

# eem<sup>93</sup><sub>94</sub>

electronic engineers master catalog

VOLUME  
**C**



## interconnections, packaging, and hardware

### 36th EDITION

- |                                                            |                                                                                 |
|------------------------------------------------------------|---------------------------------------------------------------------------------|
| 1400 Cabinets, Enclosures, Racks,<br>& Chassis             | 2600 Fans, Blowers, Cooling Equipment, &<br>Heat Exchangers                     |
| 1600 Chemical Compounds (Adhesives,<br>Cleaners, Coatings) | 3100 Insulators & Insulating Equipment                                          |
| 1700 Circuit Boards (Printed), Materials,<br>& Accessories | 3200 Interconnection Systems (Backpanels,<br>Card Holders, & Packaging Systems) |
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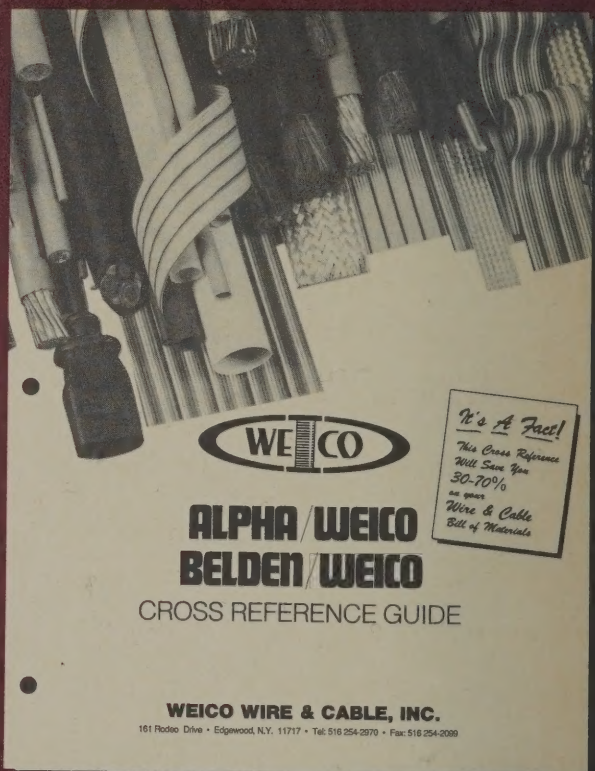


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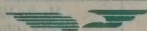
**NELSON J. MAIONE**

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|                                        | INDEX<br>CORPORATION                   | AMP<br>INCORPORATED          |                       | NATIONAL<br>WIRE & CABLE<br>CORP. |



# how to use eem

The 36th edition of EEM is arranged in four volumes each composed of related Product Sections. For user convenience, each volume contains its own Product Index and Directory (green pages) and its own Manufacturers and Sales Offices Directory (yellow pages). Every Product Heading and every manufacturer of electronic products is listed in each volume. Where, however, the Product Section is assigned to a volume other than that in use, a cross reference is made to the appropriate volume for further information.

**To locate a specific product.** Start by choosing the volume whose title describes the class of electronic product you are seeking. If you are not sure which volume is appropriate, pick up the first one at hand and

look up the product heading in the green pages. There you will find either a list of that product's manufacturers or you will be referred to the proper volume. All products are identified by their generic terms. Please read the instructions on the first page of each section. Manufacturers with catalog data pages in this edition of EEM appear in boldface type and page numbers are shown. Manufacturers appearing in lightface type have submitted verifying evidence that they supply the products shown. When you have located a product of interest, turn to the page(s) shown for further information. You will find these pages in each volume in the appropriate sections.

## product selection guides

There are 37 Product Selection Guides included in this edition of EEM. They are located on the first pages of the Product Section to which they apply. Use these

guides for basic selection parameters and then go to the EEM pages shown in the guide for more detailed information.

## product selection index

| Product Section Guide                                                         | Vol. A | Vol. B | Vol. C | Vol. D |
|-------------------------------------------------------------------------------|--------|--------|--------|--------|
| 1100 Amplifier Assemblies, Instrumentation                                    |        |        |        | D•1002 |
| 1200 Antennas & Accessories                                                   |        |        |        | D•1022 |
| 1300 Audio Equipment & Accessories                                            |        |        |        | D•1026 |
| 1400* Cabinets, Enclosures, Racks, & Chassis                                  |        |        | C•1002 |        |
| 1500* Capacitors                                                              | A•1002 |        |        |        |
| 1600 Chemical Compounds<br>(Adhesives, Cleaners, Coatings)                    |        |        | C•1134 |        |
| 1700 Circuit Boards (Printed), Materials, & Accessories                       |        |        | C•1135 |        |
| 1800* Coils, Chokes, & Inductors                                              | A•1178 |        |        |        |
| 1850 Cores, Magnets, & Ferrites                                               | A•1316 |        |        |        |
| 1900 Communications & Telemetry Equipment                                     |        |        |        | D•1073 |
| 2000 Computer Peripheral Equipment                                            |        |        |        | D•1078 |
| 2025 Computers (Mini/Micro/Boards)                                            |        |        |        | D•1116 |
| 2050 Computer Software                                                        |        |        |        | D•1147 |
| 2100* Connectors, Terminals, & Sockets                                        |        |        | C•1138 |        |
| 2200 Control Systems & Components                                             |        |        |        | D•1149 |
| 2300* Crystals, Oscillators, Crystal & Piezoelectric Filters                  |        |        |        | D•1170 |
| 2325 Data Acquisition/Handling Systems & Accessories                          | A•1324 |        |        |        |
| 2350* Delay Lines                                                             | A•1512 |        |        |        |
| 2400* Panel Hardware (Bezels, Dials, Knobs, etc.)                             |        |        | C•1522 |        |
| 2440* Military Components and Equipment                                       |        | B•1002 |        |        |
| 2450* Displays, Readouts, & CRTs                                              |        | B•1019 |        |        |
| 2460* Lamps, Lights, & Indicators                                             |        | B•1130 |        |        |
| 2475* Fiber Optic Equipment & Accessories                                     |        | B•1200 |        |        |
| 2500 Hardware & Mechanical Components                                         |        |        | C•1537 |        |
| 2550 Environmental Test Equipment                                             |        |        |        | D•1211 |
| 2600* Fans, Blowers, Cooling Equipment, & Heat Exchangers                     |        |        | C•1556 |        |
| 2700* Filters, Power                                                          | A•1584 |        |        |        |
| 2750* Filters, Signal                                                         | A•1616 |        |        |        |
| 2900* Instruments, Test & Measuring                                           |        |        |        | D•1214 |
| 2950* Panel Meters (Analog & Digital)                                         |        |        |        | D•1336 |
| 2975* Instruments, Oscilloscopes                                              |        |        |        | D•1402 |
| 3000 Instruments, Graphic Recording                                           |        |        |        | D•1410 |
| 3100 Insulators & Insulating Materials                                        |        |        | C•1654 |        |
| 3130* Integrated Circuits, Hybrid Circuits, & Function Modules                | A•1688 |        |        |        |
| 3200* Interconnection Systems (Backpanels, Card Holders, & Packaging Systems) |        |        | C•1670 |        |
| 3450* Microwave Components, Systems, & Equipment                              | A•1719 |        |        |        |
| 3500* Motors, Drives, & Rotating Equipment                                    |        | B•1230 |        |        |
| 3700 Electro-optical Equipment                                                |        | B•1312 |        |        |
| 3900* Batteries                                                               |        |        |        | D•1418 |
| 4000* Power Supplies, DC                                                      |        |        |        | D•1486 |
| 4025* DC-DC Converters                                                        |        |        |        | D•2048 |
| 4050* Power Supplies, AC                                                      |        |        |        | D•2221 |
| 4100 Production Equipment & Manufacturing Services                            |        |        |        | D•2310 |
| 4200 Prototype Boards, Kits, & Design Aids                                    |        |        | C•1677 |        |
| 4300* Protective Components (Fuses, Circuit Breakers, etc.)                   |        |        |        |        |
| 4500* Relays                                                                  |        | B•1340 |        |        |
| 4525 Shields & Shielding                                                      |        | B•1400 | C•1682 |        |
| 4550* Solenoids                                                               |        | B•1626 |        |        |
| 4700* Resistors                                                               | A•1858 |        |        |        |
| 4750* Potentiometers, Trimmers, Controls, & Rheostats                         | A•2052 |        |        |        |
| 4800* Discrete Semiconductors                                                 | A•2130 |        |        |        |
| 4900 Servomechanisms & Robotic Equipment                                      |        |        |        | D•2314 |
| 5100* Switches                                                                |        | B•1656 |        |        |
| 5150* Keyboards & Keypads                                                     |        | B•1818 |        |        |
| 5300* Thermal Components                                                      |        | B•1856 |        |        |
| 5400 Tools (Manual & Power)                                                   |        |        | C•1700 |        |
| 5500* Transducers & Encoders                                                  |        | B•1911 |        |        |
| 5600* Transformers                                                            | A•2228 |        |        |        |
| 6000* Wire & Cable                                                            |        |        | C•1701 |        |

\* A Product Selection Guide precedes these Product Sections.

## eem sales offices

### Main Sales Office

Hearst Business Communications, Inc.  
645 Stewart Avenue  
Garden City, NY 11530  
(516) 227-1300  
FAX: (516) 227-1901

### New England

Hearst Business Communications, Inc.  
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Wellesley, MA 02181  
(617) 239-1333  
FAX: (617) 239-0558

### New York, New Jersey & Southern Connecticut

The Druker Company  
Research Park  
338 Wall Street  
Princeton, NJ 08540  
(609) 921-3686  
FAX: (609) 921-1853

### Pennsylvania & Southeast

Hearst Business Communications, Inc.  
Lee Park  
1100 E. Hector Street  
Suite 415  
Conshohocken, PA 19428  
(215) 941-0600  
FAX: (215) 941-0335

### Midwest

Pattis/3M  
7161 N. Cicero Avenue  
Lincolnwood, IL 60646  
(708) 679-1100  
FAX: (708) 679-5926

### Southern California/

Nevada, Arizona, Utah & New Mexico  
Media West  
505 Villareal #112  
Anaheim, CA 92807  
(714) 283-8166  
FAX: (714) 283-8165

### Northern California/

### Pacific Northwest/Colorado

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Santa Clara, CA 95051  
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FAX: (408) 249-1384

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Wellesley, MA 02181  
(617) 239-1333  
FAX: (617) 239-0558

### Japan

Interpress Inc.  
Yamaji Sanbancho Bldg. 5th Floor  
5-24, Sanbancho, Chiyoda-ku  
Tokyo 102  
81-33-234-2331  
FAX: 81-33-234-2380

### Europe

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645 Stewart Avenue  
Garden City, NY 11530  
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# advertisers' index

To find a specific manufacturer's data pages, an alphabetical index of EEM participants appears in EEM starting on page A•5 of Volume A and on pages B•5, C•5 and D•5 of the other volumes.

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## manufacturers' index

In the EEM yellow pages you will find pertinent details on all manufacturers listed in EEM including local sales offices and/or distributors. Please refer to the detailed

instructions on the first page of the EEM yellow pages for additional information.

## to order a product found in eem

When you have located the product that suits your needs, call the manufacturer or the local sales rep or distributor as shown in the EEM yellow pages. Give the

EEM data page number and specs from that page. You and the supplier will be talking on the same wave length which should simplify your ordering and buying.

## to file manufacturers' catalogs and data

The EEM File System is revised and updated to reflect changes in EEM itself. Each new EEM File System contains a complete Product Index. This index tells you where to file which catalog. It also contains a cross reference identifying what should be filed in each section. In order to use the EEM File System all you need is a supply of standard letter size, third-cut manila file folders. You then use the pressure sensitive labels which are supplied with the system to go into as much detail as you want or need.

Each label fits the third-cut file folder exactly. There are over 300 of these labels in each system: one for the

index, one each for the EEM Product Sections, 24 for the alphabetical file of multiproduct catalogs, plus more than 200 additional labels for system expansion. The EEM File System also includes Cross Reference Cards so you can quickly and easily find multiproduct catalogs. The EEM File System is complete and can save you countless hours of time and thousands of dollars. Send your check for \$25.00 to: EEM File System, 645 Stewart Ave., Garden City, NY 11530 and we'll absorb postage and handling. Send a purchase order and add \$5.00 for postage and handling. NY, CA and MA residents, please add sales tax.

## technical information: codes... miniglossaries...charts...

|                                            |                                |
|--------------------------------------------|--------------------------------|
| Abbreviations .....                        | A•1014, B•1221, C•1536, D•1058 |
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| Batteries & Fuel Codes .....               | D•1422                         |
| Capacitors .....                           | A•1061                         |
| Conductors, Maximum Current Capacity ..... | C•1255                         |
| Connectors .....                           | C•1146                         |
| EBCDIC Code .....                          | A•1086                         |
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| Power Supplies .....                       | D•1595                         |
| Relays .....                               | B•1668                         |
| Relay Contact Forms .....                  | B•1539                         |
| Resistor Color Codes .....                 | A•2018                         |
| Servo Components .....                     | B•1233                         |
| SI Units .....                             | C•1856                         |
| Symbols—International Authorities .....    | A•1578                         |
| Thermal Conductivity of Dielectrics .....  | B•1272                         |
| Thyristors & High Power Diodes .....       | A•2148                         |
| Wire Gauges .....                          | C•1705                         |



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# 93 94 Alphabetical Index of Manufacturers Catalog Pages

This index provides an alphabetical listing of manufacturers pages and where to find them

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Abbott Electronics ..... D•1491-1511, 2226-2227  
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D•1512-1515, 2228-2229  
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Acon, Inc. .... D•2058-2066  
Acopian Technical Company ..... D•1517-1548  
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Advance Conversion Devices Co./Unit of Transitor  
Dvcs, Inc. .... D•2230-2231  
Advanced Analog, Intech ..... D•2067  
Advanced Components Inds., Inc., Div. of Kaschke  
..... A•1318, 2254-2255; D•1403  
Advanced Control Sys. .... D•1150  
Advanced High Voltage Company ..... D•1553  
Advanced Input Devices ..... B•1819  
Advanced Power Solutions, M & L Enterprises  
..... D•1554-1556  
Advanced Rubber Concepts, Formerly Goliote Sales  
Ltd. .... B•1820  
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Advanced Thermistor Div., U.S. Sensor Corp.  
..... B•1860-1862  
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AEMC Corporation ..... D•1223  
Aerovox Inc. .... A•1008-1009, 1585  
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Air Filtration Products, Inc. .... C•1612  
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A.J.'s Power Source, Inc. .... D•1557-1559  
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A-L-L Magnetics Inc./The Magnet Source  
..... A•1319  
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Alumapak Electronic Precepts of Florida ..... C•1009  
Amber Inds., Inc. .... B•1343  
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Under each product heading whose Product Section appears in the volume you are using, the names of the manufacturers who supply the product are shown in alphabetical order with EEM catalogers shown first in boldface type with appropriate page numbers. Other manufacturers are shown in light face type. The symbol (\$) indicates that these products are available from local distributors. The symbol (†) indicates that the product is available to MIL specifications.

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| Brandywine Abrasives, Spring City, PA 19475                                      | 215-948-7028 |
| Dubbelde Harris Diamond Corp./D. Drukker & Zn. N.V., Mt. Arlington, NJ 07856     | 201-770-1420 |
| Ferro Corporation, Transelco Div., Penn Yan, NY 14527-0127                       | 315-536-3357 |
| Glen Mills Inc., Clifton, NJ 07012                                               | 201-777-0777 |
| #HMC/Hub Material Company, Canton, MA 02021                                      | 617-821-1870 |
| †Jonard Industries Corp., Tuckahoe, NY 10707                                     | 914-793-0700 |
| Press-On Products, Addison, IL 60101                                             | 708-628-2255 |
| †Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000 |
| \$Techni-Tool, Plymouth Meeting, PA 19462                                        | 215-825-4990 |
| S.S. White Technologies Inc., Piscataway, NJ 08854-3761                          | 908-752-8300 |

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| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                | C*1438         |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                  | C*1460         |
| Trompeter Electronics, Inc., Westlake Village, CA 91362-0047, 818-707-2020               | C*1500-1505    |
| \$AVA Electronics Corporation, Drexel Hill, PA 19026                                     | 215-284-2500   |
| \$Daburn Electronics & Cable Corp., Northvale, NJ 07647                                  | 201-768-5400   |
| \$Foxconn International, Hon Hai, Sunnyvale, CA 94086                                    | 408-749-1228   |
| Fujipoly, America Corp., Cranford, NJ 07016                                              | 908-272-3850   |
| International Components Corp., Melville, NY 11747                                       | 516-293-1500   |
| \$Johnson, E. F., Co., Waseca, MN 56093                                                  | 1-800-247-8256 |
| \$Panduit Corp., Tinley Park, IL 60477-0981                                              | 800-777-3300   |
| \$Philmore Manufacturing, Rockford, IL 61125-1386                                        | 815-229-7773   |
| Power Dynamics Inc., West Orange, NJ 07052                                               | 201-736-5722   |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000   |
| \$Winegard Co., Burlington, IA 52601-2000                                                | 319-754-0600   |

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| \$Amphenol Interconnect Products, LPL Technologies, Endicott, NY 13760 | 607-754-4444 |

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| Colorado Data Systems, Tektronix, Englewood, CO 80110 | 303-762-1640;                | 800-237-2831 |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2  | 416-470-1346                 |              |
| ICS Electronics Corp., Milpitas, CA 95035-5545        | 408-263-5500; 1-800-952-4499 |              |
| Kinetic Systems Corp., Lockport, IL 60441             | 815-838-0005                 |              |
| L-Com Inc., N. Andover, MA 01845                      | 508-682-6936                 |              |
| \$# Support Systems Intl. Corp., Richmond, CA 94804   | 510-234-9090                 |              |

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| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218                                   | C*1490-1491                    |  |
| #Accu-Tech Corporation, Roswell, GA 30076-3890                                                        | 404-751-9473; 800-221-4767     |  |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                            | 908-925-8000                   |  |
| AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                                   | 1-800-344-0223, Ext. 1027      |  |
| †Brim Electronics, Fair Lawn, NJ 07410                                                                | 201-796-2886                   |  |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007              | 708-981-6000                   |  |
| \$Contact East, N. Andover, MA 01845                                                                  | 508-682-2000                   |  |
| \$Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                   |  |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                        | 203-438-9684; 800-344-9684     |  |
| \$Elite Electronics, Inc., Plano, TX 75074                                                            | 214-881-0026; 800-553-4376     |  |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684                   |  |
| \$Golden Pacific Electronics, Inc., Placentia, CA 92670                                               | 714-993-6970                   |  |
| \$GTE Supply, GTE, Irving, TX 75038                                                                   | 800-433-4837                   |  |
| \$Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                   |  |
| International Components Corp., Melville, NY 11747                                                    | 516-293-1500                   |  |
| International Microelectronics, Arlington, TX 76003                                                   | 817-473-1730                   |  |
| \$J.A.W. Industries, Inc., Warrington, PA 18976                                                       | 215-343-8990                   |  |
| \$Kyeon Cable & Connector, Inc., San Jose, CA 95125                                                   | 408-295-1110; 800-544-6941     |  |
| \$L-Com Inc., N. Andover, MA 01845                                                                    | 508-682-6936                   |  |
| Mouser Electronics, Santee, CA 92071                                                                  | 800-346-6873                   |  |
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| Mouser Electronics, Gilroy, CA 95020                                                                  | 800-346-6873                   |  |
| \$Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                   |  |
| \$Philmore Manufacturing, Rockford, IL 61125-1386                                                     | 815-229-7773                   |  |
| Power Dynamics Inc., West Orange, NJ 07052                                                            | 201-736-5722                   |  |
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| \$# Support Systems Intl. Corp., Richmond, CA 94804                                                   | 510-234-9090                   |  |
| \$Terminal Data Corp., Rockville, MD 20855                                                            | 301-921-8282                   |  |

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| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                     | C-1460                                         |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                           | D-1956-1957                                    |
| Top-Link Computer Inc., Milpitas, CA 95035-8001, 408-946-7888                               | D-1998-1999                                    |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                             | 201-288-4477;<br>800-447-5639                  |
|                                                                                             | 908-446-3110                                   |
| EWC, Inc., Englishtown, NJ 07726                                                            | 714-975-1222                                   |
| Potrans International Inc., Potrans Electrical Corp. Ltd., Irvine, CA 92714                 | 201-736-5722                                   |
|                                                                                             | 216-951-3300                                   |
| Power Dynamics Inc., West Orange, NJ 07052                                                  | 800-848-2600 ext.62                            |
| † Qualtek Electronics Corp., Mentor, OH 44060                                               | 503-638-1000                                   |
| † Schurter, Inc., Petaluma, CA 94954                                                        | 219-722-2244                                   |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR<br>97068 | 503-638-1000                                   |
| † Stancor, White-Rodgers, Logansport, IN 46947                                              | 219-722-2244                                   |
| † Tamura Corporation of America, Temecula, CA 92589-2230                                    | 909-699-1270                                   |
| † Tru-Connector Corp., Peabody, MA 01960                                                    | 508-532-0775; 1-800-262-9787;<br>1-800-COAXTRU |
|                                                                                             | 800-867-4600                                   |
| † USD Products, Div. of Bussmann, Chicago, IL 60656                                         |                                                |

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| † The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                                  | 603-528-3400               |
| † AAVID Engineering, Inc., Laconia, NH 03247-0400                                            | 708-426-2200; 800-445-1754 |
| † Abatron, Inc., Gilberts, IL 60136                                                          | 215-855-1000               |
| † Ablestik Electronic Materials & Adhesives-EMCA-REME Products, Montgomeryville, PA<br>18936 | 310-764-4600               |
| † Ablestik Laboratories, Rancho Dominguez, CA 90221                                          | 310-764-4600               |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747              |                            |
|                                                                                              | 313-984-5581               |
| † Ambroid Co., Springfield, VT 05156                                                         | 802-885-9244               |
| † Aremco Products, Inc., Ossining, NY 10562                                                  | 914-762-0685               |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                                           | 617-926-2550               |
| † Capcon, Inc., New York, NY 10001                                                           | 212-243-6275               |
| † Castall Inc., E. Weymouth, MA 02189                                                        | 617-337-6075               |
| † Conap, Inc., Olean, NY 14760                                                               | 716-372-9650               |
| † Contact East, N. Andover, MA 01845                                                         | 508-682-2000               |
| † Cotronics, Brooklyn, NY 11235                                                              | 718-646-7996               |
| † Dynaloy, Inc., Hanover, NJ 07936                                                           | 201-887-9270               |
| † EG & G Wakefield Engineering, Wakefield, MA 01880                                          | 617-245-5900               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                  | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                                        | 708-632-1020               |
| † Electrostatic Consulting Assocs., Grotton, MA 01450                                        | 508-448-5485               |
| † Epic Resins, General Fiberglass Supply, Inc., Waukesha, WI 53186                           | 414-521-2255               |
| † Epoxy Technology, Inc., Billerica, MA 01821                                                | 508-667-3805; 800-227-2201 |
| † Ercor Incorporated, Waltham, MA 02154                                                      | 617-899-1497               |
| † Glenmarc Manufacturing Inc., Vernon Hills, IL 60061                                        | 708-634-6080; 800-323-5350 |
| † Insulcast, Permagine Inds. Inc., Plainville, NY 11803                                      | 516-349-1100; 800-645-7546 |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119                                    | 206-284-2200               |
| † International Microelectronics, Arlington, TX 76003                                        | 817-473-1730               |
| † Leepoxy Plastics, Inc., Ft. Wayne, IN 46809                                                | 219-747-7411               |
| † Master Bond, Hackensack, NJ 07601                                                          | 201-343-8983               |
| † Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893                        |                            |
|                                                                                              | 401-822-9300               |
| † Omega Engineering, Stamford, CT 06907                                                      | 800-826-6342               |
| † Orcus, Kansas City, MO 64112                                                               | 913-897-5128               |
| † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715                                   | 714-833-3000               |
| † Power Devices Inc., Laguna Hills, CA 92653                                                 | 714-582-6712               |
| † Sheldahl, Inc., Northfield, MN 55057                                                       | 507-663-8000               |
| † Shin-Etsu Polymer America, Inc., Union City, CA 94587                                      | 510-475-9000               |
| † Silicones Unlimited, Inc., Marietta, GA 30062                                              | 404-578-1274               |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370                 |                            |
|                                                                                              | 617-878-7015               |
| † Techni-Tool, Plymouth Meeting, PA 19462                                                    | 215-825-4990               |
| † Tech Spray, Inc., Amarillo, TX 79105                                                       | 806-372-8523               |
| † Technit, Cranford, NJ 07016                                                                | 908-272-5500               |
| † Thermally, Inc., Dallas, TX 75381-0839                                                     | 214-243-4321               |
| † Thermoset Plastics Inc., Indianapolis, IN 46220                                            | 317-259-4161               |
| † Tra-Con, Inc., Medford, MA 02155                                                           | 617-391-5550               |

**Adhesives, General Purpose-1600**

|                                                                        |              |
|------------------------------------------------------------------------|--------------|
| † The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900            | C-1685       |
| † Ablestik Laboratories, Rancho Dominguez, CA 90221                    | 310-764-4600 |
| † Ambroid Co., Springfield, VT 05156                                   | 802-885-9244 |
| † American Chemical, Inc., Minneapolis, MN 55408-1047                  | 612-374-1767 |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                     | 617-926-2550 |
| † Berg, W. M., Inc., East Rockaway, NY 11518                           | 516-599-5010 |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 | 313-583-1200 |
| † Castall Inc., E. Weymouth, MA 02189                                  | 617-337-6075 |
| † Conap, Inc., Olean, NY 14760                                         | 716-372-9650 |
| † Contact East, N. Andover, MA 01845                                   | 508-682-2000 |
| † Dow Corning Corp., Midland, MI 48686-0994                            | 517-496-4000 |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162            | 708-547-5400 |

|                                                                       |                            |
|-----------------------------------------------------------------------|----------------------------|
| † Electro Insulation Corp., Arlington Hgts., IL 60004                 | 708-632-1020               |
| † Epic Resins, General Fiberglass Supply, Inc., Waukesha, WI 53186    | 414-521-2255               |
| † Epoxy Technology, Inc., Billerica, MA 01821                         | 508-667-3805; 800-227-2201 |
| † Fel-Pro Chemical Products LP., Commerce City, CO 80022              | 303-289-5651               |
| † GC-Thorsen, Rockford, IL 61105-1209                                 | 815-968-9661               |
| † Glenmarc Manufacturing Inc., Vernon Hills, IL 60061                 | 708-634-6080; 800-323-5350 |
| † Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                | 201-751-3000               |
| † HMC/Hub Material Company, Canton, MA 02021                          | 617-821-1870               |
| † Insulcast, Permagine Inds. Inc., Plainville, NY 11803               | 516-349-1100; 800-645-7546 |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119             | 206-284-2200               |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                | 602-968-6241               |
| † Leepoxy Plastics, Inc., Ft. Wayne, IN 46809                         | 219-747-7411               |
| † Master Bond, Hackensack, NJ 07601                                   | 201-343-8983               |
| † Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893 |                            |
|                                                                       | 401-822-9300               |
| † Metron Optics Inc., Solana Beach, CA 92075-0690                     | 619-755-4477               |
| † Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950           | 203-743-4447               |
| † MLT/Micro-Lite Technology, Mesa, AZ 85206                           | 602-545-1113               |
| † MLT/Micro-Lite Technology, Mesa, AZ 85206                           | 602-545-1113               |
| † Omega Engineering, Stamford, CT 06907                               | 800-826-6342               |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218            | 317-543-3540;              |
|                                                                       | 800-382-4635               |
| † Sigma Plastronics, Inc., Whitmore Lake, MI 48189                    | 810-231-2871               |
| † Silicones Unlimited, Inc., Marietta, GA 30062                       | 404-578-1274               |
| † Techni-Tool, Plymouth Meeting, PA 19462                             | 215-825-4990               |
| † Tech Spray, Inc., Amarillo, TX 79105                                | 806-372-8523               |
| † Thermaglon, Inc., Cleveland, OH 44109                               | 216-741-7659               |
| † Thermoset Plastics Inc., Indianapolis, IN 46220                     | 317-259-4161               |
| † Tra-Con, Inc., Medford, MA 02155                                    | 617-391-5550               |
| † Transene, Rowley, MA 01969                                          | 508-948-2501               |
| † Wilson, H. F., Engineering Co., Glen Ellyn, IL 60137                | 708-469-7473               |

**Adhesives, Insulating-1600**

|                                                                            |                            |
|----------------------------------------------------------------------------|----------------------------|
| † Chomerics, Inc.-W.R. Grace & Co., Woburn, MA 01888, 617-935-4850         | C-1659-1661                |
|                                                                            | C-1668                     |
| † Thruet Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730 |                            |
|                                                                            | C-1668                     |
| † Abatron, Inc., Gilberts, IL 60136                                        | 708-426-2200; 800-445-1754 |
| † Ablestik Laboratories, Rancho Dominguez, CA 90221                        | 310-764-4600               |
| † American Chemical, Inc., Minneapolis, MN 55408-1047                      | 612-374-1767               |
| † Aremco Products, Inc., Ossining, NY 10562                                | 914-762-0685               |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                         | 617-926-2550               |
| † Castall Inc., E. Weymouth, MA 02189                                      | 617-337-6075               |
| † Contact East, N. Andover, MA 01845                                       | 508-682-2000               |
| † Cotronics, Brooklyn, NY 11235                                            | 718-646-7996               |
| † Dolph, John C., Co., Monmouth Junction, NJ 08852                         | 908-329-2333               |
| † Dow Corning Corp., Midland, MI 48686-0994                                | 517-496-4000               |
| † Electra-assembly, Lancer Chemical, Warren, RI 02885                      | 401-245-5493               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                      | 708-632-1020               |
| † Epic Resins, General Fiberglass Supply, Inc., Waukesha, WI 53186         | 414-521-2255               |
| † Epoxy Technology, Inc., Billerica, MA 01821                              | 508-667-3805; 800-227-2201 |
| † Fel-Pro Chemical Products LP., Commerce City, CO 80022                   | 303-289-5651               |
| † GC-Thorsen, Rockford, IL 61105-1209                                      | 815-968-9661               |
| † Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                     | 201-751-3000               |
| † Insulcast, Permagine Inds. Inc., Plainville, NY 11803                    | 516-349-1100; 800-645-7546 |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119                  | 206-284-2200               |
| † Leepoxy Plastics, Inc., Ft. Wayne, IN 46809                              | 219-747-7411               |
| † Master Bond, Hackensack, NJ 07601                                        | 201-343-8983               |
| † Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893      |                            |
|                                                                            | 401-822-9300               |
| † MLT/Micro-Lite Technology, Mesa, AZ 85206                                | 602-545-1113               |
| † MLT/Micro-Lite Technology, Mesa, AZ 85206                                | 602-545-1113               |
| † Omega Engineering, Stamford, CT 06907                                    | 800-826-6342               |
| † Rogers Corporation, Circuit Materials Div., Chandler, AZ 85244           | 602-963-4584               |
| † Sigma Plastronics, Inc., Whitmore Lake, MI 48189                         | 810-231-2871               |
| † Silicones Unlimited, Inc., Marietta, GA 30062                            | 404-578-1274               |
| † Soundcoat Co., Inc., Deer Park, NY 11729-5701                            | 516-242-2200               |
| † Tech Spray, Inc., Amarillo, TX 79105                                     | 806-372-8523               |
| † Thermaglon, Inc., Cleveland, OH 44109                                    | 216-741-7659               |
| † Thermally, Inc., Dallas, TX 75381-0839                                   | 214-243-4321               |
| † Thermoset Plastics Inc., Indianapolis, IN 46220                          | 317-259-4161               |
| † Tra-Con, Inc., Medford, MA 02155                                         | 617-391-5550               |
| † Transene, Rowley, MA 01969                                               | 508-948-2501               |

**Adhesives, Liquid Spray-1600**

|                                                             |                            |
|-------------------------------------------------------------|----------------------------|
| † American Chemical, Inc., Minneapolis, MN 55408-1047       | 612-374-1767               |
| † Conap, Inc., Olean, NY 14760                              | 716-372-9650               |
| † Contact East, N. Andover, MA 01845                        | 508-682-2000               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162 | 708-547-5400               |
| † GC-Thorsen, Rockford, IL 61105-1209                       | 815-968-9661               |
| † Glenmarc Manufacturing Inc., Vernon Hills, IL 60061       | 708-634-6080; 800-323-5350 |
| † Master Bond, Hackensack, NJ 07601                         | 201-343-8983               |
| † MLT/Micro-Lite Technology, Mesa, AZ 85206                 | 602-545-1113               |
| † MLT/Micro-Lite Technology, Mesa, AZ 85206                 | 602-545-1113               |
| † Soundcoat Co., Inc., Deer Park, NY 11729-5701             | 516-242-2200               |

**Adhesives, Optical-1600**

|                                                                     |                            |
|---------------------------------------------------------------------|----------------------------|
| AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962 | 1-800-344-0223, Ext. 1027  |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                  | 617-926-2550               |
| † Contact East, N. Andover, MA 01845                                | 508-682-2000               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162         | 708-547-5400               |
| † Epoxy Technology, Inc., Billerica, MA 01821                       | 508-667-3805; 800-227-2201 |
| † GC-Thorsen, Rockford, IL 61105-1209                               | 815-968-9661               |
| † Glenmarc Manufacturing Inc., Vernon Hills, IL 60061               | 708-634-6080; 800-323-5350 |



|                                                          |                   |
|----------------------------------------------------------|-------------------|
| Hardman: Harcos Chemicals Inc, Belleville, NJ 07109      | 201-751-3000      |
| # Intaq Key Panels, GM Nameplate, Inc, Seattle, WA 98119 | 206-284-2200      |
| † Master Bond, Hackensack, NJ 07601                      | 201-343-8983      |
| ‡ Multicore Solders, Inc, Richardson, TX 75081           | 214-238-1224      |
| § Polytronix, Inc, Richardson, TX 75081                  | 214-238-7045      |
| ¶ Polyn Optics Co, Covina, CA 91722-2199                 | 818-915-5707/5717 |
| † Silicones Unlimited, Inc, Marietta, GA 30062           | 404-578-1274      |
| § Techni-Tool, Plymouth Meeting, PA 19462                | 215-825-4990      |
| † Tra-Con, Inc, Medford, MA 02155                        | 617-391-5550      |
| Transene, Rowley, MA 01969                               | 508-948-2501      |

### Adhesives, UV Curing-1600

|                                                                     |                           |
|---------------------------------------------------------------------|---------------------------|
| † American Chemical, Inc, Minneapolis, MN 55408-1047                | 612-374-1767              |
| AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962 | 1-800-344-0223, Ext. 1027 |
| Castall Inc, E. Weymouth, MA 02189                                  | 617-337-6075              |
| § Contact East, N. Andover, MA 01845                                | 508-682-2000              |
| † Dynaloy, Inc, Hanover, NJ 07936                                   | 201-887-9270              |
| # Electrical Insulation Suppliers, Inc, Hillside, IL 60162          | 708-547-5400              |
| † Electro Insulation Corp, Arlington Hgts., IL 60004                | 708-632-1020              |
| Epoxy Technology, Inc, Billerica, MA 01821                          | 508-667-3805/800-227-2201 |
| § Glenmarc Manufacturing Inc, Vernon Hills, IL 60061                | 708-634-6080/800-323-5350 |
| † Master Bond, Hackensack, NJ 07601                                 | 201-343-8983              |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                           | 602-545-1113              |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                           | 602-545-1113              |
| ‡ Multicore Solders, Inc, Richardson, TX 75081                      | 214-238-1224              |
| Polytronix, Inc, Richardson, TX 75081                               | 214-238-7045              |
| Shamrock Plastics & Rubber, Inc, Indianapolis, IN 46218             | 317-543-3540/800-382-4635 |
| † Silicones Unlimited, Inc, Marietta, GA 30062                      | 404-578-1274              |
| Xenon Corp, Woburn, MA 01801                                        | 617-938-3594              |

### Adhesives, Wire Tacking-1600

|                                                            |                           |
|------------------------------------------------------------|---------------------------|
| § Ambroid Co, Springfield, VT 05156                        | 802-885-9244              |
| † American Chemical, Inc, Minneapolis, MN 55408-1047       | 612-374-1767              |
| Castall Inc, E. Weymouth, MA 02189                         | 617-337-6075              |
| § Contact East, N. Andover, MA 01845                       | 508-682-2000              |
| # Electrical Insulation Suppliers, Inc, Hillside, IL 60162 | 708-547-5400              |
| † Electro Insulation Corp, Arlington Hgts., IL 60004       | 708-632-1020              |
| § Glenmarc Manufacturing Inc, Vernon Hills, IL 60061       | 708-634-6080/800-323-5350 |
| Leepoxy Plastics, Inc, Ft. Wayne, IN 46809                 | 219-747-7411              |
| † Master Bond, Hackensack, NJ 07601                        | 201-343-8983              |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                  | 602-545-1113              |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                  | 602-545-1113              |
| † Silicones Unlimited, Inc, Marietta, GA 30062             | 404-578-1274              |
| § Tech Spray, Inc, Amarillo, TX 79105                      | 806-372-8523              |

### Air Cleaners & Filters (Shielded & Unshielded)-2600

|                                                                                  |                |
|----------------------------------------------------------------------------------|----------------|
| ETRI, Inc, Monroe, NC 28110, 704-289-5423                                        | C•1585         |
| McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550, 609-799-0100 | C•1606-1607    |
| § Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300                      | C•1638-1639    |
| # Absolute Filter Co, Ambler, PA 19002                                           | 215-886-9176   |
| # Absolute Filter Co, Ambler, PA 19002                                           | 215-886-9176   |
| # Air Filtration Products, Inc, Tucson, AZ 85705                                 | 602-624-2272   |
| † ALFCO, Div. of Air Maze, Carpinteria, CA 93013                                 | 805-684-7651   |
| † Baker Co, Inc, Sanford, ME 04073                                               | 1-800-992-2537 |
| † Balston, Haverhill, MA 01835-0723                                              | 508-374-7400   |
| † Bud Industries, Inc, Willoughby, OH 44094-0431                                 | 216-946-3200   |
| † Carey Electronics Engineering Co, Springfield, OH 45505                        | 513-323-6300   |
| † Chomerics, Inc, W.R. Grace & Co, Woburn, MA 01888                              | 617-935-4850   |
| § Clean Room Products, Inc, Ronkonkoma, NY 11779-6528                            | 516-588-7000   |
| † Conductive System, Inc, Amsterdam, NY 12010                                    | 518-843-5740   |
| Electro Maze Air Filters, Carmichael, CA 95608                                   | 916-485-4079   |
| Indek Corporation, San Jose, CA 95131                                            | 408-432-1199   |
| Instrument Specialties Co, Headquarters, Delaware Water Gap, PA 18327-0136       | 717-424-8510   |
| † Merrill, Inc, Bonita Springs, FL 33959                                         | 813-591-1626   |
| Norgren, Littleton, CO 80120-1663                                                | 303-794-2611   |
| § PACE, Inc, Laurel, MD 20723-1990                                               | 301-490-9860   |
| † PolyPly Inc./Conductives Systems, Inc, Amsterdam, NY 12010                     | 518-843-3900   |
| Rittal Corp, Springfield, OH 45504-9807                                          | 800-477-4000   |
| Tech-Elch, Inc, Plymouth, MA 02360                                               | 508-747-0300   |
| † Technit, Cranford, NJ 07016                                                    | 908-272-5500   |
| † Zero Enclosures, Zero Corp, North Salt Lake, UTAH 84054-0310                   | 801-298-5900   |

### Air Conditioners (For Equipment)-2600

|                                                                                  |                |
|----------------------------------------------------------------------------------|----------------|
| Marlow Industries, Inc, Dallas, TX 75238-1645, 214-340-4900                      | C•1602-1605    |
| McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550, 609-799-0100 | C•1606-1607    |
| † McLean Midwest, Sub. of Zero Corporation, Brooklyn Pk., MN 55443, 612-561-9400 | C•1608-1609    |
| TECA, ThermoElectric Cooling America Corp., Chicago, IL 60639, 312-342-4900      | C•1644-1645    |
| Cambridge Aerofoil, Inc, Shirley, MA 01464                                       | 508-425-2346   |
| Cool Corporation, Minneapolis, MN 55447                                          | 1-612-559-3117 |
| † Electro Impulse, Neptune, NJ 07754-0278                                        | 908-776-5800   |
| § Hammond Manufacturing Co, Buffalo, NY 14225                                    | 716-894-5710   |
| § Hoffman Engineering, Anoka, MN 55303                                           | 612-421-2240   |
| † Kooltronic, Inc, Hopewell, NJ 08525                                            | 909-466-3400   |
| † Kooltronic, Inc, Ventura, CA 93003                                             | 805-642-8521   |
| † Merrill, Inc, Bonita Springs, FL 33959                                         | 813-591-1626   |
| † Noren Products Inc, Menlo Pk., CA 94025                                        | 415-322-9500   |
| § Norgren, Littleton, CO 80120-1663                                              | 303-794-2611   |
| Rittal Corp, Springfield, OH 45504-9807                                          | 800-477-4000   |
| Schroff, Inc, Warwick, RI 02886                                                  | 401-732-3770   |

|                                                                 |              |
|-----------------------------------------------------------------|--------------|
| † Sinclair Radio Laboratories Ltd, Aurora, ONT., CANADA L4G 3G9 | 416-727-0165 |
| Standard Environmental Systems, Inc, Totowa, NJ 07512           | 201-256-2200 |
| Thermacore Inc, Lancaster, PA 17601                             | 717-569-6551 |
| Thermodynamic Engineering Inc, Camarillo, CA 93012              | 805-484-0472 |
| Vortec Corporation Illinois Tool Works, Cincinnati, OH 45242    | 800-441-7475 |

### Alarms & Alarm Systems-2200 — See Vol. D

### Alarms, Controls, Photoelectric-3700 — See Vol. B

### Alarms, Static Level-4100 — See Vol. D

### Alloys, Brazing-5400

|                                                                                                 |                            |
|-------------------------------------------------------------------------------------------------|----------------------------|
| † Alpha Metals, Jersey City, NJ 07304                                                           | 201-434-6778               |
| Indium Corporation of America, Utica, NY 13502                                                  | 315-853-4900/1-800-4INDIUM |
| Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039                 | 401-433-7000               |
| † Semiconductor Packaging Materials Co, Mamaroneck, NY 10543                                    | 914-698-5353               |
| § Tricon Industries, Inc, Brazing Alloys & Chemical Products Div., Downers Grove, IL 60515-4012 | 708-963-0220               |
| † Wilkinson, Westlake Village, CA 91359                                                         | 818-889-0050/800-822-4653  |

### Alloys, Metal/Ceramic-1600

|                                                                                 |                            |
|---------------------------------------------------------------------------------|----------------------------|
| Alcomet, Inc, Beaver Dam, WI 53916                                              | 414-885-9200               |
| † A-L-L Magnetics Inc./The Magnet Source, Placentia, CA 92670                   | 800-262-4638/800-525-3536  |
| † Alpha Metals, Jersey City, NJ 07304                                           | 201-434-6778               |
| † Atomergic Chemetals Corp, Farmingdale, NY 11735-1718                          | 516-694-9000               |
| † Carpenter Technology Corp, Reading, PA 19612                                  | 215-208-2000               |
| § Dynalloy, Inc, Irvine, CA 92715                                               | 714-476-1206               |
| # Electrical Insulation Suppliers, Inc, Hillside, IL 60162                      | 708-547-5400               |
| † Gardiner Solder Co, Div. of Gardiner Metal Co, Chicago, IL 60632              | 312-847-0100               |
| Indium Corporation of America, Utica, NY 13502                                  | 315-853-4900/1-800-4INDIUM |
| † Magnetics, Spang & Co, Butler, PA 16003-0391                                  | 412-282-8282               |
| Materials Research Corporation, Orangeburg, NY 10962                            | 914-359-4200               |
| † Miami Magnet Co, Inc, The Magnet Source, Miami, FL 33015                      | 800-222-7846               |
| The J. M. Ney Company, Bloomfield, CT 06002                                     | 203-242-2281               |
| Precision Thin Metal (LP), Beaver Dam, WI 53916                                 | 414-885-9000               |
| Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| Texas Instrs, Matis & Controls Grp, Attleboro, MA 02703                         | 508-699-3800               |

### Alphanumeric Readouts — See Tubes, Readout (Vol. A)

### Alternators-4050 — See Vol. D

### Altimeters-2900 — See Vol. D

### Aluminizers, Vacuum — See Deposition Equip. (Vol. D), Evaporation

### Equipment, Electronic Beam (Vol. D)

### Amplifiers, AF-1300 — See Vol. D

### Amplifiers, Antenna-1200 — See Vol. D

### Amplifiers, Compressor-1100 — See Vol. D

### Amplifiers, Current, AC-1100 — See Vol. D

### Amplifiers, DC-1100 — See Vol. D

### Amplifiers, Data — See Amplifiers, Instrumentation (Vol. D)

### Amplifiers, Decade-1100 — See Vol. D

### Amplifiers, Deflection-Also See Yokes, Deflection, Oscilloscopes, etc.-1100 — See Vol. D

### Amplifiers, Differential-1100 — See Vol. D

### Amplifiers, Distribution-1100 — See Vol. D

### Amplifiers, Equalization-1300 — See Vol. D

### Amplifiers, Fiber Optic-1100 — See Vol. D

### Amplifiers, FM, IF, Surface Mount-4800 — See Vol. A

### Amplifiers, GaAs-3450 — See Vol. A

### Amplifiers, IF-1100 — See Vol. D

### Amplifiers, Instrumentation-1100 — See Vol. D

### Amplifiers, Integrating-Also See Amplifiers, Operational; Integrators, Electronic-1100 — See Vol. D

### Amplifiers, Isolation-1100 — See Vol. D

### Amplifiers, Limiting-1100 — See Vol. D

### Amplifiers, Line-1100 — See Vol. D

### Amplifiers, Lock-in-1100 — See Vol. D

### Amplifiers, Logarithmic-1100 — See Vol. D

### Amplifiers, Low Noise-1100 — See Vol. D

### Amplifiers, Magnetic-1100 — See Vol. D

### Amplifiers, Master Antenna — See Amplifiers, Distribution (Vol. D)

### Amplifiers, Microphone — See Amplifiers, AF (Vol. D)

### Amplifiers, Microwave-3450 — See Vol. A

### Amplifiers, Mixing-1300 — See Vol. D

### Amplifiers, Multichannel-1100 — See Vol. D

### Amplifiers, Narrow Band-1100 — See Vol. D

### Amplifiers, Null-1100 — See Vol. D

### Amplifiers, Operational-1100 — See Vol. D

### Amplifiers, Operational, Surface Mount-4800 — See Vol. A

### Amplifiers, Parametric-3450 — See Vol. A

### Amplifiers, Peak Limiting-1100 — See Vol. D

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**Backpanel Interconnect Systems-3200**

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 ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400 ..... C\*1032  
 Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 ..... C\*1336-1339  
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 † Product Technology, Inc., Irvine, CA 92714, 714-474-8998 ..... C\*1673  
 † Tempustech, Inc., Naples, FL 33942, 813-643-2424 ..... D\*1144  
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 \$ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 ..... C\*1025,1675  
 WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810 ..... C\*1510  
 \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 ..... C\*1510,1513  
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 Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492 ..... 203-265-8910  
 † Assembly Specialists, Chelmsford, MA 01824 ..... 508-250-5900  
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 Berg Electronics, Camp Hill, PA 17011 ..... 800-237-2374  
 BICC-VERO Electronics, Inc., Hamden, CT 06514 ..... 203-288-8001; 800-242-2863  
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| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                       | 714-669-9473                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608               | 201-288-4477;<br>800-447-5639     |
| § Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135       | 408-922-9000                      |
| † W.L. Gore & Assocs., Newark, DE 19714                                       | 302-738-4880                      |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                     | 619-747-9177;<br>800-628-4095     |
| § GTE Supply, GTE, Irving, TX 75038                                           | 800-433-4837                      |
| § Harting Elektronik, Inc., Hoffman Estates, IL 60195                         | 708-519-7700, ext. 200            |
| Hybricon Corporation, Ayer, MA 01432                                          | 508-772-5422                      |
| † Interlog Industries, Melville, NY 11747-4294                                | 516-420-8111                      |
| ITT Cannon, Santa Ana, CA 92705-5684                                          | 714-557-4700                      |
| § 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sls. & Prod. Info. |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936          | 215-699-5373                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                            | 508-588-6110                      |
| Optima Electronic Packaging Systems, Tucker, GA 30084-5088                    | 404-496-4000                      |
| § Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300                      |
| § Robinson Nugent, Inc., New Albany, IN 47150                                 | 812-948-0564                      |
| Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244        | 602-963-4584                      |
| Schroff, Inc., Warwick, RI 02886                                              | 401-732-3770                      |
| §# Support Systems Intl. Corp., Richmond, CA 94804                            | 510-234-9090                      |
| Techmar Corp., Marina Del Rey, CA 90292                                       | 310-827-8897                      |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                  | 603-889-5156                      |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                      |
| Unifrac Industries, Inc., Milford, DE 19963                                   | 302-424-5050                      |
| Urban Electronics, Dover, MA 02030                                            | 617-329-4068                      |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                  | 516-254-2970                      |
| Wire Graphics, Inc., Farmingdale, NY 11735                                    | 516-293-1525                      |
| § Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310               | 801-298-5900                      |

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## Barriers, Intrinsic Safety-2100

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| Elcon Instruments, Inc., Whessoe, Plc., Annapolis, MD 21401                     | 410-280-6686               |
| † Gems Sensors Division, Div. of IMO Industries Inc., Plainville, CT 06062-1198 | 203-747-3000               |
| § TURCK Inc., Minneapolis, MN 55441-2656                                        | 612-553-9224; 800-328-0580 |
| § Weed Fiber Optics Inc., Weed Instrument Co., Round Rock, TX 78664             | 512-388-2522               |

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| † Basic Electronics, Inc., Stanton, CA 90680          | 714-530-2400               |
| § Concord Electronics Corporation, New York, NY 10012 | 1-212-777-6571             |
| † Eldre Corporation, Rochester, NY 14623              | 716-427-7280               |
| § ITT Pomona Electronics, Pomona, CA 91766            | 909-469-2900               |
| † Ross Engineering Corp., Campbell, CA 95008          | 408-377-4621               |
| § Vector Electronic Co., Inc., Sylmar, CA 91342       | 818-365-9661; 800-423-5659 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717          | 516-254-2970               |

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## Bearings-2500

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| † Boston Gear, IMO Industries Inc., Quincy, MA 02171                                   | 617-328-3300; 1-800-225-5280                       |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035                 | 313-583-1200                                       |
| § Del-Tron Precision, Bethel, CT 06801                                                 | 800-245-5013                                       |
| § Dynaroll Corporation, San Fernando, CA 91340                                         | 818-837-3456                                       |
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| † INA Bearing Co., Inc., Fort Mill, SC 29715                                           | 803-548-8500                                       |
| International Machine & Tool Corp., Warwick, RI 02888                                  | 401-467-6905                                       |
| Keystone Carbon, Thermistor Div., St. Marys, PA 15857                                  | 814-781-1591                                       |
| Mechatronics Inc., Mercer Island, WA 98040                                             | 206-232-4800                                       |
| MPB Corp., Miniature Precision Bearings Div., Keene, NH 03431                          | 603-352-0310                                       |
| † New Hampshire Ball Bearing, Inc., Corp. Hdqtrs & Hitech Div., Peterborough, NH 03458 | 603-924-4100; East 603-924-4100; West 818-993-4100 |
| New Hampshire Ball Bearings, Inc., Chatsworth, CA 91311                                | 818-407-9300                                       |
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| § Reliance Electric Co., Cleveland, OH 44117                                           | 800-245-4501                                       |
| Rogers Corp., Rogers, CT 06263                                                         | 203-774-9605                                       |
| † Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416                     | 516-328-3300                                       |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416                     | 516-328-0200; 328-3300                             |
| Swiss Jewel Company, Philadelphia, PA 19106                                            | 215-925-2867                                       |

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| § Dayco Products, Inc., Dayton, OH 45401-1004                                 | 513-226-5926           |
| † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715                    | 714-833-3000           |
| Perfect Gear & Instrument, Designatronics, Inc., New Hyde Park, NY 11042-5416 | 516-328-3300           |
| § PIC Design, Remington Technologies, Inc., Middlebury, CT 06762              | 203-758-8272           |
| § Plastmatic, Inc., Putnam, CT 06260                                          | 203-928-7911           |
| § Projector Recorder Belt Corp., Whitewater, WI 53190                         | 1-800-533-9654         |
| § Reliance Electric Co., Cleveland, OH 44117                                  | 800-245-4501           |
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| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416            | 516-328-0200; 328-3300 |

## Benches, Consoles, Tables (Work Stations, Lab & Shop)-Also See Enclosures, Equipment and Panel Mounting-1400

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| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                                          | C-1017         |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423                                          | C-1023         |
| Electrotrack Products Co., Anaheim, CA 92806, 714-776-5420                                           | C-1097         |
| Emcor Products, Crenlo, Inc., Rochester, MN 55901, 507-289-3371                                      | C-1034-1037    |
| † Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691                                     | C-1040-1041    |
| Flexible Furniture Division, Metal Components, Inc., Plainwell, MI 49080, 616-685-6831; 800-875-6836 | C-1044         |
| Fury Products, Cowden Metal Specialties, Chino, CA 91710, 909-597-7860                               | C-1045         |
| § Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                                         | C-1049         |
| Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733                                      | C-1050         |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                           | C-1056         |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900                   | C-1069         |
| Premier Metal Prods. Co., Bronx, NY 10451, 718-993-9200                                              | C-1080         |
| Serco Products Division: Serco Mold, Inc., Covina, CA 91723, 818-331-0517; 800-843-8172 (Calif.)     | C-1090         |
| † TECLAB, Kalamazoo Technical Furniture, Kalamazoo, MI 49005, 616-372-6000; 800-832-5227             | C-1105         |
| # Alden Systems, Alden Products Co., Brockton, MA 02403-0860                                         | 508-583-0160   |
| Alusett U.S.A., Inc., Peekskill, NY 10566                                                            | 914-737-0120   |
| § Atlas/Soundolier, Commercial Sound Div., Atapco Security & Communications Group, Fenton, MO 63026  | 314-349-3110   |
| § Atlas/Soundolier, Industrial Cabinet Div., Atapco Security & Communications Grp., Fenton, MO 63026 | 314-349-3110   |
| † Baker Co., Inc., Sanford, ME 04073                                                                 | 1-800-992-2537 |
| † Clean Room Products, Inc., Ronkonkoma, NY 11779-6528                                               | 516-588-7000   |
| § Contact East, N. Andover, MA 01845                                                                 | 508-682-2000   |
| † Craig Systems Corp., Eastern Technologies, Ltd., Amesbury, MA 01913-4848                           | 508-388-5662   |



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 616-694-2058  
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 † Enclosure Corp., Bristol, PA 19007 ..... 215-785-2900  
 † Equipto, Aurora, IL 60506 ..... 708-859-1000; 800-323-0801  
 † Ergotron, Inc., Eagan, MN 55121 ..... 612-452-8135  
 Everest Electronic Equipment, Buford, GA 30518 ..... 404-932-2900  
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 Forma Scientific, Inc., Marietta, OH 45750 ..... 614-373-4763  
 † General Devices Co., Inc., Indianapolis, IN 46239-0100

317-897-7000; 1-800-626-9484  
 † Gordon Instruments, Inc., Orchard Park, NY 14127 ..... 716-662-5353; 1-800-333-2672  
 † HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 † Hodge Manufacturing Co., Inc., Springfield, MA 01107 ..... 413-781-6800  
 Kewaunee Scientific Corp., Technical Workstation Div., Lockhart, TX 78644

512-398-5292  
 † LJ Technical Systems, Hauppauge, NY 11788 ..... 516-234-2100  
 † Lyon Metal Products, Inc., Aurora, IL 60507 ..... 708-892-8941  
 † Midstates Marketing, Inc., Indianapolis, IN 46202 ..... 317-639-9999  
 † Print Products Intl., Silver Spring, MD 20910 ..... 301-587-7824; 800-638-2020  
 † Stackbin Corp., Lincoln, RI 02865 ..... 401-333-1600; 800-333-1603  
 † Stanley-Vidmar, Stanley Works, Allentown, PA 18103 ..... 215-797-6600  
 † Star Case Manufacturing Co., Inc., Munster, IN 46321 ..... 219-922-4440; 800-822-STAR  
 (outside IN); 800-782-CASE (inside IN)

215-825-4990  
 † Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 Tektronix, Inc., Wilsonville, OR 97070 ..... 800-835-9433  
 † Wilson, H. F., Engineering Co., Glen Ellyn, IL 60137 ..... 708-469-7473  
 Zero Cabinets (Stantron), Pacoima, CA 91331-2226 ..... 818-890-3445  
 † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 ..... 801-298-5900

## Bends &amp; Twists, Microwave-3450 — See Vol. A

## Bezels &amp; Escutcheons, Shielded &amp; Unshielded-2400

† IEE (Industrial Electronic Engineer, Inc.), Van Nuys, CA 91409, 818-787-0311

B-1078-1079  
 † JMJ Technical Prods., Westfield, NJ 07090, 201-589-4257 ..... C-1531  
 Ocular Inc., Richardson, TX 75081, 214-437-3888 ..... B-1096  
 Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400 ..... C-1068  
 † RMF Products, Inc., Batavia, IL 60510, 708-879-0020 ..... C-1533  
 † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500 ..... C-1082, 1534  
 Advanced Connector Technology, Ventura, CA 93003 ..... 805-644-9990  
 † Alpha Dist. Corp., Richfield, OH 44286 ..... 216-659-7100; 1-800-628-0841  
 † Conductive System, Inc., Amsterdam, NY 12010 ..... 518-843-5740  
 † Eaton Corp., Aerospace & Commercial Controls, Milwaukee, WI 53216 ..... 414-449-7326  
 ELMA Electronic Inc., Fremont, CA 94538 ..... 510-856-3400  
 Flex-Key Corporation, Gloucester, MA 01930 ..... 508-281-2040  
 GM Nameplate, Inc., Seattle, WA 98119 ..... 206-284-2200  
 International Instrumentation, Inc., Westlake Vlg., CA 91361 ..... 805-495-7673  
 LaFrance Corp., Philadelphia, PA 19153-3893 ..... 215-365-8000  
 Leecraft Mfg., Long Island City, NY 11101 ..... 718-392-8800  
 James Millen Elctns., Caywood Elec. Inc., No. Andover, MA 01845 ..... 508-975-2711  
 The Mushfield Co., Inc., Goffstown, NH 03045 ..... 603-866-4433  
 † Project Pro, Twinsburg, OH 44087 ..... 216-425-8888  
 † Shelly Associates, Inc., Tustin, CA 92680 ..... 714-669-9850  
 Tech-Etch, Inc., Plymouth, MA 02360 ..... 508-747-0300  
 † Technit, Cranford, NJ 07016 ..... 908-272-5500  
 † Weschler Instruments, Hughes Corp., Cleveland, OH 44136 ..... 216-238-2550  
 † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 ..... 801-298-5900

## Bimetals, Thermostatic-5300 — See Vol. B

## Blackbody Radiation Sources-2900 — See Vol. D

## Blowers, Centrifugal-2600

Advanced Technology Company, Vista, CA 92083, 619-727-7430 ..... C-1562-1573  
 † Amco Engineering, Schiller Pk., IL 60176, 708-671-6670; 800-833-3156

C-1011, 1574  
 † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090 ..... C-1017  
 Calmark Corp., San Gabriel, CA 91776, 818-287-0451 ..... C-1018  
 † Eastern Air Devices, Inc., Dover, NH 03820, 603-742-3330 ..... B-1249  
 # ebm Industries, Inc., Farmington, CT 06034, 203-674-1515 ..... C-1578-1579  
 † ETRI, Inc., Monroe, NC 28110, 704-289-5423 ..... C-1585  
 † McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550,  
 609-799-0100 ..... C-1606-1607  
 Micronel U.S., Vista, CA 92083, 619-727-7400 ..... C-1618-1625  
 † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000

C-1056-1057  
 † Papst Mechatronic Corp., Newport, RI 02840, 401-849-8810 ..... C-1634-1637  
 † Aeroflex Laboratories Inc., ARX, Inc., Plainview, NY 11803 ..... 516-694-6700  
 Lamb Electric Division, A subsidiary of Ametek Inc., Kent, OH 44240 ..... 216-673-3451  
 Ametek, Inc., Technical Motor Div., Kent, OH 44240 ..... 216-673-3452  
 † Ashland Elec. Prods., Inc., Rochester, NH 03867 ..... 603-335-1100  
 † Astro Dynamics, Inc., Woburn, MA 01801 ..... 617-935-4944  
 Bertsch U.S., Vista, CA 92083 ..... 619-727-7420  
 † Brailsford & Co., Inc., Rye, NY 10580 ..... 914-967-1820  
 Buehler Products, Inc., Raleigh, NC 27636 ..... 919-469-8522  
 Chicago Blower Corp., Glendale Heights, IL 60139 ..... 708-858-2600  
 † Comair Rotron, A KLI Company, San Ysidro, CA 92173 ..... 619-661-6688  
 † Dynamic Air Engrg., Inc., Santa Ana, CA 92705-5697 ..... 714-540-1000  
 EC&G Rotron, Industrial Division, Saugerties, NY 12477 ..... 914-246-3401  
 † Electronic Motor Engineering, Inc., Mission Viejo, CA 92691 ..... 714-583-9802  
 † Electronic Enclosures, Div. Wyle Laboratories, El Segundo, CA 90245 ..... 310-643-8181  
 † Equipto Electronics Corp., Aurora, IL 60506-9988 ..... 708-897-4691  
 † Fasco Motors Group, Chesterfield, MO 63017 ..... 314-532-3505  
 † Globe Motors, Dayton, OH 45404 ..... 513-228-3711  
 † Hammond Manufacturing Co., Buffalo, NY 14225 ..... 716-894-5170  
 † Hi-Tech, Inc., Zion, IL 60099 ..... 708-746-2447

815-889-4105  
 Interfan, William J. Purdy Co., Burlingame, CA 94010 ..... 415-347-1203  
 † Kooltronic, Inc., Hopewell, NJ 08525 ..... 609-466-3400  
 † Kooltronic, Inc., Ventura, CA 93003 ..... 805-642-8521  
 † Merrill, Inc., Bonita Springs, FL 33959 ..... 813-591-1626  
 Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216 ..... 718-774-5900  
 † Premier Metal Prods. Co., Bronx, NY 10451 ..... 718-993-9200  
 † Product Technology, Inc., Irvine, CA 92714 ..... 714-474-8998  
 Schreff, Inc., Warwick, RI 02886 ..... 401-732-3770  
 † Shinano Kensi Corp. (SKC), Culver City, CA 90230 ..... 310-915-7300  
 † Telestro Systems Corp., Corona, NY 11368 ..... 718-651-8900  
 Zero Cabinets (Stantron), Pacoima, CA 91331-2226 ..... 818-890-3445  
 † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 ..... 801-298-5900  
 † Zero Corp., Zero East Div., Monson, MA 01057-0128 ..... 413-267-5561

## Blowers, Tangential-2600

Advanced Technology Company, Vista, CA 92083, 619-727-7430 ..... C-1562-1573  
 Amco Engineering, Schiller Pk., IL 60176, 708-671-6670; 800-833-3156 ..... C-1011  
 # ebm Industries, Inc., Farmington, CT 06034, 203-674-1515 ..... C-1578-1579  
 McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550,  
 609-799-0100 ..... C-1606-1607  
 Micronel U.S., Vista, CA 92083, 619-727-7400 ..... C-1618-1625  
 † Fasco Motors Group, Chesterfield, MO 63017 ..... 314-532-3505  
 Hitachi America, Ltd., Tarrytown, NY 10591 ..... 914-631-0600  
 † Hi-Tech, Inc., Zion, IL 60099 ..... 708-746-2447  
 † Kooltronic, Inc., Hopewell, NJ 08525 ..... 609-466-3400  
 † Kooltronic, Inc., Ventura, CA 93003 ..... 805-642-8521  
 † Merrill, Inc., Bonita Springs, FL 33959 ..... 813-591-1626  
 † Product Technology, Inc., Irvine, CA 92714 ..... 714-474-8998  
 Schreff, Inc., Warwick, RI 02886 ..... 401-732-3770

## Board Computers &amp; Subassemblies, Multibus Compatible-2025 —

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## Board Computers &amp; Subassemblies, NuBus Compatible-2025 — See

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## Board Computers &amp; Subassemblies, PC Bus Compatible-2025 —

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## Board Computers &amp; Subassemblies, Q Bus/Unibus Compatible-

2025 — See Vol. D

## Board Computers &amp; Subassemblies, S100 Bus Compatible-2025 —

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## Board Computers &amp; Subassemblies, STD Bus Compatible-2025 —

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## Board Computers &amp; Subassemblies, VXI Bus Compatible-2025 —

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## Board Computers &amp; Subassemblies, VME Bus Compatible-2025 —

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## Boards, Adapter, IBM PC-2000 — See Vol. D

## Boards, Circuit, Clad-1700

IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643

D-1117

† Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388

C-1136

† Serco Products Division: Serco Mold, Inc., Covina, CA 91723,

818-331-0517; 800-843-8172 (Calif.) ..... C-1090-1091

† Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659

C-1678-1679

APX Technologies Inc., Hicksville, NY 11801 ..... 516-433-1313

† Electronic Controls Design, Milwaukee, OR 97222 ..... 503-659-6100

† Flexible Technologies, Arlon, E. Providence, RI 02914 ..... 401-434-2340

Interlog Industries, Melville, NY 11747-4294 ..... 516-420-8111

International Microelectronics, Arlington, TX 76003 ..... 817-473-1730

KDI/Triangle Electronics, Whippany, NJ 07981 ..... 201-887-5700

Mouser Electronics, Santee, CA 92071 ..... 800-346-6873

Mouser Electronics, Mansfield, TX 76063 ..... 800-346-6873

Mouser Electronics, Gilroy, CA 95020 ..... 800-346-6873

† North Texas Circuit Board, Grand Prairie, TX 75050 ..... 214-790-7610

Power Solutions Inc., Pompano Bch, FL 33064 ..... 305-943-4110

Shokai Far East Ltd., Peekskill, NY 10566 ..... 914-736-3500

Submarine Signal Division, Raytheon Company, Portsmouth, RI 02871 ..... 401-847-8000

† Techrand Corp. of America, Muskegon, MI 49444 ..... 616-798-2930

† U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA  
 90503 ..... 310-316-9984

## Boards, Circuit, Molded-1700

IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643

D-1117

† Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659

C-1679

Milton Ross Co., Warrington, PA 18976 ..... 215-491-0600

## Boards, Circuit, Unclad-1700

IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643

D-1117

† Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388

C-1136

† Serco Products Division: Serco Mold, Inc., Covina, CA 91723,

818-331-0517; 800-843-8172 (Calif.) ..... C-1090-1091

† Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659

C-1678-1679

AMP-AKZO Corporation, Chadds Ford, PA 19317 ..... 215-459-2800

Cooner Wire Co., Chatsworth, CA 91311 ..... 818-882-8311

Electronic Controls Design, Milwaukee, OR 97222 ..... 503-659-6100



|                                                      |              |
|------------------------------------------------------|--------------|
| Interlogic Industries, Melville, NY 11747-4294       | 516-420-8111 |
| International Microelectronics, Arlington, TX 76003  | 817-473-1730 |
| KDI/Triangle Electronics, Whippany, NJ 07981         | 201-887-5700 |
| Mouser Electronics, Santee, CA 92071                 | 800-346-6873 |
| Mouser Electronics, Mansfield, TX 76063              | 800-346-6873 |
| Mouser Electronics, Gilroy, CA 95020                 | 800-346-6873 |
| † North Texas Circuit Board, Grand Prairie, TX 75050 | 214-790-7610 |

## Boards, Display, Graphic-2450 — See Vol. B

## Boards, Extender — See Extender Boards (Vol. D)

## Boards, Plug-in-3200

|                                                                                  |                        |
|----------------------------------------------------------------------------------|------------------------|
| Advanced Control Sys., Hingham, MA 02043, 617-740-0223                           | D•1150                 |
| Crosspoint, Div. of Info-Lite Corp., Fairview, NJ 07022, 201-941-4455            | B•1701                 |
| Datel, Inc., Mansfield, MA 02048-1194, 508-339-3000                              | D•1184                 |
| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086        |                        |
|                                                                                  | C•1116-1117, 1128-1133 |
| § Gordos, Crouzet Corp., Carrollton, TX 75006-2506, 214-250-1647; 1-800-677-5311 |                        |
|                                                                                  | B•1460-1461, D•1183    |
| Gossen/Textmate, Vista, CA 92083-8397, 619-598-9899; 1-800-394-8344              |                        |
|                                                                                  | D•1204                 |

## IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643

|                                                                             |              |
|-----------------------------------------------------------------------------|--------------|
| § National Instruments, Austin, TX 78730-5039, 512-794-0100                 | D•1198       |
| † Product Technology, Inc., Irvine, CA 92714, 714-474-8998                  | C•1673       |
| Textmate, Inc., Vista, CA 92083-8397, 619-598-9899                          | D•1204       |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 |              |
|                                                                             | C•1025, 1679 |

|                                                                                       |                              |
|---------------------------------------------------------------------------------------|------------------------------|
| § Action Instruments, San Diego, CA 92123                                             | 619-279-5726                 |
| Advanced Hardware Architectures, Inc., Moscow, ID 83843                               | 208-883-8000                 |
| AMP-AKZO Corporation, Chadds Ford, PA 19317                                           | 215-459-2800                 |
| Analog Devices, Inc., Norwood, MA 02062-9106                                          | 617-329-4700                 |
| Andrew Corporation, Austin, TX 78746                                                  | 800-331-4144; 512-314-3000   |
| † Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                    | 508-222-2202                 |
| Augat/RDI, Carol Stream, IL 60188                                                     | 708-682-4100                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                         | 203-288-8001; 1-800-242-2863 |
| Burr-Brown Corp., Tucson, AZ 85734                                                    | 602-746-1111                 |
| Calex Mfg. Co., Inc., Concord, CA 94520                                               | 510-687-4411                 |
| Central Data Corp., Champaign, IL 61821                                               | 217-359-8010                 |
| § Colorgraphic Communications Corp., Atlanta, GA 30341                                | 404-455-3921                 |
| Compac, Holbrook, NY 11741                                                            | 516-585-3400                 |
| † dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803                       | 617-273-5800                 |
| Douglas Electronics, Inc., San Leandro, CA 94577                                      | 510-483-8770                 |
| E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512                   | 800-368-0880                 |
| † Eastern Electronics Mfg. Corp., National Patent Dev. Corp., East Hartford, CT 06108 |                              |
|                                                                                       | 203-528-9821                 |

|                                                                         |                            |
|-------------------------------------------------------------------------|----------------------------|
| § EBY Company, Philadelphia, PA 19124                                   | 215-537-4700               |
| Elecsys, Inc., Div. of C & C Jetronic, Princeton, NJ 08540              | 609-259-8866               |
| ELMA Electronic Inc., Fremont, CA 94538                                 | 510-656-3400               |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                 | 714-669-9473               |
| Enterprise Systems Corp., Dover, NH 03820                               | 603-742-7363               |
| GC-Thorsen, Rockford, IL 61105-1209                                     | 815-968-9661               |
| GEN/COMP Inc., Canton, MA 02021                                         | 617-828-2008               |
| General Digital Corp., Enfield, CT 06082                                | 203-741-7171               |
| Ghielmetti, Inc., Westlake Village, CA 91361                            | 800-228-1097               |
| § Gunther, W., GmbH, D 8500 Nurnberg 82, GERMANY                        | (0)911/65521 or 65520      |
| † Hancock Electronics Corp., Hingham, MA 02043                          | 617-740-4190               |
| Industrial Computer Source, San Diego, CA 92131                         | 619-271-9340               |
| Interlogic Industries, Melville, NY 11747-4294                          | 516-420-8111               |
| § Intra-computer Inc., Jamaica, NY 11418                                | 718-297-5500               |
| † JF Microsystems, Pasco, WA 99301-9619                                 | 509-297-4294; 800-532-2377 |
| Kalmus & Assocs., Inc., Broadview, IL 60153                             | 708-343-7004               |
| Keithley Instrs., Cleveland, OH 44139                                   | 800-552-1115               |
| § Keithley Metrabyte, Taunton, MA 02780                                 | 508-880-3000               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                    | 718-956-8900               |
| † Logic Technology, Inc., Mtn. View, CA 94043                           | 415-967-1007               |
| § Matrox Electronics Systems, Ltd., Dorval, Que., CANADA H9P 2T4        | 514-685-2630               |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936      | 215-699-5373               |
| Micro Industries, Westerville, OH 43081-9486                            | 614-548-7878               |
| § Mitel Semiconductor Div. of Mitel Corp., Kanata, Ont., CANADA K2K 1X3 |                            |
|                                                                         | 613-592-2122               |

|                                                                 |                                   |
|-----------------------------------------------------------------|-----------------------------------|
| § Monolithic Sys. Corp., Englewood, CO 80112                    | 303-790-7400                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401              | 508-588-6110                      |
| Omega Engineering, Stamford, CT 06907                           | 800-826-6342                      |
| OmniByte Corp., West Chicago, IL 60185-3790                     | 708-231-6880                      |
| Optima Electronic Packaging Systems, Tucker, GA 30084-5088      | 404-496-4000                      |
| Precision, Inc., Langhorne, PA 19047                            | 215-757-1202                      |
| † Racal-Dana Instrs. Inc., Irvine, CA 92718                     | 714-859-8999                      |
| SBE, Inc., San Ramon, CA 94583-1389                             | 510-355-2000; 800-925-2666        |
| Schroff, Inc., Warwick, RI 02886                                | 401-732-3770                      |
| § Spectrum Signal Proc., Blaine, WA 98231-0025                  | 1-800-663-8986 (US); 604-421-5422 |
| Support Electronics, Inc., Butler, NJ 07405-1367                | 1-201-838-2755                    |
| Systonix Inc., Salt Lake City, UT 84152-8398                    | 801-534-1017                      |
| § Technology 80, Inc., Minneapolis, MN 55427                    | 612-542-9545                      |
| Techno Scientific Inc., Woodbridge, Ont., CANADA L4L 5Y9        | 905-851-9958                      |
| § Techrand Corp. of America, Muskegon, MI 49444                 | 616-798-2930                      |
| Tektronix, Inc., Wilsonville, OR 97070                          | 800-835-9433                      |
| Transmagetics, Farmingdale, NY 11735                            | 516-293-3100                      |
| † Virginia Panel Corporation, Waynesboro, VA 22980              | 703-949-8376                      |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 | 801-298-5900                      |
| § Ziatech, San Luis Obispo, CA 93401                            | 805-541-0488                      |

## Boards, Plug-in, Extender-3200

|                                                                           |                   |
|---------------------------------------------------------------------------|-------------------|
| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086 |                   |
|                                                                           | C•1116, 1128-1133 |
| Gossen/Textmate, Vista, CA 92083-8397, 619-598-9899; 1-800-394-8344       |                   |
|                                                                           | D•1204            |

## IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643

|                                                                             |                              |
|-----------------------------------------------------------------------------|------------------------------|
| † Product Technology, Inc., Irvine, CA 92714, 714-474-8998                  | C•1673                       |
| Textmate, Inc., Vista, CA 92083-8397, 619-598-9899                          | D•1204                       |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 |                              |
|                                                                             | C•1025, 1679-1680            |
| Applied Data Systems, Inc., Baltimore, MD 21202                             | 800-541-2003; 410-576-0335   |
| † Augat, Inc., Interconnection Products Group, Attleboro, MA 02703          | 508-222-2202                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                               | 203-288-8001; 1-800-242-2863 |
| Burr-Brown Corp., Tucson, AZ 85734                                          | 602-746-1111                 |
| Computer Systems Technical Support, Anaheim, CA 92807                       | 714-632-1300                 |
| Dage Precision Industries, Inc., Fremont, CA 94538                          | 510-683-3930                 |
| dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803               | 617-273-5800                 |
| Davidge Corporation, Buellton, CA 93427                                     | 805-688-9598                 |
| § EBY Company, Philadelphia, PA 19124                                       | 215-537-4700                 |
| Elecsys, Inc., Div. of C & C Jetronic, Princeton, NJ 08540                  | 609-259-8866                 |
| Electronic Precision Technology Inc., Cambridge, MA 02140                   | 617-661-2454                 |
| ELMA Electronic Inc., Fremont, CA 94538                                     | 510-656-3400                 |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                     | 714-669-9473                 |
| General Digital Corp., Enfield, CT 06082                                    | 203-741-7171                 |
| † Hancock Electronics Corp., Hingham, MA 02043                              | 617-740-4190                 |
| Hybricon Corporation, Ayer, MA 01432                                        | 508-772-5422                 |
| ICS Electronics Corp., Milpitas, CA 95035-5545                              | 408-263-5500; 1-800-952-4499 |
| Industrial Computer Source, San Diego, CA 92131                             | 619-271-9340                 |
| Interlogic Industries, Melville, NY 11747-4294                              | 516-420-8111                 |
| KineticSystems Corp., Lockport, IL 60441                                    | 815-838-0005                 |
| Matrix Corp., Raleigh, NC 27610                                             | 919-231-8000                 |
| Micro Industries, Westerville, OH 43081-9486                                | 614-548-7878                 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                          | 508-588-6110                 |
| Omega Engineering, Stamford, CT 06907                                       | 800-826-6342                 |
| Optelec, Inc., Gaithersburg, MD 20877                                       | 301-840-2121                 |
| Optima Electronic Packaging Systems, Tucker, GA 30084-5088                  | 404-496-4000                 |
| † Project Resources Inc., Wareham, MA 02571                                 | 508-295-7444                 |
| Prototek, Inc., Hamilton, OH 45015                                          | 513-874-5094                 |
| Schroff, Inc., Warwick, RI 02886                                            | 401-732-3770                 |
| Tektronix, Inc., Wilsonville, OR 97070                                      | 800-835-9433                 |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                | 603-889-5156                 |
| § Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310             | 801-298-5900                 |

## Boards, Plug-in, Interface-3200

## Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086

|                                                                                  |                     |
|----------------------------------------------------------------------------------|---------------------|
| § Gordos, Crouzet Corp., Carrollton, TX 75006-2506, 214-250-1647; 1-800-677-5311 |                     |
|                                                                                  | C•1128              |
| Gossen/Textmate, Vista, CA 92083-8397, 619-598-9899; 1-800-394-8344              |                     |
|                                                                                  | B•1460-1461, D•1183 |
|                                                                                  | D•1204              |

## IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643

|                                                                             |              |
|-----------------------------------------------------------------------------|--------------|
| Matrix Corp., Indianapolis, IN 46241, 317-248-2036                          | D•1195       |
| § National Instruments, Austin, TX 78730-5039, 512-794-0100                 | D•1147, 1302 |
| † Product Technology, Inc., Irvine, CA 92714, 714-474-8998                  | C•1673       |
| Textmate, Inc., Vista, CA 92083-8397, 619-598-9899                          | D•1204       |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 |              |
|                                                                             | C•1025, 1679 |

|                                                                     |                              |
|---------------------------------------------------------------------|------------------------------|
| § ABB Kent-Taylor Inc., Asea Brown Boveri, Rochester, NY 14602-0550 | 716-292-6050                 |
| § Action Instruments, San Diego, CA 92123                           | 619-279-5726                 |
| § Adaptec, Inc., Milpitas, CA 95035                                 | 408-945-8600                 |
| § American Advantech Corp., San Jose, CA 95122                      | 408-293-6786                 |
| Andrew Corporation, Austin, TX 78746                                | 800-331-4144; 512-314-3000   |
| † Augat, Inc., Interconnection Products Group, Attleboro, MA 02703  | 508-222-2202                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                       | 203-288-8001; 1-800-242-2863 |
| Bit 3 Computer Corporation, Minneapolis, MN 55431-1393              | 612-881-6955                 |
| Burr-Brown Corp., Tucson, AZ 85734                                  | 602-746-1111                 |
| † Cable & Computer Technology Inc., Anaheim, CA 92806               | 714-937-1341                 |
| Calex Mfg. Co., Inc., Concord, CA 94520                             | 510-687-4411                 |
| Central Data Corp., Champaign, IL 61821                             | 217-359-8010                 |
| Computer Systems Technical Support, Anaheim, CA 92807               | 714-632-1300                 |
| § Contec Microelectronics USA, San Jose, CA 95131                   | 408-434-6767; 1-800-888-8884 |
| Data Translation, Inc., Marlboro, MA 01752                          | 508-481-3700                 |
| Davidge Corporation, Buellton, CA 93427                             | 805-688-9598                 |
| Daytronic Corp., BTR Grp., Miamisburg, OH 45342                     | 513-866-3300                 |
| Digital Data Systems, Inc. (DDS), Ft. Lauderdale, FL 33313          | 305-792-3290                 |
| § EBY Company, Philadelphia, PA 19124                               | 215-537-4700                 |
| Elecsys, Inc., Div. of C & C Jetronic, Princeton, NJ 08540          | 609-259-8866                 |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680               | 714-669-9473                 |
| GEN/COMP Inc., Canton, MA 02021                                     | 617-828-2008                 |
| General Digital Corp., Enfield, CT 06082                            | 203-741-7171                 |
| § Gunther, W., GmbH, D 8500 Nurnberg 82, GERMANY                    | (0)911/65521 or 65520        |
| † Hancock Electronics Corp., Hingham, MA 02043                      | 617-740-4190                 |
| ICS Electronics Corp., Milpitas, CA 95035-5545                      | 408-263-5500; 1-800-952-4499 |
| † ILC Data Device Corp., Bohemia, NY 11716-2482                     | 516-567-5600                 |
| Industrial Computer Source, San Diego, CA 92131                     | 619-271-9340                 |
| Innovatek Microsystems, Inc., Millerton, NY 12546-9720              | 914-373-9003                 |
| Interlogic Industries, Melville, NY 11747-4294                      | 516-420-8111                 |
| † JF Microsystems, Pasco, WA 99301-9619                             | 509-297-4294; 800-532-2377   |
| § Keithley Metrabyte, Taunton, MA 02780                             | 508-880-3000                 |
| KineticSystems Corp., Lockport, IL 60441                            | 815-838-0005                 |
| Lextel, Inc., Wakefield, MA 01880                                   | 617-245-5017                 |
| Logical Design Group, Inc., Raleigh, NC 27607                       | 919-851-1101                 |
| Matrix Corp., Raleigh, NC 27610                                     | 919-231-8000                 |
| Micro Industries, Westerville, OH 43081-9486                        | 614-548-7878                 |
| Micro/sys, Glendale, CA 91208                                       | 818-244-4600                 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                  | 508-588-6110                 |
| Omega Engineering, Stamford, CT 06907                               | 800-826-6342                 |
| Opto 22, Temecula, CA 92590                                         | 714-695-9299                 |
| Parsytec Inc., West Chicago, IL 60185                               | 708-293-9500                 |



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| § Potter & Brumfield, A Siemens Co., Princeton, IN 47671-0001 | 812-386-1000              |
| Qualogy Inc., San Jose, CA 95134                              | 408-434-5200              |
| Qutech Inc., Akron, OH 44311                                  | 216-434-3154              |
| † Racal-Dana Instrs. Inc., Irvine, CA 92718                   | 714-859-8999              |
| § Rapid Systems Inc., Seattle, WA 98103                       | 206-547-8311              |
| SBE, Inc., San Ramon, CA 94583-1389                           | 510-355-2000/800-925-2666 |
| SGS-THOMSON Microelectronics, Inc., Carrollton, TX 75006      | 214-466-6000              |
| † Sheldon Instruments, Provo, UT 84604                        | 801-376-7861              |
| § Strawberry Tree, Inc., Sunnyvale, CA 94086                  | 408-736-8800              |
| Support Electronics, Inc., Butler, NJ 07405-1367              | 1-201-838-2755            |
| Sysstron Corp., Dayton, OH 45432-3068                         | 1-800-252-5601            |
| § Technology 80, Inc., Minneapolis, MN 55427                  | 612-542-9545              |
| Tektronix, Inc., Wilsonville, OR 97070                        | 800-835-9433              |
| TL Inds. Inc., Northwood, OH 43619                            | 419-666-8144              |
| Transmagetics, Farmingdale, NY 11735                          | 516-293-3100              |
| VME Microsystems Intl. Corp., Huntsville, AL 35803-3308       | 205-880-0444              |
| XYZ Electronics, McCordsville, IN 46055                       | 317-335-2128              |
| § Ziatech, San Luis Obispo, CA 93401                          | 805-541-0488              |

**Boards, Plug-in, Memory-3200**

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|----------------------------------------------------------------------------|---------------------------|
| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086  |                           |
|                                                                            | C-1116-1117, 1128         |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643 |                           |
|                                                                            | D-1117                    |
| Product Technology, Inc., Irvine, CA 92714, 714-474-8998                   |                           |
|                                                                            | C-1673                    |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661/800-423-5659   |                           |
|                                                                            | C-1025, 1679              |
| § Action Instruments, San Diego, CA 92123                                  | 619-279-5726              |
| § Alligator Technologies, Fountain Valley, CA 92708                        | 714-850-9984              |
| Avelem, Garglesse, FRANCE 36190                                            | 33-54478672               |
| § Capital Equipment Corporation, Burlington, MA 01803                      | 617-273-1818              |
| † Clearpoint Research Corp., Hopkinton, MA 01748                           | 508-435-2000              |
| § Dallas Semiconductor, Dallas, TX 75244                                   | 214-450-4000              |
| Dataram Corp., Princeton, NJ 08543-7528                                    | 609-799-0071/800-822-0071 |
| Davidge Corporation, Buellton, CA 93427                                    | 805-688-9598              |
| Digital Data Systems, Inc. (DDS), Ft. Lauderdale, FL 33313                 | 305-792-3290              |
| § Diversified Technol., Ridgeland, MS 39157                                | 601-858-4121              |
| Elcysys, Inc., Div. of C & C Jetronic, Princeton, NJ 08540                 | 609-259-8866              |
| Enterprise Systems Corp., Dover, NH 03820                                  | 603-742-7363              |
| General Digital Corp., Enfield, CT 06082                                   | 203-741-7171              |
| § GENROCO, Inc., Slinger, WI 53086-9501                                    | 414-644-8700              |
| † Hancock Electronics Corp., Hingham, MA 02043                             | 617-740-4190              |
| Industrial Computer Source, San Diego, CA 92131                            | 619-271-9340              |
| JF Microsystems, Pasco, WA 99301-9619                                      | 509-297-4294/800-532-2737 |
| Kinetic Systems Corp., Lockport, IL 60441                                  | 815-838-0005              |
| Logical Design Group, Inc., Raleigh, NC 27607                              | 919-851-1101              |
| Matrix Corp., Raleigh, NC 27610                                            | 919-231-8000              |
| MCSI, Vista, CA 92083                                                      | 619-598-2177              |
| Micro Electronic Technologies, Hopkinton, MA 01748                         | 508-435-9057              |
| Micro Industries, Westerville, OH 43081-9486                               | 614-548-7878              |
| § Monolithic Sys. Corp., Englewood, CO 80112                               | 303-790-7400              |
| § National Instruments, Austin, TX 78730-5039                              | 512-794-0100              |
| Pacific Microcomputers, Fairway Optical Data Sys., Inc., Vista, CA 92083   | 619-727-9494              |
| Parsytec Inc., West Chicago, IL 60185                                      | 708-293-9500              |
| SGS-THOMSON Microelectronics, Inc., Carrollton, TX 75006                   | 214-466-6000              |
| Teknor Microsystems Inc., Blainville, Que., CAN J7G 4G6                    | 514-437-5682              |
|                                                                            | 800-387-4222              |
| TL Inds. Inc., Northwood, OH 43619                                         | 419-666-8144              |
| XYZ Electronics, McCordsville, IN 46055                                    | 317-335-2128              |
| § Ziatech, San Luis Obispo, CA 93401                                       | 805-541-0488              |

**Boards, Plug-In, Multifunction I/O Boards-2000 — See Vol. D****Boards, Plug-in Processor-1900 — See Vol. D****Boards, Plug-in, Prototype-4200**

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| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086                        |                             |
|                                                                                                  | C-1116-1117, 1128           |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                                  |                             |
|                                                                                                  | C-1321                      |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643                       |                             |
|                                                                                                  | D-1117                      |
| Product Technology, Inc., Irvine, CA 92714, 714-474-8998                                         |                             |
|                                                                                                  | C-1673                      |
| Sercio Products Division: Sercio Mold, Inc., Covina, CA 91723, 818-331-0517/800-843-8172(Calif.) |                             |
|                                                                                                  | C-1091                      |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661/800-423-5659                         |                             |
|                                                                                                  | C-1678-1679                 |
| Wintek Corp., Lafayette, IN 47904-2993, 317-448-1903/800-742-6809                                |                             |
|                                                                                                  | D-1146                      |
| § American Advantech Corp., San Jose, CA 95122                                                   | 408-293-6786                |
| † Assembly Specialists, Chelmsford, MA 01824                                                     | 508-250-5900                |
| † Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                               | 508-222-2202                |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                    | 203-288-8001/1-800-242-2863 |
| Colorado Data Systems, Tektronix, Englewood, CO 80110                                            | 303-762-1640                |
|                                                                                                  | 800-237-2831                |
| Computer Systems Technical Support, Anaheim, CA 92807                                            | 714-632-1300                |
| Dage Precision Industries, Inc., Fremont, CA 94538                                               | 510-683-3930                |
| dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803                                    | 617-273-5800                |
| § EBY Company, Philadelphia, PA 19124                                                            | 215-537-4700                |
| Elcysys, Inc., Div. of C & C Jetronic, Princeton, NJ 08540                                       | 609-259-8866                |
| ELMA Electronic Inc., Fremont, CA 94538                                                          | 510-656-3400                |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                                          | 714-669-9473                |
| General Digital Corp., Enfield, CT 06082                                                         | 203-741-7171                |
| § Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509                           | 203-624-3103                |
| Hybricon Corporation, Ayer, MA 01432                                                             | 508-772-5422                |
| Industrial Computer Source, San Diego, CA 92131                                                  | 619-271-9340                |
| Interlogic Industries, Melville, NY 11747-4294                                                   | 516-420-8111                |
| Logical Design Group, Inc., Raleigh, NC 27607                                                    | 919-851-1101                |
| Matrix Corp., Raleigh, NC 27610                                                                  | 919-231-8000                |

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| 3M-Electronic Products Division, Austin, TX 78726        | 1-800-225-5373 Sls. & Prod. Info. |
| Micro Industries, Westerville, OH 43081-9486             | 614-548-7878                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401       | 508-589-6110                      |
| † Project Resources Inc., Wareham, MA 02571              | 508-295-7444                      |
| Prototek, Inc., Hamilton, OH 45015                       | 513-874-5094                      |
| SGS-THOMSON Microelectronics, Inc., Carrollton, TX 75006 | 214-466-6000                      |
| † Star-Tron Corporation, Providence, RI 02909            | 401-274-5090                      |
| Support Electronics, Inc., Butler, NJ 07405-1367         | 1-201-838-2755                    |
| # Techrad Corp. of America, Muskegon, MI 49444           | 616-798-2930                      |
| TL Inds. Inc., Northwood, OH 43619                       | 419-666-8144                      |
| Trend Circuits, Fremont, CA 94538-6148                   | 510-651-1150                      |
| § Verdure Industries Inc., Omaha, NE 68124               | 402-691-8300                      |
| Wire Graphics, Inc., Farmingdale, NY 11735               | 516-293-1525                      |
| XYZ Electronics, McCordsville, IN 46055                  | 317-335-2128                      |
| § Ziatech, San Luis Obispo, CA 93401                     | 805-541-0488                      |

**Boards, Rewired, High Density-3200**

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| § Gordos, Crouzet Corp., Carrollton, TX 75006-2506, 214-250-1647/1-800-677-5311 |                |
|                                                                                 | A-1695, B-1460 |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643      |                |
|                                                                                 | D-1117         |
| Product Technology, Inc., Irvine, CA 92714, 714-474-8998                        |                |
|                                                                                 | C-1673         |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                | 508-222-2202   |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                         | 714-669-9473   |
| Interlogic Industries, Melville, NY 11747-4294                                  | 516-420-8111   |
| Racal-Dana Instrs. Inc., Irvine, CA 92718                                       | 714-859-8999   |
| § Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                 | 801-298-5900   |

**Boards, Printed Circuit — See Circuits, Printed, Rigid (Vol. C)****Boards, Programming-3200**

|                                                                                      |                             |
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| AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                                 | C-1163                      |
| Crosspoint, Div. of Info-Lite Corp., Fairview, NJ 07022, 201-941-4455                | B-1701                      |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                      | C-1321                      |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643           |                             |
|                                                                                      | D-1117                      |
| Kepeco, Inc., Flushing, NY 11352, 718-461-7000                                       |                             |
|                                                                                      | D-1777                      |
| Product Technology, Inc., Irvine, CA 92714, 714-474-8998                             |                             |
|                                                                                      | C-1673                      |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661/800-423-5659             |                             |
|                                                                                      | C-1678-1679                 |
| AMP-AKZO Corporation, Chadds Ford, PA 19317                                          | 215-459-2800                |
| Antona Corp., Los Angeles, CA 90024-5603                                             | 310-473-8995                |
| CYTEC Corp., Penfield, NY 14526                                                      | 716-381-4740/800-346-3117   |
| Data Translation, Inc., Marlboro, MA 01752                                           | 508-481-3700                |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                                | 714-669-9473                |
| GEN/COMP Inc., Canton, MA 02021                                                      | 617-828-2000                |
| Ghielmetti, Inc., Westlake Village, CA 91361                                         | 800-228-1097                |
| † Hancock Electronics Corp., Hingham, MA 02043                                       | 617-740-4190                |
| † Inland Motor, Kollmorgen Corp., Radford, VA 24141                                  | 703-639-9045                |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                         | 805-495-7673                |
| † Oxley Inc., Branford, CT 06405                                                     | 203-488-1033                |
| Precision Filters, Inc., Ithaca, NY 14850                                            | 607-277-3550                |
| † Project Resources Inc., Wareham, MA 02571                                          | 508-295-7444                |
| † Racal-Dana Instrs. Inc., Irvine, CA 92718                                          | 714-859-8999                |
| § Stag Microsystems Inc., Santa Clara, CA 95054                                      | 408-988-1118/1-800-227-8836 |
| † Sunrise Electronics, Inc., Glendora, CA 91740                                      | 818-914-1926                |
| Support Electronics, Inc., Butler, NJ 07405-1367                                     | 1-201-838-2755              |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895                                  | 401-769-2625                |
| # Techrad Corp. of America, Muskegon, MI 49444                                       | 616-798-2930                |
| † Telegenix/Grim Corp., Cherry Hill, NJ 08034                                        | 609-424-5220                |
| The Test Connection, Inc., Hunt Valley, MD 21030                                     | 410-584-2500                |
| § U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 |                             |
|                                                                                      | 310-316-9984                |
| † Virginia Panel Corporation, Waynesboro, VA 22980                                   | 703-949-8376                |
| Wire Graphics, Inc., Farmingdale, NY 11735                                           | 516-293-1525                |

**Bobbins, Winding, Coil & Transformer-Also See Coil**

|                                                                                                            |                   |
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| Assemblies & Forms-2500                                                                                    |                   |
| Custom Coils Inc., Alcester, SD 57001-0348, 605-934-2460                                                   | A-2311            |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                                                         | A-1244-1245, 1247 |
| Magnos, Hudson, MA 01749, 508-562-1173                                                                     | D-1296            |
| † Apollo Magnetics Corp., Los Angeles, CA 90057                                                            | 213-381-2500      |
| Cortec, Inc., Huntington Bch., CA 92649                                                                    | 714-897-2529      |
| Cosmo Corporation, Cleveland, OH 44109                                                                     | 216-861-5594      |
| § Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                                             | 605-665-9301      |
| D & L Electronics, Langhorne, PA 19047                                                                     | 800-942-3631      |
| § Dynacast Inc., Yorktown Heights, NY 10598                                                                | 914-962-6300      |
| Electro Assemblies Corp., Northbrook, IL 60062-2319                                                        | 708-498-6120      |
| † Electromech, Inc., Irvington, NJ 07111                                                                   | 201-319-7999      |
| Engineering Design & Sls., Danville, VA 24541                                                              | 804-792-6405      |
| GC International Inc., Plano, TX 75074                                                                     | 214-423-8411      |
| Grand Transformer, Inc., Grand Haven, MI 49417                                                             | 616-842-5430      |
| Kyocera Industrial Ceramics Corp., San Diego, CA 92123                                                     | 619-576-2688      |
| † Magneto Inc., Holtsville, NY 11742                                                                       | 516-554-1166      |
| Miles Platts Inc., Elk Grove Village, IL 60007                                                             | 1-708-364-0363    |
| Milton Ross Co., Warrington, PA 18976                                                                      | 215-491-0600      |
| § MMG-North America, Paterson, NJ 07509                                                                    | 201-345-8900      |
| § Philips Components Discrete Products Division, A North American Philips Company, Riviera Beach, FL 33404 |                   |
|                                                                                                            | 407-881-3200      |
| Philips Components Discrete Products Div., A North American Philips Co., Saugerties, NY 12477              |                   |
|                                                                                                            | 914-246-2811      |
| Plasticor, Harbor City, CA 90710                                                                           | 310-539-9530      |
| Plastron Corp., Bensenville, IL 60106                                                                      | 708-595-2212      |
| Precision Paper Tube Co., Wheeling, IL 60090                                                               | 708-537-4250      |
| Pulse Engineering, Inc., San Diego, CA 92128                                                               | 619-674-8100      |
| Quality Components, Inc., St. Marys, PA 15857                                                              | 814-834-2817      |
| § RCD Components, Inc., Manchester, NH 03109                                                               | 603-669-0054      |



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| Renco Electronics, Inc., Deer Pk, NY 11729                                               | 516-586-5566;1-800-645-5828 |
| Sanilar, Inc. T/A Harbison Industrial Products, Levittown, PA 19057                      | 215-943-9000                |
| † Shogyo International Corp., Great Neck, NY 11021-4799                                  | 516-466-0911                |
| Siemens Components, Inc., Special Products Div., Iselin, NJ 08830                        | 201-321-3400                |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000                |
| Staffall Inc., Cranston, RI 02910                                                        | 401-461-5554                |
| † Stevens Products, Inc., E. Orange, NJ 07019                                            | 201-672-2140                |
| † Tokin America, Inc., San Jose, CA 95134                                                | 408-432-8020                |
| † Torelco, Inc., Irvington, NJ 07111                                                     | 201-374-8641;800-867-3526   |
| United Technical Products, Fallsington, PA 19054                                         | 800-553-5300                |
| U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503       | 310-316-9984                |
| Xylog Corp., Hackensack, NJ 07601                                                        | 201-489-4040                |

**Bolometers, Infrared-2900 — See Vol. D**

**Bolometers, Microwave-2900 — See Vol. D**

**Bolts-2500**

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| † Avibank Manufacturing, Inc., Burbank, CA 91503-0391                                  | 818-843-4330                   |
| Chandler Products, Cleveland, OH 44117                                                 | 216-481-4400                   |
| † New Hampshire Ball Bearing, Inc., Corp. Hdqtrs & Hitech Div., Peterborough, NH 03458 | 603-924-4100;West 818-993-4100 |
| † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                       | 203-758-8272                   |
| † Project Pro, Twinsburg, OH 44087                                                     | 216-425-8888                   |

**Bonding Equipment, Computer Controlled (Automatic), Die, Laser,**

**TAB, Wedge, Wire-4100 — See Vol. D**

**Books — See Technical Books (Vol. D)**

**Boosters, Low Line Voltage, Automatic — See Regulators & Stabilizers, Voltage (Vol. D)**

**Boxes, Decade — See Decade Boxes (Vol. D)**

**Boxes, Metal & Plastic — See Enclosures (Various types) (Vol. C)**

**Boxes, Power Outlet — See Boxes, Junction, Outlets & Wall Plates (Vol. C)**

**Boxes, Shipping (Reusable) — See Enclosures, Shipping (Vol. C)**

**Brackets, Antenna — See Mounts, Antenna (Vol. D)**

**Braid, Cable-Also See Wire Shielding-6000**

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| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                   | C•1712-1713,1718-1719     |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830      | C•1731                    |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                   | C•1742                    |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                           | C•1749                    |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C•1696                    |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                 | C•1768,1775,1784          |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                                     | C•1547                    |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                            | C•1832,1843               |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                         | 404-751-9473;800-221-4767 |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895                      | 1-401-769-1600            |

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| † Air/Flex Inds. Inc., S. El Monte, CA 91733                                      | 818-579-7060                    |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                      | 908-925-8000                    |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862            | 401-726-0700                    |
| † Band-It - Ilex, Inc., Denver, CO 80216                                          | 303-320-4555                    |
| Cable Systems, Inc., The HVT Group, Everett, MA 02149                             | 617-389-7080                    |
| † Carol Cable Co., Highland Heights, KY 41076                                     | 606-572-8303;606-572-8000       |
| † Cole-Flex Corporation, West Babylon, NY 11704                                   | 516-249-6150                    |
| † Conductive System, Inc., Amsterdam, NY 12010                                    | 518-843-5740                    |
| † Control Cable, Inc., Baltimore, MD 21244                                        | 410-298-4411                    |
| † Cooner Wire Co., Chatsworth, CA 91311                                           | 818-882-8311                    |
| † Cooper Industries/Belden Div., Richmond, IN 47375                               | 317-983-5200;800-BELEDEN-1      |
| † Custom Cable Corp., Westbury, NY 11590                                          | 516-334-3600                    |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                 | 708-459-1000;800-323-0198       |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                       | 708-547-5400                    |
| Gavitt Wire & Cable, Brookfield, MA 01506                                         | 508-867-6476                    |
| GC-Thorsen, Rockford, IL 61105-1209                                               | 815-968-9661                    |
| † Glenair Inc., Glendale, CA 91201-2497                                           | 818-247-6000                    |
| W.L. Gore & Assocs., Newark, DE 19714                                             | 302-738-4880                    |
| † Manger Electric Company, Inc., Stamford, CT 06902                               | 203-348-7761                    |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                             | 914-967-8000                    |
| † Markel Corp., Norristown, PA 19404                                              | 215-272-8960                    |
| Olympic Wire & Cable, Fairfield, NJ 07004                                         | 201-227-7996                    |
| † Panduit Corp., Tinley Park, IL 60477-0981                                       | 800-777-3300                    |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                         | 909-945-1365                    |
| † PolyPly Inc./Conductives Systems, Inc., Amsterdam, NY 12010                     | 518-843-3900                    |
| † Rowe Industries, Inc., Toledo, OH 43612                                         | 419-729-9761                    |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                   | 714-251-1960                    |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                           | 311-609-1811                    |
| Storm Products Co., Hinsdale, IL 60521                                            | 708-323-9121                    |
| † Sunbank Electronics, Paso Robles, CA 93446                                      | 805-238-2840                    |
| † Technit, Cranford, NJ 07016                                                     | 908-272-5500                    |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092        | 904-829-5600                    |
| Texas Instruments, Connector Systems, Attleboro, MA 02703                         | 508-699-5269;                   |
|                                                                                   | 508-699-3450                    |
|                                                                                   | 508-699-3800                    |
| † Thermax Wire Corp., Flushing, NY 11354-2897                                     | 718-939-8300                    |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                    |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                 | 401-821-1700;SALES 401-821-7800 |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                  | 805-257-2400                    |

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| Zippertubing Co., Los Angeles, CA 90061 | 310-527-0488 |
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**Brakes, Clutches, Electromechanical-3500 — See Vol. B**

**Brakes, Magnetic-3500 — See Vol. B**

**Brakes, Mechanical-3500 — See Vol. B**

**Breadboard Assemblies-4200**

|                                                                                       |                                   |
|---------------------------------------------------------------------------------------|-----------------------------------|
| † Assembly Specialists, Chelmsford, MA 01824                                          | 508-250-5900                      |
| † Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                    | 508-222-2202                      |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                          | 516-599-5010                      |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                         | 203-288-8001;1-800-242-2863       |
| † Contact East, N. Andover, MA 01845                                                  | 508-682-2000                      |
| Douglas Electronics, Inc., San Leandro, CA 94577                                      | 510-483-8770                      |
| † Eastern Electronics Mfg. Corp., National Patent Dev. Corp., East Hartford, CT 06108 | 203-528-9821                      |
| † GC-Thorsen, Rockford, IL 61105-1209                                                 | 815-968-9661                      |
| † Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509                | 203-624-3103                      |
| # KeiTech Inc., Roanoke, VA 24019                                                     | 703-362-8466                      |
| 3M-Electronic Products Division, Austin, TX 78726                                     | 1-800-225-5373 Sls. & Prod. Info. |
| Micro Industries, Westerville, OH 43081-9486                                          | 614-548-7878                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                    | 508-588-6110                      |
| Noll, J. A. Co., Monroeville, PA 15146                                                | 412-856-7566                      |
| † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                      | 203-758-8272                      |
| † Racal-Dana Instrs. Inc., Irvine, CA 92718                                           | 714-859-8999                      |
| # Trand Corp. of America, Muskegon, MI 49444                                          | 616-798-2930                      |
| Vector Electronic Co., Inc., Sylmar, CA 91342                                         | 818-365-9661;800-423-5659         |

**Breadboards & Breadboard Kits — See Kits, Breadboarding (Vol. C)**

**Bridge Rectifiers, Silicon-Also See Rectifiers, Bridges &**

**Assemblies-4800 — See Vol. A**

**Bridges, Antenna — See Bridges, RF (Vol. D)**

**Bridges, Audio-1900 — See Vol. D**

**Bridges, Capacitance-2900 — See Vol. D**

**Bridges, Dissipation Factor-2900 — See Vol. D**

**Bridges, Impedance-2900 — See Vol. D**

**Bridges, Inductance-2900 — See Vol. D**

**Bridges, Kelvin-2900 — See Vol. D**

**Bridges, LCR-2900 — See Vol. D**

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**Bridges, Megohm — See Bridges, Resistance (Vol. D)**

**Bridges, Programmable — See Bridges (Specific Types) (Vol. D)**

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**Bridges, Resistance-2900 — See Vol. D**

**Bridges, RF-2900 — See Vol. D**

**Bridges, Silicon Cell-4800 — See Vol. A**

**Bridges, Strain Gauge-2900 — See Vol. D**

**Bridges, Synchro & Resolver-2900 — See Vol. D**

**Bridges, Telephone/Data-1900 — See Vol. D**

**Bridges, Temperature-2900 — See Vol. D**

**Bridges, Wheatstone-2900 — See Vol. D**

**Brushes & Brush Assemblies-3500 — See Vol. B**

**Buffers, Data — See Spoolers, Printer Buffers (Vol. D)**

**Bulbs — See Lamps, Miniature & Subminiature (Vol. B)**

**Bumpers-2500**

|                                                                                                  |                            |
|--------------------------------------------------------------------------------------------------|----------------------------|
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C•1528                     |
| † Alasco Rubber & Plastics Corp., Belmont, CA 94002                                              | 415-595-4100               |
| † Atomco Electronic Hardware, New Haven, CT 06515                                                | 203-397-3311               |
| † AME Corporation, Towaco, NJ 07082-0195                                                         | 201-263-1700               |
| Bumper Specialties, Inc., Mt. Holly, NJ 08060                                                    | 609-261-8100;800-541-2500  |
| † Concord Electronics Corporation, New York, NY 10012                                            | 1-212-777-6571             |
| Cut Craft, Inc., Ft. Worth, TX 76102                                                             | 817-332-6151               |
| † Fastex, Illinois Tool Works, Des Plaines, IL 60016                                             | 708-299-2222               |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016                          | 708-350-8200               |
| Fujipoly, America Corp., Cranford, NJ 07016                                                      | 908-272-3850               |
| † Gasket Dynamics, Inc., Mt. Holly, NJ 08060                                                     | 609-261-8100;800-541-2500; |
|                                                                                                  | 215-922-6046               |
| † GC-Thorsen, Rockford, IL 61105-1209                                                            | 815-968-9661               |
| Herga Inc., Herga Electric Limited, West Chester, PA 19380                                       | 215-430-1970               |
| # The Hrol Company, Ft. Lauderdale, FL 33309                                                     | 305-974-4900               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                             | 718-958-8900               |
| † Minor Rubber Co., Inc., Bloomfield, NJ 07003                                                   | 201-338-6800;800-433-6886  |
| † NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016                                 | 818-357-0901               |
| † Tapeswitch Corp. of America, Farmingdale, NY 11735                                             | 516-694-6312               |
| Techno-Isel USA Division, Designatronics, New Hyde Park, NY 11042-5416                           | 516-328-3970               |

**Burnishers, Contact-5400**

|                                               |              |
|-----------------------------------------------|--------------|
| † Contact East, N. Andover, MA 01845          | 508-682-2000 |
| † Eraser Co., Syracuse, NY 13221              | 315-454-3237 |
| # HMC/Hub Material Company, Canton, MA 02021  | 617-821-1870 |
| † Jonard Industries Corp., Tuckahoe, NY 10707 | 914-793-0700 |
| † Techni-Tool, Plymouth Meeting, PA 19462     | 215-825-4990 |

**Burnishers, Flexible Head-5400**

|                                               |              |
|-----------------------------------------------|--------------|
| † Jonard Industries Corp., Tuckahoe, NY 10707 | 914-793-0700 |
|-----------------------------------------------|--------------|

**Bus Bars, Surface Mount-3200**

|                                                          |        |
|----------------------------------------------------------|--------|
| Product Technology, Inc., Irvine, CA 92714, 714-474-8998 | C•1673 |
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|---------------------------------------------------------------------------|--------------|
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 | C#1678-1679  |
| Zero Cabinets (Stantrom), Pacoima, CA 91331-2226, 818-890-3445            | C#1118-1123  |
| † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561        | C#1124       |
| \$ Bussco Inc., El Segundo, CA 90245                                      | 310-322-6580 |
| † Elders Corporation, Rochester, NY 14623                                 | 716-427-7280 |
| Rogers Corporation, Circuit Components Div., Tempe, AZ 85282              | 602-967-0624 |

## Bus Bars & Systems-3200

|                                                                                 |                              |
|---------------------------------------------------------------------------------|------------------------------|
| † Atlee Inc., North Andover, MA 01845, 508-681-1003                             | C#1671                       |
| † ILC Data Device Corp., Bohemia, NY 11716-2482, 516-567-5600                   | D#1190-1191                  |
| † Janco Corp., Burbank, CA 91508, 818-846-1800                                  | B#1759                       |
| Product Technology, Inc., Irvine, CA 92714, 714-474-8998                        | C#1673                       |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659       | C#1675, 1679                 |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                    | C#1844                       |
| Arflex Laboratories Inc., ARX, Inc., Plainville, NY 11803                       | 516-694-6700                 |
| \$ Altech Corp., Flemington, NJ 08822-6000                                      | 908-806-9400                 |
| † American Etching & Mfg., Pacoima, CA 91331-2796                               | 818-896-1187                 |
| † Basic Electronics, Inc., Stanton, CA 90680                                    | 714-530-2400                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                   | 203-288-8001; 1-800-542-2863 |
| † Brim Electronics, Fair Lawn, NJ 07410                                         | 201-796-2886                 |
| \$ Bussco Inc., El Segundo, CA 90245                                            | 310-322-6580                 |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412           | 708-455-8830                 |
| Dage Precision Industries, Inc., Fremont, CA 94538                              | 510-683-3930                 |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                               | 708-459-1000; 800-323-0198   |
| † Elders Corporation, Rochester, NY 14623                                       | 716-427-7280                 |
| Elgin Electronics, Erie, PA 16509-3570                                          | 814-864-4921                 |
| ELMA Electronic Inc., Fremont, CA 94538                                         | 510-656-3400                 |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                           | 908-241-0710                 |
| \$ GTE Supply, GTE, Irving, TX 75038                                            | 800-433-4837                 |
| Interlog Industries, Melville, NY 11747-4294                                    | 516-420-8111                 |
| † LCT Electronics Corporation, Anaheim, CA 92801                                | 714-991-7317                 |
| † Methode Electronics, Inc., Chicago, IL 60656                                  | 708-867-9600                 |
| † Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008 | 708-392-3500                 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                              | 508-588-6110                 |
| Olympic Wire & Cable, Fairfield, NJ 07004                                       | 201-227-7996                 |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                   | 717-944-1300                 |
| \$ Reliance Electric Co., Cleveland, OH 44117                                   | 800-245-4501                 |
| Rogers Corporation, Power Distribution Div., Mesa, AZ 85205                     | 602-830-3370                 |
| † Rogers Corp., Rogers, CT 06263                                                | 203-774-9605                 |
| Schroff, Inc., Warwick, RI 02886                                                | 401-732-3770                 |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                            | 800-634-2356                 |
| Vallhalla Scientific, San Diego, CA 92121                                       | 619-457-5576                 |
| \$ Wieland Inc., Burgaw, NC 28425                                               | 919-259-5050                 |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                 | 801-298-5900                 |

## Bus Compatible Instruments — See Instruments, Test and Measuring, GPIB Compatible (Vol. D)

## Bushings, Glass, Plastic, Metal, Rubber, etc.-2500

|                                                                                                  |                            |
|--------------------------------------------------------------------------------------------------|----------------------------|
| \$ Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969                               | C#1538-1539                |
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C#1525, 1529               |
| † Graphite Metallizing Corp., Yonkers, NY 10702, 914-968-8400                                    | B#1265                     |
| \$ Acme Model Engineering Co., Ridgefield, NJ 07657                                              | 201-943-7650               |
| \$ Adaltec-PLM/Div. of Scott & Fetzer Co., Cleveland, OH 44135                                   | 216-267-9000               |
| † Aimsco Inc., Chelco Corp., Seattle, WA 98108                                                   | 206-762-8014; 800-426-0244 |
| † Alasco Rubber & Plastics Corp., Belmont, CA 94002                                              | 415-595-4100               |
| Alberox Corporation, New Bedford, MA 02745                                                       | 508-995-1725               |
| † Amatrom Electronic Hardware, New Haven, CT 06515                                               | 203-397-3311               |
| † AME Corporation, Towaco, NJ 07082-0195                                                         | 201-263-1700               |
| † Applied Plastics Technology, Bristol, RI 02809                                                 | 401-253-0200               |
| † Atlantic Optical Moulding, Webster, MA 01570                                                   | 508-943-1746               |
| The Auburn Manufacturing Company, Middletown, CT 06457-0251                                      | 203-346-6677               |
| Autowage Products, Shelton, CT 06484                                                             | 203-929-1401               |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                                     | 516-599-5010               |
| \$ Bivar, Inc., Irvine, CA 92718                                                                 | 714-951-8808               |
| † Brim Electronics, Fair Lawn, NJ 07410                                                          | 201-796-2886               |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035                           | 313-583-1200               |
| Ceramaseal, New Lebanon, NY 12125                                                                | 518-794-7800               |
| \$ Concord Electronics Corporation, New York, NY 10012                                           | 1-212-777-6571             |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                          | 201-768-5400               |
| \$ Dayco Products, Inc., Dayton, OH 45401-1004                                                   | 513-226-5926               |
| Delbert Blinn Co., Inc., Pomona, CA 91769                                                        | 909-629-3900               |
| \$ Dynacast Inc., Yorktown Heights, NY 10598                                                     | 914-962-6300               |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016                                            | 708-299-2222               |
| Fujiopoly, America Corp., Cranford, NJ 07016                                                     | 908-272-3850               |
| † General Manufacturing, Glendale, CA 91201                                                      | 818-243-2069               |
| \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033                                             | 908-245-0033; 800-526-4182 |
| \$ Hiram Jones Electronics, No. Hollywood, CA 91605                                              | 213-875-0213               |
| † Industrial Dielectrics, Inc., Noblesville, IN 46060                                            | 317-773-1766               |
| † Kam Components, Inc., Nesconset, NY 11767                                                      | 516-585-0666               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                             | 718-956-8900               |
| \$ Lyn-Tron, Inc., Burbank, CA 91505                                                             | 213-849-6211; 800-423-2734 |
| Minor Rubber Co., Inc., Bloomfield, NJ 07003                                                     | 201-338-6800; 800-433-6886 |
| † Moldtronics, Inc., Downers Grove, IL 60515                                                     | 708-968-7000               |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                      | 800-777-3300               |
| Precision Paper Tube Co., Wheeling, IL 60090                                                     | 708-537-4250               |
| \$ RAF Electronic Hardware, Seymour, CT 06483                                                    | 203-888-2133               |
| \$ Reliance Electric Co., Cleveland, OH 44117                                                    | 800-245-4501               |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                                             | 800-634-2356               |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                         | 317-543-3540; 800-382-4635 |
| † Standard Insert Co., Penn Engrg. & Mfg. Corp., Danboro, PA 18916                               | 215-766-0960               |

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|-------------------------------------------------------------------|----------------------------|
| Sterling Instruments, a DSG Company, New Hyde Pk. NY 11042-5416   | 516-328-3300               |
| † Stevens Products, Inc., E. Orange, NJ 07019                     | 201-672-2140               |
| † Stock Drive Products, a DSG Company, New Hyde Pk. NY 11042-5416 | 516-328-0200; 328-3300     |
| \$ Teknological Inds., Inc., Rochester, NY 14620-1103             | 716-232-1291               |
| \$ Thermalloy, Inc., Dallas, TX 75381-0839                        | 214-243-4321               |
| † Unicorp, Orange, NJ 07050                                       | 201-674-1700; 800-526-1389 |
| † U.S. Terminals Inc., Cincinnati, OH 45243                       | 513-561-8145               |

## Busses, Multibus, Q Bus, S100 Bus, STD Bus — See Board Computers & Subassemblies (Vol. D)

## Buzzers, Electronic — See Bells, Buzzers, Gongs, Sirens & Aural Warning Devices (Vol. D)

## Cabinets — See Enclosures (Vol. C)

## Cabinets, Plastic — See Enclosures, Nonmetallic (Vol. C)

## Cabinets & Accessories, Metal — See Enclosures, Equipment & Panel Mounting (Vol. C)

## Cable, Audio-6000

|                                                                                                 |                                    |
|-------------------------------------------------------------------------------------------------|------------------------------------|
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103              | C#1706-1707                        |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                           | C#1715-1717                        |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830             | C#1732-1733                        |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116                    | C#1354, 1753                       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800         | C#1696                             |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                            | C#1763                             |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C#1768, 1771-1774, 1782, 1784-1785 |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                           | C#1803                             |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                                         | C#1807                             |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                           | C#1458, 1809                       |
| † Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                                   | C#1814                             |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                                      | C#1826-1836, 1838, 1840-1842       |
| Accurate Electronics Corp., Elyria, OH 44036                                                    | 216-366-6330; 1-800-334-5904       |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                                | 404-751-9473; 800-221-4767         |
| \$ Aerospace Wire & Cable Inc., College Point, NY 11356                                         | 718-358-2345; 1-800-395-0200       |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                 | 703-369-0440                       |
| \$ Alcatel Chester Cable Corp., Chester, NY 10918                                               | 914-469-2141                       |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                   | 908-925-8000                       |
| \$ American Insulated Wire Corp., Levittown, PA 19006, Pawtucket, RI 02862                      | 401-726-0700                       |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                             | 203-265-8910                       |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                 | 203-281-3200                       |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                    | 717-354-6200                       |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                                   | 508-520-1200                       |
| Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                          | 203-456-8000                       |
| CableStar, Incorporated, Glasgow, KY 42141                                                      | 800-338-8223                       |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303; 606-572-8000         |
| Cat Wire and Cable Corp., Miami, FL 33150                                                       | 305-836-3600                       |
| \$ Clifford of Vermont, Inc., Bethel, VT 05032                                                  | 802-234-9921; 800-451-4381         |
| Connect-Air International, Inc., Auburn, WA 98002                                               | 206-939-4880                       |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                     | 410-298-4411                       |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                        | 818-882-8311                       |
| \$ Cooper Industries Belden Div., Richmond, IN 47375                                            | 317-983-5200; 800-BELDEN-1         |
| \$ Custom Cable Corp., Westbury, NY 11590                                                       | 516-334-3600                       |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                         | 201-768-5400                       |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                               | 708-459-1000; 800-323-0198         |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                              | 708-473-4990                       |
| \$ DGS Pro Audio, Arlington, TX 76003                                                           | 800-292-2834                       |
| † Dilwol Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                                    | 416-681-2343                       |
| \$ Dukane Corp., Communications Sys. Div., St. Charles, IL 60174-9984                           | 708-584-2300                       |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                     | 708-547-5400                       |
| \$ Electrowave, Inc., Worcester, MA 01604                                                       | 508-752-8932                       |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                                     | 310-515-4996                       |
| \$ Gavitt Wire & Cable, Brookfield, MA 01506                                                    | 508-867-6476                       |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                          | 815-968-9661                       |
| † General Wire Products, Inc., Worcester, MA 01604                                              | 617-752-8260                       |
| W.L. Gore & Assoc., Newark, DE 19714                                                            | 302-738-4880                       |
| \$ GTE Supply, GTE, Irving, TX 75038                                                            | 800-433-4837                       |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                       |
| \$ Harris Corp., Dracon Div., Camarillo, CA 93012                                               | 805-987-9511                       |
| International Components Corp., Melville, NY 11747                                              | 516-293-1500                       |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                       | 201-694-6200; 1-800-572-9473       |
| Judd Wire Inc., Turners Falls, MA 01376                                                         | 413-863-4357; 800-545-5833         |
| Judd Wire Inc., San Marcos, CA 92069                                                            | 619-744-7720; 800-344-5251         |
| \$ Lynn Electronics, Feasterville, PA 19053                                                     | 215-355-8200; 800-523-6075         |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                                   | 301-921-4600                       |
| † Microtech, Boothwyn, PA 19061                                                                 | 215-459-3566                       |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                             | 612-642-1800; 1-800-258-6922(MWCC) |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                               | 201-575-1101                       |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                    | 201-227-7996                       |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                       | 909-945-1365                       |
| Parlex Corporation, Methuen, MA 01844                                                           | 508-685-4341                       |
| \$ Philadelphia Insulated Wire Co., Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357         |



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| \$ Philmore Manufacturing, Rockford, IL 61125-1386                       | 815-229-7773  |
| † Product Technology, Inc., Irvine, CA 92714                             | 714-474-8998  |
| \$ Reocot Corp., Long Island City, NY 11101                              | 718-392-6442  |
| \$ Remee Products Corp., Florida, NY 10921                               | 914-651-4431  |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                  | 914-429-3103  |
| Rodale Technical Sales Inc., Islip, NY 11751                             | 516-277-5454  |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                         | 919-557-0511  |
| \$ Shokai Far East Ltd., Peekskill, NY 10566                             | 914-736-3500  |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                 | 310-609-1811; |
|                                                                          | 800-326-0006  |
| \$ Storm Products Co., Hinsdale, IL 60521                                | 708-323-9121  |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                       | 510-234-9090  |
| K.L. Tannehill Inc., Bloomington, MN 55431                               | 612-881-6700  |
| \$ Tappan Wire & Cable Inc., Tappan, NY 10983                            | 914-259-9300  |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822         | 919-336-4311  |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092 |               |
|                                                                          | 904-829-5600  |
| † United Wire & Cable Corp., Worcester, MA 01604                         | 508-757-3872  |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                       | 213-870-9933  |
| \$ Whitmor Wire & Cable Corp., Valencia, CA 91355                        | 805-257-2400  |

## Cable, Battery Booster-6000

|                                                                       |               |                |
|-----------------------------------------------------------------------|---------------|----------------|
| Accurate Electronics Corp., Elyria, OH 44036                          | 216-366-6330; | 1-800-334-5904 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                       |               | 703-369-0440   |
| Alcatel Chester Cable Corp., Chester, NY 10918                        |               | 914-469-2141   |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 |               | 708-455-8830   |
| \$ Custom Cable Corp., Westbury, NY 11590                             |               | 516-334-3600   |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                    | 708-459-1000; | 800-323-0198   |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                    |               | 708-473-4990   |

## Cable, Biomedical Instrumentation-6000

|                                                                             |                            |
|-----------------------------------------------------------------------------|----------------------------|
| † GSI Corp., Timonium, MD 21093, 410-252-1768                               | C-1749                     |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051 |                            |
|                                                                             | C-1754-1755                |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611     |                            |
|                                                                             | C-1768                     |
| Applied Fiberoptics, Inc., Southbridge, MA 01550                            | 508-765-9121; 800-225-7486 |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                | 717-354-6200               |
| \$ Brim Electronics, Fair Lawn, NJ 07410                                    | 201-796-2886               |
| † Cable Systems, Inc., The HVT Group, Everett, MA 02149                     | 617-389-7080               |
| † CICOIL CORP., Valencia, CA 91355-3428                                     | 805-295-1295               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                    | 201-768-5400               |
| Electronic Connectors, Inc., Reading, PA 19602                              | 215-374-3796               |
| W.L. Gore & Assocs., Newark, DE 19714                                       | 302-738-4880               |
| \$ Manger Electric Company, Inc., Stamford, CT 06902                        | 203-348-7761               |
| Markel Corp., Norristown, PA 19404                                          | 215-272-8960               |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                         | 612-642-1800               |
|                                                                             | 1-800-258-6922(MWCC)       |
| Mohawk/CDT, Leominster, MA 01453                                            | 508-537-9961; 800-422-9961 |
| New England Electric Wire Corp., Lisbon, NH 03585                           | 603-838-6624               |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                    | 317-543-3540;              |
|                                                                             | 800-382-4635               |
| Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822               | 919-236-4311               |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                 | 508-839-5987               |

## Cable, Coaxial-6000

|                                                                                     |                            |
|-------------------------------------------------------------------------------------|----------------------------|
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  | C-1287, 1706-1708          |
| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                               | C-1163                     |
| \$ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1715                     |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 |                            |
|                                                                                     | C-1734-1735                |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                    | C-1748                     |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                       | C-1749                     |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116        |                            |
|                                                                                     | C-1354, 1753               |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051         |                            |
|                                                                                     | C-1754-1755                |
| Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833                 | C-1756                     |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                         | C-1759                     |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                | C-1763                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611             |                            |
|                                                                                     | C-1768                     |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                               | C-1803                     |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                          | C-1805                     |
| \$ Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                            | C-1807                     |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911               |                            |
|                                                                                     | C-1458, 1809               |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                   | C-1813                     |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020        |                            |
|                                                                                     | C-1500                     |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                        | C-1837-1838                |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473; 800-221-4767 |
| ADC Telecommunications, Inc., Minneapolis, MN 55435                                 | 612-938-8080               |
| \$ Aerospace Wire & Cable Inc., College Point, NY 11356                             | 718-358-2345;              |
|                                                                                     | 1-800-395-0200             |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                     | 703-369-0440               |
| † Alcatel Chester Cable Corp., Chester, NY 10918                                    | 914-469-2141               |
| Alpha Products, Inc., Westlake Village, CA 91362                                    | 818-889-9304               |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                       | 908-925-8000               |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862             | 401-726-0700               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                 |                            |
|                                                                                     | 203-265-8910               |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                        | 203-281-3200               |
| Andrew Corp., Orland Pk., IL 60462                                                  | 800-255-1479               |
| † Antenna Specialists, The Allen Group, Cleveland, OH 44139                         | 216-349-8400               |

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| Applied Fiberoptics, Inc., Southbridge, MA 01550                                              | 508-765-9121;             | 800-225-7486  |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                        |                           |               |
|                                                                                               | 1-800-344-0223, Ext. 1027 |               |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                              |                           | 508-222-2202  |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                  |                           | 717-354-6200  |
| \$ BIW Cable Systems, Inc., N. Dighton, MA 02764                                              |                           | 508-520-1200  |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                                               |                           | 203-423-6321  |
| † Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      |                           |               |
|                                                                                               | 203-456-8000              |               |
| \$ Brooks Electronics, Philadelphia, PA 19140                                                 |                           | 215-228-4433  |
| CableStar, Incorporated, Glasgow, KY 42141                                                    |                           | 800-338-8223  |
| Cable Systems, Inc., The HVT Group, Everett, MA 02149                                         |                           | 617-389-7080  |
| Cabletron Systems, Inc., Rochester, NH 03867                                                  |                           | 603-332-9400  |
| \$ Capcon, Inc., New York, NY 10001                                                           |                           | 212-423-6275  |
| † Carol Cable Co., Highland Heights, KY 41076                                                 | 606-572-8306;             | 606-572-8000  |
| Cat Wire and Cable Corp., Miami, FL 33150                                                     |                           | 305-836-3600  |
| † C.E. Precision Assemblies, Inc., Chandler, AZ 85226                                         |                           | 602-940-0740  |
| Ceramaseal, New Lebanon, NY 12125                                                             |                           | 518-794-7800  |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                         |                           |               |
|                                                                                               | 802-655-2121              |               |
| † CICOIL CORP., Valencia, CA 91355-3428                                                       |                           | 805-295-1295  |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                                 | 802-234-9921;             | 800-451-4381  |
| \$ Coax Connection, Peekskill, NY 10566                                                       |                           | 914-736-1010  |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                  |                           | 704-324-2200; |
|                                                                                               | 800-982-1708              |               |
| † Compac, Holbrook, NY 11741                                                                  |                           | 516-585-3400  |
| † Computer System Products, Minneapolis, MN 55447                                             | 612-476-6866;             | 800-422-2537  |
| Connect-Air International, Inc., Auburn, WA 98002                                             |                           | 206-939-4880  |
| Connector Corp., Chicago, IL 60646                                                            |                           | 312-539-3108  |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                   |                           | 410-288-4411  |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                      |                           | 818-882-6311  |
| \$ Cooper Industries' Belden Div., Richmond, IN 47375                                         | 317-983-5200;             | 800-BELDEN-1  |
| \$ Covid, Inc., Tempe, AZ 85281                                                               |                           | 602-966-2221  |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                              |                           | 619-744-8182; |
|                                                                                               | 800-334-3815              |               |
| \$ Custom Cable Corp., Westbury, NY 11590                                                     |                           | 516-334-3600  |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                      |                           | 201-768-5400  |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                | 203-438-9684;             | 800-344-9684  |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                            | 708-459-1000;             | 800-323-0198  |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                            |                           | 708-473-4990  |
| \$ Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                  |                           | 708-547-5400  |
| Electro Insulation Corp., Arlington Hgts., IL 60004                                           |                           | 708-632-1020  |
| † Electrowear, Inc., Worcester, MA 01604                                                      |                           | 508-752-8932  |
| \$ Engineered Assemblies & Components Corp., Teterboro, NJ 07608                              |                           | 201-288-4477; |
|                                                                                               | 800-447-5639              |               |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                  |                           | 818-446-6175  |
| John Fluke Mfg. Co., Inc., Everett, WA 98203                                                  |                           | 206-347-6100  |
| † Gabriel Elctms. Inc., Scarborough, ME 04070                                                 |                           | 207-883-5161  |
| Gavitt Wire & Cable, Brookfield, MA 01506                                                     |                           | 508-867-6476  |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                        |                           | 815-968-9661  |
| † General Wire Products, Inc., Worcester, MA 01604                                            |                           | 617-752-8260  |
| \$ Glasgal Communications, Inc., Northvale, NJ 07647                                          |                           | 201-768-8082  |
| † W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                               |                           | 602-431-0077  |
| † W.L. Gore & Assocs., Newark, DE 19714                                                       |                           | 302-738-4880  |
| † Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                 |                           | 606-572-8303  |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                |                           | 514-293-5304  |
| Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059            |                           |               |
|                                                                                               | 800-452-4844              |               |
| International Components Corp., Melville, NY 11747                                            |                           | 516-293-1500  |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                       |                           | 602-968-6241  |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                     | 201-694-6200;             | 800-572-9473  |
| Judd Wire Inc., San Marcos, CA 92069                                                          | 619-744-7720;             | 800-344-5251  |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                 |                           | 203-775-2590  |
| \$ Lance Industries, Sylmar, CA 91342-3832                                                    |                           | 818-367-1811  |
| \$ L-Corn Inc., N. Andover, MA 01845                                                          |                           | 508-682-6936  |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                    | 708-398-5311;             | 800-323-5207  |
| MACOM, Inc., Lowell, MA 01851                                                                 |                           | 617-272-3000  |
| \$ M/A-Corn, Inc., Antenna & Cable Division, Amesbury, MA 01913                               |                           | 508-388-5210  |
| † Markel Corp., Norristown, PA 19404                                                          |                           | 215-272-8960  |
| Meritec, Associated Enterprises, Painesville, OH 44077                                        |                           | 216-354-3148  |
| \$ Micro-Coax, Collegeville, PA 19426                                                         |                           | 215-489-3700  |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                          |                           | 215-699-5373  |
| † Micro Mode Prods., El Cajon, CA 92020                                                       |                           | 619-449-3844  |
| \$ Mington Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                    |                           |               |
|                                                                                               | 818-330-2086              |               |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                           |                           | 612-642-1800; |
|                                                                                               | 1-800-258-6922(MWCC)      |               |
| Mohawk/CDT, Leominster, MA 01453                                                              | 508-537-9961;             | 800-422-9961  |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                     |                           | 508-791-3161  |
| \$ Mouser Electronics, Santee, CA 92071                                                       |                           | 800-346-6873  |
| \$ Mouser Electronics, Mansfield, TX 76063                                                    |                           | 800-346-6873  |
| \$ Mouser Electronics, Gilroy, CA 95020                                                       |                           | 800-346-6873  |
| New England Electric Wire Corp., Lisbon, NH 03585                                             |                           | 603-838-6624  |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                             |                           | 201-575-1101  |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                  |                           | 201-227-7996  |
| † Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   |                           | 909-945-1365  |
| † Pasternack Enterprises, Irvine, CA 92713                                                    |                           | 714-261-1920  |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 41076 | 606-572-8306;             | 800-257-8357  |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                            |                           | 815-229-7773  |
| \$ Precision Tube, N. Wales, PA 19454                                                         |                           | 215-699-5801  |
| † Precision Tube Co., Coaxtube Div., Salisbury, MD 21801                                      |                           | 410-546-3911  |
| † Probe Master, Inc., San Diego, CA 92111                                                     | 619-560-9676;             | 800-772-1519  |
| † Product Technology, Inc., Irvine, CA 92714                                                  |                           | 714-474-8998  |
| † Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                 |                           | 508-988-9090  |



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| † Reactel, Inc., Rockville, MD 20850                                                     | 301-279-5535                     |
| # Relm Communications, Inc., Adage, Inc., Indianapolis, IN 46226                         | 317-545-4281                     |
| # Remeo Products Corp., Florida, NY 10921                                                | 914-651-4431                     |
| RF Industries Ltd. (Nuellink), San Diego, CA 92126                                       | 619-549-6340; 800-233-1728       |
| Shokai Far East Ltd., Peekskill, NY 10566                                                | 914-736-3500                     |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000                     |
| Soltron/Microwave, Soltron Devices, Inc., West Palm Beach, FL 33407-4697                 | 407-848-4311                     |
| † Specialty Cable Corporation, Wallingford, CT 06492                                     | 800-456-SPEC                     |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                  | 310-609-1811; 800-326-0006       |
| † ST Microwave Corp., Sub. of Signal Technlg. Corp., Sunnyvale, CA 94086                 | 408-730-6300                     |
| † Storm Products Co., Hinsdale, IL 60521                                                 | 708-323-9121                     |
| # Support Systems Intl. Corp., Richmond, CA 94804                                        | 510-234-9090                     |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                             | 612-881-6700                     |
| † Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                          | 919-236-4311                     |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092               | 904-829-5600                     |
| † Terminal Data Corp., Rockville, MD 20855                                               | 301-921-8282                     |
| Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584          | 309-693-3300                     |
| † United Wire & Cable Corp., Worcester, MA 01604                                         | 508-757-3872                     |
| # Unirek Corporation, Vancouver, WA 98661                                                | 206-699-7277                     |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                        | 401-821-1700; SALES 401-821-7800 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                       | 213-870-9933                     |
| † Western Electronic Products Co., San Clemente, CA 92673                                | 714-492-4677                     |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                         | 805-257-2400                     |
| † Wiltron, Morgan Hill, CA 95037-2809                                                    | 408-778-2000                     |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681               | 803-963-5131                     |
| § Zeus Indl. Prods. Inc., Orangeburg, SC 29116                                           | 803-531-2174; 800-526-3842       |

**Cable, Communication-6000**

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| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 | C*1706-1707                       |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                             | C*1713-1718                       |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830  | C*1726-1728, 1732-1735            |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                     | C*1749                            |
| § JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051     | C*1754-1755                       |
| Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941     | C*1365, 1757                      |
| Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                 | C*1763                            |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611           | C*1769, 1781                      |
| Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                             | C*1807                            |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                 | C*1813                            |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                      | C*1826-1836, 1839-1842, 1844-1845 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                   | 404-751-9473; 800-221-4767        |
| § Aerospace Wire & Cable Inc., College Point, NY 11356                            | 718-358-2345; 1-800-395-0200      |
| § Alcatel Canada Wire Inc., Manassas, VA 22024                                    | 703-369-0440                      |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862            | 401-726-0700                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492               | 203-265-8910                      |
| § Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                    | 203-281-3200                      |
| § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962             | 1-800-344-0223, Ext. 1027         |
| § Berk-Tek Inc., New Holland, PA 17557-9722                                       | 717-354-6200                      |
| † Brand-Rex Company, BICC Cables Corporation, Wilimantic, CT 06226-1128           | 203-456-8000                      |
| CableStar, Incorporated, Glasgow, KY 42141                                        | 800-338-8223                      |
| Cabletron Systems, Inc., Rochester, NH 03867                                      | 603-332-9400                      |
| † Carol Cable Co., Highland Heights, KY 41076                                     | 606-572-8303; 606-572-8000        |
| Cat Wire and Cable Corp., Miami, FL 33150                                         | 305-836-3600                      |
| Champlain Cable Corp. Huber & Suhner(USA)Corp., Colchester, VT 05446              | 802-655-2121                      |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                     | 802-234-9921; 800-451-4381        |
| Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                         | 704-324-2200; 800-982-1708        |
| # Computer System Products, Minneapolis, MN 55447                                 | 612-476-6866; 800-422-2537        |
| Connect-Air International, Inc., Auburn, WA 98002                                 | 206-939-4880                      |
| § Control Cable, Inc., Baltimore, MD 21244                                        | 410-298-4411                      |
| † Cooper Industries/Belden Div., Richmond, IN 47375                               | 317-983-5200; 800-BELDEN-1        |
| § CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                   | 619-744-8182; 800-334-3815        |
| § Custom Cable Corp., Westbury, NY 11590                                          | 516-334-3600                      |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                           | 201-768-5400                      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                    | 203-438-9684; 800-344-9684        |
| † Dearborn Wire & Cable, LP., Wheeling, IL 60090                                  | 708-459-1000; 800-323-0198        |
| † Dilwol Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                      | 416-681-2343                      |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                       | 708-547-5400                      |
| † The First Electronics Corp., Boston, MA 02125                                   | 617-288-2430                      |
| Gandalf Data Inc., Gandalf Technologies Inc., Wheeling, IL 60090                  | 708-541-6060; 800-GANDALF         |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                       | 508-867-6476                      |
| General Cable Co., Fiber Optics Div., S. Plainfield, NJ 07080                     | 201-769-3200                      |
| † General Wire Products, Inc., Worcester, MA 01604                                | 617-752-8260                      |
| † Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076     | 606-572-8303                      |
| § Independent Cable, Inc., Hudson, MA 01749                                       | 508-562-9913                      |
| Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                              | 602-968-6241                      |

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| § JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200; 1-800-572-9473       |
| † Judd Wire Inc., Turners Falls, MA 01376                                                     | 413-863-4357; 800-545-5833         |
| † Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720; 800-344-5251         |
| § Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                       |
| § L-Corn Inc., N. Andover, MA 01845                                                           | 508-682-6936                       |
| § Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                               | 206-485-4288; 206-486-2222         |
| † Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200; 800-523-6075         |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                                 | 301-921-4600                       |
| MACOM, Inc., Lowell, MA 01851                                                                 | 617-272-3600                       |
| § 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info.  |
| § 3M Private Network Products, 3M, Austin, TX 78726                                           | 512-984-3400; 800-426-8626         |
| § Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514                           | 203-281-0817                       |
| § Kingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                    | 618-330-2086                       |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                           | 612-642-1800; 1-800-258-6922(MWCC) |
| Mohawk/CDT, Leominster, MA 01453                                                              | 508-537-9961; 800-422-9961         |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                     | 508-791-3161                       |
| § Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                       |
| § Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                       |
| † Optical Cable Corp., Roanoke, VA 24022-1967                                                 | 1-800-622-7711                     |
| § Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                       |
| Parlex Corporation, Methuen, MA 01844                                                         | 508-685-4341                       |
| § Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357         |
| † Product Technology, Inc., Irvine, CA 92714                                                  | 714-474-8998                       |
| Pylon Electronics Inc., Lachine, PQ, CANADA H8S 1Z3                                           | 514-637-1186                       |
| † Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                 | 508-988-9090                       |
| § Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                       |
| Rodale Technical Sales Inc., Islip, NY 11751                                                  | 516-277-5454                       |
| Shokai Far East Ltd., Peekskill, NY 10566                                                     | 914-736-3500                       |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811; 800-326-0006         |
| § Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                       |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                    | 612-881-6700                       |
| § Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                       |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                   | 508-839-5987                       |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                       |
| Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584               | 309-693-3300                       |

**Cable, Computer-6000**

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| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103   | C*1706-1707                       |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                               | C*1716, 1718                      |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830  | C*1726-1734                       |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400               | C*1744                            |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                       | C*1749-1750                       |
| § JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051       | C*1754-1755                       |
| Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941       | C*1365, 1757                      |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                         | C*1759                            |
| Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                   | C*1763                            |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611             | C*1768, 1771-1772, 1786-1787      |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                                 | C*1547, 1792                      |
| RDI Elctrn's., Inc., Mamaroneck, NY 10543, 914-777-7000                             | C*1803                            |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                          | C*1805                            |
| Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                               | C*1807                            |
| Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                 | C*1458, 1809                      |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                   | C*1813                            |
| † Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                       | C*1814-1815                       |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                          | C*1828-1833, 1835-1841, 1846-1847 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                     | 404-751-9473; 800-221-4767        |
| † Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002 | 415-592-4550                      |
| § Aerospace Wire & Cable Inc., College Point, NY 11356                              | 718-358-2345; 1-800-395-0200      |
| § Alcatel Canada Wire Inc., Manassas, VA 22024                                      | 703-369-0440                      |
| § Alpha Wire Corp., Elizabeth, NJ 07207-0711                                        | 908-925-8000                      |
| § American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862              | 401-726-0700                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                 | 203-265-8910                      |
| § Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                      | 203-281-3200                      |
| § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962               | 1-800-344-0223, Ext. 1027         |
| § Berk-Tek Inc., New Holland, PA 17557-9722                                         | 717-354-6200                      |
| † Brand-Rex Company, BICC Cables Corporation, Wilimantic, CT 06226-1128             | 203-456-8000                      |
| CableStar, Incorporated, Glasgow, KY 42141                                          | 800-338-8223                      |
| Cable Systems, Inc., The HVT Group, Everett, MA 02149                               | 617-389-7080                      |
| Cabletron Systems, Inc., Rochester, NH 03867                                        | 603-332-9400                      |
| † Carol Cable Co., Highland Heights, KY 41076                                       | 606-572-8303; 606-572-8000        |
| Cat Wire and Cable Corp., Miami, FL 33150                                           | 305-836-3600                      |
| Champlain Cable Corp. Huber & Suhner(USA)Corp., Colchester, VT 05446                | 802-655-2121                      |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                       | 802-234-9921; 800-451-4381        |
| † Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                         | 704-324-2200; 800-982-1708        |



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| # Computer System Products, Minneapolis, MN 55447                                              | 612-476-6866;800-422-2537         |
| Connect-Air International, Inc., Auburn, MA 98002                                              | 206-939-4880                      |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                    | 410-298-4411                      |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200;800-BELDEN-1         |
| \$ Covid, Inc., Tempe, AZ 85281                                                                | 602-966-2221                      |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                               | 619-744-8182;<br>800-334-3815     |
| \$ Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                      |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         | 612-941-5651;1-800-343-5553       |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                 | 203-438-9684;800-344-9684         |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198        |
| \$ Dilworth Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                                | 416-681-2343                      |
| \$ Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                   | 708-547-5400                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                | 201-288-4477;<br>800-447-5639     |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                                    | 310-515-4996                      |
| \$ Ergotron, Inc., Eagan, MN 55121                                                             | 612-452-8135                      |
| The First Electronics Corp., Boston, MA 02125                                                  | 617-288-2430                      |
| \$ General Wire Products, Inc., Worcester, MA 01604                                            | 617-752-8260                      |
| \$ GlobTek, Inc., Northvale, NJ 07647                                                          | 201-784-1000                      |
| \$ Golden Pacific Electronics, Inc., Placentia, CA 92670                                       | 714-993-6970                      |
| W.L. Gore & Assocs., Newark, DE 19714                                                          | 302-738-4880                      |
| \$ GTE Supply, GTE, Irving, TX 75038                                                           | 800-433-4837                      |
| † Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                  | 606-572-8303                      |
| # Henricks Technologies, Inc., Forsyth, GA 31029                                               | 912-993-1060;800-241-0806         |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                      |
| \$ Injector Electronics (Woman Owned), Bohemia, NY 11716                                       | 516-563-3388                      |
| \$ International Instrumentation, Inc., Westlake Vlg., CA 91361                                | 805-495-7673                      |
| ISL Products Int'l. Ltd., Syosset, NY 11791-6093                                               | 516-937-3475;800-626-6116         |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                        | 602-968-6241                      |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-8200;1-800-572-9473       |
| \$ Judd Wire Inc., Turners Falls, MA 01376                                                     | 413-863-4357;800-545-5833         |
| \$ Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720;800-344-5251         |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                      |
| \$ L-Corn Inc., N. Andover, MA 01845                                                           | 508-682-6936                      |
| # Manger Electric Company, Inc., Stamford, CT 06902                                            | 203-348-7761                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514                           | 203-281-0817                      |
| \$ Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                    | 818-330-2086                      |
| Mohawk/CDT, Leominster, MA 01453                                                               | 508-537-9961;800-422-9961         |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                      | 508-791-3161                      |
| \$ Mouser Electronics, Santee, CA 92071                                                        | 800-346-6873                      |
| \$ Mouser Electronics, Mansfield, TX 76063                                                     | 800-346-6873                      |
| \$ Mouser Electronics, Gilroy, CA 95020                                                        | 800-346-6873                      |
| National Telephone & Electronics Inc., Miami, FL 33172                                         | 305-592-0551                      |
| New England Electric Wire Corp., Lisbon, NH 03585                                              | 603-838-6624                      |
| Nu Data, Inc., Little Silver, NJ 07739                                                         | 908-842-5757                      |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                      |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                      |
| † Optical Cable Corp., Roanoke, VA 24022-1967                                                  | 1-800-622-7111                    |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                      |
| Parlex Corporation, Methuen, MA 01844                                                          | 508-685-4341                      |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306;800-257-8357         |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                             | 815-229-7773                      |
| † Product Technology, Inc., Irvine, CA 92714                                                   | 714-474-8998                      |
| Pylon Electronics Inc., Lachine, PQ, CANADA H8S 1Z3                                            | 514-637-1186                      |
| \$ Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                      |
| Shokai Far East Ltd., Peekskill, NY 10566                                                      | 914-736-3500                      |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;<br>800-326-0006     |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                      |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                     | 612-881-6700                      |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                      |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                    | 508-839-5987                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                      |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                     | 803-963-5131                      |

# Cable, Data Transmission-6000

|                                                                                     |                                         |
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| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  | C-1706-1708                             |
| \$ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1716-1718                             |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1726-1730, 1734-1735                  |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                       | C-1749-1750                             |
| ISL Products Int'l. Ltd., Syosset, NY 11791-6093, 516-937-3475;800-626-6116         | C-1354, 1753                            |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051         | C-1754-1755                             |
| \$ Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357;800-545-5833               | C-1756                                  |
| \$ LZD Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                      | C-1759                                  |
| Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                   | C-1763                                  |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611             | C-1768, 1784, 1786-1787                 |
| Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                               | C-1807                                  |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                   | C-1813                                  |
| \$ Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                      | C-1814-1817                             |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                          | C-1828-1831, 1833, 1836-1841, 1846-1847 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                     | 404-751-9473;800-221-4767               |
| † Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002 | 415-592-4550                            |

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| \$ Aerospace Wire & Cable Inc., College Point, NY 11356                                        | 718-358-2345;<br>1-800-395-0200         |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                | 703-369-0440                            |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                            |
| \$ American Advantech Corp., San Jose, CA 95122                                                | 408-293-6786                            |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                        | 401-726-0700                            |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                            | 203-265-8910                            |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                | 203-281-2200                            |
| \$ AT&T Microelectronics, Allentown, PA 18103                                                  | 1-800-372-2447;In<br>Can:1-800-553-2448 |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                         | 1-800-344-0223, Ext. 1027               |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                   | 717-354-6200                            |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000                            |
| CableStar, Incorporated, Glasgow, KY 42141                                                     | 800-938-8223                            |
| Cable Systems, Inc., The HVT Group, Everett, MA 02149                                          | 617-389-7080                            |
| Cabletron Systems, Inc., Rochester, NH 03867                                                   | 603-332-9400                            |
| Carol Cable Co., Highland Heights, KY 41076                                                    | 606-572-8303;606-572-8000               |
| Cat Wire and Cable Corp., Miami, FL 33150                                                      | 305-836-3600                            |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                          | 802-655-2121                            |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                  | 802-234-9921;800-451-4381               |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                   | 704-324-2200;<br>800-982-1708           |
| # Computer System Products, Minneapolis, MN 55447                                              | 612-476-6866;800-422-2537               |
| Connect-Air International, Inc., Auburn, MA 98002                                              | 206-939-4880                            |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                    | 410-298-4411                            |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200;800-BELDEN-1               |
| \$ Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                            |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         | 612-941-5651;1-800-343-5553             |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                       | 201-768-5400                            |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                 | 203-438-9684;800-344-9684               |
| Electronic Connectors, Inc., Reading, PA 19602                                                 | 215-374-3796                            |
| General Cable Co., Fiber Optics Div., S. Plainfield, NJ 07080                                  | 201-769-3200                            |
| † General Wire Products, Inc., Worcester, MA 01604                                             | 617-752-8260                            |
| W.L. Gore & Assocs., Newark, DE 19714                                                          | 302-738-4880                            |
| \$ GTE Supply, GTE, Irving, TX 75038                                                           | 800-433-4837                            |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                    | 606-572-8303                            |
| Henricks Technologies, Inc., Forsyth, GA 31029                                                 | 912-993-1060;800-241-0806               |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                            |
| Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                           | 602-968-6241                            |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200;1-800-572-9473             |
| L-Corn Inc., N. Andover, MA 01845                                                              | 508-682-6936                            |
| \$ Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                               | 206-485-4288;<br>206-486-2222           |
| \$ Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200;800-523-6075               |
| # Manger Electric Company, Inc., Stamford, CT 06902                                            | 203-348-7761                            |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info.       |
| \$ 3M Private Network Products, 3M, Austin, TX 78726                                           | 512-984-3400;800-426-8626               |
| Meritec, Associated Enterprises, Painesville, OH 44077                                         | 216-354-3148                            |
| Mohawk/CDT, Leominster, MA 01453                                                               | 508-537-9961;800-422-9961               |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                      | 508-791-3161                            |
| New England Keyboard Inc., Fitchburg, MA 01420                                                 | 508-345-8332                            |
| Nu Data, Inc., Little Silver, NJ 07739                                                         | 908-842-5757                            |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                            |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                            |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                            |
| Parlex Corporation, Methuen, MA 01844                                                          | 508-685-4341                            |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306;800-257-8357               |
| \$ Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                            |
| Rodale Technical Sales Inc., Islip, NY 11751                                                   | 516-277-5454                            |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                       | 317-543-3540;<br>800-382-4635           |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;<br>800-326-0006           |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                            |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                     | 612-881-6700                            |
| \$ Teledyne Thermatics, Inc., Greenlawn, NY 11740                                              | 516-423-3232;800-835-3298               |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                            |
| † Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                  | 508-839-5987                            |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                            |
| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                      | 309-693-3300                            |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                                 | 818-707-2020                            |
| \$ Via West Interface, Inc., Tucson, AZ 85705                                                  | 602-623-5716;1-800-266-5716             |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                     | 803-963-5131                            |

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| \$ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1713, 1716                    |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1731-1733, 1735               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400              | C-1744                          |
| Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357;800-545-5833                  | C-1756                          |
| Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                         | C-1817                          |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                          | C-1838-1842                     |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                | 914-736-1010; 1-800-431-2103    |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                     | 404-751-9473;800-221-4767       |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                | 718-358-2345;<br>1-800-395-0200 |



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| \$† Alcatel Canada Wire Inc., Manassas, VA 22024                                                | 703-369-0440                     |
| \$† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                     |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                    | 203-281-3200                     |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                    | 717-354-6200                     |
| \$† Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000                     |
| \$ Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950                        | 717-757-6600                     |
| CableStar, Incorporated, Glasgow, KY 42141                                                      | 800-338-8223                     |
| \$ Cable USA, Inc., Naples, FL 33942-3560                                                       | 813-643-6400                     |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303; 606-572-8000       |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                           | 802-655-2121                     |
| CICOIL CORP., Valencia, CA 91355-3428                                                           | 805-295-1295                     |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                   | 802-234-9921; 800-451-4381       |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                    | 704-324-2200;                    |
|                                                                                                 | 800-982-1708                     |
| # Computer System Products, Minneapolis, MN 55447                                               | 612-476-6866; 800-422-2537       |
| Connect-Air International, Inc., Auburn, WA 98002                                               | 206-939-4880                     |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                     | 410-298-4411                     |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                        | 818-882-8311                     |
| \$† Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELDEN-1       |
| \$ Custom Cable Corp., Westbury, NY 11590                                                       | 516-334-3600                     |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                  | 203-438-9684; 800-344-9684       |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                              | 708-459-1000; 800-323-0198       |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                              | 708-473-4990                     |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                 | 201-288-4477;                    |
|                                                                                                 | 800-447-5639                     |
| † The First Electronics Corp., Boston, MA 02125                                                 | 617-288-2430                     |
| Flex-Link Products, Inc., San Fernando, CA 91340                                                | 818-898-1451                     |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                                     | 508-867-6476                     |
| General Cable Co., Fiber Optics Div., S. Plainfield, NJ 07080                                   | 201-769-3200                     |
| † General Wire Products, Inc., Worcester, MA 01604                                              | 617-752-8260                     |
| † GSI Corp., Timonium, MD 21093                                                                 | 410-252-1768                     |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                     |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                   | 514-293-5304                     |
| \$† Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                     |
| Judd Wire Inc., San Marcos, CA 92069                                                            | 619-744-7720; 800-344-5251       |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                   | 203-775-2590                     |
| # Manger Electric Company, Inc., Stamford, CT 06902                                             | 203-348-7761                     |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                                          | 914-967-8000                     |
| \$† Markel Corp., Norristown, PA 19404                                                          | 215-272-8960                     |
| Meritec, Associated Enterprises, Painesville, OH 44077                                          | 216-354-3148                     |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                           | 215-699-5373                     |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                             | 612-642-1800;                    |
|                                                                                                 | 1-800-258-6922(MWCC)             |
| Mohawk/CDT, Leominster, MA 01453                                                                | 508-537-9961; 800-422-9961       |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                       | 508-791-3161                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780                                       | 213-225-5611                     |
| New England Electric Wire Corp., Lisbon, NH 03585                                               | 603-838-6624                     |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                    | 201-227-7996                     |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                    | 909-945-1365                     |
| Parlex Corporation, Methuen, MA 01844                                                           | 508-685-4341                     |
| † Pasternack Enterprises, Irvine, CA 92713                                                      | 714-261-1920                     |
| \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 41076 | 606-572-8306; 800-257-8357       |
| \$† Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                 | 508-988-9090                     |
| \$ Radix Wire Co., Cleveland, OH 44132                                                          | 216-731-9191                     |
| \$ Remeo Products Corp., Florida, NY 10921                                                      | 914-651-4431                     |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                        | 317-543-3540;                    |
|                                                                                                 | 800-382-4635                     |
| \$† Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPCC                     |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;                    |
|                                                                                                 | 800-326-0006                     |
| † Storm Products Co., Hinsdale, IL 60521                                                        | 708-323-9121                     |
| \$† Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                     |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                      | 612-881-6700                     |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                | 919-236-4311                     |
| † Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                   | 508-839-5987                     |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                     |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                  | 803-676-2900                     |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                | 309-693-3300                     |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893                                                 | 401-821-1700; SALES 401-821-7800 |
| \$ Zeus Indl. Prods. Inc., Orangeburg, SC 29116                                                 | 803-531-2174; 800-526-3842       |

## Cable, Fiber Optic/Cable Assemblies-2475 — See Vol. B

## Cable, Flame Retardant-6000

|                                                                                      |                                    |
|--------------------------------------------------------------------------------------|------------------------------------|
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1713, 1715-1718                  |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1726-1727, 1729, 1732-1734       |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116         | C-1753                             |
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833              | C-1756                             |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611              | C-1768, 1771-1772, 1777, 1781-1785 |
| RDl Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                | C-1803                             |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                              | C-1807                             |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                      | C-1815-1817                        |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                           | C-1826-1831, 1833-1841, 1844-1847  |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                 | 914-736-1010; 1-800-431-2103       |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                      | 404-751-9473; 800-221-4767         |

|                                                                                                |                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------|
| Aerospace Wire & Cable Inc., College Point, NY 11356                                           | 718-358-2345;                     |
|                                                                                                | 1-800-395-0200                    |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                | 703-369-0440                      |
| \$† Alcatel Chester Cable Corp., Chester, NY 10918                                             | 914-469-2141                      |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                      |
| \$† American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                       | 401-726-0700                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                            | 203-265-8910                      |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                | 203-281-3200                      |
| \$ AT&T Network Systems/Network Cable Sys. Div., Morristown, NJ 07962                          | 1-800-344-0223, Ext. 1027         |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                   | 717-354-6200                      |
| \$† BIW Cable Systems, Inc., N. Dighton, MA 02764                                              | 508-520-1200                      |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                                                | 203-423-6321                      |
| \$† Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                     | 203-456-8000                      |
| \$ Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950                       | 717-757-6600                      |
| CableStar, Incorporated, Glasgow, KY 42141                                                     | 800-338-8223                      |
| Carol Cable Co., Highland Heights, KY 41076                                                    | 606-572-8303; 606-572-8000        |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                          | 802-655-2121                      |
| CICOIL CORP., Valencia, CA 91355-3428                                                          | 805-295-1295                      |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                                  | 802-234-9921; 800-451-4381        |
| Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                      | 704-324-2200;                     |
|                                                                                                | 800-982-1708                      |
| # Computer System Products, Minneapolis, MN 55447                                              | 612-476-6866; 800-422-2537        |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                    | 410-298-4411                      |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                       | 818-882-8311                      |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELDEN-1        |
| \$ Covid, Inc., Tempe, AZ 85281                                                                | 602-966-2221                      |
| \$ Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                      |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         | 612-941-5651; 1-800-343-5553      |
| \$† Dabum Electronics & Cable Corp., Northvale, NJ 07647                                       | 201-768-5400                      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                 | 203-438-9684; 800-344-9684        |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198        |
| \$† Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                  | 708-547-5400                      |
| † Electroave, Inc., Worcester, MA 01604                                                        | 508-752-8932                      |
| The First Electronics Corp., Boston, MA 02125                                                  | 617-288-2430                      |
| Gavitt Wire & Cable, Brookfield, MA 01506                                                      | 508-867-6476                      |
| General Cable Co., Fiber Optics Div., S. Plainfield, NJ 07080                                  | 201-769-3200                      |
| W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                  | 602-431-0077                      |
| † W. L. Gore & Assocs., Newark, DE 19714                                                       | 302-738-4880                      |
| † GSI Corp., Timonium, MD 21093                                                                | 410-252-1768                      |
| \$ GTE Supply, GTE, Irving, TX 75038                                                           | 800-433-4837                      |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                    | 606-572-8303                      |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                  | 514-293-5304                      |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                      |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200; 1-800-572-9473      |
| \$† Judd Wire Inc., San Marcos, CA 92069                                                       | 619-744-7720; 800-344-5251        |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                      |
| \$ Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200; 800-523-6075        |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                                  | 301-921-4600                      |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                                         | 914-967-8000                      |
| \$ Markel Corp., Norristown, PA 19404                                                          | 215-272-8960                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514                           | 203-281-0817                      |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                          | 215-699-5373                      |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                            | 612-642-1800;                     |
|                                                                                                | 1-800-258-6922(MWCC)              |
| Mohawk/CDT, Leominster, MA 01453                                                               | 508-537-9961; 800-422-9961        |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                      | 508-791-3161                      |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                      |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                      |
| † Optical Cable Corp., Roanoke, VA 24022-1967                                                  | 1-800-622-7711                    |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                      |
| Parlex Corporation, Methuen, MA 01844                                                          | 508-685-4341                      |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 41076 | 606-572-8306; 800-257-8357        |
| Phoenix Wire, Inc., S. Hero, VT 05486                                                          | 802-372-4561                      |
| \$ Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                      |
| † Roanwell, New York, NY 10014                                                                 | 212-989-1090                      |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                | 714-251-1960                      |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                       | 317-543-3540;                     |
|                                                                                                | 800-382-4635                      |
| \$† Specialty Cable Corporation, Wallingford, CT 06492                                         | 800-456-SPCC                      |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                      | 310-609-1811;                     |
|                                                                                                | 800-326-0006                      |
| † Storm Products Co., Hinsdale, IL 60521                                                       | 708-323-9121                      |
| \$† Support Systems Intl. Corp., Richmond, CA 94804                                            | 510-234-9090                      |
| \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                                  | 914-359-3900                      |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                      |
| † Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                  | 508-839-5987                      |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                   | 904-829-5600                      |
| \$† Thermax Wire Corp., Flushing, NY 11354-2897                                                | 718-939-8300                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                      |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584               | 309-693-3300                      |
| † United Wire & Cable Corp., Worcester, MA 01604                                               | 508-757-3872                      |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                              | 401-821-1700; SALES 401-821-7800  |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                             | 213-870-9933                      |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                             | 805-257-2400                      |



† Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681  
803-963-5131

## Cable, Flat-6000

‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  
C•1706-1708  
‡ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752  
C•1163  
‡ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886  
C•1718  
‡ Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400  
C•1744  
‡ GSI Corp., Timonium, MD 21093, 410-252-1768  
C•1749-1750  
‡ JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051  
C•1754-1755  
‡ National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611  
C•1768  
Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561  
C•1802  
RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000  
C•1803  
Shoggy International Corp., Great Neck, NY 11021-4799, 516-466-0911  
C•1458, 1809  
‡ Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100  
C•1815-1816  
Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970  
C•1835, 1846-1847  
‡ Accu-Tech Corporation, Roswell, GA 30076-3890  
404-751-9473; 800-221-4767  
‡ Advanced Circuit Technology, Nashua, NH 03062  
603-880-6000  
‡ Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002  
415-592-4550  
Alcatel Chester Cable Corp., Chester, NY 10918  
914-469-2141  
‡ Alpha Wire Corp., Elizabeth, NJ 07207-0711  
908-925-8000  
‡ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862  
401-726-0700  
Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492  
203-265-8910  
‡ Amphenol Spectra-Strip/ITD, Hamden, CT 06514  
203-281-3200  
‡ Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283  
602-897-7001  
Augat, Inc., Interconnection Products Group, Attleboro, MA 02703  
508-222-2202  
Autech Power Systems, Simi Valley, CA 93065  
805-522-0888  
‡ Basic Electronics, Inc., Stanton, CA 90680  
714-530-2400  
‡ Berg Electronics, Camp Hill, PA 17011  
800-237-2374  
‡ Berk-Tek Inc., New Holland, PA 17557-9722  
717-354-6200  
‡ BIW Cable Systems, Inc., N. Dighton, MA 02764  
508-520-1200  
‡ Brand Dielectrics, Inc., N. Windham, CT 06256  
203-423-6321  
Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128  
203-456-8000  
CableStar, Incorporated, Glasgow, KY 42141  
800-338-8223  
‡ Cable USA, Inc., Naples, FL 33942-3560  
813-643-6400  
Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8  
1-800-361-9466  
‡ CICOIL CORP., Valencia, CA 91355-3428  
805-295-1295  
‡ Circuit Assembly Corp., Irvine, CA 92718-2703  
714-855-7887  
‡ Control Cable, Inc., Baltimore, MD 21244  
410-298-4411  
‡ Cooner Wire Co., Chatsworth, CA 91311  
818-882-8311  
‡ Cooper Industries/Belden Div., Richmond, IN 47375  
317-983-5200; 800-BELDEN-1  
‡ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069  
619-744-8182  
800-334-3815  
‡ Custom Cable Corp., Westbury, NY 11590  
516-334-3600  
‡ Custom Computer Cable, Inc., Eden Prairie, MN 55344  
612-941-5651; 1-800-343-5553  
‡ CW Industries, Southampton, PA 18966  
215-355-7080  
‡ Data Set Cable Co., Inc., Ridgely, CT 06877  
203-438-9684; 800-344-9684  
‡ Datatran Corp., Denver, CO 80223  
303-778-0870  
‡ Dearborn Wire & Cable, LP, Wheeling, IL 60090  
708-459-1000; 800-323-0198  
‡ Electrical Insulation Suppliers, Inc., Hillside, IL 60162  
708-547-5400  
‡ Electronic Precision Technology Inc., Cambridge, MA 02140  
617-661-2454  
‡ Electrowave, Inc., Worcester, MA 01604  
508-752-8932  
‡ Engineered Assemblies & Components Corp., Teledyne, NJ 07068  
201-288-4477  
800-447-5639  
818-446-6175  
818-898-1451  
808-867-6476  
815-968-9661  
602-431-0077  
‡ W. L. Gore & Assocs., Newark, DE 19714  
802-736-4880  
‡ GTE Supply, GTE, Irving, TX 75038  
800-433-4837  
‡ Harting Elektronik, Inc., Hoffman Estates, IL 60195  
708-519-7700, ext. 200  
‡ Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714  
714-660-5772  
‡ Injectorall Electronics (Woman Owned), Bohemia, NY 11716  
516-563-3388  
‡ International Instrumentation, Inc., Westlake Vlg., CA 91361  
805-495-7673  
International Microelectronics, Arlington, TX 76003  
817-473-1730  
‡ J.A.W. Industries, Inc., Warrington, PA 18976  
215-343-8990  
‡ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044  
602-968-6241  
‡ JSC Wire & Cable, Wayne, NJ 07474-0248  
201-694-6200; 1-800-572-9473  
‡ Lance Industries, Sylmar, CA 91342-3832  
818-367-1811  
‡ Lodon Electronics, Inc., Arlington Hgts., IL 60004-7805  
708-398-5311; 800-323-5207  
‡ Lynn Electronics, Feasterville, PA 19053  
215-355-8200; 800-523-6075  
‡ LZR Electronics, Inc., Gaithersburg, MD 20879  
301-921-4600  
‡ Manger Electric Company, Inc., Stamford, CT 06902  
203-488-7761  
‡ 3M-Electronic Products Division, Austin, TX 78726  
1-800-225-5373  
‡ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514  
203-281-0817  
818-330-2086  
809-938-9473  
‡ MOLEX, Inc., Lisle, IL 60532  
708-969-4550  
‡ Montrose/CDT, Cable Design Technologies, Auburn, MA 01501  
508-791-3161  
‡ Mouser Electronics, Santee, CA 92071  
800-346-6873  
‡ Mouser Electronics, Mansfield, TX 76063  
800-346-6873  
‡ Mouser Electronics, Gilroy, CA 95020  
800-346-6873  
‡ Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401  
508-588-6110  
‡ New England Keyboard Inc., Fitchburg, MA 01420  
508-345-8332

‡ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012  
805-484-0540  
‡ Olfex Wire & Cable, Inc., Fairfield, NJ 07004  
201-575-1101  
‡ Panduit Corp., Tinley Park, IL 60477-0981  
800-777-3300  
‡ Parlex Corporation, Methuen, MA 01844  
508-685-4341  
‡ Robinson Nugent, Inc., New Albany, IN 47150  
812-948-0564  
‡ Samtec, Inc., New Albany, IN 47151-1147  
1-800-672-6832  
‡ Schroff, Inc., Warwick, RI 02886  
401-732-3770  
‡ Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218  
317-543-3540; 800-382-4635  
‡ Shokai Far East Ltd., Peekskill, NY 10566  
914-736-3500  
‡ Storm Products Co., Hinsdale, IL 60521  
708-323-9121  
‡ Support Systems Intl. Corp., Richmond, CA 94804  
510-234-9090  
‡ T.L. Tannehill Inc., Bloomington, MN 55431  
612-881-6700  
‡ Techni-Tool, Plymouth Meeting, PA 19462  
215-825-4990  
‡ TELTEC, INC., Minneapolis, MN 55425  
612-854-9632  
‡ TELTEC, Inc., Minneapolis, MN 55425  
612-854-9177  
‡ Temp-Flex Cable, Inc., S. Grafton, MA 01560  
508-839-5987  
‡ Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092  
904-829-5600

‡ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401  
803-676-2900  
‡ Tronics, Inc., St. Charles, IL 60174  
708-365-6570  
‡ United Wire & Cable Corp., Worcester, MA 01604  
508-757-3872  
‡ Warnes Holdingsworth Corp., Irvine, CA 92718  
714-855-6404  
‡ Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681  
803-963-5131  
‡ Yamaichi Electronics, Inc., Yamaichi Electronics Co. Ltd., San Jose, CA 95112  
408-452-0797

## Cable, Heater-6000

‡ National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611  
C•1768  
Alcatel Chester Cable Corp., Chester, NY 10918  
914-469-2141  
‡ ARI Industries, Inc., Addison, IL 60101  
708-953-9100; 800-237-6725  
‡ Brim Electronics, Fair Lawn, NJ 07410  
201-796-2886  
‡ Cable Continental Cables Co., BICC Cables Corp., York, PA 17402-9950  
717-757-6600  
‡ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412  
708-455-8830  
‡ Custom Cable Corp., Westbury, NY 11590  
516-334-3600  
‡ Daburn Electronics & Cable Corp., Northvale, NJ 07647  
201-768-5400  
‡ Dearborn Wire & Cable, LP, Wheeling, IL 60090  
708-459-1000; 800-323-0198  
‡ GlobTek, Inc., Northvale, NJ 07647  
201-784-1000  
‡ W. L. Gore & Assocs., Newark, DE 19714  
802-736-4880  
‡ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3  
514-293-5304  
‡ Latco International, New Braunfels, TX 78131-1200  
1-800-222-9676  
‡ Markel Corp., Norristown, PA 19404  
215-272-8960  
‡ Olympic Wire & Cable, Fairfield, NJ 07004  
201-227-7996  
‡ Omega Engineering, Stamford, CT 06907  
800-826-6342  
‡ Remae Products Corp., Florida, NY 10921  
914-651-4431  
‡ Rowe Industries, Inc., Toledo, OH 43612  
419-729-9761  
‡ Specialty Cable Corporation, Wallingford, CT 06492  
800-456-SPEC  
‡ Teledyne Thermatics, Teledyne Inos. Inc., Elm City, NC 27822  
919-236-4311  
‡ Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092  
904-829-5600  
‡ Thermax Wire Corp., Flushing, NY 11354-2897  
718-939-8300  
‡ Victor Elec. Wire & Cable, W. Warwick, RI 02893  
401-821-1700; SALES 401-821-7800  
‡ Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681  
803-963-5131

## Cable, High Temperature (Over 125°C)-6000

‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  
C•1706  
‡ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886  
C•1712-1713  
‡ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830  
C•1735  
‡ Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400  
C•1743-1744  
‡ Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833  
C•1756  
‡ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000  
C•1763  
‡ National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611  
C•1768  
Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561  
C•1802  
‡ Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761  
C•1807  
‡ Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970  
C•1835-1836, 1838-1842  
‡ Accu-Tech Corporation, Roswell, GA 30076-3890  
404-751-9473; 800-221-4767  
‡ Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002  
415-592-4550  
‡ Aerospace Wire & Cable Inc., College Point, NY 11356  
718-358-2345; 1-800-395-0200  
‡ Alcatel Canada Wire Inc., Manassas, VA 22024  
703-369-0440  
‡ Alpha Wire Corp., Elizabeth, NJ 07207-0711  
908-925-8000  
‡ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862  
401-726-0700  
‡ ARI Industries, Inc., Addison, IL 60101  
708-953-9100; 800-237-6725  
‡ Berk-Tek Inc., New Holland, PA 17557-9722  
717-354-6200  
‡ BIW Cable Systems, Inc., N. Dighton, MA 02764  
508-520-1200  
‡ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128  
203-456-8000  
‡ Cable Continental Cables Co., BICC Cables Corp., York, PA 17402-9950  
717-757-6600  
‡ Cable USA, Inc., Naples, FL 33942-3560  
813-643-6400  
‡ Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8  
1-800-361-9466  
‡ Carol Cable Co., Highland Heights, KY 41076  
606-572-8303; 606-572-8000  
‡ Ceramaseal, New Lebanon, NY 12125  
518-794-7800



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| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446              | 802-655-2121                          |
| CICOIL CORP., Valencia, CA 91355-3428                                              | 805-295-1295                          |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921;800-451-4381             |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                       | 704-324-2200;<br>800-982-1708         |
| \$ Control Cable, Inc., Baltimore, MD 21244                                        | 410-298-4411                          |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                           | 818-882-8311                          |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                               | 317-983-5200;800-BELDEN-1             |
| \$ Covid, Inc., Tempe, AZ 85281                                                    | 602-966-2221                          |
| \$ Custom Cable Corp., Westbury, NY 11590                                          | 516-334-3600                          |
| \$ Dearborn Wire & Cable, LP, Wheeling, IL 60090                                   | 800-323-0198                          |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                 | 708-473-4990                          |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                        | 708-547-5400                          |
| \$ Electrowave, Inc., Worcester, MA 01604                                          | 508-752-8932                          |
| \$ The First Electronics Corp., Boston, MA 02125                                   | 617-288-4230                          |
| \$ General Wire Products, Inc., Worcester, MA 01604                                | 617-752-8260                          |
| \$ W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                    | 602-431-0077                          |
| \$ W.L. Gore & Assocs., Newark, DE 19714                                           | 302-738-4880                          |
| \$ GSI Corp., Timonium, MD 21093                                                   | 410-252-1768                          |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076        | 606-572-8303                          |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                     | 514-293-5304                          |
| \$ Independent Cable, Inc., Hudson, MA 01749                                       | 508-562-9913                          |
| \$ Judd Wire Inc., San Marcos, CA 92069                                            | 619-744-7720;800-344-5251             |
| \$ Kelly American, Inc., Brookfield, CT 06804                                      | 203-775-2590                          |
| \$ Letco International, New Braunfels, TX 78131-1200                               | 1-800-222-9676                        |
| \$ Lutz, Inc., Charlotte, NC 28217-9805                                            | 704-357-8835;800-447-2371             |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879                                   | 301-921-4600                          |
| \$ M/A-Corn, Inc., Antenna & Cable Division, Amesbury, MA 01913                    | 508-388-5210                          |
| \$ Market Corp., Norristown, PA 19404                                              | 215-272-8960                          |
| Micro-Coax, Collegeville, PA 19426                                                 | 215-489-3700                          |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936              | 215-699-5373                          |
| \$ Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                             | 612-642-1800;<br>1-800-258-6922(MWCC) |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                          | 508-791-3161                          |
| New England Electric Wire Corp., Lisbon, NH 03585                                  | 603-838-6624                          |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                  | 201-575-1101                          |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                       | 201-227-7996                          |
| \$ Omega Engineering, Stamford, CT 06907                                           | 800-826-6342                          |
| \$ Parlex Corporation, Methuen, MA 01844                                           | 508-685-4341                          |
| \$ Pasternack Enterprises, Irvine, CA 92713                                        | 714-261-1920                          |
| \$ Radix Wire Co., Cleveland, OH 44132                                             | 216-731-9191                          |
| \$ Remeo Products Corp., Florida, NY 10921                                         | 914-651-4431                          |
| \$ Santelec, Inc., New Albany, IN 47151-1147                                       | 1-800-672-6832                        |
| Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                      | 714-251-1960                          |
| \$ Simmonds Precision Engine Systems, BF Goodrich Aerospace, Norwich, NY 13815     | 607-335-5000                          |
| \$ Specialty Cable Corporation, Wallingford, CT 06492                              | 800-456-SPEC                          |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                           | 310-609-1811;<br>800-326-0006         |
| \$ Storm Products Co., Hinsdale, IL 60521                                          | 708-323-9121                          |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                 | 510-234-9090                          |
| \$ K.L. Tannehill Inc., Bloomington, MN 55431                                      | 612-881-6700                          |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                   | 919-236-4311                          |
| \$ Temp-Flex Cable, Inc., S. Grafton, MA 01560                                     | 508-839-5987                          |
| \$ Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092        | 904-829-5600                          |
| \$ Thermax Wire Corp., Flushing, NY 11354-2897                                     | 718-939-8300                          |
| \$ Thermo Electric, Saddle Brook, NJ 07662                                         | 201-843-5800                          |
| \$ Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                          |
| \$ Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                    | 818-707-2020                          |
| \$ United Wire & Cable Corp., Worcester, MA 01604                                  | 508-757-3872                          |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893                                    | 401-821-1700;SALES 401-821-7800       |
| \$ Victor Wire & Cable Corp., Los Angeles, CA 90016                                | 213-870-9933                          |
| \$ Virginia Plastics Co., Roanoke, VA 24015-0577                                   | 703-375-0100                          |
| \$ Western Electronic Products Co., San Clemente, CA 92673                         | 714-492-4677                          |
| \$ Whitmor Wire & Cable Corp., Valencia, CA 91355                                  | 805-257-2400                          |
| \$ Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681        | 803-963-5131                          |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112  | 408-452-0797                          |

## Cable, High Voltage (1,000 Volts & Over)-6000

|                                                                                    |                           |
|------------------------------------------------------------------------------------|---------------------------|
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 | C-1706-1707               |
| \$ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                             | C-1712, 1716              |
| \$ Caton Connector Corp., Kingston, MA 02364, 617-585-4315                         | C-1275-1276, 1725         |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400             | C-1743                    |
| Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357;800-545-5833                 | C-1756                    |
| \$ National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611           | C-1768, 1773-1774         |
| \$ Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                           | C-1807                    |
| \$ Welco Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                      | C-1837-1838               |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                   | 404-751-9473;800-221-4767 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                    | 703-369-0440              |
| \$ Alcatel Chester Cable Corp., Chester, NY 10918                                  | 914-469-2141              |
| \$ Alden Products Co., Brockton, MA 02403                                          | 508-583-0160              |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862            | 401-726-0700              |
| \$ Astec High Voltage, Ashland, MA 01721                                           | 508-881-8407              |
| \$ Bertan High Voltage, Hicksville, NY 11801                                       | 516-433-3110              |
| \$ BIW Cable Systems, Inc., N. Dighton, MA 02764                                   | 508-520-1200              |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128          | 203-456-8000              |
| \$ Cable Systems, Inc., The HVT Group, Everett, MA 02149                           | 617-389-7080              |

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| # Clifford of Vermont, Inc., Bethel, VT 05032                                   | 802-234-9921;800-451-4381       |
| Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                       | 704-324-2200;<br>800-982-1708   |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412           | 708-455-8830                    |
| Continental Resources, Inc., Test Instruments Div., Bedford, MA 01730           | 617-275-0850;<br>800-937-4688   |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                            | 317-983-5200;800-BELDEN-1       |
| \$ Custom Cable Corp., Westbury, NY 11590                                       | 516-334-3600                    |
| \$ Dearborn Wire & Cable, LP, Wheeling, IL 60090                                | 800-323-0198                    |
| \$ Dielectric Sciences, Inc., HVT Group, Chelmsford, MA 01824                   | 508-250-1507                    |
| \$ Electrowave, Inc., Worcester, MA 01604                                       | 508-752-8932                    |
| \$ W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                 | 602-431-0077                    |
| \$ W.L. Gore & Assocs., Newark, DE 19714                                        | 302-738-4880                    |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                  | 514-293-5304                    |
| \$ High Voltage Technology Inc., Yonkers, NY 10701                              | 914-423-6636                    |
| Judd Wire Inc., San Marcos, CA 92069                                            | 619-744-7720;800-344-5251       |
| \$ Kelly American, Inc., Brookfield, CT 06804                                   | 203-775-2590                    |
| \$ M/A-Corn, Inc., Antenna & Cable Division, Amesbury, MA 01913                 | 508-388-5210                    |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                          | 914-967-8000                    |
| \$ Market Corp., Norristown, PA 19404                                           | 215-272-8960                    |
| Micro-Coax, Collegeville, PA 19426                                              | 215-489-3700                    |
| \$ MOLCON Div. of Context Electronics, W. Springfield, MA 01089                 | 413-736-0371                    |
| Multi-Contact USA, Santa Rosa, CA 95403                                         | 707-575-7575                    |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                    | 201-227-7996                    |
| \$ Parlex Corporation, Methuen, MA 01844                                        | 508-685-4341                    |
| \$ Pasternack Enterprises, Irvine, CA 92713                                     | 714-261-1920                    |
| \$ Radix Wire Co., Cleveland, OH 44132                                          | 216-731-9191                    |
| \$ Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                     | 317-543-3540;<br>800-382-4635   |
| \$ Simmonds Precision Engine Systems, BF Goodrich Aerospace, Norwich, NY 13815  | 607-335-5000                    |
| Storm Products Co., Hinsdale, IL 60521                                          | 708-323-9121                    |
| \$ K.L. Tannehill Inc., Bloomington, MN 55431                                   | 612-881-6700                    |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                | 919-236-4311                    |
| \$ Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092     | 904-829-5600                    |
| Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                    |
| \$ United Wire & Cable Corp., Worcester, MA 01604                               | 508-757-3872                    |
| \$ Varian Associates, Electron Device Business, Palo Alto, CA 94304             | 415-493-4000;<br>800-544-4636   |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893                                 | 401-821-1700;SALES 401-821-7800 |
| \$ Victor Wire & Cable Corp., Los Angeles, CA 90016                             | 213-870-9933                    |
| \$ Voltarc Technologies, Inc., Fairfield, CT 06430                              | 203-255-2633                    |
| \$ Whitmor Wire & Cable Corp., Valencia, CA 91355                               | 805-257-2400                    |
| \$ Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681     | 803-963-5131                    |

## Cable, IEEE 488 (GPIB)-6000

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| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051 | C-1754                      |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                     | 908-925-8000                |
| \$ American Advantech Corp., San Jose, CA 95122                                | 408-293-6786                |
| \$ Berg Electronics, Camp Hill, PA 17011                                       | 800-237-2374                |
| Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128         | 203-456-8000                |
| CableStar, Incorporated, Glasgow, KY 42141                                     | 800-338-8223                |
| \$ Capital Equipment Corporation, Burlington, MA 01803                         | 617-273-1818                |
| Carol Cable Co., Highland Heights, KY 41076                                    | 606-572-8303;806-572-8000   |
| Compac, Holbrook, NY 11741                                                     | 516-585-3400                |
| \$ Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                         | 508-580-0111                |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                 | 203-438-9684;800-344-9684   |
| John Fluke Mfg. Co., Inc., Everett, WA 98203                                   | 206-347-6100                |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076    | 606-572-8303                |
| Henricks Technologies, Inc., Forsyth, CA 31029                                 | 912-993-1060;800-241-0806   |
| \$ ICS Electronics Corp., Milpitas, CA 95035-5545                              | 408-263-5500;1-800-952-4499 |
| \$ Kikusui International Corp., Signal Hill, CA 90804-1203                     | 310-986-1677;800-545-8784   |
| \$ L-Corn Inc., N. Andover, MA 01845                                           | 508-682-6936                |
| Mohawk/CDT, Leominster, MA 01453                                               | 508-537-9961;800-422-9961   |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                      | 508-791-3161                |
| \$ National Instruments, Austin, TX 78730-5039                                 | 512-794-0101                |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                   | 909-945-1365                |
| \$ Probe Master, Inc., San Diego, CA 92111                                     | 619-550-9678;800-772-1519   |
| Quatech Inc., Akron, OH 44311                                                  | 216-434-3154                |
| \$ RAG Electronics, Inc., Canoga Park, CA 91304                                | 818-998-6500;800-732-3457   |
| \$ Strawberry Tree, Inc., Sunnyvale, CA 94086                                  | 408-736-8800                |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                             | 510-234-9090                |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822               | 919-236-4311                |

## Cable, Instrumentation & Control-6000

|                                                                                     |                              |
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| \$ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1715-1717                  |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1726-1729, 1732-1733       |
| \$ GSI Corp., Timonium, MD 21093, 410-252-1768                                      | C-1749                       |
| \$ ISL Products Int'l., Ltd., Syosset, NY 11791-6093, 516-937-3475;800-626-6116     | C-1354, 1753                 |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051         | C-1754                       |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                         | C-1759                       |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                | C-1763                       |
| \$ National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611            | C-1768, 1771-1785, 1788-1789 |
| Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                               | C-1807                       |
| \$ Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                      | C-1815                       |



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| <b>Weico Wire &amp; Cable, Inc., Edgewood, NY 11717, 516-254-2970</b>                          |                               |                              |
|                                                                                                | <b>C•1826-1842, 1844-1845</b> |                              |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                           | 914-736-1010; 1-800-431-2103  |                              |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                | 404-751-9473; 800-221-4767    |                              |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895                             |                               | 1-401-769-1600               |
| † Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002            |                               | 415-592-4550                 |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                           |                               | 718-358-2345;                |
|                                                                                                |                               | 1-800-395-0200               |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                |                               | 703-369-0440                 |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  |                               | 908-925-8000                 |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                         |                               | 401-726-0700                 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                            |                               | 203-265-8910                 |
|                                                                                                |                               | 203-281-3200                 |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                |                               | 203-281-3200                 |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                         |                               | 1-800-344-0223, Ext. 1027    |
|                                                                                                |                               | 717-354-6200                 |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                   |                               | 508-520-1200                 |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                                                |                               | 203-456-8000                 |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      |                               | 203-456-8000                 |
| \$ Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950                       |                               | 717-757-6600                 |
|                                                                                                |                               | 800-338-8223                 |
| CableStar, Incorporated, Glasgow, KY 42141                                                     |                               | 813-643-6400                 |
| \$ Cable USA, Inc., Naples, FL 33942-3560                                                      |                               | 606-572-8303; 606-572-8000   |
| Carol Cable Co., Highland Heights, KY 41076                                                    |                               | 505-836-3600                 |
| Cat Wire and Cable Corp., Miami, FL 33150                                                      |                               | 318-794-7800                 |
| Ceramaseal, New Lebanon, NY 12125                                                              |                               | 800-655-2121                 |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                          |                               | 802-234-9921; 800-451-4381   |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                  |                               | 704-324-2200;                |
| Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                      |                               | 800-982-1708                 |
|                                                                                                |                               | 206-939-4880                 |
| Connect-Air International, Inc., Auburn, WA 98002                                              |                               | 818-882-8311                 |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                       |                               | 317-983-5200; 800-BELDEN-1   |
| † Cooper Industries/Belden Div., Richmond, IN 47375                                            |                               | 516-334-3600                 |
| \$ Custom Cable Corp., Westbury, NY 11590                                                      |                               | 612-941-5651; 1-800-343-5553 |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         |                               | 201-769-5400                 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                        |                               | 203-438-9684; 800-344-9684   |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                 |                               | 708-459-1000; 800-323-0198   |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                              |                               | 708-473-4990                 |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                             |                               | 508-752-8932                 |
| † Electroweave, Inc., Worcester, MA 01604                                                      |                               | 508-867-6476                 |
| Gavitt Wire & Cable, Brookfield, MA 01506                                                      |                               | 717-522-8260                 |
| † General Wire Products, Inc., Worcester, MA 01604                                             |                               | 602-431-0077                 |
| † W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                |                               | 606-572-8303                 |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                    |                               | 508-582-9913                 |
|                                                                                                |                               | 201-694-6200; 1-800-572-9473 |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                   |                               | 413-863-4357; 800-545-5833   |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                      |                               | 619-744-7720; 800-344-6251   |
| \$ Judd Wire Inc., Turners Falls, MA 01376                                                     |                               | 203-775-2590                 |
| Judd Wire Inc., San Marcos, CA 92069                                                           |                               | 508-682-6936                 |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                  |                               | 704-357-8835; 800-447-2371   |
| \$ L-Corn Inc., N. Andover, MA 01845                                                           |                               | 215-355-8200; 800-523-6075   |
| \$ Lutz, Inc., Charlotte, NC 28217-9805                                                        |                               | 617-272-3000                 |
| † Lynn Electronics, Feasterville, PA 19053                                                     |                               | 203-348-7761                 |
| MACOM, Inc., Lowell, MA 01851                                                                  |                               | 215-272-8960                 |
| # Manger Electric Company, Inc., Stamford, CT 06902                                            |                               | 216-354-3148                 |
| \$ Markel Corp., Norristown, PA 19404                                                          |                               | 612-642-1800;                |
| Meritec, Associated Enterprises, Painesville, OH 44077                                         |                               | 1-800-258-6922(MWCC)         |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                            |                               | 508-537-9961; 800-422-9961   |
|                                                                                                |                               | 508-791-3161                 |
| Mohawk/CDT, Leominster, MA 01453                                                               |                               | 505-592-0551                 |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                      |                               | 201-575-1101                 |
| † National Telephone & Electronics Inc., Miami, FL 33172                                       |                               | 201-227-7996                 |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              |                               | 800-826-6342                 |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   |                               | 909-945-1365                 |
| Omega Engineering, Stamford, CT 06907                                                          |                               | 508-685-4341                 |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   |                               | 606-572-8306; 800-257-8357   |
| Parlex Corporation, Methuen, MA 01844                                                          |                               | 619-560-9676; 800-772-1519   |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 |                               | 714-474-8998                 |
| † Probe Master, Inc., San Diego, CA 92111                                                      |                               | 914-651-4431                 |
| † Product Technology, Inc., Irvine, CA 92714                                                   |                               | 414-429-3103                 |
| \$ Remeo Products Corp., Florida, NY 10921                                                     |                               | 317-543-3540;                |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                        |                               | 800-382-4635                 |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                       |                               | 800-456-SPEC                 |
|                                                                                                |                               | 310-609-1811;                |
| \$ Specialty Cable Corporation, Wallingford, CT 06492                                          |                               | 800-326-0006                 |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                        |                               | 708-323-9121                 |
|                                                                                                |                               | 513-426-6000                 |
| \$ Storm Products Co., Hinsdale, IL 60521                                                      |                               | 612-881-6700                 |
| Systems Research Laboratories, Arvin/Calspan, Dayton, OH 45440                                 |                               | 919-236-4311                 |
| KL Tannehill Inc., Bloomington, MN 55431                                                       |                               | 508-839-5987                 |
| † Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                |                               | 904-829-5600                 |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                    |                               | 301-921-8282                 |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                       |                               | 201-843-5800                 |
|                                                                                                |                               | 516-1584                     |
| † United Wire & Cable Corp., Worcester, MA 01604                                               |                               | 309-693-3300                 |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893                                                |                               | 508-757-3872                 |
| S.S. White Technologies Inc., Piscataway, NJ 08854-3761                                        |                               | 401-821-7800                 |
|                                                                                                |                               | 908-752-8300                 |

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| \$ Whitmor Wire & Cable Corp., Valencia, CA 91355                                   | 805-257-2400                 |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681          |                              |
|                                                                                     | 803-963-5131                 |
| <b>Cable, Intercommunication &amp; Sound System — See Cable, Audio (Vol. C)</b>     |                              |
| <b>Cable, Irradiated-6000</b>                                                       |                              |
| \$ Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833              | C•1756                       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611             |                              |
|                                                                                     | C•1768                       |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                | 914-736-1010; 1-800-431-2103 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                     | 404-751-9473; 800-221-4767   |
| † Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002 | 415-592-4550                 |
|                                                                                     | 908-925-8000                 |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                       |                              |
| AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                 | 1-800-344-0223, Ext. 1027    |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                       | 508-520-1200                 |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128           | 203-456-8000                 |
| † Brim Electronics, Fair Lawn, NJ 07410                                             | 201-796-2886                 |
| \$ Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950            | 717-757-6600                 |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446               | 802-655-2121                 |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                       | 802-234-9921; 800-451-4381   |
| Connect-Air International, Inc., Auburn, WA 98002                                   | 206-939-4880                 |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                | 708-455-8830                 |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                            | 201-768-5400                 |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                   | 800-323-0198                 |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                  | 708-473-4990                 |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                         | 708-547-5400                 |
| † Electroweave, Inc., Worcester, MA 01604                                           | 508-752-8932                 |
| † The First Electronics Corp., Boston, MA 02125                                     | 617-288-2430                 |
| † GSI Corp., Timonium, MD 21093                                                     | 410-252-1768                 |
| † Judd Wire Inc., San Marcos, CA 92069                                              | 619-744-7720; 800-344-6251   |
| \$ Kelly American, Inc., Brookfield, CT 06804                                       | 203-775-2590                 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                              | 914-967-8000                 |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                        | 201-227-7996                 |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                            | 317-543-3540;                |
|                                                                                     | 800-382-4635                 |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                             | 310-609-1811;                |
|                                                                                     | 800-326-0006                 |
| Storm Products Co., Hinsdale, IL 60521                                              | 708-323-9121                 |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                  | 510-234-9090                 |
| \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                       | 914-359-9300                 |
| † Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                     | 919-236-4311                 |
| † United Wire & Cable Corp., Worcester, MA 01604                                    | 508-757-3872                 |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893                                     | 401-821-7800; SALES          |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                        | 516-254-2970                 |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681          |                              |
|                                                                                     | 803-963-5131                 |

Cable, Low Capacitance-6000

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| \$ Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                             | C•1718                       |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 |                              |
|                                                                                    | C•1728, 1730, 1732-1733      |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051     |                              |
|                                                                                    | C•1754                       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611            |                              |
|                                                                                    | C•1768                       |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                            | C•1807                       |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                         | C•1840                       |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                               | 914-736-1010; 1-800-431-2103 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473; 800-221-4767   |
| Aerospace Wire & Cable Inc., College Point, NY 11356                               | 1-800-395-0200               |
|                                                                                    | 703-369-0440                 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                    | 914-469-2141                 |
| Alcatel Chester Cable Corp., Chester, NY 10918                                     | 908-925-8000                 |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                      | 401-726-0700                 |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862             | 203-265-8910                 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                | 203-281-3200                 |
|                                                                                    | 203-281-3200                 |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                    |                              |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962             | 1-800-344-0223, Ext. 1027    |
|                                                                                    | 717-354-6200                 |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                       | 508-520-1200                 |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                                    | 203-456-8000                 |
| Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128             |                              |
|                                                                                    | 209-456-8000                 |
| CableStar, Incorporated, Glasgow, KY 42141                                         | 800-338-8223                 |
| † Carol Cable Co., Highland Heights, KY 41076                                      | 606-572-8303; 606-572-8000   |
| Cat Wire and Cable Corp., Miami, FL 33150                                          | 505-836-3600                 |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446              | 802-655-2121                 |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921; 800-451-4381   |
| Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                          | 704-324-2200;                |
|                                                                                    | 800-982-1708                 |
| # Computer System Products, Minneapolis, MN 55447                                  | 612-476-6866; 800-422-2537   |
| Connect-Air International, Inc., Auburn, WA 98002                                  | 206-939-4880                 |
| \$ Control Cable, Inc., Baltimore, MD 21244                                        | 410-298-4411                 |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                           | 818-882-8311                 |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                               | 317-983-5200; 800-BELDEN-1   |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                   | 619-744-8182;                |
|                                                                                    | 800-334-3815                 |
| Custom Cable Corp., Westbury, NY 11590                                             | 516-334-3600                 |



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| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                       | 201-768-5400                     |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                | 203-438-9684; 800-344-9684       |
| † Dearborn Wire & Cable, LP., Wheeling, IL 60090                                              | 708-459-1000; 800-323-0198       |
| † Dilwol Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                                  | 416-681-2343                     |
| † Electro Standards Lab, Inc., Data Communications Products Div., Cranston, RI 02921          | 401-943-1164                     |
| Gavitt Wire & Cable, Brookfield, MA 01506                                                     | 508-867-6476                     |
| † GC-Thorsen, Rockford, IL 61105-1209                                                         | 815-968-9661                     |
| † Glasgal Communications, Inc., Northvale, NJ 07647                                           | 201-768-8082                     |
| † W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                               | 602-431-0077                     |
| † W.L. Gore & Assocs., Newark, DE 19714                                                       | 302-738-4880                     |
| † GSI Corp., Timonium, MD 21093                                                               | 410-252-1768                     |
| † Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                 | 606-572-8303                     |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                 | 514-293-5304                     |
| † Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                     |
| † JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200; 1-800-572-9473     |
| Judd Wire Inc., Turners Falls, MA 01376                                                       | 413-863-4357; 800-545-5833       |
| Judd Wire Inc., San Marcos, CA 92069                                                          | 619-744-7720; 800-344-5251       |
| † Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                     |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                                 | 301-921-4600                     |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                                         | 914-967-8000                     |
| † Micro-Coax, Collegeville, PA 19426                                                          | 215-489-3700                     |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                            | 215-699-5373                     |
| Mohawk/CDT, Leominster, MA 01453                                                              | 508-537-9961; 800-422-9961       |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                     | 508-791-3161                     |
| National Telephone & Electronics Inc., Miami, FL 33172                                        | 305-592-0551                     |
| New England Electric Wire Corp., Lisbon, NH 03585                                             | 603-838-6624                     |
| † Orlflex Wire & Cable, Inc., Fairfield, NJ 07004                                             | 201-575-1101                     |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                     |
| Parlex Corporation, Methuen, MA 01844                                                         | 508-685-4341                     |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357       |
| † Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                     |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                      | 317-543-3540;                    |
|                                                                                               | 800-382-4635                     |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;                    |
|                                                                                               | 800-326-0006                     |
| † Storm Products Co., Hinsdale, IL 60521                                                      | 708-323-9121                     |
| † Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                     |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                    | 612-881-6700                     |
| † Tappan Wire & Cable Inc., Tappan, NY 10983                                                  | 914-359-9300                     |
| † Teledyne Thermatics, Teledyne Inds., Elm City, NC 27822                                     | 919-236-4311                     |
| † Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                 | 508-839-5987                     |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                     |
| † Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                     |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                     |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584              | 309-693-3300                     |
| Unitrek Corporation, Vancouver, WA 98661                                                      | 206-699-7277                     |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                             | 401-821-1700; SALES 401-821-7800 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                            | 213-870-9933                     |
| † Virginia Plastics Co., Roanoke, VA 24015-0577                                               | 703-375-0100                     |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                     |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                    | 803-963-5131                     |

## Cable, Microphone-6000

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| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                       | C-1716                       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611     | C-1768, 1784                 |
| Accusonic Products, Global Market Development, New Hyde Park, NY 11040      | 516-437-6000                 |
| † AKG Acoustics, Inc., San Leandro, CA 94577                                | 510-351-3500                 |
| Alcatel Chester Cable Corp., Chester, NY 10918                              | 914-469-2141                 |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                | 908-925-8000                 |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862      | 401-726-0700                 |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                               | 508-520-1200                 |
| Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128      | 203-456-8000                 |
| Carol Cable Co., Highland Heights, KY 41076                                 | 606-572-8303; 606-572-8000   |
| Cat Wire and Cable Corp., Miami, FL 33150                                   | 305-836-3600                 |
| † Clifford of Vermont, Inc., Bethel, VT 05032                               | 802-234-9921; 800-451-4381   |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412        | 708-455-8830                 |
| † Cooper Industries/Belden Div., Richmond, IN 47375                         | 317-983-5200; 800-BELDEN-1   |
| † Custom Cable Corp., Westbury, NY 11590                                    | 516-334-3600                 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                     | 201-768-5400                 |
| † Dearborn Wire & Cable, LP., Wheeling, IL 60090                            | 708-459-1000; 800-323-0198   |
| † DGS Pro Audio, Arlington, TX 76003                                        | 800-292-2834                 |
| † EPD Electronics, Inc., Gardena, CA 90247                                  | 310-515-4996                 |
| Gavitt Wire & Cable, Brookfield, MA 01506                                   | 508-867-6476                 |
| † GC-Thorsen, Rockford, IL 61105-1209                                       | 815-968-9661                 |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076 | 606-572-8303                 |
| † JSC Wire & Cable, Wayne, NJ 07474-0248                                    | 201-694-6200; 1-800-572-9473 |
| Judd Wire Inc., Turners Falls, MA 01376                                     | 413-863-4357; 800-545-5833   |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                       | 914-967-8000                 |
| † Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514         | 203-281-0817                 |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                         | 612-642-1800                 |
|                                                                             | 1-800-258-6922(MWCC)         |
| Mohawk/CDT, Leominster, MA 01453                                            | 508-537-9961; 800-422-9961   |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                   | 508-791-3161                 |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                 | 201-227-7996                 |
| Parlex Corporation, Methuen, MA 01844                                       | 508-685-4341                 |

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| † Philmore Manufacturing, Rockford, IL 61125-1386         | 815-229-7773                     |
| † RDI Elctms, Inc., Mamaroneck, NY 10543                  | 914-777-7000                     |
| † Remeo Products Corp., Florida, NY 10921                 | 914-651-4431                     |
| † Roanwell, New York, NY 10014                            | 212-989-1090                     |
| † Rye Industries, Inc., Fuquay-Varina, NC 27526           | 919-557-0511; 800-626-1511       |
| Shokai Far East Ltd., Peekskill, NY 10566                 | 914-736-3500                     |
| † Shure Brothers Inc., Evanston, IL 60202-3696            | 708-866-2200                     |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220   | 310-609-1811;                    |
|                                                           | 800-326-0006                     |
| † Storm Products Co., Hinsdale, IL 60521                  | 708-323-9121                     |
| † Support Systems Intl. Corp., Richmond, CA 94804         | 510-234-9090                     |
| † Tappan Wire & Cable Inc., Tappan, NY 10983              | 914-359-9300                     |
| † Teledyne Thermatics, Teledyne Inds., Elm City, NC 27822 | 919-236-4311                     |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893         | 401-821-1700; SALES 401-821-7800 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016        | 213-870-9933                     |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717            | 516-254-2970                     |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355          | 805-257-2400                     |

## Cable, Multiconductor-6000

|                                                                                    |                                   |
|------------------------------------------------------------------------------------|-----------------------------------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  | C-1709                            |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                            | C-1163                            |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1714-1718                       |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1726-1730, 1732-1733            |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400              | C-1744                            |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                      | C-1749                            |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051        | C-1754                            |
| † Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833              | C-1756                            |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                        | C-1759, 1761                      |
| † Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                | C-1763                            |
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                    | C-1764                            |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611            | C-1768, 1771-1787                 |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                          | C-1794                            |
| Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561                                | C-1802                            |
| † RDI Elctms, Inc., Mamaroneck, NY 10543, 914-777-7000                             | C-1803                            |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-4544                         | C-1805                            |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                            | C-1807                            |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911              | C-1458, 1809                      |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700             | C-1810-1811                       |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                  | C-1813                            |
| † Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                      | C-1814-1817                       |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                       | C-1826-1836, 1839-1842, 1844-1847 |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473; 800-221-4767        |
| † Advanced Circuit Technology, Nashua, NH 03062                                    | 603-880-6000                      |
| Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002  | 415-592-4550                      |
| † Aerospace Systems, Communication Cable Inc., Fairmont, MN 56031                  | 507-235-3355                      |
| † Aerospace Wire & Cable Inc., College Point, NY 11356                             | 718-358-2345;                     |
|                                                                                    | 1-800-395-0200                    |
| † Alcatel Canada Wire Inc., Manassas, VA 22024                                     | 703-369-0440                      |
| † Alcatel Chester Cable Corp., Chester, NY 10918                                   | 914-469-2141                      |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                       | 908-925-8000                      |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862             | 401-726-0700                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                | 203-265-8910                      |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                       | 203-281-3200                      |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962              | 1-800-344-0223, Ext. 1027         |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                   | 508-222-2202                      |
| Auteo Power Systems, Simi Valley, CA 93065                                         | 805-522-0888                      |
| † Berk-Tek Inc., New Holland, PA 17557-9722                                        | 717-354-6200                      |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                                    | 508-520-1200                      |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                                    | 203-423-6321                      |
| † Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128           | 203-456-8000                      |
| Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950              | 717-757-6600                      |
| CableStar, Incorporated, Glasgow, KY 42141                                         | 800-338-8223                      |
| † Carol Cable Co., Highland Heights, KY 41076                                      | 606-572-8303; 606-572-8000        |
| Cat Wire and Cable Corp., Miami, FL 33150                                          | 305-836-3600                      |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446              | 802-655-2121                      |
| † CICOIL CORP., Valencia, CA 91355-3428                                            | 805-295-1295                      |
| † Circuit Assembly Corp., Irvine, CA 92718-2703                                    | 714-855-7887                      |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921; 800-451-4381        |
| † Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                        | 704-324-2200;                     |
|                                                                                    | 800-982-1708                      |
| † Computer System Products, Minneapolis, MN 55447                                  | 612-476-6886; 800-422-2537        |
| Connect-Air International, Inc., Auburn, MA 98002                                  | 206-939-4880                      |
| † Control Cable, Inc., Baltimore, MD 21244                                         | 410-298-4411                      |
| † Cooner Wire Co., Chatsworth, CA 91311                                            | 818-882-8311                      |
| † Cooper Industries/Belden Div., Richmond, IN 47375                                | 317-983-5200; 800-BELDEN-1        |
| † Covid, Inc., Tempe, AZ 85281                                                     | 602-966-2221                      |
| † CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                    | 619-744-8182;                     |
|                                                                                    | 800-334-3815                      |
| † Custom Cable Corp., Westbury, NY 11590                                           | 516-334-3600                      |
| † Custom Computer Cable, Inc., Eden Prairie, MN 55344                              | 612-941-5651; 1-800-343-5553      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                     | 203-438-9684; 800-344-9684        |
| † Dearborn Wire & Cable, LP., Wheeling, IL 60090                                   | 708-459-1000; 800-323-0198        |
| † Delta Wire & Cable Co., North Chicago, IL 60064                                  | 708-473-4990                      |



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| # DGS Pro Audio, Arlington, TX 76003                                                           | 800-292-2834                      | Aerospace Wire & Cable Inc., College Point, NY 11356                                           | 718-358-2345;                    |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                    | 708-547-5400                      |                                                                                                | 1-800-395-0200                   |
| † Electrowave, Inc., Worcester, MA 01604                                                       | 508-752-8932                      | \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                | 703-369-0440                     |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07606                                | 201-288-4477                      | \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                     |
|                                                                                                | 800-447-5639                      | \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                        | 401-726-0700                     |
| † The First Electronics Corp., Boston, MA 02125                                                | 617-288-2430                      | \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                         | 1-800-344-0223, Ext. 1027        |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                                    | 508-867-6476                      | \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                   | 717-354-6200                     |
| \$ GO-Thorsen, Rockford, IL 61105-1209                                                         | 815-968-9661                      | \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000                     |
| † General Wire Products, Inc., Worcester, MA 01604                                             | 617-752-8260                      |                                                                                                | 201-796-2886                     |
| † W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                 | 602-431-0077                      | \$ Cabletron Systems, Inc., Rochester, NH 03867                                                | 603-332-9400                     |
| † W.L. Gore & Assocs., Newark, DE 19714                                                        | 302-738-4880                      | \$ Cable USA, Inc., Naples, FL 33942-3560                                                      | 813-643-6400                     |
| \$ GTE Supply, GTE, Irving, TX 75038                                                           | 800-433-4837                      | \$ Carol Cable Co., Highland Heights, KY 41076                                                 | 606-572-8303; 606-572-8000       |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                    |                                   | \$ Cat Wire and Cable Corp., Miami, FL 33150                                                   | 305-836-3600                     |
|                                                                                                | 606-572-8303                      | Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                          | 802-655-2121                     |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                 | 514-293-5304                      |                                                                                                | 802-234-9921; 800-451-4381       |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                      | # Clifford of Vermont, Inc., Bethel, VT 05032                                                  | 704-324-2200;                    |
| International Components Corp., Melville, NY 11747                                             | 516-293-1500                      | \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                   | 800-982-1708                     |
| \$ International Instrument, Inc., Westlake Vlg., CA 91361                                     | 805-495-7673                      |                                                                                                | 516-585-3400                     |
| International Microelectronics, Arlington, TX 76003                                            | 817-473-1730                      | Compac, Holbrook, NY 11741                                                                     | 800-580-0111                     |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200; 1-800-572-9473      | † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                          | 612-476-6866; 800-422-2537       |
| \$ Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720; 800-344-5251        | # Computer System Products, Minneapolis, MN 55447                                              | 206-939-4880                     |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                      | Connect-Air International, Inc., Auburn, WA 98002                                              | 410-298-4411                     |
| \$ Lanco Industries, Sylmar, CA 91342-3832                                                     | 818-367-1811                      | \$ Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELDEN-1       |
| \$ Lutze, Inc., Charlotte, NC 28217-9805                                                       | 704-357-8835; 800-447-2371        | \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                               | 619-744-8182;                    |
| \$ Lyrer Electronics, Feasterville, PA 19053                                                   | 215-355-8200; 800-523-6075        |                                                                                                | 800-334-3815                     |
| # Manger Electric Company, Inc., Stamford, CT 06902                                            | 203-348-7761                      | \$ Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                     |
| \$ Mark Corp., Norristown, PA 19044                                                            | 215-272-8960                      | \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         | 612-941-5651; 1-800-343-5553     |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info. | \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                       | 201-768-5400                     |
| Mercotec Inc., Carlsbad, CA 92009                                                              | 619-431-7723                      | Data Set Cable Co., Inc., Ridgefield, CT 06877                                                 | 203-438-9684; 800-344-9684       |
| \$ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514                           | 203-281-0817                      | \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198       |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                          | 215-699-5373                      | \$ Delta Wire & Cable Co., North Chicago, IL 60064                                             | 708-473-4990                     |
| \$ Microtech, Boothwyn, PA 19061                                                               | 215-459-3566                      | \$ Dukane Corp., Communications Sys. Div., St. Charles, IL 60174-9984                          | 708-584-2300                     |
| \$ Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                    |                                   | # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                    | 708-547-5400                     |
|                                                                                                | 818-330-2086                      | \$ Electro Standards Lab, Inc., Data Communications Products Div., Cranston, RI 02921          | 401-943-1164                     |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                            | 612-642-1800;                     |                                                                                                | 201-769-3200                     |
|                                                                                                | 1-800-258-6922(MWCC)              | General Cable Co., Fiber Optics Div., S. Plainfield, NJ 07080                                  | 617-752-8260                     |
| Mohawk/CDT, Leominster, MA 01453                                                               | 508-537-9961; 800-422-9961        | # Glasgal Communications, Inc., Northvale, NJ 07647                                            | 201-768-8082                     |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                      | 508-791-3161                      | Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                    | 606-572-8303                     |
| Mouser Electronics, Santee, CA 92071                                                           | 800-346-6873                      |                                                                                                | 514-293-5304                     |
| Mouser Electronics, Mansfield, TX 76063                                                        | 800-346-6873                      | \$ Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                     |
| Mouser Electronics, Gilroy, CA 95020                                                           | 800-346-6873                      | LZR Electronics, Inc., Gaithersburg, MD 20879                                                  | 301-921-4600                     |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                             | 508-588-6110                      | \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                          | 215-699-5373                     |
| National Telephone & Electronics Inc., Miami, FL 33172                                         | 305-592-0551                      | Mohawk/CDT, Leominster, MA 01453                                                               | 508-537-9961; 800-422-9961       |
| New England Electric Wire Corp., Lisbon, NH 03585                                              | 603-836-6624                      | Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                      | 508-791-3161                     |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                      | \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                     |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                      | \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                     |
| Omega Engineering, Stamford, CT 06907                                                          | 800-826-6342                      | † Optical Cable Corp., Roanoke, VA 24022-1967                                                  | 1-800-622-7711                   |
| Orbit Advanced Technologies, Horsham, PA 19044                                                 | 215-674-4220                      | \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357       |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                      |                                                                                                | 914-651-4431                     |
| Parlex Corporation, Methuen, MA 01844                                                          | 508-685-4341                      | \$ Remeo Products Corp., Florida, NY 10921                                                     | 310-609-1811;                    |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357        | \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 800-326-0006                     |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                             | 815-229-7773                      |                                                                                                | 708-323-9121                     |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                                  | 201-736-5722                      | \$ Storm Products Co., Hinsdale, IL 60521                                                      | 510-234-9090                     |
| \$ Qualtek Electronics Corp., Mentor, OH 44060                                                 | 216-951-3300                      | \$ Support Systems Intl. Corp., Richmond, CA 94804                                             | 612-881-6700                     |
| \$ Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                      | KL Tannehill Inc., Bloomington, MN 55431                                                       | 919-236-4311                     |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                        | 914-429-3103                      | \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                                  |                                  |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                                     | 1-800-672-6832                    | Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                  | 919-236-4311                     |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                       | 317-543-3540;                     | \$ Temp-Flex Cable, S. C. Grafton, MA 01560                                                    | 508-839-5987                     |
|                                                                                                | 800-382-4635                      | \$ Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    |                                  |
| Shokai Far East Ltd., Peekskill, NY 10566                                                      | 914-736-3500                      |                                                                                                | 904-829-5600                     |
| \$ Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC                      |                                                                                                | 301-921-8282                     |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;                     | Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584               | 309-693-3300                     |
|                                                                                                | 800-326-0006                      |                                                                                                | 818-707-2020                     |
| † Storm Products Co., Hinsdale, IL 60521                                                       | 708-323-9121                      | † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                                 | 508-757-3872                     |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                      | † United Wire & Cable Corp., Worcester, MA 01604                                               | 401-821-1700; SALES 401-821-7800 |
| KL Tannehill Inc., Bloomington, MN 55431                                                       | 612-881-6700                      | Victor Elec. Wire & Cable, W. Warwick, RI 02893                                                |                                  |
| \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                                  | 914-359-9300                      |                                                                                                |                                  |
| Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                  | 919-236-4311                      |                                                                                                |                                  |
| \$ Temp-Flex Cable, S. C. Grafton, MA 01560                                                    | 508-839-5987                      |                                                                                                |                                  |
| \$ Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    |                                   |                                                                                                |                                  |
|                                                                                                | 904-829-5600                      |                                                                                                |                                  |
| \$ Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                      |                                                                                                |                                  |
| † Thermo Electric, Saddle Brook, NJ 07662                                                      | 201-843-5800                      |                                                                                                |                                  |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                      |                                                                                                |                                  |
|                                                                                                |                                   |                                                                                                |                                  |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584              | 309-693-3300                      |                                                                                                |                                  |
| † United Wire & Cable Corp., Worcester, MA 01604                                               | 508-757-3872                      |                                                                                                |                                  |
| # Unitrek Corporation, Vancouver, WA 98661                                                     | 206-699-7277                      |                                                                                                |                                  |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                              | 401-821-1700; SALES 401-821-7800  |                                                                                                |                                  |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                             | 213-870-9933                      |                                                                                                |                                  |
| \$ Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                      |                                                                                                |                                  |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                     | 803-963-5131                      |                                                                                                |                                  |

Cable, Patient Monitoring — See Cable, Biomedical Instrumentation

## Cable, Plenum-6000

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| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 | 708-455-8830                 |
|                                                                       | C-1732-1733                  |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                         | C-1749                       |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000  | C-1763                       |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970            | C-1838-1842                  |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                  | 914-736-1010; 1-800-431-2103 |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                      | 404-751-9473; 800-221-4767   |

## Cable, Power-6000

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| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  | C-1706-1707                |
| Aurtec Power Systems, Simi Valley, CA 93065, 805-522-0888                           | D-1612                     |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1726, 1731, 1733         |
|                                                                                     | C-1748                     |
| \$ GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                 | C-1353                     |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                 | C-1763                     |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                | C-1768                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611             |                            |
|                                                                                     | C-1458, 1809               |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                           | C-1427, 1431, 1793-1794    |
| RDI Electrn., Inc., Mamaroneck, NY 10543, 914-777-7000                              | C-1803                     |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                          | C-1804                     |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                             | C-1807                     |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911               |                            |
|                                                                                     | C-1458, 1809               |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700              | C-1810-1811                |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                          | C-1844-1845                |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473; 800-221-4767 |
| † Advanced Circuit Technology, Nashua, NH 03062                                     | 603-880-6000               |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                     | 703-369-0440               |
| † Alcatel Chester Cable Corp., Chester, NY 10918                                    | 914-469-2141               |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862              | 401-726-0700               |



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| \$† BIW Cable Systems, Inc., N. Dighton, MA 02764                                 | 508-520-1200                     |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128         | 203-456-8000                     |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                         | 201-796-2886                     |
| Carol Cable Co., Highland Heights, KY 41076                                       | 606-572-8303; 606-572-8000       |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446             | 802-655-2121                     |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                     | 802-234-9921; 800-451-4381       |
| # Computer System Products, Minneapolis, MN 55447                                 | 612-476-6866; 800-422-2537       |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                          | 818-882-8311                     |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                              | 317-983-5200; 800-BELDEN-1       |
| \$ Custom Cable Corp., Westbury, NY 11590                                         | 516-334-3600                     |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                         | 201-768-5400                     |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                               | 708-459-1000; 800-323-0198       |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                | 708-473-4990                     |
| \$ Deltac Co., Norwalk, CA 90650                                                  | 310-926-2304                     |
| † Electroweave, Inc., Worcester, MA 01604                                         | 508-752-8932                     |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                       | 310-515-4996                     |
| \$† Feller US Corporation, AFN Div., Somerset, NJ 08873                           | 908-247-7333                     |
| † The First Electronics Corp., Boston, MA 02125                                   | 617-288-2430                     |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                            | 815-968-9661                     |
| † General Wire Products, Inc., Worcester, MA 01604                                | 617-752-8260                     |
| W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                     | 602-431-0077                     |
| † W.L. Gore & Assocs., Newark, DE 19714                                           | 302-738-4880                     |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076       | 606-572-8303                     |
| \$ Kelly American, Inc., Brookfield, CT 06804                                     | 203-775-2590                     |
| \$† Linemaster Switch, Woodstock, CT 06281-0238                                   | 203-974-1000                     |
| \$ Lutz, Inc., Charlotte, NC 28217-9805                                           | 704-357-8838; 800-447-2371       |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                     | 301-921-6600                     |
| \$ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514              | 203-281-0817                     |
| \$† Mingson Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746       | 818-330-2086                     |
| Mohawk/CDT, Leominster, MA 01453                                                  | 508-537-9961; 800-422-9961       |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                         | 508-791-3161                     |
| \$ Mouser Electronics, Santee, CA 92071                                           | 800-346-6873                     |
| \$ Mouser Electronics, Mansfield, TX 76063                                        | 800-346-6873                     |
| \$ Mouser Electronics, Gilroy, CA 95020                                           | 800-346-6873                     |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                | 508-588-6110                     |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                      | 201-227-7996                     |
| \$ Pacific Electricord, Gardena, CA 90247                                         | 310-532-6600                     |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                      | 909-945-1365                     |
| Parlex Corporation, Methuen, MA 01844                                             | 508-685-4341                     |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                     | 201-736-5722                     |
| \$ Qualtek Electronics Corp., Mentor, OH 44060                                    | 216-951-3300                     |
| \$ Reme Products Corp., Florida, NY 10921                                         | 914-651-4431                     |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                          | 317-543-3540                     |
| Shokai Far East Ltd., Peekskill, NY 10566                                         | 914-736-3500                     |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                         | 310-609-1811                     |
| Storm Products Co., Hinsdale, IL 60521                                            | 800-326-0006                     |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                  | 708-323-9121                     |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092          | 919-236-4311                     |
|                                                                                   | 904-829-5600                     |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401    | 803-676-2900                     |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                     |
| \$ Tumbler Corp. Cable Div., Fremont, CA 94539                                    | 510-657-3002                     |
| † United Wire & Cable Corp., Worcester, MA 01604                                  | 508-757-3872                     |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                 | 401-821-1700; SALES 401-821-7800 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                | 213-870-9933                     |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                | 805-257-2400                     |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681        | 803-963-5131                     |

**Cable, Retractable** — See Cords, Retractable (Vol. C)

**Cable, Ribbon** — See Cable, Flat (Vol. C)

**Cable, Rotator Antenna** — See Cable, Multiconductor (Vol. C)

## Cable, Satellite-6000

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| † GSI Corp., Timonium, MD 21093, 410-252-1768                              | C-1749-1750                |
| Technical Devices, Dayton, OH 45414, 513-890-7881                          | C-1813                     |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                            | 404-751-9473; 800-221-4767 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                            | 703-369-0440               |
| Andrew Corp., Orland Pk., IL 60462                                         | 800-255-1479               |
| \$† Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128 | 203-456-8000               |
| \$ Carol Cable Co., Highland Heights, KY 41076                             | 606-572-8303; 606-572-8000 |
| Cat Wire and Cable Corp., Miami, FL 33150                                  | 305-836-3600               |
| † CICOIL CORP., Valencia, CA 91355-3428                                    | 805-295-1295               |
| # Clifford of Vermont, Inc., Bethel, VT 05032                              | 802-234-9921; 800-451-4381 |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610               | 704-324-2200               |
|                                                                            | 800-982-1708               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                   | 201-768-5400               |
| † General Wire Products, Inc., Worcester, MA 01604                         | 617-752-8260               |
| W.L. Gore & Assocs., Newark, DE 19714                                      | 302-738-4880               |
| International Components Corp., Melville, NY 11747                         | 516-293-1500               |
| MACOM, Inc., Lowell, MA 01851                                              | 617-272-3000               |
| Mohawk/CDT, Leominster, MA 01453                                           | 508-537-9961; 800-422-9961 |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                  | 508-791-3161               |
| \$ Oilex Wire & Cable, Inc., Fairfield, NJ 07004                           | 201-575-1101               |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                               | 201-227-7996               |
| Parlex Corporation, Methuen, MA 01844                                      | 508-685-4341               |
| \$ Reme Products Corp., Florida, NY 10921                                  | 914-651-4431               |

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| Rodale Technical Sales Inc., Islip, NY 11751                                    | 516-277-5454 |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                        | 317-543-3540 |
|                                                                                 | 800-382-4635 |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                       | 310-609-1811 |
|                                                                                 | 800-326-0006 |
| Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300 |
| \$† Western Electronic Products Co., San Clemente, CA 92673                     | 714-492-4677 |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681      | 803-963-5131 |

## Cable, Security-6000

|                                                                                 |                              |
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| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412              | 708-455-8830                 |
|                                                                                 | C-1727, 1732                 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                      | C-1826-1836, 1838-1842       |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                 | 404-751-9473; 800-221-4767   |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                 | 703-369-0440                 |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                   | 908-925-8000                 |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862         | 401-726-0700                 |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                    | 717-354-6200                 |
| \$† Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128      | 203-456-8000                 |
| Carol Cable Co., Highland Heights, KY 41076                                     | 606-572-8303; 606-572-8000   |
| Cat Wire and Cable Corp., Miami, FL 33150                                       | 305-836-3600                 |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446           | 802-655-2121                 |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                   | 802-234-9921; 800-451-4381   |
| Connect-Air International, Inc., Auburn, WA 98002                               | 206-939-4880                 |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                            | 317-983-5200; 800-BELDEN-1   |
| Custom Cable Corp., Westbury, NY 11590                                          | 516-334-3600                 |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                        | 201-768-5400                 |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                              | 708-473-4990                 |
| \$ Dilwol Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                   | 416-681-2343                 |
| W.L. Gore & Assocs., Newark, DE 19714                                           | 302-738-4880                 |
| † GSI Corp., Timonium, MD 21093                                                 | 410-252-1768                 |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076     | 606-572-8303                 |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                  | 514-293-5304                 |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                       | 201-694-6200; 1-800-572-9473 |
| \$ Kelly American, Inc., Brookfield, CT 06804                                   | 203-775-2590                 |
| \$ Lynn Electronics, Feasterville, PA 19053                                     | 215-355-8200; 800-523-6075   |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                          | 914-967-8000                 |
| Mohawk/CDT, Leominster, MA 01453                                                | 508-537-9961; 800-422-9961   |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                    | 201-227-7996                 |
| Parlex Corporation, Methuen, MA 01844                                           | 508-685-4341                 |
| \$ Reme Products Corp., Florida, NY 10921                                       | 914-651-4431                 |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                       | 310-609-1811                 |
|                                                                                 | 800-326-0006                 |
| \$ Storm Products Co., Hinsdale, IL 60521                                       | 708-323-9121                 |
| K.L. Tannehill Inc., Bloomington, MN 55431                                      | 612-881-6700                 |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                | 919-236-4311                 |
| Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                 |

## Cable, Shielded-6000

|                                                                                         |                            |
|-----------------------------------------------------------------------------------------|----------------------------|
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103      | C-1707-1708                |
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                 | C-1712-1713, 1715-1717     |
| Caton Connector Corp., Kingston, MA 02364, 617-585-4315                                 | C-1725                     |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830    | C-1726-1735                |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                  | C-1744                     |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                        | C-1748                     |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                           | C-1749-1750                |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                     | C-1353                     |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116            | C-1354, 1753               |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051          | C-1754-1755                |
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833                 | C-1756                     |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                             | C-1759-1760                |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C-1696                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                 | C-1768, 1771-1787          |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                              | C-1804-1805                |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9791                                 | C-1807                     |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                   | C-1458, 1809               |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                  | C-1810-1811                |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                       | C-1813                     |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                         | C-1814                     |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                            | C-1828-1841                |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                         | 404-751-9473; 800-221-4767 |
| † Advanced Circuit Technology, Nashua, NH 03062                                         | 603-880-6000               |
| † Aerospace Systems, Communication Cable Inc., Fairmont, MN 56031                       | 507-235-3355               |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                    | 718-358-2345               |
|                                                                                         | 1-800-395-0200             |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                         | 703-369-0440               |
| \$† Alcatel Chester Cable Corp., Chester, NY 10918                                      | 914-469-2141               |
| \$† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                          | 908-925-8000               |
| \$† American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                | 401-726-0700               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                     | 203-265-8910               |



|                                                                                                 |                                    |                                                                                                 |                                    |
|-------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------|
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                 | 203-281-3200                       | \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                                   | 914-359-9300                       |
| \$ AT&T Network Systems/Network Cable Sys. Div., Morristown, NJ 07962                           | 1-800-344-0223, Ext. 1027          | \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                | 919-236-4311                       |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                | 508-222-2202                       | Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                     | 508-839-5987                       |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                    | 717-354-6200                       | \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                       |
| \$† BIW Cable Systems, Inc., N. Dighton, MA 02764                                               | 508-520-1200                       | \$ Terminal Data Corp., Rockville, MD 20855                                                     | 301-921-8282                       |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                                                 | 203-423-6321                       | † Thermo Electric, Saddle Brook, NJ 07662                                                       | 201-843-5800                       |
| \$† Brand-Rex Company, BICC Cables Corporation, Wilimantic, CT 06226-1128                       | 203-456-8000                       | \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                  | 803-676-2900                       |
| \$ Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950                        | 717-757-6600                       | \$† Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1594             | 309-693-3300                       |
| CableStar, Incorporated, Glasgow, KY 42141                                                      | 800-338-8223                       | † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                                  | 818-707-2020                       |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303/606-572-8000          | † United Wire & Cable Corp., Worcester, MA 01604                                                | 508-757-3872                       |
| Cat Wire and Cable Corp., Miami, FL 33150                                                       | 305-836-3600                       | † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                               | 401-821-1700/SALES                 |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                           | 802-655-2121                       | † Victor Wire & Cable Corp., Los Angeles, CA 90016                                              | 213-870-9933                       |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                            | 617-935-4850                       | \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                       |
| † CICOIL CORP., Valencia, CA 91355-3428                                                         | 805-295-1295                       | † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                      | 803-963-5131                       |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                                   | 802-234-9921/800-451-4381          | \$ Zipertubing Co., Los Angeles, CA 90061                                                       | 310-527-0488                       |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                    | 704-324-2200; 800-982-1708         | <b>Cable, Speaker-6000</b>                                                                      |                                    |
| # Computer System Products, Minneapolis, MN 55447                                               | 612-476-6866/800-422-2537          | \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                         | C-1715                             |
| Connect-Air International, Inc., Auburn, WA 98002                                               | 206-939-4880                       | † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C-1768                             |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                     | 410-298-4411                       | <b>Weico Wire &amp; Cable, Inc., Edgewood, NY 11717, 516-254-2970</b>                           |                                    |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                        | 818-882-8311                       | <b>C-1826-1836, 1840-1842</b>                                                                   |                                    |
| \$† Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200/800-BELDEN-1          | \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                            | 914-736-1010; 1-800-431-2103       |
| Covid, Inc., Tempe, AZ 85281                                                                    | 602-966-2221                       | Accusonic Products, Global Market Development, New Hyde Park, NY 11040                          | 516-437-6000                       |
| \$ Custom Cable Corp., Westbury, NY 11590                                                       | 516-334-3600                       | Aerospace Wire & Cable Inc., College Point, NY 11356                                            | 718-358-2345; 1-800-395-0200       |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                          | 612-941-5651; 1-800-343-5553       | \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                 | 703-369-0440                       |
| \$ CW Industries, Southampton, PA 18966                                                         | 215-355-7080                       | \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                         | 401-726-0700                       |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                              | 708-459-1000; 800-323-0198         | \$ Brand-Rex Company, BICC Cables Corporation, Wilimantic, CT 06226-1128                        | 203-456-8000                       |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                              | 708-473-4990                       | Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303/606-572-8000          |
| \$ Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                    | 708-547-5400                       | Cat Wire and Cable Corp., Miami, FL 33150                                                       | 305-836-3600                       |
| † Electroweave, Inc., Worcester, MA 01604                                                       | 508-752-8932                       | # Clifford of Vermont, Inc., Bethel, VT 05032                                                   | 802-234-9921/800-451-4381          |
| \$ Endevo Corporation, Meggitt Aerospace, San Juan Capistrano, CA 92675                         | 714-493-8181                       | \$ Cooper Industries/Belden Div., Richmond, IN 47375                                            | 317-983-5200/800-BELDEN-1          |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                                     | 310-515-4996                       | Custom Cable Corp., Westbury, NY 11590                                                          | 516-334-3600                       |
| \$† Feller US Corporation, AFN Div., Somerset, NJ 08873                                         | 908-247-7333                       | \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                        | 201-768-5400                       |
| † The First Electronics Corp., Boston, MA 02125                                                 | 617-288-2430                       | \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198         |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                                     | 508-867-6476                       | \$ DGS Pro Audio, Arlington, TX 76003                                                           | 800-292-2834                       |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                          | 815-968-9661                       | \$ EPD Electronics, Inc., Gardena, CA 90247                                                     | 310-515-4996                       |
| † Glenair Inc., Glendale, CA 91201-2497                                                         | 818-247-6000                       | Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                       |
| † W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                  | 602-431-0077                       | International Components Corp., Melville, NY 11747                                              | 516-293-1500                       |
| † W.L. Gore & Assocs., Newark, DE 19714                                                         | 302-738-4880                       | International Microelectronics, Arlington, TX 76003                                             | 817-473-1730                       |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                       | \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                       | 201-694-6200; 1-800-572-9473       |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                  | 514-293-5304                       | \$ Kelly American, Inc., Brookfield, CT 06804                                                   | 203-775-2590                       |
| \$ Harris Corp., Dracon Div., Camarillo, CA 93012                                               | 805-987-9511                       | \$ Kelly American, Inc., Brookfield, CT 06804                                                   | 203-775-2590                       |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                    | 508-562-9913                       | \$† Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200/800-523-6075          |
| International Microelectronics, Arlington, TX 76003                                             | 817-473-1730                       | \$ Manhattan Electric Cable Corporation, Rye, NY 10580                                          | 914-967-8000                       |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                       | 201-694-6200; 1-800-572-9473       | \$ Markel Corp., Norristown, PA 19044                                                           | 215-272-8960                       |
| † Judd Wire Inc., San Marcos, CA 92069                                                          | 619-744-7720/800-344-5251          | \$ 3M-Electronic Products Division, Austin, TX 78726                                            | 1-800-225-5373 Sls. & Prod. Info.  |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                   | 203-775-2590                       | Meritec, Associated Enterprises, Painesville, OH 44077                                          | 216-354-3148                       |
| \$† Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200/800-523-6075          | \$† Micro-Coax, Collegeville, PA 19426                                                          | 215-489-3700                       |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                                          | 914-967-8000                       | \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                           | 215-699-5373                       |
| \$ Markel Corp., Norristown, PA 19044                                                           | 215-272-8960                       | \$† Microtech, Boothwyn, PA 19061                                                               | 215-459-3566                       |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                            | 1-800-225-5373 Sls. & Prod. Info.  | Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                             | 612-642-1800; 1-800-258-6922(MWCC) |
| Meritec, Associated Enterprises, Painesville, OH 44077                                          | 216-354-3148                       | Mohawk/CDT, Leominster, MA 01453                                                                | 508-537-9961/800-422-9961          |
| \$† Micro-Coax, Collegeville, PA 19426                                                          | 215-489-3700                       | \$ MOLEX, Inc., Lisle, IL 60532                                                                 | 708-969-4550                       |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                           | 215-699-5373                       | Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                       | 508-791-3161                       |
| \$† Microtech, Boothwyn, PA 19061                                                               | 215-459-3566                       | Mouser Electronics, Santee, CA 92071                                                            | 800-346-6873                       |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                             | 612-642-1800; 1-800-258-6922(MWCC) | Mouser Electronics, Mansfield, TX 76063                                                         | 800-346-6873                       |
| Mohawk/CDT, Leominster, MA 01453                                                                | 508-537-9961/800-422-9961          | Mouser Electronics, Gilroy, CA 95020                                                            | 800-346-6873                       |
| \$ MOLEX, Inc., Lisle, IL 60532                                                                 | 708-969-4550                       | Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                              | 508-588-6110                       |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                       | 508-791-3161                       | New England Electric Wire Corp., Lisbon, NH 03585                                               | 603-838-6624                       |
| Mouser Electronics, Santee, CA 92071                                                            | 800-346-6873                       | ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                   | 805-484-0540                       |
| Mouser Electronics, Mansfield, TX 76063                                                         | 800-346-6873                       | \$ Ollflex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                       |
| Mouser Electronics, Gilroy, CA 95020                                                            | 800-346-6873                       | \$† Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                       |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                              | 508-588-6110                       | \$ Pacific Electricord, Gardena, CA 90247                                                       | 310-532-6600                       |
| New England Electric Wire Corp., Lisbon, NH 03585                                               | 603-838-6624                       | \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                    | 909-945-1365                       |
| ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                   | 805-484-0540                       | Parlex Corporation, Methuen, MA 01844                                                           | 508-685-4341                       |
| \$ Ollflex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                       | \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306/800-257-8357          |
| \$† Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                       | \$ Philmore Manufacturing, Rockford, IL 61125-1386                                              | 815-229-7773                       |
| \$ Pacific Electricord, Gardena, CA 90247                                                       | 310-532-6600                       | \$† Precision Tube, N. Wales, PA 19454                                                          | 215-699-5801                       |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                    | 909-945-1365                       | \$† Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                 | 508-988-9090                       |
| Parlex Corporation, Methuen, MA 01844                                                           | 508-685-4341                       | † RDI Elctns., Inc., Mamaroneck, NY 10543                                                       | 914-777-7000                       |
| \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306/800-257-8357          | \$ Remece Products Corp., Florida, NY 10921                                                     | 914-651-4431                       |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                              | 815-229-7773                       | † Roanwell, New York, NY 10014                                                                  | 212-989-1090                       |
| \$† Precision Tube, N. Wales, PA 19454                                                          | 215-699-5801                       | † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                         | 914-429-3103                       |
| \$† Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                 | 508-988-9090                       | † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                 | 714-251-1960                       |
| † RDI Elctns., Inc., Mamaroneck, NY 10543                                                       | 914-777-7000                       | Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                        | 317-543-3540; 800-382-4635         |
| \$ Remece Products Corp., Florida, NY 10921                                                     | 914-651-4431                       | Shokai Far East Ltd., Peekskill, NY 10566                                                       | 914-736-3500                       |
| † Roanwell, New York, NY 10014                                                                  | 212-989-1090                       | \$† Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC                       |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                         | 914-429-3103                       | \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 800-326-0006                       |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                 | 714-251-1960                       | \$ Storm Products Co., Hinsdale, IL 60521                                                       | 708-233-9121                       |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                        | 317-543-3540; 800-382-4635         | \$† Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                       |
| Shokai Far East Ltd., Peekskill, NY 10566                                                       | 914-736-3500                       | KL Tannehill Inc., Bloomington, MN 55431                                                        | 612-881-6700                       |
| \$† Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC                       |                                                                                                 |                                    |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 800-326-0006                       |                                                                                                 |                                    |
| \$ Storm Products Co., Hinsdale, IL 60521                                                       | 708-233-9121                       |                                                                                                 |                                    |
| \$† Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                       |                                                                                                 |                                    |
| KL Tannehill Inc., Bloomington, MN 55431                                                        | 612-881-6700                       |                                                                                                 |                                    |
| \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                                   | 914-359-9300                       |                                                                                                 |                                    |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                | 919-236-4311                       |                                                                                                 |                                    |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                     | 508-839-5987                       |                                                                                                 |                                    |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                       |                                                                                                 |                                    |
| \$ Terminal Data Corp., Rockville, MD 20855                                                     | 301-921-8282                       |                                                                                                 |                                    |
| † Thermo Electric, Saddle Brook, NJ 07662                                                       | 201-843-5800                       |                                                                                                 |                                    |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                  | 803-676-2900                       |                                                                                                 |                                    |
| \$† Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1594             | 309-693-3300                       |                                                                                                 |                                    |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                                  | 818-707-2020                       |                                                                                                 |                                    |
| † United Wire & Cable Corp., Worcester, MA 01604                                                | 508-757-3872                       |                                                                                                 |                                    |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                               | 401-821-1700/SALES                 |                                                                                                 |                                    |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                              | 213-870-9933                       |                                                                                                 |                                    |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                       |                                                                                                 |                                    |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                      | 803-963-5131                       |                                                                                                 |                                    |
| \$ Zipertubing Co., Los Angeles, CA 90061                                                       | 310-527-0488                       |                                                                                                 |                                    |
| <b>Cable, Speaker-6000</b>                                                                      |                                    |                                                                                                 |                                    |
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                         | C-1715                             |                                                                                                 |                                    |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C-1768                             |                                                                                                 |                                    |
| <b>Weico Wire &amp; Cable, Inc., Edgewood, NY 11717, 516-254-2970</b>                           |                                    |                                                                                                 |                                    |
| <b>C-1826-1836, 1839-1840, 1842</b>                                                             |                                    |                                                                                                 |                                    |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                            | 914-736-1010; 1-800-431-2103       |                                                                                                 |                                    |
| Accusonic Products, Global Market Development, New Hyde Park, NY 11040                          | 516-437-6000                       |                                                                                                 |                                    |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                            | 718-358-2345; 1-800-395-0200       |                                                                                                 |                                    |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                 | 703-369-0440                       |                                                                                                 |                                    |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                         | 401-726-0700                       |                                                                                                 |                                    |
| \$ Brand-Rex Company, BICC Cables Corporation, Wilimantic, CT 06226-1128                        | 203-456-8000                       |                                                                                                 |                                    |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303/606-572-8000          |                                                                                                 |                                    |
| Cat Wire and Cable Corp., Miami, FL 33150                                                       | 305-836-3600                       |                                                                                                 |                                    |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                   | 802-234-9921/800-451-4381          |                                                                                                 |                                    |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                            | 317-983-5200/800-BELDEN-1          |                                                                                                 |                                    |
| Custom Cable Corp., Westbury, NY 11590                                                          | 516-334-3600                       |                                                                                                 |                                    |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                        | 201-768-5400                       |                                                                                                 |                                    |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198         |                                                                                                 |                                    |
| \$ DGS Pro Audio, Arlington, TX 76003                                                           | 800-292-2834                       |                                                                                                 |                                    |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                                     | 310-515-4996                       |                                                                                                 |                                    |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                       |                                                                                                 |                                    |
| International Components Corp., Melville, NY 11747                                              | 516-293-1500                       |                                                                                                 |                                    |
| International Microelectronics, Arlington, TX 76003                                             | 817-473-1730                       |                                                                                                 |                                    |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                       | 201-694-6200; 1-800-572-9473       |                                                                                                 |                                    |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                   | 203-775-2590                       |                                                                                                 |                                    |
| Mohawk/CDT, Leominster, MA 01453                                                                | 508-537-9961/800-422-9961          |                                                                                                 |                                    |
| Mouser Electronics, Santee, CA 92071                                                            | 800-346-6873                       |                                                                                                 |                                    |
| Mouser Electronics, Mansfield, TX 76063                                                         | 800-346-6873                       |                                                                                                 |                                    |
| Mouser Electronics, Gilroy, CA 95020                                                            | 800-346-6873                       |                                                                                                 |                                    |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                    | 201-227-7996                       |                                                                                                 |                                    |
| Parlex Corporation, Methuen, MA 01844                                                           | 508-685-4341                       |                                                                                                 |                                    |
| \$ Remece Products Corp., Florida, NY 10921                                                     | 914-651-4431                       |                                                                                                 |                                    |
| Rodale Technical Sales Inc., Islip, NY 11751                                                    | 516-277-5454                       |                                                                                                 |                                    |
| Shogry International Corp., Great Neck, NY 11021-4799                                           | 516-466-0911                       |                                                                                                 |                                    |
| \$ Shure Brothers Inc., Evanston, IL 60202-3696                                                 | 708-866-2200                       |                                                                                                 |                                    |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                        | 310-609-1811; 800-326-0006         |                                                                                                 |                                    |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                | 919-236-4311                       |                                                                                                 |                                    |
| \$ Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                  | 508-839-5987                       |                                                                                                 |                                    |
| <b>Cable, Telephone-6000</b>                                                                    |                                    |                                                                                                 |                                    |
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                         | C-1717                             |                                                                                                 |                                    |
| ISL Products Int'l., Ltd., Syosset, NY 11791-6093, 516-937-3475/800-626-6116                    | C-1354, 1753                       |                                                                                                 |                                    |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                  | C-1759-1760                        |                                                                                                 |                                    |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                            | C-1763                             |                                                                                                 |                                    |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C-1768                             |                                                                                                 |                                    |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                           | C-1441, 1803                       |                                                                                                 |                                    |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                               | C-1813                             |                                                                                                 |                                    |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                                 | C-1814                             |                                                                                                 |                                    |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                                      | C-1826-1836, 1839-1840, 1842       |                                                                                                 |                                    |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                 | 404-751-9473/800-221-4767          |                                                                                                 |                                    |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                 | 703-369-0440                       |                                                                                                 |                                    |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                   | 908-925-8000                       |                                                                                                 |                                    |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                         | 401-726-0700                       |                                                                                                 |                                    |
| † Apotek, Rogue River, OR 97537                                                                 | 503-582-2120                       |                                                                                                 |                                    |
| \$ AT&T Network Systems/Network Cable Sys. Div., Morristown, NJ 07962                           | 203-456-8000                       |                                                                                                 |                                    |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                    | 717-354-6200                       |                                                                                                 |                                    |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303/606-572-8000          |                                                                                                 |                                    |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                           | 802-655-2121                       |                                                                                                 |                                    |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                   | 802-234-9921/800-451-4381          |                                                                                                 |                                    |
| # Computer System Products, Minneapolis, MN 55447                                               | 612-476-6866/800-422-2537          |                                                                                                 |                                    |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                       |                                                                                                 |                                    |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                     | 410-298-4411                       |                                                                                                 |                                    |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                            | 317-983-5200/800-BELDEN-1          |                                                                                                 |                                    |
| \$ CSD Industries, Inc., d/b/a C Enterprises, San Marcos, CA 92069                              | 619-744-8182; 800-334-3815         |                                                                                                 |                                    |



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| \$ Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                     |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         | 612-941-5651; 1-800-343-5553     |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                                      | 201-769-5400                     |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                 | 203-438-9684; 800-344-9684       |
| Dearborn Wire & Cable, LP., Wheeling, IL 60090                                                 | 708-459-1000; 800-323-0198       |
| \$ Elite Electronics, Inc., Plano, TX 75074                                                    | 214-881-0026; 800-553-4376       |
| \$† Feller US Corporation, AFN Div., Somerset, NJ 08873                                        | 908-247-7333                     |
| General Cable Co., Fiber Optics Div., S. Plainfield, NJ 07080                                  | 201-769-3200                     |
| # Glasgal Communications, Inc., Northvale, NJ 07647                                            | 201-768-8082                     |
| \$ GTE Supply, GTE, Irving, TX 75038                                                           | 800-433-4837                     |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                    | 606-572-8303                     |
| \$ Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                     |
| International Components Corp., Melville, NY 11747                                             | 516-293-1500                     |
| International Microelectronics, Arlington, TX 76003                                            | 817-473-1730                     |
| \$# J.A.W. Industries, Inc., Warrington, PA 18976                                              | 215-343-8990                     |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200; 1-800-572-9473     |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                     |
| \$ Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                               | 206-485-4288;                    |
|                                                                                                | 206-486-2222                     |
| \$ Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200; 800-523-6075       |
| \$ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514                           | 203-281-0817                     |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                             | 215-699-5373                     |
| \$ Kingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                    | 818-330-2086                     |
| Mohawk/CDT, Leominster, MA 01453                                                               | 508-537-9961; 800-422-9961       |
| Mouser Electronics, Santee, CA 92071                                                           | 800-346-6873                     |
| Mouser Electronics, Mansfield, TX 76063                                                        | 800-346-6873                     |
| Mouser Electronics, Gilroy, CA 95020                                                           | 800-346-6873                     |
| † National Telephone & Electronics Inc., Miami, FL 33172                                       | 305-592-0551                     |
| Nu Data, Inc., Little Silver, NJ 07739                                                         | 908-842-5757                     |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                     |
| \$ Pacific ElectriCORD, Gardena, CA 90247                                                      | 310-532-6600                     |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                     |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357       |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                             | 815-229-7773                     |
| \$ Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                     |
| Rodale Technical Sales Inc., Islip, NY 11751                                                   | 516-277-5454                     |
| Shogoy International Corp., Great Neck, NY 11021-4799                                          | 516-466-0911                     |
| \$ Shokai Far East Ltd., Peekskill, NY 10566                                                   | 914-736-3500                     |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;                    |
|                                                                                                | 800-326-0006                     |
| \$# Support Systems Intl. Corp., Richmond, CA 94804                                            | 510-234-9090                     |
| \$ Tappan Wire & Cable Inc., Tappan, NY 10983                                                  | 914-359-9300                     |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                     |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                   | 904-829-5600                     |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                     |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                              | 401-821-1700; SALES 401-821-7800 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                             | 213-870-9933                     |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                     | 803-963-5131                     |

## Cable, TFE Insulated-6000

|                                                                                      |                              |
|--------------------------------------------------------------------------------------|------------------------------|
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1712                       |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1735                       |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400              | C-1743-1744                  |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611              | C-1768                       |
| Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561                                  | C-1802                       |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                    | C-1813                       |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                         | C-1826, 1835-1836, 1838      |
| \$† ABL Electronics Supply, Inc., Peekskill, NY 10566                                | 914-736-1010; 1-800-431-2103 |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                     | 404-751-9473; 800-221-4767   |
| Alcatel Chester Cable Corp., Chester, NY 10918                                       | 914-469-2141                 |
| \$† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                       | 908-925-8000                 |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                         | 203-281-3200                 |
| \$† BW Cable Systems, Inc., N. Dighton, MA 02764                                     | 508-520-1200                 |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128            | 203-456-8000                 |
| \$ Carol Cable Co., Highland Heights, KY 41076                                       | 606-572-8303; 606-572-8000   |
| \$† Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921; 800-451-4381   |
| \$† Cooper Industries/Belden Div., Richmond, IN 47375                                | 317-983-5200; 800-BELDEN-1   |
| \$ Custom Cable Corp., Westbury, NY 11590                                            | 516-334-3600                 |
| \$† Dearborn Wire & Cable, LP., Wheeling, IL 60090                                   | 708-459-1000; 800-323-0198   |
| \$ Electrical Insulation Suppliers, Inc., Hillsdale, IL 60162                        | 708-547-5400                 |
| † Electrowave, Inc., Worcester, MA 01604                                             | 508-752-8932                 |
| \$ Engineered Assemblies & Components Corp., Teterboro, NJ 07608                     | 201-288-4477;                |
|                                                                                      | 800-447-5639                 |
| † General Wire Products, Inc., Worcester, MA 01604                                   | 617-752-8260                 |
| † W.L. Gore & Assocs., Newark, DE 19714                                              | 302-738-4880                 |
| † GSI Corp., Timonium, MD 21093                                                      | 410-252-1768                 |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                        | 514-293-5304                 |
| \$† Independent Cable, Inc., Hudson, MA 01749                                        | 508-562-9913                 |
| Kaman Instrumentation, Colo Springs, CO 80907                                        | 719-599-1132                 |
| \$ Kelly American, Inc., Brookfield, CT 06804                                        | 203-775-2590                 |
| \$† M/A-Corn, Inc., Antenna & Cable Division, Amesbury, MA 01913                     | 508-388-5210                 |
| \$† Manager Electric Company, Inc., Stamford, CT 06902                               | 203-348-7761                 |
| \$† Manhattan Electric Cable Corporation, Rye, NY 10580                              | 914-967-8000                 |
| \$† Markel Corp., Norristown, PA 19040                                               | 215-272-8960                 |
| \$† Micro-Coax, Collegeville, PA 19426                                               | 215-489-3700                 |

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| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                              | 215-699-5373               |
| \$† Microtech, Boothwyn, PA 19061                                                               | 215-459-3566               |
| Mupac Corp., Carlo Gavazzi Co., Brookline, MA 02401                                             | 508-588-6110               |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                               | 201-575-1101               |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                    | 201-227-7996               |
| Omega Engineering, Stamford, CT 06907                                                           | 800-826-6342               |
| \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357 |
| †# Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                  | 508-988-9090               |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                 | 714-251-1960               |
| \$† Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC               |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;              |
|                                                                                                 | 800-326-0006               |
| Storm Products Co., Hinsdale, IL 60521                                                          | 708-323-9121               |
| \$# Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090               |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                                    | 612-881-6700               |
| \$† Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311               |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600               |
| \$† Thermawire Corp., Flushing, NY 11354-2897                                                   | 718-939-8300               |
| † Thermo Electric, Saddle Brook, NJ 07662                                                       | 201-843-5800               |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                  | 803-676-2900               |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                | 309-693-3300               |
| † United Wire & Cable Corp., Worcester, MA 01604                                                | 508-757-3872               |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                              | 213-870-9933               |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577                                               | 703-375-0100               |
| \$† Whittom Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400               |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681                      | 803-963-5131               |
| \$ Zeus Indl. Prods. Inc., Orangeburg, SC 29116                                                 | 803-531-2174; 800-526-3842 |

## Cable, Thermocouple-6000

|                                                                                                |                            |
|------------------------------------------------------------------------------------------------|----------------------------|
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                           | C-1763                     |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                                            | C-1792                     |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                               | 404-751-9473; 800-221-4767 |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                           | 718-358-2345;              |
|                                                                                                | 1-800-395-0200             |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000               |
| ARI Industries, Inc., Addison, IL 60101                                                        | 708-953-9100; 800-237-6725 |
| \$† BW Cable Systems, Inc., N. Dighton, MA 02764                                               | 508-520-1200               |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000               |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                      | 201-796-2886               |
| \$ Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950                       | 717-757-6600               |
| \$ Cable USA, Inc., Naples, FL 33942-3560                                                      | 813-643-6400               |
| Ceramaseal, New Lebanon, NY 12125                                                              | 518-794-7800               |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                          | 802-655-2121               |
| \$† Clifford of Vermont, Inc., Bethel, VT 05032                                                | 802-234-9921; 800-451-4381 |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELDEN-1 |
| \$ Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                        | 201-768-5400               |
| † DELTA M Corporation, Oak Ridge, TN 37830                                                     | 615-483-1569               |
| † Electrowave, Inc., Worcester, MA 01604                                                       | 508-752-8932               |
| † General Wire Products, Inc., Worcester, MA 01604                                             | 617-752-8260               |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                 | 514-293-5304               |
| Incotherm Limited, Inco Alloys Ltd., Hereford, UNITED KINGDOM HR4 9SL                          | (44) 432 355880            |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590               |
| \$ Love Controls Division, Dwyer Instruments, Inc., Wheeling, IL 60090                         | 708-541-3232               |
| \$ Markel Corp., Norristown, PA 19040                                                          | 215-272-8960               |
| \$ Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101               |
| \$ Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357 |
| PYCO, Inc., Penndel, PA 19047                                                                  | 215-757-3704               |
| Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796                                | 617-527-4385               |
| Rodale Technical Sales Inc., Islip, NY 11751                                                   | 516-277-5454               |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                | 714-251-1960               |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                       | 317-543-3540;              |
|                                                                                                | 800-382-4635               |
| \$† Specialty Cable Corporation, Wallingford, CT 06492                                         | 800-456-SPEC               |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;              |
|                                                                                                | 800-326-0006               |
| Storm Products Co., Hinsdale, IL 60521                                                         | 708-323-9121               |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311               |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                   | 904-829-5600               |
| † Thermo Electric, Saddle Brook, NJ 07662                                                      | 201-843-5800               |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584               | 309-693-3300               |
| † United Wire & Cable Corp., Worcester, MA 01604                                               | 508-757-3872               |

## Cable, Transmission Line, Power-6000

|                                                                         |                            |
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| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 | C-1768                     |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970            | C-1837-1838, 1844-1845     |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                        | 404-751-9473; 800-221-4767 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                         | 703-369-0440               |
| Alcatel Chester Cable Corp., Chester, NY 10918                          | 914-469-2141               |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 | 401-726-0700               |
| \$† Brim Electronics, Fair Lawn, NJ 07410                               | 201-796-2886               |
| Carol Cable Co., Highland Heights, KY 41076                             | 606-572-8303; 606-572-8000 |



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| # Clifford of Vermont, Inc., Bethel, VT 05032                                  | 802-234-9921;800-451-4381   |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412         | 708-455-8830                |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                           | 317-983-5200;800-BELDEN-1   |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647                          | 201-768-5400                |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                | 708-459-1000; 800-323-0198  |
| † W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                 | 602-431-0077                |
| † W.L. Gore & Assocs., Newark, DE 19714                                        | 302-738-4880                |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                      | 201-694-6200;1-800-572-9473 |
| † Kaman Instrumentation, Colo Springs, CO 80907                                | 719-599-1132                |
| \$ Kelly American, Inc., Brookfield, CT 06804                                  | 203-775-2590                |
| † M/A-Corn, Inc., Antenna & Cable Division, Amesbury, MA 01913                 | 508-388-5210                |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                         | 914-967-8000                |
| \$† Micro-Coax, Collegeville, PA 19426                                         | 215-489-3700                |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936          | 215-699-5373                |
| \$ Precision Tube, N. Wales, PA 19454                                          | 215-699-5801                |
| \$ Remeo Products Corp., Florida, NY 10921                                     | 914-651-4431                |
| Storm Products Co., Hinsdale, IL 60521                                         | 708-323-9121                |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                    | 508-839-5987                |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092       | 904-829-5600                |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                |

## Cable, Triaxial-6000

|                                                                                                 |                              |
|-------------------------------------------------------------------------------------------------|------------------------------|
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                                | C•1748                       |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                                   | C•1749                       |
| † Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357;800-545-5833                            | C•1756                       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C•1768                       |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                                         | C•1807                       |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                    | C•1500                       |
| \$† ABL Electronics Supply, Inc., Peekskill, NY 10566                                           | 914-736-1010; 1-800-431-2103 |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                                | 404-751-9473;800-221-4767    |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                            | 718-358-2345; 1-800-395-0200 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                 | 703-369-0440                 |
| \$ Alcatel Chester Cable Corp., Chester, NY 10918                                               | 914-469-2141                 |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                   | 908-925-8000                 |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                                    | 717-354-6200                 |
| \$† BIW Cable Systems, Inc., N. Dighton, MA 02764                                               | 508-520-1200                 |
| Brand-Flex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                         | 203-456-8000                 |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                       | 201-796-2886                 |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303;606-572-8000    |
| Cat Wire and Cable Corp., Miami, FL 33150                                                       | 305-836-3600                 |
| CICOLL CORP., Valencia, CA 91355-3428                                                           | 805-295-1295                 |
| \$† Clifford of Vermont, Inc., Bethel, VT 05032                                                 | 802-234-9921;800-451-4381    |
| \$† Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                   | 704-324-2200; 800-982-1708   |
| Connect-Air International, Inc., Auburn, WA 98002                                               | 206-939-4880                 |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                 |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                        | 818-882-8313                 |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                            | 317-983-5200;800-BELDEN-1    |
| Custom Cable Corp., Westbury, NY 11590                                                          | 516-334-3600                 |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                                       | 201-768-5400                 |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198   |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                              | 708-473-4990                 |
| \$ Electrical Insulation Suppliers, Inc., Hillside, IL 61062                                    | 708-547-5400                 |
| † General Wire Products, Inc., Worcester, MA 01604                                              | 617-752-8260                 |
| \$ Glasgal Communications, Inc., Northvale, NJ 07647                                            | 201-768-8082                 |
| † W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                  | 602-431-0077                 |
| † W.L. Gore & Assocs., Newark, DE 19714                                                         | 302-738-4880                 |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                 |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                  | 514-293-5304                 |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                       | 201-694-6200;1-800-572-9473  |
| \$† Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720;800-344-5251    |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                   | 203-775-2590                 |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879                                                | 301-921-4600                 |
| \$ Manger Electric Company, Inc., Stamford, CT 06902                                            | 203-348-7761                 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                                          | 914-967-8000                 |
| Meritec, Associated Enterprises, Painesville, OH 44077                                          | 216-354-3148                 |
| \$† Micro-Coax, Collegeville, PA 19426                                                          | 215-489-3700                 |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                           | 215-699-5373                 |
| Mohawk/CDT, Leominster, MA 01453                                                                | 508-537-9961;800-422-9961    |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                       | 508-791-3161                 |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                    | 201-227-7996                 |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                    | 909-945-1365                 |
| \$ Philadelphia Insulated Wire Co., Inc., General Cable Corporation, Highland Heights, KY 41076 | 606-572-8306;800-257-8357    |
| Phoenix Wire, Inc., S. Hero, VT 05486                                                           | 802-372-4561                 |
| Precision Tube, N. Wales, PA 19454                                                              | 215-699-5801                 |
| \$ Quality Microwave Interconnects, Inc., Wilmington, MA 01887                                  | 508-988-9090                 |
| \$ Remeo Products Corp., Florida, NY 10921                                                      | 914-651-4431                 |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                        | 317-543-3540; 800-382-4635   |
| \$ Specialty Cable Corporation, Wallingford, CT 06492                                           | 800-456-SPEC                 |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                        | 310-609-1811; 800-326-0006   |
| † Storm Products Co., Hinsdale, IL 60521                                                        | 708-323-9121                 |
| \$† Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                 |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                 |
| \$† Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                 |

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|---------------------------------------------------------------------------------|--------------|
| Transtechonlogy Electronics, Transtechonlogy Corporation, Peoria, IL 61615-1584 | 309-693-3300 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                              | 213-870-9933 |
| \$† Western Electronic Products Co., San Clemente, CA 92673                     | 714-492-4677 |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                              | 805-257-2400 |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681      | 803-963-5131 |

## Cable, TV (Incl. Camera)-6000

|                                                                                               |                                 |
|-----------------------------------------------------------------------------------------------|---------------------------------|
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830           | C•1734-1735                     |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475;800-626-6116                   | C•1354,1753                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                       | C•1768                          |
| RDl Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                         | C•1803                          |
| Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                           | C•1458,1809                     |
| Alcatel Chester Cable Corp., Chester, NY 10918                                                | 914-469-2141                    |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                 | 908-925-8000                    |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                       | 401-726-0700                    |
| \$ BIW Cable Systems, Inc., N. Dighton, MA 02764                                              | 508-520-1200                    |
| Brand-Flex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                       | 203-456-8000                    |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                     | 201-796-2886                    |
| Carol Cable Co., Highland Heights, KY 41076                                                   | 606-572-8303;606-572-8000       |
| Cat Wire and Cable Corp., Miami, FL 33150                                                     | 305-836-3600                    |
| \$ Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                  | 704-324-2200                    |
| Connect-Air International, Inc., Auburn, WA 98002                                             | 206-939-4880                    |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                          | 317-983-5200;800-BELDEN-1       |
| Covid, Inc., Tempe, AZ 85281                                                                  | 602-966-2221                    |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                                     | 201-768-5400                    |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                            | 708-459-1000; 800-323-0198      |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                                   | 310-515-4996                    |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                        | 815-968-9661                    |
| † General Wire Products, Inc., Worcester, MA 01604                                            | 617-752-8260                    |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                   | 606-572-8303                    |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                     | 201-694-6200;1-800-572-9473     |
| Judd Wire Inc., Turners Falls, MA 01376                                                       | 413-863-4357;800-545-5833       |
| Judd Wire Inc., San Marcos, CA 92069                                                          | 619-744-7720;800-344-5251       |
| \$ Kelly American, Inc., Brookfield, CT 06804                                                 | 203-775-2590                    |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879                                              | 301-921-4600                    |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                                        | 914-967-8000                    |
| \$† Micro-Coax, Collegeville, PA 19426                                                        | 215-489-3700                    |
| Mohawk/CDT, Leominster, MA 01453                                                              | 508-537-9961;800-422-9961       |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                     | 508-791-3161                    |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                            | 815-229-7773                    |
| \$ Remeo Products Corp., Florida, NY 10921                                                    | 914-651-4431                    |
| Rowe Industries, Inc., Toledo, OH 43612                                                       | 419-729-9761                    |
| Shokai Far East Ltd., Peekskill, NY 10566                                                     | 914-736-3500                    |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                      | 310-609-1811; 800-326-0006      |
| # Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                    |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893                                               | 401-821-1700;SALES 401-821-7800 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                            | 213-870-9933                    |
| \$ Wavetek Communications Div., (Formerly Wavetek Indiana, Inc.), Indianapolis, IN 46203-6109 | 317-788-9351                    |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                            | 805-257-2400                    |

## Cable, Twisted Pair-6000

|                                                                                     |                                      |
|-------------------------------------------------------------------------------------|--------------------------------------|
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  | C•1707                               |
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                             | C•1715,1717                          |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                    | C•1748                               |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                       | C•1749                               |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051         | C•1754-1755                          |
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357;800-545-5833              | C•1756                               |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611             | C•1768,1772,1774,1778-1780,1783-1784 |
| Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561                                 | C•1802                               |
| Technical Devices, Dayton, OH 45414, 513-890-7881                                   | C•1813                               |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                     | C•1815,1817                          |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                          | C•1826,1829-1831,1839-1842           |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                     | 404-751-9473;800-221-4767            |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895                  | 1-401-769-1600                       |
| † Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002 | 415-592-4550                         |
| Aerospace Wire & Cable Inc., College Point, NY 11356                                | 718-358-2345; 1-800-395-0200         |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                     | 703-369-0440                         |
| \$† Alcatel Chester Cable Corp., Chester, NY 10918                                  | 914-469-2141                         |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                       | 908-925-8000                         |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862             | 401-726-0700                         |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                 | 203-265-8910                         |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                     | 203-281-3200                         |
| \$ AT&T Network Systems,Network Cable Sys. Div., Morristown, NJ 07962               | 1-800-344-0223, Ext. 1027            |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                    | 508-222-2202                         |
| \$ Berk-Tek Inc., New Holland, PA 17557-9722                                        | 717-354-6200                         |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                       | 508-520-1200                         |



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| † Brand Dielectrics, Inc., N. Windham, CT 06256                                               | 203-423-6321                      |
| § Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000                      |
| § Cable Continental Cables Co., BICC Cables Corp., York, PA 17402-9950                        | 717-757-6600                      |
| CableStar, Incorporated, Glasgow, KY 42141                                                    | 800-338-8223                      |
| Cabletron Systems, Inc., Rochester, NH 03867                                                  | 603-332-9400                      |
| Carol Cable Co., Highland Heights, KY 41076                                                   | 606-572-8303; 606-572-8000        |
| Cat Wire and Cable Corp., Miami, FL 33150                                                     | 305-836-3600                      |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                         | 802-655-2121                      |
| CICOIL CORP., Valencia, CA 91355-3428                                                         | 805-295-1295                      |
| § Circuit Assembly Corp., Irvine, CA 92718-2703                                               | 714-855-7887                      |
| § Clifford of Vermont, Inc., Bethel, VT 05032                                                 | 802-234-9921; 800-451-4381        |
| § Comm/Scope, Inc., Network Cable Div., Claremont, NC 28610                                   | 704-324-2200;                     |
|                                                                                               | 800-982-1708                      |
| § Computer System Products, Minneapolis, MN 55447                                             | 612-476-6866; 800-422-2537        |
| Connect-Air International, Inc., Auburn, WA 98002                                             | 206-939-4880                      |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                      |
| § Control Cable, Inc., Baltimore, MD 21244                                                    | 410-298-4411                      |
| § Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELEN-1         |
| § CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                               | 619-744-8182;                     |
|                                                                                               | 800-334-3815                      |
| § Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                      |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                                         | 612-941-5651; 1-800-334-5553      |
| § Dabum Electronics & Cable Corp., Northvale, NJ 07647                                        | 201-768-5400                      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                | 203-438-9684; 800-344-9684        |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198        |
| § Delta Wire & Cable Co., North Chicago, IL 60064                                             | 708-473-4990                      |
| § Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                   | 708-547-5400                      |
| † Electrowave, Inc., Worcester, MA 01604                                                      | 508-752-8932                      |
| § Endeavor Corporation, Meggitt Aerospace, San Juan Capistrano, CA 92675                      | 714-493-8181                      |
| Gavitt Wire & Cable, Brookfield, MA 01506                                                     | 508-867-6476                      |
| General Cable Co., Fiber Optics Div., Plainfield, NJ 07080                                    | 201-769-3200                      |
| † W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                               | 602-431-0077                      |
| † W.L. Gore & Assocs., Newark, DE 19714                                                       | 302-738-4880                      |
| § GTE Supply, GTE, Irving, TX 75038                                                           | 800-433-4837                      |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                   | 606-572-8303                      |
| § Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                 | 514-293-5304                      |
| § Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                      |
| ISL Products Int'l Ltd., Sysset, NY 11791-6093                                                | 516-937-3475; 800-626-6116        |
| Judd Wire Inc., San Marcos, CA 92069                                                          | 619-744-7720; 800-344-5251        |
| § Kelly American, Inc., Brookfield, CT 06804                                                  | 203-775-2590                      |
| § Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                               | 206-485-4288;                     |
|                                                                                               | 206-486-2222                      |
| § Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200; 800-523-6075        |
| § Manhattan Electric Cable Corporation, Rye, NY 10580                                         | 914-967-8000                      |
| † Markel Corp., Norristown, PA 19404                                                          | 215-272-8960                      |
| § 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info. |
| 3M Private Network Products, 3M, Austin, TX 78726                                             | 512-984-3400; 800-426-8626        |
| Meritec, Associated Enterprises, Painesville, OH 44077                                        | 216-354-3148                      |
| † Microtech, Boothwyn, PA 19061                                                               | 215-459-3566                      |
| § Mington Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                     | 818-330-2086                      |
| Mohawk/CDT, Leominster, MA 01453                                                              | 508-537-9961; 800-422-9961        |
| Molecu-Wire, Farmingdale, NJ 07727                                                            | 908-938-9473                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                            | 508-588-6110                      |
| New England Electric Wire Corp., Lisbon, NH 03585                                             | 603-838-6624                      |
| ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                 | 805-484-0540                      |
| § Offlex Wire & Cable, Inc., Fairfield, NJ 07004                                              | 201-575-1101                      |
| § Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                      |
| Omega Engineering, Stamford, CT 06907                                                         | 800-826-6342                      |
| § Pacific Electricord, Gardena, CA 90247                                                      | 210-532-6600                      |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                     | 909-945-1365                      |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 41076 | 606-572-8306; 800-257-8700        |
| RDI Elctms., Inc., Mamaroneck, NY 10543                                                       | 914-777-7000                      |
| § Remeo Products Corp., Florida, NY 10921                                                     | 914-651-4431                      |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                       | 914-429-3103                      |
| † Rowe Industries, Inc., Toledo, OH 43612                                                     | 419-729-9761                      |
| § Samtec, Inc., New Albany, IN 47151-1147                                                     | 1-800-672-6832                    |
| Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                 | 714-251-1960                      |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                      | 317-543-3540;                     |
|                                                                                               | 800-382-4635                      |
| † Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC                      |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;                     |
|                                                                                               | 800-326-0006                      |
| § Storm Products Co., Hinsdale, IL 60521                                                      | 708-323-9121                      |
| § Support Systems Intl. Corp., Richmond, CA 94804                                             | 510-234-9090                      |
| § Tappan Wire & Cable, Inc., Tappan, NY 10983                                                 | 914-359-9300                      |
| § Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                      |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                                   | 508-839-5987                      |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                      |
| † Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                      |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 | 803-676-2900                      |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584             | 309-693-3300                      |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                                | 818-707-2020                      |
| † United Wire & Cable Corp., Worcester, MA 01604                                              | 508-757-3872                      |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                             | 401-821-1700; SALES 401-821-7800  |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                            | 213-870-9933                      |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                      |

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| § Wilco Wire & Cable Co., Inc., San Jose, CA 95133                         | 408-926-8880 |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681 | 803-963-5131 |

## Cable, Welding-6000

|                                                                         |                            |
|-------------------------------------------------------------------------|----------------------------|
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 | C-1768                     |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970              | C-1839                     |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                         | 404-751-9473; 800-221-4767 |
| § American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862  | 401-728-0700               |
| † Brim Electronics, Fair Lawn, NJ 07410                                 | 201-796-2886               |
| Custom Cable Corp., Westbury, NY 11590                                  | 516-334-3600               |
| Meritec, Associated Enterprises, Painesville, OH 44077                  | 216-354-3148               |

## Cable, Woven Conductor-6000

|                                                                                         |                                   |
|-----------------------------------------------------------------------------------------|-----------------------------------|
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                           | C-1749-1750                       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C-1696                            |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                 | C-1768                            |
| † Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002     | 415-592-4550                      |
| † Berk-Tek Inc., New Holland, PA 17557-9722                                             | 717-354-6200                      |
| † Brim Electronics, Fair Lawn, NJ 07410                                                 | 201-796-2886                      |
| † Cable Systems, Inc., The HVT Group, Everett, MA 02149                                 | 617-389-7080                      |
| § Circuit Assembly Corp., Irvine, CA 92718-2703                                         | 714-855-7887                      |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                      | 708-455-8830                      |
| § Dabum Electronics & Cable Corp., Northvale, NJ 07647                                  | 201-768-5400                      |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                       | 708-459-1000; 800-323-0198        |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                             | 708-547-5400                      |
| † Electrowave, Inc., Worcester, MA 01604                                                | 508-752-8932                      |
| § 3M-Electronic Products Division, Austin, TX 78726                                     | 1-800-225-5373 Sls. & Prod. Info. |
| Parlex Corporation, Methuen, MA 01844                                                   | 508-685-4341                      |
| § Support Systems Intl. Corp., Richmond, CA 94804                                       | 510-234-9090                      |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                | 904-829-5600                      |
| Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584         | 309-693-3300                      |
| † United Wire & Cable Corp., Worcester, MA 01604                                        | 508-757-3872                      |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                        | 805-257-2400                      |
| † Woven Electronics, Woven Electronics Corporation, Simpsonville, SC 29681              | 803-963-5131                      |

## Cable &amp; Assemblies (MIL)-2440 — See Vol. B

## Cable &amp; Connectors, Satellite Antennas-1200 — See Vol. D

## Cable Assemblies &amp; Harnesses-6000

|                                                                                                            |                              |
|------------------------------------------------------------------------------------------------------------|------------------------------|
| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103                          | C-1287, 1706-1709            |
| † Aiden Products Co., Brockton, MA 02403, 508-583-0160                                                     | C-1148                       |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                    | B-1202-1203, 1206, C-1163    |
| C & C Jetronic, Inc., Allentown, NJ 08501, 609-259-8855                                                    | C-1274                       |
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| \$ Gentron Corporation, Scottsdale, AZ 85260              | 602-443-1288 |
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| \$† Keystone Electronics Corp., Astoria, NY 11105-2017          | 718-956-8900              |
| National Manufacturing Co., Inc., Chatham, NJ 07928             | 201-635-8846              |
| POLYCASE PRODS., ECP Corp., Cleveland, OH 44103                 | 216-391-0444/800-248-1233 |
| United Technical Products, Fallsington, PA 19054                | 800-553-5300              |
| † Wall, A. T. Co., Warwick, RI 02886                            | 401-739-0740              |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 | 801-298-5900              |

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| \$ Bivar, Inc., Irvine, CA 92718, 714-951-8808                        | C-1537        |
| Chicago Condenser Corp., Chicago, IL 60622, 312-227-7070              | A-1029        |
| \$ North American Capacitor Co., Indianapolis, IN 46224, 317-273-0090 | A-1134        |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608       | 201-288-4477; |
|                                                                       | 800-447-5639  |
| Sprague, Solid Tantalum Capacitors, Sanford, ME 04073-0231            | 207-324-4140  |
| Sprague, Wet & Foil Tantalum Capacitors, North Adams, MA 01247-3987   | 413-664-4431  |

\$† Teknatonal Inds., Inc., Rochester, NY 14620-1103 716-232-1291

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| Alden Products Co., Brockton, MA 02403, 508-583-0160                  | C-1148 |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121 |        |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380   | C-1353 |
| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571           | C-1358 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492   |        |

203-265-8910  
\$† Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810 203-743-9272;  
800-627-7100

|                                                                                             |              |
|---------------------------------------------------------------------------------------------|--------------|
| \$ AVA Electronics Corporation, Drexel Hill, PA 19026                                       | 215-284-2500 |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000 |
| \$† CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428       |              |

|                                                                     |                           |
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| 612-537-1010                                                        |                           |
| † Glenair Inc., Glendale, CA 91201-2497                             | 818-247-6000              |
| \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033                | 908-245-0033/800-526-4182 |
| Hypertronics Corp., Hudson, MA 01749                                | 508-568-0451/800-225-9228 |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                       | 815-895-5181              |
| ITT Cannon, Santa Ana, CA 92705-5684                                | 714-557-4700              |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                            | 502-684-0431              |
| \$† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101              | 617-890-4750              |
| \$† Pass & Seymour/LeGrand, Pass & Seymour/Inc., Syracuse, NY 13221 | 315-468-6211              |

|                                                                        |                           |
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| \$ Penstock Engineering Labs, Penstock, Inc., Sunnyvale, CA 94086-4018 |                           |
|                                                                        | 408-730-0300/800-PENSTOCK |
| † Rowe Industries, Inc., Toledo, OH 43612                              | 419-729-9761              |



## PRODUCT INDEX & DIRECTORY

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| \$ Stetco, Inc., Franklin Pk., IL 60131                                        | 708-671-4208                  |
| \$ Sunbank Electronics, Paso Robles, CA 93446                                  | 805-238-2840                  |
| TELTEC, Inc., Minneapolis, MN 55425                                            | 612-854-9177                  |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 |                               |
|                                                                                | 803-676-2900                  |
| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584      |                               |
|                                                                                | 309-693-3300                  |
| † Tru-Connector Corp., Peabody, MA 01960                                       | 508-532-0775; 1-800-262-9787; |
|                                                                                | 1-800-COAXTRU                 |

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| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                     | C-1720-1721                |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400     | C-1740                     |
| \$† 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368 |                            |
|                                                                             | C-1667, D-2311             |
| \$ Newman, M. M., Corp., Heli-Tube Div., Marblehead, MA 01945, 617-631-7100 |                            |
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| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                               | 908-925-8000               |
| † AME Corporation, Towaco, NJ 07082-0195                                    | 201-263-1700               |
| \$ Antex Division, Marblehead, MA 01945                                     | 617-631-7100               |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                             | 203-423-6321               |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8       |                            |
|                                                                             | 1-800-361-9466             |
| † Cole-Flex Corporation, West Babylon, NY 11704                             | 516-249-6150               |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412          | 708-455-8830               |
| \$ Contact East, N. Andover, MA 01845                                       | 508-682-2000               |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                 | 708-547-5400               |
| Fibertek Inc., Franklin, TN 37065                                           | 615-794-1400               |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                               | 815-895-5181               |
| \$† M.M. Newman Corporation, Marblehead, MA 01945                           | 617-631-7100               |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                | 800-777-3300               |
| Precision Paper Tube Co., Wheeling, IL 60090                                | 708-537-4250               |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                  | 317-543-3540;              |
|                                                                             | 800-382-4635               |
| Shin-Etsu Polymer America, Inc., Union City, CA 94587                       | 510-475-9000               |
| \$ Special Electric Co., Inc., Milwaukee, WI 53215                          | 414-383-6370               |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                    | 310-609-1811;              |
|                                                                             | 800-326-0006               |
| Topflight, York, PA 17404                                                   | 717-843-9901; 800-233-9386 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                | 516-254-2970               |
| \$† Zeus Ind. Prods. Inc., Orangeburg, SC 29116                             | 803-531-2174; 800-526-3842 |

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| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                          | C-1163                            |
| Bivar, Inc., Irvine, CA 92718, 714-951-8808                                    | C-1537                            |
| J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                           | C-1363                            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                      | 516-546-1751                      |
| AOT Electronics, Inc., Newport Beach, CA 92660                                 | 714-852-9999                      |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283        |                                   |
|                                                                                | 602-897-7001                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703               | 508-222-2202                      |
| Autosplice, Inc., San Diego, CA 92121                                          | 619-535-0077                      |
| \$ Berg Electronics, Camp Hill, PA 17011                                       | 800-237-2374                      |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                           | 416-470-1346                      |
| Elcysys Inc., Div. of C & C Jetronic, Princeton, NJ 08540                      | 609-259-8866                      |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365              | 814-726-6500                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                | 201-288-4477;                     |
|                                                                                | 800-447-5639                      |
| \$ ERNI Components, Richmond, VA 23236                                         | 804-794-6367                      |
| † Hypertronics Corp., Hudson, MA 01749                                         | 508-568-0451; 800-225-9228        |
| \$ 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sls. & Prod. Info. |
| MOLEX, Inc., Lisle, IL 60532                                                   | 708-969-4550                      |
| \$ The J. M. Ney Company, Bloomfield, CT 06002                                 | 203-242-2281                      |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300                      |
| Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244         |                                   |
|                                                                                | 602-963-4584                      |
| \$ Teka Interconnection Systems, Interplex Industries, Providence, RI 02907    |                                   |
|                                                                                | 401-785-4110                      |
| Texas Instruments, Connector Systems, Attleboro, MA 02703                      | 508-699-5269;                     |
|                                                                                | 508-699-3450                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 |                                   |
|                                                                                | 803-676-2900                      |

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| Gemini Inc., Cannon Falls, MN 55009, 507-263-3957; 800-533-3631            | C-1046-1047                            |
| Kit Master, Peekskill, NY 10566, 914-736-1010                              | C-1541                                 |
| Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733            | C-1051                                 |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 |                                        |
|                                                                            | C-1060                                 |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500          | C-1082-1083                            |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                             | C-1089                                 |
| Simco, Miami, FL 33177, 305-233-9900; 800-780-9090                         | C-1094-1095                            |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                            | 404-751-9473; 800-221-4767             |
| Alusett U.S.A., Inc., Peekskill, NY 10566                                  | 914-737-0120                           |
| Anvil Cases, Subsidiary of Zero Corporation, City of Industry, CA 91745    |                                        |
|                                                                            | 818-968-4100                           |
| † Casemaker, Stecco Industries, Inc., Chicago, IL 60609                    | 312-254-1221                           |
| Electronic Packaging System, Marion, IA 52302                              | 319-377-3423                           |
| # HMC/Hub Material Company, Canton, MA 02021                               | 617-821-1870                           |
| † Instrument Enclosures, Tulare, CA 93274                                  | 209-688-1100                           |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                               | 708-677-9500                           |
| \$ Metermaster, Tempe, AZ 85282                                            | 602-431-0015                           |
| Miller, W. A. Co., Oquossoc, ME 04964-0337                                 | 207-864-3344; 800-227-1415             |
| MultiNational Resources, Inc., Bedford, NH 03110                           | 603-622-3550                           |
| † Nielsen Hardware, Zero Corporation, Hartford, CT 06141                   | 203-522-8145                           |
| Packaging Plus, Inc., Minneapolis, MN 55432                                | 612-574-9909                           |
| The Pedro Companies, St. Paul, MN 55101                                    | 612-224-9491                           |
| \$† Princeton Case Co., Inc., Union, NJ 07083                              | 908-687-1750                           |
| # Project Pro, Twinsburg, OH 44087                                         | 216-425-8888                           |
| Rittal Corp., Springfield, OH 45504-9807                                   | 800-477-4000                           |
| † Skydye Div., AAR Mfg., Port Jervis, NY 12771                             | 914-856-6655; 800-428-CASE             |
| Star Case Manufacturing Co., Inc., Munster, IN 46321                       | 219-922-4440; 800-822-STAR             |
|                                                                            | (outside IN); 800-782-CASE (inside IN) |
| Western Case, Inc., Tustin, CA 92680                                       | 714-838-8460                           |

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| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                              | C-1017                                 |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                    | C-1021                                 |
| Emcor Products, Crenio, Inc., Rochester, MN 55901, 507-289-3371                          | C-1034                                 |
| Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691                           | C-1038-1039                            |
| \$ Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000              |                                        |
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| \$ Precision Fabrication Technologies, Inc., Monon, IN 47959,                            |                                        |
| 1-800-558-7297; 219-253-6666                                                             | C-1074, 1076                           |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                          | 404-751-9473; 800-221-4767             |
| † Albion Industries, Albion, MI 49224                                                    | 517-629-9441                           |
| ELMA Electronic Inc., Fremont, CA 94538                                                  | 510-656-3400                           |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016                  | 708-350-8200                           |
| Inter Metro Industries Corp., Wilkes-Barre, PA 18705                                     | 717-825-2741                           |
| # Midwest Container Systems, Minneapolis, MN 55428                                       | 612-533-4532                           |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216                     | 718-774-5901                           |
| The Pedro Companies, St. Paul, MN 55101                                                  | 612-224-9491                           |
| Premier Metal Prods. Co., Bronx, NY 10451                                                | 718-993-9200                           |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-639-1000                           |
| Star Case Manufacturing Co., Inc., Munster, IN 46321                                     | 219-922-4440; 800-822-STAR             |
|                                                                                          | (outside IN); 800-782-CASE (inside IN) |

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| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106,          |              |
| 708-766-7800                                                                        | C-1696       |
| \$ Walker Scientific, Worcester, MA 01606, 508-852-3674; 508-853-3232; 800-962-4638 |              |
|                                                                                     | D-1334       |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                     | 219-223-3158 |
| Magnetic Instrumentation, Inc., Indianapolis, IN 46226                              | 317-545-2102 |
| † The Mushiold Co. Inc., Goffstown, NH 03045                                        | 603-666-4433 |
| † Power Sys. Grp., Rantec Div., Emerson Elec. Co., Chatsworth, CA 91311             |              |
|                                                                                     | 818-885-8223 |

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 † Abalon Precision Mfg. Bronx, NY 10459 ..... 718-589-5682; 1-800-888-ABALON  
 † Acroloop Motion Control Systems, Inc., Chanhassen, MN 55317 ..... 612-474-4500  
 † BICO-VERO Electronics, Inc., Hamden, CT 06514 ..... 203-288-8001; 1-800-242-2863  
 † Boston Gear, IMO Industries Inc., Quincy, MA 02171 ..... 617-328-3300; 1-800-225-5280  
 † Bud Industries, Inc., Willoughby, OH 44094-0431 ..... 216-946-3200  
 † Calmark Corp., San Gabriel, CA 91776 ..... 818-287-0451  
 dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803 ..... 617-273-5800  
 † Diversified Technlg., Ridgeland, MS 39157 ..... 601-856-4121  
 Douglas Electronics, Inc., San Leandro, CA 94577 ..... 510-483-8770  
 † DY 4 Systems Inc., Nepean, Ont, CANADA K2H 9J4 ..... 613-596-9911  
 † EG & G Birtcher, EG & G, Inc., El Monte, CA 91794-1268 ..... 818-442-2572  
 Electronic Connectors, Inc., Reading, PA 19602 ..... 215-374-3796  
 ELMA Electronic Inc., Fremont, CA 94538 ..... 510-656-3400  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 Graham Electronic Manufacturing Inc., Escondido, CA 92025 ..... 619-747-9177; 800-628-4095

800-433-4837  
 † Hamilton Metalcraft, Pasadena, CA 91103 ..... 818-795-4811  
 † Hammond Manufacturing Co., Buffalo, NY 14225 ..... 716-894-5710  
 Micro Industries, Westerville, OH 43081-9486 ..... 614-548-7878  
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 # Project Pro, Twinsburg, OH 44087 ..... 216-425-8888  
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 Rittal Corp., Springfield, OH 45504-9807 ..... 800-477-4000  
 † Ritze Electronics/Relco, New Dundee, Ont, CANADA NOB 2E0 ..... 519-696-2616  
 † Titchener, E. H. & Co., Binghamton, NY 13902-1706 ..... 607-772-1161  
 Tracewell Enclosures, Inc., Westerville, OH 43081 ..... 614-846-6175; 800-848-4525  
 Unitrack Industries, Inc., Milford, DE 19963 ..... 302-424-5050  
 † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 ..... 310-316-9984  
 Zendex Corp., Dublin, CA 94568 ..... 510-828-3000  
 Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 ..... 801-298-5900

Chassis Marking Kits — See Kits, Marking (Vol. C)  
**Chassis, Metal-1400**  
 Ango Electronics Corp., North Arlington, NJ 07031, 201-955-0800 ..... C\*1014  
 Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433 ..... C\*1016  
 Calmark Corp., San Gabriel, CA 91776, 818-287-0451 ..... C\*1018  
 Compac, Holbrook, NY 11741, 516-585-3400 ..... C\*1020  
 † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572 ..... C\*1022  
 Electro Space Fabricators, Topton, PA 19562-0067, 215-682-7181 ..... C\*1029  
 Fury Products, Cowden Metal Specialties, Chino, CA 91710, 909-597-7860 ..... C\*1045  
 † General Devices Co., Inc., Indianapolis, IN 46239-0100, 317-897-7000, 1-800-626-9484 ..... C\*1048  
 † Lansing Instrument Corp., Ithaca, NY 14851-0730, 607-272-3265; 800-847-3535 ..... C\*1054-1055  
 † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 ..... C\*1056-1058, 1061  
 Powerbox Inc., Boulder, CO 80302, 303-444-1461; 800-444-1461 ..... C\*1071  
 Schreff, Inc., Warwick, RI 02886, 401-732-3770 ..... C\*1088  
 † Sescom, Inc., Henderson, NV 89015-4249, 702-565-3400 ..... C\*1093  
 † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288 ..... C\*1098-1099  
 TDJ Co., Inc., San Diego, CA 92110, 619-276-5920 ..... C\*1100-1101

† Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897 ..... C\*1102-1104  
 Zero Cabinets (Stantron), Pacoima, CA 91331-2226, 818-890-3445 ..... C\*1118-1123  
 † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561 ..... C\*1124  
 † AAK Corp., Haverhill, MA 01832 ..... 508-373-3769; 800-886-2225  
 † Abalon Precision Mfg. Bronx, NY 10459 ..... 718-589-5682; 1-800-888-ABALON  
 † Acme Model Engineering Co., Ridgefield, NJ 07657 ..... 201-943-7650  
 † Acroloop Motion Control Systems, Inc., Chanhassen, MN 55317 ..... 612-474-4500  
 Aiden Products Co., Brockton, MA 02403 ..... 508-583-0160  
 † American Aluminum, Mountainside, NJ 07092 ..... 908-233-3500  
 BICO-VERO Electronics, Inc., Hamden, CT 06514 ..... 203-288-8001; 1-800-242-2863  
 Bit 3 Computer Corporation, Minneapolis, MN 55431-1393 ..... 612-881-6955  
 † Bud Industries, Inc., Willoughby, OH 44094-0431 ..... 216-946-3200  
 Burbank Sheet Metal Works Inc., Burbank, CA 91502 ..... 818-846-0316  
 † Churchill Corp., Melrose, MA 02176 ..... 617-665-4700  
 † Diversified Technlg., Ridgeland, MS 39157 ..... 601-856-4121  
 ELMA Electronic Inc., Fremont, CA 94538 ..... 510-656-3400  
 Framar Metal Products Co., Inc., Kenilworth, NJ 07033 ..... 908-241-0710  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 † GENROCO, Inc., Slinger, WI 53086-9501 ..... 414-644-8700  
 Graham Electronic Manufacturing Inc., Escondido, CA 92025 ..... 619-747-9177; 800-628-4095  
 † GTE Supply, GTE, Irving, TX 75038 ..... 800-433-4837  
 † Hamilton Metalcraft, Pasadena, CA 91103 ..... 818-795-4811  
 † Hammond Manufacturing Co., Buffalo, NY 14225 ..... 716-894-5710  
 † Heeger, Inc., City of Commerce, CA 90040 ..... 213-728-5108; 728-4729; 728-6913  
 Industrial Computer Source, San Diego, CA 92131 ..... 619-271-9340  
 † LMB Heeger, Inc., Commerce, CA 90040 ..... 213-728-5108; 213-728-4729  
 Matrix Corp., Raleigh, NC 27610 ..... 919-231-8000  
 † Mecro Precision/Inds. Inc., Bridgeport, CT 06607 ..... 203-333-4900  
 Optelecom, Inc., Gaithersburg, MD 20877 ..... 301-840-2121  
 † Precision Fabrication Technologies, Inc., Monon, IN 47959 ..... 1-800-558-7297; 219-253-6666  
 † Premier Metal Prods. Co., Bronx, NY 10451 ..... 718-993-9200  
 # Project Pro, Twinsburg, OH 44087 ..... 216-425-8888  
 Prototek, Inc., Hamilton, OH 45015 ..... 513-874-5094  
 Rittal Corp., Springfield, OH 45504-9807 ..... 800-477-4000  
 † Ritze Electronics/Relco, New Dundee, Ont, CANADA NOB 2E0 ..... 519-696-2616  
 SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 ..... 503-638-1000  
 † Titchener, E. H. & Co., Binghamton, NY 13902-1706 ..... 607-772-1161  
 Tracewell Enclosures, Inc., Westerville, OH 43081 ..... 614-846-6175; 800-848-4525  
 Unitrack Industries, Inc., Milford, DE 19963 ..... 302-424-5050  
 † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 ..... 310-316-9984  
 † Vector Electronic Co., Inc., Sylmar, CA 91342 ..... 818-365-9661; 800-423-5659  
 Zendex Corp., Dublin, CA 94568 ..... 510-828-3000  
 † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 ..... 801-298-5900  
 † Zero Corp., Zero East Div., Monson, MA 01057-0128 ..... 413-267-5561

Chassis Slides — See Slides, Cabinet, Chassis (Vol. C)  
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 Checkers — See Analyzers (Vol. D), Testers (Vol. D)  
 Chemicals, Antistatic — See Coatings, Antistatic (Vol. C)

## Chemicals, Electroplating-1600

† Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747 ..... 313-984-5581  
 † Alpha Metals, Jersey City, NJ 07304 ..... 201-434-6778  
 AMP-AKZO Corporation, Chadds Ford, PA 19317 ..... 215-458-2800  
 † A.P.E. Corporation, Medford, NY 11763 ..... 516-654-1197  
 Auric Corp., Newark, NJ 07114 ..... 201-242-4100  
 Berg Electronics, Camp Hill, PA 17011 ..... 800-237-2374  
 † Fidelity Chemical Products Corp., Newark, NJ 07114 ..... 201-242-4110  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 Indium Corporation of America, Utica, NY 13502 ..... 315-853-4900; 1-800-4INDIUM  
 † Kepro Circuit Systems, Fenton, MO 63026-2992 ..... 314-343-1630  
 † PACE, Inc., Laurel, MD 20723-1990 ..... 301-490-9860  
 † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 ..... 401-433-7000  
 Shipley Company, Inc., Newton, MA 02162 ..... 617-969-5500  
 † Technic, Inc., Providence, RI 02940-9650 ..... 401-781-6100  
 Transene, Rowley, MA 01969 ..... 508-948-2501  
 † Van Waters & Rogers Inc., Univar Corp., St. Paul, MN 55164-0004 ..... 612-774-9400

## Chemicals, Epoxy Stripping-1600

† Atomergic Chemetals Corp., Farmingdale, NY 11735-1718 ..... 516-694-9000  
 Castall Inc., E. Weymouth, MA 02189 ..... 617-337-6075  
 † Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Dynalco, Inc., Hanover, NJ 07936 ..... 201-887-9270  
 † Electro Insulation Corp., Arlington Hgts., IL 60004 ..... 708-632-1020  
 Hardman: Harcos Chemicals Inc., Belleville, NJ 07109 ..... 201-751-3000  
 † Lilly-Ram Industries, Gardena, CA 90248 ..... 213-321-0710  
 † Master Bond, Hackensack, NJ 07601 ..... 201-343-8983  
 Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893 ..... 401-822-9300  
 † Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950 ..... 203-743-4447  
 † Sigma Plastics, Inc., Whitmore Lake, MI 48189 ..... 810-231-2871  
 † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370 ..... 617-878-7015  
 † Van Waters & Rogers Inc., Univar Corp., St. Paul, MN 55164-0004 ..... 612-774-9400

## Chemicals, Etching-1700

† Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 ..... C\*1677  
 † Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388 ..... C\*1136



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|-----------------------------------------------------------------|--------------|
| Auric Corp., Newark, NJ 07114                                   | 201-242-4100 |
| Berg Electronics, Camp Hill, PA 17011                           | 800-237-2374 |
| Fidelity Chemical Products Corp., Newark, NJ 07114              | 201-242-4110 |
| Gates, Geo. W. & Co., Inc., Franklin Sq., NY 11010              | 516-352-2904 |
| GC-Thorsen, Rockford, IL 61105-1209                             | 815-968-9661 |
| General Chemical Corporation, Pittsburg, CA 94565               | 510-685-1450 |
| W.L. Gore & Assocs., Newark, DE 19714                           | 302-738-4880 |
| Kepron Circuit Systems, Fenton, MO 63026-2992                   | 314-343-1630 |
| Micro-Etch Products, Inc., Stratford, CT 06497                  | 203-738-8610 |
| Shipley Company, Inc., Newton, MA 02162                         | 617-969-5500 |
| Technic, Inc., Providence, RI 02940-9650                        | 401-781-6100 |
| Techni-Tool, Plymouth Meeting, PA 19462                         | 215-825-4990 |
| Tran-Con, Inc., Medford, MA 02155                               | 617-391-5550 |
| Transene, Rowley, MA 01969                                      | 508-948-2501 |
| Van Waters & Rogers Inc., Univar Corp., St. Paul, MN 55164-0004 | 612-774-9400 |

**Chemicals, Fungicidal** — See Coatings, Fungicidal (Vol. C)

**Chemicals, Tin Plating-1700**

|                                                                                |              |
|--------------------------------------------------------------------------------|--------------|
| Datark Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 | C•1677       |
| Cramco Inc., Scarborough, Ont., CAN M1L 4M7                                    | 416-757-2876 |
| Fidelity Chemical Products Corp., Newark, NJ 07114                             | 201-242-4110 |
| Kepron Circuit Systems, Fenton, MO 63026-2992                                  | 314-343-1630 |
| Technic, Inc., Providence, RI 02940-9650                                       | 401-781-6100 |

**Chemicals, Wire Stripping-1600**

|                                                    |              |
|----------------------------------------------------|--------------|
| Eraser Co., Syracuse, NY 13221                     | 315-454-3237 |
| Fidelity Chemical Products Corp., Newark, NJ 07114 | 201-242-4110 |
| GC-Thorsen, Rockford, IL 61105-1209                | 815-968-9661 |
| Techni-Tool, Plymouth Meeting, PA 19462            | 215-825-4990 |

**Chestsets** — See Handsets, Chestsets (Vol. D)

**Chip Carriers, Surface Mount-2500**

|                                                                                 |                            |
|---------------------------------------------------------------------------------|----------------------------|
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643      | D•1117                     |
| International Sensor Systems, Inc., Aurora, NE 68818, 402-694-6111              | A•1704-1705                |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                     | C•1389                     |
| Mini-Systems, Inc., Electronic Package Div., Plainville, MA 02762, 508-695-2000 | A•1710                     |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                | 508-222-2202               |
| Coors Electronic Package Co., Chattanooga, TN 37405                             | 615-755-5452               |
| Dale Electronics, Inc., Columbus Div., Columbus, NE 68601-3647                  | 402-563-6506               |
| Dale Electronics, Inc., Norfolk Div., Norfolk, NE 68701-2242                    | 402-371-0080               |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162                       | 708-547-5400               |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                   | 201-288-4477; 800-447-5639 |
| HMC/Hub Material Company, Canton, MA 02021                                      | 617-821-1870               |
| International Resistive Company, Boone, NC 28607                                | 704-264-8861               |
| Mhotronics, Inc., Vernon Hills, IL 60061                                        | 708-913-9566               |
| Microsemi Corp., Santa Ana, CA 92799-6890                                       | 714-979-8220               |
| Microsemi Corp. - Scottsdale, Microsemi Corporation, Scottsdale, AZ 85252-1390  | 602-941-6300               |
| Nepenthe, Inc., Palo Alto, CA 94303                                             | 415-496-6666               |
| The J. M. Ney Company, Bloomfield, CT 06002                                     | 203-242-2281               |
| Ohmtek Inc., Vishay, Niagara Falls, NY 14304                                    | 716-283-4025               |
| Project Resources Inc., Wareham, MA 02571                                       | 508-295-7444               |
| SGS-THOMSON Microelectronics, Inc., Carrollton, TX 75006                        | 214-466-6000               |
| Solitron Devices, Inc., Semiconductor Group, West Palm Beach, FL 33407-4697     | 407-848-4311               |
| Technitrol, Philadelphia, PA 19134                                              | 215-426-9105               |

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**Chokes, RF** — See Coils, RF (Vol. A)

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**Circuit Breakers, Boxes, Panel Boards, Enclosures (MIL)-2440** — See Vol. B

**Circuit Testers** — See Testers, Signal Tracing (Vol. D)

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**Circuits, Hybrid, Thin Film-3130** — See Vol. A

**Circuits, Integrated** — See Integrated Circuits (Specific Types) (Vol. A)

**Circuits, Printed Flexible-1700**

|                                                                            |              |
|----------------------------------------------------------------------------|--------------|
| Aztec Industries, Inc., Mesa, AZ 85210, 602-833-3131; 800-729-3132         | B•1821       |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643 | D•1117       |
| OMNI Switch USA, Inc., Phoenix, AZ 85027, 602-582-0629                     | C•1137       |
| AAA Circuits, Inc., Wayne, NJ 07470                                        | 201-835-2765 |
| AAA Circuits, Inc., Wayne, NJ 07470                                        | 201-835-2765 |
| Action Instruments, San Diego, CA 92123                                    | 619-279-5726 |
| Advanced Circuit Technology, Nashua, NH 03062                              | 603-880-6000 |
| A E G Corporation, Basking Ridge, NJ 07920                                 | 908-204-8900 |
| Associated Circuits Inc., Menlo Park, CA 94025                             | 415-329-0478 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703           | 508-222-2202 |

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|----------------------------------------------------------------------------------|----------------------------|
| Basic Electronics, Inc., Stanton, CA 90680                                       | 714-530-2400               |
| Colt Technology Corp., Lenexa, KS 66219                                          | 913-888-1673               |
| Eldre Corporation, Rochester, NY 14623                                           | 716-427-7280               |
| Electrofilm, Valencia, CA 91355                                                  | 805-257-2242               |
| Electronic Systems Division, Boeing Defense & Space Grp., Seattle, WA 98124-2499 | 206-657-7474               |
| Electronic Tele-Communications, Inc., Atlanta, GA 30340-2178                     | 404-457-5600               |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                    | 201-288-4477; 800-447-5639 |
| Flex-Link Products, Inc., San Fernando, CA 91340                                 | 818-898-1451               |
| General Technology Corp., Albuquerque, NM 87109                                  | 505-345-5591               |
| Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                 | 714-660-5772               |
| Hughes Electronics Products Corp., Livonia, MI 48150                             | 313-427-8310               |
| Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119                          | 206-284-2200               |
| ISL Products Int'l, Ltd., Sysset, NY 11791-6093                                  | 516-937-3475; 800-626-6116 |
| ITL Circuits, Markham, Ontario, CANADA L3R 1C4                                   | 416-475-6658; 416-492-9307 |
| Jayco Interface Technology, Orange, CA 92665                                     | 714-974-1701               |
| Mantex Corp., Oxford, MI 48371                                                   | 313-628-8210               |
| Max Levy Autograph, Inc., Philadelphia, PA 19144-4298                            | 215-842-3675               |
| Method Electronics, Inc., Chicago, IL 60656                                      | 708-867-9600               |
| Metro Circuits, PJC Technologies, Inc., Rochester, NY 14613                      | 716-254-2980               |
| Minco Products, Minneapolis, MN 55432                                            | 612-571-3121               |
| New England Keyboard Inc., Fitchburg, MA 01420                                   | 508-345-8332               |
| Parlex Corporation, Methuen, MA 01844                                            | 508-685-4341               |
| Polyflon Company, Crane Co., New Rochelle, NY 10801                              | 914-636-7222               |
| Precision Graphics Inc., Raritan, NJ 08869                                       | 908-707-8880               |
| Precision Prototypes, Inc., Garfield, NJ 07026                                   | 201-546-6737               |
| Proto Systems, Alpharetta, GA 30201                                              | 404-475-1330; 800-331-1797 |
| Rogers Corporation, Circuit Materials Div., Chandler, AZ 85244                   | 602-963-4584               |
| Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244           | 602-963-4584               |
| Rogers Corp., Rogers, CT 06263                                                   | 203-774-9605               |
| Sheldahl, Inc., Northfield, MN 55057                                             | 507-663-8000               |
| Smart Relay Technology, Inc., Commack, NY 11725                                  | 516-543-7161               |
| Tech-Etch, Inc., Plymouth, MA 02360                                              | 508-747-0300               |
| Technical Heaters, Inc./Thermolab, San Fernando, CA 91340                        | 818-365-9435               |
| Tektronix, Inc., Wilsonville, OR 97070                                           | 800-835-9433               |
| TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                         | 714-630-7127               |
| Wire Graphics, Inc., Farmingdale, NY 11735                                       | 516-293-1525               |
| Worltronics, Los Angeles, CA 90039                                               | 213-660-6230               |

**Circuits, Printed, Multilayer-1700**

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|----------------------------------------------------------------------------------|-------------------------------------|
| Fema Elctms. Corp., E. Brunswick, NJ 08816, 908-238-1223                         | B•1063                              |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643       | D•1117                              |
| International Sensor Systems, Inc., Aurora, NE 68818, 402-694-6111               | A•1704-1705                         |
| OMNI Switch USA, Inc., Phoenix, AZ 85027, 602-582-0629                           | C•1137                              |
| AAA Circuits, Inc., Wayne, NJ 07470                                              | 201-835-2765                        |
| AAA Circuits, Inc., Wayne, NJ 07470                                              | 201-835-2765                        |
| Action Instruments, San Diego, CA 92123                                          | 619-279-5726                        |
| AMP-AKZO Corporation, Chadds Ford, PA 19317                                      | 215-459-2800                        |
| Applied Design Company, Minneapolis, MN 55413                                    | 612-378-0094                        |
| Associated Circuits Inc., Menlo Park, CA 94025                                   | 415-329-0478                        |
| AT&T Microelectronics, Allentown, PA 18103                                       | 1-800-372-2447; Can: 1-800-553-2448 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                 | 508-222-2202                        |
| Avanti Circuits, Inc., Phoenix, AZ 85023                                         | 1-800-234-1556                      |
| Aydin Corp., Horsham, PA 19044                                                   | 215-657-7510                        |
| Aztec Industries, Inc., Mesa, AZ 85210                                           | 602-833-3131; 800-729-3132          |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                    | 203-288-8001; 1-800-242-2863        |
| Collins Commercial Avionics, Rockwell Int'l, Cedar Rapids, IA 52498              | 319-395-1000                        |
| Colt Technology Corp., Lenexa, KS 66219                                          | 913-888-1673                        |
| Coors Electronic Package Co., Chattanooga, TN 37405                              | 615-755-5452                        |
| C-S Electronic Sales, Inc., Frankfort, IN 46041                                  | 317-659-1874                        |
| Diversified Systems, Inc., Indianapolis, IN 46268                                | 317-299-9547                        |
| Douglas Electronics, Inc., San Leandro, CA 94577                                 | 510-483-8770                        |
| Electronic Controls Design, Milwaukie, OR 97222                                  | 503-659-6100                        |
| Electronic Systems Division, Boeing Defense & Space Grp., Seattle, WA 98124-2499 | 206-657-7474                        |
| Electronic Tele-Communications, Inc., Atlanta, GA 30340-2178                     | 404-457-5600                        |
| EMDS, Inc., Gathersburg, MD 20877                                                | 301-840-5710                        |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                    | 201-288-4477; 800-447-5639          |
| General Technology Corp., Albuquerque, NM 87109                                  | 505-345-5591                        |
| Hokuriku USA Ltd., Madison, AL 35758                                             | 205-772-9620                        |
| Hughes Electronics Products Corp., Livonia, MI 48150                             | 313-427-8310                        |
| IDM (International Design Modeling), Bedford, NH 03110                           | 603-472-7068                        |
| IM/D, E.P.E. Corp., Manchester, NH 03101                                         | 603-669-5224                        |
| Interlogic Industries, Melville, NY 11747-4294                                   | 516-420-8111                        |
| ISL Products Int'l, Ltd., Sysset, NY 11791-6093                                  | 516-937-3475; 800-626-6116          |
| ITL Circuits, Markham, Ontario, CANADA L3R 1C4                                   | 416-475-6658; 416-492-9307          |
| Kalmus & Assocs., Inc., Broadview, IL 60153                                      | 708-343-7004                        |
| Max Levy Autograph, Inc., Philadelphia, PA 19144-4298                            | 215-842-3675                        |
| Mega Circuit, Inc., Addison, IL 60101                                            | 708-629-1800                        |
| Method Electronics, Inc., Chicago, IL 60656                                      | 708-867-9600                        |
| Metro Circuits, PJC Technologies, Inc., Rochester, NY 14613                      | 716-254-2980                        |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936               | 215-699-5373                        |
| Micro Engineering Co., Inc., Simi Valley, CA 93063-3449                          | 805-581-3950                        |
| North Texas Circuit Board, Grand Prairie, TX 75050                               | 214-790-7610                        |
| Pacific Coast Circuits, Inc., San Luis Obispo, CA 93401                          | 805-544-4881                        |
| Polyflon Company, Crane Co., New Rochelle, NY 10801                              | 914-636-7222                        |
| Precision Graphics Inc., Raritan, NJ 08869                                       | 908-707-8880                        |
| Precision Prototypes, Inc., Garfield, NJ 07026                                   | 201-546-6737                        |
| Proto Systems, Alpharetta, GA 30201                                              | 404-475-1330; 800-331-1797          |



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| Riverhead Circuits, AMP + AKZO Corporation, Aquebogue, NY 11931                          | 516-722-4100 |
| † Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244                 | 602-963-4584 |
| Rogers Corp., Rogers, CT 06263                                                           | 203-774-9605 |
| † Sheldahl, Inc., Northfield, MN 55057                                                   | 507-663-8000 |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000 |
| † Solaoyne Division, Rogers Corporation, San Diego, CA 92111                             | 619-279-7872 |
| Stetron International, Inc., Buffalo, NY 14203                                           | 716-854-3443 |
| † Techniques, Inc., Englewood, NJ 07631                                                  | 201-569-5900 |
| Tektronix, Inc., Wilsonville, OR 97070                                                   | 800-835-9433 |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                             | 603-889-5156 |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401            | 803-676-2900 |
| † Trend Circuits, Fremont, CA 94538-6148                                                 | 510-651-1150 |
| † Truline Corporation, Farmersville, CA 93223                                            | 209-747-1261 |
| Urban Electronics, Dover, MA 02030                                                       | 617-329-4068 |
| USAPEX Corp., Santa Clara, CA 95051                                                      | 408-982-9063 |
| † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503     | 310-316-9984 |
| Vector Electronic Co., Inc., Sylmar, CA 91342                                            | 818-365-9661 |
| Wire Graphics, Inc., Farmingdale, NY 11735                                               | 516-293-1525 |
| Wontronics, Los Angeles, CA 90039                                                        | 213-660-6230 |

## Circuits, Printed, Rigid, One &amp; Two Sided-1700

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| † Fema Elctns. Corp., E. Brunswick, NJ 08816, 908-238-1223                            | B-1063                                 |
| § Gordos, Crouzet Corp., Carrollton, TX 75006-2506, 214-250-1647; 1-800-677-5311      | B-1460-1461                            |
| IBM United States/US OEM Marketing, White Plains, NY 10604, 1-800-969-8643            | D-1117                                 |
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 † Mouser Electronics, Gilroy, CA 95020 800-346-6873

† Mueller Elec. Co., Cleveland, OH 44114 216-771-5225  
 † Philmore Manufacturing, Rockford, IL 61125-1386 815-229-7773  
 † Rye Industries, Inc., Fuquay-Varina, NC 27526 919-557-0511; 800-626-1511

Shokai Far East Ltd., Peekskill, NY 10566 914-736-3500  
 † H H Smith, NT-T Inc., Meadville, PA 16335 814-724-6440  
 † Techni-Tool, Plymouth Meeting, PA 19462 215-825-4990

## Clips & Holders, Fuse-Also See Panels, Fuse-2500

§ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 C•1163  
 † Arcotectric Corp., Canoga Park, CA 91304, 818-700-1933 B•1132-1133  
 † Bel Fuse, Jersey City, NJ 07302, 201-432-0463 B•1344,1346

† FIC Corp., Rockville, MD 20852, 301-881-8124; 800-638-6594 B•1359  
 † GlobTek, Inc., Northvale, NJ 07647, 201-784-1000 C•1340  
 † Littelfuse, Inc., Des Plaines, IL 60016, 708-824-1188; 708-824-0400 B•1366

Mechanical Products Inc., Jackson, MI 49204, 517-782-0391 B•1371-1373  
 Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097 B•1376, C•1428  
 † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911 C•1808



|                                                                        |                               |
|------------------------------------------------------------------------|-------------------------------|
| \$ Wickmann USA, Inc., Atlanta, GA 30336, 404-699-7820                 | B-1395-1396, 1398             |
| Accurate Electronics Corp., Elyria, OH 44036                           | 216-366-6330; 1-800-334-5904  |
| \$ Acme Model Engineering Co., Ridgefield, NJ 07657                    | 201-943-7650                  |
| \$ Altie Inc., North Andover, MA 01845                                 | 508-681-1003                  |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703       | 508-222-2202                  |
| Autgat/RDI, Carol Stream, IL 60188                                     | 708-682-4100                  |
| Autoswage Products, Shelton, CT 06484                                  | 203-929-1401                  |
| \$ Bussmann Division, Cooper Industries, St. Louis, MO 63178           | 314-394-2877                  |
| \$ Components Corp., Denville, NJ 07834                                | 201-627-0290                  |
| \$ Concord Electronics Corporation, New York, NY 10012                 | 1-212-777-6571                |
| Connector Corp., Chicago, IL 60646                                     | 312-539-3108                  |
| Doran Manufacturing Co., Cincinnati, OH 45225                          | 513-681-5424                  |
| \$ EBY Electro Inc., Rockville Centre, NY 11571-1100                   | 516-536-6000                  |
| \$ Eby Electro Inc., Rockville Centre, NY 11571-1100                   | 516-536-6000                  |
| EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268                 | 818-442-2572                  |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608        | 201-288-4477;<br>800-447-5639 |
| \$ Ercona, Patchogue, NY 11772                                         | 516-758-0700                  |
| \$ Ferraz Corporation, Parsippany, NJ 07054                            | 201-428-8400; 800-526-9067    |
| † Fuses Unlimited, D.E.I., Van Nuys, CA 91406                          | 818-786-8111                  |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                 | 815-968-9661                  |
| \$ Gould Shawmut, Newburyport, MA 01950                                | 508-462-6662/3131             |
| \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033                   | 908-245-0033; 800-526-4182    |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                          | 815-985-5181                  |
| International Microelectronics, Arlington, TX 76003                    | 817-473-1730                  |
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017                  | 718-956-8900                  |
| \$ Marathon Special Prods., Marathon Electric, Bowling Green, OH 43402 | 419-352-8441                  |
| \$ McKenzie Technology, Fremont, CA 94538                              | 510-651-2700                  |
| 3M Telecom Markets Division, Austin, TX 78726                          | 512-984-3400; 800-426-8626    |
| Mouser Electronics, Santee, CA 92071                                   | 800-346-6873                  |
| Mouser Electronics, Mansfield, TX 76063                                | 800-346-6873                  |
| Mouser Electronics, Gilroy, CA 95020                                   | 800-346-6873                  |
| Pass & Seymour Canada, Inc., Legrand, Concord, ONT L4K 3M9             | 416-738-9195                  |
| \$ Philmore Manufacturing, Rockford, IL 61225-1386                     | 815-229-7773                  |
| \$ Power Dynamics Inc., West Orange, NJ 07052                          | 201-736-5722                  |
| \$ Richco Plastic Co., Chicago, IL 60680                               | 312-539-4060                  |
| \$ San-O Industrial Corp., Holbrook, NY 11741                          | 516-472-6666                  |
| Schaffner EMC, Inc. Instr. Div., Springfield, NJ 07081                 | 201-379-7778                  |
| \$ Schurter, Inc., Petaluma, CA 94954                                  | 800-848-2600 ext.62           |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                   | 800-634-2356                  |
| Shokai Far East Ltd., Peekskill, NY 10566                              | 914-736-3500                  |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670               | 714-996-0960                  |
| \$ USD Products, Div. of Bussmann, Chicago, IL 60656                   | 708-867-4600                  |
| \$ Weidmuller Inc., Richmond, VA 23236                                 | 804-794-2877                  |

## Clips, Battery - Also See Connectors, Battery-2100

|                                                                       |                               |
|-----------------------------------------------------------------------|-------------------------------|
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500     | C-1082-1083                   |
| † Shoggy International Corp., Great Neck, NY 11021-4799, 516-466-0911 | C-1457, 1459, 1808, D-1474    |
| Accurate Electronics Corp., Elyria, OH 44036                          | 216-366-6330; 1-800-334-5904  |
| \$ Altie Inc., North Andover, MA 01845                                | 508-681-1003                  |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703      | 508-222-2202                  |
| Autoswage Products, Shelton, CT 06484                                 | 203-929-1401                  |
| \$ Concord Electronics Corporation, New York, NY 10012                | 1-212-777-6571                |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608         | 201-288-4477;<br>800-447-5639 |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                | 815-968-9661                  |
| IMC Power Sources, San Jose, CA 95112                                 | 408-441-9614                  |
| International Microelectronics, Arlington, TX 76003                   | 817-473-1730                  |
| \$ Jaro Components, Inc., Boca Raton, FL 33487-8295                   | 407-241-8600                  |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                              | 502-684-0431                  |
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017                 | 718-956-8900                  |
| Mouser Electronics, Santee, CA 92071                                  | 800-346-6873                  |
| Mouser Electronics, Mansfield, TX 76063                               | 800-346-6873                  |
| Mouser Electronics, Gilroy, CA 95020                                  | 800-346-6873                  |
| \$ Mueller Elec. Co., Cleveland, OH 44114                             | 216-771-5225                  |
| \$ Philmore Manufacturing, Rockford, IL 61225-1386                    | 815-229-7773                  |
| \$ Richco Plastic Co., Chicago, IL 60680                              | 312-539-4060                  |
| Shokai Far East Ltd., Peekskill, NY 10566                             | 914-736-3500                  |
| Stimpson Company, Inc., Bayport, NY 11705-1097                        | 516-472-2000                  |

## Clips, Board, Harness-1700

|                                                                                |                               |
|--------------------------------------------------------------------------------|-------------------------------|
| \$ Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969             | C-1538-1539, 1723             |
| Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571            | C-1291                        |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400         | C-1746                        |
| DEK, Inc., St. Charles, IL 60174, 708-377-2575                                 | C-1747                        |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                | 201-288-4477;<br>800-447-5639 |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                                   | 818-446-6175                  |
| \$ Metemaster, Tempe, AZ 85282                                                 | 602-431-0015                  |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300                  |
| Siemens Components, Inc., Special Products Div., Iselin, NJ 08830              | 201-321-3400                  |
| \$ Sjoberg, C. & Son, Inc., Cranston, RI 02910                                 | 401-461-8220                  |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                  |

## Clips, Breadboard-4200

|                                                                        |              |
|------------------------------------------------------------------------|--------------|
| Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571    | C-1291       |
| DEK, Inc., St. Charles, IL 60174, 708-377-2575                         | C-1747       |
| \$ Grayhill Inc., La Grange, IL 60525, 708-354-1040                    | C-1341       |
| \$ Berg, W. M., Inc., East Rockaway, NY 11518                          | 516-599-5010 |
| \$ E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512 | 800-368-0880 |

|                                                                 |                               |
|-----------------------------------------------------------------|-------------------------------|
| \$ Emulation Technology, Inc., Santa Clara, CA 95051            | 408-982-0660                  |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 | 201-288-4477;<br>800-447-5639 |
| \$ EPD Electronics, Inc., Gardena, CA 90247                     | 310-515-4996                  |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                    | 818-446-6175                  |
| \$ Metemaster, Tempe, AZ 85282                                  | 602-431-0015                  |
| Mueller Elec. Co., Cleveland, OH 44114                          | 216-771-5225                  |
| Vector Electronic Co., Inc., Sylmar, CA 91342                   | 818-365-9661; 800-423-5659    |

## Clips, Fahnestock-2100

|                                                                         |                |
|-------------------------------------------------------------------------|----------------|
| Acme Model Engineering Co., Ridgefield, NJ 07657                        | 201-943-7650   |
| Concord Electronics Corporation, New York, NY 10012                     | 1-212-777-6571 |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016 | 708-350-8200   |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                  | 815-968-9661   |
| \$ Metemaster, Tempe, AZ 85282                                          | 602-431-0015   |

## Clips, LED - See Retainers, Transistor &amp; Diode (Vol. C)

## Clips, Logic Test-2900 - See Vol. D

## Clips, Test-2100

|                                                                         |                                   |
|-------------------------------------------------------------------------|-----------------------------------|
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571  | C-1290-1291                       |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660      | C-1321                            |
| \$ Grayhill Inc., La Grange, IL 60525, 708-354-1040                     | C-1341                            |
| \$ ITT Pomona Electronics, Pomona, CA 91766, 909-469-2900               | C-1355                            |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62              | C-1455                            |
| † Shoggy International Corp., Great Neck, NY 11021-4799, 516-466-0911   | C-1459, 1808                      |
| AVO International, TBG, Dallas, TX 75237                                | 214-333-3201                      |
| \$ Components Corp., Denville, NJ 07834                                 | 201-627-0290                      |
| Connector Corp., Chicago, IL 60646                                      | 312-539-3108                      |
| \$ Contact, Inc., Edgecomb, ME 04556                                    | 207-882-6116                      |
| \$ Contact East, N. Andover, MA 01845                                   | 508-682-2000                      |
| dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803           | 617-273-5800                      |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                            | 818-446-6175                      |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                  | 815-968-9661                      |
| \$ Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509 | 203-624-3103                      |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457              | 201-835-5002                      |
| # HMC/Hub Material Company, Canton, MA 02021                            | 617-821-1870                      |
| \$ Industrial Devices, Inc., Hackensack, NJ 07601                       | 201-489-8989                      |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                    | 718-956-8900                      |
| \$ Lynn Electronics, Feasterville, PA 19053                             | 215-355-8200; 800-523-6075        |
| \$ 3M-Electronic Products Division, Austin, TX 78726                    | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Metemaster, Tempe, AZ 85282                                          | 602-431-0015                      |
| † Micro Instrument Company, Escondido, CA 92029                         | 619-746-2010                      |
| \$ Mouser Electronics, Santee, CA 92071                                 | 800-346-6873                      |
| \$ Mouser Electronics, Mansfield, TX 76063                              | 800-346-6873                      |
| \$ Mouser Electronics, Gilroy, CA 95020                                 | 800-346-6873                      |
| \$ Mueller Elec. Co., Cleveland, OH 44114                               | 216-771-5225                      |
| \$ Philmore Manufacturing, Rockford, IL 61225-1386                      | 815-229-7773                      |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                        | 919-557-0511; 800-626-1511        |
| Shokai Far East Ltd., Peekskill, NY 10566                               | 914-736-3500                      |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                              | 215-825-4990                      |

## Clips, Transistor &amp; Diode - See Retainers, Transistor &amp; Diode (Vol. C)

## Clips (MIL), Electrical-2440 - See Vol. B

## Clocks, Time Keeping - Also See Oscillators, Clock-2200 - See Vol. D

## Clocks &amp; Controllers, Thermal-2200 - See Vol. D

## Clutches, Friction, Magnetic, Positive-3500 - See Vol. B

## Coating Services - See Services, Coating (Vol. D)

## Coatings, Antistatic-1600

|                                                                                   |                              |
|-----------------------------------------------------------------------------------|------------------------------|
| Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388            | C-1136                       |
| 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368           | D-2311                       |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747   | 313-984-5581                 |
| † ACL Inc., Elk Grove Village, IL 60007                                           | 708-981-9212; 1-800-782-8420 |
| # Amstat Industries, Inc., Glenview, IL 60025                                     | 708-998-6210                 |
| \$ Chemtronics Inc., Hauppauge, NY 11788                                          | 516-582-3322; 800-645-5244   |
| † Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888                             | 617-935-8500                 |
| † Contact East, N. Andover, MA 01845                                              | 508-682-2000                 |
| \$ Control Cable, Inc., Baltimore, MD 21244                                       | 410-298-4411                 |
| \$ Electrical Insulation Suppliers, Inc., Hillside, IL 61012                      | 708-547-5400                 |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                             | 708-632-1020                 |
| \$ Electrostatic Consulting Assocs., Groton, MA 01450                             | 508-448-5485                 |
| † E/M Corporation, W. Lafayette, IN 47906                                         | 317-497-6346                 |
| † Evaporated Coatings, Inc., Willow Grove, PA 19090                               | 215-659-3080                 |
| † Flexible Technologies, Arlon, E. Providence, RI 02914                           | 401-434-2340                 |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                            | 815-968-9661                 |
| # HMC/Hub Material Company, Canton, MA 02021                                      | 617-821-1870                 |
| HumSeal Div., CHASE Corporation, Woodside, NY 11377                               | 718-932-0800                 |
| Indium Corporation of America, Utica, NY 13502                                    | 315-853-4900; 1-800-4INDIUM  |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                                      | 708-677-9500                 |
| † Liberty Mirror Co., Pilkington Aerospace Inc., Brackenridge, PA 15014           | 412-224-1800                 |
| † Master Bond, Hackensack, NJ 07601                                               | 201-343-8983                 |
| \$ Merix Chemical Co., Chicago, IL 60649                                          | 312-221-8242                 |
| Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950                         | 203-743-4447                 |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                         | 602-545-1113                 |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                         | 602-545-1113                 |
| Plastic Systems Inc., Marlboro, MA 01752-3004                                     | 508-485-7390                 |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000                 |
| \$ Simco Co., Hatfield, PA 19440                                                  | 215-822-2171                 |



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| Solder Absorbing Technology (SAT), A Sprig Co., Springfield, MA 01108 | 800-628-8862 |
| † Southwall Technologies Inc., Palo Alto, CA 94303                    | 415-962-9111 |
| † Techni-Tool, Plymouth Meeting, PA 19462                             | 215-825-4990 |
| † Tech Spray, Inc., Amarillo, TX 79105                                | 806-372-8523 |
| † Technit, Cranford, NJ 07016                                         | 908-272-5500 |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807            | 714-630-7127 |
| † Wescorp Static Control Products, Mountain View, CA 94041            | 415-969-7717 |
| † Zippertubing Co., Los Angeles, CA 90061                             | 310-527-0488 |

## Coatings, Compounds, Lubricants, etc., Heat Conductive-1600

|                                                                                            |                            |
|--------------------------------------------------------------------------------------------|----------------------------|
| The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                                     | C-1654-1655                |
| † EG & G Wakefield Engineering, Wakefield, MA 01880, 617-245-5900                          | C-1582                     |
| † William F. Nye, Inc., New Bedford, MA 02742-8927, 508-998-6721                           | C-1134                     |
| † AAVID Engineering, Inc., Laconia, NH 03247-0400                                          | 603-528-3400               |
| † Ablestik Electronic Materials & Adhesives-EMCA-REMEX Products, Montgomeryville, PA 18936 | 215-855-1000               |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747            |                            |
|                                                                                            | 313-984-5581               |
| Aremco Products, Inc., Ossining, NY 10562                                                  | 914-762-0685               |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302                      |                            |
|                                                                                            | 716-278-2521               |
| Castall Inc., E. Weymouth, MA 02189                                                        | 617-337-6075               |
| † Chemtronics Inc., Hauppauge, NY 11788                                                    | 516-582-3322, 800-645-5244 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                       | 617-935-4850               |
| † Contact East, N. Andover, MA 01845                                                       | 508-682-2000               |
| † The Cool-Amp Conducto-Lube Co., Lake Oswego, OR 97035                                    | 503-624-6426               |
| † Dolph, John C. Co., Monmouth Junction, NJ 08852                                          | 908-329-2333               |
| † Dow Corning Corp., Midland, MI 48686-0994                                                | 517-496-4000               |
| † Dynalco, Inc., Hanover, NJ 07936                                                         | 201-887-9270               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                | 708-547-5400               |
| † E/M Corporation, W. Lafayette, IN 47906                                                  | 317-497-6346               |
| Flexible Technologies, Arlon, E. Providence, RI 02914                                      | 401-434-2340               |
| Fujipoly, America Corp., Cranford, NJ 07016                                                | 908-272-3850               |
| † GC-Thorsen, Rockford, IL 61105-1209                                                      | 815-968-9661               |
| Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                                       | 201-751-3000               |
| † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                            | 603-224-9585               |
| HumiSeal Div., CHASE Corporation, Woodside, NY 11377                                       | 718-932-0800               |
| † IERC, Burbank, CA 91502                                                                  | 213-849-2481               |
| † Injectorall Electronics (Woman Owned), Bohemia, NY 11716                                 | 516-563-3388               |
| † Master Bond, Hackensack, NJ 07601                                                        | 201-343-8983               |
| Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893                        |                            |
|                                                                                            | 401-822-9300               |
| † Merix Chemical Co., Chicago, IL 60649                                                    | 312-221-8242               |
| Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950                                  | 203-743-4447               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                                  | 602-545-1113               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                                  | 602-545-1113               |
| † Multicore Solders, Inc., Richardson, TX 75081                                            | 214-238-1224               |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                | 800-777-3300               |
| Power Devices Inc., Laguna Hills, CA 92653                                                 | 714-582-6712               |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039          |                            |
|                                                                                            | 401-433-7000               |
| Sealing Devices, Inc., Lancaster, NY 14086                                                 | 716-684-7600               |
| † Silicones Unlimited, Inc., Marietta, GA 30062                                            | 404-578-1274               |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370               |                            |
|                                                                                            | 617-878-7015               |
| † Techni-Tool, Plymouth Meeting, PA 19462                                                  | 215-825-4990               |
| † Tech Spray, Inc., Amarillo, TX 79105                                                     | 806-372-8523               |
| Technit, Cranford, NJ 07016                                                                | 908-272-5500               |
| Transene, Rowley, MA 01969                                                                 | 508-948-2501               |
| Underwood Industries of N.Y., Inc., d/b/a Viking Products, Waverly, NY 14892               | 607-565-4551               |

## Coatings, Conductive, Electric-1600

|                                                                                            |                            |
|--------------------------------------------------------------------------------------------|----------------------------|
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888, 617-935-4850                         | C-1659                     |
| † Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262            | C-1677                     |
| 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368                    | D-2311                     |
| Abatron, Inc., Gilberts, IL 60136                                                          | 708-426-2200, 800-445-1754 |
| † Ablestik Electronic Materials & Adhesives-EMCA-REMEX Products, Montgomeryville, PA 18936 | 215-855-1000               |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747            |                            |
|                                                                                            | 313-984-5581               |
| Alexandria Metal Finisher, Inc., Lorton, VA 22079                                          | 703-643-1636               |
| † Alpha Metals, Jersey City, NJ 07304                                                      | 201-434-6778               |
| Aremco Products, Inc., Ossining, NY 10562                                                  | 914-762-0685               |
| Aztec Industries, Inc., Mesa, AZ 85210                                                     | 602-833-3131, 800-729-3132 |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                                         | 617-926-2550               |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302                      |                            |
|                                                                                            | 716-278-2521               |
| † Conductive System, Inc., Amsterdam, NY 12010                                             | 518-843-5740               |
| † Contact East, N. Andover, MA 01845                                                       | 508-682-2000               |
| † The Cool-Amp Conducto-Lube Co., Lake Oswego, OR 97035                                    | 503-624-6426               |
| † Dynalco, Inc., Hanover, NJ 07936                                                         | 201-887-9270               |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                  | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                                      | 708-632-1020               |
| Electro-Science Labs, Inc., King of Prussia, PA 19406-1533                                 | 215-272-8000               |
| † Electrostatic Consulting Assocs., Grotton, MA 01450                                      | 508-448-5485               |
| † E/M Corporation, W. Lafayette, IN 47906                                                  | 317-497-6346               |
| † Ercon Incorporated, Waltham, MA 02154                                                    | 617-899-1497               |
| † Evaporated Coatings, Inc., Willow Grove, PA 19090                                        | 215-659-3080               |
| Ferro Corporation, Electronic Materials Div., Santa Barbara, CA 93117-3092                 |                            |
|                                                                                            | 805-968-5000               |
| Flexible Technologies, Arlon, E. Providence, RI 02914                                      | 401-434-2340               |

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| † GC-Thorsen, Rockford, IL 61105-1209                                             | 815-968-9661                |
| † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                   | 603-224-9585                |
| Indium Corporation of America, Utica, NY 13502                                    | 315-853-4900; 1-800-4INDIUM |
| † Insulcast, Permagine Inds. Inc., Plainview, NY 11803                            | 516-349-1100; 800-645-7546  |
| † Liberty Mirror Co., Pilkington Aerospace Inc., Brackenridge, PA 15014           | 412-224-1800                |
| † Master Bond, Hackensack, NJ 07601                                               | 201-343-8983                |
| Materials Research Corporation, Orangeburg, NY 10962                              | 914-359-4200                |
| † Max Levy Autograph Inc., Philadelphia, PA 19144-4298                            | 215-842-3675                |
| Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893               |                             |
|                                                                                   | 401-822-9300                |
| † Merix Chemical Co., Chicago, IL 60649                                           | 312-221-8242                |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                         | 602-545-1113                |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                         | 602-545-1113                |
| † Orcus, Kansas City, MO 64112                                                    | 913-897-5128                |
| † Oxley Inc., Branford, CT 06405                                                  | 203-488-1033                |
| Plastic Systems Inc., Marlboro, MA 01752-3004                                     | 508-485-7390                |
| Polytronix, Inc., Richardson, TX 75081                                            | 214-238-7045                |
| Power Devices Inc., Laguna Hills, CA 92653                                        | 714-582-6712                |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |                             |
|                                                                                   | 401-433-7000                |
| Sealing Devices, Inc., Lancaster, NY 14086                                        | 716-684-7600                |
| Shibley Company, Inc., Newton, MA 02162                                           | 617-969-5500                |
| Solder Absorbing Technology (SAT), A Sprig Co., Springfield, MA 01108             |                             |
|                                                                                   | 800-628-8862                |
| † Southwall Technologies Inc., Palo Alto, CA 94303                                | 415-962-9111                |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370      |                             |
|                                                                                   | 617-878-7015                |
| † Techni-Tool, Plymouth Meeting, PA 19462                                         | 215-825-4990                |
| † Tech Spray, Inc., Amarillo, TX 79105                                            | 806-372-8523                |
| † Technit, Cranford, NJ 07016                                                     | 908-272-5500                |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                        | 714-630-7127                |
| † Tra-Con, Inc., Medford, MA 02155                                                | 617-391-5550                |
| Transene, Rowley, MA 01969                                                        | 508-948-2501                |
| † Wescorp Static Control Products, Mountain View, CA 94041                        | 415-969-7717                |

## Coatings, Corrosion Resistant-1600

|                                                                                   |                             |
|-----------------------------------------------------------------------------------|-----------------------------|
| † Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388          | C-1136                      |
| Abatron, Inc., Gilberts, IL 60136                                                 | 708-426-2200, 800-445-1754  |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747   |                             |
|                                                                                   | 313-984-5581                |
| Alexandria Metal Finisher, Inc., Lorton, VA 22079                                 | 703-643-1636                |
| † Alpha Industries, Inc., Woburn, MA 01801                                        | 617-935-5150                |
| Aremco Products, Inc., Ossining, NY 10562                                         | 914-762-0685                |
| † Caig Laboratories, Rancho Bernardo, CA 92127-1904                               | 619-451-1799                |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302             |                             |
|                                                                                   | 716-278-2521                |
| † Chemtronics Inc., Hauppauge, NY 11788                                           | 516-582-3322, 800-645-5244  |
| Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                | 617-935-4850                |
| Conap, Inc., Olean, NY 14760                                                      | 716-372-9650                |
| † Conductive System, Inc., Amsterdam, NY 12010                                    | 518-843-5740                |
| † Contact East, N. Andover, MA 01845                                              | 508-682-2000                |
| † The Cool-Amp Conducto-Lube Co., Lake Oswego, OR 97035                           | 503-624-6426                |
| † Cotronics, Brooklyn, NY 11235                                                   | 718-646-7996                |
| † Dennis Chemical, St. Louis, MO 63103                                            | 314-771-1800                |
| † Dow Corning Corp., Midland, MI 48686-0994                                       | 517-496-4000                |
| Electra-assembly, Lancer Chemical, Warren, RI 02885                               | 401-245-5493                |
| Electronic Packaging System, Marion, IA 52302                                     | 319-377-3423                |
| † E/M Corporation, W. Lafayette, IN 47906                                         | 317-497-6346                |
| Ferro Corporation, Frit Division, Cleveland, OH 44101                             | 216-641-8580                |
| Ferro Corporation, Powder Coatings Div., Cleveland, OH 44101                      | 216-641-8580                |
| Flexible Technologies, Arlon, E. Providence, RI 02914                             | 401-434-2340                |
| Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                              | 201-751-3000                |
| † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                   | 603-224-9585                |
| HumiSeal Div., CHASE Corporation, Woodside, NY 11377                              | 718-932-0800                |
| † Ideal Industries, Inc., Sycamore, IL 60178                                      | 815-895-5181                |
| † IERC, Burbank, CA 91502                                                         | 213-849-2481                |
| Indium Corporation of America, Utica, NY 13502                                    | 315-853-4900; 1-800-4INDIUM |
| † Insulcast, Permagine Inds. Inc., Plainview, NY 11803                            | 516-349-1100; 800-645-7546  |
| † Klein Tools, Inc., Chicago, IL 60659-9033                                       | 708-677-9500                |
| † Master Bond, Hackensack, NJ 07601                                               | 201-343-8983                |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                         | 602-545-1113                |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                         | 602-545-1113                |
| † Multicore Solders, Inc., Richardson, TX 75081                                   | 214-238-1224                |
| † Panduit Corp., Tinley Park, IL 60477-0981                                       | 800-777-3300                |
| † Permaulster, Inc., Burbank, CA 91504                                            | 213-849-4543; 213-849-6454  |
| Polytronix, Inc., Richardson, TX 75081                                            | 214-238-7045                |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |                             |
|                                                                                   | 401-433-7000                |
| Shibley Company, Inc., Newton, MA 02162                                           | 617-969-5500                |
| † Tech Spray, Inc., Amarillo, TX 79105                                            | 806-372-8523                |
| Transene, Rowley, MA 01969                                                        | 508-948-2501                |

## Coatings, Electromagnetic Wave Absorbing-1600

|                                                                                 |              |
|---------------------------------------------------------------------------------|--------------|
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747 |              |
|                                                                                 | 313-984-5581 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                            | 617-935-4850 |
| † Donteck, Inc., Doylestown, PA 18901                                           | 215-348-5010 |
| † Electrostatic Consulting Assocs., Grotton, MA 01450                           | 508-448-5485 |
| † E/M Corporation, W. Lafayette, IN 47906                                       | 317-497-6346 |
| † Ercon Incorporated, Waltham, MA 02154                                         | 617-899-1497 |
| † Evaporated Coatings, Inc., Willow Grove, PA 19090                             | 215-659-3080 |
| † Flexible Technologies, Arlon, E. Providence, RI 02914                         | 401-434-2340 |
| † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                 | 603-224-9585 |
| HumiSeal Div., CHASE Corporation, Woodside, NY 11377                            | 718-932-0800 |
| † Liberty Mirror Co., Pilkington Aerospace Inc., Brackenridge, PA 15014         | 412-224-1800 |



|                                                                                    |              |
|------------------------------------------------------------------------------------|--------------|
| † Max Levy Autograph, Inc., Philadelphia, PA 19144-4298                            | 215-842-3675 |
| †# Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000 |
| ‡ Tech Spray, Inc., Amarillo, TX 79105                                             | 806-372-8523 |
| † Technit, Cranford, NJ 07016                                                      | 908-272-5500 |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                         | 714-630-7127 |

**Coatings, Fungicidal-1600**

|                                                                                    |                            |
|------------------------------------------------------------------------------------|----------------------------|
| ‡ Chemtronics Inc., Hauppauge, NY 11788                                            | 516-582-3322; 800-645-5244 |
| ‡ Dolph, John C., Co., Monmouth Junction, NJ 08852                                 | 908-329-2333               |
| ‡ Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                    | 603-224-9585               |
| ‡ HumiSeal Div., CHASE Corporation, Woodside, NY 11377                             | 718-932-0800               |
| ‡ Injectorall Electronics (Woman Owned), Bohemia, NY 11716                         | 516-563-3388               |
| † Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950                        | 203-743-4447               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                          | 602-545-1113               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                          | 602-545-1113               |
| † Permaluster, Inc., Burbank, CA 91504                                             | 213-849-4543; 213-849-6454 |
| †# Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370       | 617-878-7015               |
| ‡ Techni-Tool, Plymouth Meeting, PA 19462                                          | 215-825-4990               |

**Coatings, High Temperature, Ceramic, Plasma Spray — See Services, Coating (Vol. D)****Coatings, Insulating-3100**

|                                                                                            |                            |
|--------------------------------------------------------------------------------------------|----------------------------|
| Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850 ... C-1659               |                            |
| Abatron, Inc., Gilberts, IL 60136                                                          | 708-426-2200; 800-445-1754 |
| † Ablestik Electronic Materials & Adhesives-EMCA-REMEX Products, Montgomeryville, PA 18936 | 215-855-1000               |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747            | 313-984-5581               |
| ‡ Ambroid Co., Springfield, VT 05156                                                       | 802-885-9244               |
| American Chemical, Inc., Minneapolis, MN 55408-1047                                        | 612-374-1767               |
| AMP-AKO Corporation, Chadds Ford, PA 19317                                                 | 215-459-2800               |
| Aremco Products, Inc., Ossining, NY 10562                                                  | 914-762-0685               |
| Autosplice, Inc., San Diego, CA 92121                                                      | 619-535-0077               |
| † CAD Engrg. & Assembly Inc., Mentor, OH 44060                                             | 216-255-7744               |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302                      | 716-278-2521               |
| Castall Inc., E. Weymouth, MA 02189                                                        | 617-337-6075               |
| ‡ Chemtronics Inc., Hauppauge, NY 11788                                                    | 516-582-3322; 800-645-5244 |
| † Conap, Inc., Olean, NY 14760                                                             | 716-372-9650               |
| † Cotronics, Brooklyn, NY 11235                                                            | 718-646-7996               |
| † Dennis Chemical, St. Louis, MO 63103                                                     | 314-771-1800               |
| ‡ Dolph, John C., Co., Monmouth Junction, NJ 08852                                         | 908-329-2333               |
| ‡ Dow Corning Corp., Midland, MI 48686-0994                                                | 517-496-4000               |
| Electra-assembly, Lancer Chemical, Warren, RI 02885                                        | 401-245-5493               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                                      | 708-632-1020               |
| † Electro-Science Labs., Inc., King of Prussia, PA 19406-1533                              | 215-272-8000               |
| Fel-Pro Chemical Products LP, Commerce City, CO 80022                                      | 303-289-5651               |
| Ferro Corporation, Electronic Materials Div., Santa Barbara, CA 93117-3092                 | 805-968-5000               |
| Flexible Technologies, Arlon, E. Providence, RI 02914                                      | 401-434-2340               |
| ‡ GC-Thorsen, Rockford, IL 61105-1209                                                      | 815-968-9661               |
| Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                                       | 201-751-3000               |
| ‡ HumiSeal Div., CHASE Corporation, Woodside, NY 11377                                     | 718-932-0800               |
| † IERC, Burbank, CA 91502                                                                  | 213-849-2481               |
| ‡ Injectorall Electronics (Woman Owned), Bohemia, NY 11716                                 | 516-563-3388               |
| ‡ Insulcast, Permagine Inds. Inc., Plainview, NY 11803                                     | 516-349-1100; 800-645-5746 |
| ‡ Lilly-Ram Industries, Gardena, CA 90248                                                  | 213-321-0710               |
| † Master Bond, Hackensack, NJ 07601                                                        | 201-343-8983               |
| Materials Research Corporation, Orangeburg, NY 10962                                       | 914-359-4200               |
| 3M Private Network Products, 3M, Austin, TX 78726                                          | 512-984-3400; 800-426-8626 |
| Mercero Products Div., Metachem Resins Corp., West Warwick, RI 02893                       | 401-822-9300               |
| Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950                                  | 203-743-4447               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                                  | 602-545-1113               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                                  | 602-545-1113               |
| † MMG-North America, Paterson, NJ 07509                                                    | 201-345-8900               |
| Molecu-Wire, Farmingdale, NJ 07727                                                         | 908-938-9473               |
| ‡ Multicore Solders, Inc., Richardson, TX 75081                                            | 214-238-1224               |
| ‡ Panduit Corp., Tinley Park, IL 60477-0981                                                | 800-777-3300               |
| † Permaluster, Inc., Burbank, CA 91504                                                     | 213-849-4543; 213-849-6454 |
| Polytronix, Inc., Richardson, TX 75081                                                     | 214-238-7045               |
| †# Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039         | 401-433-7000               |
| ‡ Special Electric Co., Inc., Milwaukee, WI 53215                                          | 414-383-6370               |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370               | 617-878-7015               |
| ‡ Techni-Tool, Plymouth Meeting, PA 19462                                                  | 215-825-4990               |
| ‡ Tech Spray, Inc., Amarillo, TX 79105                                                     | 806-372-8523               |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                                 | 714-630-7127               |
| Thermostat Plastics Inc., Indianapolis, IN 46220                                           | 317-259-4161               |
| ‡ Tra-Con, Inc., Medford, MA 02155                                                         | 617-391-5550               |
| Underwood Industries of N.Y., Inc., d/b/a Viking Products, Waverly, NY 14892               | 607-565-4551               |
| Zippertubing Co., Los Angeles, CA 90061                                                    | 310-527-0488               |

**Coatings, Moisture Repellent & Waterproofing-1600**

|                                                                  |                            |
|------------------------------------------------------------------|----------------------------|
| † William F. Nye, Inc., New Bedford, MA 02742-8927, 508-996-6721 | C-1134                     |
| Abatron, Inc., Gilberts, IL 60136                                | 708-426-2200; 800-445-1754 |
| ‡ Ambroid Co., Springfield, VT 05156                             | 802-885-9244               |
| ‡ Chemtronics Inc., Hauppauge, NY 11788                          | 516-582-3322; 800-645-5244 |
| † Conap, Inc., Olean, NY 14760                                   | 716-372-9650               |

|                                                                                    |                            |
|------------------------------------------------------------------------------------|----------------------------|
| † Diagnostic Instrument Corp., Ayer, MA 01432                                      | 508-772-4572               |
| ‡ Dow Corning Corp., Midland, MI 48686-0994                                        | 517-496-4000               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                        | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                              | 708-632-1020               |
| † Electro-Science Labs., Inc., King of Prussia, PA 19406-1533                      | 215-272-8000               |
| Ferro Corporation, Frit Division, Cleveland, OH 44101                              | 216-641-8580               |
| Ferro Corporation, Powder Coatings Div., Cleveland, OH 44101                       | 216-641-8580               |
| Flexible Technologies, Arlon, E. Providence, RI 02914                              | 401-434-2340               |
| ‡ GC-Thorsen, Rockford, IL 61105-1209                                              | 815-968-9661               |
| Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                               | 201-751-3000               |
| † The Hirol Company, Ft. Lauderdale, FL 33309                                      | 305-974-4900               |
| ‡ HumiSeal Div., CHASE Corporation, Woodside, NY 11377                             | 718-932-0800               |
| ‡ Injectorall Electronics (Woman Owned), Bohemia, NY 11716                         | 516-563-3388               |
| ‡ Insulcast, Permagine Inds. Inc., Plainview, NY 11803                             | 516-349-1100; 800-645-5746 |
| † Master Bond, Hackensack, NJ 07601                                                | 201-343-8983               |
| 3M Private Network Products, 3M, Austin, TX 78726                                  | 512-984-3400; 800-426-8626 |
| 3M Telecom Markets Division, Austin, TX 78726                                      | 512-984-3400; 800-426-8626 |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                          | 602-545-1113               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                          | 602-545-1113               |
| ‡ Multicore Solders, Inc., Richardson, TX 75081                                    | 214-238-1224               |
| †# Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| ‡ Special Electric Co., Inc., Milwaukee, WI 53215                                  | 414-383-6370               |
| ‡ Techni-Tool, Plymouth Meeting, PA 19462                                          | 215-825-4990               |
| ‡ Tech Spray, Inc., Amarillo, TX 79105                                             | 806-372-8523               |
| † Zippertubing Co., Los Angeles, CA 90061                                          | 310-527-0488               |

**Coatings, Protective-1600**

|                                                                                    |                            |
|------------------------------------------------------------------------------------|----------------------------|
| † Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262    | C-1677                     |
| † The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                        | C-1685                     |
| ‡ Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388           | C-1136                     |
| Raytheon Company, Quincy Operation, Quincy, MA 02269, 617-479-5300                 | B-1108                     |
| Abatron, Inc., Gilberts, IL 60136                                                  | 708-426-2200; 800-445-1754 |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747    | 313-984-5581               |
| ‡ Alpha Metals, Jersey City, NJ 07304                                              | 201-434-6778               |
| ‡ Ambroid Co., Springfield, VT 05156                                               | 802-885-9244               |
| American Chemical, Inc., Minneapolis, MN 55408-1047                                | 612-374-1767               |
| Aremco Products, Inc., Ossining, NY 10562                                          | 914-762-0685               |
| Auric Corp., Newark, NJ 07114                                                      | 201-242-4100               |
| Berg Electronics, Camp Hill, PA 17011                                              | 800-237-2734               |
| † Caig Laboratories, Rancho Bernardo, CA 92127-1904                                | 619-451-1799               |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302              | 716-278-2521               |
| Castall Inc., E. Weymouth, MA 02189                                                | 617-337-6075               |
| ‡ Chemtronics Inc., Hauppauge, NY 11788                                            | 516-582-3322; 800-645-5244 |
| † Conap, Inc., Olean, NY 14760                                                     | 716-372-9650               |
| † Diagnostic Instrument Corp., Ayer, MA 01432                                      | 508-772-4572               |
| ‡ Dolph, John C., Co., Monmouth Junction, NJ 08852                                 | 908-329-2333               |
| ‡ Dow Corning Corp., Midland, MI 48686-0994                                        | 517-496-4000               |
| Electra-assembly, Lancer Chemical, Warren, RI 02885                                | 401-245-5493               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                        | 708-547-5400               |
| † Electro-Science Labs., Inc., King of Prussia, PA 19406-1533                      | 215-272-8000               |
| † E/M Corporation, W. Lafayette, IN 47906                                          | 317-497-6346               |
| † Epoxy Technology, Inc., Billerica, MA 01821                                      | 508-667-3805; 800-227-2201 |
| Ferro Corporation, Frit Division, Cleveland, OH 44101                              | 216-641-8580               |
| Ferro Corporation, Powder Coatings Div., Cleveland, OH 44101                       | 216-641-8580               |
| † Fidelity Chemical Products Corp., Newark, NJ 07114                               | 201-242-4100               |
| Flexible Technologies, Arlon, E. Providence, RI 02914                              | 401-434-2340               |
| † Gardiner Solder Co., Div. of Gardiner Metal Co., Chicago, IL 60632               | 312-847-0100               |
| ‡ GC-Thorsen, Rockford, IL 61105-1209                                              | 815-968-9661               |
| Hardman: Harcos Chemicals Inc., Belleville, NJ 07109                               | 201-751-3000               |
| ‡ Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                    | 603-224-9585               |
| ‡ HumiSeal Div., CHASE Corporation, Woodside, NY 11377                             | 718-932-0800               |
| ‡ Insulcast, Permagine Inds. Inc., Plainview, NY 11803                             | 516-349-1100; 800-645-5746 |
| ‡ Klein Tools, Inc., Chicago, IL 60659-9033                                        | 708-677-9500               |
| ‡ Lilly-Ram Industries, Gardena, CA 90248                                          | 213-321-0710               |
| † Master Bond, Hackensack, NJ 07601                                                | 201-343-8983               |
| Materials Research Corporation, Orangeburg, NY 10962                               | 914-359-4200               |
| 3M Private Network Products, 3M, Austin, TX 78726                                  | 512-984-3400; 800-426-8626 |
| 3M Telecom Markets Division, Austin, TX 78726                                      | 512-984-3400; 800-426-8626 |
| Mercero Products Div., Metachem Resins Corp., West Warwick, RI 02893               | 401-822-9300               |
| Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950                          | 203-743-4447               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                          | 602-545-1113               |
| MLT/Micro-Lite Technology, Mesa, AZ 85206                                          | 602-545-1113               |
| ‡ Multicore Solders, Inc., Richardson, TX 75081                                    | 214-238-1224               |
| ‡ Oriol Corp., Stratford, CT 06497-0872                                            | 203-377-8282               |
| ‡ Panduit Corp., Tinley Park, IL 60477-0981                                        | 800-777-3300               |
| † Permaluster, Inc., Burbank, CA 91504                                             | 213-849-4543; 213-849-6454 |
| Polytronix, Inc., Richardson, TX 75081                                             | 214-238-7045               |
| †# Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| † Specialty Coating Systems, Inc., Indianapolis, IN 46241                          | 317-244-1200               |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370       | 617-878-7015               |
| † Techni, Inc., Providence, RI 02940-9650                                          | 401-781-6100               |
| Techni-Tool, Plymouth Meeting, PA 19462                                            | 215-825-4990               |
| ‡ Tech Spray, Inc., Amarillo, TX 79105                                             | 806-372-8523               |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                         | 714-630-7127               |
| Thermostat Plastics Inc., Indianapolis, IN 46220                                   | 317-259-4161               |

**Code Actuated Switches — See Switches, Data (Vol. D)**



**Code & Tab Markers** — See Wire Markers (All Types) (Vol. C)  
**Coded Discs, Optical** — See Encoders, Shaft Angle, Optical (Vol. B)  
**Coder/Decoders** — See Converters (Vol. D)  
**Coders, Telephone, Dial-1900** — See Vol. D  
**Coders, Transponder-3450** — See Vol. A  
**Coil Assemblies & Forms-Also See Bobbins, Winding, Coil & Transformer-1800** — See Vol. A  
**Coil Standards** — See Standards, Inductance (Vol. D)  
**Coil-Winding Equipment** — See Machines, Coil Winding (Vol. D)  
**Coils, AF-1800** — See Vol. A  
**Coils, Antenna (Incl. Loading Type)-1800** — See Vol. A  
**Coils, Chip-1800** — See Vol. A  
**Coils, Field-1800** — See Vol. A  
**Coils, Focusing-1800** — See Vol. A  
**Coils, Foil Wound-1800** — See Vol. A  
**Coils, High Q, High Frequency-1800** — See Vol. A  
**Coils, High Q, Low Frequency-1800** — See Vol. A  
**Coils, Hum Eliminating** — See Hum Eliminators (Vol. A)  
**Coils, Hybrid & Repeater-1800** — See Vol. A  
**Coils, IF-1800** — See Vol. A  
**Coils, Molded-1800** — See Vol. A  
**Coils, pi Winding-1800** — See Vol. A  
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**Coils, RF-1800** — See Vol. A  
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**Cold Plates** — See Thermal Platforms (Vol. D)  
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**Communication Systems, Megaplex-1900** — See Vol. D  
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**Comparators, Capacitance** — See Bridges, Capacitance (Vol. D)  
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**Comparators, Dimension Calibrators-4100** — See Vol. D  
**Comparators, Frequency-2900** — See Vol. D  
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**Alden Products Co., Brockton, MA 02403, 508-583-0160** ..... C•1148  
**Abatron, Inc., Gilberts, IL 60136** ..... 708-426-2200/800-445-1754  
**† Ablestik Laboratories, Rancho Dominguez, CA 90221** ..... 310-764-4600  
**† American Chemical, Inc., Minneapolis, MN 55408-1047** ..... 612-374-1767  
**Aremco Products, Inc., Ossining, NY 10562** ..... 914-762-0685  
**† Bacon Industries, Inc., Watertown, MA 02172-2399** ..... 617-926-2550  
**† Castall Inc., E. Weymouth, MA 02189** ..... 617-337-6075  
**§ Compac, Holbrook, NY 11741** ..... 516-585-3400

**Component Mfg. Svc., Inc., W. Bridgewater, MA 02379** ..... 508-580-0111  
**† Conap, Inc., Olean, NY 14760** ..... 716-372-9650  
**§ Contact East, N. Andover, MA 01845** ..... 508-682-2000  
**† Cotronics, Brooklyn, NY 11235** ..... 718-646-7996  
**† Dennis Chemical, St. Louis, MO 63103** ..... 314-771-1800  
**§ Dolph, John C., Co., Monmouth Junction, NJ 08852** ..... 908-329-2333  
**§† Dow Corning Corp., Midland, MI 48686-0994** ..... 517-496-4000  
**§† EG & G Wakefield Engineering, Wakefield, MA 01880** ..... 617-245-5900  
**Electrical Insulation Suppliers, Inc., Hillside, IL 60162** ..... 708-547-5400  
**† Electro Insulation Corp., Arlington Hgts., IL 60004** ..... 708-632-1020  
**Epic Resins, General Fiberglass Supply, Inc., Waukesha, WI 53186** ..... 414-521-2255  
**† Epoxy Technology, Inc., Billerica, MA 01821** ..... 508-667-3805/800-227-2201  
**Fel-Pro Chemical Products LP., Commerce City, CO 80022** ..... 303-289-5651  
**Fujipoly, America Corp., Cranford, NJ 07016** ..... 908-272-3850  
**Glenmarc Manufacturing Inc., Vernon Hills, IL 60061** ..... 708-634-6080/800-323-5350  
**Hardman: Harcos Chemicals Inc., Belleville, NJ 07109** ..... 201-751-3000  
**# HMC/Hub Material Company, Canton, MA 02021** ..... 617-821-1870  
**† Industrial Dielectrics, Inc., Noblesville, IN 46060** ..... 317-773-1766  
**§† Insulcast, Permagine Inds. Inc., Plainview, NY 11803** ..... 516-349-1100/800-645-7546  
**# Jaro Components, Inc., Boca Raton, FL 33487-8295** ..... 407-241-8600  
**Leepoxy Plastics, Inc., Ft. Wayne, IN 46809** ..... 219-747-7411  
**§ Lilly-Ram Industries, Gardena, CA 90248** ..... 213-321-0710  
**† Master Bond, Hackensack, NJ 07601** ..... 201-343-8983  
**§ 3M Electrical Specialties Division, Austin, TX 78726-9000** ..... 800-328-1368  
**Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893** ..... 401-822-9300  
**Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950** ..... 203-743-4447  
**Milton Ross Co., Warrington, PA 18976** ..... 215-491-0600  
**Plasticorp, Harbor City, CA 90710** ..... 310-539-9530  
**† SAS Industries Inc., Manoville, NY 11949** ..... 516-727-1441/1-800-544-5238  
**† Sigma Plastics, Inc., Whitmore Lake, MI 48189** ..... 810-231-2871  
**† Silicones Unlimited, Inc., Marietta, GA 30062** ..... 404-578-1274  
**§ Special Electric Co., Inc., Milwaukee, WI 53215** ..... 414-383-6370  
**† TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370** ..... 617-878-7015  
**§ Tech Spray, Inc., Amarillo, TX 79105** ..... 806-372-8523  
**Thermagon, Inc., Cleveland, OH 44109** ..... 216-741-7659  
**Thermoset Plastics Inc., Indianapolis, IN 46220** ..... 317-259-4161  
**§ Thermoset Plastics Inc., Indianapolis, IN 46220** ..... 317-259-4161  
**§† Tra-Con, Inc., Medford, MA 02155** ..... 617-391-5550  
**Transene, Rowley, MA 01969** ..... 508-948-2501  
**Underwood Industries of N.Y., Inc., d/b/a Viking Products, Waverly, NY 14892** ..... 607-565-4551  
**Zippertubing Co., Los Angeles, CA 90061** ..... 310-527-0488

## Compounds, Insulating-3100

**The Bergquist Co., Minneapolis, MN 55439, 800-347-4572** ..... C•1654-1655  
**§† Chomerics, Inc.-W.R. Grace & Co., Woburn, MA 01888, 617-935-4850** ... C•1659  
**Abatron, Inc., Gilberts, IL 60136** ..... 708-426-2200/800-445-1754  
**† Ablestik Laboratories, Rancho Dominguez, CA 90221** ..... 310-764-4600  
**† Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747** ..... 313-984-5581  
**† American Chemical, Inc., Minneapolis, MN 55408-1047** ..... 612-374-1767  
**Aremco Products, Inc., Ossining, NY 10562** ..... 914-762-0685  
**† Bacon Industries, Inc., Watertown, MA 02172-2399** ..... 617-926-2550  
**† Brand Dielectrics, Inc., N. Windham, CT 06256** ..... 203-423-6321  
**† Castall Inc., E. Weymouth, MA 02189** ..... 617-337-6075  
**Conap, Inc., Olean, NY 14760** ..... 716-372-9650  
**§ Contact East, N. Andover, MA 01845** ..... 508-682-2000  
**† Dennis Chemical, St. Louis, MO 63103** ..... 314-771-1800  
**§ Dolph, John C., Co., Monmouth Junction, NJ 08852** ..... 908-329-2333  
**§† Dow Corning Corp., Midland, MI 48686-0994** ..... 517-496-4000  
**Electrical Insulation Suppliers, Inc., Hillside, IL 60162** ..... 708-547-5400  
**† Electro Insulation Corp., Arlington Hgts., IL 60004** ..... 708-632-1020  
**Epic Resins, General Fiberglass Supply, Inc., Waukesha, WI 53186** ..... 414-521-2255  
**Fujipoly, America Corp., Cranford, NJ 07016** ..... 908-272-3850  
**§ GC-Thorsen, Rockford, IL 61105-1209** ..... 815-968-9661  
**Hardman: Harcos Chemicals Inc., Belleville, NJ 07109** ..... 201-751-3000  
**† Industrial Dielectrics, Inc., Noblesville, IN 46060** ..... 317-773-1766  
**Injectorall Electronics (Woman Owned), Bohemia, NY 11716** ..... 516-563-3368  
**Leepoxy Plastics, Inc., Ft. Wayne, IN 46809** ..... 219-747-7411  
**§ 3M Electrical Specialties Division, Austin, TX 78726-9000** ..... 800-328-1368  
**Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893** ..... 401-822-9300  
**Omega Engineering, Stamford, CT 06907** ..... 800-826-6342  
**† Silicones Unlimited, Inc., Marietta, GA 30062** ..... 404-578-1274  
**§ Special Electric Co., Inc., Milwaukee, WI 53215** ..... 414-383-6370  
**§† Tech Spray, Inc., Amarillo, TX 79105** ..... 806-372-8523  
**Thermagon, Inc., Cleveland, OH 44109** ..... 216-741-7659  
**§ Thermalloy, Inc., Dallas, TX 75381-0839** ..... 214-243-4321  
**Thermoset Plastics Inc., Indianapolis, IN 46220** ..... 317-259-4161  
**§ Thermoset Plastics Inc., Indianapolis, IN 46220** ..... 317-259-4161  
**§† Tra-Con, Inc., Medford, MA 02155** ..... 617-391-5550  
**Transene, Rowley, MA 01969** ..... 508-948-2501  
**Underwood Industries of N.Y., Inc., d/b/a Viking Products, Waverly, NY 14892** ..... 607-565-4551

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### Conductive Elastomers-4525

|                                                                               |                              |
|-------------------------------------------------------------------------------|------------------------------|
| † AME Corporation, Towaco, NJ 07082-0195, 201-263-1700                        | B-1663                       |
| † Chomerics, Inc.-W.R. Grace & Co., Woburn, MA 01888, 617-935-4850            |                              |
| # Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                          | C-1659-1661                  |
| Elastomeric Technologies, Inc., Hatboro, PA 19040, 215-672-0787; 215-672-4741 | C-1662, 1684                 |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                     | C-1314                       |
| † 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368     | C-1330-1332                  |
| Advanced Connector Technology, Ventura, CA 93003                              | C-1667, D-2311               |
| † Castall Inc., E. Weymouth, MA 02189                                         | 805-644-9990                 |
| † CHR, Furon, New Haven, CT 06509                                             | 617-337-6075                 |
| † Conductive System, Inc., Amsterdam, NY 12010                                | 203-777-3631                 |
| Cotronics, Brooklyn, NY 11235                                                 | 518-843-5740                 |
| Dayco Products, Inc., Dayton, OH 45401-1004                                   | 718-646-7996                 |
| Dow Corning Corp., Midland, MI 48688-0994                                     | 513-226-5926                 |
| Eagle Magnetic Company, Inc., Indianapolis, IN 46224                          | 517-496-4000                 |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                   | 317-297-1030                 |
| † Ercon Incorporated, Waltham, MA 02154                                       | 708-547-5400                 |
| Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136    | 617-899-1497                 |
| † Insulcast, Permagie Inds. Inc., Plainview, NY 11803                         | 717-424-8510                 |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119                     | 516-349-1100; 800-645-7546   |
| Monsanto Co., St. Louis, MO 63167                                             | 206-284-2200                 |
| † Orcus, Kansas City, MO 64112                                                | 314-694-1000                 |
| † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715                    | 913-897-5128                 |
| † PolyPly Inc./Conductives Systems, Inc., Amsterdam, NY 12010                 | 714-833-3000                 |
| † SAS Industries Inc., Manorville, NY 11949                                   | 518-843-3900                 |
| Sealing Devices, Inc., Lancaster, NY 14086                                    | 516-727-1441; 1-800-544-5238 |
| Shin-Etsu Polymer America, Inc., Union City, CA 94587                         | 716-684-7600                 |
| † Silicones Unlimited, Inc., Marietta, GA 30062                               | 510-475-9000                 |
| Solder Absorbing Technology (SAT), A Sprig Co., Springfield, MA 01108         | 404-578-1274                 |
| † Stanley Co., Inc., Irvine, CA 92714                                         | 800-628-8862                 |
| Tech-Etch, Inc., Plymouth, MA 02360                                           | 1-800-LED-LCD1               |
| † Tech Spray, Inc., Amarillo, TX 79105                                        | 508-747-0300                 |
| † Technit, Cranford, NJ 07016                                                 | 806-372-8523                 |
| Thermoseal Plastics Inc., Indianapolis, IN 46220                              | 908-272-5500                 |
| † Wescorp Static Control Products, Mountain View, CA 94041                    | 317-259-4161                 |
| Conductive Fabrics, Films & Tapes — See Fabrics, Conductive (Vol. C)          | 415-969-7717                 |

### Conductive Floor Coatings & Cleaners-1600

|                                                                                            |                              |
|--------------------------------------------------------------------------------------------|------------------------------|
| † ACL Inc., Elk Grove Village, IL 60007                                                    | 708-981-9212; 1-800-782-8420 |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8                      |                              |
| † Contact East, N. Andover, MA 01845                                                       | 1-800-361-9466               |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                | 508-682-2000                 |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                                      | 708-547-5400                 |
| † HMC Hub Material Company, Canton, MA 02021                                               | 708-632-1020                 |
| † Tech Spray, Inc., Amarillo, TX 79105                                                     | 617-821-1870                 |
| † Wescorp Static Control Products, Mountain View, CA 94041                                 | 806-372-8523                 |
| Conductive Plastic Materials & Parts-4525                                                  | 415-969-7717                 |
| Chomerics, Inc.-W.R. Grace & Co., Woburn, MA 01888, 617-935-4850                           |                              |
| # Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                                       | C-1659                       |
| † 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368                  | C-1662, 1684                 |
| # Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730                 | D-2311                       |
| † Ablesstik Electronic Materials & Adhesives-EMCA-REME Products, Montgomeryville, PA 18936 | C-1668-1669, 1699            |
| ADE, Inc., Chicago, IL 60633                                                               | 215-855-1000                 |
| American Cyanamid Co., Metal Coated Fibers Dept., Wallingford, CT 06492                    | 312-646-3400                 |
| # Amstat Industries, Inc., Glenview, IL 60025                                              | 203-284-4217                 |
| # Applied Design Company, Minneapolis, MN 55413                                            | 708-998-6210                 |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                                         | 612-378-0094                 |
| † Barrington Plastics, Mt. Laurel, NJ 08054                                                | 617-926-2550                 |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035                     | 609-235-5151                 |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8                      | 313-583-1200                 |
| † Conductive System, Inc., Amsterdam, NY 12010                                             | 1-800-361-9466               |
| † Conductive System, Inc., Amsterdam, NY 12010                                             | 518-843-5740                 |

|                                                                              |              |
|------------------------------------------------------------------------------|--------------|
| † Contact East, N. Andover, MA 01845                                         | 508-682-2000 |
| † Dayco Products, Inc., Dayton, OH 45401-1004                                | 513-226-5926 |
| † Dynaloy, Inc., Hanover, NJ 07936                                           | 201-887-9270 |
| Eagle Magnetic Company, Inc., Indianapolis, IN 46224                         | 317-297-1030 |
| EG & G Wakefield Engineering, Wakefield, MA 01880                            | 617-245-5900 |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                  | 708-547-5400 |
| The Hirol Company, Ft. Lauderdale, FL 33309                                  | 305-974-4900 |
| † Industrial Dielectrics, Inc., Noblesville, IN 46060                        | 317-773-1766 |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                 | 805-495-7673 |
| † LNP Engineering Plastics, Exton, PA 19341                                  | 215-363-4500 |
| Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893          |              |
| † Merix Chemical Co., Chicago, IL 60649                                      | 401-822-9300 |
| Milton Ross Co., Warrington, PA 18976                                        | 312-221-8242 |
| Monsanto Co., St. Louis, MO 63167                                            | 215-491-0600 |
| † NRD Inc., Subsidiary of Mark IV Inds., Inc., Grand Island, NY 14072        | 314-694-1000 |
| † Orcus, Kansas City, MO 64112                                               | 716-773-7634 |
| Packaging Plus, Inc., Minneapolis, MN 55432                                  | 913-897-5128 |
| Penny & Giles Controls, Inc., Attleboro, MA 02703                            | 612-574-9909 |
| Rogers Corp., Rogers, CT 06263                                               | 508-226-3008 |
| † Semtronics Corp., Peachtree City, GA 30269                                 | 203-774-9605 |
| Shin-Etsu Polymer America, Inc., Union City, CA 94587                        | 404-487-6681 |
| † Simco Co., Hatfield, PA 19440                                              | 510-475-9000 |
| Solder Absorbing Technology (SAT), A Sprig Co., Springfield, MA 01108        | 215-822-2171 |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370 | 800-628-8862 |
| † Techni-Tool, Plymouth Meeting, PA 19462                                    | 617-878-7015 |
| Technit, Cranford, NJ 07016                                                  | 215-825-4990 |
| Teknatonal Inds., Inc., Rochester, NY 14620-1103                             | 908-272-5500 |
| † Tra-Con, Inc., Medford, MA 02155                                           | 716-232-1291 |
| † United Foam Plastics, Georgetown, MA 01833                                 | 617-391-5550 |
| † Wescorp Static Control Products, Mountain View, CA 94041                   | 508-352-2200 |
| † Zippertubing Co., Los Angeles, CA 90061                                    | 415-969-7717 |
|                                                                              | 310-527-0488 |

### Conduit, Electrical-6000

|                                                                                   |              |
|-----------------------------------------------------------------------------------|--------------|
| † Air/Flex Inds. Inc., S. El Monte, CA 91733                                      | 818-579-7060 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                        | 908-925-8000 |
| † Carlson, A Div. of Lamson & Sessions, Cleveland, OH 44122                       | 216-831-4000 |
| † Chomerics, Inc.-W.R. Grace & Co., Woburn, MA 01888                              | 617-935-4850 |
| † Cole-Flex Corporation, West Babylon, NY 11704                                   | 516-249-6150 |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                             | 708-632-1020 |
| † Ergotron, Inc., Eagan, MN 55121                                                 | 612-452-8135 |
| † Glenair Inc., Glendale, CA 91201-2497                                           | 818-247-6000 |
| † Sunbank Electronics, Paso Robles, CA 93446                                      | 805-238-2840 |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401     |              |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                               | 803-676-2900 |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 607-772-1161 |
| † The Wiremold Company, W. Hartford, CT 06110                                     | 309-693-3300 |
| Zippertubing Co., Los Angeles, CA 90061                                           | 203-233-6251 |
|                                                                                   | 310-527-0488 |

### Connecting Blocks, Data-2100

|                                                                                    |                            |
|------------------------------------------------------------------------------------|----------------------------|
| † WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                 | C-1510                     |
| † WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C-1510, 1513               |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473; 800-221-4767 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                |                            |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962              | 203-265-8910               |
| † Bussmann Division, Cooper Industries, St. Louis, MO 63178                        | 1-800-344-0223, Ext. 1027  |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                      | 314-394-2877               |
| † Computer System Products, Minneapolis, MN 55447                                  | 802-234-9921; 800-451-4381 |
| † GTE Supply, GTE, Irving, TX 75038                                                | 612-476-6866; 800-422-2537 |
| † 3M Private Network Products, 3M, Austin, TX 78726                                | 800-433-4837               |
| † National Instruments, Austin, TX 78730-5039                                      | 512-984-3400; 800-426-8626 |
|                                                                                    | 512-794-0100               |

### Connecting Blocks, Modular Telephones-2100

|                                                                                                       |                            |
|-------------------------------------------------------------------------------------------------------|----------------------------|
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                                       | 404-751-9473; 800-221-4767 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                   |                            |
| † Amphenol Interconnect Products, LPL Technologies, Endicott, NY 13760                                | 203-265-8910               |
| † Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 607-754-4444               |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                                 | 602-897-7001               |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                      | 1-800-344-0223, Ext. 1027  |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007              | 201-347-4040               |
| † Computer System Products, Minneapolis, MN 55447                                                     | 708-981-6000               |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                    | 800-422-2537               |
| † Control Cable, Inc., Baltimore, MD 21244                                                            | 708-455-8830               |
| † GTE Supply, GTE, Irving, TX 75038                                                                   | 410-298-4411               |
| † Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 800-433-8873               |
| † International Instrumentation, Inc., Westlake Vlg., CA 91361                                        | 805-522-7958               |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                | 805-495-7673               |
| † Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                                       | 714-557-4700               |
|                                                                                                       | 206-485-4288               |
|                                                                                                       | 206-486-2222               |

### Connector Adapters-2100

|                                                                                   |        |
|-----------------------------------------------------------------------------------|--------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 |        |
|                                                                                   | C-1287 |



|                                                                                                       |                                 |
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| † Aiden Products Co., Brockton, MA 02403, 508-583-0160                                                | C•1150                          |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                               | C•1163                          |
| Amplifier Research, Souderton, PA 18964-9990, 215-723-8181                                            | D•1003                          |
| Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                                                  | C•1256-1257                     |
| Ault, Incorporated, Minneapolis, MN 55428, 612-493-1900                                               | D•1608-1609                     |
| C & C Jetronic, Inc., Allentown, NJ 08501, 609-259-8855                                               | C•1274                          |
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                                 | C•1290                          |
| Connector Corp., Chicago, IL 60646, 312-539-3108                                                      | C•1292                          |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                                       | C•1321                          |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                                      | D•1732                          |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                                   | C•1353                          |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116                          | C•1354                          |
| ITT Pomona Electronics, Pomona, CA 91766, 909-469-2900                                                | C•1355                          |
| Jerome Industries Corp., Elizabeth, NJ 07201, 908-353-5700                                            | D•1760                          |
| § LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                          | C•1369                          |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                           | C•1400, 1411-1413, D•1818, 1827 |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                         | C•1416-1419                     |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                             | C•1427, 1431, 1437, 1798        |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                                    | C•1442                          |
| § Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                                             | C•1548-1549, 1551               |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                                 | A•2534, C•1459, 1808            |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960                                | C•1461                          |
| § Spectrum Control, Inc., Erie, PA 16506, 814-835-4000                                                | A•1677                          |
| § Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                              | C•1479, 1810                    |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                          | C•1500, 1502                    |
| Accurate Electronics Corp., Elyria, OH 44036                                                          | 216-366-6330; 1-800-334-5904    |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                                       | 404-751-9473; 800-221-4767      |
| † Air Electro Inc., Van Nuys, CA 91406                                                                | 213-873-6400; 818-988-4400      |
| † Air/Flex Inds. Inc., S. El Monte, CA 91733                                                          | 818-579-7060                    |
| § American Advantech Corp., San Jose, CA 95122                                                        | 408-293-6786                    |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                   | 203-265-8910                    |
| § Amphenol Interconnect Products, LPL Technologies, Endicott, NY 13760                                | 607-754-4444                    |
| † Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                     | 203-743-9272; 800-627-7100      |
| Applied Engineering Products, New Haven, CT 06513                                                     | 203-756-1669                    |
| § Arnes Electronics, Frenchtown, NJ 08825                                                             | 908-996-6841                    |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                      | 508-222-2202                    |
| Augat/RDI, Carol Stream, IL 60188                                                                     | 708-682-4100                    |
| Autosplice, Inc., San Diego, CA 92121                                                                 | 619-535-0077                    |
| Autoswage Products, Shelton, CT 06484                                                                 | 203-929-1401                    |
| § AVA Electronics Corporation, Drexel Hill, PA 19026                                                  | 215-284-2500                    |
| § Beau Interconnect Systems, Vemtron Corp., Laconia, NH 03247                                         | 603-524-5102                    |
| Berg Electronics, Camp Hill, PA 17011                                                                 | 800-237-2374                    |
| † Bird Electronic Corp., Cleveland, OH 44139-2794                                                     | 216-248-1200                    |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                                         | 508-520-1200                    |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                      | 201-347-4040                    |
| B.R.T.B. Inc., Markham, Ont., CANADA L6G 1A7                                                          | 416-475-8903                    |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                     | 908-679-9300                    |
| CableStar, Incorporated, Glasgow, KY 42141                                                            | 800-338-8223                    |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007            | 708-981-6000                    |
| † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428                   | 612-537-1010                    |
| § Coax Connection, Peekskill, NY 10566                                                                | 914-736-1010                    |
| § Cole Hersee Co., Boston, MA 02127-2467                                                              | 617-268-2100                    |
| § Compac, Holbrook, NY 11741                                                                          | 516-585-3400                    |
| § Computer System Products, Minneapolis, MN 55447                                                     | 612-476-6866; 800-422-2537      |
| § Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                    |
| § CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 619-744-8182; 800-334-3815      |
| § Dabum Electronics & Cable Corp., Northvale, NJ 07647                                                | 201-768-5400                    |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                        | 203-438-9684; 800-344-9684      |
| † Deltronics Corporation, S. El Monte, CA 91733                                                       | 818-579-7130                    |
| § EBY Company, Philadelphia, PA 19124                                                                 | 215-537-4700                    |
| † Elcom Systems, Inc., Boca Raton, FL 33487                                                           | 407-994-1774                    |
| § EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996                    |
| † ESC Technologies, Inc., Hawthorne, CA 90250                                                         | 310-970-4090                    |
| § EXFO E.O. Engineering, Inc., Vanier, QC, CANADA G1M 3G7                                             | 418-683-0211; 1-800-663-EXFO    |
| § E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                           | 818-446-6175                    |
| † The First Electronics Corp., Boston, MA 02125                                                       | 617-288-2430                    |
| § GC-Thorsen, Rockford, IL 61105-1209                                                                 | 815-968-9661                    |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684                    |
| † Glenair Inc., Glendale, CA 91201-2497                                                               | 818-247-6000                    |
| § Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059                  | 800-452-4844                    |
| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                    |
| § Richard Hirschmann of America Inc., Riverdale, NJ 07457                                             | 201-835-5002                    |
| Hypertronics Corp., Hudson, MA 01749                                                                  | 508-568-0451; 800-225-9228      |
| § Inmet Corporation, Ann Arbor, MI 48103                                                              | 313-426-5553                    |
| § International Instrumentation, Inc., Westlake Vlg., CA 91361                                        | 805-495-7673                    |
| ITT Cannon, Santa Ana, CA 92705-5684                                                                  | 714-557-4700                    |
| † ITT Cannon/Sealec, New Britain, CT 06051                                                            | 203-223-2700                    |
| § JAW Industries, Inc., Warrington, PA 18976                                                          | 215-343-8990                    |

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| † Jettron Products Inc., E. Hanover, NJ 07936                                     | 201-887-0571                                |
| § Johnson, E. F., Co., Waseca, MN 56093                                           | 1-800-247-8256                              |
| § Jolo Industries, Inc., Garden Grove, CA 92643                                   | 714-554-6840                                |
| L-Com Inc., N. Andover, MA 01845                                                  | 508-682-6936                                |
| § Lucas Weinschel, Gaithersburg, MD 20884-6001                                    | 301-948-3434                                |
| MACOM, Inc., Lowell, MA 01851                                                     | 617-272-3000                                |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                              | 617-890-4750                                |
| † Maury Microwave Corp., Ontario, CA 91764                                        | 909-987-4715                                |
| § McKenzie Technology, Fremont, CA 94538                                          | 510-651-2700                                |
| § 3M-Electronic Products Division, Austin, TX 78726                               | 1-800-225-5373 Sals & Prod. Info.           |
| § Methode Electronics, Inc., Interconnect Prods Div, Rolling Meadows, IL 60008    | 708-392-3500                                |
| § Microdot, Interconnect Systems Division, Montgomeryville, PA 18936              | 215-699-5373                                |
| † Micro Mode Prods., El Cajon, CA 92020                                           | 619-449-3844                                |
| § Midwest Microwave, Saline, MI 48176-9569                                        | 313-429-4773; 800-521-4410                  |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                | 508-588-6110                                |
| § OFTI, Westford, MA 01886                                                        | 508-692-6606                                |
| § Olympic Wire & Cable, Fairfield, NJ 07004                                       | 201-227-7996                                |
| Packard Electric, General Motors, Warren, OH 44486                                | 216-373-2121; 1-800-PACKARD                 |
| § Panduit Corp., Tinley Park, IL 60477-0981                                       | 800-777-3300                                |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                         | 909-945-1365                                |
| Parker Hannifin Corp., Tube Fittings, Columbus, OH 43228                          | 614-279-7070                                |
| § Philips ECG, North American Philips Co., Williamsport, PA 17701                 | 717-323-4691                                |
| § Philmore Manufacturing, Rockford, IL 61125-1386                                 | 815-229-7773                                |
| Positronic Industries, Inc., Springfield, MO 65801                                | 417-866-2322                                |
| § Power Dynamics Inc., West Orange, NJ 07052                                      | 201-736-5722                                |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                      | 708-438-4000                                |
| † Pyle-National, Chicago, IL 60651                                                | 312-342-6300 x210                           |
| § Quality Microwave Interconnects, Inc., Wilmington, MA 01887                     | 508-988-9090                                |
| § Qualtek Electronics Corp., Mentor, OH 44060                                     | 216-951-3300                                |
| § Recton Corp., Long Island City, NY 11101                                        | 718-392-6442                                |
| † Rowe Industries, Inc., Toledo, OH 43612                                         | 419-729-9761                                |
| § Rye Industries, Inc., Fuquay-Varina, NC 27526                                   | 919-557-0511; 800-626-1511                  |
| Shokal Far East Ltd., Peekskill, NY 10566                                         | 914-736-3500                                |
| † Solitron/Microwave, Solitron Devices, Inc., West Palm Beach, FL 33407-4697      | 407-848-4311                                |
| Staffall Inc., Cranston, RI 02910                                                 | 401-461-5554                                |
| † Sunbank Electronics, Paso Robles, CA 93446                                      | 805-238-2840                                |
| § Suf Support Systems Intl. Corp., Richmond, CA 94804                             | 510-234-9090                                |
| † Teleplex, Inc., Alford Division, Woburn, MA 01801                               | 617-935-8610                                |
| § Test Probes, Inc., San Diego, CA 92121                                          | 619-552-2090                                |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                                |
| § Trimm Inc., Libertyville, IL 60048                                              | 708-362-3700                                |
| † Tru-Connector Corp., Peabody, MA 01960                                          | 508-532-0775; 1-800-262-9787; 1-800-COAXTRU |
| Vann Instruments, Albuquerque, NM 87106                                           | 505-265-2498                                |
| § Vector Electronic Co., Inc., Sylmar, CA 91342                                   | 818-365-9661; 800-423-5659                  |
| § Wiltron, Morgan Hill, CA 95037-2809                                             | 408-778-2000                                |
| † Wire-Pro, Inc., Salem, NJ 08079                                                 | 609-935-7601; 609-935-7651                  |

## Connector Assemblies, IEEE 488-GPIB-2100

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| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                | C•1163                     |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960 | C•1461                     |
| † Assembly Specialists, Chelmsford, MA 01824                           | 508-250-5900               |
| Berg Electronics, Camp Hill, PA 17011                                  | 800-237-2374               |
| § Dairlon, Inc., Tigard, OR 97223                                      | 503-620-2879               |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                   | 416-470-1346               |
| † Electro-Prep, Inc., Wareham, MA 02571                                | 508-291-2880               |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608        | 201-288-4477; 800-447-5639 |
| L-Com Inc., N. Andover, MA 01845                                       | 508-682-6936               |
| Motor Technical Products Inc., Tampa, FL 33626                         | 813-855-5736               |
| § Positronic Industries, Inc., Springfield, MO 65801                   | 417-866-2322               |
| § Powell Electronics Inc., Philadelphia, PA 19101                      | 215-365-1900               |
| Shogyo International Corp., Great Neck, NY 11021-4799                  | 516-466-0911               |
| § Suf Support Systems Intl. Corp., Richmond, CA 94804                  | 510-234-9090               |
| § Techrond Corp. of America, Muskegon, MI 49444                        | 616-798-2930               |

## Connector Backshells-2100

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| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                                   | C•1163                     |
| Calmark Corp., San Gabriel, CA 91776, 818-287-0451                                                                        | C•1018                     |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-8000 | C•1337, 1339               |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                                                           | 404-751-9473; 800-221-4767 |
| † Air Electro Inc., Van Nuys, CA 91406                                                                                    | 213-873-6400; 818-988-4400 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                                | 908-925-8000               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                                       | 203-265-8910               |
| § Amphenol Interconnect Products, LPL Technologies, Endicott, NY 13760                                                    | 607-754-4444               |
| § Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                                            | 203-281-3200               |
| † Array Connector Corporation, Miami, FL 33166-5598                                                                       | 305-591-7530               |
| § Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283                                                    | 602-897-7001               |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                                         | 908-679-9300               |
| CableStar, Incorporated, Glasgow, KY 42141                                                                                | 800-338-8223               |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                                | 708-981-6000               |
| † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428                                       | 612-537-1010               |
| § Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                                                | 416-475-8500               |
| § Computer System Products, Minneapolis, MN 55447                                                                         | 612-476-6866; 800-422-2537 |



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| Connect-Air International, Inc., Auburn, WA 99002                                                   | 206-939-4880                      |
| Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                      |
| CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 619-744-8182                      |
|                                                                                                     | 800-334-3815                      |
| Daitron, Inc., Tigard, OR 97223                                                                     | 503-620-2879                      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                      | 203-438-9684; 800-344-9684        |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                | 416-470-1346                      |
| EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                      |
| Elite Electronics, Inc., Plano, TX 75074                                                            | 214-881-0026; 800-553-4376        |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;                     |
|                                                                                                     | 800-447-5639                      |
| EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996                      |
| ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                      |
| ESC Technologies, Inc., Hawthorne, CA 90250                                                         | 310-970-4090                      |
| FISHERCAST, Fisher Gauge Limited, Peterborough, Ont., CANADA K9J 6Y9                                |                                   |
|                                                                                                     | 705-748-9522                      |
| Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                               |                                   |
|                                                                                                     | 408-922-9000                      |
| Glenair Inc., Glendale, CA 91201-2497                                                               | 818-247-6000                      |
| Harting Elektronik, Inc., Hoffman Estates, IL 60195                                                 | 708-519-7700, ext. 200            |
| Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059                  |                                   |
|                                                                                                     | 800-452-4844                      |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| Hudson Tool & Die Co., Ormond Beach, FL 32174                                                       | 904-672-2000                      |
| Hypertronics Corp., Hudson, MA 01749                                                                | 508-568-0451; 800-225-9228        |
| Interconnect Devices, Inc., Kansas City, KS 66106                                                   | 913-342-5544                      |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                                        | 805-495-7673                      |
| ITT Cannon, Santa Ana, CA 92705-5684                                                                | 714-557-4700                      |
| J.A.W. Industries, Inc., Warrington, PA 18976                                                       | 215-343-8990                      |
| 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                  | 215-699-5373                      |
| Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                              | 416-475-9320;                     |
|                                                                                                     | 1-800-456-1875                    |
| Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                      |
| ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                       | 805-484-0540                      |
| Olympic Wire & Cable, Fairfield, NJ 07004                                                           | 201-227-7996                      |
| Pacific Microtronics Corp., New York, NY 10021                                                      | 212-517-5622                      |
| Panduit Corp., Tinsley Park, IL 60477-0981                                                          | 800-777-3300                      |
| Positronic Industries, Inc., Springfield, MO 65801                                                  | 417-866-2322                      |
| Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                      |
| Power Dynamics Inc., West Orange, NJ 07052                                                          | 201-736-5722                      |
| Pyle-National, Chicago, IL 60651                                                                    | 312-342-6300 x210                 |
| Raycon Technology, Costa Mesa, CA 92627                                                             | 714-646-7700                      |
| Sabritec, Irvine, CA 92714                                                                          | 714-250-1244                      |
| Siltronics Ltd., Dover, MA 02030                                                                    | 617-329-4068                      |
| Sunbank Electronics, Paso Robles, CA 93446                                                          | 805-238-2840                      |
| Support Systems Intl. Corp., Richmond, CA 94804                                                     | 510-234-9090                      |
| Terminal Data Corp., Rockville, MD 20855                                                            | 301-921-8282                      |
| Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         |                                   |
|                                                                                                     | 803-676-2900                      |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                    |                                   |
|                                                                                                     | 309-693-3300                      |
| Tri-Star Elctns., Dallas, TX 75243                                                                  | 214-553-8011                      |
| Veam, Liton Systems, Watertown, CT 06795                                                            | 203-274-9681                      |
| Viking Electronics, Inc., Chatsworth, CA 91311                                                      | 818-341-4330                      |
| Wire-Pro, Inc., Salem, NJ 08079                                                                     | 609-935-7601; 609-935-7651        |

## Connector Blocks, Mother Board-2100

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| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                    | C-1163                     |
| JA Electronics Inc., Irvine, CA 92718, 714-753-2600                                      | C-1356-1357                |
| Accu-Tech Corporation, Roswell, GA 30076-3890                                            | 404-751-9473; 800-221-4767 |
| Autospice, Inc., San Diego, CA 92121                                                     | 619-535-0077               |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000               |
| Douglas Electronics, Inc., San Leandro, CA 94577                                         | 510-483-8770               |
| Eastern Electronics Mfg. Corp., National Patent Dev. Corp., East Hartford, CT 06108      |                            |
|                                                                                          | 203-528-9821               |
| EBY Company, Philadelphia, PA 19124                                                      | 215-537-4700               |
| ELMA Electronic Inc., Fremont, CA 94538                                                  | 510-656-3400               |
| GTE Supply, GTE, Irving, TX 75038                                                        | 800-433-4837               |
| Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451; 800-225-9228 |
| IEH Corp., Bay Ridge, NY 11220                                                           | 718-492-4440               |
| Panel Components Corp., Oskaloosa, IA 52577                                              | 515-673-0097               |
| Phoenix Contact Inc., Harrisburg, PA 17111                                               | 717-944-1300               |
| Positronic Industries, Inc., Springfield, MO 65801                                       | 417-866-2322               |
| Siltronics Ltd., Dover, MA 02030                                                         | 617-329-4068               |
| Star-Tron Corporation, Providence, RI 02909                                              | 401-274-5090               |
| TELTEC, Inc., Minneapolis, MN 55425                                                      | 612-854-9177               |
| Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                               | 603-889-5156               |
| Urban Electronics, Dover, MA 02030                                                       | 617-329-4068               |
| Wieland Inc., Burgaw, NC 28425                                                           | 919-259-5050               |

## Connector Boxes & Strips, Power Outlet-2500

|                                                                     |                              |
|---------------------------------------------------------------------|------------------------------|
| Corcom, Inc., Libertyville, IL 60048, 708-680-7400                  | C-1300                       |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380 | C-1353                       |
| MCG Elctns., Deer Park, NY 11729, 516-586-5125                      | B-1368                       |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097           |                              |
|                                                                     | C-1431-1433, 1437-1438       |
| S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500     | C-1082                       |
| Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62             | C-1450, 1452                 |
| Accurate Electronics Corp., Elyria, OH 44036                        | 216-366-6330; 1-800-334-5904 |
| Accu-Tech Corporation, Roswell, GA 30076-3890                       | 404-751-9473; 800-221-4767   |
| Alden Products Co., Brockton, MA 02403                              | 508-583-0160                 |
| Brooks Electronics, Philadelphia, PA 19140                          | 215-228-4433                 |

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| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000               |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                       | 708-455-8830               |
| Contact East, N. Andover, MA 01845                                                       | 508-682-2000               |
| Equipto Electronics Corp., Aurora, IL 60506-9988                                         | 708-897-4691               |
| Ericson Manufacturing Co., Willoughby, OH 44094                                          | 216-951-8000               |
| GC-Thorsen, Rockford, IL 61105-1209                                                      | 815-968-9661               |
| Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451; 800-225-9228 |
| ITT Pomona Electronics, Pomona, CA 91766                                                 | 909-469-2900               |
| Pass & Seymour/LeGrand, Pass & Seymour/Inc., Syracuse, NY 13221                          |                            |
|                                                                                          | 315-468-6211               |
| Perma Power Elctns., Niles, IL 60714                                                     | 312-763-0763               |
| Power Dynamics Inc., West Orange, NJ 07052                                               | 201-736-5722               |
| Qualtek Electronics Corp., Mentor, OH 44060                                              | 216-951-3300               |
| Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761               |
| SL Waber, Inc., Mt. Laurel, NJ 08054                                                     | 609-866-8888; 800-257-8384 |
| Techni-Tool, Plymouth Meeting, PA 19462                                                  | 215-825-4990               |
| Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816   | 908-238-1166               |
| WECCO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                      |                            |
|                                                                                          | 514-694-9136               |
| The Wiremold Company, W. Hartford, CT 06110                                              | 203-233-6251               |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                            | 801-298-5900               |

## Connectors, AC Power-2100

|                                                                                                     |                                  |
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| Alden Products Co., Brockton, MA 02403, 508-583-0160                                                | C-1148-1149                      |
| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                               | C-1163                           |
| Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                                  | C-1300                           |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                                    | C-1340                           |
| Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                               |                                  |
|                                                                                                     | C-1347                           |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                                 | C-1353                           |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                         |                                  |
|                                                                                                     | C-1400, 1407, 1412, D-1818, 1827 |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                           |                                  |
|                                                                                                     | C-1427, 1793, 1797-1798, D-2291  |
| Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300                                           | C-1639                           |
| Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                             | A-1606, C-1450-1454              |
| Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                            |                                  |
|                                                                                                     | C-1470                           |
| Air Electro Inc., Van Nuys, CA 91406                                                                | 213-873-6400; 818-988-4400       |
| Alpha Products, Inc., Westlake Village, CA 91362                                                    | 818-889-9304                     |
| Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135                         |                                  |
|                                                                                                     | 617-787-5880                     |
| Array Connector Corporation, Miami, FL 33166-5598                                                   | 305-591-7530                     |
| Amerace Electronic Components, Punta Gorda, FL 33950                                                | 813-575-8400                     |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007            | 708-981-6000                     |
| Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                 | 508-580-0111                     |
| Connectronics Corp., Toledo, OH 43607                                                               | 419-537-0020                     |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                  | 708-455-8830                     |
| Delta Products Corporation, Fremont, CA 94538                                                       | 510-770-0660                     |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;                    |
|                                                                                                     | 800-447-5639                     |
| Entrelec Inc., Irving, TX 75038                                                                     | 214-550-9025                     |
| EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996                     |
| Ericson Manufacturing Co., Willoughby, OH 44094                                                     | 216-951-8000                     |
| Golden Pacific Electronics, Inc., Placentia, CA 92670                                               | 714-993-6970                     |
| Harting Elektronik, Inc., Hoffman Estates, IL 60195                                                 | 708-519-7700, ext. 200           |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                     |
| Hypertronics Corp., Hudson, MA 01749                                                                | 508-568-0451; 800-225-9228       |
| Kaut & Bux Manufacturing Co., Mundelein, IL 60060                                                   | 708-949-8505                     |
| Lumberg, Inc., Richmond, VA 23236                                                                   | 804-379-2010                     |
| MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                     |
| Panduit Corp., Tinsley Park, IL 60477-0981                                                          | 800-777-3300                     |
| Positronic Industries, Inc., Springfield, MO 65801                                                  | 417-866-2322                     |
| Power Dynamics Inc., West Orange, NJ 07052                                                          | 201-736-5722                     |
| Pyle-National, Chicago, IL 60651                                                                    | 312-342-6300 x210                |
| San-O Industrial Corp., Holbrook, NY 11741                                                          | 516-472-6666                     |
| Superior Electric, Warner Electric, Bristol, CT 06010                                               | 203-582-9561                     |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                    |                                  |
|                                                                                                     | 309-693-3300                     |
| United Switch Company, Seattle, WA 98199                                                            | 206-282-8823                     |
| USD Products, Div. of Bussmann, Chicago, IL 60656                                                   | 708-867-4600                     |
| Veam, Liton Systems, Watertown, CT 06795                                                            | 203-274-9681                     |
| Voltac Technologies, Inc., Fairfield, CT 06430                                                      | 203-255-2633                     |
| Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816              | 908-238-1166                     |
| WECCO Electrical Connectors, Inc., Moores, NY 12958                                                 | 518-298-4810                     |
| WECCO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                                 |                                  |
|                                                                                                     | 514-694-9136                     |

## Connectors, Antenna — See Connectors, RF, Coaxial & Triaxial (Vol. C)

## Connectors, Audio-2100

|                                                                               |                      |
|-------------------------------------------------------------------------------|----------------------|
| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                         | C-1163               |
| Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002         |                      |
|                                                                               | C-1347               |
| ISL Products Int'l., Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116 |                      |
|                                                                               | C-1354, 1753, D-1041 |
| JEMA, Wilmette, IL 60091, 708-251-3600                                        | D-1044               |
| LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)    |                      |
|                                                                               | C-1369               |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                   | C-1411, D-1827       |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                         | C-1440-1441, 1803    |



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| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                                 | C•1459,1808                 |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                               | C•1460                      |
| † Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                              | C•1476-1477,1479-1481,1811  |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                          | C•1500,1502                 |
| Accurate Electronics Corp., Elyria, OH 44036                                                          | 216-366-6330;1-800-334-5904 |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                                 | 612-938-8080                |
| Air Electro Inc., Van Nuys, CA 91406                                                                  | 213-873-6400;818-988-4400   |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                    | 818-889-9304                |
| † Armel Electronics, N. Bergen, NJ 07047                                                              | 201-869-4201                |
| † Array Connector Corporation, Miami, FL 33166-5598                                                   | 305-591-7530                |
| † Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 602-897-7001                |
| Autosplice, Inc., San Diego, CA 92121                                                                 | 619-535-0077                |
| † Beau Interconnect Systems, Vernon Rock, Laconia, NH 03247                                           | 603-524-5102                |
| † Birim Electronics, Fair Lawn, NJ 07410                                                              | 201-796-2886                |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007            | 708-981-6000                |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                 | 508-580-0111                |
| † Connector Corp., Chicago, IL 60646                                                                  | 312-539-3108                |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                    | 708-455-8830                |
| Cooper Industries/Belden Div., Richmond, IN 47375                                                     | 317-983-5200;800-BELDEN-1   |
| C-S Electronic Sales, Inc., Frankfurt, IN 46041                                                       | 317-659-1874                |
| † Dabum Electronics & Cable Corp., Northvale, NJ 07647                                                | 201-768-5400                |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                        | 203-438-9684;800-344-9684   |
| † DGS Pro Audio, Arlington, TX 76003                                                                  | 800-292-2834                |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;               |
|                                                                                                       | 800-447-5639                |
| † EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996                |
| † Ercona, Patchogue, NY 11772                                                                         | 516-758-0700                |
| † GC-Thorsen, Rockford, IL 61105-1209                                                                 | 815-968-9661                |
| † Golden Pacific Electronics, Inc., Placentia, CA 92670                                               | 714-993-6970                |
| † Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                |
| † Huglin Industries Inc., Los Altos, CA 94022                                                         | 415-961-2950                |
| Hypertronics Corp., Hudson, MA 01749                                                                  | 508-568-0451;800-225-9228   |
| † International Components Corp., Melville, NY 11747                                                  | 516-293-1500                |
| † International Microelectronics, Arlington, TX 76003                                                 | 817-473-1730                |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                | 714-557-4700                |
| † ITT Pomona Electronics, Pomona, CA 91766                                                            | 909-469-2900                |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                                  | 718-956-8900                |
| † Kings Electronics Co., Inc., Tuckahoe, NY 10707                                                     | 914-793-5000                |
| Lumberg, Inc., Richmond, VA 23236                                                                     | 800-379-2010                |
| † Microtech, Boothwyn, PA 19061                                                                       | 215-459-3566                |
| Modor Technical Products Inc., Tampa, FL 33626                                                        | 813-855-5736                |
| † Mouser Electronics, Santee, CA 92071                                                                | 800-346-6873                |
| † Mouser Electronics, Mansfield, TX 76063                                                             | 800-346-6873                |
| † Mouser Electronics, Gilroy, CA 95020                                                                | 800-346-6873                |
| Multi-Contact USA, Santa Rosa, CA 95403                                                               | 707-575-7575                |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                |
| † Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                           | 909-945-1365                |
| † Philips ECG, North American Philips Co., Williamsport, PA 17701                                     | 717-323-4691                |
| † Philmore Manufacturing, Rockford, IL 61125-1386                                                     | 815-229-7773                |
| † Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                                        | 708-438-4000                |
| Re-An U.S.A. Inc., Re-An Ltd. (UK), Fairfield, NJ 07004                                               | 1-800-828-7266              |
| † Rowe Industries, Inc., Toledo, OH 43612                                                             | 419-729-9761                |
| † Rye Industries, Inc., Fuquay-Varina, NC 27526                                                       | 919-557-0511;800-626-1511   |
| † H H Smith, NT-T Inc., Meadville, PA 16335                                                           | 814-724-6440                |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670                                              | 714-996-0960                |
| † Support Systems Intl. Corp., Richmond, CA 94804                                                     | 510-234-9090                |
| † Trimm, Inc., Libertyville, IL 60048                                                                 | 708-362-3700                |
| USAPEX Corp., Santa Clara, CA 95051                                                                   | 408-982-9063                |
| † Veam, Litton Systems, Watertown, CT 06795                                                           | 203-274-9681                |
| † Wire-Pro, Inc., Salem, NJ 08079                                                                     | 609-935-7601;609-935-7651   |

## Connectors, Back Panel — See Connectors, Wirewrap (Z-3 Level) (Vol. C)

## Connectors, Battery-2100

|                                                                               |                                               |
|-------------------------------------------------------------------------------|-----------------------------------------------|
| Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                          | C•1256                                        |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571         | C•1540                                        |
| Hitrane Corporation, Flemington, NJ 08822-1238, 908-782-5525                  | D•1744                                        |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475;800-626-6116   | C•1354,1753                                   |
| † Memory Protection Devices, Inc., Farmingdale, NY 11735, 516-293-5891        | D•1455                                        |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500             | C•1082-1083                                   |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911         | C•1459,1808, D•1474                           |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                       | C•1460                                        |
| † Tauber Elctms. Inc., San Diego, CA 92117, 619-274-7242;1-800-927-0004       | D•1480                                        |
| Accurate Electronics Corp., Elyria, OH 44036                                  | 216-366-6330;1-800-334-5904                   |
| Acme Model Engineering Co., Ridgefield, NJ 07657                              | 201-943-7650                                  |
| † Adcoir, Inc., Sharon, MA 02067                                              | 617-784-8123                                  |
| † Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135 | 617-787-5880                                  |
| † Array Connector Corporation, Miami, FL 33166-5598                           | 305-591-7530                                  |
| Autosplice, Inc., San Diego, CA 92121                                         | 619-535-0077                                  |
| † Battery Specialties, Costa Mesa, CA 92626                                   | 714-755-0888;1-800-362-3706 (Toll free in CA) |
| † Connector Corp., Chicago, IL 60646                                          | 312-539-3108                                  |
| † Detronics Corporation, S. El Monte, CA 91733                                | 818-579-7130                                  |
| Eagle-Picher, Seneca, MO 64865                                                | 417-776-2256                                  |

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| † Elcon Products International Company, Fremont, CA 94538                    | 510-490-4200                |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608              | 201-288-4477;               |
|                                                                              | 800-447-5639                |
| † GC-Thorsen, Rockford, IL 61105-1209                                        | 815-968-9661                |
| † Golden Pacific Electronics, Inc., Placentia, CA 92670                      | 714-993-6970                |
| † Grunberg Oven Co., Williamsport, PA 17701                                  | 717-326-1755                |
| † House of Batteries, Huntington Beach, CA 92647                             | 1-800-432-3385;714-375-0222 |
| † Huglin Industries Inc., Los Altos, CA 94022                                | 415-961-2950                |
| † Hypertronics Corp., Hudson, MA 01749                                       | 508-568-0451;800-225-9228   |
| † IMC Power Sources, San Jose, CA 95112                                      | 408-441-9614                |
| † International Components Corp., Melville, NY 11747                         | 516-293-1500                |
| † ITT Cannon, Santa Ana, CA 92705-5684                                       | 714-557-4700                |
| † Jaro Components, Inc., Boca Raton, FL 33487-8295                           | 407-241-8600                |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                         | 718-956-8900                |
| Nesco Battery Systems, National Electro-Sales Corp., Van Nuys, CA 91406-3779 | 818-781-0505;1-800-423-2664 |
| † Philmore Manufacturing, Rockford, IL 61125-1386                            | 815-229-7773                |
| † Plainview Batteries, Inc., Plainville, NY 11803                            | 800-642-2354                |
| † Power Dynamics Inc., West Orange, NJ 07052                                 | 201-736-5722                |
| † Rose Electronics, Inc., Energy Products Group, San Jose, CA 95131          | 408-943-0440                |
| † Sjoborg, C. & Son, Inc., Cranston, RI 02910                                | 407-861-8220                |
| † Specialty Electronics, Inc., Landrum, SC 29356                             | 803-457-3824                |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                  | 513-561-8145                |
| † Veam, Litton Systems, Watertown, CT 06795                                  | 203-274-9681                |
| Yardney Technical Products, Inc., Pawcatuck, CT 06379                        | 203-599-1100                |

## Connectors, Cable-2100

|                                                                                                                           |                                    |
|---------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103                                         | C•1287,1706-1707                   |
| † AirBorn, Inc., Addison, TX 75001-0519, 214-931-3200                                                                     | C•1147                             |
| † Alden Products Co., Brockton, MA 02403, 508-583-0160                                                                    | C•1148,1150                        |
| † AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752                                                                    | C•1163                             |
| Autec Power Systems, Simi Valley, CA 93065, 805-522-0888                                                                  | D•1614                             |
| † C & C Jetronic, Inc., Allentown, NJ 08501, 609-259-8855                                                                 | C•1274                             |
| † Caton Connector Corp., Kingston, MA 02364, 617-585-4315                                                                 | C•1275-1277                        |
| † Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                                             | C•1280-1281,1285                   |
| Connector Corp., Chicago, IL 60646, 312-539-3108                                                                          | C•1292                             |
| † Connectronics Corp., Toledo, OH 43607, 419-537-0020                                                                     | C•1293                             |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830                                          | C•1295-1296,1298                   |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-1291                                                     | C•1322-1329                        |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C•1334-1338                        |
| † Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                                                   | C•1347                             |
| † Hypertronics Corp., Hudson, MA 01749, 508-568-0451;800-225-9228                                                         | C•1348,1350                        |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                                                       | C•1353                             |
| † JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                                    | C•1356-1357                        |
| † JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051                                             | C•1754-1755                        |
| † J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                                    | C•1363                             |
| † Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110;800-544-6941                                            | C•1364-1365,1757                   |
| † LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                                              | C•1369                             |
| † LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                                             | C•1382                             |
| † LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5898;800-247-0564                                               | C•1394-1398                        |
| † LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                             | C•1409,1411-1412,1414,1759, D•1827 |
| Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                                                         | C•1763                             |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                                             | C•1419                             |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                                                     | C•1422-1424                        |
| † RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                                                   | C•1441,1803                        |
| † Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                                                 | C•1450-1451                        |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                                                     | C•1459,1808                        |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                                                   | C•1460                             |
| † Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                                | C•1470-1471                        |
| † Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                                                  | C•1482,1810                        |
| † Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269;508-699-3450                                    | C•1493-1494,1498                   |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                                              | C•1501                             |
| † Tru-Connector Corp., Peabody, MA 01960, 508-532-0775;1-800-262-9787;1-800-COAXTRU                                       | C•1507                             |
| † Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                                                             | C•1508-1509,1814                   |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                                                           | 404-751-9473;800-221-4767          |
| † Adam Technologies Inc., Roselle Park, NJ 07204                                                                          | 908-245-4000                       |
| † Air Electro Inc., Van Nuys, CA 91406                                                                                    | 213-873-6400;818-988-4400          |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                                        | 818-889-9304                       |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                              | 908-925-8000                       |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                                       | 203-265-8910                       |
| † Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                                         | 203-743-9272;                      |
|                                                                                                                           | 800-627-7100                       |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                                              | 203-281-3200                       |
| † Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                                                      | 1-800-545-ANCO                     |
| † Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135                                             | 617-787-5880                       |



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| Andrew Corp., Orland Pk., IL 60462                                                                     | 800-255-1479                      | \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                          | 805-484-0540               |
| Applied Engineering Products, New Haven, CT 06513                                                      | 203-756-1669                      | \$ Olympic Wire & Cable, Fairfield, NJ 07004                                              | 201-227-7996               |
| † Arnel Electronics, N. Bergen, NJ 07047                                                               | 201-869-4201                      | \$ Dupin America, Inc., Simi Valley, CA 93065                                             | 805-520-0862               |
| † Arrow Connector Corporation, Miami, FL 33166-5598                                                    | 305-591-7530                      | \$ Pacific Electricord, Gardena, CA 90247                                                 | 310-532-6600               |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                |                                   | \$ Panduit Corp., Tinley Park, IL 60477-0981                                              | 800-777-3300               |
|                                                                                                        | 602-897-7001                      | \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                              | 909-945-1365               |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                                 |                                   | \$ Philmore Manufacturing, Rockford, IL 61125-1386                                        | 815-229-7773               |
|                                                                                                        | 1-800-344-0223, Ext. 1027         | \$ Pisonitron Industries, Inc., Springfield, MO 65801                                     | 417-866-2322               |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                       | 508-222-2202                      | Powell Electronics Inc., Philadelphia, PA 19101                                           | 215-365-1900               |
| Augat/RDI, Carol Stream, IL 60188                                                                      | 708-682-4100                      | \$ Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722               |
| Autospice, Inc., San Diego, CA 92121                                                                   | 619-535-0077                      | Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                              | 708-438-4000               |
| Autoswage Products, Shelton, CT 06484                                                                  | 203-929-1401                      | † Pyle-National, Chicago, IL 60651                                                        | 312-342-6300 x210          |
| \$ Beau Interconnect Systems, Verrinton Corp., Laconia, NH 03247                                       | 603-524-5102                      | \$ Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300               |
| Berg Electronics, Camp Hill, PA 17011                                                                  | 800-237-2374                      | \$ Reliance Electric Co., Cleveland, OH 44117                                             | 800-245-4501               |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                                                        | 508-520-1200                      | \$ RMS, Electrical Connector Division, Minneapolis, MN 55433                              | 612-786-1520               |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                       | 201-347-4040                      | Romberg Nugent, Inc., New Albany, IN 47150                                                | 812-948-0564               |
| Burdry Corporation, An FCI Company, Norwalk, CT 06856                                                  | 203-838-4444                      | \$ Rowe Industries, Inc., Toledo, OH 43612                                                | 419-729-9761               |
| \$ Burton Electrical Engineering, Wyle Laboratories, El Segundo, CA 90245                              |                                   | \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                          | 919-557-0511, 800-626-1511 |
|                                                                                                        | 310-322-0615                      | † Sabritec, Irvine, CA 92714                                                              | 714-250-1244               |
| CableStar, Incorporated, Glasgow, KY 42141                                                             | 800-338-8223                      | \$ Samtec, Inc., New Albany, IN 47151-1147                                                | 1-800-672-6832             |
| Cable Systems, Inc., The HVT Group, Everett, MA 02149                                                  | 617-389-7080                      | † Solitron/Microwave, Solitron Devices, Inc., West Palm Beach, FL 33407-4697              |                            |
| Cabletron Systems, Inc., Rochester, NH 03867                                                           | 603-332-9400                      |                                                                                           | 407-848-4311               |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007             | 708-981-6000                      | \$ Square D Co., Palatine, IL 60067                                                       | 708-397-2600               |
| † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428                    | 612-537-1010                      | † Star-Tron Corporation, Providence, RI 02909                                             | 401-274-5090               |
|                                                                                                        | 802-234-9921, 800-451-4381        | \$ Support Systems Intl. Corp., Richmond, CA 94804                                        | 510-234-9090               |
| \$ Clifford of Vermont, Inc., Bethel, VT 05032                                                         | 802-234-9921, 800-451-4381        | Teledyne Penn-Union, Edinboro, PA 16412                                                   | 814-734-1631 Ext. 382      |
| \$ Cole Hersee Co., Boston, MA 02127-2467                                                              | 617-268-2100                      | \$ TELTEC, Inc., Minneapolis, MN 55425                                                    | 612-854-9632               |
| \$ Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                            | 416-475-8500                      | \$ TELTEC, Inc., Minneapolis, MN 55425                                                    | 612-854-9177               |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                  | 508-580-0111                      | † Texas Instrs., Matts. & Controls Grp., Attleboro, MA 02703                              | 508-899-3800               |
| \$ Computer System Products, Minneapolis, MN 55447                                                     | 612-476-6866, 800-422-2537        | Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401               | 803-676-2900               |
| \$ Concord Electronics Corporation, New York, NY 10012                                                 | 1-212-777-6571                    | \$ Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584        | 309-693-3300               |
| Connect-Air International, Inc., Auburn, WA 98002                                                      | 206-939-4880                      | † Veam, Litton Systems, Watertown, CT 06795                                               | 203-274-9681               |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                      | \$ Viking Electronics, Inc., Chatsworth, CA 91311                                         | 818-341-4330               |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                                   | 317-983-5200, 800-BELDEN-1        | \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166               |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 619-744-8182                      | \$ Weidmuller Inc., Richmond, VA 23236                                                    | 804-794-2877               |
|                                                                                                        | 800-334-3815                      | Wieland Inc., Burgaw, NC 28425                                                            | 919-259-5050               |
| Curtis Industries, Milwaukee, WI 53234-3925                                                            | 414-649-4200                      | † Wire-Pro, Inc., Salem, NJ 08079                                                         | 609-935-7601, 809-935-7651 |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                 | 612-941-5651, 1-800-343-5553      |                                                                                           |                            |
| \$ Dabum Electronics & Cable Corp., Northvale, NJ 07647                                                | 201-768-5400                      |                                                                                           |                            |
| \$ Dairton, Inc., Tigard, OR 97223                                                                     | 503-620-2879                      |                                                                                           |                            |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                         | 203-438-9684, 800-344-9684        |                                                                                           |                            |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                   | 416-470-1346                      |                                                                                           |                            |
| Direct Sound Corporation, Boston, MA 02116                                                             | 1-800-372-1616                    |                                                                                           |                            |
| † EBY Company, Philadelphia, PA 19124                                                                  | 215-537-4700                      |                                                                                           |                            |
| \$ EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                      |                                                                                           |                            |
| \$ Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                         | 814-643-0700                      |                                                                                           |                            |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                              | 617-661-2454                      |                                                                                           |                            |
| \$ Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477, 800-447-5639        |                                                                                           |                            |
|                                                                                                        | 804-794-6367                      |                                                                                           |                            |
| \$ ERNI Components, Richmond, VA 23236                                                                 | 818-446-6175                      |                                                                                           |                            |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                           |                                   |                                                                                           |                            |
| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                               |                                   |                                                                                           |                            |
|                                                                                                        | 408-922-9000                      |                                                                                           |                            |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                                 | 815-968-9661                      |                                                                                           |                            |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                        | 714-781-5684                      |                                                                                           |                            |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195                                                 | 708-519-7700, ext. 200            |                                                                                           |                            |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |                                                                                           |                            |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                     | 714-660-5772                      |                                                                                           |                            |
| \$ Hugin Industries Inc., Los Altos, CA 94022                                                          | 415-961-2950                      |                                                                                           |                            |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                                                          | 815-895-5181                      |                                                                                           |                            |
| † IEH Corp., Bay Ridge, NY 11220                                                                       | 718-492-4440                      |                                                                                           |                            |
| Injectall Electronics (Woman Owned), Bohemia, NY 11716                                                 | 516-563-3388                      |                                                                                           |                            |
| \$ International Components Corp., Melville, NY 11747                                                  | 516-293-1500                      |                                                                                           |                            |
| \$ International Instrumentation, Inc., Westlake Vlg., CA 91361                                        | 805-495-7673                      |                                                                                           |                            |
| International Microelectronics, Arlington, TX 76003                                                    | 817-473-1730                      |                                                                                           |                            |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                 | 714-557-4700                      |                                                                                           |                            |
| † ITT Cannon/Sealectro, New Britain, CT 06051                                                          | 203-223-2700                      |                                                                                           |                            |
| † ITT Pomona Electronics, Pomona, CA 91766                                                             | 909-469-2900                      |                                                                                           |                            |
| Jettison Products Inc., E. Hanover, NJ 07936                                                           | 201-887-0571                      |                                                                                           |                            |
| \$ Johnson, E. F., Co., Waseca, MN 56093                                                               | 1-800-247-8256                    |                                                                                           |                            |
| \$ KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                | 408-720-9044                      |                                                                                           |                            |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                                   | 718-956-8900                      |                                                                                           |                            |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                                                           | 708-677-9500                      |                                                                                           |                            |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311, 800-323-5207        |                                                                                           |                            |
| MACOM, Inc., Lowell, MA 01851                                                                          | 617-272-3000                      |                                                                                           |                            |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                                   | 617-890-4750                      |                                                                                           |                            |
| † Maury Microwave Corp., Ontario, CA 91764                                                             | 909-987-4715                      |                                                                                           |                            |
| † M-M Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |                                                                                           |                            |
| Meritec, Associated Enterprises, Painesville, OH 44077                                                 | 216-354-3148                      |                                                                                           |                            |
| \$ Mtronics, Inc., Vernon Hills, IL 60061                                                              | 708-913-9566                      |                                                                                           |                            |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                  | 215-699-5373                      |                                                                                           |                            |
| † Micro Mode Prods., El Cajon, CA 92020                                                                | 619-449-3844                      |                                                                                           |                            |
| † Microtech, Boothwyn, PA 19061                                                                        | 215-459-3566                      |                                                                                           |                            |
| † Min-E-Con, Costa Mesa, CA 92626                                                                      | 714-434-7312                      |                                                                                           |                            |
| \$ Mington Electronics, Inc., MEC Inc. (Taiwan), City of Industry, CA 91746                            |                                   |                                                                                           |                            |
|                                                                                                        | 818-330-2086                      |                                                                                           |                            |
| \$ MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                      |                                                                                           |                            |
| \$ Mouser Electronics, Santee, CA 92071                                                                | 800-346-6873                      |                                                                                           |                            |
| \$ Mouser Electronics, Mansfield, TX 76063                                                             | 800-346-6873                      |                                                                                           |                            |
| \$ Mouser Electronics, Gilroy, CA 95020                                                                | 800-346-6873                      |                                                                                           |                            |
| Mueller Elec. Co., Cleveland, OH 44114                                                                 | 216-771-5225                      |                                                                                           |                            |
| Mupac Corp., Carlo Gavazzi Co., Brookline, MA 02401                                                    | 508-588-6110                      |                                                                                           |                            |
| \$ Nichifu America, Inc., Pottstown, PA 19464                                                          | 215-323-7120                      |                                                                                           |                            |
|                                                                                                        |                                   | \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                          | 805-484-0540               |
|                                                                                                        |                                   | \$ Olympic Wire & Cable, Fairfield, NJ 07004                                              | 201-227-7996               |
|                                                                                                        |                                   | \$ Dupin America, Inc., Simi Valley, CA 93065                                             | 805-520-0862               |
|                                                                                                        |                                   | \$ Pacific Electricord, Gardena, CA 90247                                                 | 310-532-6600               |
|                                                                                                        |                                   | \$ Panduit Corp., Tinley Park, IL 60477-0981                                              | 800-777-3300               |
|                                                                                                        |                                   | \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                              | 909-945-1365               |
|                                                                                                        |                                   | \$ Philmore Manufacturing, Rockford, IL 61125-1386                                        | 815-229-7773               |
|                                                                                                        |                                   | \$ Pisonitron Industries, Inc., Springfield, MO 65801                                     | 417-866-2322               |
|                                                                                                        |                                   | Powell Electronics Inc., Philadelphia, PA 19101                                           | 215-365-1900               |
|                                                                                                        |                                   | \$ Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722               |
|                                                                                                        |                                   | Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                              | 708-438-4000               |
|                                                                                                        |                                   | † Pyle-National, Chicago, IL 60651                                                        | 312-342-6300 x210          |
|                                                                                                        |                                   | \$ Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300               |
|                                                                                                        |                                   | \$ Reliance Electric Co., Cleveland, OH 44117                                             | 800-245-4501               |
|                                                                                                        |                                   | \$ RMS, Electrical Connector Division, Minneapolis, MN 55433                              | 612-786-1520               |
|                                                                                                        |                                   | Romberg Nugent, Inc., New Albany, IN 47150                                                | 812-948-0564               |
|                                                                                                        |                                   | \$ Rowe Industries, Inc., Toledo, OH 43612                                                | 419-729-9761               |
|                                                                                                        |                                   | \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                          | 919-557-0511, 800-626-1511 |
|                                                                                                        |                                   | † Sabritec, Irvine, CA 92714                                                              | 714-250-1244               |
|                                                                                                        |                                   | \$ Samtec, Inc., New Albany, IN 47151-1147                                                | 1-800-672-6832             |
|                                                                                                        |                                   | † Solitron/Microwave, Solitron Devices, Inc., West Palm Beach, FL 33407-4697              |                            |
|                                                                                                        |                                   |                                                                                           | 407-848-4311               |
|                                                                                                        |                                   | \$ Square D Co., Palatine, IL 60067                                                       | 708-397-2600               |
|                                                                                                        |                                   | † Star-Tron Corporation, Providence, RI 02909                                             | 401-274-5090               |
|                                                                                                        |                                   | \$ Support Systems Intl. Corp., Richmond, CA 94804                                        | 510-234-9090               |
|                                                                                                        |                                   | Teledyne Penn-Union, Edinboro, PA 16412                                                   | 814-734-1631 Ext. 382      |
|                                                                                                        |                                   | \$ TELTEC, Inc., Minneapolis, MN 55425                                                    | 612-854-9632               |
|                                                                                                        |                                   | \$ TELTEC, Inc., Minneapolis, MN 55425                                                    | 612-854-9177               |
|                                                                                                        |                                   | † Texas Instrs., Matts. & Controls Grp., Attleboro, MA 02703                              | 508-899-3800               |
|                                                                                                        |                                   | Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401               | 803-676-2900               |
|                                                                                                        |                                   | \$ Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584        | 309-693-3300               |
|                                                                                                        |                                   | † Veam, Litton Systems, Watertown, CT 06795                                               | 203-274-9681               |
|                                                                                                        |                                   | \$ Viking Electronics, Inc., Chatsworth, CA 91311                                         | 818-341-4330               |
|                                                                                                        |                                   | \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166               |
|                                                                                                        |                                   | \$ Weidmuller Inc., Richmond, VA 23236                                                    | 804-794-2877               |
|                                                                                                        |                                   | Wieland Inc., Burgaw, NC 28425                                                            | 919-259-5050               |
|                                                                                                        |                                   | † Wire-Pro, Inc., Salem, NJ 08079                                                         | 609-935-7601, 809-935-7651 |

Connectors, Card — See Connectors, Printed Circuit, Card Edge (Vol. C)

## Connectors, Circular, Metal Shell-2100

|                                                                                          |                              |
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| Alden Products Co., Brockton, MA 02403, 508-583-0160                                     | C-1148-1149                  |
| † AMP, Harrisburg, PA 17105, 717-564-0100, 800-522-6752                                  | C-1163                       |
| C & C Jetronic, Inc., Allentown, NJ 08501, 609-259-8855                                  | C-1274                       |
| † Caton Connector Corp., Kingston, MA 02364, 617-585-4315                                | C-1275-1276                  |
| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                                          | C-1279                       |
| \$ CUI Stack Inc., Beaverton, OR 97005, 503-643-4899                                     | C-1303                       |
| \$ Direct Sound Corporation, Boston, MA 02116, 1-800-372-1616                            | C-1309                       |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                    | C-1323-1329                  |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                 | C-1347                       |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475, 800-626-6116             | C-1354                       |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                     | C-1357                       |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 907-578-8811, 800-444-LEMO (5366)            | C-1369                       |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                           | D-1827                       |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                  | C-1460                       |
| \$ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                | C-1482                       |
| Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020               | C-1502                       |
| Advanced Connector Technology, Ventura, CA 93003                                         | 805-644-9990                 |
| † Air Electro Inc., Van Nuys, CA 91406                                                   | 213-873-6400, 818-988-4400   |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                      | 203-265-8910                 |
| † Amphenol, Bendix Connector Operations, Sidney, NY 13838                                | 607-563-5011                 |
| † Array Connector Corporation, Miami, FL 33166-5598                                      | 305-591-7530                 |
| Braxton Mfg., Watertown, CT 06795                                                        | 203-274-6781                 |
| † BTC Electronic Components, Old Bridge, NJ 08857                                        | 908-679-9300                 |
| Burdry Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444                 |
| \$ Burton Electrical Engineering, Wyle Laboratories, El Segundo, CA 90245                | 310-322-0615                 |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                 |
| † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428      | 612-537-1010                 |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                    | 508-580-0111                 |
| Concord Electronics Corporation, New York, NY 10012                                      | 1-212-777-6571               |
| Connect-Air International, Inc., Auburn, WA 98002                                        | 206-939-4880                 |
| Connector Corp., Chicago, IL 60646                                                       | 312-539-3108                 |
| Connectronics Corp., Toledo, OH 43607                                                    | 419-537-0020                 |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                   | 612-941-5651, 1-800-343-5553 |
| \$ Dairton, Inc., Tigard, OR 97223                                                       | 503-620-2879                 |
| \$ Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                          | 605-665-9301                 |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                           | 203-438-9684, 800-344-9684   |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                     | 416-470-1346                 |
| † Detronics Corporation, S. El Monte, CA 91733                                           | 818-579-1130                 |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477                 |
| \$ ESC Technologies, Inc., Hawthorne, CA 90250                                           | 310-970-4090                 |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195                                   | 708-519-7700, ext. 200       |
| † Hermetic Seal Corp., Rosemead, CA 91770                                                | 213-283-0411                 |



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| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958              |
| † Hoffman Engineering Corp., Stamford, CT 06902                                                     | 203-325-8933              |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                  | 714-660-5772              |
| Hypertronics Corp., Hudson, MA 01749                                                                | 508-568-0451/800-225-9228 |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                              | 714-557-4700              |
| Mercotac Inc., Carlsbad, CA 92009                                                                   | 619-431-7723              |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                | 215-699-5373              |
| † Microtech, Boothwyn, PA 19061                                                                     | 610-599-3566              |
| Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                            |                           |
|                                                                                                     | 818-330-2086              |
| § Mouser Electronics, Santee, CA 92071                                                              | 800-346-6873              |
| § Mouser Electronics, Mansfield, TX 76063                                                           | 800-346-6873              |
| § Mouser Electronics, Gilroy, CA 95020                                                              | 800-346-6873              |
| Nanonics Corporation, Phoenix, AZ 85027                                                             | 602-581-6188              |
| Presh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                                       | 708-438-4000              |
| † Pyle-National, Chicago, IL 60651                                                                  | 312-342-6300 x210         |
| RDI Elctms., Inc., Mamaroneck, NY 10543                                                             | 914-777-7000              |
| RMS, Electrical Connector Division, Minneapolis, MN 55433                                           | 612-786-1520              |
| † Rowe Industries, Inc., Toledo, OH 43612                                                           | 419-729-9761              |
| Sabritec, Irvine, CA 92714                                                                          | 714-250-1244              |
| † Seathorn, Inc., Cincinnati, OH 45215                                                              | 513-733-8400              |
| Siltronics Ltd., Dover, MA 02030                                                                    | 617-329-4068              |
| § SMK Electronics Corporation, U.S.A., Placentia, CA 92670                                          | 714-996-0960              |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                       |                           |
|                                                                                                     | 803-676-2900              |
| § Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                   |                           |
|                                                                                                     | 309-693-3300              |
| † Tri-Star Elctms., Dallas, TX 75243                                                                | 214-553-8011              |
| † Veam, Litton Systems, Watertown, CT 06795                                                         | 203-274-9681              |
| § Viking Electronics, Inc., Chatsworth, CA 91311                                                    | 818-341-4330              |

## Connectors, Circular, Plastic/Composite Shell-2100

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|------------------------------------------------------------------------------------------|---------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                                     | C•1148-1151               |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                    |                           |
|                                                                                          | C•1323-1329               |
| Hypertronics Corp., Hudson, MA 01749, 508-568-0451/800-225-9228                          | C•1348                    |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                    | C•1441                    |
| Advanced Connector Technology, Ventura, CA 93003                                         | 805-644-9990              |
| § AMP, Harrisburg, PA 17105                                                              | 717-564-0100/800-522-6752 |
| † Amphenol, Bendix Connector Operations, Sidney, NY 13838                                | 607-563-5011              |
| Burndy Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444              |
| Connectronics Corp., Toledo, OH 43607                                                    | 419-537-0020              |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                           | 203-438-9684/800-344-9684 |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477;             |
|                                                                                          | 800-447-5639              |
| Lumberg, Inc., Richmond, VA 23236                                                        | 804-379-2010              |
| § Motor Technical Products Inc., Tampa, FL 33626                                         | 813-855-5736              |
| Nanonics Corporation, Phoenix, AZ 85027                                                  | 602-581-6188              |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                | 909-945-1365              |
| § Positronic Industries, Inc., Springfield, MO 65801                                     | 417-866-2322              |
| § Support Systems Intl. Corp., Richmond, CA 94804                                        | 510-234-9090              |
| § Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166              |

## Connectors, Data-2100

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| Alden Products Co., Brockton, MA 02403, 508-583-0160                                                        | C•1148                    |
| † AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                                                      | C•1163                    |
| Entran Devices, Fairfield, NJ 07004, 201-227-1002/800-635-0650                                              | B•945                     |
| § Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                  |                           |
|                                                                                                             | C•1470                    |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                             | 404-751-9473/800-221-4767 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                  | 908-925-8000              |
| Autosplice, Inc., San Diego, CA 92121                                                                       | 619-535-0077              |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                            | 201-347-4040              |
| § Daitron, Inc., Tigard, OR 97223                                                                           | 503-620-2879              |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                              | 203-438-9684/800-344-9684 |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                        | 416-470-1346              |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                               | 201-288-4477;             |
|                                                                                                             | 800-447-5639              |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000              |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                             | 714-761-5684              |
| § Harting Elektronik, Inc., Hoffman Estates, IL 60195                                                       | 708-519-7700, ext. 200    |
| § Ideal Industries, Inc., Sycamore, IL 60178                                                                | 815-895-5181              |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                                   | 708-398-5311/800-323-5207 |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                                 | 800-777-3300              |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                                   | 909-945-1365              |
| § Philips ECG, North American Philips Co., Williamsport, PA 17701                                           | 717-323-4691              |
| Stewart Connector Sys., Inc., Glen Rock, PA 17327                                                           | 717-235-7512              |
| § Support Systems Intl. Corp., Richmond, CA 94804                                                           | 510-234-9090              |
| † Virginia Plastics Co., Roanoke, VA 24015-0577                                                             | 703-375-0100              |

## Connectors, DC Power-2100

|                                                                               |               |
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| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121         |               |
|                                                                               | C•1327        |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                         | C•1440        |
| Tamura Corporation of America, Temecula, CA 92589-2230, 909-699-1270          |               |
|                                                                               | D•1952        |
| Advanced Connector Technology, Ventura, CA 93003                              | 805-644-9990  |
| § Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135 |               |
|                                                                               | 617-787-5880  |
| § Beau Interconnect Systems, Veritron Corp., Laconia, NH 03247                | 603-524-5102  |
| Connectronics Corp., Toledo, OH 43607                                         | 419-537-0020  |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                 | 201-288-4477; |
|                                                                               | 800-447-5639  |

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| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958              |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093                                                    | 516-937-3475/800-626-6116 |
| § Kycon Cable & Connector, Inc., San Jose, CA 95125                                                 | 408-295-1110/800-544-6941 |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                           | 708-398-5311/800-323-5207 |
| Manhattan Electric Cable Corporation, Rye, NY 10580                                                 | 914-967-8000              |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                         | 800-777-3300              |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                           | 909-945-1365              |
| § Philips ECG, North American Philips Co., Williamsport, PA 17701                                   | 717-323-4691              |
| † Positronic Industries, Inc., Springfield, MO 65801                                                | 417-866-2322              |
| Power Dynamics Inc., West Orange, NJ 07052                                                          | 201-736-5722              |
| Shogyo International Corp., Great Neck, NY 11021-4799                                               | 516-466-0911              |
| Siltronics Ltd., Dover, MA 02030                                                                    | 617-329-4068              |
| † Veam, Litton Systems, Watertown, CT 06795                                                         | 203-274-9681              |

## Connectors, DIN-2100

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| Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                                      | B•1342, C•1006              |
| § AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                                     | C•1163                      |
| Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                                       | C•1256-1257                 |
| § CUI Stack Inc., Beaverton, OR 97005, 503-643-4899                                        | C•1303                      |
| § CW Industries, Southampton, PA 18966, 215-355-7080                                       | C•1304                      |
| § Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                  |                             |
|                                                                                            | C•1315-1318                 |
| § Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200              |                             |
|                                                                                            | C•1343-1344                 |
| § Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                    |                             |
|                                                                                            | C•1347                      |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                        | C•1353                      |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475/800-626-6116                |                             |
|                                                                                            | C•1354, 1753                |
| § J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                     | C•1363                      |
| § Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110/800-544-6941             |                             |
|                                                                                            | C•1365                      |
| § LECO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                               | C•1382                      |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896/800-247-0564                  |                             |
|                                                                                            | C•1396, 1398-1399           |
| § LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                              |                             |
|                                                                                            | C•1404, 1406, 1759, D•1827  |
| § Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                 |                             |
|                                                                                            | C•1056                      |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                      | C•1440-1441                 |
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2800 ext.62                                  | C•1451-1452                 |
| Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                        |                             |
|                                                                                            | C•1459, 1808                |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                    | C•1460                      |
| Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                               | C•1463                      |
| § Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                 |                             |
|                                                                                            | C•1471                      |
| § Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                            | C•1473                      |
| § Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                   |                             |
|                                                                                            | C•1482                      |
| Tamura Corporation of America, Temecula, CA 92589-2230, 909-699-1270                       |                             |
|                                                                                            | D•1952                      |
| # Technical Devices, Dayton, OH 45414, 513-890-7881                                        | C•1813                      |
| § Tekra Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110  | C•1485, 1488-1489           |
| † Tru-Connector Corp., Peabody, MA 01960, 508-532-0775; 1-800-262-9787; 1-800-COAXTRU      | C•1507                      |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661/800-423-5659                 |                             |
|                                                                                            | C•1674, 1681                |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                  | 516-546-1751                |
| Adam Technologies Inc., Roselle Park, NJ 07204                                             | 908-245-4000                |
| Advanced Connector Technology, Ventura, CA 93003                                           | 805-644-9990                |
| § Air Electro Inc., Van Nuys, CA 91406                                                     | 213-873-6400/818-988-4400   |
| † Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-889-9304                |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                        |                             |
|                                                                                            | 203-265-8910                |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                         | 1-800-545-ANCO              |
| # Array Connector Corporation, Miami, FL 33166-5598                                        | 305-591-7530                |
| § Assmann Electronics Inc., Assmann Electronics GMBH, Tempe, AZ 85283                      |                             |
|                                                                                            | 602-897-7001                |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                           | 508-222-2202                |
| Augat/RDI, Carol Stream, IL 60188                                                          | 708-682-4100                |
| Beau Interconnect Systems, Veritron Corp., Laconia, NH 03247                               | 603-524-5102                |
| § Berg Electronics, Camp Hill, PA 17011                                                    | 800-237-2374                |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                              | 203-288-8001/1-800-242-2863 |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                           | 201-347-4040                |
| † BTC Electronic Components, Old Bridge, NJ 08857                                          | 908-679-9300                |
| § Amerace Electronic Components, Punta Gorda, FL 33950                                     | 813-575-8400                |
| § Burndy Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444                |
| § Canfield Connector, Canfield Industries, Youngstown, OH 44514                            | 216-758-8299                |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                |
| †# Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                     | 508-580-0111                |
| Connect-Air International, Inc., Auburn, WA 98002                                          | 206-939-4880                |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                         | 708-455-8830                |
| § Control Cable, Inc., Baltimore, MD 21244                                                 | 410-298-4411                |
| § CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                            | 619-744-8182;               |
|                                                                                            | 800-334-3815                |
| CTS Corporation, Elkhart, IN 46514                                                         | 219-293-7511                |
| †# CTS Corp., Connector Products, New Hope, MN 55428                                       | 612-533-3533                |
| § Daitron, Inc., Tigard, OR 97223                                                          | 503-620-2879                |
| § Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                             | 605-665-9301                |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                             | 203-438-9684/800-344-9684   |
| § DGS Pro Audio, Arlington, TX 76003                                                       | 800-292-2834                |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                              | 814-643-0700                |



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| ELMA Electronic Inc., Fremont, CA 94538                                                                | 510-656-3400                      |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                                                  | 714-669-9473                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477                      |
|                                                                                                        | 800-447-5639                      |
| † ERNI Components, Richmond, VA 23236                                                                  | 804-794-6367                      |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                    | 408-749-1228                      |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                        | 714-761-5684                      |
| \$ Golden Pacific Electronics, Inc., Placentia, CA 92670                                               | 714-993-6970                      |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| † Interlogic Industries, Melville, NY 11747-4294                                                       | 516-420-8111                      |
| \$ International Components Corp., Melville, NY 11747                                                  | 516-293-1500                      |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                 | 714-557-4700                      |
| JAE Electronics Inc., Irvine, CA 92718                                                                 | 714-753-2600                      |
| \$ Jaro Components, Inc., Boca Raton, FL 33487-8295                                                    | 407-241-8600                      |
| JEMA, Wilmette, IL 60091                                                                               | 708-251-3600                      |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501                                       | 310-328-0051                      |
| \$ KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                | 408-720-9044                      |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311                      |
| Lumberg, Inc., Richmond, VA 23236                                                                      | 804-379-2100                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Methode Electronics, Inc., Chicago, IL 60656                                                        | 708-867-9600                      |
| \$ Mhoitronics, Inc., Vernon Hills, IL 60061                                                           | 708-913-9566                      |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                     | 215-699-5373                      |
| Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                               | 818-330-2086                      |
| \$ Mouser Electronics, Santee, CA 92071                                                                | 800-346-6873                      |
| \$ Mouser Electronics, Mansfield, TX 76063                                                             | 800-346-6873                      |
| \$ Mouser Electronics, Gilroy, CA 95020                                                                | 800-346-6873                      |
| \$ Nichifu America, Inc., Pottstown, PA 19464                                                          | 215-323-7120                      |
| \$ Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                      |
| \$ ODU-U.S.A., Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                    | 805-484-0540                      |
| \$ Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173                          | 708-843-7900                      |
|                                                                                                        | 1-800-626-6766                    |
| \$ Oupin America, Inc., Simi Valley, CA 93065                                                          | 805-520-0862                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                            | 800-777-3300                      |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                           | 909-945-1365                      |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                                     | 815-229-7773                      |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                                          | 717-944-1300                      |
| \$ Positronic Industries, Inc., Springfield, MO 65801                                                  | 417-866-2322                      |
| \$ Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                      |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                                          | 201-736-5722                      |
| \$ Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                                        | 708-438-4000                      |
| Raycon Technology, Costa Mesa, CA 92627                                                                | 714-646-7700                      |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                                         | 812-948-0564                      |
| Schroff, Inc., Warwick, RI 02886                                                                       | 401-732-3770                      |
| † Siltronics Ltd., Dover, MA 02030                                                                     | 617-329-4068                      |
| \$ SMK Electronics Corporation, U.S.A., Placentia, CA 92670                                            | 714-996-0960                      |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                                     | 510-234-9090                      |
| \$ TELTEC, INC., Minneapolis, MN 55425                                                                 | 612-854-9632                      |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                                                 | 612-854-9177                      |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                                           | 603-889-5156                      |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                          | 803-676-2900                      |
|                                                                                                        | 214-553-8011                      |
| † Tri-Star Electms., Dallas, TX 75243                                                                  | 818-341-4330                      |
| \$ Viking Electronics, Inc., Chatsworth, CA 91311                                                      | 804-794-2877                      |
| \$ Weidmuller Inc., Richmond, VA 23236                                                                 | 919-259-5050                      |
| \$ Wieland Inc., Burgaw, NC 28425                                                                      | 919-259-5050                      |
| \$ Yamachi Electronics, Inc., Yamachi Electronics Co., Ltd., San Jose, CA 95112                        | 408-452-0797                      |

## Connectors, D Subminiature-2100

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| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103                                        | C*1287                               |
| AirBorn, Inc., Addison, TX 75001-0519, 214-931-3200                                                                       | C*1147                               |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                                   | C*1163                               |
| † Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                                             | C*1284, 1286                         |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830                                          | C*1294-1295, 1297                    |
| CUI Stack Inc., Beaverton, OR 97005, 503-643-4899                                                                         | C*1303                               |
| † CW Industries, Southhampton, PA 18966, 215-355-7080                                                                     | C*1304                               |
| \$ Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180, 605-665-9301                                             | C*1308                               |
| Direct Sound Corporation, Boston, MA 02116, 1-800-372-1616                                                                | C*1309                               |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C*1334                               |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200                                            | C*1343-1344                          |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116                                              | C*1354, 1753                         |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                                      | C*1356-1357                          |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051                                            | C*1754-1755                          |
| \$ J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                                   | C*1363                               |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941                                          | C*1364-1365, 1757                    |
| \$ LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                                            | C*1382                               |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                                                | C*1399                               |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                            | C*1404, 1408-1409, 1413-1414, D*1827 |
| \$ McKenzie Technology, Fremont, CA 94538, 510-651-2700                                                                   | C*1415                               |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                                             | A*1652, C*1416-1419                  |
| \$ Murata Erie North America, Inc., Smyrna, GA 30080, 404-436-1300                                                        | C*1425                               |
| RDI Electrs., Inc., Mamaroneck, NY 10543, 914-777-7000                                                                    | C*1441                               |

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| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                                     | C*1442-1444                       |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                                | C*1460                            |
| \$ Spectrum Control, Inc., Erie, PA 16506, 814-835-4000                                                | A*1677-1678, C*1468               |
| # Technical Devices, Dayton, OH 45414, 513-890-7881                                                    | C*1813                            |
| Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                             | C*1504                            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                              | 516-546-1751                      |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                        | 404-751-9473; 800-221-4767        |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                         | 908-245-4000                      |
| Advanced Connector Technology, Ventura, CA 93003                                                       | 805-644-9990                      |
| † Air Electro Inc., Van Nuys, CA 91406                                                                 | 213-873-6400; 818-988-4400        |
| Alpha Dist. Corp., Richfield, OH 44286                                                                 | 216-659-7100; 1-800-628-0841      |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                     | 818-889-9304                      |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                          | 908-925-8000                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                    | 203-265-8910                      |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                        | 203-281-3200                      |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                                     | 1-800-545-ANCO                    |
| † Array Connector Corporation, Miami, FL 33166-5598                                                    | 305-591-7530                      |
| \$ Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283                                | 602-897-7001                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                       | 508-222-2202                      |
| Augat/RDI, Carol Stream, IL 60188                                                                      | 708-682-4100                      |
| Beau Interconnect Systems, Vernonitron Corp., Laconia, NH 03247                                        | 603-524-5102                      |
| \$ Berg Electronics, Camp Hill, PA 17011                                                               | 800-237-2374                      |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                       | 201-347-4040                      |
| B.R.T.B. Inc., Markham, Ont., CANADA L6G 1A7                                                           | 416-475-8903                      |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                      | 908-679-9300                      |
| Burdyn Corporation, An FCI Company, Norwalk, CT 06856                                                  | 203-838-4444                      |
| CableStar, Incorporated, Glasgow, KY 42141                                                             | 800-338-8223                      |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007             | 708-981-6000                      |
| \$ Coax Connection, Peekskill, NY 10566                                                                | 914-736-1010                      |
| \$ Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                            | 416-475-8500                      |
| # Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                  | 508-580-0111                      |
| # Computer System Products, Minneapolis, MN 55447                                                      | 612-476-6866; 800-422-2537        |
| Connect-Air International, Inc., Auburn, WA 98002                                                      | 206-399-4880                      |
| Connector Corp., Chicago, IL 60646                                                                     | 312-539-3100                      |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                      |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                                   | 317-983-5200; 800-BELDEN-1        |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 619-744-8182                      |
|                                                                                                        | 800-334-3815                      |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                 | 612-941-5651; 1-800-343-5553      |
| \$ Dairton, Inc., Tigard, OR 97223                                                                     | 503-620-2879                      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                         | 203-438-9684; 800-344-9684        |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                   | 416-470-1346                      |
| \$ Dynacast Inc., Yorktown Heights, NY 10598                                                           | 914-962-6300                      |
| \$ EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                      |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                          | 814-643-0700                      |
| \$ Elite Electronics, Inc., Plano, TX 75074                                                            | 214-881-0026; 800-553-4376        |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477                      |
|                                                                                                        | 800-447-5639                      |
| \$ EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996                      |
| \$ Ercona, Patchogue, NY 11772                                                                         | 516-758-0700                      |
| \$ ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                      |
| \$ Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                 | 408-749-1228                      |
| Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                                  | 408-922-9000                      |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                                 | 815-968-9861                      |
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| † Hermetic Seal Corp., Rosemead, CA 91770                                                              | 213-283-0411                      |
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| \$ Injectorall Electronics (Woman Owned), Bohemia, NY 11716                                            | 516-563-3388                      |
| \$ International Components Corp., Melville, NY 11747                                                  | 516-293-1500                      |
| International Microelectronics, Arlington, TX 76003                                                    | 817-473-1730                      |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                 | 714-557-4700                      |
| \$ Jaro Components, Inc., Boca Raton, FL 33487-8295                                                    | 407-241-8600                      |
| \$ J.A.W. Industries, Inc., Warrington, PA 18976                                                       | 215-343-8990                      |
| † Keystone Electronics Corp., Astoria, OR 1105-2017                                                    | 718-956-8900                      |
| L-Corn Inc., N. Andover, MA 01845                                                                      | 508-682-6936                      |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311; 800-323-5207        |
| Manhattan Electric Cable Corporation, Rye, NY 10580                                                    | 914-967-8000                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Mhoitronics, Inc., Vernon Hills, IL 60061                                                           | 708-913-9566                      |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                   | 215-699-5373                      |
| \$ Microtech, Boothwyn, PA 19061                                                                       | 215-459-3566                      |
| Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                               | 818-330-2086                      |
| \$ MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                      |
| Mouser Electronics, Santee, CA 92071                                                                   | 800-346-6873                      |
| Mouser Electronics, Mansfield, TX 76063                                                                | 800-346-6873                      |
| Mouser Electronics, Gilroy, CA 95020                                                                   | 800-346-6873                      |
| \$ Murata Manufacturing Co., Ltd., Nagaoka-Kyo-Shi, Kyoto, JAPAN 617                                   | 075-951-9111                      |
| Nanonics Corporation, Phoenix, AZ 85027                                                                | 602-581-6188                      |
| National Telephone & Electronics Inc., Miami, FL 33172                                                 | 305-592-0551                      |
| \$ Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                              | 416-475-9320; 1-800-456-1875      |
| \$ Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                      |
| \$ ODU-U.S.A., Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                    | 805-484-0540                      |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                           | 201-227-7996                      |
| \$ Onshore Technology, Tempe, AZ 85281                                                                 | 602-921-3000                      |
| \$ Oupin America, Inc., Simi Valley, CA 93065                                                          | 805-520-0862                      |
| Pacific Microtronics Corp., New York, NY 10021                                                         | 212-517-5622                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                            | 800-777-3300                      |



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| \$ Philmore Manufacturing, Rockford, IL 6125-1386                              | 815-229-7773              |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                  | 717-944-1300              |
| \$† Positronic Industries, Inc., Springfield, MO 65801                         | 417-866-2322              |
| \$† Powell Electronics Inc., Philadelphia, PA 19101                            | 215-365-1900              |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                  | 201-736-5722              |
| \$ Pyle-National, Chicago, IL 60651                                            | 312-342-6300 x210         |
| \$ Raycon Technology, Costa Mesa, CA 92627                                     | 714-646-7700              |
| \$ Remee Products Corp., Florida, NY 10921                                     | 914-651-4431              |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                 | 812-948-0564              |
| \$ Rowe Industries, Inc., Toledo, OH 43612                                     | 419-729-9761              |
| \$ Sabritec, Irvine, CA 92714                                                  | 714-250-1244              |
| \$ Shogyo International Corp., Great Neck, NY 11021-4799                       | 516-466-0911              |
| \$ Siltronics Ltd., Dover, MA 02030                                            | 617-329-4068              |
| \$† Support Systems Intl. Corp., Richmond, CA 94804                            | 510-234-9090              |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                         | 612-854-9632              |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                         | 612-854-9177              |
| \$ Terminal Data Corp., Rockville, MD 20855                                    | 301-921-8282              |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900              |
| \$ USAPEX Corp., Santa Clara, CA 95051                                         | 408-982-9063              |
| \$† U.S. Terminals Inc., Cincinnati, OH 45243                                  | 513-561-8145              |
| \$ Viking Electronics, Inc., Chatsworth, CA 91311                              | 818-341-4330              |
| \$ Weidmuller Inc., Richmond, VA 23236                                         | 804-794-2877              |
| \$† Wells Electronics, Inc., South Bend, IN 46613                              | 219-287-5941              |
| \$ Wieland Inc., Burgaw, NC 28425                                              | 919-259-5050              |
| \$† Wire-Pro, Inc., Salem, NJ 08079                                            | 609-935-7601/609-935-7651 |
| \$ Yamachi Electronics, Inc., Yamachi Electronics Co. Ltd., San Jose, CA 95112 | 408-452-0797              |

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| AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                                                     | C-1163                      |
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| Alden Products Co., Brockton, MA 02403                                                                   | 508-583-0160                |
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| Connectronics Corp., Toledo, OH 43607                                                                    | 419-537-0020                |
| Elform, Inc., Reno, NV 89510                                                                             | 702-829-1905                |
| Greenwich Instruments USA, Charlotte, NC 28205                                                           | 704-376-1021                |
| ISL Products Int'l., Ltd., Syosset, NY 11791-6093                                                        | 516-937-3475/800-626-6116   |
| Jettron Products Inc., E. Hanover, NJ 07936                                                              | 201-887-0571                |
| \$ Kemlon Products & Development Company, Houston, TX 77021                                              | 713-747-5020                |
| \$ Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244                                | 602-963-4584                |
| \$† SAS Industries Inc., Manorville, NY 11949                                                            | 516-727-1441/1-800-544-5238 |
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| \$ Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                          | A-1586-1587, C-1300-1301  |
| Del Electronics Corp., Vailhalla, NY 10595, 914-686-3600                                       | A-1601                    |
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| Air Electro Inc., Van Nuys, CA 91406                                                           | 213-873-6400/818-988-4400 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                            | 203-265-8910              |
| \$ Amphenol, Bendix Connector Operations, Sidney, NY 13838                                     | 607-563-5011              |
| \$† Amphenol Canada Corp., Scarborough, Ontario, CANADA M1B 2X6                                | 416-291-4401              |
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| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                        | 602-897-7001              |
| \$ AVA Electronics Corporation, Drexel Hill, PA 19026                                          | 215-284-2500              |
| Berg Electronics, Camp Hill, PA 17011                                                          | 800-237-2374              |
| \$† BTC Electronic Components, Old Bridge, NJ 08857                                            | 908-679-9300              |
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| \$† Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007   | 708-981-6000              |
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| # Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                          | 508-580-0111              |
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| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                | 416-470-1346              |
| EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151              |
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| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477              |
| \$ Ercona, Patchogue, NY 11772                                                                      | 516-758-0700              |
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| \$† Frequency Electronics, Inc., Mitchell Field, NY 11553                                           | 516-794-4500              |
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| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 90665 | 805-522-7958              |
| \$† Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                | 714-660-5772              |
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| \$† ITT Cannon, Santa Ana, CA 92705-5684                                                            | 714-557-4700              |
| \$† Loda Electronics, Inc., Arlington Hgts., IL 60004-7805                                          | 708-398-5311/800-323-5207 |
| \$† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                              | 617-890-4750              |
| Meritek, Associated Enterprises, Painesville, OH 44077                                              | 216-354-3148              |
| \$ Murata Manufacturing Co., Ltd., Nagasaki-Kyo-Shi, Kyoto, JAPAN 617                               | 075-951-9111              |
| \$ Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                           | 416-475-9320              |
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| \$ Oxytel Inc., Branford, CT 06405                                                                  | 203-488-1033              |
| Panel Components Corp., Oskaloosa, IA 52577                                                         | 515-673-0097              |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                           | 909-945-1365              |
| \$ Positronic Industries, Inc., Springfield, MO 65801                                               | 417-866-2322              |
| \$ Powell Electronics Inc., Philadelphia, PA 19101                                                  | 215-365-1900              |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                                       | 201-736-5722              |
| \$ Pyle-National, Chicago, IL 60651                                                                 | 312-342-6300 x210         |
| \$ Quatek Electronics Corp., Mentor, OH 44060                                                       | 216-951-3300              |
| \$ Rowe Industries, Inc., Toledo, OH 43612                                                          | 419-729-9761              |
| \$ Sabritec, Irvine, CA 92714                                                                       | 714-250-1244              |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                                                        | 814-724-6440              |
| \$ Stetco, Inc., Franklin Pk., IL 60131                                                             | 708-671-4208              |
| \$† Support Systems Intl. Corp., Richmond, CA 94804                                                 | 510-234-9090              |
| Technit, Cranford, NJ 07016                                                                         | 908-272-5500              |
| \$† Tri-Star Elctms., Dallas, TX 75243                                                              | 214-553-8011              |
| \$† Team, Liton Systems, Watertown, CT 06795                                                        | 203-274-9681              |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577                                                   | 703-375-0100              |

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| \$† AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                                                                  | C-1163                      |
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| \$ Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                                                | C-1315-1319                 |
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| \$ LECO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                                             | C-1382, 1390-1391           |
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| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136                                       | C-1520-1521                 |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                                                      | 914-736-1010/1-800-431-2103 |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                                                 | 516-546-1751                |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                                                          | 404-751-9473/800-221-4767   |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                                            | 908-245-4000                |
| \$† Advanced Circuit Technology, Nashua, NH 03062                                                                         | 603-880-6000                |
| Air Electro Inc., Van Nuys, CA 91406                                                                                      | 213-873-6400/818-988-4400   |
| Alden Products Co., Brockton, MA 02403                                                                                    | 508-583-0160                |
| \$ Alpha Products, Inc., Westlake Village, CA 91362                                                                       | 818-889-9304                |
| \$† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                            | 908-925-8000                |
| \$ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                                           | 203-281-3200                |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                                                        | 1-800-545-ANCO              |
| \$ Aries Electronics, Frenchtown, NJ 08825                                                                                | 908-996-6841                |
| \$† Arnel Electronics, N. Bergen, NJ 07047                                                                                | 201-869-4201                |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                                   | 602-897-7001                |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                                          | 508-222-2202                |
| Augat/RDI, Carol Stream, IL 60188                                                                                         | 708-682-4100                |
| Autospice, Inc., San Diego, CA 92121                                                                                      | 619-535-0077                |
| Autoswage Products, Shelton, CT 06484                                                                                     | 203-929-1401                |
| Beau Interconnect Systems, Vermilion Corp., Laconia, NH 03247                                                             | 603-524-5102                |
| \$† Berg Electronics, Camp Hill, PA 17011                                                                                 | 800-237-2374                |
| \$† BTC Electronic Components, Old Bridge, NJ 08857                                                                       | 908-679-9300                |
| \$ Burdny Corporation, An FCI Company, Norwalk, CT 06856                                                                  | 203-838-4444                |
| CableStar, Incorporated, Glasgow, KY 42141                                                                                | 800-338-8223                |
| \$† Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                              | 708-981-6000                |
| Comatel USA, Inc., Danbury, CT 06810                                                                                      | 203-797-9445                |
| # Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                                     | 508-580-0111                |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                                               | 410-298-4411                |
| \$† Cooper Industries/Belden Div., Richmond, IN 47375                                                                     | 317-983-5200/800-BELEN-1    |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                                          | 619-744-8182                |
| 800-334-3815                                                                                                              |                             |



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| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                 | 612-941-5651; 1-800-343-5553                  |
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| DDK Electronics Inc., Markham, Ont., CANADA L3R 9T2                                                    | 416-470-1346                                  |
| \$ EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                                  |
| Elform, Inc., Reno, NV 89510                                                                           | 702-829-1905                                  |
| E-Mark, Inc., Trumbull, CT 06611                                                                       | 203-452-1003                                  |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477;<br>800-447-5639<br>804-794-6367 |
| \$ ERNI Components, Richmond, VA 23236                                                                 | 808-922-9000                                  |
| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                               | 415-968-9661                                  |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                                 | 714-761-5684                                  |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                        | 800-433-4837                                  |
| \$ GTE Supply, GTE, Irving, TX 75038                                                                   | 905-522-7958                                  |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                                  |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                     | 714-660-5772                                  |
| Hypertronics Corp., Hudson, MA 01749                                                                   | 508-568-0451; 800-225-9228                    |
| Injector Electronics (Woman Owned), Bohemia, NY 11716                                                  | 516-563-3388                                  |
| International Components Corp., Melville, NY 11747                                                     | 516-293-1500                                  |
| International Microelectronics, Arlington, TX 76003                                                    | 817-473-1730                                  |
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| \$ J.A.W. Industries, Inc., Warrington, PA 18976                                                       | 215-343-8990                                  |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501                                       | 310-328-0051                                  |
| \$ KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                | 408-720-9044                                  |
| \$ Loran Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311; 800-323-5207                    |
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| † M-3 Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info.             |
| MeCh-Tronics, Mount Holly, NJ 08060                                                                    | 609-267-0680                                  |
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| \$ Mhtronics, Inc., Vernon Hills, IL 60061                                                             | 708-913-9566                                  |
| Micro-Coax, Collegeville, PA 19426                                                                     | 215-489-3700                                  |
| Mingston Electronics, Inc., MEC Inc. (Taiwan), City of Industry, CA 91746                              | 818-330-2086                                  |
| \$ MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                                  |
| Mouser Electronics, Santee, CA 92071                                                                   | 800-346-6873                                  |
| Mouser Electronics, Mansfield, TX 76063                                                                | 800-346-6873                                  |
| Mouser Electronics, Gilroy, CA 95020                                                                   | 800-346-6873                                  |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                                     | 508-588-6110                                  |
| Nanonics Corporation, Phoenix, AZ 85027                                                                | 602-581-6188                                  |
| \$ Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                                  |
| \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                       | 805-484-0540                                  |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                                  |
| \$ PCDI, Peabody, MA 01960                                                                             | 508-532-8800                                  |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                                          | 717-944-1300                                  |
| \$ Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                                  |
| Raycon Technology, Costa Mesa, CA 92627                                                                | 714-646-7700                                  |
| \$ RMS, Electrical Connector Division, Minneapolis, MN 55433                                           | 612-786-1520                                  |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                                         | 812-948-0564                                  |
| \$ Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244                              | 602-963-4584                                  |
| † Rowe Industries, Inc., Toledo, OH 43612                                                              | 419-729-9761                                  |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                                             | 1-800-672-6832                                |
| \$ Shattuck Industries, Santa Cruz, CA 95060                                                           | 408-427-3122                                  |
| \$ Shin-Etsu Polymer America, Inc., Union City, CA 94587                                               | 510-475-9000                                  |
| Shokai Far East Ltd., Peekskill, NY 10566                                                              | 914-736-3500                                  |
| † Star-Tron Corporation, Providence, RI 02909                                                          | 401-274-5090                                  |
| \$ Stock Connectors, Stocko Corporation, Carlstadt, NJ 07072                                           | 201-933-4452                                  |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                                     | 510-234-9090                                  |
| \$ T-Bar Data Switch Corp., Orange, CT 06477                                                           | 203-795-0739; 800-726-8227                    |
| \$ TELTEC, INC., Minneapolis, MN 55425                                                                 | 612-854-9632                                  |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                                                 | 612-854-9177                                  |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                                           | 603-889-5156                                  |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         | 803-676-2900                                  |
| Weames Hollingsworth Corp., Irvine, CA 92718                                                           | 714-855-6404                                  |
| \$ Weidmuller Inc., Richmond, VA 23236                                                                 | 804-794-2877                                  |
| Wieland Inc., Burgaw, NC 28425                                                                         | 919-259-5050                                  |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112                      | 408-452-0797                                  |

### Connectors, Fused - Also See Connectors, AC Power; DC Power-2100

|                                                                                           |                               |
|-------------------------------------------------------------------------------------------|-------------------------------|
| \$ Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                     | C-1300, 1302                  |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941          | C-1757                        |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                 | C-1793, 1798                  |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                | A-1606, C-1450-1453           |
| Adam Technologies Inc., Roselle Park, NJ 07204                                            | 908-245-4000                  |
| \$ Bussmann Division, Cooper Industries, St. Louis, MO 63178                              | 314-394-2877                  |
| Delta Products Corporation, Fremont, CA 94538                                             | 510-770-0660                  |
| \$ EBY Electro Inc., Rockville Centre, NY 11571-1100                                      | 516-536-6000                  |
| \$ Eby Electro Inc., Rockville Centre, NY 11571-1100                                      | 516-536-6000                  |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                             | 201-288-4477;<br>800-447-5639 |
| E-T-A Circuit Breakers, Niles, IL 60714                                                   | 708-647-8303                  |
| Hypertronics Corp., Hudson, MA 01749                                                      | 508-568-0451; 800-225-9228    |
| JEMA, Wilmette, IL 60091                                                                  | 708-251-3600                  |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879                                          | 301-921-4600                  |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                             | 717-944-1300                  |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722                  |
| \$ Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300                  |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166                  |

|                                        |              |
|----------------------------------------|--------------|
| \$ Weidmuller Inc., Richmond, VA 23236 | 804-794-2877 |
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### Connectors, Heavy Duty, Power-2100

|                                                                                             |                                                |
|---------------------------------------------------------------------------------------------|------------------------------------------------|
| Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                                       | C-1157                                         |
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                    | C-1163                                         |
| Connectronics Corp., Toledo, OH 43607, 419-537-0020                                         | C-1293                                         |
| Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                          | C-1300                                         |
| \$ Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                  | C-1315-1316, 1319                              |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                       | C-1324-1326, 1328-1329                         |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                            | C-1340                                         |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200              | C-1344                                         |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                         | C-1353                                         |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)               | C-1369                                         |
| \$ LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564               | C-1394, 1396-1397, 1399                        |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                       | C-1422-1423                                    |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                  | C-1451-1452                                    |
| \$ WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                         | C-1510, 1512                                   |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136         | C-1510-1511, 1513                              |
| \$† Air Electro Inc., Van Nuys, CA 91406                                                    | 213-873-6400; 818-988-4400                     |
| \$ Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-889-9304                                   |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                         | 203-265-8910                                   |
| \$† Amphenol, Bendix Connector Operations, Sidney, NY 13838                                 | 607-563-5011                                   |
| \$ Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135              | 617-787-5880                                   |
| † Arnel Electronics, N. Bergen, NJ 07047                                                    | 201-869-4201                                   |
| † Array Connector Corporation, Miami, FL 33166-5598                                         | 305-591-7530                                   |
| \$ Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247                            | 603-524-5102                                   |
| † BTC Electronic Components, Old Bridge, NJ 08857                                           | 908-679-9300                                   |
| \$ Amerace Electronic Components, Punta Gorda, FL 33950                                     | 813-575-8400                                   |
| \$ Burndy Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444                                   |
| \$ Burton Electrical Engineering, Wyle Laboratories, El Segundo, CA 90245                   | 310-322-0615                                   |
| \$ Canfield Connector, Canfield Industries, Youngstown, OH 44514                            | 216-758-8299                                   |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                                   |
| \$ Detronics Corporation, S. El Monte, CA 91733                                             | 818-579-7130                                   |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                               | 201-288-4477;<br>800-447-5639                  |
| \$ Entelec Inc., Irving, TX 75038                                                           | 214-550-9025                                   |
| \$ Ericson Manufacturing Co., Willoughby, OH 44094                                          | 216-551-8000                                   |
| \$ ERNI Components, Richmond, VA 23236                                                      | 804-794-6367                                   |
| E-T-A Circuit Breakers, Niles, IL 60714                                                     | 708-647-8303                                   |
| \$ Hugin Industries Inc., Los Altos, CA 94022                                               | 415-961-2950                                   |
| \$ Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451; 800-225-9228                     |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                                               | 815-895-5181                                   |
| \$ ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700                                   |
| \$ KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                     | 408-720-9044                                   |
| \$ Kemlon Products & Development Company, Houston, TX 77021                                 | 713-747-5020                                   |
| \$ MOLEX, Inc., Lisle, IL 60532                                                             | 708-969-4550                                   |
| \$ Nichifu America, Inc., Pottstown, PA 19464                                               | 215-323-7120                                   |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                | 800-777-3300                                   |
| Panel Components Corp., Oskaloosa, IA 52577                                                 | 515-673-0097                                   |
| \$† Pass & Seymour/Legrand, Pass & Seymour/Inc., Syracuse, NY 13221                         | 315-468-6211                                   |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                               | 717-944-1300                                   |
| \$† Positronic Industries, Inc., Springfield, MO 65801                                      | 417-866-2322                                   |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                               | 201-736-5722                                   |
| \$ Pyle-National, Chicago, IL 60651                                                         | 312-342-6300 x210                              |
| \$ Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761                                   |
| \$ Sabritec, Irvine, CA 92714                                                               | 714-250-1244                                   |
| \$ Square D Co., Palatine, IL 60067                                                         | 708-397-2600                                   |
| \$ Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401                        | 203-732-7025                                   |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401              | 803-676-2900                                   |
| \$ Tru-Connector Corp., Peabody, MA 01960                                                   | 508-532-0775; 1-800-262-9787;<br>1-800-COAXTRU |
| \$ USD Products, Div. of Bussmann, Chicago, IL 60656                                        | 708-867-4600                                   |
| \$ Veam, Liton Systems, Watertown, CT 06795                                                 | 203-274-9681                                   |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816   | 908-238-1166                                   |
| \$ Wieland Inc., Burgaw, NC 28425                                                           | 919-259-5050                                   |
| \$† Wire-Pro, Inc., Salem, NJ 08079                                                         | 609-935-7601; 609-935-7651                     |

### Connectors, Hermetically & Glass Sealed-2100

|                                                                       |                                                |
|-----------------------------------------------------------------------|------------------------------------------------|
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121 | C-1327                                         |
| Array Connector Corporation, Miami, FL 33166-5598                     | 305-591-7530                                   |
| † BTC Electronic Components, Old Bridge, NJ 08857                     | 908-679-9300                                   |
| Connectronics Corp., Toledo, OH 43607                                 | 419-537-0020                                   |
| † Rowe Industries, Inc., Toledo, OH 43612                             | 419-729-9761                                   |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047        | 818-707-2020                                   |
| \$ Tru-Connector Corp., Peabody, MA 01960                             | 508-532-0775; 1-800-262-9787;<br>1-800-COAXTRU |
| \$ Veam, Liton Systems, Watertown, CT 06795                           | 203-274-9681                                   |

### Connectors, Hermetically Sealed, Pressurized, or Waterproof-2100

|                                                          |        |
|----------------------------------------------------------|--------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 | C-1163 |
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|-------------------------------------------------------------------------------------------|----------------------------|
| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                                           | C•1279                     |
| \$ Direct Sound Corporation, Boston, MA 02116, 1-800-372-1616                             | C•1309                     |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                     |                            |
|                                                                                           | C•1322,1327                |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                          | D•1732                     |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                  |                            |
|                                                                                           | C•1347                     |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)             |                            |
|                                                                                           | C•1369                     |
| \$† Air Electro Inc., Van Nuys, CA 91406                                                  | 213-873-6400; 818-988-4400 |
| \$† Amphenol, Bendix Connector Operations, Sidney, NY 13838                               | 607-563-5011               |
| \$† Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                       | 203-743-9272;              |
|                                                                                           | 800-627-7100               |
| # Array Connector Corporation, Miami, FL 33166-5598                                       | 305-591-7530               |
| B.R.T.B. Inc., Markham, Ont., CANADA L6G 1A7                                              | 416-475-8903               |
| † BTC Electronic Components, Old Bridge, NJ 08857                                         | 908-679-9300               |
| Burdny Corporation, An FCI Company, Norwalk, CT 06856                                     | 203-838-4444               |
| Caton Connector Corp., Kingston, MA 02364                                                 | 617-585-4315               |
| \$† CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428     |                            |
|                                                                                           | 612-537-1010               |
| Connectronics Corp., Toledo, OH 43607                                                     | 419-537-0020               |
| \$ Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                           | 605-665-9301               |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                      | 416-470-1346               |
| † Detronics Corporation, S. El Monte, CA 91733                                            | 818-579-7130               |
| \$† Electrical Industries Corp., Murray Hill, NJ 07974                                    | 908-464-3200               |
| \$ Ericson Manufacturing Co., Willoughby, OH 44094                                        | 216-951-8000               |
| † Frequency Electronics, Inc., Mitchell Field, NY 11553                                   | 516-794-4500               |
| † Glenair Inc., Glendale, CA 91201-2497                                                   | 818-247-6000               |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195                                    | 708-519-7700, ext. 200     |
| † Hermitec Seal Corp., Rosemead, CA 91770                                                 | 213-283-0411               |
| \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033                                      | 908-245-0038; 800-526-4182 |
| † Hypertronics Corp., Hudson, MA 01749                                                    | 508-568-0451; 800-225-9228 |
| \$ ITT Cannon, Santa Ana, CA 92705-5684                                                   | 714-557-4700               |
| \$† ITT Cannon/Sealectro, New Britain, CT 06051                                           | 203-223-2700               |
| \$ ITT Pomona Electronics, Pomona, CA 91766                                               | 909-469-2900               |
| † Kemlon Products & Development Company, Houston, TX 77021                                | 713-747-5020               |
| \$† Kings Electronics Co., Inc., Tuckahoe, NY 10707                                       | 914-793-5000               |
| Lucas Weinschel, Gathersburg, MD 20884-6001                                               | 301-948-3434               |
| MACOM, Inc., Lowell, MA 01851                                                             | 617-272-3000               |
| \$† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                    | 617-890-4750               |
| Micro-Coax, Collegeville, PA 19426                                                        | 215-489-3700               |
| \$† Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                    | 215-699-5373               |
| \$† Microtech, Boothwyn, PA 19061                                                         | 215-459-3566               |
| † Pasternack Enterprises, Irvine, CA 92713                                                | 714-261-1920               |
| PAYE Technology Co., Inc., Dayton, OH 45414-3445                                          | 513-890-1100               |
| † Pyle-National, Chicago, IL 60651                                                        | 312-342-6300 x210          |
| † Rowe Industries, Inc., Toledo, OH 43612                                                 | 419-729-9761               |
| † Sabritec, Irvine, CA 92714                                                              | 714-250-1244               |
| † Sealtron, Inc., Cincinnati, OH 45215                                                    | 513-733-8400               |
| \$† Soltron/Microwave, Soltron Devices, Inc., West Palm Beach, FL 33407-4697              |                            |
|                                                                                           | 407-848-4311               |
| Standex Electronics, Standex International, Cincinnati, OH 45209                          | 513-871-3777               |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401            |                            |
|                                                                                           | 803-676-2900               |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584         |                            |
|                                                                                           | 309-693-3300               |
| Tricon Industries, Inc., Electromechanical Division, Downers Grove, IL 60515-4076         |                            |
|                                                                                           | 708-964-2330               |
| † Trompetter Electronics, Inc., Westlake Village, CA 91362-4047                           | 818-707-2020               |
| † Yeom, Litton Systems, Watertown, CT 06795                                               | 203-274-9681               |
| \$ Viking Electronics, Inc., Chatsworth, CA 91311                                         | 818-341-4330               |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166               |

## Connectors, High Density, Multipin-2100

|                                                                                                                           |                              |
|---------------------------------------------------------------------------------------------------------------------------|------------------------------|
| † AirBOP, Inc., Addison, TX 75001-0519, 214-931-3200                                                                      | C•1147                       |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                                   | C•1163                       |
| Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388                                                                      | C•1256-1257                  |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                                                  | C•1266-1267                  |
| Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102                                               |                              |
|                                                                                                                           | C•1271                       |
| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                                                                           | C•1279                       |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                                            | C•1280-1286                  |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830                                       |                              |
|                                                                                                                           | C•1294, 1296-1298            |
| \$† CW Industries, Southampton, PA 18966, 215-355-7080                                                                    | C•1304                       |
| Direct Sound Corporation, Boston, MA 02116, 1-800-372-1616                                                                | C•1309                       |
| \$ Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                                                |                              |
|                                                                                                                           | C•1315-1318                  |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                                                     |                              |
|                                                                                                                           | C•1322, 1325-1326, 1328-1329 |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                                                                 | C•1330                       |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C•1334, 1336-1339            |
| Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200                                               |                              |
|                                                                                                                           | C•1343-1345                  |
| Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                                                          |                              |
|                                                                                                                           | C•1349-1352                  |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                                      | C•1356-1357                  |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051                                            |                              |
|                                                                                                                           | C•1754-1755                  |
| J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                                      | C•1363                       |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941                                          |                              |
|                                                                                                                           | C•1364-1365, 1757            |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                                             |                              |
|                                                                                                                           | C•1369                       |

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|--------------------------------------------------------------------------------------------------------|-----------------------------------------|
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                            |                                         |
|                                                                                                        | C•1382, 1384-1385, 1387-1388, 1390-1393 |
| \$ LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                          |                                         |
|                                                                                                        | C•1394, 1396, 1398                      |
| \$ McKenzie Technology, Fremont, CA 94538, 510-651-2700                                                | C•1415                                  |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                          | C•1417                                  |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                                  | C•1422                                  |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                                  | C•1441                                  |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                                     | C•1445                                  |
| Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                                           | C•1462-1467                             |
| Spectrum Control, Inc., Erie, PA 16506, 814-835-4000                                                   | C•1468                                  |
| \$ Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                            |                                         |
|                                                                                                        | C•1470                                  |
| Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                                          | C•1472-1473                             |
| \$ Teka Interconnection Systems, Interplex Industries, Providence, RI 02907,                           |                                         |
| 401-785-4110                                                                                           | C•1484-1487, 1489                       |
| \$† Texas Instruments, Connector Systems, Attleboro, MA 02703,                                         |                                         |
| 508-699-5269; 508-699-3450                                                                             | C•1493-1494, 1498                       |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                              |                                         |
|                                                                                                        | C•1681                                  |
| \$† Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                                        | C•1508                                  |
| WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                                       | C•1511                                  |
| WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4,                                    |                                         |
| 514-694-9136                                                                                           | C•1513                                  |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                              | 516-546-1751                            |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                        | 404-751-9473; 800-221-4767              |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                         | 908-245-4000                            |
| Advanced Connector Technology, Ventura, CA 93003                                                       | 805-644-9990                            |
| Air Electro Inc., Van Nuys, CA 91406                                                                   | 213-873-6400; 818-988-4400              |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                    |                                         |
|                                                                                                        | 203-265-8910                            |
| \$† Amphenol, Bendix Connector Operations, Sidney, NY 13838                                            | 607-563-5011                            |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                           | 203-281-3200                            |
| †# Array Connector Corporation, Miami, FL 33166-5598                                                   | 305-591-7530                            |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                       | 508-222-2202                            |
| Autosplice, Inc., San Diego, CA 92121                                                                  | 619-535-0077                            |
| \$ Berg Electronics, Camp Hill, PA 17011                                                               | 800-237-2374                            |
| \$† Beta Phase, Menlo Park, CA 94025                                                                   | 415-494-8410                            |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                       | 201-347-4040                            |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                      | 908-679-9300                            |
| \$ Amerace Electronic Components, Punta Gorda, FL 33950                                                | 813-575-8400                            |
| \$ Burndy Corporation, An FCI Company, Norwalk, CT 06856                                               | 203-838-4444                            |
| \$† Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007           | 708-981-6000                            |
| \$† CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428                  |                                         |
|                                                                                                        | 612-537-1010                            |
| Compac, Holbrook, NY 11741                                                                             | 516-585-3400                            |
| †# Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                 | 508-580-0111                            |
| Connector Corp., Chicago, IL 60646                                                                     | 312-539-3108                            |
| Connectronics Corp., Toledo, OH 43607                                                                  | 419-537-0020                            |
| CTS Corporation, Elkhart, IN 46514                                                                     | 219-293-7511                            |
| CTS Corp., Connector Products, New Hope, MN 55428                                                      | 612-533-3533                            |
| \$ Daitron, Inc., Tigard, OR 97223                                                                     | 503-620-2879                            |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                   | 416-470-1346                            |
| \$ EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                            |
| \$† Elco Corp., Electronic Connector Div., Huntington, PA 16652                                        | 814-643-0700                            |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                      | 814-726-8500                            |
| \$ Elite Electronics, Inc., Plano, TX 75074                                                            | 214-881-0026; 800-593-4376              |
| ELMA Electronic Inc., Fremont, CA 94538                                                                | 510-856-3400                            |
| E-Mark, Inc., Trumbull, CT 06611                                                                       | 203-452-1003                            |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477;                           |
|                                                                                                        | 800-447-5639                            |
| \$ ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                            |
| \$ Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                 | 408-749-1228                            |
| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                               |                                         |
|                                                                                                        | 408-922-9000                            |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                        | 714-761-5684                            |
| † Hermitec Seal Corp., Rosemead, CA 91770                                                              | 213-283-0411                            |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                            |
| \$† Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                   | 714-660-5772                            |
| \$† IEH Corp., Bay Ridge, NY 11220                                                                     | 718-492-4440                            |
| \$ Interconnect Devices, Inc., Kansas City, KS 66106                                                   | 913-342-5544                            |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093                                                       | 516-937-3475; 800-626-6116              |
| \$† ITT Cannon, Santa Ana, CA 92705-5684                                                               | 714-557-4700                            |
| \$ KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                | 408-720-9044                            |
| † Kemlon Products & Development Company, Houston, TX 77021                                             | 713-747-5020                            |
| \$ LZR Electronics, Inc., Gathersburg, MD 20879                                                        | 301-921-9600                            |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info.       |
| Meritex, Associated Enterprises, Painesville, OH 44077                                                 | 216-354-3148                            |
| \$† Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                 | 215-699-5373                            |
| † Min-E-Con, Costa Mesa, CA 92626                                                                      | 714-434-7312                            |
| Mingston Electronics, Inc., MEC Inc. (Taiwan), City of Industry, CA 91746                              |                                         |
|                                                                                                        | 818-330-2086                            |
| Nanonics Corporation, Phoenix, AZ 85027                                                                | 602-581-6188                            |
| \$ Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                              | 416-475-9320;                           |
|                                                                                                        | 1-800-456-1875                          |
| \$ Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                            |
| \$ Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173                          | 708-843-7900; 1-800-626-6766            |
| \$ Onshore Technology, Tempe, AZ 85281                                                                 | 602-921-3000                            |
| \$ Oupin America, Inc., Simi Valley, CA 93065                                                          | 805-520-0862                            |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                            |
| PCD, Peabody, MA 01960                                                                                 | 508-532-8800                            |
| \$† Powell Electronics Inc., Philadelphia, PA 19101                                                    | 215-365-1900                            |
| Power Dynamics Inc., West Orange, NJ 07052                                                             | 201-736-5722                            |



|                                                                                  |                                                |
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| Preciconnect, Inc., Langhorne, PA 19047                                          | 215-757-1202                                   |
| † Pyle-National, Chicago, IL 60651                                               | 312-342-6300 x210                              |
| § Robinson Nugent, Inc., New Albany, IN 47150                                    | 812-948-0564                                   |
| Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244           | 602-969-4584                                   |
| † Siltronics Ltd., Dover, MA 02030                                               | 617-329-4068                                   |
| § TELTEC, Inc., Minneapolis, MN 55425                                            | 612-854-9177                                   |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                     | 603-889-5156                                   |
| † Tru-Connector Corp., Peabody, MA 01960                                         | 508-532-0775; 1-800-262-9787;<br>1-800-COAXTRU |
| † Veam, Litton Systems, Watertown, CT 06795                                      | 203-274-9681                                   |
| § West Electronic Sales Team, Huntington Beach, CA 92647                         | 714-375-6500;<br>310-495-5569                  |
| §† Wire-Pro, Inc., Salem, NJ 08079                                               | 609-935-7601; 609-935-7651                     |
| § Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 408-452-0797                                   |

**Connectors, High Voltage (1,000 Volts & Over)-2100**

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| † Alden Products Co., Brockton, MA 02403, 508-583-0160                                     | C-1148-1151                   |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                    | C-1163                        |
| C & C Jetronic, Inc., Allentown, NJ 08501, 609-259-8855                                    | C-1274                        |
| † Caton Connector Corp., Kingston, MA 02364, 617-585-4315                                  | C-1275-1276                   |
| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                                            | C-1279                        |
| Connectronics Corp., Toledo, OH 43607, 419-537-0020                                        | C-1293                        |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                      | C-1322, 1324, 1326, 1328-1329 |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                           | C-1340                        |
| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571                                | C-1358-1359                   |
| § LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)               | C-1369                        |
| Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450      | C-1493-1494, 1498             |
| § Air Electro Inc., Van Nuys, CA 91406                                                     | 213-873-6400; 818-988-4400    |
| † Alberox Corporation, New Bedford, MA 02745                                               | 508-995-1725                  |
| § Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-889-9304                  |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                        | 203-265-8910                  |
| §† Amphenol, Bendix Connector Operations, Sidney, NY 13838                                 | 607-563-5011                  |
| §† Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                         | 203-743-9272;<br>800-627-7100 |
| † Armel Electronics, N. Bergen, NJ 07047                                                   | 201-869-4201                  |
| § Astec High Voltage, Ashland, MA 01721                                                    | 508-881-8407                  |
| † Barth Electronics, Inc., Boulder City, NV 89005                                          | 702-293-1576                  |
| Beau Interconnect Systems, Verritron Corp., Laconia, NH 03247                              | 603-524-5102                  |
| Bertan High Voltage, Hicksville, NY 11801                                                  | 516-433-3110                  |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                              | 508-520-1200                  |
| † BTC Electronic Components, Old Bridge, NJ 08857                                          | 908-679-9300                  |
| § Burndy Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444                  |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                  |
| § Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                             | 605-665-9301                  |
| † Detronics Corporation, S. El Monte, CA 91733                                             | 818-579-7130                  |
| † Dielectric Sciences, Inc., HVT Group, Chelmsford, MA 01824                               | 508-250-1507                  |
| § Direct Sound Corporation, Boston, MA 02116                                               | 1-800-372-1616                |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477;<br>800-447-5639 |
| § Harting Elektronik, Inc., Hoffman Estates, IL 60195                                      | 708-519-7700, ext. 200        |
| † Hermatic Seal Corp., Rosemead, CA 91770                                                  | 213-283-0411                  |
| High Voltage Technology Inc., Yonkers, NY 10701                                            | 914-423-6636                  |
| § Hobson Bros., Chicago, IL 60630-3884                                                     | 312-283-3600                  |
| Hypertronics Corp., Hudson, MA 01749                                                       | 508-568-0451; 800-225-9228    |
| Isolation Products, Inc., Sunnysvale, CA 94086                                             | 408-730-4672                  |
| ITT Cannon, Santa Ana, CA 92705-5684                                                       | 714-557-4700                  |
| § ITT Pomona Electronics, Pomona, CA 91766                                                 | 909-469-2900                  |
| † Kings Electronics Co., Inc., Tuckahoe, NY 10707                                          | 914-793-5000                  |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                       | 215-699-5373                  |
| James Millen Elctms., Caywood Elec. Inc., No. Andover, MA 01845                            | 508-975-2711                  |
| Multi-Contact USA, Santa Rosa, CA 95403                                                    | 707-575-7575                  |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                | 800-777-3300                  |
| † Pasternack Enterprises, Irvine, CA 92713                                                 | 714-261-1920                  |
| § Phoenix Contact Inc., Harrisburg, PA 17111                                               | 717-944-1300                  |
| § Positronic Industries, Inc., Springfield, MO 65801                                       | 417-866-2322                  |
| † Pyle-National, Chicago, IL 60651                                                         | 312-342-6300 x210             |
| † Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761                  |
| † Sealtron, Inc., Cincinnati, OH 45215                                                     | 513-733-8400                  |
| Siltronics Ltd., Dover, MA 02030                                                           | 617-329-4068                  |
| † Simmonds Precision Engine Systems, BF Goodrich Aerospace, Norwich, NY 13815              | 607-335-5000                  |
| §† Solitron/Microwave, Solitron Devices, Inc., West Palm Beach, FL 33407-4697              | 407-848-4311                  |
| § Square D Co., Palatine, IL 60067                                                         | 708-397-2600                  |
| Standex Electronics, Standex International, Cincinnati, OH 45209                           | 513-871-3777                  |
| Transtechonology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584           | 309-693-3300                  |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                | 513-561-8145                  |
| † Veam, Litton Systems, Watertown, CT 06795                                                | 203-274-9681                  |

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| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                                   | C-1163            |
| § Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                                             | C-1280-1282, 1286 |
| §# Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830                                       | C-1296            |
| §† CW Industries, Southampton, PA 18966, 215-355-7080                                                                     | C-1304            |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C-1334, 1336-1338 |

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| § Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200                         | C-1343-1344                               |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                  | C-1356-1357                               |
| § JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051                         | C-1754-1755                               |
| § J.S.T. Corp., Mt. Prospect, IL 60058, 1-800-947-1110                                                | C-1363                                    |
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| § LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                         | C-1382, 1390                              |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                                 | C-1441                                    |
| § Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                            | C-1470-1471                               |
| § ABL Electronics Supply, Inc., Peekskill, NY 10566                                                   | 914-736-1010; 1-800-431-2103              |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                             | 516-546-1751                              |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                                       | 404-751-9473; 800-221-4767                |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                        | 908-245-4000                              |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                                 | 612-938-8080                              |
| Advanced Connector Technology, Ventura, CA 93003                                                      | 805-644-9990                              |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                    | 818-889-9304                              |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                            | 908-925-8000                              |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                   | 203-265-8910                              |
| § Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                        | 203-281-3200                              |
| § Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 602-897-7001                              |
| AT&T Microelectronics, Allentown, PA 18103                                                            | 1-800-372-2447; In<br>Can. 1-800-553-2448 |
| Autosplice, Inc., San Diego, CA 92121                                                                 | 619-535-0077                              |
| § Berg Electronics, Camp Hill, PA 17011                                                               | 800-237-2374                              |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                     | 908-679-9300                              |
| § Amerace Electronic Components, Punta Gorda, FL 33950                                                | 813-575-8400                              |
| § Burndy Corporation, An FCI Company, Norwalk, CT 06856                                               | 203-838-4444                              |
| CableStar, Incorporated, Glasgow, KY 42141                                                            | 800-838-8223                              |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007            | 708-981-6000                              |
| Comatel USA, Inc., Danbury, CT 06810                                                                  | 203-797-9445                              |
| § Computer System Products, Minneapolis, MN 55447                                                     | 612-476-6866; 800-422-2537                |
| Connect-Air International, Inc., Auburn, WA 98002                                                     | 206-939-4880                              |
| § CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 619-744-8182;<br>800-334-3815             |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                 | 612-941-5651; 1-800-343-5553              |
| § Daitron, Inc., Tigard, OR 97223                                                                     | 503-620-2879                              |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                        | 203-438-9684; 800-344-9684                |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                  | 416-470-1346                              |
| § EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                              |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                         | 814-643-0700                              |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                                                 | 708-632-1020                              |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                     | 814-726-6500                              |
| § Electronic Precision Technology Inc., Cambridge, MA 02140                                           | 617-661-2454                              |
| § Elite Electronics, Inc., Plano, TX 75074                                                            | 214-881-0028; 800-553-4376                |
| E-Mark, Inc., Trumbull, CT 06611                                                                      | 203-452-1003                              |
| EMS, Div. of Sandberg Industries, Tustin, CA 92680                                                    | 714-669-9473                              |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;<br>800-447-5639             |
| EPD Electronics, Inc., Gardena, CA 90247                                                              | 310-515-4996                              |
| § ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                              |
| § Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                               | 408-922-9000                              |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684                              |
| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                              |
| Hypertronics Corp., Hudson, MA 01749                                                                  | 508-568-0451; 800-225-9228                |
| International Microelectronics, Arlington, TX 76003                                                   | 817-473-1730                              |
| § KEL Connectors, Inc., KEL Corp., Sunnysvale, CA 94086                                               | 408-720-9044                              |
| § Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                                       | 206-485-4288;<br>206-486-2222             |
| Lumberg, Inc., Richmond, VA 23236                                                                     | 804-379-2010                              |
| § LZR Electronics, Inc., Gaithersburg, MD 20879                                                       | 301-921-4600                              |
| § 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sl. & Prod. Info.          |
| § Methode Electronics, Inc., Chicago, IL 60656                                                        | 708-867-9600                              |
| Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                              | 818-330-2086                              |
| § MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                              |
| Mouser Electronics, Santee, CA 92071                                                                  | 800-346-6873                              |
| Mouser Electronics, Mansfield, TX 76063                                                               | 800-346-6873                              |
| Mouser Electronics, Gilroy, CA 95020                                                                  | 800-346-6873                              |
| § Nichifu America, Inc., Pottstown, PA 19464                                                          | 215-323-7120                              |
| § Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                              | 416-475-9320;<br>1-800-456-1875           |
| § Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                              |
| § ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                       | 805-484-0540                              |
| § Oupin America, Inc., Simi Valley, CA 93065                                                          | 805-520-0862                              |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                              |
| § PCD, Peabody, MA 01960                                                                              | 508-532-8800                              |
| § Phillips ECG, North American Phillips Co., Williamsport, PA 17701                                   | 717-323-4691                              |
| § Philmore Manufacturing, Rockford, IL 61125-1386                                                     | 815-229-7773                              |
| § Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                              |
| Power Dynamics Inc., West Orange, NJ 07052                                                            | 201-736-5722                              |
| Raycon Technology, Costa Mesa, CA 92627                                                               | 714-646-7700                              |
| § Robinson Nugent, Inc., New Albany, IN 47150                                                         | 812-948-0564                              |
| § Samtec, Inc., New Albany, IN 47151-1147                                                             | 1-800-672-6832                            |
| Standex Electronics, Standex International, Cincinnati, OH 45209                                      | 513-871-3777                              |
| # Technical Devices, Dayton, OH 45414                                                                 | 513-890-7881                              |
| § TELTEC, Inc., Minneapolis, MN 55425                                                                 | 612-854-9632                              |
| § TELTEC, Inc., Minneapolis, MN 55425                                                                 | 612-854-9177                              |



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| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401  | 803-676-2900 |
| † Veam, Litton Systems, Watertown, CT 06795                                    | 203-274-9681 |
| Wearnes Hollingsworth Corp., Irvine, CA 92718                                  | 714-855-6404 |
| Weidmuller Inc., Richmond, VA 23236                                            | 804-794-2877 |
| West Electronic Sales Team, Huntington Beach, CA 92647                         | 714-375-6500 |
|                                                                                | 310-495-5569 |
| Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 408-452-0797 |

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| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                | C•1163                     |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850            | C•1332                     |
| Advanced Connector Technology, Ventura, CA 93003                     | 805-644-9990               |
| Artes Electronics, Frenchtown, NJ 08825                              | 908-996-6841               |
| Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283 | 602-897-7001               |
|                                                                      | 203-929-1401               |
| Autoswage Products, Shelton, CT 06484                                | 605-665-9301               |
| Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180         | 215-672-0787               |
| Elastomer Technologies, Inc., Hatboro, PA 19040                      | 215-672-4741               |
| Elform, Inc., Reno, NV 89510                                         | 702-289-1905               |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608        | 201-288-4477               |
|                                                                      | 800-447-5639               |
| ISL Products Int'l Ltd., Syosset, NY 11791-6093                      | 516-937-3475; 800-626-6116 |
| McKenzie Technology, Fremont, CA 94538                               | 510-651-2700               |
| Panduit Corp., Tinley Park, IL 60477-0981                            | 800-777-3300               |
| Power Dynamics Inc., West Orange, NJ 07052                           | 201-736-5722               |
| Samtec, Inc., New Albany, IN 47151-1147                              | 1-800-672-6832             |
| Shin-Etsu Polymer America, Inc., Union City, CA 94587                | 510-475-9000               |
| Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502  | 619-776-1005               |
| † UCE, Inc., Norwalk, CT 06854                                       | 203-838-7509               |

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|                                                  |                                        |
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| # Accu-Tech Corporation, Roswell, GA 30076-3890  | 404-751-9473; 800-221-4767             |
| Advanced Connector Technology, Ventura, CA 93003 | 805-644-9990                           |
| AT&T Microelectronics, Allentown, PA 18103       | 1-800-372-2447; In Can: 1-800-553-2448 |
| Die-Tech Inc., York Haven, PA 17370              | 717-938-6771                           |
| Nanonics Corporation, Phoenix, AZ 85027          | 602-581-6188                           |

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| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571 | C•1358       |
| † Veam, Litton Systems, Watertown, CT 06795                 | 203-274-9681 |

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| Connectronics Corp., Toledo, OH 43607, 419-537-0020                                        | C•1293                     |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                    | C•1317                     |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                      |                            |
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| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                                  | C•1330                     |
| Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200                | C•1345                     |
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| LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                 | C•1369                     |
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| McKenzie Technology, Fremont, CA 94538, 510-651-2700                                       | C•1422-1423                |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                      | 516-546-1751               |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                  | 908-245-4000               |
| Adam Technologies Inc., Roselle Park, NJ 07204                                             | 213-873-6400; 818-988-4400 |
| Air Electro Inc., Van Nuys, CA 91406                                                       | 818-889-9304               |
| Alpha Products, Inc., Westlake Village, CA 91362                                           | 203-265-8910               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                        | 607-563-5011               |
| Amphenol, Bendix Connector Operations, Sidney, NY 13838                                    | 1-800-545-ANCO             |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                         | 714-852-9999               |
| AOT Electronics, Inc., Newport Beach, CA 92660                                             | 305-591-7530               |
| Array Connector Corporation, Miami, FL 33166-5598                                          | 619-535-0077               |
| Autosplice, Inc., San Diego, CA 92121                                                      | 415-944-8410               |
| † Beta Phase, Menlo Park, CA 94025                                                         | 203-838-4444               |
| Burdyn Corporation, An FCI Company, Norwalk, CT 06856                                      |                            |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000               |
| † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428        | 612-537-1010               |
| Compac, Holbrook, NY 11741                                                                 | 516-585-3400               |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                      | 508-580-0111               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                       | 708-455-8830               |
| Covid, Inc., Tempe, AZ 85281                                                               | 602-966-2221               |
| Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                               | 605-665-9301               |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                       | 416-470-1346               |
| EBY Company, Philadelphia, PA 19124                                                        | 215-537-4700               |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16852                              | 814-643-0700               |
| Elcon Products International Company, Fremont, CA 94538                                    | 510-490-4200               |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477               |
|                                                                                            | 800-447-5639               |

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| Entelec Inc., Irving, TX 75038                                                                      | 214-550-9025                      |
| ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                      |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                 | 408-749-1228                      |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                    | 714-660-5772                      |
| Hugin Industries Inc., Los Altos, CA 94022                                                          | 415-961-2950                      |
| Hypertronics Corp., Hudson, MA 01749                                                                | 508-568-0451; 800-225-9228        |
| IEH Corp., Bay Ridge, NY 11220                                                                      | 718-492-4440                      |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                              | 714-557-4700                      |
| 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                | 215-699-5373                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                         | 800-777-3300                      |
| † Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                         | 909-945-1365                      |
| † Pyle-National, Chicago, IL 60651                                                                  | 312-342-6300 x210                 |
| RC Electronics, Fremont, CA 94538-3164                                                              | 510-656-8490                      |
| RMS, Electrical Connector Division, Minneapolis, MN 55433                                           | 612-786-1520                      |
| Rowe Industries, Inc., Toledo, OH 43612                                                             | 419-729-9761                      |
| † Star-Tron Corporation, Providence, RI 02909                                                       | 401-274-5090                      |
| † Veam, Litton Systems, Watertown, CT 06795                                                         | 203-274-9681                      |
| Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816              | 908-238-1166                      |
| WECCO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                                 | 514-694-9136                      |
| Wieland Inc., Burgaw, NC 28425                                                                      | 919-259-5050                      |
| † Wire-Pro, Inc., Salem, NJ 08079                                                                   | 609-935-7601; 609-935-7651        |

### Connectors, Printed Circuit Board, Programmable-2100

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|-------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Comm Conn Connectors Inc., Duarte, CA 91010, 818-301-4200                                                   | C•1289                            |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                                     |                                   |
|                                                                                                             | C•1317                            |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                                             | C•1321                            |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                        | C•1357                            |
| † JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051                               | C•1754-1755                       |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                 | C•1407                            |
| McKenzie Technology, Fremont, CA 94538, 510-651-2700                                                        | C•1415                            |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                               | C•1416                            |
| RDI Elctrn., Inc., Mamaroneck, NY 10543, 914-777-7000                                                       | C•1441                            |
| # Array Connector Corporation, Miami, FL 33166-5598                                                         | 305-591-7530                      |
| Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                                    | 416-475-8500                      |
|                                                                                                             | 800-676-7644                      |
| Crane Electronics, Inc., Cincinnati, OH 45212                                                               | 612-533-3533                      |
| CTS Corp., Connector Products, New Hope, MN 55428                                                           | 201-288-4477                      |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                               | 800-447-5639                      |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                         | 408-749-1228                      |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000                      |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065         | 805-522-7958                      |
| International Microelectronics, Arlington, TX 76003                                                         | 817-473-1730                      |
| LMI Connectors Inc., Boca Raton, FL 33487-2710                                                              | 407-994-5896; 800-247-0564        |
| 3M-Electronic Products Division, Austin, TX 78726                                                           | 1-800-225-5373 Sls. & Prod. Info. |
| † Mouser Electronics, Santee, CA 92071                                                                      | 800-346-6873                      |
| † Mouser Electronics, Mansfield, TX 76063                                                                   | 800-346-6873                      |
| † Mouser Electronics, Gilroy, CA 95020                                                                      | 800-346-6873                      |
| † Powell Electronics Inc., Philadelphia, PA 19101                                                           | 215-365-1900                      |
| Raycon Technology, Costa Mesa, CA 92627                                                                     | 714-646-7700                      |
| † Samtec, Inc., New Albany, IN 47151-1147                                                                   | 1-800-672-6832                    |
| † Schurter, Inc., Petaluma, CA 94954                                                                        | 800-848-2600 ext.62               |
| † Star-Tron Corporation, Providence, RI 02909                                                               | 401-274-5090                      |
| Weidmuller Inc., Richmond, VA 23236                                                                         | 804-794-2877                      |
| Wieland Inc., Burgaw, NC 28425                                                                              | 919-259-5050                      |

### Connectors, Piggy Back — See Connectors, Wirewrap (Z-3 Level) (Vol. C)

### Connectors, Plug-in, Program Board-2100

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| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                   | C•1163                                      |
| † Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                           | C•1285                                      |
| Crosspoint, Div. of Info-Lite Corp., Fairview, NJ 07022, 201-941-4455                   | B•1701                                      |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                         | C•1321                                      |
| † Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200           | C•1344                                      |
| Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                        | C•1348                                      |
| † LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                           |                                             |
|                                                                                         | C•1400, 1403-1404, 1406, 1413, 1759, D•1827 |
| PCA Electronics, Sepulveda, CA 91343, 818-892-0761                                      | D•1855                                      |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960                  |                                             |
|                                                                                         | C•1461                                      |
| Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                |                                             |
|                                                                                         | C•1470                                      |
| † Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561                   | C•1475                                      |
| Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110  | C•1484                                      |
| † Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450 | C•1493-1495, 1498                           |
| † Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659             |                                             |
|                                                                                         | C•1678                                      |
| WECCO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                       |                                             |
|                                                                                         | C•1510, 1513                                |
| WECCO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136       | C•1510, 1512-1514                           |
| Accurate Electronics Corp., Elyria, OH 44036                                            | 216-366-6330; 1-800-334-5904                |
| Adam Technologies Inc., Roselle Park, NJ 07204                                          | 908-245-4000                                |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                      | 1-800-545-ANCO                              |



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| † Arnel Electronics, N. Bergen, NJ 07047                                                   | 201-869-4201   |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                           | 508-222-2202   |
| Autoswage Products, Shelton, CT 06484                                                      | 203-929-1401   |
| † Berg Electronics, Camp Hill, PA 17011                                                    | 800-237-2374   |
| § Bumdy Corporation, An FCI Company, Norwalk, CT 06856                                     | 203-838-4444   |
| § Bussco Inc., El Segundo, CA 90245                                                        | 310-322-6580   |
| Cable Systems, Inc., The HVT Group, Everett, MA 02149                                      | 617-389-7080   |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000   |
| § Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                             | 605-665-9301   |
| E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512                        | 800-368-0880   |
| † EBY Company, Philadelphia, PA 19124                                                      | 215-537-4700   |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477   |
|                                                                                            | 800-447-5639   |
| E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                  | 818-446-6175   |
| † IEH Corp., Bay Ridge, NY 11220                                                           | 718-492-4440   |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700   |
| § Johnson, E. F., Co., Waseca, MN 56093                                                    | 1-800-247-8256 |
| Lectronic Research Labs, Inc., Camden, NJ 08104                                            | 800-358-8378   |
| § McKenzie Technology, Fremont, CA 94538                                                   | 510-651-2700   |
| § MOLEX, Inc., Lisle, IL 60532                                                             | 708-969-4550   |
| § Mouser Electronics, Santee, CA 92071                                                     | 800-346-6873   |
| § Mouser Electronics, Mansfield, TX 76063                                                  | 800-346-6873   |
| § Mouser Electronics, Gilroy, CA 95020                                                     | 800-346-6873   |
| Positronic Industries, Inc., Springfield, MO 65801                                         | 417-866-2322   |
| § Power Dynamics Inc., West Orange, NJ 07052                                               | 201-736-5722   |
| † Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761   |
| Staffall Inc., Cranston, RI 02910                                                          | 401-461-5554   |
| § Texas Instrs., Matis & Controls Grp., Attleboro, MA 02703                                | 508-699-3800   |
| Tricon Industries, Inc., Electromechanical Division, Downers Grove, IL 60515-4076          | 708-964-2330   |
| § Viking Electronics, Inc., Chatsworth, CA 91311                                           | 818-341-4330   |
| † Virginia Panel Corporation, Waynesboro, VA 22980                                         | 703-949-8376   |
| Weidmuller Inc., Richmond, VA 23236                                                        | 804-794-2877   |

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| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                                   | C*1163                        |
| § Andon Electrs. Corp., Lincoln, RI 02865, 401-333-0388                                                                   | C*1256-1257                   |
| † Catcon Connector Corp., Kingston, MA 02364, 617-585-4315                                                                | C*1277                        |
| § Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                                             |                               |
|                                                                                                                           | C*1282, 1285-1286             |
| Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200                                                                  | C*1289                        |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830                                        | C*1294-1296, 1298             |
| † CW Industries, Southhampton, PA 18966, 215-355-7080                                                                     | C*1304                        |
| § Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180, 605-665-9301                                              | C*1306-1308                   |
| § Edac Inc., St. Laurent, Que., CAN HAR 2K9, 514-333-7288; 1-800-565-2811                                                 | C*1311-1313                   |
| § Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                                                 | C*1315-1316                   |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C*1334-1336, 1338-1339        |
| † Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                                                        | C*1349                        |
| § Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388                                                  | C*1136                        |
| § JH America, Inc., JBT International, Inc., Torrance, CA 90501, 310-328-0051                                             | C*1754-1755                   |
| § Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-5840                                                             | C*1360                        |
| § J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                                    | C*1363                        |
| § Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941                                           | C*1364, 1367                  |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                                               | C*1382, 1384, 1387-1388, 1393 |
| § LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                                              | C*1394-1397, 1399             |
| § LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                             | C*1400, 1403-1410, 1413-1414  |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                                             | C*1417                        |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960                                                    | C*1461                        |
| Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                                                              | C*1462-1467, D*1475           |
| § Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                                | C*1470-1471                   |
| § Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                                                           | C*1472-1473                   |
| † Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110                                  | C*1484-1485, 1487, 1489       |
| † Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 800-699-3450                                   | C*1493-1494, 1498             |
| † Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                                               | C*1681                        |
| Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                                                               | C*1509                        |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                                                 | 516-546-1751                  |
| † Accurate Electronics Corp., Elyria, OH 44036                                                                            | 216-366-6330; 1-800-334-5904  |
| Advanced Connector Technology, Ventura, CA 93003                                                                          | 805-644-9990                  |
| § Alpha Products, Inc., Westlake Village, CA 91362                                                                        | 818-889-9304                  |
| § Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                              | 908-925-8000                  |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                                       | 203-265-8910                  |
| † Amphenol, Bendix Connector Operations, Sidney, NY 13838                                                                 | 607-563-5011                  |
| † Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                                            | 203-281-3200                  |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                                                        | 1-800-545-ANCO                |
| † Arnel Electronics, N. Bergen, NJ 07047                                                                                  | 201-869-4201                  |
| Aromat Corp., Matsushita Electrical Works Ltd., New Providence, NJ 07974                                                  | 908-464-3550                  |

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| # Array Connector Corporation, Miami, FL 33166-5598                                                   | 305-591-7530                            |
| § Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                |                                         |
|                                                                                                       | 602-897-7001                            |
| AT&T Microelectronics, Allentown, PA 18103                                                            | 1-800-372-2447; in Can.: 1-800-553-2448 |
|                                                                                                       | 508-222-2202                            |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                      | 708-682-4100                            |
| § Augat/RDI, Carol Stream, IL 60188                                                                   | 619-535-0077                            |
| Autosplice, Inc., San Diego, CA 92121                                                                 | 203-929-1401                            |
| Autoswage Products, Shelton, CT 06484                                                                 | 800-237-2374                            |
| § Berg Electronics, Camp Hill, PA 17011                                                               | 415-494-8410                            |
| † Beta Phase, Menlo Park, CA 94025                                                                    | 203-288-8001; 1-800-242-2863            |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                         | 908-679-9300                            |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                     | 813-575-8400                            |
| § Amerace Electronic Components, Punta Gorda, FL 33950                                                | 203-838-4444                            |
| § Bumdy Corporation, An FCI Company, Norwalk, CT 06856                                                |                                         |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007            | 708-981-6000                            |
| § Cincinnati Electrosystems, Milford, OH 45150                                                        | 513-631-6800                            |
| Comatel USA, Inc., Danbury, CT 06810                                                                  | 203-797-9445                            |
| Compac, Holbrook, NY 11741                                                                            | 516-585-3400                            |
| § Compax, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                            | 416-475-8500                            |
| # Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                 | 508-580-0111                            |
| § Components Corp., Denville, NJ 07834                                                                | 201-627-0290                            |
| § Concord Electronics Corporation, New York, NY 10012                                                 | 1-212-777-6571                          |
| Connect-Air International, Inc., Auburn, WA 98002                                                     | 206-939-4880                            |
| Cooper Industries/Belden Div., Richmond, IN 47375                                                     | 317-983-5200; 800-BELDEN-N              |
| † CTS Corporation, Elkhart, IN 46514                                                                  | 219-293-7511                            |
| † CTS Corp., Connector Products, New Hope, MN 55428                                                   | 612-533-3533                            |
| § Curtis Industries, Milwaukee, WI 53234-3925                                                         | 414-649-4200                            |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                 | 612-941-5651; 1-800-343-5553            |
| † Dixon, Inc., Grand Junction, CO 81503                                                               | 303-244-1241                            |
| Douglas Electronics, Inc., San Leandro, CA 94577                                                      | 510-483-8770                            |
| † EBY Company, Philadelphia, PA 19124                                                                 | 215-337-4700                            |
| § EDA Inc., Div. of Connector, La Habra, CA 90631                                                     | 213-697-7151                            |
| † Elco Corp., Electronic Connector Div., Huntington, PA 16652                                         | 814-643-0700                            |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                     | 814-726-6500                            |
| ELMA Electronic Inc., Fremont, CA 94538                                                               | 510-656-3400                            |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477                            |
|                                                                                                       | 800-447-5639                            |
| § ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                            |
| § Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                 | 408-749-1228                            |
| § Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                               |                                         |
|                                                                                                       | 408-922-9000                            |
| § GC-Thorsen, Rockford, IL 61105-1209                                                                 | 815-968-9661                            |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684                            |
| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                            |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                    | 714-660-5772                            |
| † IEH Corp., Bay Ridge, NY 11220                                                                      | 718-492-4440                            |
| § Interconnect Devices, Inc., Kansas City, KS 66106                                                   | 913-342-5544                            |
| Interlog Industries, Melville, NY 11747-4294                                                          | 516-420-8111                            |
| International Microelectronics, Arlington, TX 76003                                                   | 817-473-1730                            |
| ITT Cannon, Santa Ana, CA 92705-5684                                                                  | 714-557-4700                            |
| ITT Pomona Electronics, Pomona, CA 91766                                                              | 909-469-2900                            |
| JAE Electronics Inc., Irvine, CA 92718                                                                | 714-753-2600                            |
| § Johnson, E. F., Co., Waseca, MN 56093                                                               | 1-800-247-8256                          |
| § KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                | 408-720-9044                            |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                                  | 718-956-8900                            |
| Lectronic Research Labs, Inc., Camden, NJ 08104                                                       | 800-358-8378                            |
| Lumberg, Inc., Richmond, VA 23236                                                                     | 804-379-2010                            |
| § Manger Electric Company, Inc., Stamford, CT 06902                                                   | 203-348-7761                            |
| § 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info.       |
| † Methode Electronics, Inc., Chicago, IL 60656                                                        | 708-867-9600                            |
| § Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008                       |                                         |
|                                                                                                       | 708-392-3500                            |
| § Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                  | 215-699-5373                            |
| † Microtech, Boothwyn, PA 19061                                                                       | 215-459-3566                            |
| Milton Ross Co., Warrington, PA 18976                                                                 | 215-491-0600                            |
| Mingston Electronics, Inc., MEC Inc.(Taiwan), City of Industry, CA 91746                              |                                         |
|                                                                                                       | 818-330-2086                            |
| § MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                            |
| § Mouser Electronics, Santee, CA 92071                                                                | 800-346-6873                            |
| § Mouser Electronics, Mansfield, TX 76063                                                             | 800-346-6873                            |
| § Mouser Electronics, Gilroy, CA 95020                                                                | 800-346-6873                            |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                                    | 508-588-6110                            |
| Nanonics Corporation, Phoenix, AZ 85027                                                               | 602-581-6188                            |
| The J. M. Ney Company, Bloomfield, CT 06002                                                           | 203-242-2281                            |
| § Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                              | 416-475-9320; 1-800-456-1875            |
| § Norwesco Interconnect Devices, Gastonia, NC 28053                                                   | 704-868-3581                            |
| ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                         | 805-484-0540                            |
| § Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173                          | 708-843-7900; 1-800-626-6766            |
| § Ouplin America, Inc., Simi Valley, CA 93065                                                         | 805-520-0862                            |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                            |
| § PCD, Peabody, MA 01960                                                                              | 508-532-8800                            |
| § Phoenix Contact Inc., Harrisburg, PA 17111                                                          | 717-944-1300                            |
| § Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                            |
| Raycon Technology, Costa Mesa, CA 92627                                                               | 714-646-7700                            |
| RC Electronics, Fremont, CA 94538-3164                                                                | 510-656-8490                            |
| Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244                                |                                         |
|                                                                                                       | 602-963-4584                            |
| Schroff, Inc., Warwick, RI 02886                                                                      | 401-732-3770                            |
| § Schurter, Inc., Petaluma, CA 94954                                                                  | 800-848-2600 ext.62                     |
| Siltronics Ltd., Dover, MA 02030                                                                      | 617-329-4068                            |



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| † Star-Tron Corporation, Providence, RI 02909                                  | 401-274-5090               |
| § TELTEC, INC., Minneapolis, MN 55425                                          | 612-854-9632               |
| § TELTEC, Inc., Minneapolis, MN 55425                                          | 612-854-9177               |
| §† Texas Instrs., Matls. & Controls Grp., Attleboro, MA 02703                  | 508-699-3800               |
| §† Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900               |
| Urban Electronics, Dover, MA 02030                                             | 617-329-4068               |
| USAPEX Corp., Santa Clara, CA 95051                                            | 408-982-9063               |
| § USD Products, Div. of Bussmann, Chicago, IL 60656                            | 708-867-4600               |
| § Viking Electronics, Inc., Chatsworth, CA 91311                               | 818-341-4330               |
| Weames Hollingsworth Corp., Irvine, CA 92718                                   | 714-855-6404               |
| § Weidmuller Inc., Richmond, VA 23236                                          | 804-794-2877               |
| § Wieland Inc., Burgaw, NC 28425                                               | 919-259-5050               |
| §† Wire-Pro, Inc., Salem, NJ 08079                                             | 609-935-7601; 609-935-7651 |

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| §† AirBorn, Inc., Addison, TX 75001-0519, 214-931-3200                                   | C-1147                             |
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| §# Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830      | C-1294-1295, 1297                  |
| §† CW Industries, Southhampton, PA 18966, 215-355-7080                                   | C-1304                             |
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| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                    | C-1322, 1324, 1327                 |
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| § Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                  | C-1347                             |
| † Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                       | C-1349                             |
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| § LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                            | C-1403-1410, 1413-1414, D-1827     |
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| §† Speciality Electronics, Inc., Landrum, SC 29356, 803-457-3824                         | C-1462-1467, D-1475                |
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| §† Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                           | C-1508-1509                        |
| § WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                       | C-1510-1512                        |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136       | C-1510-1511, 1513-1514             |
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| Advanced Interconnections Corp., West Warwick, RI 02893                                  | 401-823-5200                       |
| § Alpha Products, Inc., Westlake Village, CA 91362                                       | 818-889-9304                       |
| §† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                            | 908-925-8000                       |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                             | 203-281-3200                       |

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| § Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135                               | 617-787-5880                            |
| Array Connector Corporation, Miami, FL 33166-5598                                                           | 305-591-7530                            |
| § Assmann Electronics Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                       | 602-897-7001                            |
| AT&T Microelectronics, Allentown, PA 18103                                                                  | 1-800-572-2447; In Can.: 1-800-553-2448 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                            | 508-282-2202                            |
| Augat/RDI, Carol Stream, IL 60188                                                                           | 708-682-4100                            |
| Autospice, Inc., San Diego, CA 92121                                                                        | 619-535-0077                            |
| Autoswage Products, Shelton, CT 06484                                                                       | 203-929-1401                            |
| § Berg Electronics, Camp Hill, PA 17011                                                                     | 800-237-2374                            |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                               | 203-288-8001; 1-800-242-2863            |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                            | 201-347-4040                            |
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| Burndy Corporation, An FCI Company, Norwalk, CT 06856                                                       | 203-838-4444                            |
| §† Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                 | 708-981-6000                            |
| § Coax Connection, Peekskill, NY 10566                                                                      | 914-736-1010                            |
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| # Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                       | 508-580-0111                            |
| Components Corp., Denville, NJ 07834                                                                        | 201-627-0290                            |
| § Concord Electronics Corporation, New York, NY 10012                                                       | 1-212-777-6571                          |
| Crane Electronics, Inc., Cincinnati, OH 45212                                                               | 800-676-7644                            |
| † CTS Corporation, Elkhart, IN 46514                                                                        | 219-293-7511                            |
| † CTS Corp., Connector Products, New Hope, MN 55428                                                         | 612-533-3533                            |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                       | 612-941-5651; 1-800-343-5553            |
| § Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                                              | 605-665-9301                            |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                        | 416-470-1346                            |
| § Delta Electronics Mfg. Corp., Beverly, MA 01915                                                           | 508-927-1060                            |
| Direct Sound Corporation, Boston, MA 02116                                                                  | 1-800-372-1616                          |
| Doran Manufacturing Co., Cincinnati, OH 45225                                                               | 513-681-5424                            |
| § EBY Company, Philadelphia, PA 19124                                                                       | 215-537-4700                            |
| § EBY Electro Inc., Rockville Centre, NY 11571-1100                                                         | 516-536-6000                            |
| § Eby Electro Inc., Rockville Centre, NY 11571-1100                                                         | 516-536-6000                            |
| EDA Inc., Div. of Connector, La Habra, CA 90631                                                             | 213-697-7151                            |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                               | 814-643-0701                            |
| § Elcon Products International Company, Fremont, CA 94538                                                   | 510-490-4200                            |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                           | 814-726-6500                            |
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| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                             | 201-288-4477                            |
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| § Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                       | 804-794-6367                            |
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| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065       | 714-761-5684                            |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                          | 805-552-9558                            |
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| § Interconnect Devices, Inc., Kansas City, KS 66106                                                         | 415-961-2950                            |
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| ITT Pomona Electronics, Pomona, CA 91766                                                                    | 714-557-4700                            |
| §† Johnson, E. F., Co., Waseca, MN 56093                                                                    | 909-469-2900                            |
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| § McKenzie Technology, Fremont, CA 94538                                                                    | 203-756-8847                            |
| §† 3M-Electronic Products Division, Austin, TX 78726                                                        | 510-651-2700                            |
| § Methode Electronics, Inc., Chicago, IL 60656                                                              | 1-800-225-5373 Sls. & Prod. Info.       |
| § Mtronics, Inc., Vernon Hills, IL 60061                                                                    | 708-867-9600                            |
| § Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                        | 708-913-9566                            |
| † Min-E-Con, Costa Mesa, CA 92626                                                                           | 215-699-5373                            |
| § MOLEX, Inc., Lisle, IL 60532                                                                              | 714-434-7312                            |
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| § Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                                    | 602-581-6180                            |
| § Norwesco Interconnect Devices, Gastonia, NC 28053                                                         | 416-475-9322                            |
| § ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                             | 1-800-456-1875                          |
| § Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173                                | 704-868-3581                            |
| § Ouplin America, Inc., Simi Valley, CA 93065                                                               | 805-520-0862                            |
| Oxley Inc., Branford, CT 06405                                                                              | 203-488-1033                            |
| §† Panduit Corp., Tintin Park, IL 60477-0981                                                                | 800-777-3300                            |
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| † PCD, Peabody, MA 01960                                                                                    | 508-532-8800                            |
| §† Positronic Industries, Inc., Springfield, MO 65801                                                       | 417-866-2322                            |
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| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                                                | 708-438-4000                            |
| † Pyle-National, Chicago, IL 60651                                                                          | 312-342-6300 x210                       |
| Raycon Technology, Costa Mesa, CA 92627                                                                     | 714-646-7700                            |
| § Robinson Nugent, Inc., New Albany, IN 47150                                                               | 812-948-0564                            |
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| † Star-Tron Corporation, Providence, RI 02909                                     | 401-274-5090                  |
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| Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502               | 619-576-1005                  |
| † Teledyne Ryan Electronics, San Diego, CA 92123                                  | 619-560-6400                  |
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| ‡ TELTEC, Inc., Minneapolis, MN 55425                                             | 612-854-9177                  |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                      | 603-889-5156                  |
| ‡ Texas Instrs., Mtlts. & Controls Grp., Attleboro, MA 02703                      | 508-699-3800                  |
| ‡ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401     |                               |
|                                                                                   | 803-676-2900                  |
| Tricon Industries, Inc., Electromechanical Division, Downers Grove, IL 60515-4076 |                               |
|                                                                                   | 708-964-2330                  |
| † Tru-Connector Corp., Peabody, MA 01960                                          | 508-532-0775; 1-800-262-9787; |
|                                                                                   | 1-800-COAXTRU                 |
| USD Products, Div. of Bussmann, Chicago, IL 60656                                 | 708-867-4600                  |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                       | 513-561-8145                  |
| ‡ Viking Electronics, Inc., Chatsworth, CA 91311                                  | 818-341-4330                  |
| ‡ Wago Corp., Brown Deer, WI 53223                                                | 414-354-5511                  |
| Wearnes Hollingsworth Corp., Irvine, CA 92718                                     | 714-855-6404                  |
| ‡ Weidmuller Inc., Richmond, VA 23236                                             | 804-794-2877                  |

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| ‡ CW Industries, Southampton, PA 18966, 215-355-7080                                                                      | C*1304                     |
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| ‡ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                                                   |                            |
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| J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                                      | C*1363                     |
| ‡ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941                                           |                            |
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| ‡ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                                              | C*1369                     |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                                                |                            |
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| ‡ LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                             | C*1408-1410                |
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| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                                                     | C*1441                     |
| ‡ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext. 62                                                                | C*1450                     |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                                                     |                            |
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| ‡ Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561                                                     | C*1475                     |
| ‡ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                                                  |                            |
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| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                                           | 404-751-9473; 800-221-4767 |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                                            | 908-245-4000               |
| ‡ Air Electro Inc., Van Nuys, CA 91406                                                                                    | 213-873-6400; 818-988-4400 |
| ‡ Alpha Products, Inc., Westlake Village, CA 91362                                                                        | 818-889-9304               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                                       |                            |
|                                                                                                                           | 203-265-8910               |
| ‡ Amphenol Canada Corp., Scarborough, Ontario, CANADA M1B 2X6                                                             | 416-291-4401               |
| ‡ Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                                            | 203-281-3200               |
| ‡ Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135                                             |                            |
|                                                                                                                           | 617-787-5880               |
| † Array Connector Corporation, Miami, FL 33166-5598                                                                       | 305-591-7530               |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                                          | 508-222-2202               |
| Autosplice, Inc., San Diego, CA 92121                                                                                     | 619-535-0077               |
| Autoswage Products, Shelton, CT 06484                                                                                     | 203-929-1401               |
| ‡ Berg Electronics, Camp Hill, PA 17011                                                                                   | 800-237-2374               |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                                             | 203-288-8001; 800-242-2863 |
| B.R.T.B. Inc., Markham, Ont., CANADA L6G 1A7                                                                              | 416-475-8903               |
| † B.T.C. Electronic Components, Old Bridge, NJ 08857                                                                      | 908-679-9300               |
| ‡ Bud Industries, Inc., Willoughby, OH 44094-0431                                                                         | 216-946-3200               |
| Burndy Corporation, An FCI Company, Norwalk, CT 06856                                                                     | 203-838-4444               |
| ‡ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                                | 708-981-6000               |
| ‡ CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428                                       |                            |
|                                                                                                                           | 612-537-1010               |
| ‡ Circuit Assembly Corp., Irvine, CA 92718-2703                                                                           | 714-855-7887               |
| Comatel USA, Inc., Danbury, CT 06810                                                                                      | 203-797-9445               |

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| ‡ Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                            |                                   |
|                                                                                                       | 416-475-8500                      |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                 | 508-580-0111                      |
| ‡ Concord Electronics Corporation, New York, NY 10012                                                 | 1-212-777-6571                    |
| Connectronics Corp., Toledo, OH 43607                                                                 | 419-537-0020                      |
| ‡ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                  | 708-455-8830                      |
| ‡ CTS Corporation, Elkhart, IN 46514                                                                  | 219-293-7511                      |
| ‡ CTS Corp., Connector Products, New Hope, MN 55428                                                   | 612-533-3533                      |
| Curtis Industries, Milwaukee, WI 53234-3925                                                           | 414-649-4200                      |
| ‡ Data Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                                        | 605-665-9301                      |
| ‡ Dale Set Cable Co., Inc., Ridgefield, CT 06877                                                      | 203-438-9684; 800-344-9684        |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                  | 416-470-1346                      |
| Douglas Electronics, Inc., San Leandro, CA 94577                                                      | 510-483-8770                      |
| EDA Inc., Div. of Connector, La Habra, CA 90631                                                       | 213-697-7151                      |
| ‡ Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                         | 814-643-0700                      |
| ‡ Elcon Products International Company, Fremont, CA 94538                                             | 510-490-4200                      |
| ELMA Electronic Inc., Fremont, CA 94538                                                               | 510-656-3400                      |
| ‡ Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;                     |
|                                                                                                       | 800-447-5639                      |
| E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                             | 818-446-6175                      |
| Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                                 |                                   |
|                                                                                                       | 408-922-9000                      |
| † Hermetic Seal Corp., Rosemead, CA 91770                                                             | 213-283-0411                      |
| ‡ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                    | 714-660-5772                      |
| ‡ Ideal Industries, Inc., Sycamore, IL 60178                                                          | 815-895-5181                      |
| ‡ ITT Cannon, Santa Ana, CA 92705-5684                                                                | 714-557-4700                      |
| ‡ ITT Pomona Electronics, Pomona, CA 91766                                                            | 909-469-2900                      |
| JAE Electronics Inc., Irvine, CA 92718                                                                | 714-753-2600                      |
| ‡ Johnson, E. F. Co., Waseca, MN 56093                                                                | 1-800-247-8256                    |
| † Kemlon Products & Development Company, Houston, TX 77021                                            | 713-747-5020                      |
| Lectronic Research Labs, Inc., Camden, NJ 08104                                                       | 800-358-8378                      |
| ‡ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| ‡ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                  | 215-699-5373                      |
| † Milton Ross Co., Warrington, PA 18976                                                               | 215-491-0600                      |
| † Min-E-Con, Costa Mesa, CA 92626                                                                     | 714-434-7312                      |
| ‡ MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                      |
| ‡ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                                       | 805-484-0540                      |
| ‡ Olympic Wire & Cable, Fairfield, NJ 07004                                                           | 201-227-7996                      |
| Pacific Microtronics Corp., New York, NY 10021                                                        | 212-517-5622                      |
| ‡ Phoenix Contact Inc., Harrisburg, PA 17111                                                          | 717-944-1300                      |
| ‡ Positronic Industries, Inc., Springfield, MO 65801                                                  | 417-866-2322                      |
| ‡ Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                      |
| ‡ Power Dynamics Inc., West Orange, NJ 07052                                                          | 201-736-5722                      |
| † Pyle-National, Chicago, IL 60651                                                                    | 312-342-6300 x210                 |
| ‡ Radial, Inc., Stratford, CT 06497                                                                   | 203-386-1030                      |
| Rowe Industries, Inc., Toledo, OH 43612                                                               | 419-729-9761                      |
| † Sabritec, Irvine, CA 92714                                                                          | 714-250-1244                      |
| Schroff, Inc., Warwick, RI 02886                                                                      | 401-732-3770                      |
| ‡ Support Systems Intl. Corp., Richmond, CA 94804                                                     | 510-234-9090                      |
| TELTEC, INC., Minneapolis, MN 55425                                                                   | 612-854-9632                      |
| TELTEC, Inc., Minneapolis, MN 55425                                                                   | 612-854-9177                      |
| ‡ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         |                                   |
|                                                                                                       | 803-676-2900                      |
| ‡ Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                     |                                   |
|                                                                                                       | 309-693-3300                      |
| ‡ Trimm Inc., Libertyville, IL 60048                                                                  | 708-362-3700                      |
| ‡ Tri-Star Elctns., Dallas, TX 75243                                                                  | 214-553-8011                      |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                           | 513-561-8145                      |
| † Veam, Liton Systems, Watertown, CT 06795                                                            | 203-274-9681                      |
| ‡ Viking Electronics, Inc., Chatsworth, CA 91311                                                      | 818-341-4330                      |
| † Virginia Panel Corporation, Waynesboro, VA 22980                                                    | 703-949-8376                      |
| ‡ Wire-Pro, Inc., Salem, NJ 08079                                                                     | 609-935-7601; 609-935-7651        |

## Connectors, RF, Coaxial &amp; Triaxial-2100

|                                                                                       |                   |
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| ‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103     |                   |
|                                                                                       | C*1287, 1707      |
| AirBorn, Inc., Addison, TX 75001-0519, 214-931-3200                                   | C*1147            |
| ‡ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                               | C*1163            |
| † C & C Jetrico, Inc., Allentown, NJ 08501, 609-259-8855                              | C*1274            |
| Caton Connector Corp., Kingston, MA 02364, 617-585-4315                               | C*1275-1277       |
| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                                       | C*1279            |
| ‡ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                 |                   |
|                                                                                       | C*1290-1291, 1540 |
| Connectronics Corp., Toledo, OH 43607, 419-537-0020                                   | C*1293            |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                 |                   |
|                                                                                       | C*1323-1329       |
| ‡ Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200         |                   |
|                                                                                       | C*1345            |
| ISL Products Int'l., Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116         |                   |
|                                                                                       | C*1354, 1753      |
| ‡ ITT Pomona Electronics, Pomona, CA 91766, 909-469-2900                              | C*1355            |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                  | C*1357            |
| ‡ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)          |                   |
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| ‡ LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                         | C*1407            |
| ‡ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                   | C*1763            |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                         | C*1419            |
| ‡ Murata Erie North America, Inc., Smyrna, GA 30080, 404-436-1300                     | C*1425            |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                    | C*1442            |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                 |                   |
|                                                                                       | C*1459, 1808      |
| ‡ Spectrum Control, Inc., Erie, PA 16506, 814-835-4000                                | A*1677-1678       |
| Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450 |                   |
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| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                          | C-1499-1505                       |
| † Tru-Connector Corp., Peabody, MA 01960, 508-532-0775; 1-800-262-9787; 1-800-COAXTRU                 | C-1507                            |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                       | 404-751-9473; 800-221-4767        |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                                 | 612-938-8080                      |
| † Air Electro Inc., Van Nuys, CA 91406                                                                | 213-873-6400; 818-988-4400        |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                    | 818-889-9304                      |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                            | 908-925-8000                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                   | 203-265-8910                      |
| † Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                     | 203-743-9272; 800-627-7100        |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                          | 203-281-3200                      |
| Andrew Corp., Orland Pk., IL 60462                                                                    | 800-255-1479                      |
| † Antenna Specialists, The Allen Group, Cleveland, OH 44139                                           | 216-349-8400                      |
| Applied Engineering Products, New Haven, CT 06513                                                     | 203-756-1669                      |
| † Applied Plastics Technology, Bristol, RI 02809                                                      | 401-253-0200                      |
| † Armel Electronics, N. Bergen, NJ 07047                                                              | 201-869-4201                      |
| † Array Connector Corporation, Miami, FL 33166-5598                                                   | 305-591-7530                      |
| † AVA Electronics Corporation, Drexel Hill, PA 19026                                                  | 215-284-2500                      |
| Berg Electronics, Camp Hill, PA 17011                                                                 | 800-237-2374                      |
| † Bird Electronic Corp., Cleveland, OH 44139-2794                                                     | 216-248-1200                      |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                      | 201-347-4040                      |
| B.R.T.B. Inc., Markham, Ont., CANADA L6G 1A7                                                          | 416-475-8903                      |
| † BTO Electronic Components, Old Bridge, NJ 08857                                                     | 908-679-9300                      |
| † C.E. Precision Assemblies, Inc., Chandler, AZ 85226                                                 | 602-940-0740                      |
| † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428                   | 612-537-1010                      |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                         | 802-234-9921; 800-451-4381        |
| Coax Connection, Peekskill, NY 10566                                                                  | 914-736-1010                      |
| § Communication Devices, Inc., Scarborough, Ont., CAN M1B3R6                                          | 416-292-4463                      |
| § Compac, Holbrook, NY 11741                                                                          | 516-585-3400                      |
| § Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                 | 508-580-0111                      |
| § Computer System Products, Minneapolis, MN 55447                                                     | 612-476-6868; 800-422-2537        |
| † Connector Corp., Chicago, IL 60646                                                                  | 312-539-3108                      |
| † Connector Industries of America Div., Microdot Mfg., Cincinnati, OH 45215                           | 513-772-3680                      |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                  | 708-455-8830                      |
| § Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                      |
| Covid, Inc., Tempe, AZ 85281                                                                          | 602-966-2221                      |
| § CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 619-744-8182; 800-334-3815        |
| § Daitron, Inc., Tigard, OR 97223                                                                     | 503-620-2879                      |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                        | 203-438-9684; 800-344-9684        |
| † Delta Electronics Mfg. Corp., Beverly, MA 01915                                                     | 508-927-1060                      |
| † Deloronic Corporation, S. El Monte, CA 91733                                                        | 818-579-7130                      |
| § Direct Sound Corporation, Boston, MA 02116                                                          | 1-800-372-1616                    |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                             | 617-661-2454                      |
| † EMC Technology Inc., Cherry Hill, NJ 08034                                                          | 609-429-7800                      |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477; 800-447-5639        |
| § EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996                      |
| § ERNI Components, Richmond, VA 23236                                                                 | 804-794-6367                      |
| § E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                           | 818-446-6175                      |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                   | 408-749-1228                      |
| † Frequency Electronics, Inc., Mitchell Field, NY 11553                                               | 516-794-4500                      |
| Gabriel Elctns. Inc., Scarborough, ME 04070                                                           | 207-883-5161                      |
| § GC-Thorsen, Rockford, IL 61105-1209                                                                 | 815-968-9661                      |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684                      |
| † Hermetic Seal Corp., Rosemead, CA 91770                                                             | 213-283-0411                      |
| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| Hypertronics Corp., Hudson, MA 01749                                                                  | 508-568-0451; 800-225-9228        |
| § Ideal Industries, Inc., Sycamore, IL 60178                                                          | 815-895-5181                      |
| † Imtronics Industries Inc., St. Petersburg, FL 33716                                                 | 813-572-9010                      |
| § Interconnect Devices, Inc., Kansas City, KS 66106                                                   | 913-342-5544                      |
| § International Components Corp., Melville, NY 11747                                                  | 516-293-1500                      |
| § ITT Cannon, Santa Ana, CA 92705-5684                                                                | 714-557-4700                      |
| † ITT Cannon/Sealectro, New Britain, CT 06051                                                         | 203-223-2700                      |
| Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                                  | 602-968-6241                      |
| † Johnson, E. F. Co., Waseca, MN 56093                                                                | 1-800-247-8256                    |
| † Kings Electronics Co., Inc., Tuckahoe, NY 10707                                                     | 914-793-5000                      |
| L-Com Inc., N. Andover, MA 01845                                                                      | 508-682-6936                      |
| LEMO RF, InterLEMO, Santa Rosa, CA 95401                                                              | 707-578-8811                      |
| Lucas Weinschel, Gaithersburg, MD 20884-6001                                                          | 301-948-3434                      |
| MACOM, Inc., Lowell, MA 01851                                                                         | 617-272-3000                      |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                                  | 617-890-4750                      |
| † Maury Microwave Corp., Ontario, CA 91764                                                            | 909-987-4715                      |
| 3M-Electronic Products Division, Austin, TX 78726                                                     | 1-800-225-5373 Sls. & Prod. Info. |
| Meritec, Associated Enterprises, Painesville, OH 44077                                                | 216-354-3148                      |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                  | 215-699-5373                      |
| † Micro Mode Prods., El Cajon, CA 92020                                                               | 619-449-3844                      |
| † Microtech, Boothwyn, PA 19061                                                                       | 215-459-3566                      |
| † Midwest Microwave, Saline, MI 48176-9569                                                            | 313-429-4773; 800-521-4410        |
| § MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                      |
| § Murata Manufacturing Co., Ltd., Nagaoka-Kyo-Shi, Kyoto, JAPAN 617                                   | 075-951-9111                      |
| § Olympic Wire & Cable, Fairfield, NJ 07004                                                           | 201-277-7996                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300                      |
| † Pasternack Enterprises, Irvine, CA 92713                                                            | 714-261-1920                      |
| § Penstock Engineering Labs, Penstock, Inc., Sunnyvale, CA 94086-4018                                 | 408-730-0300; 800-PENSTOCK        |
| § Philmore Manufacturing, Rockford, IL 61225-1886                                                     | 815-229-7773                      |
| † Positronic Industries, Inc., Springfield, MO 65801                                                  | 417-866-2322                      |
| § Powell Electronics Inc., Philadelphia, PA 19101                                                     | 215-365-1900                      |
| † Pyle-National, Chicago, IL 60651                                                                    | 312-342-6300 x210                 |

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| § Quality Microwave Interconnects, Inc., Wilmington, MA 01887                 | 508-988-9090               |
| † Radial, Inc., Stratford, CT 06497                                           | 203-386-1030               |
| † Remee Products Corp., Florida, NY 10921                                     | 914-651-4431               |
| RF Industries Ltd. (Nuelink), San Diego, CA 92126                             | 619-549-6340; 800-233-1728 |
| † Rowe Industries, Inc., Toledo, OH 43612                                     | 419-729-9761               |
| † Sabritec, Irvine, CA 92714                                                  | 714-250-1244               |
| § Schurter, Inc., Petaluma, CA 94954                                          | 800-848-2600 ext.62        |
| Siltronics Ltd., Dover, MA 02030                                              | 617-329-4068               |
| § Sitco Antennas Div. of Simplicity Tool Corp., Portland, OR 97220            | 503-253-2000               |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                   | 814-724-6440               |
| † Solitron/Microwave, Solitron Devices, Inc., West Palm Beach, FL 33407-4697  | 407-848-4311               |
| § Stetco, Inc., Franklin Pk., IL 60131                                        | 708-671-4208               |
| † Storm Products Co., Hinsdale, IL 60521                                      | 708-323-9121               |
| § Support Systems Intl. Corp., Richmond, CA 94804                             | 510-234-9090               |
| § TELTEC, INC., Minneapolis, MN 55425                                         | 612-854-9632               |
| § TELTEC, Inc., Minneapolis, MN 55425                                         | 612-854-9177               |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900               |
| § Trimm Inc., Libertyville, IL 60048                                          | 708-362-3700               |
| U.S. Terminals Inc., Cincinnati, OH 45243                                     | 513-561-8145               |
| † Veam, Liton Systems, Watertown, CT 06795                                    | 203-274-9681               |
| § Wiltron, Morgan Hill, CA 95037-2809                                         | 408-778-2000               |
| § Winegard Co., Burlington, IA 52601-2000                                     | 319-754-0600               |

## Connectors, Rectangular, Computer-Modular, I/O-2100

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| § Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200                               | C-1345                     |
| § Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                  | C-1470-1471                |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                             | 404-751-9473; 800-221-4767 |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                              | 908-245-4000               |
| § Augat/RDI, Carol Stream, IL 60188                                                                         | 708-682-4100               |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                            | 201-347-4040               |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                              | 203-438-9684; 800-344-9684 |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                               | 814-643-0700               |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                               | 201-288-4477; 800-447-5639 |
| § Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                       | 408-749-1228               |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000               |
| JAE Electronics Inc., Irvine, CA 92718                                                                      | 714-753-2600               |
| # Manger Electric Company, Inc., Stamford, CT 06902                                                         | 203-348-7761               |
| § McKenzie Technology, Fremont, CA 94538                                                                    | 510-651-2700               |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                                 | 800-777-3300               |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                                   | 909-945-1365               |
| RDI Elctns. Inc., Mamaroneck, NY 10543                                                                      | 914-777-7000               |
| RF Industries Ltd. (Nuelink), San Diego, CA 92126                                                           | 619-549-6340; 800-233-1728 |
| Shogyo International Corp., Great Neck, NY 11021-4799                                                       | 516-466-0911               |
| § Support Systems Intl. Corp., Richmond, CA 94804                                                           | 510-234-9090               |
| § TELTEC, INC., Minneapolis, MN 55425                                                                       | 612-854-9632               |
| § TELTEC, Inc., Minneapolis, MN 55425                                                                       | 612-854-9177               |

## Connectors, Rectangular, Other-2100

|                                                                                                             |                            |
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| Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200                                                | C-1042                     |
| Advanced Connector Technology, Ventura, CA 93003                                                            | 805-644-9990               |
| § Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135                               | 617-787-5880               |
| § Beau Interconnect Systems, Veritron Corp., Laconia, NH 03247                                              | 603-524-5102               |
| Burndy Corporation, An FCI Company, Norwalk, CT 06856                                                       | 203-838-4444               |
| Connectronics Corp., Toledo, OH 43607                                                                       | 419-537-0020               |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                              | 203-438-9684; 800-344-9684 |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                               | 201-288-4477; 800-447-5639 |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                         | 408-749-1228               |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000               |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065         | 805-522-7958               |
| § Modor Technical Products Inc., Tampa, FL 33626                                                            | 813-855-5736               |
| Nanonics Corporation, Phoenix, AZ 85027                                                                     | 602-581-6188               |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                                 | 800-777-3300               |
| † Positronic Industries, Inc., Springfield, MO 65801                                                        | 417-866-2322               |
| § Support Systems Intl. Corp., Richmond, CA 94804                                                           | 510-234-9090               |
| § Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816                    | 908-238-1166               |
| § Wieland Inc., Burgaw, NC 28425                                                                            | 919-259-5050               |

## Connectors, Rectangular, Ribbon-2100

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| § Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                  | C-1470                       |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                             | 404-751-9473; 800-221-4767   |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                              | 908-245-4000                 |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                       | 612-941-5651; 1-800-343-5553 |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                              | 203-438-9684; 800-344-9684   |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                                   | 617-661-2454                 |
| Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                               | 201-288-4477; 800-447-5639   |
| § Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                       | 408-749-1228                 |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000                 |
| Nanonics Corporation, Phoenix, AZ 85027                                                                     | 602-581-6188                 |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                                   | 909-945-1365                 |
| § Powell Electronics Inc., Philadelphia, PA 19101                                                           | 215-365-1900                 |
| RDI Elctns. Inc., Mamaroneck, NY 10543                                                                      | 914-777-7000                 |
| § Support Systems Intl. Corp., Richmond, CA 94804                                                           | 510-234-9090                 |



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|---------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------|
| Weames Hollingsworth Corp., Irvine, CA 92718                                                                  | 714-855-6404                      | \$ Microtech, Boothwyn, PA 19061                                                                              | 215-459-3566                 |
| <b>Connectors, Solderless-2100</b>                                                                            |                                   | \$ MOLEX, Inc., Lisle, IL 60532                                                                               | 800-969-4550                 |
| † AirBorn, Inc., Addison, TX 75001-0519, 214-931-3200                                                         | C-1147                            | Mouser Electronics, Santee, CA 92071                                                                          | 800-346-6873                 |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                       | C-1163                            | Mouser Electronics, Mansfield, TX 76063                                                                       | 800-346-6873                 |
| Beau Interconnect Systems, Vemtron Corp., Laconia, NH 03247, 603-524-5102                                     | C-1270                            | Mouser Electronics, Gilroy, CA 95020                                                                          | 800-346-6873                 |
| Elastomeric Technologies, Inc., Hattboro, PA 19040, 215-672-0787; 215-672-4741                                | C-1314                            | Nanonics Corporation, Phoenix, AZ 85027                                                                       | 602-581-6188                 |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                                                     | C-1330                            | † Nichifu America, Inc., Pottstown, PA 19464                                                                  | 215-323-7120                 |
| † Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200                                 | C-1344                            | † Panduit Corp., Tinley Park, IL 60477-0981                                                                   | 800-777-3300                 |
| † J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                        | C-1363                            | † Patton-MacGyver Inc., Providence, RI 02905                                                                  | 401-941-6000                 |
| † LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                                  | C-1369                            | † Philmore Manufacturing, Rockford, IL 61125-1386                                                             | 815-229-7773                 |
| † LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                 | D-1827                            | † Pioneer Components, Brooklyn, NY 11234                                                                      | 718-444-3880                 |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                                 | C-1417-1419                       | † Positronic Industries, Inc., Springfield, MO 65801                                                          | 417-866-2322                 |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                                         | C-1441                            | † Power Dynamics Inc., West Orange, NJ 07052                                                                  | 201-736-5722                 |
| Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000                                                  | C-1555                            | † Pyle-National, Chicago, IL 60651                                                                            | 312-342-6300 x210            |
| † Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                    | C-1470-1471                       | † Remeo Products Corp., Florida, NY 10921                                                                     | 914-651-4431                 |
| † Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561                                         | C-1475                            | † RMS, Electrical Connector Division, Minneapolis, MN 55433                                                   | 612-786-1520                 |
| † Tekla Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110                     | C-1487                            | † Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244                                      | 602-963-4584                 |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-0447, 818-707-2020                                  | C-1500-1502                       | Rogers Corp., Rogers, CT 06263                                                                                | 203-774-9605                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                                                | 216-366-6330; 1-800-334-5904      | Shin-Etsu Polymer America, Inc., Union City, CA 94587                                                         | 510-475-9000                 |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                                               | 404-751-9473; 800-221-4767        | Shokai Far East Ltd., Peekskill, NY 10566                                                                     | 914-736-3500                 |
| ADC Telecommunications, Inc., Minneapolis, MN 55435                                                           | 612-938-8080                      | Siltronics Ltd., Dover, MA 02030                                                                              | 617-329-4068                 |
| † Advanced Circuit Technology, Nashua, NH 03062                                                               | 603-880-6000                      | SMK Electronics Corporation, U.S.A., Placentia, CA 92670                                                      | 714-996-0960                 |
| † Advanced Connector Technology, Ventura, CA 93003                                                            | 805-644-9990                      | † Square D Co., Palatine, IL 60067                                                                            | 708-397-2600                 |
| † Air Electro Inc., Van Nuys, CA 91406                                                                        | 213-873-6400; 818-988-4400        | Standex Electronics, Standex International, Cincinnati, OH 45209                                              | 513-871-3777                 |
| Alden Products Co., Brockton, MA 02403                                                                        | 508-583-0160                      | † Support Systems Intl. Corp., Richmond, CA 94804                                                             | 510-234-9090                 |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                            | 818-889-9304                      | † Switches Unlimited, Inc., Woodside, NY 11377                                                                | 718-478-5000; 800-221-4087   |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                  | 908-925-8000                      | Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502                                           | 619-576-1005                 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                           | 203-265-8910                      | † Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401                                           | 203-732-7025                 |
| † Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                             | 203-743-9272; 800-627-7100        | † Teledyne Penn-Union, Edinboro, PA 16412                                                                     | 814-734-1631 Ext. 382        |
| † Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                                | 203-281-3200                      | † Teledyne Ryan Electronics, San Diego, CA 92123                                                              | 619-856-6400                 |
| † Array Connector Corporation, Miami, FL 33166-5598                                                           | 305-591-7530                      | † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                                                  | 603-889-5156                 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                              | 508-222-2202                      | † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                                 | 803-676-2900                 |
| Autosplitz, Inc., San Diego, CA 92121                                                                         | 619-535-0077                      | † Tyton Corp., Milwaukee, WI 53223                                                                            | 414-355-1130; 800-535-5552   |
| Autoswage Products, Shelton, CT 06484                                                                         | 203-929-1401                      | † Vector Electronic Co., Inc., Sylmar, CA 91342                                                               | 818-365-9661; 800-423-5659   |
| † Berg Electronics, Camp Hill, PA 17011                                                                       | 800-237-2374                      | † Viking Electronics, Inc., Chatsworth, CA 91311                                                              | 818-341-4330                 |
| † Beta Phase, Menlo Park, CA 94025                                                                            | 415-494-8410                      | † WECO Electrical Connectors, Inc., Moores, NY 12958                                                          | 518-298-4810                 |
| BI-CO-VERO Electronics, Inc., Hamden, CT 06514                                                                | 203-288-8001; 800-242-2863        | † WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                                          | 514-694-9136                 |
| † BTC Electronic Components, Old Bridge, NJ 08857                                                             | 908-679-9300                      | † Weidmuller Inc., Richmond, VA 23236                                                                         | 804-794-2877                 |
| † Burndy Corporation, An FCI Company, Norwalk, CT 06856                                                       | 203-838-4444                      | <b>Connectors, Splicing-2100</b>                                                                              |                              |
| † Busco Inc., El Segundo, CA 90245                                                                            | 310-322-6580                      | † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                       | C-1163                       |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                    | 708-981-6000                      | † J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                        | C-1363                       |
| † Circuit Assembly Corp., Irvine, CA 92718-2703                                                               | 714-855-7887                      | Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730                                      | C-1669                       |
| † Cole Hersee Co., Boston, MA 02127-2467                                                                      | 617-268-2100                      | † Tru-Connector Corp., Peabody, MA 01960, 508-532-0775; 1-800-262-9787; 1-800-COAXTRU                         | C-1507                       |
| † Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                                    | 416-475-8500                      | † Accurate Electronics Corp., Elyria, OH 44036                                                                | 216-366-6330; 1-800-334-5904 |
| † Concord Electronics Corporation, New York, NY 10012                                                         | 1-212-777-6571                    | † Accu-Tech Corporation, Roswell, GA 30076-3890                                                               | 404-751-9473; 800-221-4767   |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                          | 708-455-8830                      | Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                                    | 908-925-8000                 |
| † CTS Corporation, Elkhart, IN 46514                                                                          | 219-293-7511                      | † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                                         | 1-800-344-0223, Ext. 1027    |
| † CTS Corp., Connector Products, New Hope, MN 55428                                                           | 612-533-3533                      | Autosplitz, Inc., San Diego, CA 92121                                                                         | 619-535-0077                 |
| † Custom Computer Cable, Inc., Eden Prairie, MN 55344                                                         | 612-941-5651; 1-800-343-5553      | † Clifford of Vermont, Inc., Bethel, VT 05032                                                                 | 802-234-9921; 800-451-4381   |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                                       | 201-768-5400                      | † Cole-Flex Corporation, West Babylon, NY 11704                                                               | 516-249-6150                 |
| † Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180                                                | 605-665-9301                      | † Cole Hersee Co., Boston, MA 02127-2467                                                                      | 617-268-2100                 |
| † Direct Sound Corporation, Boston, MA 02116                                                                  | 1-800-372-1616                    | † ICO-RALLY Corporation, Palo Alto, CA 94303                                                                  | 415-856-9900                 |
| † Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                           | 814-726-6500                      | † Ideal Industries, Inc., Sycamore, IL 60178                                                                  | 815-895-5181                 |
| † Elform, Inc., Reno, NV 89510                                                                                | 702-829-1905                      | † 3M Private Network Products, 3M, Austin, TX 78726                                                           | 512-984-3400; 800-426-8626   |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                               | 201-288-4747                      | † 3M Telecom Markets Division, Austin, TX 78726                                                               | 512-984-3400; 800-426-8626   |
| † ERNI Components, Richmond, VA 23236                                                                         | 804-794-6367                      | † Panduit Corp., Tinley Park, IL 60477-0981                                                                   | 800-777-3300                 |
| † Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000                      | † Pyle-National, Chicago, IL 60651                                                                            | 312-342-6300 x210            |
| † GC-Thorsen, Rockford, IL 61105-1209                                                                         | 815-968-9661                      | † Remeo Products Corp., Florida, NY 10921                                                                     | 914-651-4431                 |
| † General Electronic Materials Technology, Los Alamitos, CA 90720                                             | 714-761-5684                      | † Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072                                                  | 201-933-4452                 |
| † Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065         | 805-522-7958                      | † Teledyne Penn-Union, Edinboro, PA 16412                                                                     | 814-734-1631 Ext. 382        |
| † Hypertronics Corp., Hudson, MA 01749                                                                        | 508-568-0451; 800-225-9228        | † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                                 | 803-676-2900                 |
| † ICO-RALLY Corporation, Palo Alto, CA 94303                                                                  | 415-856-9900                      | † Tyton Corp., Milwaukee, WI 53223                                                                            | 414-355-1130; 800-535-5552   |
| † Ideal Industries, Inc., Sycamore, IL 60178                                                                  | 815-895-5181                      | † WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                                          | 514-694-9136                 |
| † Interlogic Industries, Melville, NY 11747-4294                                                              | 516-420-8111                      | <b>Connectors, Stripline-2100</b>                                                                             |                              |
| † International Microelectronics, Arlington, TX 76003                                                         | 817-473-1730                      | AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                         | C-1163                       |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                        | 714-557-4700                      | † Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                                 | C-1281                       |
| † ITT Pomona Electronics, Pomona, CA 91766                                                                    | 909-469-2900                      | † Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200                                                    | C-1289                       |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                                        | 602-968-6241                      | Elastomeric Technologies, Inc., Hattboro, PA 19040, 215-672-0787; 215-672-4741                                | C-1314                       |
| † KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                        | 408-720-9044                      | Advanced Connector Technology, Ventura, CA 93003                                                              | 805-644-9990                 |
| † Keystone Electronics Corp., Astoria, OR 11105-2017                                                          | 718-956-8900                      | † Alpha Products, Inc., Westlake Village, CA 91362                                                            | 818-889-9304                 |
| † Klein Tools, Inc., Chicago, IL 60659-9033                                                                   | 708-677-9500                      | Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                           | 203-265-8910                 |
| † LMI Connectors Inc., Boca Raton, FL 33487-2710                                                              | 407-994-5896; 800-247-0564        | † Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                             | 203-743-9272; 800-627-7100   |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                                     | 708-398-5311; 800-323-5207        | † Aries Electronics, Frenchtown, NJ 08825                                                                     | 908-996-6841                 |
| † MACOM, Inc., Lowell, MA 01851                                                                               | 617-272-3000                      | Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                              | 508-222-2202                 |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                                          | 617-890-4750                      | † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                    | 708-981-6000                 |
| † McKenzie Technology, Fremont, CA 94538                                                                      | 510-651-2700                      | Crane Electronics, Inc., Cincinnati, OH 45212                                                                 | 800-676-7644                 |
| † 3M-Electronic Products Division, Austin, TX 78726                                                           | 1-800-225-5373 Sls. & Prod. Info. | † EMC Technology Inc., Cherry Hill, NJ 08034                                                                  | 609-429-7800                 |
| † Methode Electronics, Inc., Chicago, IL 60656                                                                | 708-867-9600                      | † Entrellec Inc., Irving, TX 75038                                                                            | 214-550-9025                 |
| † Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008                               | 708-392-3500                      | † ERNI Components, Richmond, VA 23236                                                                         | 804-794-6367                 |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                          | 215-699-5373                      | † Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000                 |
|                                                                                                               |                                   | Hypertronics Corp., Hudson, MA 01749                                                                          | 508-568-0451; 800-225-9228   |



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| \$ ITT Cannon, Santa Ana, CA 92705-5684                                       | 714-557-4700                                |
| \$ ITT Cannon/Sealectro, New Britain, CT 06051                                | 203-223-2700                                |
| \$ ITT Kings Electronics Co., Inc., Tuckahoe, NY 10707                        | 914-793-5000                                |
| MACOM, Inc., Lowell, MA 01851                                                 | 617-272-3000                                |
| \$ M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                         | 617-890-4750                                |
| Micro Mode Prods., El Cajon, CA 92020                                         | 619-449-3844                                |
| Nanonics Corporation, Phoenix, AZ 85027                                       | 602-581-6188                                |
| Rogers Corporation, Flexible Interconnections Div., Chandler, AZ 85244        | 602-963-4584                                |
| \$ Solitron/Microwave, Solitron Devices, Inc., West Palm Beach, FL 33407-4697 | 407-848-4311                                |
| \$ Tru-Connector Corp., Peabody, MA 01960                                     | 508-532-0775; 1-800-262-9787; 1-800-COAXTRU |
| \$ Wiltron, Morgan Hill, CA 95037-2809                                        | 408-778-2000                                |

## Connectors, Surface Mount-2100

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|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                                                     | C-1163                                 |
| \$ Comm Conn Connectors Inc., Duarte, CA 91010, 818-301-4200                                                              | C-1289                                 |
| \$ CW Industries, Southampton, PA 18966, 215-355-7080                                                                     | C-1304                                 |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                                                   |                                        |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                                                                 | C-1318                                 |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C-1330                                 |
| Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                                                          | C-1348                                 |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                                                       | C-1353                                 |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                                      | C-1356-1357                            |
| \$ J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                                   | C-1363                                 |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941                                          | C-1365                                 |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000                                                  |                                        |
| \$ Murata Erie North America, Inc., Smyrna, GA 30080, 404-436-1300                                                        | C-1421                                 |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960                                                    | C-1425                                 |
| \$ Speciality Electronics, Inc., Landrum, SC 29356, 803-457-3824                                                          |                                        |
| \$ Stewart Connector Sys., Inc., Glen Rock, PA 17327, 717-235-7512                                                        | C-1463, 1465-1467                      |
| \$ Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                               | C-1469                                 |
| \$ Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                                                          | C-1470-1471                            |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                                                    | C-1472-1473                            |
| \$ Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110                                 | C-1482                                 |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218                                                       | C-1484-1489                            |
| \$ Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450                                  | C-1490                                 |
| \$ WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                                                       | C-1494, 1498                           |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                                                          | C-1510                                 |
| Acme Model Engineering Co., Ridgefield, NJ 07657                                                                          | 404-751-9473; 800-221-4767             |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                                            | 201-943-7650                           |
| \$ Advanced Circuit Technology, Nashua, NH 03062                                                                          | 908-245-4000                           |
| AirBorn, Inc., Addison, TX 75001-0519                                                                                     | 603-880-6000                           |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                                       | 214-931-3200                           |
| \$ Amphenol, Bendix Connector Operations, Sidney, NY 13838                                                                | 203-265-8910                           |
| Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                                           | 607-563-5011                           |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                                                        | 203-743-9272; 800-627-7100             |
| Applied Engineering Products, New Haven, CT 06513                                                                         | 1-800-545-ANCO                         |
| \$ Aries Electronics, Frenchtown, NJ 08825                                                                                | 203-756-1669                           |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                                   | 908-996-6841                           |
| AT&T Microelectronics, Allentown, PA 18103                                                                                | 602-897-7001                           |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                                          | 1-800-372-2447; In Can. 1-800-553-2448 |
| Autosipco, Inc., San Diego, CA 92121                                                                                      | 508-222-2202                           |
| \$ Berg Electronics, Camp Hill, PA 17011                                                                                  | 619-535-0077                           |
| \$ Beta Phase, Menlo Park, CA 94025                                                                                       | 800-237-2374                           |
| \$ BTC Electronic Components, Old Bridge, NJ 08857                                                                        | 415-494-8410                           |
| \$ Burndy Corporation, An FCI Company, Norwalk, CT 06856                                                                  | 908-679-9300                           |
| \$ Bussmann Division, Cooper Industries, St. Louis, MO 63178                                                              | 203-838-4444                           |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007                               | 314-394-2877                           |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703                                                                          | 708-981-6000                           |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                                               | 714-855-7887                           |
| Crane Electronics, Inc., Cincinnati, OH 45212                                                                             | 410-298-4411                           |
| Curtis Industries, Milwaukee, WI 53234-3925                                                                               | 800-676-7644                           |
| \$ Dairton, Inc., Tigard, OR 97223                                                                                        | 414-649-4200                           |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                                      | 503-620-2879                           |
| Elastomer Technologies, Inc., Hatboro, PA 19040                                                                           | 416-470-1346                           |
| \$ Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                                            | 215-672-0787                           |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                                         | 815-643-0700                           |
| Eiform, Inc., Reno, NV 89510                                                                                              | 814-726-6500                           |
| E-Mark, Inc., Trumbull, CT 06611                                                                                          | 702-829-1905                           |
| \$ Engineered Assemblies & Components Corp., Teborbo, NJ 07608                                                            | 203-452-1003                           |
| \$ ERNI Components, Richmond, VA 23236                                                                                    | 201-288-4477                           |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                                       | 804-794-6367                           |
| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                                                  | 408-749-1228                           |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065                    | 408-922-9000                           |
| \$ IEH Corp., Bay Ridge, NY 11220                                                                                         | 805-522-7958                           |
|                                                                                                                           | 718-492-4440                           |

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| ITT Cannon, Santa Ana, CA 92705-5684                                              | 714-557-4700                      |
| \$ KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                           | 408-720-9044                      |
| Lectronic Research Labs., Inc., Camden, NJ 08104                                  | 800-358-8378                      |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                        | 708-398-5311; 800-323-5207        |
| MACOM, Inc., Lowell, MA 01851                                                     | 617-272-3000                      |
| \$ McKenzie Technology, Fremont, CA 94538                                         | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                              | 1-800-225-5373 Sls. & Prod. Info. |
| Meritec, Associated Enterprises, Painesville, OH 44077                            | 216-354-3148                      |
| \$ Methode Electronics, Inc., Chicago, IL 60656                                   | 708-867-9600                      |
| \$ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008  |                                   |
| \$ Microdot, Interconnect Systems Division, Montgomeryville, PA 18936             | 708-392-3500                      |
| Milton Ross Co., Warrington, PA 18976                                             | 215-699-5373                      |
| \$ Min-E-Con, Costa Mesa, CA 92626                                                | 215-491-0600                      |
| \$ MOLEX, Inc., Lisle, IL 60532                                                   | 714-434-7312                      |
| \$ Murata Manufacturing Co., Ltd., Nagakyo-Kyo-Shi, Kyoto, JAPAN 617              | 708-969-4550                      |
| Nanonics Corporation, Phoenix, AZ 85027                                           | 075-951-9111                      |
| \$ The J. M. Ney Company, Bloomfield, CT 06002                                    | 602-581-6188                      |
| \$ Ouplin America, Inc., Simi Valley, CA 93065                                    | 203-242-2281                      |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                      | 805-520-0862                      |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                      | 800-777-3300                      |
| \$ Pasternack Enterprises, Irvine, CA 92713                                       | 909-945-1365                      |
| \$ Positronic Industries, Inc., Springfield, MO 65801                             | 714-261-1920                      |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                     | 417-866-2322                      |
| Raycon Technology, Costa Mesa, CA 92627                                           | 201-736-5722                      |
| RDI Elctms, Inc., Mamaroneck, NY 10543                                            | 714-646-7700                      |
| \$ RMS, Electrical Connector Division, Minneapolis, MN 55433                      | 914-777-7000                      |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                        | 612-786-1520                      |
| \$ Shin-Etsu Polymer America, Inc., Union City, CA 94587                          | 1-800-672-6832                    |
| H H Smith, NT-T Inc., Meadville, PA 16335                                         | 510-475-9000                      |
| \$ Star-Tron Corporation, Providence, RI 02909                                    | 814-724-6440                      |
| \$ Switches Unlimited, Inc., Woodside, NY 11377                                   | 201-274-5090                      |
| \$ Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502            | 718-478-5000; 800-221-0487        |
| \$ Teledyne Ryan Electronics, San Diego, CA 92123                                 | 619-576-1005                      |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                            | 619-560-6400                      |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                            | 612-854-9632                      |
| \$ Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                     | 612-854-9177                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401    | 603-889-5156                      |
| \$ Viking Electronics, Inc., Chatsworth, CA 91311                                 | 803-676-2900                      |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4             | 818-341-4330                      |
| Wieland Inc., Burgaw, NC 28425                                                    | 514-694-9136                      |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 919-259-5050                      |
|                                                                                   | 408-452-0797                      |

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| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                               | C-1163                     |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                         | C-1409-1410                |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                                  | C-1440-1441, 1803          |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                                | C-1460                     |
| \$ Stewart Connector Sys., Inc., Glen Rock, PA 17327, 717-235-7512                                     | C-1469                     |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                                 |                            |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218                                    | C-1477, 1810               |
| \$ Accu-Tech Corporation, Roswell, GA 30076-3890                                                       | C-1490                     |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                         | 404-751-9473; 800-221-4767 |
| Advanced Connector Technology, Ventura, CA 93003                                                       | 908-245-4000               |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                             | 805-644-9990               |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 908-925-8000               |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                                 | 602-897-7001               |
| \$ Berg Electronics, Camp Hill, PA 17011                                                               | 1-800-344-0223, Ext. 1027  |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                       | 800-237-2374               |
| \$ BTC Electronic Components, Old Bridge, NJ 08857                                                     | 201-347-4040               |
| \$ Clifford of Vermont, Inc., Bethel, VT 05032                                                         | 908-679-9300               |
| Connector Corp., Chicago, IL 60646                                                                     | 800-451-4381               |
| CTS Corp., Connector Products, New Hope, MN 55428                                                      | 312-539-3108               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                               | 612-533-3533               |
| \$ Dairton, Inc., Tigard, OR 97223                                                                     | 201-768-5400               |
| \$ Elite Electronics, Inc., Plano, TX 75074                                                            | 503-620-2879               |
| \$ Engineered Assemblies & Components Corp., Teborbo, NJ 07608                                         | 214-881-0026; 800-553-4376 |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                    | 201-288-4477               |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                        | 800-447-5639               |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 408-749-1228               |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                                                          | 714-761-5684               |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                                | 805-522-7958               |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125                                                   | 815-895-5181               |
| \$ L-Cor Inc., N. Andover, MA 01845                                                                    | 602-968-6241               |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 408-295-1110; 800-544-6941 |
| \$ Manger Electric Company, Inc., Stamford, CT 06902                                                   | 508-682-6936               |
| \$ 3M Telecom Markets Division, Austin, TX 78726                                                       | 708-398-5311; 800-323-5207 |
| \$ Ouplin America, Inc., Simi Valley, CA 93065                                                         | 203-348-7761               |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-426-8626               |
| \$ Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                           | 805-520-0862               |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                                          | 800-777-3300               |
| \$ Shogyo International Corp., Great Neck, NY 11021-4799                                               | 909-945-1365               |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                                                     | 201-736-7522               |
|                                                                                                        | 516-466-0911               |
|                                                                                                        | 510-234-9090               |

## Connectors, Test-2100

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| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 | C-1163 |
| AZ-COM, Orinda, CA 94563-2206, 510-254-5400           | D-1235 |



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| \$ Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180, 605-665-9301              | C-1306-1307                |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                         | C-1321                     |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                   | C-1347                     |
| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571                                | C-1358                     |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                             | C-1361                     |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)              | C-1369                     |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000                   | C-1421                     |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                      | C-1423                     |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661, 800-423-5659               | C-1680-1681                |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                      | 612-938-8080               |
| AirBorn, Inc., Addison, TX 75001-0519                                                      | 214-931-3200               |
| Air Electro Inc., Van Nuys, CA 91406                                                       | 213-873-6400, 818-988-4400 |
| † Air-O-Tronics, Pelco Electronics, Cazenovia, NY 13035                                    | 315-655-2387               |
| Alden Products Co., Brockton, MA 02403                                                     | 508-583-0160               |
| \$ Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135             | 617-787-5880               |
| \$ Aries Electronics, Frenchtown, NJ 08825                                                 | 908-996-6841               |
| † Armet Electronics, N. Bergen, NJ 07047                                                   | 201-889-4201               |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                     | 1-800-344-0223, Ext. 1027  |
| † BTC Electronic Components, Old Bridge, NJ 08857                                          | 908-679-9300               |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000               |
| Comatel USA, Inc., Danbury, CT 06810                                                       | 203-797-9445               |
| Components Corp., Denville, NJ 07834                                                       | 201-627-0290               |
| \$ Concord Electronics Corporation, New York, NY 10012                                     | 1-212-777-6571             |
| Connectronics Corp., Toledo, OH 43607                                                      | 419-537-0020               |
| † CTS Corp., Connector Products, New Hope, MN 55428                                        | 612-533-3533               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                   | 201-768-5400               |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                  | 617-661-2454               |
| E-Mark, Inc., Trumbull, CT 06611                                                           | 203-452-1003               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477               |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                                               | 818-446-6175               |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                     | 815-968-9661               |
| † Glenair Inc., Glendale, CA 91201-2497                                                    | 818-247-6000               |
| Hiram Jones Electronics, No. Hollywood, CA 91605                                           | 213-875-0213               |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                         | 714-660-5772               |
| † Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451, 800-225-9228 |
| \$ Interconnect Devices, Inc., Kansas City, KS 66106                                       | 913-342-5544               |
| \$ ITT Cannon/Sealectro, New Britain, CT 06051                                             | 203-223-2700               |
| \$ ITT Pomona Electronics, Pomona, CA 91766                                                | 909-469-2900               |
| \$ Johnson, E. F. Co., Waseca, MN 56093                                                    | 1-800-247-8256             |
| † Jonard Industries Corp., Tuckahoe, NY 10707                                              | 914-793-0700               |
| \$ M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                      | 617-890-4750               |
| \$ McKenzie Technology, Fremont, CA 94538                                                  | 510-651-2700               |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                       | 1-800-225-5373             |
| Milton Ross Co., Warrington, PA 18976                                                      | 215-491-0600               |
| Mouser Electronics, Santee, CA 92071                                                       | 800-346-6873               |
| Mouser Electronics, Mansfield, TX 76063                                                    | 800-346-6873               |
| Mouser Electronics, Gilroy, CA 95020                                                       | 800-346-6873               |
| † Mueller Elec. Co., Cleveland, OH 44114                                                   | 216-771-5225               |
| \$ The J. M. Ney Company, Bloomfield, CT 06002                                             | 203-242-2281               |
| † Oxley Inc., Branford, CT 06405                                                           | 203-488-1033               |
| \$ PCD, Peabody, MA 01960                                                                  | 508-532-8800               |
| Positronic Industries, Inc., Springfield, MO 65801                                         | 417-866-2322               |
| Robinson Nugent, Inc., New Albany, IN 47150                                                | 812-948-0564               |
| † Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761               |
| † Russtech Engineering Company, Inc., Mission Viejo, CA 92691                              | 714-472-0880               |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                           | 919-557-0511, 800-626-1511 |
| \$ Schurter, Inc., Petaluma, CA 94954                                                      | 800-848-2600 ext. 62       |
| † Teledyne Ryan Electronics, San Diego, CA 92123                                           | 619-560-6400               |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584          | 309-693-3300               |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                | 513-561-8145               |
| Virginia Panel Corporation, Waynesboro, VA 22980                                           | 703-949-8376               |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                      | 514-694-9136               |

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| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                                | C-1279                     |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121          | C-1327                     |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200 | C-1345                     |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)  | C-1369                     |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                            | B-1887                     |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                | 404-751-9473, 800-221-4767 |
| † Air Electro Inc., Van Nuys, CA 91406                                         | 213-873-6400, 818-988-4400 |
| † Alberox Corporation, New Bedford, MA 02745                                   | 508-995-1725               |
| Alden Products Co., Brockton, MA 02403                                         | 508-583-0160               |
| † Alpha Products, Inc., Westlake Village, CA 91362                             | 818-889-9304               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492            | 203-265-8910               |
| † Amphenol, Bendix Connector Operations, Sidney, NY 13838                      | 607-563-5011               |
| # Array Connector Corporation, Miami, FL 33166-5598                            | 305-591-7530               |
| † BTC Electronic Components, Old Bridge, NJ 08857                              | 908-679-9300               |
| Conax Buffalo Corporation, Buffalo, NY 14225                                   | 716-684-4500               |
| † Connector Industries of America Div., Microdot Mfg., Cincinnati, OH 45215    | 513-772-3680               |

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| Connectronics Corp., Toledo, OH 43607                                  | 419-537-0020              |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608        | 201-288-4477              |
| \$ GIC Thermodynamics, Royal Oak, MI 48073                             | 800-447-5639              |
| † Hermetic Seal Corp., Rosemead, CA 91770                              | 213-280-1648              |
| Hypertronics Corp., Hudson, MA 01749                                   | 213-283-0411              |
| ITT Cannon, Santa Ana, CA 92705-5684                                   | 800-225-9228              |
| \$ Love Controls Division, Dwyer Instruments, Inc., Wheeling, IL 60090 | 714-557-4700              |
| Mercotac Inc., Carlsbad, CA 92009                                      | 708-541-3232              |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936     | 619-431-7723              |
| Newport Electronics, Santa Ana, CA 92704-4426                          | 215-699-5373              |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                          | 714-540-4914, 800-NEWPORT |
| PYCO, Inc., Pennell, PA 19047                                          | 717-944-1300              |
| † Pyle-National, Chicago, IL 60651                                     | 215-757-3704              |
| \$ Pyrocom Co., Seattle, WA 98133                                      | 312-342-6300 x210         |
| Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796        | 206-365-3535              |
| \$ S-Products Inc., Fairfield, CT 06430                                | 617-527-4385              |
| † Thermo Electric, Saddle Brook, NJ 07662                              | 203-331-9546              |
| \$ Tri-Star Electrs., Dallas, TX 75243                                 | 201-843-5800              |
| † Veam, Litton Systems, Watertown, CT 06795                            | 214-553-8011              |
| \$ Weidmuller Inc., Richmond, VA 23236                                 | 203-274-9681              |
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| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                                  | C-1324, 1327               |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475, 800-626-6116                           | C-1354, 1753               |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                   | C-1356-1357                |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                          | C-1369                     |
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| † Trompeter Electronics, Inc., Westlake Village, CA 91362-0407, 818-707-2020                           | C-1500-1505                |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                        | 404-751-9473, 800-221-4767 |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                                  | 612-938-8080               |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                     | 818-889-9304               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                    | 203-265-8910               |
| \$ Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                                     | 203-743-9272               |
| Bomar Interconnect Products, Ledgewood, NJ 07852                                                       | 800-627-7109               |
| B.R.T.B. Inc., Markham, Ont., CANADA L6G 1A7                                                           | 201-347-4040               |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007            | 416-475-8903               |
| Compac, Holbrook, NY 11741                                                                             | 708-981-6000               |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                                  | 516-585-3400               |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                  | 508-580-0111               |
| Covid, Inc., Tempe, AZ 85281                                                                           | 708-455-8830               |
| \$ CSD Industries, Inc., dba C Enterprises, San Marcos, CA 92069                                       | 602-966-2221               |
| \$ Dairton, Inc., Tigard, OR 97223                                                                     | 619-744-8182               |
| \$ DGS Pro Audio, Arlington, TX 76003                                                                  | 800-334-3815               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 503-620-2879               |
|                                                                                                        | 800-292-2834               |
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| EPD Electronics, Inc., Gardena, CA 90247                                                               | 310-515-4996               |
| Foxconn International, Hon Hai, Sunnyvale, CA 94086                                                    | 408-749-1228               |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958               |
| † Imtronics Industries Inc., St. Petersburg, FL 33716                                                  | 813-572-9010               |
| \$ International Components Corp., Melville, NY 11747                                                  | 516-293-1500               |
| International Microelectronics, Arlington, TX 76003                                                    | 817-473-1730               |
| \$ ITT Cannon, Santa Ana, CA 92705-5684                                                                | 714-557-4700               |
| \$ ITT Pomona Electronics, Pomona, CA 91766                                                            | 909-469-2900               |
| \$ LZR Electronics, Inc., Gaithersburg, MD 20879                                                       | 301-921-4600               |
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| Mouser Electronics, Mansfield, TX 76063                                                                | 800-346-6873               |
| Mouser Electronics, Gilroy, CA 95020                                                                   | 800-346-6873               |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                           | 201-227-7996               |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                           | 800-777-3300               |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                              | 909-945-1365               |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                                     | 815-229-7773               |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                                                           | 814-724-6400               |
| \$ Support Systems Int'l. Corp., Richmond, CA 94804                                                    | 510-234-9090               |
| \$ Trimm Inc., Libertyville, IL 60048                                                                  | 708-362-3700               |

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| † AirBORN, Inc., Addison, TX 75001-0519, 214-931-3200                             | C-1147       |
| † AMP, Harrisburg, PA 17105, 717-564-0100, 800-522-6752                           | C-1163       |
| Andon Electrs. Corp., Lincoln, RI 02865, 401-333-0388                             | C-1256, 1258 |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                          | C-1260       |
| CW Industries, Southampton, PA 18966, 215-355-7080                                | C-1304       |
| \$ Dale Electronics, Inc., Yankton Div., Yankton, SD 57078-0180, 605-665-9301     | C-1308       |
| E-Can Technology Inc., E-Can AG, Scottsdale, AZ 85260, 602-443-1949, 800-638-3226 | C-1310       |
| \$ Edac Inc., St. Laurent, Que., CAN H4R 2K9, 514-333-7288, 1-800-565-2811        | C-1311-1313  |
| \$ Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454        | C-1315, 1318 |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680, 714-669-9473               | C-1672       |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195, 708-519-7700, ext. 200    | C-1343-1344  |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                    | C-1360       |
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| † Air Electro Inc., Van Nuys, CA 91406                                                     | 213-873-6400; 818-988-4400        |
| † Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-989-9304                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                        | 203-265-8910                      |
| † Amphenol, Bendix Connector Operations, Sidney, NY 13838                                  | 607-563-5011                      |
| † Arnel Electronics, N. Bergen, NJ 07047                                                   | 201-869-4201                      |
| † Assembly Specialists, Chelmsford, MA 01824                                               | 508-250-5900                      |
| † Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283                     | 602-897-7001                      |
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| Autosplique, Inc., San Diego, CA 92121                                                     | 619-535-0077                      |
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| Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247                              | 603-524-5102                      |
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| † Circuit Assembly Corp., Irvine, CA 92718-2703                                            | 714-855-7887                      |
| Comatel USA, Inc., Danbury, CT 06810                                                       | 203-797-9445                      |
| † Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                 | 416-475-8500                      |
| † Concord Electronics Corporation, New York, NY 10012                                      | 212-277-6571                      |
| † CTS Corporation, Elkhart, IN 46514                                                       | 219-293-7511                      |
| † CTS Corp., Connector Products, New Hope, MN 55428                                        | 612-533-3533                      |
| Douglas Electronics, Inc., San Leandro, CA 94577                                           | 510-483-8770                      |
| † EBY Company, Philadelphia, PA 19124                                                      | 215-537-4700                      |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                              | 814-643-0700                      |
| ELMA Electronic Inc., Fremont, CA 94538                                                    | 510-656-3400                      |
| E-Mark, Inc., Trumbull, CT 06611                                                           | 203-452-1003                      |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477; 800-447-5639        |
| † ERNI Components, Richmond, VA 23236                                                      | 804-794-6367                      |
| † E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                | 818-446-6175                      |
| † Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                    | 408-922-9000                      |
| † Gary Electronics, WPI, Salem, NH 08079                                                   | 609-935-7603                      |
| † GC-Thorsen, Rockford, IL 61105-1209                                                      | 815-968-9661                      |
| Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                           | 714-860-5772                      |
| † Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451; 800-225-9228        |
| † IEH Corp., Bay Ridge, NY 11220                                                           | 718-492-4440                      |
| † Interconnect Devices, Inc., Kansas City, KS 66106                                        | 913-342-5544                      |
| Interlog Industries, Melville, NY 11747-4294                                               | 516-420-8111                      |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700                      |
| † KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                     | 408-720-9044                      |
| Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                             | 203-756-8847                      |
| † McKenzie Technology, Fremont, CA 94538                                                   | 510-651-2700                      |
| † 3M-Electronic Products Division, Austin, TX 78726                                        | 1-800-225-5373 Sls. & Prod. Info. |
| † Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008            | 708-392-3500                      |
| † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                       | 215-699-5373                      |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                  | 516-922-6000                      |
| MOLEX, Inc., Lisle, IL 60532                                                               | 708-969-4550                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                         | 508-588-6110                      |
| † Norwesco Interconnect Devices, Gastonia, NC 28053                                        | 704-869-3581                      |
| † ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                            | 805-484-0540                      |
| † PCD, Peabody, MA 01960                                                                   | 508-532-8800                      |
| † Positronic Industries, Inc., Springfield, MO 65801                                       | 417-866-2322                      |
| Project Resources Inc., Wareham, MA 02571                                                  | 508-295-7444                      |
| † Pyle-National, Chicago, IL 60651                                                         | 312-342-6300 x210                 |
| Raycon Technology, Costa Mesa, CA 92627                                                    | 714-646-7700                      |
| † RMS, Electrical Connector Division, Minneapolis, MN 55433                                | 612-786-1520                      |
| † Robinson Nugent, Inc., New Albany, IN 47150                                              | 812-948-0564                      |
| † Samtec, Inc., New Albany, IN 47151-1147                                                  | 1-800-672-6832                    |
| Schroff, Inc., Warwick, RI 02886                                                           | 401-732-3770                      |
| † Schurter, Inc., Petaluma, CA 94954                                                       | 800-848-2600 ext.62               |
| † Star-Tron Corporation, Providence, RI 02909                                              | 401-274-5090                      |
| Switches Unlimited, Inc., Woodside, NY 11377                                               | 718-478-5000; 800-221-0487        |
| † TELTEC, INC., Minneapolis, MN 55425                                                      | 612-854-9632                      |
| † TELTEC, Inc., Minneapolis, MN 55425                                                      | 612-854-9177                      |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                               | 603-889-5156                      |
| Urban Electronics, Dover, MA 02030                                                         | 617-329-4068                      |
| USAPEX Corp., Santa Clara, CA 95051                                                        | 408-982-9063                      |
| † Viking Electronics, Inc., Chatsworth, CA 91311                                           | 818-341-4330                      |
| † Wire-Pro, Inc., Salem, NJ 08079                                                          | 609-935-7601; 609-935-7651        |

## Connectors, Zero & Low Insertion Force-2100

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| † AirBorn, Inc., Addison, TX 75001-0519, 214-931-3200                             | C-1147      |
| Alden Products Co., Brockton, MA 02403, 508-583-0160                              | C-1151      |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                           | C-1163      |
| Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                              | C-1256-1257 |
| † Aries Electronics, Frenchtown, NJ 08825, 908-996-6641                           | C-1260      |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949; 800-638-3226 | C-1310      |
| Elastomeric Technologies, Inc., Hatboro, PA 19040, 215-672-0787; 215-672-4741     | C-1314      |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                         | C-1330      |

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| † Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                                          | C-1348-1352                       |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                                                        | C-1357                            |
| † J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                                      | C-1363                            |
| † LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)                                | C-1369                            |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                                  | C-1395-1396                       |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                                       | C-1422-1423                       |
| † Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452                                  | C-1470                            |
| Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                                               | C-1472-1473                       |
| † Tekta Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110                   | C-1485-1489                       |
| † Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100                                               | C-1508-1509                       |
| Adam Technologies Inc., Roselle Park, NJ 07204                                                              | 908-245-4000                      |
| † Advanced Circuit Technology, Nashua, NH 03062                                                             | 603-880-6000                      |
| Advanced Connector Technology, Ventura, CA 93003                                                            | 805-644-9990                      |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                                         | 203-265-8910                      |
| † Amphenol, Bendix Connector Operations, Sidney, NY 13838                                                   | 607-563-5011                      |
| † Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                                              | 203-281-3200                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                            | 508-222-2202                      |
| Augat/RDI, Carol Stream, IL 60188                                                                           | 708-682-4100                      |
| Autowage Products, Shelton, CT 06484                                                                        | 203-929-1401                      |
| † Azimut Electronics, Inc., San Clemente, CA 92672                                                          | 714-492-6481                      |
| Berg Electronics, Camp Hill, PA 17011                                                                       | 800-237-2374                      |
| † Beta Phase, Menlo Park, CA 94025                                                                          | 415-494-8410                      |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                               | 203-288-8001; 1-800-242-2863      |
| † BCT Electronic Components, Old Bridge, NJ 08857                                                           | 908-679-9300                      |
| Burndy Corporation, An FCI Company, Norwalk, CT 06856                                                       | 203-838-4444                      |
| † Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4                                  | 416-475-8500                      |
| CTS Corporation, Elkhart, IN 46514                                                                          | 219-293-7511                      |
| † CTS Corp., Connector Products, New Hope, MN 55428                                                         | 612-533-3533                      |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                                        | 416-470-1346                      |
| † Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                                               | 814-643-0700                      |
| Electronic Components & Materials, GTE Sylvania, Warren, PA 16365                                           | 814-726-6500                      |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                             | 201-288-4477; 800-447-5639        |
| † ERNI Components, Richmond, VA 23236                                                                       | 804-794-6367                      |
| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 408-922-9000                      |
| † Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065       | 805-522-7958                      |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                                          | 714-660-5772                      |
| † IEH Corp., Bay Ridge, NY 11220                                                                            | 718-492-4440                      |
| † ITT Cannon, Santa Ana, CA 92705-5684                                                                      | 714-557-4700                      |
| † KEL Connectors, Inc., KEL Corp., Sunnyvale, CA 94086                                                      | 408-720-9044                      |
| † Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                                            | 203-756-8847                      |
| † McKenzie Technology, Fremont, CA 94538                                                                    | 510-651-2700                      |
| † 3M-Electronic Products Division, Austin, TX 78726                                                         | 1-800-225-5373 Sls. & Prod. Info. |
| Meritec, Associated Enterprises, Painesville, OH 44077                                                      | 216-354-3148                      |
| † Methode Electronics, Inc., Chicago, IL 60656                                                              | 708-867-9600                      |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                                   | 516-922-6000                      |
| Milton Ross Co., Warrington, PA 18976                                                                       | 215-491-0600                      |
| † Min-E-Con, Costa Mesa, CA 92626                                                                           | 714-434-7312                      |
| † MOLEX, Inc., Lisle, IL 60532                                                                              | 708-969-4550                      |
| Nanonics Corporation, Phoenix, AZ 85027                                                                     | 602-581-6188                      |
| † The J. M. Ney Company, Bloomfield, CT 06002                                                               | 203-242-2281                      |
| † PCD, Peabody, MA 01960                                                                                    | 508-532-8800                      |
| † Positronic Industries, Inc., Springfield, MO 65801                                                        | 417-866-2322                      |
| † Power Dynamics Inc., West Orange, NJ 07052                                                                | 201-736-5722                      |
| † RMS, Electrical Connector Division, Minneapolis, MN 55433                                                 | 612-786-1520                      |
| Robinson Nugent, Inc., New Albany, IN 47150                                                                 | 812-948-0564                      |
| Rowe Industries, Inc., Toledo, OH 43612                                                                     | 419-729-9761                      |
| † Samtec, Inc., New Albany, IN 47151-1147                                                                   | 1-800-672-6832                    |
| Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502                                         | 619-576-1005                      |
| † Teledyne Ryan Electronics, San Diego, CA 92123                                                            | 619-560-6400                      |
| † TELTEC, INC., Minneapolis, MN 55425                                                                       | 612-854-9632                      |
| † TELTEC, Inc., Minneapolis, MN 55425                                                                       | 612-854-9177                      |
| † Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060                                                | 603-889-5156                      |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                               | 803-676-2900                      |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                                             | 801-298-5900                      |

## Connectors & Terminals, Push-on, Quick Disconnect-2100

|                                                                               |                        |
|-------------------------------------------------------------------------------|------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                          | C-1151                 |
| † Atech Corp., Flemington, NJ 08822-6000, 908-806-9400                        | C-1006, 1152, 1157     |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                       | C-1163                 |
| † Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102 | C-1270                 |
| † Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969             | C-1723                 |
| † Catmount Connector Corp., Kingston, MA 02364, 617-585-4315                  | C-1275-1277            |
| Ceramaseal, New Lebanon, NY 12125, 518-794-7800                               | C-1279                 |
| Direct Sound Corporation, Boston, MA 02116, 1-800-372-1616                    | C-1309                 |
| † Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228            | C-1348-1349, 1351-1352 |
| † J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                        | C-1363                 |
| † LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)  | C-1369                 |
| † LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564  | C-1394, 1396           |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                   | C-1412                 |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                         | C-1422-1424            |
| † RIA Electronics, Eatontown, NJ 07724, 908-389-1300                          | C-1442                 |



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| <p> <b>§ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62</b> ..... <b>C*1451</b><br/> <b>† Shoghy International Corp., Great Neck, NY 11021-4799, 516-466-0911</b> ..... <b>C*1459</b><br/> <b>§ Stocko Connectors, Stocko Corporation, Carlstadt, NJ 07072, 201-933-4452</b> ..... <b>C*1470-1471</b><br/> <b>Teka Interconnection Systems, Interplex Industries, Providence, RI 02907,</b><br/> <b>401-785-4110</b> ..... <b>C*1485-1486, 1489</b><br/> <b>† Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020</b> ..... <b>C*1500-1503</b><br/> <b>Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100</b> ..... <b>C*1509</b><br/> <b>§ Visual Communications Co., Inc., San Diego, CA 92126, 619-549-6900</b> ..... <b>B*1197</b><br/> <b>§ WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810</b> ..... <b>C*1511</b><br/> <b>§ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4,</b><br/> <b>514-694-9136</b> ..... <b>C*1513-1514</b><br/> <b>† Accurate Electronics Corp., Elyria, OH 44036</b> ..... <b>216-366-6330/1-800-334-5904</b><br/> <b>ADC Telecommunications, Inc., Minneapolis, MN 55435</b> ..... <b>612-938-8080</b><br/> <b>Advanced Connector Technology, Ventura, CA 93003</b> ..... <b>805-644-9990</b><br/> <b>Air Electro Inc., Van Nuys, CA 91406</b> ..... <b>213-873-6400/818-988-4400</b><br/> <b>§ Alpha Products, Inc., Westlake Village, CA 91362</b> ..... <b>818-889-9304</b><br/> <b>Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492</b> ..... <b>203-265-8910</b><br/> <b>§ Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810</b> ..... <b>203-743-9272/</b><br/> <b>800-627-7100</b><br/> <b>§ Anderson Power Products, Div. of High Voltage Engineering, Boston, MA 02135</b> ..... <b>617-787-5880</b><br/> <b>Ark-Les Corp., Raleigh, NC 27620</b> ..... <b>919-231-2000</b><br/> <b>† Armel Electronics, N. Bergen, NJ 07047</b> ..... <b>201-869-4201</b><br/> <b>Augat, Inc., Interconnection Products Group, Attleboro, MA 02703</b> ..... <b>508-222-2202</b><br/> <b>Augat/RDI, Carol Stream, IL 60188</b> ..... <b>708-682-4100</b><br/> <b>Autosplice, Inc., San Diego, CA 92121</b> ..... <b>619-535-0077</b><br/> <b>Autoswage Products, Shelton, CT 06484</b> ..... <b>203-929-1401</b><br/> <b>§ AVA Electronics Corporation, Drexel Hill, PA 19026</b> ..... <b>215-284-2500</b><br/> <b>† Avibank Manufacturing, Inc., Burbank, CA 91503-0391</b> ..... <b>818-843-4330</b><br/> <b>Bead Industries, Bridgeport, CT 06605-0571</b> ..... <b>203-334-4124</b><br/> <b>§ Berg Electronics, Camp Hill, PA 17011</b> ..... <b>800-237-2374</b><br/> <b>† Birn Electronics, Fair Lawn, NJ 07410</b> ..... <b>201-796-2886</b><br/> <b>§ Burmy Corporation, An FCI Company, Norwalk, CT 06856</b> ..... <b>203-838-4444</b><br/> <b>† Cinch Connector Division, Labinal Components &amp; Systems Inc., Elk Grove Village, IL</b><br/> <b>60007</b> ..... <b>708-981-6000</b><br/> <b># Clifford of Vermont, Inc., Bethel, VT 05032</b> ..... <b>802-234-9921/800-451-4381</b><br/> <b>§ Cole Hersee Co., Boston, MA 02127-2467</b> ..... <b>617-268-2100</b><br/> <b>Comatel USA, Inc., Danbury, CT 06810</b> ..... <b>203-797-9445</b><br/> <b>§ Concord Electronics Corporation, New York, NY 10012</b> ..... <b>1-212-777-6571</b><br/> <b>† Connector Corp., Chicago, IL 60646</b> ..... <b>312-539-3108</b><br/> <b>Connectronics Corp., Toledo, OH 43607</b> ..... <b>419-537-0020</b><br/> <b>Cosmo Corporation, Cleveland, OH 44109</b> ..... <b>216-861-5594</b><br/> <b>Curtis Industries, Milwaukee, WI 53234-3925</b> ..... <b>414-649-4200</b><br/> <b>§ Daburn Electronics &amp; Cable Corp., Northvale, NJ 07647</b> ..... <b>201-768-5400</b><br/> <b>† Detronics Corporation, S. El Monte, CA 91733</b> ..... <b>818-579-7130</b><br/> <b>§ Doran Manufacturing Co., Cincinnati, OH 45225</b> ..... <b>513-681-5424</b><br/> <b>† Etron Products International Company, Fremont, CA 94538</b> ..... <b>510-490-4200</b><br/> <b>ELMA Electronic Inc., Fremont, CA 94538</b> ..... <b>510-656-3400</b><br/> <b>E-Mark, Inc., Trumbull, CT 06611</b> ..... <b>203-452-1003</b><br/> <b># Engineered Assemblies &amp; Components Corp., Teterboro, NJ 07608</b> ..... <b>201-288-4477/</b><br/> <b>800-447-5639</b><br/> <b>§ Entrelec Inc., Irving, TX 75038</b> ..... <b>214-550-9025</b><br/> <b>† E-Z Hook Tektest Inc., Arcadia, CA 91006</b> ..... <b>818-446-6175</b><br/> <b>§ GC-Thorsen, Rockford, IL 61105-1209</b> ..... <b>815-968-9661</b><br/> <b>† Heyco Molded Products, Inc., Kenilworth, NJ 07033</b> ..... <b>908-245-0033/800-526-4182</b><br/> <b>Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA</b><br/> <b>93065</b> ..... <b>805-522-7958</b><br/> <b>§ Hugin Industries Inc., Los Altos, CA 94022</b> ..... <b>415-961-2950</b><br/> <b>† ICO-RALLY Corporation, Palo Alto, CA 94303</b> ..... <b>415-856-9900</b><br/> <b>§ Ideal Industries, Inc., Sycamore, IL 60178</b> ..... <b>815-895-5181</b><br/> <b>† Interconnect Devices, Inc., Kansas City, KS 66106</b> ..... <b>913-342-5544</b><br/> <b>International Components Corp., Melville, NY 11747</b> ..... <b>516-293-1500</b><br/> <b>ITT Cannon, Santa Ana, CA 92705-5684</b> ..... <b>714-557-4700</b><br/> <b>† ITT Cannon/Sealectro, New Britain, CT 06051</b> ..... <b>203-223-2700</b><br/> <b>§ ITT Pomona Electronics, Pomona, CA 91766</b> ..... <b>909-469-2900</b><br/> <b>§ Johnson, E. F., Co., Waseca, MN 56093</b> ..... <b>1-800-247-8256</b><br/> <b>† Keystone Electronics Corp., Astoria, NY 11105-2017</b> ..... <b>718-956-8900</b><br/> <b>§ Klein Tools, Inc., Chicago, IL 60659-9033</b> ..... <b>708-677-9500</b><br/> <b>Lectronic Research Labs, Inc., Camden, NJ 08104</b> ..... <b>800-358-8378</b><br/> <b>MACOM, Inc., Lowell, MA 01851</b> ..... <b>617-272-3000</b><br/> <b>† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101</b> ..... <b>617-890-4750</b><br/> <b>§ Marathon Special Prods., Marathon Electric, Bowling Green, OH 43402</b> ..... <b>419-352-8441</b><br/> <b>§ Martin Sound Prods. Inc., Cleveland, OH 44143-2297</b> ..... <b>216-442-2286</b><br/> <b>3M-Electronic Products Division, Austin, TX 78726</b> ..... <b>1-800-225-5373 Sls. &amp; Prod. Info.</b><br/> <b>§ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008</b> ..... <b>708-392-3500</b><br/> <b>† Microdot, Interconnect Systems Division, Montgomeryville, PA 18936</b> ..... <b>215-699-5373</b><br/> <b>James Millen Elctms., Caywood Elec. Inc., No. Andover, MA 01845</b> ..... <b>508-975-2711</b><br/> <b>§ MOLEX, Inc., Lisle, IL 60532</b> ..... <b>708-969-4550</b><br/> <b>§ MSC Automation, Miller Sales Co., Wauconda, IL 60084</b> ..... <b>708-526-9200/800-323-5294</b><br/> <b>† Nichifu America, Inc., Pottstown, PA 19464</b> ..... <b>215-323-7120</b><br/> <b>Omega Engineering, Stamford, CT 06907</b> ..... <b>800-826-6342</b><br/> <b>§ Panduit Corp., Tinley Park, IL 60477-0981</b> ..... <b>800-777-3300</b><br/> <b>† Patton-MacGuerly, Inc., Providence, RI 02905</b> ..... <b>401-941-6000</b><br/> <b>† Pioneer Components, Brooklyn, NY 11234</b> ..... <b>718-444-3880</b><br/> <b>§ Power Dynamics Inc., West Orange, NJ 07052</b> ..... <b>201-736-5722</b><br/> <b>§ PTS Corporation, Bloomington, IN 47401</b> ..... <b>812-824-9331</b><br/> <b>† Pyle-National, Chicago, IL 60651</b> ..... <b>312-342-6300 x210</b><br/> <b>§ Qualtex Electronics Corp., Mentor, OH 44060</b> ..... <b>216-951-3300</b><br/> <b>§ Reliance Comm/Tec, Reliance Electric, Cleveland, OH 44117</b> ..... <b>800-245-4501</b><br/> <b>§ RMS, Electrical Connector Division, Minneapolis, MN 55433</b> ..... <b>612-786-1520</b><br/> <b>† Rowe Industries, Inc., Toledo, OH 43612</b> ..... <b>419-729-9761</b> </p> | <p> <b>§ Rye Industries, Inc., Fuquay-Varina, NC 27526</b> ..... <b>919-557-05</b></p> |
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|--------------------------------------------------------------------------------------------|------------------------|
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000           |
| §† CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428       | 612-537-1010           |
| Cold Header Machine Corp., Boca Raton, FL 33431                                            | 407-393-3201           |
| Compac, Holbrook, NY 11741                                                                 | 516-585-3400           |
| † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379                                      | 508-580-0111           |
| § Components Corp., Denville, NJ 07834                                                     | 201-627-0290           |
| § Concord Electronics Corporation, New York, NY 10012                                      | 1-212-777-6571         |
| † CTS Corp., Connector Products, New Hope, MN 55428                                        | 612-533-3533           |
| † Danmar Inds., Moorpark, CA 93021                                                         | 1-805-529-3788         |
| Deringer Mfg. Co., Mundelein, IL 60060                                                     | 708-566-4100           |
| Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101                                   | 718-447-5639           |
| § Elco Corp., Electronic Connector Div., Huntingdon, PA 16652                              | 814-643-0700           |
| § Elcon Products International Company, Fremont, CA 94538                                  | 510-490-4200           |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                  | 617-661-2454           |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477           |
| §† Garry Electronics, WPI, Salem, NJ 08079                                                 | 609-935-7603           |
| § Harting Elektronik, Inc., Hoffman Estates, IL 60195                                      | 708-519-7700, ext. 200 |
| Hasco Components International Co., Bellrose Village, NY 11001                             | 516-328-9292           |
| § Hiram Jones Electronics, No. Hollywood, CA 91605                                         | 213-875-0213           |
| † Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714                         | 714-680-5772           |
| † Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451           |
| §† IEH Corp., Bay Ridge, NY 11220                                                          | 718-492-4440           |
| Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136                 | 717-424-8510           |
| §† Interconnect Devices, Inc., Kansas City, KS 66106                                       | 913-342-5544           |
| ITT Cannon, Santa Ana, CA 92705-5684                                                       | 714-557-4700           |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 718-956-8900           |
| † Kirkwood Industries Inc., Cleveland, OH 44135                                            | 216-267-6200           |
| Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                             | 203-756-8847           |
| † Max Levy Autograph, Inc., Philadelphia, PA 19144-4298                                    | 215-842-3675           |
| Mercoat Inc., Carlsbad, CA 92009                                                           | 619-431-7723           |
| Meritec, Associated Enterprises, Painesville, OH 44077                                     | 216-354-3148           |
| § Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                       | 215-699-5373           |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                  | 516-922-6000           |
| † Milton Ross Co., Warrington, PA 18976                                                    | 215-491-0600           |
| § MOLEX, Inc., Lisle, IL 60532                                                             | 708-969-4550           |
| § Nephenthe, Inc., Palo Alto, CA 94303                                                     | 415-496-6666           |
| The J. M. Ney Company, Bloomfield, CT 06002                                                | 203-242-2281           |
| § Ostby-Barton Test Probes, Warwick, RI 02886                                              | 401-739-7310           |
| Pacific Microtronics Corp., New York, NY 10021                                             | 212-517-5622           |
| § Positronic Industries, Inc., Springfield, MO 65801                                       | 417-866-2322           |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                               | 708-438-4000           |
| † Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761           |
| † Sjoborg, C. & Son, Inc., Cranston, RI 02910                                              | 401-461-8220           |
| Staffall Inc., Cranston, RI 02910                                                          | 401-461-5554           |
| §† Superior Carbon Products, Inc., Walnut Grove, MS 39189                                  | 601-253-2442           |
| † Technit, Cranford, NJ 07016                                                              | 908-272-5500           |
| † Texas Instruments, Connector Systems, Attleboro, MA 02703                                | 508-699-5269           |
| Texas Instrs., Matls. & Controls Grp., Attleboro, MA 02703                                 | 508-699-3450           |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401              | 803-676-2900           |
| Tricon Industries, Inc., Electromechanical Division, Downers Grove, IL 60515-4076          | 708-964-2330           |
| §† Tri-Star Elctms., Dallas, TX 75243                                                      | 214-553-8011           |
| † Unit Industries, Fullerton, CA 92631                                                     | 714-871-4161           |
| § Useco Div., Litton Inds., Van Nuys, CA 91409                                             | 818-786-6381           |

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**Controls, Audio System Consoles-2200 — See Vol. D**  
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**Controls, Computer Input, Joysticks, Mouse Devices, etc.-2000 — See Vol. D**  
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**Controls, Counting & Sorting-2200 — See Vol. D**  
**Controls, DC Motor, Programmable-4900 — See Vol. D**  
**Controls, DC Regenerative-2200 — See Vol. D**  
**Controls, Density-2200 — See Vol. D**  
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## Controls, Fan Speed-2600

|                                                         |              |
|---------------------------------------------------------|--------------|
| Control Resources Inc., Harvard, MA 01451, 508-772-4043 | C•1575       |
| Quality Thermistor, Boise, ID 83709, 208-377-3373       | B•1892       |
| American Assembly Inc., Florida, NY 10921               | 914-651-3433 |
| § Baldor Electric Company, Fort Smith, AR 72902         | 501-646-4711 |
| Douglas Randall, Pawcatuck, CT 06379                    | 203-599-2075 |
| § Drivecon Corporation, Libertyville, IL 60048          | 708-918-1406 |
| § KB Electronics, Brooklyn, NY 11207                    | 718-257-3300 |

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**Controls, Fluorescent Light Power-2200 — See Vol. D**  
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**Converters, Digital to Analog-2325 — See Vol. D**  
**Converters, Digital to Paper Tape-2000 — See Vol. D**  
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**Converters, Frequency to Voltage-2325 — See Vol. D**  
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**Cooling/Heating Modules, Thermoelectric-2600**

† ITI FerroTec, Chelmsford, MA 01824, 508-452-0212 ..... C\*1597  
 † Marlow Industries, Inc., Dallas, TX 75238-1645, 214-340-4900 ..... C\*1602-1605  
 † Melcor/Materials Electron. Prods., Trenton, NJ 08648, 609-393-4178 ..... C\*1613-1616  
 Omega Engineering, Stamford, CT 06907, 800-826-6342 ..... B\*2005  
 R-Theta Inc., Buffalo, NY 14220-8089, 1-800-388-5428 ..... C\*1643  
 TECA, ThermoElectric Cooling America Corp., Chicago, IL 60639, 312-342-4900 ..... C\*1644-1645  
 Andulet Digital Corp., San Dimas, CA 91773 ..... 909-394-0171  
 Cambridge Aeroflo, Inc., Shirley, MA 01464 ..... 508-425-2346  
 Cool Corporation, Minneapolis, MN 55447 ..... 1-612-559-3117  
 Incotherm Limited, Inco Alloys Ltd, Hereford, UNITED KINGDOM HR4 9SL ..... (44) 432 355880  
 † Noren Products Inc., Menlo Pk., CA 94025 ..... 415-322-9500  
 Products for Research, Danvers, MA 01923 ..... 508-774-3250  
 † Product Technology, Inc., Irvine, CA 92714 ..... 714-474-8998  
 Tellurex Corp., Traverse City, MI 49684 ..... 616-947-0110  
 Thermacore Inc., Lancaster, PA 17601 ..... 717-569-6551

**Cooling Sprays — See Refrigerants, Spray (Vol. C)****Cords & Tapes, Lacing-6000**

† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886 ..... C\*1718  
 † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 ..... C\*1746  
 † ABL Electronics Supply, Inc., Peekskill, NY 10566 ..... 914-736-1010; 1-800-431-2103  
 † Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000

† Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., Fort Smith, AR 72903-7097 ..... 501-452-3987  
 Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8 ..... 1-800-361-9466  
 † Concord Electronics Corporation, New York, NY 10012 ..... 1-212-777-6571  
 † Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Dearborn Wire & Cable, L.P., Wheeling, IL 60090 ..... 708-459-1000; 800-323-0198  
 † Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 † ICO-RALLY Corporation, Palo Alto, CA 94303 ..... 415-856-9900  
 Special Electric Co., Inc., Milwaukee, WI 53215 ..... 414-383-6370  
 † Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 Welco Wire & Cable, Inc., Edgewood, NY 11717 ..... 516-254-2970  
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The Berquist Co., Minneapolis, MN 55439, 800-347-4572 ..... C\*1710-1711  
 † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886 ..... C\*1714  
 † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 ..... C\*1736, 1739  
 † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 ..... C\*1745  
 † GlobTek, Inc., Northvale, NJ 07647, 201-784-1000 ..... C\*1340, D\*1732  
 International Configurations, Inc., Enfield, CT 06082, 203-749-6380 ..... C\*1353  
 LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600 ..... C\*1403, 1409, 1411, 1758, 1761  
 † Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000 ..... C\*1763  
 Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097 ..... C\*1426-1427, 1431-1432, 1793, 1798, 1801  
 Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454 ..... C\*1805  
 † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911 ..... A\*2534, C\*1458, 1808-1809  
 † Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700 ..... C\*1810  
 † Virginia Plastics Co., Roanoke, VA 24015-0577, 703-375-0100 ..... C\*1814  
 † Welco Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 ..... C\*1848-1849  
 † ABL Electronics Supply, Inc., Peekskill, NY 10566 ..... 914-736-1010; 1-800-431-2103  
 Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895 ..... 1-401-769-1600  
 † Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000  
 † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 ..... 401-726-0700  
 Autec Power Systems, Simi Valley, CA 93065 ..... 805-522-0888  
 Cable Systems, Inc., The HVT Group, Everett, MA 02149 ..... 617-389-7080  
 † Clifford of Vermont, Inc., Bethel, VT 05032 ..... 802-234-9921; 800-451-4381  
 † Damac Products, Inc., Santa Fe Springs, CA 90670 ..... 310-946-0881  
 † Dearborn Wire & Cable, L.P., Wheeling, IL 60090 ..... 708-459-1000; 800-323-0198  
 † Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101 ..... 718-937-8000  
 † Ericson Manufacturing Co., Willoughby, OH 44094 ..... 216-951-8000  
 † Excel Specialty Corp., Chicago, IL 60660 ..... 312-262-4781  
 † Feller US Corporation, AFN Div., Somerset, NJ 08873 ..... 908-247-7333  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 † Golden Pacific Electronics, Inc., Placentia, CA 92670 ..... 714-993-6970  
 Henricks Technologies, Inc., Forsyth, GA 31029 ..... 912-993-1060; 800-241-0806  
 IMC Power Sources, San Jose, CA 95112 ..... 408-441-9614  
 JH America, Inc., JBT International, Inc., Torrance, CA 90501 ..... 310-328-0051  
 † JSC Wire & Cable, Wayne, NJ 07474-0248 ..... 201-694-6200; 1-800-572-9473  
 † Lynn Electronics, Feasterville, PA 19053 ..... 215-355-8200; 800-523-6075  
 † McGill Electrical Product Group, Valparaiso, IN 46383 ..... 219-465-2200  
 Olympic Wire & Cable, Fairfield, NJ 07004 ..... 201-227-7996  
 † Pacific Electriccord, Gardena, CA 90247 ..... 310-532-6600  
 † Power Dynamics Inc., West Orange, NJ 07052 ..... 201-736-5722  
 † Qualtek Electronics Corp., Mentor, OH 44060 ..... 216-951-3300  
 Shokai Far East Ltd., Peekskill, NY 10566 ..... 914-736-3500  
 † SL Weber, Inc., Mt. Laurel, NJ 08054 ..... 609-866-8888; 800-257-8384  
 † Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 † TURCK Inc., Minneapolis, MN 55441-2658 ..... 612-553-9224; 1-800-328-0580  
 † Victor Elec. Wire & Cable, W. Warwick, RI 02893 ..... 401-821-1700; SALES 401-821-7800  
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**Cords, Line, Resistance-6000**

Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454 ..... C\*1805  
 † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 ..... 401-726-0700  
 † Feller US Corporation, AFN Div., Somerset, NJ 08873 ..... 908-247-7333  
 IMC Power Sources, San Jose, CA 95112 ..... 408-441-9614  
 † Lynn Electronics, Feasterville, PA 19053 ..... 215-355-8200; 800-523-6075  
 † Power Dynamics Inc., West Orange, NJ 07052 ..... 201-736-5722  
 † Qualtek Electronics Corp., Mentor, OH 44060 ..... 216-951-3300  
 † Virginia Plastics Co., Roanoke, VA 24015-0577 ..... 703-375-0100

**Cords, Patch-2100**

† ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 ..... C\*1287, 1707  
 † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 ..... C\*1291, 1540  
 † Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002 ..... C\*1347  
 Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097 ..... C\*1426  
 Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454 ..... C\*1805  
 † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911 ..... C\*1808  
 † Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700 ..... C\*1481  
 TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218 ..... C\*1490  
 † Trompeter Electronics, Inc., Westlake Village, CA 91362-0407, 818-707-2020 ..... C\*1500-1502  
 † Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 † ADC Telecommunications, Inc., Minneapolis, MN 55435 ..... 612-938-8080



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|---------------------------------------------------------------------|---------------------------|
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895  | 1-401-769-1600            |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                          | 908-925-8000              |
| AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962 | 1-800-344-0223, Ext. 1027 |
| Autec Power Systems, Simi Valley, CA 93065                          | 805-522-0888              |
| AVA Electronics Corporation, Drexel Hill, PA 19026                  | 215-284-2500              |
| Berg Electronics, Camp Hill, PA 17011                               | 800-237-2374              |
| Brim Electronics, Fair Lawn, NJ 07410                               | 201-796-2886              |
| Brooks Electronics, Philadelphia, PA 19140                          | 215-228-4433              |
| Clifford of Vermont, Inc., Bethel, VT 05032                         | 802-234-9921              |
| Coax Connection, Peekskill, NY 10566                                | 914-736-1010              |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647               | 201-768-5400              |
| Darnac Products, Inc., Santa Fe Springs, CA 90670                   | 310-946-0881              |
| E-Z Hook, Tektest Inc., Arcadia, CA 91006                           | 818-446-6175              |
| Gavitt Wire & Cable, Brookfield, MA 01506                           | 508-867-6476              |
| GC-Thorsen, Rockford, IL 61105-1209                                 | 815-968-9661              |
| Henricks Technologies, Inc., Forsyth, GA 31029                      | 912-993-1060              |
| ITT Pomona Electronics, Pomona, CA 91766                            | 909-469-2900              |
| Keystone Electronics Corp., Astoria, NY 11105-2017                  | 718-956-8900              |
| L-Com Inc., N. Andover, MA 01845                                    | 508-682-6936              |
| Leecraft Industries Ltd., Scarborough, Ont., CANADA M1B 3R6         | 416-292-4463              |
| Lynn Electronics, Feasterville, PA 19053                            | 215-355-8200              |
| Manger Electric Company, Inc., Stamford, CT 06902                   | 203-348-7761              |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936  | 215-699-5373              |
| Mueller Elec. Co., Cleveland, OH 44114                              | 216-771-5225              |
| Pastemack Enterprises, Irvine, CA 92713                             | 714-261-1920              |
| Philmore Manufacturing, Rockford, IL 61125-1386                     | 815-229-7773              |
| Power Dynamics Inc., West Orange, NJ 07052                          | 201-736-5722              |
| Probe Master, Inc., San Diego, CA 92111                             | 619-560-9676              |
| Rye Industries, Inc., Fuquay-Varina, NC 27526                       | 919-557-0511              |
| Shokai Far East Ltd., Peekskill, NY 10566                           | 914-736-3500              |
| Support Systems Intl. Corp., Richmond, CA 94804                     | 510-234-9090              |
| Techni-Tool, Plymouth Meeting, PA 19462                             | 215-825-4990              |
| Trim Inc., Libertyville, IL 60048                                   | 708-362-3700              |
| Tru-Connector Corp., Peabody, MA 01960                              | 508-532-0775              |
| U.S. Terminals Inc., Cincinnati, OH 45243                           | 513-561-8145              |
| Vector Electronic Co., Inc., Sylmar, CA 91342                       | 818-365-9661              |
| Virginia Panel Corporation, Waynesboro, VA 22980                    | 703-949-8376              |

## Cords, Power-6000

|                                                                                  |                      |
|----------------------------------------------------------------------------------|----------------------|
| ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103  | C-1706-1708          |
| American Skynet Electronic Co., Milpitas, CA 95035, 408-945-6355                 | D-1568-1569          |
| The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                           | C-1710-1711          |
| Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1714               |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1736-1739          |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400              | C-1745-1746          |
| ETRI, Inc., Monroe, NC 28110, 704-289-5423                                       | C-1586               |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                 | C-1340, 1748, D-1732 |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380              | C-1353               |
| Jerome Industries Corp., Elizabeth, NJ 07201, 908-353-5700                       | D-1760               |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                      | C-1400, 1403, 1758   |

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|---------------------------------------------------------------------|-----------------------------------|
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097           | C-1426-1427, 1431-1432, 1793-1801 |
| Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300           | C-1638-1639                       |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000               | C-1803                            |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454          | C-1804-1805                       |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218 | C-1490-1491                       |

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|----------------------------------------------------------------------|----------------------------|
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970           | C-1844-1845, 1848-1849     |
| Accu-Tech Corporation, Roswell, GA 30076-3890                        | 404-751-9473; 800-221-4767 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                           | 908-925-8000               |
| American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 | 401-726-0700               |
| Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 | 602-897-7001               |

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|---------------------------------------------------------------|------------------------------|
| Autec Power Systems, Simi Valley, CA 93065                    | 805-522-0888                 |
| Connector Corp., Chicago, IL 60646                            | 312-539-3108                 |
| Contact East, N. Andover, MA 01845                            | 508-682-2000                 |
| Cooper Industries/Belden Div., Richmond, IN 47375             | 317-983-5200; 800-BELDEN-1   |
| Custom Computer Cable, Inc., Eden Prairie, MN 55344           | 612-941-5651; 1-800-343-5553 |
| D & B Power, Inc., Bayshore, NY 11706                         | 516-586-5955                 |
| Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101      | 718-937-8000                 |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162     | 708-547-5400                 |
| ELMEC, Inc., Techna Corp., Chandler, AZ 85226                 | 602-961-7100                 |
| Ericson Manufacturing Co., Willoughby, OH 44094               | 216-951-8000                 |
| Feller US Corporation, AFN Div., Somerset, NJ 08873           | 908-247-7333                 |
| General Cable Co., Highland Hts., KY 41076                    | 606-572-8616                 |
| IMC Power Sources, San Jose, CA 95112                         | 408-441-9614                 |
| International Microelectronics, Arlington, TX 76003           | 817-473-1730                 |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501 | 310-328-0051                 |
| Lodan Electronics, Inc., Arlington Hts., IL 60004-7805        | 708-398-5311                 |
| Mouser Electronics, Santee, CA 92071                          | 800-346-6873                 |
| Mouser Electronics, Mansfield, TX 76063                       | 800-346-6873                 |
| Mouser Electronics, Gilroy, CA 95020                          | 800-346-6873                 |
| Power Dynamics Inc., West Orange, NJ 07052                    | 201-736-5722                 |
| RF Electronics, Inc., Irvine, CA 92714-5517                   | 714-263-0661                 |
| Schurter, Inc., Petaluma, CA 94954                            | 800-848-2600 ext.62          |
| Shogoy International Corp., Great Neck, NY 11021-4799         | 516-466-0911                 |
| Shokai Far East Ltd., Peekskill, NY 10566                     | 914-736-3500                 |

|                                                                                          |              |
|------------------------------------------------------------------------------------------|--------------|
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000 |
| Techrand Corp. of America, Muskegon, MI 49444                                            | 616-798-2930 |

## Cords, Retractable-6000

|                                                                                  |              |
|----------------------------------------------------------------------------------|--------------|
| Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                              | C-1713-1714  |
| Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C-1736, 1739 |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400              | C-1745       |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                 | C-1748       |
| ISL Products Int'l, Ltd., Sysset, NY 11791-6093, 516-937-3475; 800-626-6116      | C-1354       |

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|-----------------------------------------------------------------------|--------------|
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600           | C-1409, 1760 |
| National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 | C-1768, 1789 |

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|--------------------------------------------------------------------|------------------------------|
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000              | C-1803                       |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454         | C-1805                       |
| ABL Electronics Supply, Inc., Peekskill, NY 10566                  | 914-736-1010; 1-800-431-2103 |
| Accu-Tech Corporation, Roswell, GA 30076-3890                      | 404-751-9473; 800-221-4767   |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895 | 1-401-769-1600               |

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|-------------------------------------------------------------------|------------------------------------|
| Alpha Products, Inc., Westlake Village, CA 91362                  | 818-889-9304                       |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                        | 908-925-8000                       |
| Autec Power Systems, Simi Valley, CA 93065                        | 805-522-0888                       |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                     | 508-520-1200                       |
| Connect-Air International, Inc., Auburn, WA 98002                 | 206-939-4880                       |
| Cooper Industries/Belden Div., Richmond, IN 47375                 | 317-983-5200; 800-BELDEN-1         |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                   | 708-459-1000; 800-323-0198         |
| ELMEC, Inc., Techna Corp., Chandler, AZ 85226                     | 602-961-7100                       |
| Gavitt Wire & Cable, Brookfield, MA 01506                         | 508-867-6476                       |
| W.L. Gore & Assoc., Newark, DE 19714                              | 302-738-4880                       |
| ITT Pomona Electronics, Pomona, CA 91766                          | 909-469-2900                       |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501     | 310-328-0051                       |
| Lynn Electronics, Feasterville, PA 19053                          | 215-355-8200; 800-523-6075         |
| Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514 | 203-281-0817                       |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721               | 612-642-1800; 1-800-258-6922(MWCC) |

|                                                               |                                  |
|---------------------------------------------------------------|----------------------------------|
| MOLDCON Div. of Contex Electronics, W. Springfield, MA 01089  | 413-736-0371                     |
| New England Electric Wire Corp., Lisbon, NH 03585             | 603-838-6624                     |
| Omega Engineering, Stamford, CT 06907                         | 800-826-6342                     |
| Philmore Manufacturing, Rockford, IL 61125-1386               | 815-229-7773                     |
| Power Dynamics Inc., West Orange, NJ 07052                    | 201-736-5722                     |
| Qualtek Electronics Corp., Mentor, OH 44060                   | 216-951-3300                     |
| Rye Industries, Inc., Fuquay-Varina, NC 27526                 | 919-557-0511                     |
| Shogoy International Corp., Great Neck, NY 11021-4799         | 516-466-0911                     |
| Shokai Far East Ltd., Peekskill, NY 10566                     | 914-736-3500                     |
| Standard Wire & Cable Co., Rancho Dominguez, CA 90220         | 310-609-1811; 800-626-0006       |
| Technical Services for Electronics, Inc., Arlington, MN 55307 | 612-964-2237                     |
| Victor Elec. Wire & Cable, W. Warwick, RI 02893               | 401-821-1700; SALES 401-821-7800 |
| Virginia Plastics Co., Roanoke, VA 24015-0577                 | 703-375-0100                     |

## Cords, Speaker Extension - See Cable, Audio (Vol. C)

## Cords, Telephone, Modular - See Cable, Telephone (Vol. C)

## Cords, Twin Lead - See Cable, Multiconductor (Vol. C)

## Cords & Cable, Dial Drive-2400

|                                                            |                            |
|------------------------------------------------------------|----------------------------|
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454 | C-1805                     |
| Autopulse, Inc., San Diego, CA 92121                       | 619-535-0077               |
| Berg, W. M., Inc., East Rockaway, NY 11518                 | 516-599-5010               |
| Brim Electronics, Fair Lawn, NJ 07410                      | 201-796-2886               |
| Carol Cable Co., Highland Heights, KY 41076                | 606-572-8303; 800-572-8000 |
| Carolina Steel & Wire, Lexington, SC 29073-0829            | 803-359-5501               |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647      | 201-768-5400               |
| GC-Thorsen, Rockford, IL 61105-1209                        | 815-968-9661               |
| Philmore Manufacturing, Rockford, IL 61125-1386            | 815-229-7773               |
| Projector Recorder Belt Corp., Whitewater, WI 53190        | 1-800-533-9654             |

## Cords & Cord Sets, Telephone-6000

|                                                                     |                    |
|---------------------------------------------------------------------|--------------------|
| Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                 | C-1713-1714        |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 | C-1745             |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600         | C-1409, 1411, 1760 |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000               | C-1803             |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454          | C-1805             |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218 | C-1490             |

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| Accu-Tech Corporation, Roswell, GA 30076-3890                        | 404-751-9473; 800-221-4767 |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895   | 1-401-769-1600             |
| American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 | 401-726-0700               |
| APX Technologies Inc., Hicksville, NY 11801                          | 516-433-1313               |
| AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962  | 1-800-344-0223, Ext. 1027  |

|                                                       |                              |
|-------------------------------------------------------|------------------------------|
| Carol Cable Co., Highland Heights, KY 41076           | 606-572-8303; 800-572-8000   |
| Connect-Air International, Inc., Auburn, WA 98002     | 206-939-4880                 |
| Connector Corp., Chicago, IL 60646                    | 312-539-3108                 |
| Contact East, N. Andover, MA 01845                    | 508-682-2000                 |
| Custom Computer Cable, Inc., Eden Prairie, MN 55344   | 612-941-5651; 1-800-343-5553 |
| ELMEC, Inc., Techna Corp., Chandler, AZ 85226         | 602-961-7100                 |
| EPD Electronics, Inc., Gardena, CA 90247              | 310-515-4996                 |
| Feller US Corporation, AFN Div., Somerset, NJ 08873   | 908-247-7333                 |
| Golden Pacific Electronics, Inc., Placentia, CA 92670 | 714-993-6970                 |
| GTE Supply, GTE, Irving, TX 75038                     | 800-433-4837                 |
| Henricks Technologies, Inc., Forsyth, GA 31029        | 912-993-1060; 800-241-0806   |
| Lance Industries, Sylmar, CA 91342-3832               | 818-367-1811                 |



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|----------------------------------------------------------------------|---------------------------|
| \$ Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416     | 206-485-4288;             |
|                                                                      | 206-486-2222              |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805           | 708-398-5311;800-323-5207 |
| \$† Lynn Electronics, Feasterville, PA 19053                         | 215-355-8200;800-523-6075 |
| Manhattan Electric Cable Corporation, Rye, NY 10580                  | 914-967-8000              |
| \$ Meyer Wire & Cable Co., Div. of Cole Hersee Co., Hamden, CT 06514 | 203-281-0817              |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                   | 815-229-7773              |
| Power Dynamics Inc., West Orange, NJ 07052                           | 201-736-5722              |
| Shogyo International Corp., Great Neck, NY 11021-4799                | 516-466-0911              |
| Shokai Far East Ltd., Peekskill, NY 10566                            | 914-736-3500              |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                         | 516-254-2970              |

## Cords & Cord Sets, International-6000

|                                                                                          |                                         |
|------------------------------------------------------------------------------------------|-----------------------------------------|
| The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                                   | C*1710-1711                             |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                   | 708-455-8830                            |
|                                                                                          | C*1737-1738                             |
| D & B Power, Inc., Bayshore, NY 11706, 516-586-5955                                      | D*1655                                  |
| Datel, Inc., Mansfield, MA 02048-1194, 508-339-3000                                      | D*1185                                  |
| \$ GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                      | C*1340,1748                             |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                      | C*1353                                  |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                              | C*1758                                  |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                | C*1426-1427,1431-1434,1793-1801, D*2291 |
| \$ Quatek Electronics Corp., Mentor, OH 44060, 216-951-3300                              | C*1639                                  |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                    | C*1803                                  |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                               | C*1805                                  |
| \$ Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                   | A*2534                                  |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                     | 914-736-1010;1-800-431-2103             |
| † Alpha Products, Inc., Westlake Village, CA 91362                                       | 818-889-9304                            |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                            | 908-925-8000                            |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                  | 401-726-0700                            |
| \$ Assmann Electronics Inc., Assmann Electronics GMBH, Tempe, AZ 85283                   | 602-897-7001                            |
|                                                                                          | 805-522-0888                            |
| Autec Power Systems, Simi Valley, CA 93065                                               | 805-522-0888                            |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                | 201-796-2886                            |
| \$ Carol Cable Co., Highland Heights, KY 41076                                           | 606-572-8303;606-572-8000               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                 | 201-768-5400                            |
| \$† ELMEC, Inc., Technautic Corp., Chandler, AZ 85226                                    | 602-961-7100                            |
| Feller US Corporation, AFN Div., Somerset, NJ 08873                                      | 908-247-7333                            |
| \$ GSI Corp., Timonium, MD 21093                                                         | 410-252-1768                            |
| Kaut & Bux Manufacturing Co., Mundelein, IL 60060                                        | 708-949-8505                            |
| \$ Pacific Electricord, Gardena, CA 90247                                                | 310-532-6600                            |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                            | 201-736-5722                            |
| \$ Schurter, Inc., Petaluma, CA 94954                                                    | 800-848-2600 ext.62                     |
| Shokai Far East Ltd., Peekskill, NY 10566                                                | 914-736-3500                            |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000                            |
| \$ Technical Services for Electronics, Inc., Arlington, MN 55307                         | 612-964-2237                            |
| \$ Techrand Corp. of America, Muskegon, MI 49444                                         | 616-798-2930                            |
| \$ TURCK Inc., Minneapolis, MN 55441-2656                                                | 612-553-9224;1-800-328-0580             |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                             | 516-254-2970                            |
| \$ Wieland Inc., Burgaw, NC 28425                                                        | 919-259-5050                            |

## Cores, Ceramic-1850 — See Vol. A

## Cores, Magnetic, Ferrite, L, E, etc.-1850 — See Vol. A

## Cores, Magnetic, Ferrite, Pot/Cup-1850 — See Vol. A

## Cores, Magnetic, Ferrite, Slug-1850 — See Vol. A

## Cores, Magnetic, Ferrite, Toroid-1850 — See Vol. A

## Cores, Magnetic, Ferrite, Yoke Section-1850 — See Vol. A

## Cores, Magnetic, Metal Alloy (Other Than Silicon & Nickel-Iron)-1850 — See Vol. A

## Cores, Magnetic, Nickel-Iron, L, EE, F, & Ring Laminations-1850 — See Vol. A

## Cores, Magnetic, Nickel-Iron, Toroid-1850 — See Vol. A

## Cores, Magnetic, Powdered Iron, Pot/Cup-1850 — See Vol. A

## Cores, Magnetic, Powdered Iron, Slug-1850 — See Vol. A

## Cores, Magnetic, Powdered Iron, Toroid-1850 — See Vol. A

## Cores, Magnetic, Powdered Permalloy, Toroid-1850 — See Vol. A

## Cores, Magnetic, Silicon C-1850 — See Vol. A

## Cores, Magnetic, Silicon EI, EE, & F Laminations-1850 — See Vol. A

## Cores, Magnetic, Silicon, Toroid-1850 — See Vol. A

## Cores, Magnets & Ferrites-1850 — See Vol. A

## Corners, Waveguide — See Bends & Twists, Microwave (Vol. A)

## Coulometers — See Timers, Electrolytic Cell (Vol. D)

## Countermeasures (CM) Sets (MIL)-2440 — See Vol. B

## Counter/Timers-2900 — See Vol. D

## Counters, Bidirectional-2200 — See Vol. D

## Counters, Coil Winding-2200 — See Vol. D

## Counters, Decade-2200 — See Vol. D

## Counters, Directional-2200 — See Vol. D

## Counters, Electromagnetic-2200 — See Vol. D

## Counters, Event-2200 — See Vol. D

## Counters, Frequency-2900 — See Vol. D

## Counters, Mechanical-2200 — See Vol. D

## Counters, Particle-2900 — See Vol. D

## Counters, Photoelectric-2200 — See Vol. D

## Counters, Predetermining — See Counters, Preset (Vol. D)

## Counters, Preset-2200 — See Vol. D

## Counters, Printing-2200 — See Vol. D

## Counters, Proportional — See Counters, Particle (Vol. D)

## Counters, Pulse-2200 — See Vol. D

## Counters, Reversible — See Counters, Bidirectional (Vol. D)

## Counters, Revolution-2200 — See Vol. D

## Counters, Universal-2900 — See Vol. D

## Couplers, Acoustic-1900 — See Vol. D

## Couplers, Antenna-1200 — See Vol. D

## Couplers, Communications, Acoustic, Telephone-1900 — See Vol. D

## Couplers, Directional-3450 — See Vol. A

## Couplers, Fiber Optic-2475 — See Vol. B

## Couplers, Microwave-3450 — See Vol. A

## Couplers, Multiset — See Couplers, Antenna (Vol. D)

## Couplers, Optoelectronic — See Isolators, Optoelectronic (Vol. B)

## Couplers, Rotary-3450 — See Vol. A

## Couplers (MIL), Directional-2440 — See Vol. B

## Couplings, Quick-disconnect, Liquid or Gas-2500

|                                                |              |
|------------------------------------------------|--------------|
| \$ Dayco Products, Inc., Dayton, OH 45401-1004 | 513-226-5926 |
| \$ MEGA Systems & Chemicals, Phoenix, AZ 85040 | 602-437-9105 |
| \$ Snapfitte/Allied, Erie, PA 16506            | 814-838-3190 |

## Couplings, Shaft, Rigid & Flexible-2400

|                                                                                   |                             |
|-----------------------------------------------------------------------------------|-----------------------------|
| \$† Accurate Electronics Corp., Elyria, OH 44036                                  | 216-366-6330;1-800-334-5904 |
| Alpha-Tech Inc., Riverdale, NJ 07457                                              | 201-838-1188                |
| AMP, Harrisburg, PA 17105                                                         | 717-564-0100;800-522-6752   |
| \$ Ball Screws & Actuators Co., San Jose, CA 95136-1305                           | 408-629-1132                |
| \$ Concord Electronics Corporation, New York, NY 10012                            | 1-212-777-6571              |
| \$ Dayco Products, Inc., Dayton, OH 45401-1004                                    | 513-226-5926                |
| \$ El & S, Prime Technology Inc., North Branford, CT 06471                        | 203-481-5721                |
| \$ Foreord Elec. Co., Blackstone Inds. Inc., Bethel, CT 06801                     | 203-792-8622                |
| \$ Helical Prods. Co., Inc., Santa Maria, CA 93456-1069                           | 805-928-3851                |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                            | 718-958-8900                |
| \$† Machine Components Corp., Plainville, NY 11803                                | 516-694-7222                |
| \$ James Millen Elctms., Caywood Elec. Inc., No. Andover, MA 01845                | 508-975-2711                |
| \$† Perfect Gear & Instrument, Designatronics, Inc., New Hyde Park, NY 11042-5416 |                             |
|                                                                                   | 516-328-3300                |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                 | 203-758-8272                |
| † Precision Mechanisms, Westbury, NY 11590                                        | 516-ED3-5955                |
| \$ Reliance Electric Co., Cleveland, OH 44117                                     | 800-245-4501                |
| \$† Rocom Corporation, Huntington Beach, CA 92649                                 | 1-800-952-3539;714-891-9922 |
| \$† Sterling Instruments, a DSG Company, New Hyde Pk, NY 11042-5416               | 516-328-3300                |
|                                                                                   | 516-328-3300                |
| Stock Drive Products, a DSG Company, New Hyde Pk, NY 11042-5416                   | 516-328-0200;328-3300       |
| \$ S.S. White Technologies Inc., Piscataway, NJ 08854-3761                        | 908-752-8300                |

## Covers, Protective (Incl. Dustcovers)-1400

|                                                                                              |                             |
|----------------------------------------------------------------------------------------------|-----------------------------|
| Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                                        | C*1006                      |
| \$ Bivar, Inc., Irvine, CA 92718, 714-951-8808                                               | C*1537                      |
| Electro Space Fabricators, Tipton, PA 19562-0067, 215-682-7181                               | C*1029                      |
| Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                                   | C*1049                      |
| \$† STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                                      | C*1098-1099                 |
| \$† AME Corporation, Towaco, NJ 07082-0195                                                   | 201-263-1700                |
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| \$† Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035                     | 313-583-1200                |
| \$† Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                |
| \$† CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428        |                             |
|                                                                                              | 612-537-1010                |
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| \$ Custom Connector, Cleveland, OH 44114                                                     | 216-241-1679                |
| \$ Electronic Packaging System, Marion, IA 52302                                             | 319-377-3423                |
| \$† EMC Global Technologies Inc., Doylestown, PA 18901                                       | 215-340-0650                |
| \$† ESC Technologies, Inc., Hawthorne, CA 90250                                              | 310-970-4090                |
| \$† ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700                |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 718-958-8900                |
| \$ Leader Instruments Corp., Hauppauge, NY 11788-3694                                        | 516-231-6900                |
|                                                                                              | 1-800-645-5104              |
| \$ MultiNational Resources, Inc., Bedford, NH 03110                                          | 603-622-3550                |
| \$ Potter & Brumfield, A Siemens Co., Princeton, IN 47671-0001                               | 812-386-1000                |
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| \$ Wescorp Static Control Products, Mountain View, CA 94041                                  | 415-969-7717                |
| \$ Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                             | 801-298-5900                |
| \$† Zero Corp., Zero East Div., Monson, MA 01057-0128                                        | 413-267-5561                |
| \$ Zeus Indl. Prods. Inc., Orangeburg, SC 29116                                              | 803-531-2174;800-526-3842   |

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## Cups, Encapsulation-1600

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 D & L Electronics, Langhorne, PA 19047 ..... 800-942-3631  
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 † Milton Ross Co., Warrington, PA 18976 ..... 215-491-0600  
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Xenon Corp., Woburn, MA 01801 ..... 617-938-3594

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 \$ Wilson, H. F., Engineering Co., Glen Ellyn, IL 60137 ..... 708-469-7473

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**Decade Boxes, Resistance, Programmable-2900 — See Vol. D**

**Decade Boxes, Transformer-2900 — See Vol. D**

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† Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119, 206-284-2200 ..... B-1837, C-1665  
 Memtron Technologies, Inc., Frankenmuth, MI 48734, 517-652-2656; 800-234-7525 ..... B-1845  
 Aztec Industries, Inc., Mesa, AZ 85210 ..... 602-833-3131; 800-729-3132  
 Central Decal Co., Inc., Chicago, IL 60638 ..... 312-586-2012  
 \$† Datak Corp., An LKG Company, Rockford, IL 61104 ..... 815-229-7773; 1-800-645-2262  
 † GM Nameplate, Inc., Seattle, WA 98119 ..... 206-284-2200  
 † Hallmark Technologies, Mt. Dora, FL 32757 ..... 800-874-9063  
 † Miller Dial Corp., El Monte, CA 91731 ..... 818-444-4555  
 † Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003 ..... 214-231-6663;  
 214-924-3289; 1-800-331-6600

Stanpat Prods., Woonsocket, RI 02895 ..... 401-766-8400  
 \$ Tapecon, Inc., Rochester, NY 14612 ..... 716-621-8400  
 † Topflight, York, PA 17404 ..... 717-843-9901; 800-233-9386

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 Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 ..... C•1540  
 ‡ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 ..... C•1524-1525  
 ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400 ..... C•1530  
 MORS Components, Wakefield, MA 01880-4444, 617-246-1007 ..... C•1532  
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 LaFrance Corp., Philadelphia, PA 19153-3893 ..... 215-365-8000  
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 214-924-3289; 1-800-331-6600  
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 § Clarostat Sensors and Controls Group, BYR, PLC, Plano, TX 75075, 214-422-1844; 1-800-872-0044 ..... A•2071  
 § Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 ..... C•1524  
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| † Tridac, Brookfield, CT 06804                                                                                                              | 203-775-1287               |
| \$ Zevatech, Inc., Morrisville, NC 27560                                                                                                    | 919-460-0111               |
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| <b>Displays, Light-emitting Diode (LED)-2450 — See Vol. B</b>                                                                               |                            |
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| <b>Dividers, Power (LF, HF, VHF, UHF)-3450 — See Vol. A</b>                                                                                 |                            |
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| <b>Down Converters-3450 — See Vol. A</b>                                                                                                    |                            |
| <b>Drafting Machines-4200</b>                                                                                                               |                            |
| \$ Ergotron, Inc., Eagan, MN 55121                                                                                                          | 612-452-8135               |
| <b>Drafting Symbols, Dry Transfer, Pressure Sensitive, etc. (Incl. Lettering)-4200</b>                                                      |                            |
| \$† Datak Corp., an LK Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262                                                            | C•1677                     |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                                                                      | 815-968-9661               |
| \$ Injectorall Electronics (Woman Owned), Bohemia, NY 11716                                                                                 | 516-563-3388               |
| \$† Kepro Circuit Systems, Fenton, MO 63026-2992                                                                                            | 314-343-1630               |
| \$ Stanpat Prods., Woonsocket, RI 02895                                                                                                     | 401-766-8400               |
| <b>Drawers, Sliding-1400</b>                                                                                                                |                            |
| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                                                                                 | C•1017                     |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                                                                       | B•1827                     |
| \$† General Devices Co., Inc., Indianapolis, IN 46239-0100, 317-897-7000, 1-800-626-9484                                                    | C•1048                     |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                                                                  | C•1057-1058, 1061          |
| \$ Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297; 219-253-6666                                                  | C•1076, 1079               |
| TDJ Co., Inc., San Diego, CA 92110, 619-276-5920                                                                                            | C•1101                     |
| Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                                                                                       | C•1102-1104                |
| TECLAB, Kalamazoo Technical Furniture, Kalamazoo, MI 49005, 616-372-6000; 800-832-5227                                                      | C•1105                     |
| Zero Cabinets (Stantron), Pacoima, CA 91331-2226, 818-890-3445                                                                              | C•1118-1123                |
| † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561                                                                          | C•1124                     |
| † Amco Engineering, Schiller Pk., IL 60176                                                                                                  | 708-671-6670; 800-833-3156 |

|                                                                      |                            |
|----------------------------------------------------------------------|----------------------------|
| \$† Bud Industries, Inc., Willoughby, OH 44094-0431                  | 216-946-3200               |
| \$ Euplio, Aurora, IL 60506                                          | 708-859-1000; 800-323-0801 |
| \$ Hodge Manufacturing Co., Inc., Springfield, MA 01107              | 413-781-6800               |
| \$† Lyon Metal Products, Inc., Aurora, IL 60507                      | 708-892-8941               |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                   | 508-588-6110               |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216 | 718-774-5900               |
| † Premier Metal Prods. Co., Bronx, NY 10451                          | 718-993-9200               |
| \$ Ritz Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0          | 519-696-2616               |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310        | 801-298-5900               |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                  | 413-267-5561               |

## Drills & Accessories, Manual & Power-5400

|                                                                           |              |
|---------------------------------------------------------------------------|--------------|
| \$ Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388 | C•1136       |
| Aremco Products, Inc., Ossining, NY 10562                                 | 914-762-0685 |
| \$† Berg, W. M., Inc., East Rockaway, NY 11518                            | 516-599-5010 |
| Brandywine Abrasives, Spring City, PA 19475                               | 215-948-7028 |
| \$ Contact East, N. Andover, MA 01845                                     | 508-682-2000 |
| \$ Foremost Elec. Co., Blackstone Inds. Inc., Bethel, CT 06801            | 203-792-8622 |
| # HMC/Hub Material Company, Canton, MA 02021                              | 617-821-1870 |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                             | 815-895-5181 |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                   | 602-968-6241 |
| \$† Kepro Circuit Systems, Fenton, MO 63026-2992                          | 314-343-1630 |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                              | 708-677-9500 |
| MSI Micro-Machining Systems Inc., Santa Clara, CA 95052                   | 408-727-0100 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                | 215-825-4990 |

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## Drivers, Hardware & Software-2000 — See Vol. D

## Drivers, Nut-5400

|                                                         |                      |
|---------------------------------------------------------|----------------------|
| Automation Component Technology, Fremont, CA 94538      | 510-226-0900;        |
|                                                         | 510-490-3587 (Sales) |
| \$ Contact East, N. Andover, MA 01845                   | 508-682-2000         |
| \$† Cooper Tools, Raleigh, NC 27622                     | 919-781-7200         |
| \$ GC-Thorsen, Rockford, IL 61105-1209                  | 815-968-9661         |
| # HMC/Hub Material Company, Canton, MA 02021            | 617-821-1870         |
| \$ Ideal Industries, Inc., Sycamore, IL 60178           | 815-895-5181         |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 | 602-968-6241         |
| Jonard Industries Corp., Tuckahoe, NY 10707             | 914-793-0700         |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033            | 708-677-9500         |
| \$† Moody Tools, Inc., E. Greenwich, RI 02818-0230      | 401-885-0911         |
| \$ Techni-Tool, Plymouth Meeting, PA 19462              | 215-825-4990         |
| \$ The Triangle Tool Group, Inc., Orangeburg, SC 29115  | 803-534-7010         |

## Drivers, Solenoid-4550 — See Vol. B

## Drivers, Speaker-1300 — See Vol. D

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## Drivers, Tube — See Drivers & Decoders for Readouts (Vol. B)

## Drives & Drive Mechanisms (Dial)-2400

|                                                                                                    |                        |
|----------------------------------------------------------------------------------------------------|------------------------|
| \$† Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C•1525                 |
| F-P Electronics, A Mark IV Industries Company, Mississauga, Ont., CANADA L4W 2P1, 416-624-3020     | B•1068                 |
| # Ball Screws & Actuators Co., San Jose, CA 95136-1305                                             | 408-629-1132           |
| \$† Berg, W. M., Inc., East Rockaway, NY 11518                                                     | 516-599-5010           |
| † Control Technology Co., Inc., Long Island City, NY 11101                                         | 718-361-2133           |
| Φ Equipment Remarketing Company, Boston Financial & Equity Corporation, Boston, MA 02215           | 617-267-8600           |
| Fujitsu America, Inc., Computer Products Group, San Jose, CA 95134                                 | 408-432-1300           |
| \$ Machine Components Corp., Plainville, NY 11803                                                  | 516-694-7222           |
| Micro Mo Electronics, Inc., St. Petersburg, FL 33701                                               | 813-822-2529           |
| NIDEC Corporation, Torrington, CT 06790                                                            | 203-482-4422           |
| \$† Perfect Gear & Instrument, Designatronics, Inc., New Hyde Park, NY 11042-5416                  | 516-328-3300           |
| † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                                   | 203-758-8272           |
| † Reproduction Technologies Inc., Bristol, IN 46507-0790                                           | 219-848-5233           |
| \$† Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416                               | 516-328-3300           |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416                                 | 516-328-0200; 328-3300 |
| † Transcoil, Inc., Eagle-Picher, Trooper, PA 19403-5214                                            | 215-539-4400           |

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## Drives/Subsystems, Disk, 3 1/4" Winchester-2000 — See Vol. D

## Drives/Subsystems, Disk, 5 1/4" Diskette-2000 — See Vol. D

## Drives/Subsystems, Disk, 5 1/4" Winchester-2000 — See Vol. D

## Drives/Subsystems, Disk, 8" Diskette-2000 — See Vol. D

## Drives/Subsystems, Disk, 8" Winchester-2000 — See Vol. D

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## Drives/Subsystems, Magnetic Tape, 1/4" Cartridge-2000 — See Vol. D

## Drives/Subsystems, Magnetic Tape, Cassette-2000 — See Vol. D

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## Dry Transfer Letters & Numbers — See Kits, Marking (Vol. C)



## Ducts, Wiring-6000

|                                                                    |                           |
|--------------------------------------------------------------------|---------------------------|
| \$ Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969 | C-1538-1539               |
| \$ DEK, Inc., St. Charles, IL 60174, 708-377-2575                  | C-1747                    |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                    | 404-751-9473;800-221-4767 |
| Avery Dennison, Framingham, MA 01701                               | 508-879-0511              |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647           | 201-768-5400              |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162        | 708-547-5400              |
| Electro Insulation Corp., Arlington Hts., IL 60004                 | 708-632-1020              |
| Electronic Packaging System, Marion, IA 52302                      | 319-377-3423              |
| Fuses Unlimited, D.E.I., Van Nuys, CA 91406                        | 818-786-8111              |
| \$ Gould Shawmut, Newburyport, MA 01950                            | 508-462-6662/3131         |
| \$ Hoffman Engineering, Anoka, MN 55303                            | 612-421-2240              |
| 3M Private Network Products, 3M, Austin, TX 78726                  | 512-984-3400;800-426-8626 |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                       | 800-777-3300              |
| Pass & Seymour Canada, Inc., LeGrand, Concord, ONT L4K 3M9         | 416-738-9195              |
| POLYCASE PRODS., ECP Corp., Cleveland, OH 44103                    | 216-391-0444;800-248-1233 |
| \$ Square D Co., Palatine, IL 60067                                | 708-397-2600              |
| \$ The Wiremold Company, W. Hartford, CT 06110                     | 203-233-6251              |

## Ducts, Fiber Optic-2475 — See Vol. B

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## Dummy Loads, Resistive-2900 — See Vol. D

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## Earphones — See Headphones (Vol. D)

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## Earth Stations, TV, Receive/Transmit-1900 — See Vol. D

## Edge Clips, Surface Mount-2500

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Autosplice, Inc., San Diego, CA 92121                           | 619-535-0077   |
| † Comatel USA, Inc., Danbury, CT 06810                          | 203-797-9445   |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 | 201-288-4477   |
|                                                                 | 800-447-5639   |
| NEC Electronics, Inc., Mountain View, CA 94039-7241             | 1-800-366-9782 |

## Edge Connectors, Surface Mount-2100

|                                                                              |                  |
|------------------------------------------------------------------------------|------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752                      | C-1163           |
| J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                         | C-1363           |
| Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                | C-1472-1473      |
| \$ Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, |                  |
| 401-785-4110                                                                 | C-1485,1487-1489 |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218          |                  |

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|                                                                                                     | C-1490                    |
| AOT Electronics, Inc., Newport Beach, CA 92660                                                      | 714-852-9999              |
| \$ Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283                             |                           |
|                                                                                                     | 602-897-7001              |
| Autosplice, Inc., San Diego, CA 92121                                                               | 619-535-0077              |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                               | 708-455-8890              |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                     | 201-288-4477              |
|                                                                                                     | 800-447-5639              |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958              |
| Hypertronics Corp., Hudson, MA 01749                                                                | 508-568-0451;800-225-9228 |
| \$ Lodan Electronics, Inc., Arlington Hts., IL 60004-7805                                           | 708-398-5311;800-323-5207 |
| Meritec, Associated Enterprises, Painesville, OH 44077                                              | 216-354-3148              |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                        | 800-777-3300              |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                                              | 612-854-9177              |
| Texas Instruments, Connector Systems, Attleboro, MA 02703                                           | 508-699-5269              |
|                                                                                                     | 508-699-3450              |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                      | 803-676-2900              |

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## Electromagnets-1850 — See Vol. A

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## ECM Systems (MIL)-2440 — See Vol. B

## ECM Systems (MIL), Deceptive-2440 — See Vol. B

## Electronic Intelligence (Eliint) (MIL)-2440 — See Vol. B

## Electronic Loads — See Dummy Loads (Vol. D)

## Electronic Support Measures (ESM) Sets (MIL)-2440 — See Vol. B

## Electronic Warfare (EW) Sets (MIL)-2440 — See Vol. B

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## Emulators, RTS-2900 — See Vol. D

## Emulators, Terminal-2900 — See Vol. D

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## Encapsulation Services — See Services, Encapsulation (Vol. D)

## Enclosures, Circuit Board, Module, & Relay Mounting-1400

|                                                                                                   |                       |
|---------------------------------------------------------------------------------------------------|-----------------------|
| \$ Atech Corp., Flemington, NJ 08822-6000, 908-806-9400                                           | C-1006-1007           |
| \$ Alumapak, Electronic Precepts of Florida, Largo, FL 34643, 800-775-6077                        |                       |
|                                                                                                   | C-1009                |
| † Amco Engineering, Schiller Pk., IL 60176, 708-671-6670;800-833-3156                             |                       |
|                                                                                                   | C-1010-1011,1013      |
| Ange Electronics Corp., North Arlington, NJ 07031, 201-955-0800                                   | C-1014                |
| † Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                                          | C-1016                |
| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                                       | C-1017                |
| † Calmark Corp., San Gabriel, CA 91776, 818-287-0451                                              | C-1018                |
| † Compac, Holbrook, NY 11741, 516-585-3400                                                        | C-1020                |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                             | C-1021                |
| † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572                            |                       |
|                                                                                                   | C-1022                |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423                                       | C-1023                |
| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086                         |                       |
|                                                                                                   | C-1116-1117,1128-1133 |
| Electro Space Fabricators, Topton, PA 19562-0067, 215-682-7181                                    | C-1026,1028           |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                             | C-1031-1033           |
| Emcor Products, Crenlo, Inc., Rochester, MN 55901, 507-289-3371                                   | C-1034                |
| Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200                                      | B-1828,               |
|                                                                                                   | C-1043                |
| † Gemini Inc., Cannon Falls, MN 55009, 507-263-3957;800-533-3631                                  | C-1046-1047           |
| † General Devices Co., Inc., Indianapolis, IN 46239-0100,                                         |                       |
| 317-897-7000, 1-800-626-9484                                                                      | C-1048                |
| \$ Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                                     | C-1049                |
| \$ IERC, Burbank, CA 91502, 213-849-2481                                                          | C-1052                |
| † Lansing Instrument Corp., Ithaca, NY 14851-0730, 607-272-3265;800-847-3535                      |                       |
|                                                                                                   | C-1054-1055           |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                        |                       |
|                                                                                                   | C-1056-1061           |
| \$ Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                             |                       |
|                                                                                                   | C-1062-1063,1065-1067 |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216,                             |                       |
| 718-774-5900                                                                                      | C-1069                |
| POLYCASE PRODS., ECP Corp., Cleveland, OH 44103,                                                  |                       |
| 216-391-0444;800-248-1233                                                                         | C-1070                |
| Powerbox Inc., Boulder, CO 80302, 303-444-1461;800-444-1461                                       | C-1071                |
| \$ Precision Fabrication Technologies, Inc., Monon, IN 47959,                                     |                       |
| 1-800-558-7297;219-253-6666                                                                       | C-1073-1075,1077-1079 |
| † Premier Metal Prods. Co., Bronx, NY 10451, 718-993-9200                                         | C-1080                |
| \$ Ritiz Electronics/Relco, New Dundee, Ont., CANADA N0B 2E0, 519-696-2616                        |                       |
|                                                                                                   | C-1081                |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                 | C-1082-1083           |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                                                    | C-1088                |
| Serco Products Division:Serco Mold, Inc., Covina, CA 91723,                                       |                       |
| 818-331-0517;800-843-8172(Calif.)                                                                 | C-1090                |
| † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                                             | C-1098-1099           |
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| † Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                                           | C-1102,1104           |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175;800-848-4525                      |                       |
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| Unitrack Industries, Inc., Milford, DE 19963, 302-424-5050                                        | C-1115                |
| † U.S. Power Converting Company/Relco, Leonard V. Snow & Assoc., Torrance, CA 90503, 310-316-9984 | C-1081                |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661;800-423-5659                       |                       |
|                                                                                                   | C-1025,1674           |
| Zero Cabinets (Stantron), Pacoima, CA 91331-2226, 818-890-3445                                    | C-1118-1119           |
| † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561                                |                       |
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| † Abalon Precision Mfg., Bronx, NY 10459                         | 718-589-5682;1-800-888-ABALON |
| A.B. Controls & Technology, Inc., Houston, TX 77090              | 713-876-3728;301-984-6020     |
| Alden Products Co., Brockton, MA 02403                           | 508-583-0160                  |
| Aluset U.S.A., Inc., Peekskill, NY 10566                         | 914-737-0120                  |
| AMASCO, Torrance, CA 90501                                       | 310-781-9494                  |
| † American Aluminum, Mountainside, NJ 07092                      | 908-233-3500                  |
| † Astro Dynamics, Inc., Woburn, MA 01801                         | 617-935-4944                  |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703 | 508-222-2202                  |
| Augat/RDI, Carol Stream, IL 60188                                | 708-682-4100                  |
| \$ Baradine Products Ltd., North Vancouver, B.C., CANADA V7L 4L3 | 604-988-9853                  |
| Basler Elec., Electronic Product Group, Highland, IL 62249       | 618-654-2341;                 |
|                                                                  | 800-645-2074                  |



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| † Bud Industries, Inc., Willoughby, OH 44094-0431                   | 216-946-3200                | Marway Prods. Inc., Santa Ana, CA 92703, 714-973-1800                              | D•2278                                           |
| Calex Mfg. Co., Inc., Concord, CA 94520                             | 510-687-4411                | Micro Mo Electronics, Inc., St. Petersburg, FL 33701, 813-822-2529                 | D•1164                                           |
| † Compucraft Fabricators Inc., Warminster, PA 18974                 | 215-443-7107                | † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000         | C•1056-1061                                      |
| Controls Unlimited, Inc., Perry, OH 44081                           | 216-259-2500                | § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400               | C•1062-1063,1065-1067                            |
| § Covox, Inc., Eugene, OR 97402                                     | 503-342-1271                | Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216,              | C•1069                                           |
| § Damac Products, Inc., Santa Fe Springs, CA 90670                  | 301-946-0881                | 718-774-5900                                                                       | POLYCASE PRODS., ECP Corp., Cleveland, OH 44103, |
| Data Translation, Inc., Marlboro, MA 01752                          | 508-481-3700                | 216-391-0444;800-248-1233                                                          | C•1070                                           |
| D. L. Custom, Markham, Ont. CANADA L3R 2M5                          | 416-475-0275                | Powerbox Inc., Boulder, CO 80302, 303-444-1461;800-444-1461                        | C•1071                                           |
| Douglas Electronics, Inc., San Leandro, CA 94577                    | 510-483-8770                | § Precision Fabrication Technologies, Inc., Monon, IN 47959,                       | C•1073,1075,1077                                 |
| Electronic Connectors, Inc., Reading, PA 19602                      | 215-374-3796                | 1-800-558-7297;219-253-6666                                                        | C•1080                                           |
| Electronic Enclosures, Div. Wyle Laboratories, El Segundo, CA 90245 | 310-643-8181                | † Premier Metal Prods. Co., Bronx, NY 10451, 718-993-9200                          | C•1081                                           |
| † EMC Global Technologies Inc., Doylestown, PA 18901                | 215-340-0650                | † Ritz Electronics/Relco, New Dundee, Ont., CANADA N0B 2E0, 519-696-2616           | C•1084-1085                                      |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680             | 714-669-9473                | Schroff, Inc., Warwick, RI 02886, 401-732-3770                                     | C•1088-1089                                      |
| § ERNI Components, Richmond, VA 23236                               | 804-794-6367                | Serco Products Division:Serco Mold, Inc., Covina, CA 91723,                        | C•1091                                           |
| Formax, Brookfield, CT 06804                                        | 203-775-9492                | 818-331-0517;800-843-8172(Calif.)                                                  | C•1093                                           |
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| § Gary Electronics, WPI, Salem, NJ 08079                            | 609-935-7603                | † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                              | C•1100-1101                                      |
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| § Hoffman Engineering, Anoka, MN 55303                              | 612-421-2240                | Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175;800-848-4525       | C•1081                                           |
| † Hudson Tool & Die Co., Ormond Beach, FL 32174                     | 904-672-2000                | † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance,        | C•1081                                           |
| Hybricon Corporation, Ayer, MA 01432                                | 508-772-5422                | CA 90503, 310-316-9984                                                             | C•1081                                           |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119           | 206-284-2200                | § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661;800-423-5659         | C•1025                                           |
| International Instrumentation, Inc., Westlake Vlg., CA 91361        | 805-495-7673                | Zero Cabinets (Stantron), Pacoima, CA 91331-2226, 818-890-3445                     | C•1118-1123                                      |
| International Microelectronics, Arlington, TX 76003                 | 817-473-1730                | † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561                 | C•1124-1127                                      |
| § ITT Pomona Electronics, Pomona, CA 91766                          | 909-469-2900                | † A & J Manufacturing Co., Tustin, CA 92680                                        | 714-544-9570                                     |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                | 718-956-8900                | † Abalon Precision Mfg., Bronx, NY 10459                                           | 718-589-5682;1-800-888-ABALON                    |
| KineticSystems Corp., Lockport, IL 60441                            | 815-838-0005                | A.B. Controls & Technology, Inc., Houston, TX 77090                                | 713-676-3728;301-984-6020                        |
| § Line Electric Products, Gastonbury, CT 06033                      | 203-659-3573;1-800-331-1137 | # Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473;800-221-4767                        |
| † Miller, W. A. Co., Oquossoc, ME 04964-0337                        | 207-864-3344;800-227-1415   | § Action Instruments, San Diego, CA 92123                                          | 619-279-5726                                     |
| Modor Technical Products Inc., Tampa, FL 33626                      | 813-855-5736                | Adale-PLM/Div. of Scott & Fetzer Co., Cleveland, OH 44135                          | 216-267-9000                                     |
| Mouser Electronics, Santee, CA 92071                                | 800-346-6873                | Adams Rite Products, Inc., Glendale, CA 91204                                      | 818-241-5121                                     |
| Mouser Electronics, Mansfield, TX 76063                             | 800-346-6873                | Ahamtorn Inc., 999 Inc., Temecula, CA 92589-9019                                   | 714-676-4151                                     |
| Mouser Electronics, Gilroy, CA 95020                                | 800-346-6873                | Alden Products Co., Brockton, MA 02403                                             | 508-583-0160                                     |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                  | 508-588-6110                | Alusett U.S.A., Inc., Peekskill, NY 10566                                          | 914-737-0120                                     |
| North American Capacitor Co., Indianapolis, IN 46224                | 317-273-0090                | † American Aluminum, Mountainside, NJ 07092                                        | 908-233-3500                                     |
| Octagon Systems, Westminster, CO 80030                              | 303-430-1500                | Arrem Plastics, Inc., Addison, IL 60101                                            | 708-628-2450                                     |
| Omega Engineering, Stamford, CT 06907                               | 800-826-6342                | † Assembled Electronic Enclosures, Mundelein, IL 60060                             | 708-566-2030                                     |
| § Opto 22, Temecula, CA 92590                                       | 714-695-9299                | † Astro Dynamics, Inc., Woburn, MA 01801                                           | 617-935-4944                                     |
| § Phoenix Contact Inc., Harrisburg, PA 17111                        | 717-944-1300                | § AT&T Network Systems,Network Cable Sys. Div., Morristown, NJ 07962               | 1-800-344-0223, Ext. 1027                        |
| † Princeton Case Co., Inc., Union, NJ 07083                         | 908-687-1750                | § Atlas/Soundolier, Commercial Sound Div., Atapco Security & Communications Group, | 314-349-3110                                     |
| † Product Technology, Inc., Irvine, CA 92714                        | 714-474-8998                | Fenton, MO 63026                                                                   | 314-349-3110                                     |
| § Project Pro, Twinsburg, OH 44087                                  | 216-425-8888                | Augat/RDI, Carol Stream, IL 60188                                                  | 708-682-4100                                     |
| Project Resources Inc., Wareham, MA 02571                           | 508-295-7444                | BICC-VERO Electronics, Inc., Hamden, CT 06514                                      | 203-288-8001;1-800-242-2863                      |
| § Pro-Log Corp., Monterey, CA 93940                                 | 408-372-4593                | § Bopla Enclosures, Frederick, MD 21701-8353                                       | 301-696-9300                                     |
| Prototek, Inc., Hamilton, OH 45015                                  | 513-874-5094                | † Bud Industries, Inc., Willoughby, OH 44094-0431                                  | 216-946-3200                                     |
| Qualogy Inc., San Jose, CA 95134                                    | 408-434-5200                | Calex Mfg. Co., Inc., Concord, CA 94520                                            | 510-687-4411                                     |
| Quantum Scientific Inc., Toronto, ONT M8W 4Y4                       | 416-503-8555;800-268-6000   | § C&D Charter Power Systems, Plymouth Meeting, PA 19462                            | 215-828-9000                                     |
| Rittal Corp., Springfield, OH 45504-9807                            | 800-477-4000                | † Churchill Corp., Melrose, MA 02176                                               | 617-665-4700                                     |
| † Rose Enclosures Sys., Inc., Frederick, MD 21701-8353              | 301-696-9800                | † Compucraft Fabricators Inc., Warminster, PA 18974                                | 215-443-7107                                     |
| § SKB Corporation, Orange, CA 92667                                 | 714-637-1252                | Controls Unlimited, Inc., Perry, OH 44081                                          | 216-259-2500                                     |
| § Stevens Products, Inc., E. Orange, NJ 07019                       | 201-672-2140                | † Craig Systems Corp., Eastern Technologies Ltd., Amesbury, MA 01913-4848          | 508-388-5662                                     |
| § TELTEC, INC., Minneapolis, MN 55425                               | 612-854-9632                | Dage Precision Industries, Inc., Fremont, CA 94538                                 | 510-669-3930                                     |
| § TELTEC, Inc., Minneapolis, MN 55425                               | 612-854-9177                | § Damac Products, Inc., Santa Fe Springs, CA 90670                                 | 310-946-0981                                     |
| § Temptron Corporation, Newton, MA 02158                            | 617-969-2501                | dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803                      | 617-273-5800                                     |
| Teradyne Connection Sys., Teradyne, Inc., Nashua, NH 03060          | 603-889-5156                | D. L. Custom, Markham, Ont. CANADA L3R 2M5                                         | 416-475-0275                                     |
| Time Mark Corp., Tulsa, OK 74116                                    | 918-438-1220                | Douglas Electronics, Inc., San Leandro, CA 94577                                   | 510-483-8770                                     |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                 | 607-772-1161                | Electra-Tec, Inc., Div. of Impert Industries, Inc., Otsego, MI 49078               | 800-225-3532;                                    |
| Verilog Corp., Eugene, OR 97402                                     | 800-824-3163                | 616-694-2058                                                                       |                                                  |
| Virgina Panel Corporation, Waynesboro, VA 22980                     | 703-949-8376                | † Electronic Enclosures, Div. Wyle Laboratories, El Segundo, CA 90245              | 310-643-8181                                     |
| XYZ Electronics, McCordsville, IN 46055                             | 317-335-2128                | Electro Space Fabricators, Tipton, PA 19562-0067                                   | 215-682-7181                                     |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310       | 801-298-5900                | † Enclosure Corp., Bristol, PA 19007                                               | 215-785-2900                                     |
| Zero Corp., Zero East Div., Monson, MA 01057-0128                   | 413-267-5561                | Enterprise Systems Corp., Dover, NH 03820                                          | 603-742-7363                                     |

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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                    | C•1006-1007         |
| § Alumapack, Electronic Precepts of Florida, Largo, FL 34643, 800-775-6077 | C•1009              |
| † Amco Engineering, Schiller Pk., IL 60176, 708-671-6670;800-833-3156      | C•1011,1013         |
| Ango Electronics Corp., North Arlington, NJ 07031, 201-955-0800            | C•1014              |
| § Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                   | C•1016              |
| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                | C•1017              |
| CMF Enclosures, Inc., Gurnee, IL 60031, 708-244-3230                       | C•1019              |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                      | C•1021              |
| † EG & G Bircher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572      | C•1022              |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423                | C•1023              |
| Electrorack Products Co., Anaheim, CA 92806, 714-776-5420                  | C•1097              |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                      | C•1031-1033         |
| Emcor Products, Crenio, Inc., Rochester, MN 55901, 507-289-3371            | C•1034-1037         |
| † Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691           | C•1038-1041         |
| Extraction Technology, Inc., Randolph, MA 02368, 617-963-7200              | B•1828, C•1042-1043 |
| Fury Products, Cowden Metal Specialties, Chino, CA 91710, 909-597-7860     | C•1045              |
| † Gemini Inc., Cannon Falls, MN 55009, 507-263-3957;800-533-3631           | C•1046-1047         |
| † General Devices Co., Inc., Indianapolis, IN 46239-0100,                  | C•1048              |
| 317-897-7000,1-800-626-9484                                                | C•1049              |
| § Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710               | C•1541              |
| Kit Master, Peekskill, NY 10566, 914-736-1010                              |                     |

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| 508-388-5662                   |  |
| 510-669-3930                   |  |
| 310-946-0981                   |  |
| 617-273-5800                   |  |
| 416-475-0275                   |  |
| 510-483-8770                   |  |
| 800-225-3532;                  |  |
| 616-694-2058                   |  |
| 310-643-8181                   |  |
| 215-682-7181                   |  |
| 215-785-2900                   |  |
| 603-742-7363                   |  |
| 612-452-8135                   |  |
| 804-794-6367                   |  |
| 404-932-2900                   |  |
| 714-634-2200                   |  |
| 203-775-9492                   |  |
| 201-768-8082                   |  |
| 619-747-9177;                  |  |
| 800-628-4095                   |  |
| 800-433-4837                   |  |
| 818-795-4811                   |  |
| 413-665-2163                   |  |
| 213-728-5108;728-4729;728-6913 |  |
| 305-974-4900                   |  |
| 612-421-2240                   |  |
| 508-772-5422                   |  |
| 914-373-9003                   |  |



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| † Instrument Enclosures, Tulare, CA 93274                                 | 209-688-1100                                                    |
| International Instrumentation, Inc., Westlake Vlg., CA 91361              | 805-495-7673                                                    |
| † Kam Components, Inc., Nesconset, NY 11767                               | 516-585-0666                                                    |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                      | 718-956-8900                                                    |
| † Langley/Fleet Aerospace, Inc., San Diego, CA 92112                      | 619-264-3181                                                    |
| LMB Heeger, Inc., Commerce, CA 90040                                      | 213-728-5108/213-728-4729                                       |
| § Mantex Corp., Oxford, MI 48371                                          | 313-628-8210                                                    |
| Midjet Louver, Norwalk, CT 06851                                          | 203-666-2342                                                    |
| † Miller, W. A. Co., Quosoc, ME 04964-0337                                | 207-864-3344/800-227-1415                                       |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                        | 508-588-6110                                                    |
| North American Capacitor Co., Indianapolis, IN 46224                      | 317-273-0090                                                    |
| Parsons Manufacturing, Menlo Park, CA 94025-1476                          | 415-324-4726                                                    |
| § Princeton Case Co., Inc., Union, NJ 07083                               | 908-687-1750                                                    |
| # Project Pro, Twinsburg, OH 44087                                        | 216-425-8888                                                    |
| Quantum Scientific Inc., Toronto, ONT M8W 4Y4                             | 416-503-8555/800-268-6000                                       |
| † Recortec, Inc., Sunnyvale, CA 94089                                     | 800-729-7654                                                    |
| § Relay Specialties, Oakland, NJ 07436                                    | 201-337-1000                                                    |
| § Reliance Electric Co., Cleveland, OH 44117                              | 800-245-4501                                                    |
| Rittal Corp., Springfield, OH 45504-9807                                  | 800-477-4000                                                    |
| § Rose Enclosures Sys., Inc., Frederick, MD 21701-8353                    | 301-696-9800                                                    |
| † SKB Corporation, Orange, CA 92667                                       | 714-637-1252                                                    |
| † Skydine Div., AAR Mfg., Port Jervis, NY 12771                           | 914-856-6655/800-428-CASE                                       |
| † Stackbin Corp., Lincoln, RI 02865                                       | 401-333-1600/800-393-1603                                       |
| Stanley-Vidmar, Stanley Works, Allentown, PA 18103                        | 215-797-6600                                                    |
| § Star Case Manufacturing Co., Inc., Munster, IN 46321                    | 219-922-4440/800-822-STAR (outside IN)/800-782-CASE (inside IN) |
| §# Support Systems Intl. Corp., Richmond, CA 94804                        | 510-234-8090                                                    |
| § Switches Unlimited, Inc., Woodside, NY 11377                            | 718-478-5000/800-221-0487                                       |
| Techno-Isel USA Division, Designtronics, New Hyde Park, NY 11042-5416     | 516-328-3970                                                    |
| TEGAM, Inc., Madison, OH 44057                                            | 800-666-1010                                                    |
| Telenex Corporation, A Unit of General Signal Corp., Mt. Laurel, NJ 08054 | 609-234-7900                                                    |
| § Ten-Tec, Inc., Sevierville, TN 37862                                    | 615-453-7172                                                    |
| † Thermodyne International Ltd., Long Beach, CA 90810                     | 310-603-1976                                                    |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                       | 607-772-1161                                                    |
| † Tridac, Brookfield, CT 06804                                            | 203-775-1287                                                    |
| § Underwater Kinetics, San Marcos, CA 92069                               | 619-744-7580                                                    |
| Unitrack Industries, Inc., Milford, DE 19963                              | 302-424-5050                                                    |
| § Viking Cases, St. Petersburg, FL 33716                                  | 813-577-1216                                                    |
| Vynckier, Inc., Hawthorne, NY 10532                                       | 714-896-0772                                                    |
| Xcel Controls, Inc., Mishawaka, IN 46544                                  | 219-259-7804                                                    |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310           | 801-298-5900                                                    |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                       | 413-267-5561                                                    |
| † Zero Plastics, Zero Corp., Monson, MA 01092                             | 413-267-5561                                                    |
| § Ziatech, San Luis Obispo, CA 93401                                      | 805-541-0488                                                    |

## Enclosures, Instrument-1400

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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                                            | C*1006-1007,1158              |
| § Alumapak, Electronic Precepts of Florida, Largo, FL 34643, 800-775-6077                          | C*1009                        |
| Autec Power Systems, Simi Valley, CA 93065, 805-522-0888                                           | D*1614                        |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                              | C*1021                        |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423                                        | C*1023                        |
| Electrocrack Products Co., Anaheim, CA 92806, 714-776-5420                                         | C*1097                        |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                              | C*1031-1033                   |
| Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691                                     | C*1041                        |
| Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200                                       | C*1042                        |
| Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733                                    | C*1051                        |
| † Lansing Instrument Corp., Ithaca, NY 14851-0730, 607-272-3265/800-847-3535                       | C*1054-1055                   |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                         | C*1056-1059,1061              |
| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                               | C*1062,1068                   |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900                 | C*1069                        |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297/219-253-6666           | C*1073,1078                   |
| § Ritze Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0, 519-696-2616                          | C*1081                        |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                  | C*1082-1083,1085              |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                                                     | C*1088                        |
| § Serco Products Division: Serco Mold, Inc., Covina, CA 91723, 818-331-0517/800-843-8172 (Calif.)  | C*1090-1091                   |
| Simco, Miami, FL 33177, 305-233-9900/800-780-9090                                                  | C*1094                        |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175/800-848-4525                       | C*1106-1108,1110,1112         |
| † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503, 310-316-9984 | C*1081                        |
| Zero Cabinets (Stantron), Pacoima, CA 91331-2226, 818-890-3445                                     | C*1118-1119                   |
| † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561                                 | C*1124-1127                   |
| † Abalon Precision Mfg., Bronx, NY 10459                                                           | 718-589-5682/1-800-888-ABALON |
| A.B. Controls & Technology, Inc., Houston, TX 77090                                                | 713-876-3728/301-984-6020     |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                                    | 404-751-9473/800-221-4767     |
| † Assembled Electronic Enclosures, Mundelein, IL 60060                                             | 708-566-2030                  |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                      | 203-288-8001/1-800-242-8633   |
| Cardinal Prods., Inc., Santa Ana, CA 92704                                                         | 714-546-1224                  |
| § Carlson, A Div. of Lamson & Sessions, Cleveland, OH 44122                                        | 216-831-4000                  |
| † Compucraft Fabricators Inc., Warminster, PA 18974                                                | 215-443-7107                  |
| Damac Products, Inc., Santa Fe Springs, CA 90670                                                   | 310-946-0881                  |
| D. L. Custom, Markham, Ont., CANADA L3R 2M5                                                        | 416-475-0275                  |
| Electronic Enclosures, Div. Wyle Laboratories, El Segundo, CA 90245                                | 310-643-8181                  |
| Formax, Brookfield, CT 06804                                                                       | 203-775-9492                  |

|                                                                                     |                           |
|-------------------------------------------------------------------------------------|---------------------------|
| Gemini Inc., Cannon Falls, MN 55009                                                 | 507-263-3957/800-533-3631 |
| § Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509              | 203-624-3103              |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                           | 619-747-9177/800-628-4095 |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                      | 413-665-2163              |
| § Hoffman Engineering, Anoka, MN 55303                                              | 612-421-2240              |
| † Instrument Enclosures, Tulare, CA 93274                                           | 209-688-1100              |
| § ITT Pomona Electronics, Pomona, CA 91766                                          | 909-469-2900              |
| † Langley/Fleet Aerospace, Inc., San Diego, CA 92112                                | 619-264-3181              |
| Matrix Corp., Raleigh, NC 27610                                                     | 919-231-8000              |
| Miller, W. A. Co., Quosoc, ME 04964-0337                                            | 207-864-3344/800-227-1415 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                  | 508-588-6110              |
| Premier Metal Prods. Co., Bronx, NY 10451                                           | 718-993-9200              |
| # Project Pro, Twinsburg, OH 44087                                                  | 216-425-8888              |
| Quantum Scientific Inc., Toronto, ONT M8W 4Y4                                       | 416-503-8555/800-268-6000 |
| Rittal Corp., Springfield, OH 45504-9807                                            | 800-477-4000              |
| † Skydine Div., AAR Mfg., Port Jervis, NY 12771                                     | 914-856-6655/800-428-CASE |
| † STRONGBOX, Culver City, CA 90231-2726                                             | 310-305-8288              |
| TEGAM, Inc., Madison, OH 44057                                                      | 800-666-1010              |
| § UDS/Motorola, Inc., Motorola Information Systems Group, Huntsville, AL 35805-1993 | 205-430-8000              |
| Unitrack Industries, Inc., Milford, DE 19963                                        | 302-424-5050              |
| § Vector Electronic Co., Inc., Sylmar, CA 91342                                     | 818-365-9661/800-423-5659 |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                     | 801-298-5900              |
| † Zero Plastics, Zero Corp., Monson, MA 01092                                       | 413-267-5561              |

## Enclosures, Keyboard-1400

|                                                                                                    |                               |
|----------------------------------------------------------------------------------------------------|-------------------------------|
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                              | C*1021                        |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423                                        | C*1023                        |
| Electrocrack Products Co., Anaheim, CA 92806, 714-776-5420                                         | C*1097                        |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                              | B*1827, C*1031-1033           |
| § Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                                       | C*1049                        |
| New England Keyboard Inc., Fitchburg, MA 01420, 508-345-8332                                       | B*1847                        |
| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                               | C*1062-1067                   |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900                 | C*1069                        |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297/219-253-6666           | C*1075,1078                   |
| § Ritze Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0, 519-696-2616                          | C*1081                        |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                  | C*1082                        |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175/800-848-4525                       | C*1106,1111                   |
| † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503, 310-316-9984 | C*1081                        |
| † Abalon Precision Mfg., Bronx, NY 10459                                                           | 718-589-5682/1-800-888-ABALON |
| A.B. Controls & Technology, Inc., Houston, TX 77090                                                | 713-876-3728/301-984-6020     |
| Arem Plastics, Inc., Addison, IL 60101                                                             | 708-628-2450                  |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                      | 203-288-8001/1-800-242-8633   |
| § Bopla Enclosures, Frederick, MD 21701-8353                                                       | 301-696-9300                  |
| Buckeye Stamping Co., Columbus, OH 43207                                                           | 614-445-8433                  |
| † Bud Industries, Inc., Willoughby, OH 44094-0431                                                  | 216-946-3200                  |
| § Damac Products, Inc., Santa Fe Springs, CA 90670                                                 | 310-946-0881                  |
| Electro Space Fabricators, Topton, PA 19562-0067                                                   | 215-682-7181                  |
| Extrusion Technology, Inc., Randolph, MA 02368                                                     | 617-963-7200                  |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                                          | 619-747-9177/800-628-4095     |
| † Hamilton Metalcraft, Pasadena, CA 91103                                                          | 818-795-4811                  |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                                     | 413-665-2163                  |
| Heeger, Inc., City of Commerce, CA 90040                                                           | 213-728-5108/213-728-4729     |
| § Hoffman Engineering, Anoka, MN 55303                                                             | 612-421-2240                  |
| Industrial Computer Source, San Diego, CA 92131                                                    | 619-271-9340                  |
| † Instrument Enclosures, Tulare, CA 93274                                                          | 209-688-1100                  |
| † Interface Products, Inc., Oceanside, CA 92056                                                    | 619-945-0230                  |
| Interlogic Industries, Melville, NY 11747-4294                                                     | 516-420-8111                  |
| LMB Heeger, Inc., Commerce, CA 90040                                                               | 213-728-5108/213-728-4729     |
| § Mantex Corp., Oxford, MI 48371                                                                   | 313-628-8210                  |
| § Optima Electronic Packaging Systems, Tucker, GA 30084-5088                                       | 404-496-4000                  |
| # Project Pro, Twinsburg, OH 44087                                                                 | 216-425-8888                  |
| Quology Inc., San Jose, CA 95134                                                                   | 408-434-5200                  |
| Rittal Corp., Springfield, OH 45504-9807                                                           | 800-477-4000                  |
| † Rose Enclosures Sys., Inc., Frederick, MD 21701-8353                                             | 301-696-9800                  |
| Schroff, Inc., Warwick, RI 02886                                                                   | 401-732-3770                  |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                                      | 801-298-5900                  |

## Enclosures, Metal-1400

|                                                                           |                       |
|---------------------------------------------------------------------------|-----------------------|
| § Alumapak, Electronic Precepts of Florida, Largo, FL 34643, 800-775-6077 | C*1009                |
| Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                    | C*1016                |
| CMP Enclosures, Inc., Gurnee, IL 60031, 708-244-3230                      | C*1019                |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                     | C*1021                |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423               | C*1023                |
| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086 | C*1116-1117,1128-1133 |
| Electrocrack Products Co., Anaheim, CA 92806, 714-776-5420                | C*1097                |
| Electro Space Fabricators, Topton, PA 19562-0067, 215-682-7181            | C*1026,1028           |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                     | B*1827, C*1031-1033   |
| Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691            | C*1038-1039,1041      |
| Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200              | B*1828, C*1042        |
| Fury Products, Cowden Metal Specialties, Chino, CA 91710, 909-597-7860    | C*1045                |
| Gemini Inc., Cannon Falls, MN 55009, 507-263-3957/800-533-3631            | C*1047                |
| Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733           | C*1051-1052           |



# PRODUCT INDEX & DIRECTORY

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| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                               |                                |
| Powerbox Inc., Boulder, CO 80302, 303-444-1461; 800-444-1461                                       | C•1062-1063, 1067              |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297; 219-253-6666          | C•1071                         |
| § Ritz Electronics/Relco, New Dundee, Ont., CANADA NOB 2EO, 519-696-2616                           | C•1073, 1075, 1078             |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                  | C•1081                         |
| † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                                              | C•1085                         |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175; 800-848-4525                      | C•1098                         |
| § U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503, 310-316-9984 | C•1106-1109, 1112-1113         |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                        | C•1081                         |
| Zero Cabinets (Stantron), Pacoima, CA 91331-2226, 818-890-3445                                     | C•1025                         |
| † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561                                 | C•1118-1123                    |
| † A & J Manufacturing Co., Tustin, CA 92680                                                        | C•1124-1127                    |
| † Abalon Precision Mfg., Bronx, NY 10459                                                           | 714-544-9570                   |
| AB Controls & Technology, Inc., Houston, TX 77090                                                  | 718-589-5682; 1-800-888-ABALON |
| Accu-Tech Corporation, Roswell, GA 30076-3890                                                      | 713-876-3728; 301-984-6020     |
| ADC Telecommunications, Inc., Minneapolis, MN 55435                                                | 404-751-9473; 800-221-4767     |
| Ahamtor Inc., 999 Inc., Temecula, CA 92589-9019                                                    | 612-938-8080                   |
| Alden Products Co., Brockton, MA 02403                                                             | 714-676-4151                   |
| Alusett U.S.A., Inc., Peekskill, NY 10566                                                          | 508-583-0160                   |
| † Assembled Electronic Enclosures, Mundelein, IL 60060                                             | 914-737-0120                   |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                      | 708-566-2030                   |
| Burbank Sheet Metal Works Inc., Burbank, CA 91502                                                  | 800-242-2863                   |
| § Damac Products, Inc., Santa Fe Springs, CA 90670                                                 | 818-846-0316                   |
| § Dataware Electronics Inc., Mukilteo, WA 98275                                                    | 310-946-0881                   |
| East File, Irvine, CA 92718                                                                        | 206-742-5000                   |
| † EMC Global Technologies Inc., Doylestown, PA 18901                                               | 714-855-4121                   |
| Enterprise Systems Corp., Dover, NH 03820                                                          | 215-340-0650                   |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                                          | 603-742-7363                   |
| Hybricon Corporation, Ayer, MA 01432                                                               | 619-747-9177;                  |
| † Instrument Enclosures, Tulare, CA 93274                                                          | 800-628-4095                   |
| Interlog Industries, Melville, NY 11747-4294                                                       | 508-772-5422                   |
| † Langley/Fleet Aerospace, Inc., San Diego, CA 92112                                               | 209-688-1100                   |
| Maell Corp., Dillsburg, PA 17019-0339                                                              | 516-420-8111                   |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                                 | 619-264-3181                   |
| National Manufacturing Co., Inc., Chatham, NJ 07928                                                | 717-432-8686                   |
| Premier Metal Prods. Co., Bronx, NY 10451                                                          | 508-588-6110                   |
| † Project Pro, Twinsburg, OH 44087                                                                 | 201-635-8846                   |
| Quantum Scientific Inc., Toronto, ONT M8W 4Y4                                                      | 718-993-9200                   |
| Rittal Corp., Springfield, OH 45504-9807                                                           | 216-425-8888                   |
| Rose Enclosures Sys., Inc., Frederick, MD 21701-8353                                               | 800-477-4000                   |
| Schroff, Inc., Warwick, RI 02886                                                                   | 301-696-9800                   |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068           | 401-732-3770                   |
| † Skydyne Div., AAR Mfg., Port Jervis, NY 12771                                                    | 503-638-1000                   |
| § Support Systems Intl. Corp., Richmond, CA 94804                                                  | 914-856-6655; 800-428-CASE     |
| TEGAM, Inc., Madison, OH 44057                                                                     | 510-234-9090                   |
| Versalogic Corp., Eugene, OR 97402                                                                 | 800-666-1010                   |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                                    | 800-824-3163                   |
|                                                                                                    | 801-298-5900                   |

## Enclosures, Nonmetallic-1400

|                                                                                                    |                              |
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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                                            | C•1006-1007                  |
| § Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                                           | C•1016                       |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                              | C•1021                       |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                              | C•1031-1032                  |
| † Gemini Inc., Cannon Falls, MN 55009, 507-263-3957; 800-533-3631                                  | C•1046-1047                  |
| § Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                                       | C•1049                       |
| IET Labs, Inc., Westbury, NY 11590, 516-334-5959; 800-899-8438                                     | D•1266-1267                  |
| Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733                                    | C•1051-1052                  |
| § Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                         | C•1056                       |
| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                               | C•1062-1063, 1065-1068       |
| POLYCASE PRODS., ECP Corp., Cleveland, OH 44103, 216-391-0444; 800-248-1233                        | C•1070                       |
| § Ritz Electronics/Relco, New Dundee, Ont., CANADA NOB 2EO, 519-696-2616                           | C•1081                       |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                  | C•1082-1083, 1085            |
| Serco Products Division: Serco Mold, Inc., Covina, CA 91723, 818-331-0517; 800-843-8172 (Calif.)   | C•1090-1091                  |
| Simco, Miami, FL 33177, 305-233-9900; 800-780-9090                                                 | C•1094-1096                  |
| § Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                                            | C•1104                       |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175; 800-848-4525                      | C•1106-1108, 1112            |
| † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503, 310-316-9984 | C•1081                       |
| AB Controls & Technology, Inc., Houston, TX 77090                                                  | 713-876-3728; 301-984-6020   |
| Action USA, St. Petersburg, FL 33704                                                               | 813-821-5000; 800-821-5001   |
| ADE, Inc., Chicago, IL 60633                                                                       | 312-646-3400                 |
| AMP, Harrisburg, PA 17105                                                                          | 717-564-0100; 800-522-6752   |
| Arrem Plastics, Inc., Addison, IL 60101                                                            | 708-628-2450                 |
| Baker Co., Inc., Sanford, ME 04073                                                                 | 1-800-992-2537               |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                      | 203-288-8001; 1-800-242-2863 |
| § Bopla Enclosures, Frederick, MD 21701-8353                                                       | 301-696-9300                 |
| † Bud Industries, Inc., Willoughby, OH 44094-0431                                                  | 216-946-3200                 |
| Cardinal Prods., Inc., Santa Ana, CA 92704                                                         | 714-546-1224                 |
| § Carlon, A Div. of Lamson & Sessions, Cleveland, OH 44122                                         | 216-831-4000                 |
| EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268                                             | 818-442-2572                 |

# Enclosures, Portable - Also See Cases-1400

|                                                                                          |                                        |
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| § ERNI Components, Richmond, VA 23236                                                    | 804-794-6367                           |
| General Devices Co., Inc., Indianapolis, IN 46239-0100                                   |                                        |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                                | 317-897-7000; 1-800-626-9484           |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                           | 619-747-9177;                          |
| Heeger, Inc., City of Commerce, CA 90040                                                 | 800-628-4095                           |
| † The Hrol Company, FL Lauderdale, FL 33309                                              | 413-665-2163                           |
| § Hoffman Engineering, Anoka, MN 55303                                                   | 213-728-5108; 728-4729; 728-6913       |
| Hybricon Corporation, Ayer, MA 01432                                                     | 305-974-4900                           |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                             | 612-421-2240                           |
| International Microelectronics, Arlington, TX 76003                                      | 508-772-5422                           |
| ITT Pomona Electronics, Pomona, CA 91766                                                 | 805-495-7673                           |
| † ITT Components, Inc., Nesconset, NY 11767                                              | 917-473-1730                           |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                     | 809-469-2900                           |
| § Klockner Moeller, Franklin, MA 02038                                                   | 518-585-0666                           |
| † Langley/Fleet Aerospace, Inc., San Diego, CA 92112                                     | 718-956-8900                           |
| LMB Heeger, Inc., Commerce, CA 90040                                                     | 508-520-7080                           |
| § Mantex Corp., Oxford, MI 48371                                                         | 619-264-3181                           |
| † Miller, W. A. Co., Quossoc, ME 04964-0337                                              | 213-728-5108; 213-728-4729             |
| Modder Technical Products Inc., Tampa, FL 33626                                          | 313-628-8210                           |
| Mouser Electronics, Santee, CA 92071                                                     | 207-864-3344; 800-227-1415             |
| Mouser Electronics, Mansfield, TX 76063                                                  | 813-855-5736                           |
| Mouser Electronics, Gilroy, CA 95020                                                     | 800-346-6873                           |
| North American Capacitor Co., Indianapolis, IN 46224                                     | 800-346-6873                           |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216                     | 317-273-0090                           |
| § Parsons Manufacturing, Menlo Park, CA 94025-1476                                       | 718-774-5900                           |
| Pass & Seymour Canada, Inc., Legrand, Concord, ONT L4K 3M9                               | 415-324-4726                           |
| † Premier Metal Prods. Co., Bronx, NY 10451                                              | 416-738-9195                           |
| † Princeton Case Co., Inc., Union, NJ 07083                                              | 718-993-9200                           |
| † Project Pro, Twinsburg, OH 44087                                                       | 908-687-1750                           |
| Quantum Scientific Inc., Toronto, ONT M8W 4Y4                                            | 216-425-8888                           |
| § Relay Specialties, Oakland, NJ 07436                                                   | 416-503-8555; 800-268-6000             |
| Rittal Corp., Springfield, OH 45504-9807                                                 | 201-337-1000                           |
| § Rose Enclosures Sys., Inc., Frederick, MD 21701-8353                                   | 800-477-4000                           |
| † Schell Inc., St. Petersburg, FL 33733                                                  | 301-696-9800                           |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 813-822-2600; 800-237-2600             |
| † SKB Corporation, Orange, CA 92667                                                      | West Linn, OR                          |
| † Skydyne Div., AAR Mfg., Port Jervis, NY 12771                                          | 503-638-1000                           |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                              | 714-637-1252                           |
| § Star Case Manufacturing Co., Inc., Munster, IN 46321                                   | 914-856-6655; 800-428-CASE             |
|                                                                                          | 814-724-6440                           |
| † Stevens Products, Inc., E. Orange, NJ 07019                                            | 219-922-4440; 800-822-STAR             |
| § Switches Unlimited, Inc., Woodside, NY 11377                                           | (outside IN); 800-782-CASE (inside IN) |
| † Thermodyne International Ltd., Long Beach, CA 90810                                    | 201-672-2140                           |
| § Underwater Kinetics, San Marcos, CA 92069                                              | 718-478-5000; 800-221-0487             |
| United Foam Plastics, Georgetown, MA 01833                                               | 310-603-1976                           |
| † Verbox Co., Garden Grove, CA 92643                                                     | 619-744-7560                           |
| Vynckier, Inc., Hawthorne, NY 10532                                                      | 508-352-2200                           |
| Western Case, Inc., Tustin, CA 92680                                                     | 714-530-4541                           |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                            | 714-896-0772                           |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                                      | 714-838-8460                           |
| Zero Plastics, Zero Corp., Monson, MA 01092                                              | 801-298-5900                           |
|                                                                                          | 413-267-5561                           |
|                                                                                          | 413-267-5561                           |

## Enclosures, Portable - Also See Cases-1400

|                                                                                                    |                     |
|----------------------------------------------------------------------------------------------------|---------------------|
| § Alumapak, Electronic Precepts of Florida, Largo, FL 34643, 800-775-6077                          |                     |
| Ango Electronics Corp., North Arlington, NJ 07031, 201-955-0800                                    | C•1009              |
| Autec Power Systems, Simi Valley, CA 93065, 805-522-0888                                           | C•1014              |
| § Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                                           | D•1614              |
| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                                        | C•1016              |
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                              | C•1017              |
| Electronic Packaging System, Marion, IA 52302, 319-377-3423                                        | C•1021              |
| Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086                          | C•1023              |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                              | C•1128              |
| Emcor Products, Crenlo, Inc., Rochester, MN 55901, 507-289-3371                                    | B•1827, C•1031-1033 |
| † Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691                                   | C•1035-1037         |
| Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200                                       | C•1038              |
| † Gemini Inc., Cannon Falls, MN 55009, 507-263-3957; 800-533-3631                                  | B•1828              |
| IET Labs, Inc., Westbury, NY 11590, 516-334-5959; 800-899-8438                                     | C•1046-1047         |
| Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733                                    | D•1266-1267         |
| † Lansing Instrument Corp., Ithaca, NY 14851-0730, 607-272-3265; 800-847-3535                      | C•1050-1051         |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                         | C•1054-1055         |
| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                               | C•1056, 1060        |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900                 | C•1062-1068         |
| POLYCASE PRODS., ECP Corp., Cleveland, OH 44103, 216-391-0444; 800-248-1233                        | C•1069              |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297; 219-253-6666          | C•1070              |
| † Premier Metal Prods. Co., Bronx, NY 10451, 718-993-9200                                          | C•1078              |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                  | C•1080              |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                                                     | C•1082-1085         |
| § Serco Products Division: Serco Mold, Inc., Covina, CA 91723, 818-331-0517; 800-843-8172 (Calif.) | C•1088              |
| Simco, Miami, FL 33177, 305-233-9900; 800-780-9090                                                 | C•1090              |
| † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                                              | C•1094-1096         |
| † Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                                            | C•1098-1099         |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175; 800-848-4525                      | C•1102, 1104        |
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§ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659

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| † Abalon Precision Mfg., Bronx, NY 10459                                           | 718-589-5682; 1-800-888-ABALON         |       |
| Action USA, St. Petersburg, FL 33704                                               | 813-821-5000; 800-821-5001             |       |
| Adams Rite Products, Inc., Glendale, CA 91204                                      | 818-241-5121                           |       |
| ADE, Inc., Chicago, IL 60633                                                       | 312-646-3400                           |       |
| Alusett U.S.A., Inc., Peekskill, NY 10566                                          | 914-737-0120                           |       |
| † Amco Engineering, Schiller Pk., IL 60176                                         | 708-671-6670; 800-833-3156             |       |
| † American Aluminum, Mountaineer, NJ 07092                                         | 908-233-3500                           |       |
| Amherst International Corp., Manchester, NH 03101                                  | 603-644-3555; 1-800-547-5600           |       |
| † Astro Dynamics, Inc., Woburn, MA 01801                                           | 617-935-4944                           |       |
| Baker Co., Inc., Sanford, ME 04073                                                 | 1-800-992-2537                         |       |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                      | 203-288-8001; 1-800-242-2863           |       |
| § Bopla Enclosures, Frederick, MD 21701-8353                                       | 301-696-9300                           |       |
| † Bud Industries, Inc., Willoughby, OH 44094-0431                                  | 216-946-3200                           |       |
| Cardinal Prods., Inc., Santa Ana, CA 92704                                         | 714-546-1224                           |       |
| † Compucraft Fabricators Inc., Warminster, PA 18974                                | 215-443-7107                           |       |
| § Control Cable, Inc., Baltimore, MD 21244                                         | 410-298-4411                           |       |
| † Craig Systems Corp., Eastern Technologies, Ltd., Amesbury, MA 01913-4848         |                                        |       |
|                                                                                    | 508-388-5662                           |       |
| § Davies Molding Co., Carol Stream, IL 60188                                       | 708-510-8188                           |       |
| † EDK Inc., EDK Ltd., Melbourne, FL 32934                                          | 407-242-2953; 800-462-8478             |       |
| † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268                           | 818-442-2572                           |       |
| Electronic Space Fabricators, Tipton, PA 19562-0067                                | 215-682-7181                           |       |
| † EMC Global Technologies Inc., Doylestown, PA 18901                               | 215-340-0650                           |       |
| Everest Electronic Equipment, Buford, GA 30518                                     | 404-932-2900                           |       |
| Everest Electronic Equipment, Inc., Anaheim, CA 92806                              | 714-634-2200                           |       |
| § Ferno-Salesmark, Ferno-Washington, Inc., Wilmington, OH 45177                    | 513-382-1451                           |       |
| Formax, Brookfield, CT 06804                                                       | 203-775-9492                           |       |
| General Devices Co., Inc., Indianapolis, IN 46239-0100                             |                                        |       |
|                                                                                    | 317-897-7000; 1-800-626-9484           |       |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                          | 619-747-9177                           |       |
|                                                                                    | 800-628-4095                           |       |
| § Hammond Manufacturing Co., Buffalo, NY 14225                                     | 716-894-5710                           |       |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                     | 413-665-2163                           |       |
| † The Hirol Company, Ft. Lauderdale, FL 33309                                      | 305-974-4900                           |       |
| § Hoffman Engineering, Anoka, MN 55303                                             | 612-421-2240                           |       |
| Hybricon Corporation, Ayer, MA 01432                                               | 508-772-5422                           |       |
| † Instrument Enclosures, Tulare, CA 93274                                          | 209-688-1100                           |       |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                       | 805-495-7673                           |       |
| ITT Pomona Electronics, Pomona, CA 91766                                           | 909-469-2900                           |       |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                             | 602-968-6241                           |       |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                               | 718-956-8900                           |       |
| † Langley/Fleet Aerospace, Inc., San Diego, CA 92112                               | 619-264-3181                           |       |
| † LectroMagnetics Division, Los Angeles, CA 90016                                  | 213-870-9383; USA 800-969-9383         |       |
| LMB Heeger, Inc., Commerce, CA 90040                                               | 213-728-5108; 213-728-4729             |       |
| McCoy/Ovenaire/Spectrum, A Sub. of Oak Industries, Mt. Holly Springs, PA 17065     |                                        |       |
|                                                                                    | 717-486-3411                           |       |
| J. R. Merritt Controls, Inc., Norwalk, CT 06854                                    | 203-855-9100; 800-333-5762             |       |
| † Midwest Container Systems, Minneapolis, MN 55428                                 | 612-533-4532                           |       |
| † Miller, W. A. Co., Quososs, ME 04964-0337                                        | 207-864-3344; 800-227-1415             |       |
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| † Project Pro, Twinsburg, OH 44087                                                 | 216-425-8888                           |       |
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| Quantum Scientific Inc., Toronto, ON M8W 4Y4                                       | 416-503-8555; 800-268-6000             |       |
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| § Rose Enclosures Sys., Inc., Frederick, MD 21701-8353                             | 301-696-9800                           |       |
| † Schell Inc., St. Petersburg, FL 33733                                            | 813-822-2600; 800-237-2600             |       |
| † SKB Corporation, Orange, CA 92667                                                | 714-637-1252                           |       |
| † Skydive Div., AAR Mfg., Port Jervis, NY 12771                                    | 914-856-6655; 800-428-CAASE            |       |
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| † Stevens Products, Inc., E. Orange, NJ 07019                                      | 201-672-2140                           |       |
| § Switches Unlimited, Inc., Woodside, NY 11377                                     | 718-478-5000; 800-221-0480             |       |
| § Ten-Tec, Inc., Sevierville, TN 37862                                             | 615-453-7172                           |       |
| † Thermodyne International Ltd., Long Beach, CA 90810                              | 310-803-1976                           |       |
| Triplett Corporation, Bluffton, OH 45817-9987                                      | 419-358-5015                           |       |
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| United Foam Plastics, Georgetown, MA 01833                                         | 508-352-2200                           |       |
| Unirack Industries, Inc., Milford, DE 19963                                        | 302-424-5050                           |       |
| U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 | 310-316-9984                           |       |
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| Zero Cabinets (Stantron), Pacoima, CA 91331-2226                                   | 818-890-3445                           |       |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                    | 801-298-5900                           |       |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                                | 413-267-5561                           |       |
| † Zero Plastics, Zero Corp., Monson, MA 01092                                      | 413-267-5561                           |       |

† Stevens Products, Inc., E. Orange, NJ 07019

§ Switches Unlimited, Inc., Woodside, NY 11377

§ Ten-Tec, Inc., Sevierville, TN 37862

† Thermodyne International Ltd., Long Beach, CA 90810

Triplett Corporation, Bluffton, OH 45817-9987

§ Underwater Kinetics, San Marcos, CA 92069

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Unirack Industries, Inc., Milford, DE 19963

U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503

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† Zero Corp., Zero East Div., Monson, MA 01057-0128

† Zero Plastics, Zero Corp., Monson, MA 01092

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Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200 C=1042

† Pulizzi Engineering, Inc., Santa Ana, CA 92704-6865, 714-540-4229 D=2300

Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175; 800-848-4525

Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659

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† Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561

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| † Abalon Precision Mfg., Bronx, NY 10459                                                           | 718-589-5682; 1-800-888-ABALON |                         |
| A.B. Controls & Technology, Inc., Houston, TX 77090                                                | 713-876-3728; 301-984-6020     |                         |
| Adale-PLM/Div. of Scott & Fetzer Co., Cleveland, OH 44135                                          | 216-267-9000                   |                         |
| § Alumapak, Electronic Precepts of Florida, Largo, FL 34643                                        | 800-775-6077                   |                         |
| AMP, Harrisburg, PA 17105                                                                          | 717-564-0100; 800-522-6752     |                         |
| § Brooks Electronics, Philadelphia, PA 19140                                                       | 215-228-4433                   |                         |
| E-T-A Circuit Breakers, Niles, IL 60714                                                            | 708-647-8303                   |                         |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                                          | 619-747-9177; 800-628-4095     |                         |
| † Langley/Fleet Aerospace, Inc., San Diego, CA 92112                                               | 619-264-3181                   |                         |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                                 | 508-588-6110                   |                         |
| † Project Pro, Twinsburg, OH 44087                                                                 | 216-425-8888                   |                         |
| Vynckier, Inc., Hawthorne, NY 10532                                                                | 714-896-0772                   |                         |
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| † General Devices Co., Inc., Indianapolis, IN 46239-0100, 317-897-7000, 1-800-626-9484             |                                | C=1048                  |
| § Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                                       |                                | C=1049                  |
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| † The Mushfield Co. Inc., Goffstown, NH 03045, 603-666-4433                                        |                                | C=1698                  |
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| † Premier Metal Prods. Co., Bronx, NY 10451, 718-993-9200                                          |                                | C=1080                  |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                  |                                | C=1082-1083             |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                                                     |                                | C=1088-1089             |
| § Serco Products Division: Serco Mold, Inc., Covina, CA 91723, 818-331-0517; 800-843-8172 (Calif.) |                                | C=1090-1091             |
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| † A & J Manufacturing Co., Tustin, CA 92680                                                        |                                | 714-544-9570            |
| † Abalon Precision Mfg., Bronx, NY 10459                                                           | 718-589-5682; 1-800-888-ABALON |                         |
| A.B. Controls & Technology, Inc., Houston, TX 77090                                                | 713-876-3728; 301-984-6020     |                         |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                                    | 404-751-9473; 800-221-4767     |                         |
| § Action Instruments, San Diego, CA 92123                                                          |                                | 619-279-5726            |
| Action USA, St. Petersburg, FL 33704                                                               | 813-821-5000; 800-821-5001     |                         |
| Adams Rite Products, Inc., Glendale, CA 91204                                                      | 818-241-5121                   |                         |
| § ADE, Inc., Chicago, IL 60633                                                                     | 312-646-3400                   |                         |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                                    | 219-223-3158                   |                         |
| † American Aluminum, Mountaineer, NJ 07092                                                         | 908-233-3500                   |                         |
| † Applied Design Company, Minneapolis, MN 55413                                                    | 612-378-0094                   |                         |
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| † Astro Dynamics, Inc., Woburn, MA 01801                                                           | 617-935-4944                   |                         |
| Atlee Inc., North Andover, MA 01845                                                                | 508-681-1003                   |                         |
| Baker Co., Inc., Sanford, ME 04073                                                                 | 1-800-992-2537                 |                         |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                      | 203-288-8001; 1-800-242-2863   |                         |
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| † Churchill Corp., Melrose, MA 02176                                                               | 617-665-4700                   |                         |
| † Compucraft Fabricators Inc., Warminster, PA 18974                                                | 215-443-7107                   |                         |
| † Craig Systems Corp., Eastern Technologies, Ltd., Amesbury, MA 01913-4848                         |                                |                         |
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| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                              | 714-689-9473              |
| † Enclosure Corp., Bristol, PA 19007                                                 | 215-785-2900              |
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| Graham Electronic Manufacturing Inc., Escondido, CA 92025                            | 619-747-9177              |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                       | 800-628-4095              |
| † The Hirol Company, Ft. Lauderdale, FL 33309                                        | 413-665-2163              |
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| † Skydive Div., AAR Mfg., Port Jervis, NY 12771                                      | 714-637-1252              |
| † Stevens Products, Inc., E. Orange, NJ 07019                                        | 914-856-6655/800-428-CASE |
| † Support Systems Intl. Corp., Richmond, CA 94804                                    | 201-672-2140              |
| † Thermodyne International Ltd., Long Beach, CA 90810                                | 510-234-9090              |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                                  | 310-603-1976              |
| Triplett Corporation, Bluffton, OH 45817-9987                                        | 607-772-1161              |
| † Underwater Kinetics, San Marcos, CA 92069                                          | 419-358-5015              |
| † U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 | 619-744-7560              |
| Vynckier, Inc., Hawthorne, NY 10532                                                  | 310-316-9984              |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                      | 714-896-0772              |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                                  | 801-298-5900              |
|                                                                                      | 413-267-5561              |

### Enclosures, Shipping-1400

|                                                                                                  |                             |
|--------------------------------------------------------------------------------------------------|-----------------------------|
| † ECS Composites, Grants Pass, OR 97526, 503-476-8871                                            | C-1021                      |
| Extrusion Technology, Inc., Randolph, MA 02368, 617-963-7200                                     | C-1042-1043                 |
| † Gemini Inc., Cannon Falls, MN 55009, 507-263-3957; 800-533-3631                                | C-1046-1047                 |
| 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368                          | C-1667, D-2311              |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900               | C-1069                      |
| Serco Products Division: Serco Mold, Inc., Covina, CA 91723, 818-331-0517; 800-843-8172 (Calif.) | C-1090                      |
| Zero Cabinets (Stantrom), Pacoima, CA 91331-2226, 818-890-3445                                   | C-1118-1119                 |
| † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561                               | C-1124-1127                 |
| Action USA, St. Petersburg, FL 33704                                                             | 813-821-5000/800-821-5001   |
| † ADE, Inc., Chicago, IL 60633                                                                   | 312-646-3400                |
| † American Aluminum, Mountainside, NJ 07092                                                      | 908-233-3500                |
| Anvil Cases, Subsidiary of Zero Corporation, City of Industry, CA 91745                          | 818-968-4100                |
| † Astro Dynamics, Inc., Woburn, MA 01801                                                         | 617-935-4944                |
| Cardinal Prods., Inc., Santa Ana, CA 92704                                                       | 714-546-1224                |
| † Craig Systems Corp., Eastern Technologies, Ltd., Amesbury, MA 01913-4848                       | 508-388-5662                |
| † EDAC Inc., EDAC Ltd., Melbourne, FL 32934                                                      | 407-242-2953/800-462-8478   |
| Electro Space Fabricators, Tooton, PA 19662-0067                                                 | 215-682-7181                |
| ELMA Electronic Inc., Fremont, CA 94538                                                          | 510-656-3400                |
| General Devices Co., Inc., Indianapolis, IN 46239-0100                                           | 317-897-7000/1-800-626-9484 |
| † Gordon, L., Packaging, Baltimore, MD 21230                                                     | 410-739-6537                |
| Graham Electronic Manufacturing Inc., Escondido, CA 92025                                        | 619-747-9177                |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                                   | 800-628-4095                |
| † Instrument Enclosures, Tulare, CA 93274                                                        | 413-665-2163                |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                                     | 209-688-1100                |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                                           | 805-495-7673                |
| † McCoy/Ovenaire/Spectrum, A Sub. of Oak Industries, Mt. Holly Springs, PA 17065                 | 602-968-6241                |
|                                                                                                  | 717-486-3411                |

## Extractors, DIP, IC, & Pin Grid Array-5400

|                                                                 |                                                                 |
|-----------------------------------------------------------------|-----------------------------------------------------------------|
| Packaging Plus, Inc., Minneapolis, MN 55432                     | 612-574-9909                                                    |
| Parsons Manufacturing, Menlo Park, CA 94025-1476                | 415-324-4726                                                    |
| The Pedro Companies, St. Paul, MN 55101                         | 612-224-9491                                                    |
| Precision Tech. Sewing, Palo Alto, CA 94303                     | 415-856-2128                                                    |
| † Premier Metal Prods. Co., Bronx, NY 10451                     | 718-993-9200                                                    |
| † Princeton Case Co., Inc., Union, NJ 07083                     | 908-687-1750                                                    |
| † Pylon Electronics Inc., Lachine, PQ, CANADA H8S 1Z3           | 514-637-1186                                                    |
| Quantum Scientific Inc., Toronto, ONT M8W 4Y4                   | 416-503-8555/800-268-6000                                       |
| † Schell Inc., St. Petersburg, FL 33733                         | 813-822-2600/800-237-2600                                       |
| † SKB Corporation, Orange, CA 92667                             | 714-637-1252                                                    |
| † Skydive Div., AAR Mfg., Port Jervis, NY 12771                 | 914-856-6655/800-428-CASE                                       |
| † Stackbin Corp., Lincoln, RI 02865                             | 401-333-1600/800-333-1603                                       |
| † Star Case Manufacturing Co., Inc., Munster, IN 46321          | 219-922-4440/800-822-STAR (outside IN)/800-782-CASE (inside IN) |
| † Thermodyne International Ltd., Long Beach, CA 90810           | 310-603-1976                                                    |
| † Underwater Kinetics, San Marcos, CA 92069                     | 619-744-7560                                                    |
| United Foam Plastics, Georgetown, MA 01833                      | 508-352-2200                                                    |
| Unitrack Industries, Inc., Milford, DE 19963                    | 302-424-5050                                                    |
| † Viking Cases, St. Petersburg, FL 33716                        | 813-577-1216                                                    |
| Western Case, Inc., Tustin, CA 92680                            | 714-838-8460                                                    |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 | 801-298-5900                                                    |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128             | 413-267-5561                                                    |
| † Zero Plastics, Zero Corp., Monson, MA 01092                   | 413-267-5561                                                    |

### Enclosures, (MIL)-2440 — See Vol. B

### Encoders, Digital — See Encoders, Shaft Angle (Vol. B)

### Encoders, Displacement, Linear-3500 — See Vol. B

### Encoders, Fiber Optic-2475 — See Vol. B

### Encoders, Magnetic Strip-3500 — See Vol. B

### Encoders, Proof-2000 — See Vol. D

### Encoders, Shaft Angle, Contacting-3500 — See Vol. B

### Encoders, Shaft Angle, Magnetic-3500 — See Vol. B

### Encoders, Shaft Angle, Optical-3500 — See Vol. B

### Encoders, Shaft Position — See Encoders, Shaft Angle (Vol. B), Resolvers, Synchro (Vol. D)

### Encoders, Tone-1900 — See Vol. D

### Encoders, Video-1900 — See Vol. D

### Encoders, (MIL)-2440 — See Vol. B

### Encryptors — See Security Systems, Data (Vol. D)

### Engineering Reference Books — See Technical Books (Vol. D)

### Energy Management Systems-2200 — See Vol. D

### Environmental Testing Services — See Services, Environmental Testing (Vol. D)

### Epoxy — See Compounds, Encapsulating, Molding, Potting (Vol. C), Adhesives (Vol. C)

### Equalizers, Audio-1300 — See Vol. D

### Equalizers, Delay-1900 — See Vol. D

### Equalizers, Phase-1900 — See Vol. D

### Erasers, Magnetic Tape (Bulk)-1300 — See Vol. D

### Erasing Equipment, EPROM-3130 — See Vol. A

### Escutcheons — See Bezels & Escutcheons (Vol. C)

### Etchants, Fluorocarbon-1600

|                                                          |                |
|----------------------------------------------------------|----------------|
| W. Applied Plastics Technology, Bristol, RI 02809        | 401-253-0200   |
| W. L. Gore & Assocs., Inc., Phoenix, AZ 85044            | 602-431-0077   |
| † W.L. Gore & Associates, Inc., Flagstaff, AZ 86003-3000 | 602-526-3030;  |
|                                                          | 1-800-344-3644 |

### Etchants, Printed Circuit-1700

|                                                                                 |              |
|---------------------------------------------------------------------------------|--------------|
| † Datab Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 | C-1677       |
| † GC-Thorsen, Rockford, IL 61105-1209                                           | 815-968-9661 |
| † General Chemical Corporation, Pittsburg, CA 94565                             | 510-685-1450 |
| † Injectral Electronics (Woman Owned), Bohemia, NY 11716                        | 516-563-3388 |
| † Kepro Circuit Systems, Fenton, MO 63026-2992                                  | 314-343-1630 |

### Etching & Engraving — See Services, Metal Etching, Engraving (Vol. D)

### Ethernet Extenders-2475 — See Vol. B

### Evaporation Equipment, Electron Beam-4100 — See Vol. D

### Exciters — See Oscillators (Vol. A)

### Exciters, Vibration — See Testers, Vibration (Vol. D)

### Expanders, Data-2440 — See Vol. B

### Expanders, Meter — See Multipliers, Meter (Vol. D)

### Extender Boards, Electronic-2900 — See Vol. D

### Extender Boards, Mini-2900 — See Vol. D

### Extender Boards, Plain-2900 — See Vol. D

### Extractors, Circuit Board, Tube — See Pullers, Circuit Board (Vol. C)

## Extractors, DIP, IC, & Pin Grid Array-5400

|                                                                  |              |
|------------------------------------------------------------------|--------------|
| † Advanced Interconnections Corp., West Warwick, RI 02893        | 401-823-5200 |
| † Aries Electronics, Frenchtown, NJ 08825                        | 908-996-6841 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703 | 508-222-2202 |
| † Contact East, N. Andover, MA 01845                             | 508-682-2000 |
| † Eraser Co., Syracuse, NY 13221                                 | 315-454-3237 |
| Garry Electronics, WPI, Salem, NJ 08079                          | 609-935-7603 |
| † HMC/HUB Material Company, Canton, MA 02021                     | 617-821-1870 |
| † ITT Pomona Electronics, Pomona, CA 91766                       | 909-469-2900 |
| † Jonard Industries Corp., Tuckahoe, NY 10707                    | 914-793-0700 |
| † Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                 | 203-756-8847 |
| † McKenzie Technology, Fremont, CA 94538                         | 510-651-2700 |



|                                                          |                           |
|----------------------------------------------------------|---------------------------|
| \$ Micro Electronic Systems, Inc., Bridgewater, CT 06752 | 203-350-5004              |
| Reliability Incorporated, Houston, TX 77218              | 713-492-0550              |
| \$† Techni-Tool, Plymouth Meeting, PA 19462              | 215-825-4990              |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342         | 818-365-9661/800-423-5859 |

## Eyelets-2500

|                                                                 |                             |
|-----------------------------------------------------------------|-----------------------------|
| \$ Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000 | C-1555                      |
| \$ Acme Model Engineering Co., Ridgefield, NJ 07657             | 201-943-7650                |
| \$† Aimco Inc., Chelco Corp., Seattle, WA 98108                 | 206-762-8014/800-426-0244   |
| Autosplice, Inc., San Diego, CA 92121                           | 619-535-0077                |
| Autoswage Products, Shelton, CT 06484                           | 203-929-1401                |
| \$† Braxton Mfg., Watertown, CT 06795                           | 203-274-6781                |
| \$† General Manufacturing, Glendale, CA 91201                   | 818-243-2069                |
| \$† International Eyelets, Inc., Carlsbad, CA 92008-9812        | 619-931-1446/1-800-333-9353 |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                        | 502-684-0431                |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017          | 718-956-8900                |
| \$ Lyn-Tron, Inc., Burbank, CA 91505                            | 213-849-6211/800-423-2734   |
| \$† Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716              | 203-756-8847                |
| \$ PACE, Inc., Laurel, MD 20723-1990                            | 301-490-9860                |
| \$ Uesco Div., Litton Inds., Van Nuys, CA 91409                 | 818-786-6381                |
| \$ Wall, A. T., Co., Warwick, RI 02886                          | 401-739-0740                |

## Fabrics, Conductive-4525

|                                                                                     |                             |
|-------------------------------------------------------------------------------------|-----------------------------|
| \$ The Hiral Company, Ft. Lauderdale, FL 33309, 305-974-4900                        | C-1685                      |
| American Cyanamid Co., Metal Coated Fibers Dept., Wallingford, CT 06492             | 203-284-4217                |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8               | 1-800-361-9466              |
| \$ CHR, Furon, New Haven, CT 06509                                                  | 203-777-3631                |
| \$ Contact East, N. Andover, MA 01845                                               | 508-682-2000                |
| \$ Dayco Products, Inc., Dayton, OH 45401-1004                                      | 513-226-5926                |
| \$ Lydall Inc., Manning Div., Troy, NY 12181                                        | 518-273-6320                |
| \$† Merix Chemical Co., Chicago, IL 60649                                           | 312-221-8242                |
| \$† Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000                |
| \$† SAS Industries Inc., Manonville, NY 11949                                       | 516-727-1441/1-800-544-5238 |
| \$ Semtronics Corp., Peachtree City, GA 30269                                       | 404-487-6681                |
| Solder Absorbing Technology (SAT), A Spring Co., Springfield, MA 01108              | 800-628-8862                |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                          | 215-825-4990                |
| \$† Tecknit, Cranford, NJ 07016                                                     | 908-272-5500                |
| \$ Wescorp Static Control Products, Mountain View, CA 94041                         | 415-969-7717                |
| Zippertubing Co., Los Angeles, CA 90061                                             | 310-527-0488                |

## Facsimile Equipment-1900 - See Vol. D

## Fan Accessories-2600

|                                                           |             |
|-----------------------------------------------------------|-------------|
| Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300 | C-1638-1639 |
|-----------------------------------------------------------|-------------|

## Fan Guards-2600

|                                                                |                           |
|----------------------------------------------------------------|---------------------------|
| Indek Corporation, San Jose, CA 95131, 408-432-1199            | C-1593                    |
| \$ KeyMarc Electronics, Inc., Torrance, CA 90501, 310-212-7724 | C-1598                    |
| Mechatronics Inc., Mercer Island, WA 98040, 206-232-4800       | C-1610                    |
| \$ NMB Technologies Inc., Chatsworth, CA 91311, 818-341-3355   | C-1630                    |
| \$ Papst Mechatronic Corp., Newport, RI 02840, 401-849-8810    | C-1633, 1637              |
| \$ Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300   | C-1638-1639               |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454     | C-1640-1641               |
| TUS Electronics, Mission Viejo, CA 92691, 714-458-1155         | C-1649-1651               |
| Unitrack Industries, Inc., Milford, DE 19963, 302-424-5050     | C-1115                    |
| \$† Air Filtration Products, Inc., Tucson, AZ 85705            | 602-624-2272              |
| \$ Electric Motor Engineering, Inc., Mission Viejo, CA 92691   | 714-583-9802              |
| \$ Evox-Rifa Inc., Lincolnshire, IL 60069                      | 708-948-9511              |
| \$ Interfan, William J. Purdy Co., Burlingame, CA 94010        | 415-347-1203              |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017         | 718-956-8900              |
| Milton Ross Co., Warrington, PA 18976                          | 215-491-0600              |
| \$ Oriental Motor USA Corp., Torrance, CA 90505-5217           | 310-515-2264              |
| \$ TELTEC, Inc., Minneapolis, MN 55425                         | 612-854-9632              |
| \$ TELTEC, Inc., Minneapolis, MN 55425                         | 612-854-9177              |
| \$ Terminal Data Corp., Rockville, MD 20855                    | 301-921-8282              |
| Tracewell Enclosures, Inc., Westerville, OH 43081              | 614-846-6175/800-848-4525 |

## Fans, Axial-2600

|                                                                                           |              |
|-------------------------------------------------------------------------------------------|--------------|
| Advanced Technology Company, Vista, CA 92083, 619-727-7430                                | C-1562-1573  |
| \$† Amco Engineering, Schiller Pk., IL 60176, 708-671-6670/800-833-3156                   | C-1011, 1574 |
| Calmark Corp., San Gabriel, CA 91776, 818-287-0451                                        | C-1018       |
| \$ Crouzet Corporation, Carrollton, TX 75006-2506, 214-250-1647/1-800-677-5311            | C-1576-1577  |
| \$ ebm Industries, Inc., Farmington, CT 06034, 203-674-1515                               | C-1578       |
| \$† ETRI, Inc., Monroe, NC 28110, 704-289-5423                                            | C-1585-1591  |
| \$ Indek Corporation, San Jose, CA 95131, 408-432-1199                                    | C-1593-1596  |
| \$ KeyMarc Electronics, Inc., Torrance, CA 90501, 310-212-7724                            | C-1598-1601  |
| \$ Knurr USA Inc., Knurr A.G., Simi Valley, CA 93063, 805-526-7733                        | C-1050       |
| \$† McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550, 609-799-0100      | C-1606-1607  |
| \$† McLean Midwest, Sub. of Zero Corporation, Brooklyn Pk., MN 55443, 612-561-9400        | C-1608-1609  |
| Mechatronics Inc., Mercer Island, WA 98040, 206-232-4800                                  | C-1610-1611  |
| \$ Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                          | C-1617       |
| \$ Micronel U.S., Vista, CA 92083, 619-727-7400                                           | C-1618-1625  |
| \$ MultiNational Resources, Inc., Bedford, NH 03110, 603-622-3550                         | C-1584       |
| \$ NMB Technologies Inc., Chatsworth, CA 91311, 818-341-3355                              | C-1630-1631  |
| \$† Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000              | C-1057       |
| \$ Papst Mechatronic Corp., Newport, RI 02840, 401-849-8810                               | C-1633-1637  |
| \$ Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297/219-253-6666 | C-1077       |

|                                                                              |                             |
|------------------------------------------------------------------------------|-----------------------------|
| \$ Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300                 | C-1638                      |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                   | C-1640-1641                 |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                               | C-1089                      |
| Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                        | C-1646                      |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175/800-848-4525 | C-1108                      |
| TUS Electronics, Mission Viejo, CA 92691, 714-458-1155                       | C-1649-1651                 |
| Unitrack Industries, Inc., Milford, DE 19963, 302-424-5050                   | C-1115                      |
| \$ U.S. Toyo Fan Corp., San Gabriel, CA 91776, 818-287-5297                  | C-1652-1653                 |
| \$† Ashland Elec. Prods., Inc., Rochester, NH 03867                          | 603-335-1100                |
| \$ Baknor Industries Inc., Mississauga, ONT., CANADA L5L 1X1                 | 416-828-2400                |
| \$† Brailsford & Co., Inc., Rye, NY 10580                                    | 914-967-1820                |
| Buehler Products, Inc., Raleigh, NC 27636                                    | 919-469-8522                |
| Canon U.S.A. Elctn. Comps. Div., Lake Success, NY 11042                      | 516-488-6700                |
| Chicago Blower Corp., Glendale Heights, IL 60139                             | 708-858-2600                |
| \$ Delta Products Corporation, Fremont, CA 94538                             | 510-770-0660                |
| \$† Eastern Air Devices, Inc., Dover, NH 03820                               | 603-742-3330                |
| \$† Electric Motor Engineering, Inc., Mission Viejo, CA 92691                | 714-583-9802                |
| ELMA Electronic Inc., Fremont, CA 94538                                      | 510-656-3400                |
| \$† Equipto Electronics Corp., Aurora, IL 60506-9988                         | 708-897-4691                |
| Everest Electronic Equipment, Buford, GA 30518                               | 404-932-2900                |
| Everest Electronic Equipment, Inc., Anaheim, CA 92806                        | 714-634-2200                |
| \$ Evox-Rifa Inc., Lincolnshire, IL 60069                                    | 708-948-9511                |
| \$† Fasco Motors Group, Chesterfield, MO 63017                               | 314-532-3505                |
| \$† General Devices Co., Inc., Indianapolis, IN 46239-0100                   | 317-897-7000/1-800-626-9484 |

|                                                                               |                             |
|-------------------------------------------------------------------------------|-----------------------------|
| Globe Motors, Dayton, OH 45404                                                | 513-228-3171                |
| \$† Hi-Tech, Inc., Zion, IL 60099                                             | 708-746-2447                |
| \$ Hoffman Engineering, Anoka, MN 55303                                       | 612-421-2240                |
| \$ Howard Industries, Inc./Brevol Motors, Milford, IL 60953                   | 815-889-4105                |
| \$ Interfan, William J. Purdy Co., Burlingame, CA 94010                       | 415-347-1203                |
| \$ ISL Products Int'l, Ltd., Syosset, NY 11791-6093                           | 516-937-3475/800-626-6116   |
| \$ Japanese Products Corp., Elmsford, NY 10523                                | 914-592-8880                |
| \$ Kooltronic, Inc., Hopewell, NJ 08525                                       | 609-466-3400                |
| \$ Kooltronic, Inc., Ventura, CA 93003                                        | 805-642-8521                |
| \$† Merrill, Inc., Bonita Springs, FL 33959                                   | 813-591-1626                |
| \$ MG Electronics, Hauppauge, NY 11788                                        | 516-582-3400                |
| \$ Mitsubishi Elctns. America, Inc., Elctn. Device Grp., Sunnyvale, CA 94086  | 408-730-5900                |
| Motor-Tronics, Inc., Vista, CA 92083                                          | 619-727-7425                |
| \$† NIDEC Corporation, Torrington, CT 06790                                   | 203-482-4422                |
| \$ Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173 | 708-843-7900/1-800-626-6766 |
| \$ Oriental Motor USA Corp., Torrance, CA 90505-5217                          | 310-515-2264                |
| \$ Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216       | 718-774-5900                |
| \$ Product Technology, Inc., Irvine, CA 92714                                 | 714-474-8998                |
| \$ Relay Specialties, Oakland, NJ 07436                                       | 201-337-1000                |
| \$ Rittal Corp., Springfield, OH 45504-9807                                   | 800-477-4000                |
| \$ Shinano Kensei Corp. (SKC), Culver City, CA 90230                          | 310-915-7300                |
| \$† Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416          | 516-328-0200/328-3300       |
| \$† Sunon, Mission Viejo, CA 92691                                            | 714-583-9802                |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                        | 612-854-9632                |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                        | 612-854-9177                |
| \$ Zero Corp., Zero East Div., Monson, MA 01057-0128                          | 413-267-5561                |

## Fans, Propeller-2600

|                                                                             |              |
|-----------------------------------------------------------------------------|--------------|
| \$ ebm Industries, Inc., Farmington, CT 06034, 203-674-1515                 | C-1578       |
| Indek Corporation, San Jose, CA 95131, 408-432-1199                         | C-1593-1596  |
| \$ KeyMarc Electronics, Inc., Torrance, CA 90501, 310-212-7724              | C-1598-1601  |
| \$ Aromat Corp., Matsushita Electrical Works Ltd., New Providence, NJ 07974 | 908-464-3550 |
| \$† Ashland Elec. Prods., Inc., Rochester, NH 03867                         | 603-335-1100 |
| Buehler Products, Inc., Raleigh, NC 27636                                   | 919-469-8522 |
| \$ Cabtron Systems, Inc., Northbrook, IL 60062                              | 708-498-6090 |
| Chicago Blower Corp., Glendale Heights, IL 60139                            | 708-858-2600 |
| \$† Eastern Air Devices, Inc., Dover, NH 03820                              | 603-742-3330 |
| \$† Hi-Tech, Inc., Zion, IL 60099                                           | 708-746-2447 |
| \$ Howard Industries, Inc./Brevol Motors, Milford, IL 60953                 | 815-889-4105 |
| \$ Interfan, William J. Purdy Co., Burlingame, CA 94010                     | 415-347-1203 |
| \$ Kooltronic, Inc., Hopewell, NJ 08525                                     | 609-466-3400 |
| \$ Kooltronic, Inc., Ventura, CA 93003                                      | 805-642-8521 |
| \$† Merrill, Inc., Bonita Springs, FL 33959                                 | 813-591-1626 |
| \$ Oriental Motor USA Corp., Torrance, CA 90505-5217                        | 310-515-2264 |
| \$ Peter Parts & Assocs., Webster, NY 14580                                 | 716-265-2540 |
| \$ Product Technology, Inc., Irvine, CA 92714                               | 714-474-8998 |
| Rodale Technical Sales Inc., Islip, NY 11751                                | 516-277-5454 |

## Fans, Tubeaxial-2600

|                                                                              |             |
|------------------------------------------------------------------------------|-------------|
| Advanced Technology Company, Vista, CA 92083, 619-727-7430                   | C-1562-1573 |
| Amco Engineering, Schiller Pk., IL 60176, 708-671-6670/800-833-3156          | C-1574      |
| \$† Eastern Air Devices, Inc., Dover, NH 03820, 603-742-3330                 | B-1249      |
| \$ ebm Industries, Inc., Farmington, CT 06034, 203-674-1515                  | C-1578-1579 |
| \$† ETRI, Inc., Monroe, NC 28110, 704-289-5423                               | C-1585-1591 |
| \$ GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                          | D-1732      |
| \$ Indek Corporation, San Jose, CA 95131, 408-432-1199                       | C-1593-1596 |
| \$ KeyMarc Electronics, Inc., Torrance, CA 90501, 310-212-7724               | C-1598-1601 |
| Mechatronics Inc., Mercer Island, WA 98040, 206-232-4800                     | C-1610-1611 |
| \$ Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366             | C-1617      |
| \$ Micronel U.S., Vista, CA 92083, 619-727-7400                              | C-1618-1625 |
| \$ NMB Technologies Inc., Chatsworth, CA 91311, 818-341-3355                 | C-1631      |
| \$† Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 | C-1057      |
| \$ Papst Mechatronic Corp., Newport, RI 02840, 401-849-8810                  | C-1633      |
| \$ Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300                 | C-1638      |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                   | C-1640-1641 |



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|------------------------------------------------------------------------------|--------------|
| U.S. Toyo Fan Corp., San Gabriel, CA 91776, 818-287-5297                     | C-1652-1653  |
| † Ashland Elec. Prods., Inc., Rochester, NH 03867                            | 603-335-1100 |
| § Baknor Industries Inc., Mississauga, ONT., CANADA L5L 1X1                  | 416-828-2400 |
| Chicago Blower Corp., Glendale Heights, IL 60139                             | 708-858-2600 |
| § Comair Rotron, A KJI Company, San Ysidro, CA 92173                         | 619-661-6688 |
| Dairton, Inc., Tigard, OR 97223                                              | 503-620-2879 |
| § Delta Products Corporation, Fremont, CA 94538                              | 510-770-0660 |
| † Dynamic Air Engrg., Inc., Santa Ana, CA 92705-5697                         | 714-540-1000 |
| § Electric Motor Engineering, Inc., Mission Viejo, CA 92691                  | 714-583-9802 |
| † Fasco Motors Group, Chesterfield, MO 63017                                 | 314-532-3505 |
| General Electronic Materials Technology, Los Alamitos, CA 90720              | 714-761-5684 |
| § Globe Motors, Dayton, OH 45404                                             | 513-228-3171 |
| † HI-Tech, Inc., Zion, IL 60099                                              | 708-746-2447 |
| § Howard Industries, Inc./Brevet Motors, Milford, IL 60953                   | 815-889-4105 |
| § Interlan, William J. Purdy Co., Burlingame, CA 94010                       | 415-347-1203 |
| International Microelectronics, Arlington, TX 76003                          | 817-473-1730 |
| ISL Products Int'l., Ltd., Syosset, NY 11791-6093                            | 516-937-3475 |
| § Japanese Products Corp., Elmsford, NY 10523                                | 914-592-8880 |
| † Kooltronic, Inc., Hopewell, NJ 08525                                       | 609-466-3400 |
| † Kooltronic, Inc., Ventura, CA 93003                                        | 805-642-8521 |
| † Merrill, Inc., Bonita Springs, FL 33959                                    | 813-591-1626 |
| § MG Electronics, Hauppauge, NY 11788                                        | 516-582-3400 |
| Mouse Electronics, Santee, CA 92071                                          | 800-346-6873 |
| Mouse Electronics, Mansfield, TX 76063                                       | 800-346-6873 |
| Mouse Electronics, Gilroy, CA 95020                                          | 800-346-6873 |
| † Nedco Electronics, Inc., Morton Grove, IL 60053                            | 708-967-0500 |
| § NIDEC Corporation, Torrington, CT 06790                                    | 203-482-4422 |
| § Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173 | 708-843-7900 |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216         | 718-774-5900 |
| § Product Technology, Inc., Irvine, CA 92714                                 | 714-474-8998 |
| § Relay Specialties, Oakland, NJ 07436                                       | 201-337-1000 |
| § Sunon, Mission Viejo, CA 92691                                             | 714-583-9802 |
| § Techmar Corp., Marina Del Rey, CA 90292                                    | 310-827-8897 |

## Fans, Vaneaxial-2600

|                                                                                          |              |
|------------------------------------------------------------------------------------------|--------------|
| Advanced Technology Company, Vista, CA 92083, 619-727-7430                               | C-1562-1573  |
| § KeyMarc Electronics, Inc., Torrance, CA 90501, 310-212-7724                            | C-1598       |
| Mechatronics Inc., Mercer Island, WA 98040, 206-232-4800                                 | C-1610-1611  |
| Micronel U.S., Vista, CA 92083, 619-727-7400                                             | C-1618-1625  |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297/219-253-6666 | C-1077       |
| † Ashland Elec. Prods., Inc., Rochester, NH 03867                                        | 603-335-1100 |
| § Baknor Industries Inc., Mississauga, ONT., CANADA L5L 1X1                              | 416-828-2400 |
| Chicago Blower Corp., Glendale Heights, IL 60139                                         | 708-858-2600 |
| § Dairton, Inc., Tigard, OR 97223                                                        | 503-620-2879 |
| Delta Products Corporation, Fremont, CA 94538                                            | 510-770-0660 |
| † Dynamic Air Engrg., Inc., Santa Ana, CA 92705-5697                                     | 714-540-1000 |
| † Eastern Air Devices, Inc., Dover, NH 03820                                             | 603-742-3330 |
| § Electric Motor Engineering, Inc., Mission Viejo, CA 92691                              | 714-583-9802 |
| † Fasco Motors Group, Chesterfield, MO 63017                                             | 314-532-3505 |
| Globe Motors, Dayton, OH 45404                                                           | 513-228-3171 |
| § Howard Industries, Inc./Brevet Motors, Milford, IL 60953                               | 815-889-4105 |
| § Interlan, William J. Purdy Co., Burlingame, CA 94010                                   | 415-347-1203 |
| † Merrill, Inc., Bonita Springs, FL 33959                                                | 813-591-1626 |
| § Product Technology, Inc., Irvine, CA 92714                                             | 714-474-8998 |
| Rodale Technical Sales Inc., Islip, NY 11751                                             | 516-277-5454 |

## Fans/Blowers (MIL)-2440 - See Vol. B

## Fasteners, Cable & Wire - See Wire & Cable Ties (Vol. C)

## Fasteners, Metal-2500

|                                                                        |                |
|------------------------------------------------------------------------|----------------|
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400  | C-1746         |
| Electro Space Fabricators, Tipton, PA 19562-0067, 215-682-7181         | C-1029         |
| Kit Master, Peekskill, NY 10566, 914-736-1010                          | C-1541         |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161       | C-1543         |
| † Nielsen Hardware, Zero Corporation, Hartford, CT 06141, 203-522-8145 | C-1544-1545    |
| † Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000         | C-1555         |
| § Acme Model Engineering Co., Ridgefield, NJ 07657                     | 201-943-7650   |
| Adams Rite Products, Inc., Glendale, CA 91204                          | 818-241-5121   |
| † Aimsco Inc., Chelser Corp., Seattle, WA 98108                        | 206-762-8014   |
| † Alinabell, Milford, CT 06460                                         | 203-397-3241   |
| † Amatronic Electronic Hardware, New Haven, CT 06515                   | 203-397-3311   |
| † AME Corporation, Towaco, NJ 07082-0195                               | 201-263-1700   |
| § Arrow Fastener, Saddlebrook, NJ 07662                                | 201-843-6900   |
| † Associated Spring, Barnes Grp., Bristol, CT 06010                    | 203-583-1331   |
| Autosplice, Inc., San Diego, CA 92121                                  | 619-535-0077   |
| Autoswage Products, Shelton, CT 06484                                  | 203-929-1401   |
| † Avibank Manufacturing, Inc., Burbank, CA 91503-0391                  | 818-843-4330   |
| Bead Industries, Bridgeport, CT 06605-0571                             | 203-334-4124   |
| † Berg, W. M., Inc., East Rockaway, NY 11518                           | 516-599-5010   |
| † Brim Electronics, Fair Lawn, NJ 07410                                | 201-796-2886   |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8  | 1-800-361-9466 |
| Chandler Products, Cleveland, OH 44117                                 | 216-481-4400   |
| Cold Header Machine Corp., Boca Raton, FL 33431                        | 407-393-3201   |
| § Concord Electronics Corporation, New York, NY 10012                  | 1-212-777-6571 |
| Cornell Manufacturing, An Elgin Co., Orangeburg, NY 10962              | 914-365-0400   |
| Delbert Blinn Co., Inc., Pomona, CA 91769                              | 909-629-3900   |
| § Dimco-Gray, Dayton, OH 45458                                         | 513-433-7600   |
| † Dupree, Inc., China, CA 91710                                        | 909-597-4889   |
| † Dynacast Inc., Yorktown Heights, NY 10598                            | 914-962-6300   |
| † Dzus Fastener, W. Islip, NY 11795                                    | 516-669-6000   |
| † Eberhard Mfg. Co., Div., Eastern Co., Strongsville, OH 44136         | 216-238-9720   |
| EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268                 | 818-442-2572   |
| Equipto Electronics Corp., Aurora, IL 60506-9988                       | 708-897-4691   |

|                                                                           |               |
|---------------------------------------------------------------------------|---------------|
| § Fastex, Illinois Tool Works, Des Plaines, IL 60016                      | 708-299-2222  |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016   | 708-350-8200  |
| § FISHERTECH, Fisher Gauge Limited, Peterborough, Ontario, CANADA K9J 6Y9 | 705-748-9522  |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                     | 908-241-0710  |
| † Hoffman Engineering Corp., Stamford, CT 06902                           | 203-325-8933  |
| § ICO-RALLY Corporation, Palo Alto, CA 94303                              | 415-856-9900  |
| Ken-Tron Mfg. Co., Owensboro, KY 42301                                    | 502-684-0431  |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                      | 213-849-6211  |
| § Lyn-Tron, Inc., Burbank, CA 91505                                       | 800-423-2734  |
| Mark Eylet Inc., AMP, Inc., Wolcott, CT 06716                             | 203-756-8847  |
| † Morris, J. I. Co., Southbridge, MA 01550                                | 508-764-4394  |
| † NKR Precision Manufacturing, Harrison, NY 10926                         | 914-782-8562  |
| † NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016          | 818-357-0901  |
| § Panduit Corp., Tinley Park, IL 60477-0981                               | 800-777-3300  |
| † Penn Engineering & Manufacturing Corp., Danboro, PA 18916               | 215-766-8853  |
| PIC Design, Remington Technologies, Inc., Middlebury, CT 06762            | 203-758-8272  |
| † Precision Metal Products Co., Peabody, MA 01960                         | 508-532-5500  |
| § RAF Electronic Hardware, Seymour, CT 06483                              | 203-888-2133  |
| Schroff, Inc., Warwick, RI 02886                                          | 401-732-3770  |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                      | 800-634-2356  |
| † Sjöberg, C. & Son, Inc., Cranston, RI 02910                             | 401-461-8200  |
| § H H Smith, NT-T Inc., Meadville, PA 16335                               | 814-724-6440  |
| † Southco, Inc., Concordville, PA 19331                                   | 215-459-4000  |
| † Standard Insert Co., Penn Engrg. & Mfg. Corp., Danboro, PA 18916        | 215-766-0960  |
| † Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416        | 516-328-3300  |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416        | 516-328-0200  |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                       | 607-772-1161  |
| † Unicorp, Orange, NJ 07050                                               | 201-674-1700  |
| § Useco Div., Litton Inds., Van Nuys, CA 91409                            | 818-786-6381  |
| § West Electronic Sales Team, Huntington Beach, CA 92647                  | 714-375-6500; |
|                                                                           | 310-495-5569  |

## Fasteners, Nonmetallic-2500

|                                                                                    |                |
|------------------------------------------------------------------------------------|----------------|
| § Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969                  | C-1538-1539    |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400              | C-1746         |
| Electro Space Fabricators, Tipton, PA 19562-0067, 215-682-7181                     | C-1029         |
| Kit Master, Peekskill, NY 10566, 914-736-1010                                      | C-1541         |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161                   | C-1543         |
| Simco, Miami, FL 33177, 305-233-9900; 800-780-9090                                 | C-1094-1096    |
| Acme Model Engineering Co., Ridgefield, NJ 07657                                   | 201-943-7650   |
| † Aimsco Inc., Chelser Corp., Seattle, WA 98108                                    | 206-762-8014   |
| Alberox Corporation, New Bedford, MA 02745                                         | 508-995-1725   |
| † All-States, Inc., Chicago, IL 60640                                              | 312-728-0525   |
| † Amatronic Electronic Hardware, New Haven, CT 06515                               | 203-397-3311   |
| § Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., Fort Smith, AR 72903-7097 | 501-452-3987   |
| † Applied Plastics Technology, Bristol, RI 02809                                   | 401-253-0200   |
| † Avery Dennison, Framingham, MA 01701                                             | 508-879-0511   |
| § Berg, W. M., Inc., East Rockaway, NY 11518                                       | 516-599-5010   |
| § Bivar, Inc., Irvine, CA 92718                                                    | 714-951-8808   |
| † Brim Electronics, Fair Lawn, NJ 07410                                            | 201-796-2886   |
| § Concord Electronics Corporation, New York, NY 10012                              | 1-212-777-6571 |
| Delbert Blinn Co., Inc., Pomona, CA 91769                                          | 909-629-3900   |
| Dynacast Inc., Yorktown Heights, NY 10598                                          | 914-962-6300   |
| † Dzus Fastener, W. Islip, NY 11795                                                | 516-669-6000   |
| † Eberhard Mfg. Co., Div., Eastern Co., Strongsville, OH 44136                     | 216-238-9720   |
| § Fastex, Illinois Tool Works, Des Plaines, IL 60016                               | 708-299-2222   |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016            | 708-350-8200   |
| Hanscom, H. F. Co., Inc., Providence, RI 02905                                     | 401-941-1455   |
| § Heyco Molded Products, Inc., Kenilworth, NJ 07033                                | 908-245-0033   |
| § ICO-RALLY Corporation, Palo Alto, CA 94303                                       | 415-856-9900   |
| † Kam Components, Inc., Nesconset, NY 11767                                        | 516-585-0666   |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                               | 213-849-6211   |
| § Lyn-Tron, Inc., Burbank, CA 91505                                                | 800-423-2734   |
| Minor Rubber Co., Inc., Bloomfield, NJ 07003                                       | 201-338-6800   |
| § Nichifu America, Inc., Pottstown, PA 19464                                       | 215-329-7120   |
| † NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016                   | 818-357-0901   |
| § North American Capacitor Co., Indianapolis, IN 46224                             | 317-273-0090   |
| † Panduit Corp., Tinley Park, IL 60477-0981                                        | 800-777-3300   |
| § PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                   | 203-758-8272   |
| § RAF Electronic Hardware, Seymour, CT 06483                                       | 203-888-2133   |
| § Richco Plastic Co., Chicago, IL 60680                                            | 312-539-4060   |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                           | 317-543-3540;  |
|                                                                                    | 800-382-4635   |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                        | 814-724-6440   |
| † Southco, Inc., Concordville, PA 19331                                            | 215-459-4000   |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416                 | 516-328-0200   |
| † Unicorp, Orange, NJ 07050                                                        | 201-674-1700   |
| § Useco Div., Litton Inds., Van Nuys, CA 91409                                     | 818-786-6381   |
| § West Electronic Sales Team, Huntington Beach, CA 92647                           | 714-375-6500;  |
|                                                                                    | 310-495-5569   |

## Fault Locators - See Detectors (Vol. D)

## Feedthrus, Satellite Antenna-1200 - See Vol. D

## Feedthrus & Seals, Environmental-2500

|                                                                                          |                   |
|------------------------------------------------------------------------------------------|-------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                                     | C-1148-1149, 1151 |
| Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                      | C-1290            |
| Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136, 717-424-8510 | C-1693            |



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| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                    | A-1651       |
| † Alberox Corporation, New Bedford, MA 02745                                     | 508-995-1725 |
| † AME Corporation, Towaco, NJ 07082-0195                                         | 201-263-1700 |
| Andon Elctms. Corp., Lincoln, RI 02865                                           | 401-333-0388 |
| † Applied Plasctics Technology, Bristol, RI 02809                                | 401-253-0200 |
| Augat Alcoswitch, Augat Inc., Attleboro Falls, MA 02763                          | 508-699-9800 |
| Ceramaseal, New Lebanon, NY 12125                                                | 518-794-7800 |
| § Compac, Holbrook, NY 11741                                                     | 516-585-3400 |
| Conax Buffalo Corporation, Buffalo, NY 14225                                     | 716-684-4500 |
| † Da/Pro Rubber, Inc., Broken Arrow, OK 74012                                    | 918-258-9386 |
| † Detronics Corporation, S. El Monte, CA 91733                                   | 818-579-7130 |
| § Ferrofluidics Corp., Nashua, NH 03061                                          | 603-883-9800 |
| † Hermetic Seal Corp., Rosemead, CA 91770                                        | 213-283-0411 |
| Mini-Systems, Inc., Electronic Package Div., Plainville, MA 02762                | 508-695-2000 |
| Omega Engineering, Stamford, CT 06907                                            | 800-826-6342 |
| § Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715                       | 714-833-3000 |
| PAVE Technology Co., Inc., Dayton, OH 45414-3445                                 | 513-890-1100 |
| Philips Technologies, Airpax Protector Group, Cambridge, MD 21613                | 410-228-4600 |
| † Precision Electro-Optics, Inc., Chatham, NJ 07928                              | 203-635-8811 |
| Schott Electronics, Seymour, CT 06483                                            | 201-881-0102 |
| Temescal/Airco Coating Technology, The BOC Group, Inc., Fairfield, CA 94533-0252 | 707-423-2100 |
| U.R.D. America, Laguna Nigel, CA 92607                                           | 714-831-0111 |
| Veeco Instruments Inc., Plainview, NY 11803                                      | 516-349-8300 |

## Ferrite Material & Parts-1850 — See Vol. A

## Ferrules, Cable-end-2500

|                                                                                 |                            |
|---------------------------------------------------------------------------------|----------------------------|
| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                         | C-1157                     |
| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                           | B-1202                     |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                 | 404-751-9473; 800-221-4767 |
| Alpha Industries, Inc., Woburn, MA 01801                                        | 617-935-5150               |
| Autowage Products, Shelton, CT 06484                                            | 203-929-1401               |
| Braxton Mfg., Watertown, CT 06795                                               | 203-274-6781               |
| § Concord Electronics Corporation, New York, NY 10012                           | 1-212-777-6571             |
| Fiberoptics Technology, Inc., Pomfret, CT 06258                                 | 203-928-0443, 800-433-5248 |
| § Phoenix Contact Inc., Harrisburg, PA 17111                                    | 717-944-1300               |
| Transtechonlogy Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300               |
| § Weidmuller Inc., Paladin Tools, Newbury Park, CA 91320                        | 805-499-0318               |

**Fiber Optic Components** — See Adapters (Vol. B), Attenuators (Vol. B), Cable (Vol. B), Connectors (Vol. B), Couplers (Vol. B), Detectors (Vol. B), Isolators (Vol. B), Light Sources (Vol. B), Receivers (Vol. B), Transmitters (Vol. B)

**Fiber Optic Data Links** — See Data Links, Fiber Optic (Vol. B)

**Fiber Optic Networks-2475 — See Vol. B**

**Fiber Optic Scanners** — See Scanners, Fiber Optic (Vol. B)

**Fiber Optic Splices & Splicing Equipment-2475 — See Vol. B**

**Fiber Optic Test Equipment** — See Test Equipment, Fiber Optic (Vol. B), Testers, Fiber Optic (Vol. D)

## Films, Masking-2500

|                                                                       |                                            |
|-----------------------------------------------------------------------|--------------------------------------------|
| § The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900           | C-1685                                     |
| Berg Electronics, Camp Hill, PA 17011                                 | 800-237-2374                               |
| † Cadillac Plastic & Chem. Co. Div. of MA. Hanna, Troy, MI 48007-7035 | 313-583-1200                               |
| Conforming Matrix, Toledo, OH 43611                                   | 419-729-3777                               |
| Electro Insulation Corp., Arlington Hgts., IL 60004                   | 708-632-1020                               |
| § Gordon Instruments, Inc., Orchard Park, NY 14127                    | 716-662-5353; 1-800-333-2672               |
| § Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119             | 206-284-2200                               |
| International Resistive Company, Boone, NC 28607                      | 704-264-8861                               |
| † SAS Industries Inc., Manorville, NY 11949                           | 516-727-1441; 1-800-544-5238               |
| Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003               | 214-231-6663; 214-924-3289; 1-800-331-6600 |

**Films, Resistance-4700 — See Vol. A**

**Filters, AC Power Line-2700 — See Vol. A**

**Filters, AF-2750 — See Vol. A**

**Filters, Air** — See Air Cleaners & Filters (Vol. C)

**Filters, Air (for Clean Room)-2550 — See Vol. D**

**Filters, Air (for Disk Drives)-2750 — See Vol. A**

**Filters, Analog** — See Filters, Continuously Variable (Vol. A)

**Filters, Antenna-2750 — See Vol. A**

**Filters, Antialias-2750 — See Vol. A**

**Filters, Band Elimination-2750 — See Vol. A**

**Filters, Bandpass-2750 — See Vol. A**

**Filters, Bandpass, SAW (Surface Acoustic Wave)-2750 — See Vol. A**

**Filters, Band Reject, Band Stop** — See Filters, Band Elimination (Vol. A)

**Filters, Ceramic-2750 — See Vol. A**

**Filters, Ceramic, Surface Mount-2750 — See Vol. A**

**Filters, Coaxial-2750 — See Vol. A**

**Filters, Color, Panel Light** — Also see Lenses, Readout & Display;

Lenses, Filters, Windows, Infrared-2460 — See Vol. B

**Filters, Comb-2750 — See Vol. A**

**Filters, Continuously Variable-2750 — See Vol. A**

**Filters, Crystal-2300 — See Vol. A**

**Filters, Delay-2750 — See Vol. A**

**Filters, Digital-2750 — See Vol. A**

**Filters, Digital, High Speed FFT/FIR-2750 — See Vol. A**

**Filters, Display-3700 — See Vol. B**

**Filters, EMI/RFI-2700 — See Vol. A**

**Filters, Equalizer-2750 — See Vol. A**

**Filters, Harmonic-2750 — See Vol. A**

**Filters, High Pass-2750 — See Vol. A**

**Filters, Hybrid-2750 — See Vol. A**

**Filters, IF-2750 — See Vol. A**

**Filters, Ladder-2750 — See Vol. A**

**Filters, LAN-2750 — See Vol. A**

**Filters, LC-2750 — See Vol. A**

**Filters, Line** — See Filters, EMI/RFI (Vol. A)

**Filters, Linear Phase-2750 — See Vol. A**

**Filters, Low Pass-2750 — See Vol. A**

**Filters, Mechanical-2750 — See Vol. A**

**Filters, Microwave-3450 — See Vol. A**

**Filters, Monolithic-2300 — See Vol. A**

**Filters, Notch** — See Filters, Band Elimination (Vol. A)

**Filters, Optical-3700 — See Vol. B**

**Filters, Programmable** — See Filters, Variable (Vol. A)

**Filters, RF-2750 — See Vol. A**

**Filters, Single Sideband-2750 — See Vol. A**

**Filters, Surface Acoustic Wave (SAW)-2300 — See Vol. A**

**Filters, Synchronous Tracking-2750 — See Vol. A**

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## Flux, Brazing & Soldering Materials-4600

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| † Alpha Metals, Jersey City, NJ 07304                                                            | 201-434-6778                |
| † Caig Laboratories, Rancho Bernardo, CA 92127-1904                                              | 619-451-1799                |
| † Contact East, N. Andover, MA 01845                                                             | 508-682-2000                |
| Cramco Inc., Scarborough, Ont., CAN MIL 4M7                                                      | 416-757-2876                |
| § Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                      | 708-547-5400                |
| § Gardiner Solder Co., Div. of Gardiner Metal Co., Chicago, IL 60632                             | 312-847-0100                |
| § GC-Thorsen, Rockford, IL 61105-1209                                                            | 815-968-9661                |
| § HMC/Hub Material Company, Canton, MA 02021                                                     | 617-821-1870                |
| † Indium Corporation of America, Ulica, NY 13502                                                 | 315-853-4900; 1-800-4INDIUM |
| § Kester Solder Div., Litton Sys., Inc., Des Plaines, IL 60018                                   | 708-297-1600                |
| † Multicore Solders, Inc., Richardson, TX 75081                                                  | 214-238-1224                |
| † Read Advanced Materials, A Readco Intl. business unit, Riverside, RI 02915-0039                | 401-433-7000                |
| Solder Absorbing Technology (SAT), A Sprig Co., Springfield, MA 01108                            | 800-628-8862                |
| Superior Flux & Mfg. Co., Cleveland, OH 44143                                                    | 216-641-3315                |
| § Techni-Tool, Plymouth Meeting, PA 19462                                                        | 215-825-4990                |
| † Tech Spray, Inc., Amarillo, TX 79105                                                           | 806-372-8523                |
| † Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., Downers Grove, IL 60515-4012 | 708-963-0220                |

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## Frames, Cabinet & Rack-1400

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| † Amco Engineering, Schiller Pk., IL 60176, 708-671-6670; 800-833-3156                    | C-1010, 1012-1013 |
| § Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                                  | C-1016            |
| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                               | C-1017            |
| † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572                    | C-1022            |
| Electro Space Fabricators, Tipton, PA 19562-0067, 215-682-7181                            | C-1026            |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                     | C-1031            |
| † Emcor Products, Crenlo, Inc., Rochester, MN 55901, 507-289-3371                         | C-1035-1036       |
| † Euploto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691                          | C-1038-1040       |
| Gemini Inc., Cannon Falls, MN 55009, 507-263-3957; 800-533-3631                           | C-1046            |
| † General Devices Co., Inc., Indianapolis, IN 46239-0100, 317-897-7000, 1-800-626-9484    | C-1048            |
| § Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                              | C-1049            |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                | C-1056-1059, 1061 |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297; 219-253-6666 | C-1073-1075       |
| † Premier Metal Prods. Co., Bronx, NY 10451, 718-993-9200                                 | C-1080            |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                                            | C-1088            |



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| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175; 800-848-4525                          | C-1110, 1112-1113                        |
| Alusett U.S.A., Inc., Peekskill, NY 10566                                                              | 914-737-0120                             |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                                 | 1-800-344-0223, Ext. 1027                |
| \$ Atlas/Soundolier, Commercial Sound Div., Atapco Security & Communications Group, Fenton, MO 63026   | 314-349-3110                             |
| \$ Atlas/Soundolier, Industrial Cabinet Div., Atapco Security & Communications Group, Fenton, MO 63026 | 314-349-3110                             |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                          | 203-288-8001; 1-800-242-2863             |
| \$ Bud Industries, Inc., Willoughby, OH 44094-0431                                                     | 216-946-3200                             |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411                             |
| † Craig Systems Corp., Eastern Technologies, Ltd., Amesbury, MA 01913-4848                             | 508-388-5662                             |
| † Electronic Enclosures, Div. Wyle Laboratories, El Segundo, CA 90245                                  | 310-643-8181                             |
| \$ Ergotron, Inc., Eagan, MN 55121                                                                     | 612-452-8135                             |
| \$ GTE Supply, GTE, Irving, TX 75038                                                                   | 800-433-4837                             |
| Hybricon Corporation, Ayer, MA 01432                                                                   | 508-772-5422                             |
| 3M Private Network Products, 3M, Austin, TX 78726                                                      | 512-984-3400; 800-426-8626               |
| \$ Ritze Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0                                           | 519-696-2616                             |
| † Skydine Div., AAR Mfg. Port Jervis, NY 12771                                                         | 914-856-6655; 800-428-CASE               |
| † Thermodyne International Ltd., Long Beach, CA 90810                                                  | 310-603-1976                             |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                                                    | 607-772-1161                             |
| \$ U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503                  | 310-316-9984                             |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342                                                       | 818-365-9661; 800-423-5659               |
| Zero Cabinets (Stanton), Pacoima, CA 91331-2226                                                        | 818-890-3445                             |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                                          | 801-298-5900                             |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                                                    | 413-267-5561                             |
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| Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                                                     | C-1662, 1684                             |
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                                            | C-1664, 1685                             |
| Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136, 717-424-8510               | C-1687-1694                              |
| # Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119, 206-284-2200                                | C-1665                                   |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                          | A-1652, C-1419                           |
| <b># Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730</b>                      |                                          |
| † Airtron, Litton Industries, Inc., Morris Plains, NJ 07950                                            | 201-539-5500                             |
| † AME Corporation, Towaco, NJ 07082-0195                                                               | 201-263-1700                             |
| † Applied Plastics Technology, Bristol, RI 02809                                                       | 401-253-0200                             |
| Atlee Inc., North Andover, MA 01845                                                                    | 508-681-1003                             |
| † The Auburn Manufacturing Company, Middletown, CT 06457-0251                                          | 203-346-6677                             |
| Carey Electronics Engineering Co., Springfield, OH 45505                                               | 513-323-6300                             |
| Caramaseal, New Lebanon, NY 12125                                                                      | 518-794-7800                             |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                                   | 617-935-4850                             |
| † CHR, Furon, New Haven, CT 06509                                                                      | 203-777-3631                             |
| † Compac, Holbrook, NY 11741                                                                           | 516-585-3400                             |
| † Conductive System, Inc., Amsterdam, NY 12010                                                         | 518-843-5740                             |
| Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                                   | 317-297-1030                             |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                            | 708-547-5400                             |
| \$ Gasket Dynamics, Inc., Mt. Holly, NJ 08060                                                          | 609-261-8100; 800-541-2500; 215-922-6046 |
| GM Nameplate, Inc., Seattle, WA 98119                                                                  | 206-284-2200                             |
| W.L. Gore & Assocs., Newark, DE 19714                                                                  | 302-738-4880                             |
| Insulation Components Associates, Inc., Downey, CA 90241                                               | 310-861-7268                             |
| † International Telecommunications Components, Inc., Deer Park, NY 11729                               | 516-243-1444                             |
| \$ ITT Pomona Electronics, Pomona, CA 91766                                                            | 909-469-2900                             |
| † Karn Components, Inc., Nesconset, NY 11767                                                           | 516-585-0666                             |
| † McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550                                   | 609-799-0100                             |
| Minor Rubber Co., Bloomfield, NJ 07003                                                                 | 201-338-6800; 800-433-6886               |

## Gears & Gear Mechanisms (Precision)-2500

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| † Mitec Electronics, Pointe Claire, QUEBEC, CANADA H9R 3X3                                   | 514-694-6666; 800-724-3911   |
| \$ † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715                                | 714-833-3000                 |
| † SAS Industries Inc., Manorville, NY 11949                                                  | 516-727-1441; 1-800-544-5238 |
| Schlegel Corp., Rochester, NY 14692                                                          | 800-828-6237, ext. 2126      |
| † Sealing Devices, Inc., Lancaster, NY 14086                                                 | 716-684-7600                 |
| Soundcoat Co., Inc., Deer Park, NY 11729-5701                                                | 516-242-2200                 |
| † Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003                                    | 214-231-6663; 800-331-6600   |
| † Spira Manufacturing Corp., North Hollywood, CA 91605                                       | 818-764-8222                 |
| \$ Tapecon, Inc., Rochester, NY 14612                                                        | 716-621-8400                 |
| \$ † Tech-Etch, Inc., Plymouth, MA 02360                                                     | 508-747-0300                 |
| † Technit, Cranford, NJ 07016                                                                | 908-272-5500                 |
| Topflight, York, PA 17404                                                                    | 717-843-9901; 800-233-9386   |
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| † Ocean Motions Co., Barrington, RI 02806, 401-246-1394                                      | B-1980                       |
| Applied Controls Co., Inc., Fairfield, NJ 07004                                              | 201-227-5454                 |
| \$ Automatic Timing and Controls, Sycon Corp., Marion, OH 43302                              | 614-387-8827                 |
| † Bourne Instruments Inc., Riverside, CA 92507                                               | 714-781-5148                 |
| Capacitec, Inc., Ayer, MA 01432                                                              | 508-772-6033                 |
| Computer Instruments Div., Westbury, NY 11590                                                | 516-876-8400                 |
| \$ Confaq Technologies Corp., Bristol, VT 05443                                              | 802-453-3332                 |
| HBM, Inc., Marlboro, MA 01752                                                                | 508-624-4500                 |
| Heidenhain Corp., Schaumburg, IL 60173                                                       | 708-490-1191                 |
| Jonard Industries Corp., Tuckahoe, NY 10707                                                  | 914-793-0700                 |
| Lucas Schaevitz, Inc., Lucas Industries PLC, Pennsauken, NJ 08110-1489                       | 609-662-8000                 |
| † Marlow Industries, Inc., Dallas, TX 75238-1645                                             | 214-340-4900                 |
| \$ MTS Sensors Division, MTS Sys. Corp., Research Triangle Park, NC 27709                    | 919-677-0100                 |
| Teledyne Gurley, Troy, NY 12181                                                              | 518-272-6300; 800-758-1844   |
| \$ Temposonics Sensors Division, MTS Sys. Corp., Research Triangle Park, NC 27709            | 919-677-0100                 |
| † Warren-Knight Instrument Co., Warren Industries, Inc., Philadelphia, PA 19116              | 215-464-9300                 |
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| \$ BURGESS-SAIA, Inc., Buffalo Grove, IL 60089, 708-215-9600                                 | B-1244                       |
| † Computer Conversions Corp., E. Northport, NY 11731, 516-261-3300                           | D-1175                       |
| \$ † Micro Mo Electronics, Inc., St. Petersburg, FL 33701, 813-822-2529                      | B-1295-1297, D-2316          |
| Motor Technology, Inc., Dayton, OH 45429, 513-294-1041                                       | B-1299, 1301                 |
| Arc Systems, Inc., Hauppauge, NY 11788-4764                                                  | 516-582-8020                 |
| \$ Berg, W. M., Inc., East Rockaway, NY 11518                                                | 516-599-5010                 |
| † Boston Gear, IMO Industries Inc., Quincy, MA 02171                                         | 617-328-3300; 1-800-225-5280 |
| † Bowmar Instrument Corp., Aerospace Div., Ft. Wayne, IN 46809                               | 219-747-3121                 |
| Daido Precision Engineered Products/, Sumtak Electronics, Somerset, NJ 08875                 | 908-805-1900                 |
| † EEMCO, Datron, Inc., Los Angeles, CA 90039                                                 | 818-247-7060                 |
| \$ † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735        | 516-752-1950                 |
| \$ Empire Magnetics, Rohnert Park, CA 94928                                                  | 707-584-2801                 |
| † FISHERCAST, Fisher Gauge Limited, Peterborough, Ont., CANADA K9J 6Y9                       | 705-748-9522                 |
| H D Systems, Inc., Hauppauge, NY 11788                                                       | 516-231-6630                 |
| † Industrial Control Co., Rockledge, FL 32955                                                | 407-259-7105                 |
| † Island Components Group, Bohemia, NY 11716                                                 | 516-563-4224                 |
| † Lucas Western Inc., Electro Systems Division, Brea, CA 92621                               | 714-671-4500                 |
| \$ † Machine Components Corp., Plainville, NY 11803                                          | 516-694-7222                 |
| † Maxon Precision Motors, Inc., Burlingame, CA 94010                                         | 415-697-9614                 |
| † Moore Reed & Co. Ltd., Andover, HAMPSHIRE SP 105AB                                         | 0264-324155                  |
| \$ † Perfect Gear & Instrument, Designatronics, Inc., New Hyde Park, NY 11042-5416           | 516-328-3300                 |
| \$ † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                          | 203-758-8272                 |
| \$ † Plasmatic, Inc., Putnam, CT 06260                                                       | 203-928-7911                 |
| Portescap U.S., Inc., Hauppauge, NY 11788                                                    | 516-234-3900                 |
| † Precision Mechanisms, Westbury, NY 11590                                                   | 516-ED3-5955                 |
| † Precision Specialties, Inc., Northridge, CA 91324                                          | 818-349-9774                 |
| \$ † Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416                        | 516-328-3300                 |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416                           | 516-328-0200; 328-3300       |
| † Transcoil, Inc., Eagle-Picher, Trooper, PA 19403-5214                                      | 215-539-4400                 |
| † Transcoil Inc., Eagle-Picher Inc., Trooper, PA 19403                                       | 215-539-4400                 |
| † Valley Electromagnetics, ECM Motor Co., Elkhorn, WI 53121                                  | 414-723-6400                 |
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## Glass Diode Sleeves-2500

- Coming Incorporated, Advanced Materials Business, Corning, NY 14831  
 607-974-7920  
 Garner Glass Co., Claremont, CA 91711  
 909-624-5071  
 GTI/ Electronics Div., Hadley, PA 16130-8815  
 412-253-3161

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- † Atlantic Optical Moulding, Webster, MA 01570  
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 § Corning Incorporated, Advanced Materials Business, Corning, NY 14831  
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 † Ercona, Patchogue, NY 11772  
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 † Kontes, Kimble Div. of Owens/I.L., Vineland, NJ 08360  
 800-223-7150  
 † Oxley Inc., Branford, CT 06405  
 203-488-1033  
 † Schott Glass Technologies, Inc., Duryea, PA 18642  
 717-457-7485  
 SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068  
 503-638-1000

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 † Aremco Products, Inc., Ossining, NY 10562  
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 † Atomergic Chemetals Corp., Farmingdale, NY 11735-1718  
 516-694-9000  
 † Barrington Plastics, Mt. Laurel, NJ 08054  
 609-235-5151  
 † Danmar Inds., Moorpark, CA 93021  
 1-805-529-3788  
 † Dylon Graphite Company, Dylon Industries, Inc., Cleveland, OH 44144  
 216-651-1300  
 † Superior Carbon Products, Inc., Walnut Grove, MS 39189  
 601-253-2442

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 † ETRI, Inc., Monroe, NC 28110, 704-289-5423  
 C-1585-1586  
 † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000  
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 § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400  
 C-1063, 1065  
 § Fourjay Industries, Dayton, OH 45413-0617  
 513-890-6444  
 LaFrance Corp., Philadelphia, PA 19153-3893  
 215-365-8000  
 § Martin Sound Prods. Inc., Cleveland, OH 44143-2297  
 216-442-2286  
 † McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550  
 609-799-0100  
 † Premier Metal Prods. Co., Bronx, NY 10451  
 718-993-9200  
 § RitZ Electronics/Relco, New Dundee, Ont., CANADA NOB ZEO  
 519-696-2616  
 § Speco Div., Components Specialties, Inc., Lindenhurst, NY 11757-0624  
 516-957-8700/800-645-5516  
 § Techmar Corp., Marina Del Rey, CA 90292  
 310-827-8897  
 † Titchener, E. H. & Co., Binghamton, NY 13902-1706  
 607-772-1161  
 † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310  
 801-298-5900

## Grommets &amp; Bushings-2500

- † Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969  
 C-1538-1539  
 § Oshino Lamps Limited, Shinagawa-Ku, Tokyo, JAPAN 140, 03-3471-8548  
 B-1176-1177  
 † Aimco Inc., Cheler Corp., Seattle, WA 98108  
 206-762-8014/800-426-0244  
 Amatom Electronic Hardware, New Haven, CT 06515  
 203-397-3311  
 † AME Corporation, Towaco, NJ 07082-0195  
 201-263-1700  
 † Applied Plastics Technology, Bristol, RI 02809  
 401-253-0200  
 † Avibank Manufacturing, Inc., Burbank, CA 91503-0391  
 818-843-4330  
 † Berg, W. M., Inc., East Rockaway, NY 11518  
 516-599-5010  
 † Brim Electronics, Fair Lawn, NJ 07410  
 201-796-2886  
 § Concord Electronics Corporation, New York, NY 10012  
 1-212-777-6571  
 † Daburn Electronics & Cable Corp., Northvale, NJ 07647  
 201-768-5400  
 † Da/Pro Rubber, Inc., Broken Arrow, OK 74012  
 918-258-9386  
 § E-A-R Specialty Composites, Cabot Safety Corp., Indianapolis, IN 46268  
 317-692-1111  
 § Fastex, Illinois Tool Works, Des Plaines, IL 60016  
 708-299-2222  
 § Gasket Dynamics, Inc., Mt. Holly, NJ 08060  
 609-261-8100/800-541-2500/  
 215-922-6046  
 § GC-Thorsen, Rockford, IL 61105-1209  
 815-968-9661  
 § Heyco Molded Products, Inc., Kenilworth, NJ 07033  
 908-245-0033/800-526-4182  
 § ICO-RALLY Corporation, Palo Alto, CA 94303  
 415-856-9900  
 † Keystone Electronics Corp., Astoria, NJ 1105-2017  
 718-956-8900  
 Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716  
 203-756-8847  
 † Minor Rubber Co., Inc., Bloomfield, NJ 07003  
 201-338-6800/800-433-6886  
 † NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016  
 818-357-0901  
 † Panduit Corp., Tinley Park, IL 60477-0981  
 800-777-3300  
 § Richco Plastic Co., Chicago, IL 60680  
 312-539-4060  
 † SAS Industries Inc., Manorville, NY 11949  
 516-727-1441/1-800-544-5238  
 † Stimpson Company, Inc., Bayport, NY 11705-1097  
 516-472-2000  
 § Tylon Corp., Milwaukee, WI 53223  
 414-355-1130/800-535-5552  
 § Useco Div., Litton Inds., Van Nuys, CA 91409  
 818-786-6381  
 † U.S. Terminals Inc., Cincinnati, OH 45243  
 513-561-8145

Ground Fault Detectors & Accessories — See Detectors, Ground Fault (Vol. D)

Ground Strips-1900 — See Vol. D

## Guides, Circuit Board-3200

- † Atlee Inc., North Andover, MA 01845, 508-681-1003  
 C-1015, 1671  
 † Bivar, Inc., Irvine, CA 92718, 714-951-8808  
 C-1537  
 † Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433  
 C-1016  
 † Calmark Corp., San Gabriel, CA 91776, 818-287-0451  
 C-1018  
 † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572  
 C-1022, 1135  
 § Electro Space Fabricators, Tipton, PA 19562-0067, 215-682-7181  
 1-807-1028  
 LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896/800-247-0564  
 C-1396  
 Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000  
 C-1058, 1061  
 § Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321  
 C-1646  
 Unitrack Industries, Inc., Milford, DE 19963, 302-424-5050  
 C-1114  
 § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661/800-423-5559  
 C-1674

- All-States, Inc., Chicago, IL 60640  
 312-728-0525  
 BICO-VERO Electronics, Inc., Hamden, CT 06514  
 203-288-8001/1-800-242-2863  
 † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007  
 708-981-6000  
 Compac, Holbrook, NY 11741  
 516-585-3400  
 § Components Corp., Denville, NJ 07834  
 201-627-0290  
 § Concord Electronics Corporation, New York, NY 10012  
 1-212-777-6571  
 Douglas Electronics, Inc., San Leandro, CA 94577  
 510-483-8770  
 ELMA Electronic Inc., Fremont, CA 94538  
 510-656-3400  
 † Milton Ross Co., Warrington, PA 18976  
 215-491-0600  
 § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153  
 215-365-8400  
 † Premier Metal Prods. Co., Bronx, NY 10451  
 718-993-9200



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| \$ Richco Plastic Co., Chicago, IL 60680                                              | 312-539-4060 |
| Rittal Corp., Springfield, OH 45504-9807                                              | 800-477-4000 |
| Schroff, Inc., Warwick, RI 02886                                                      | 401-732-3770 |
| † Stevens Products, Inc., E. Orange, NJ 07019                                         | 201-672-2140 |
| \$ Teknational Inds., Inc., Rochester, NY 14620-1103                                  | 716-232-1291 |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                                | 612-854-9632 |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                                | 612-854-9177 |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                                   | 607-772-1161 |
| \$ U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 | 310-316-9984 |
| \$ Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                      | 801-298-5900 |

## Gyros (All Types)-2200 — See Vol. D

**Hall Effect Devices** — See Generators, Hall (Vol. B), Magnetoresistors, Hall (Vol. A), Multipliers, Hall (Vol. A), Probes, Hall (Vol. A), Switches, Hall Effect (Vol. B)

## Handlers, Integrated Circuit (Automatic)-4100 — See Vol. D

## Handles For Cabinets, Circuit Boards, Racks, etc.-2500

|                                                                        |             |
|------------------------------------------------------------------------|-------------|
| \$ Bivar, Inc., Irvine, CA 92718, 714-951-8808                         | C•1537      |
| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090            | C•1017      |
| \$ Calmark Corp., San Gabriel, CA 91776, 818-287-0451                  | C•1018      |
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 | C•1291,1540 |
| † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572 | C•1022      |

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| \$ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C•1528      |
| \$ General Devices Co., Inc., Indianapolis, IN 46239-0100, 317-897-7000, 1-800-626-9484           | C•1048      |
| † Nielsen Hardware, Zero Corporation, Hartford, CT 06141, 203-522-8145                            | C•1544-1545 |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000                        | C•1057,1061 |

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|-------------------------------------------------------------------------------|-------------|
| \$ Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400         | C•1065      |
| Schroff, Inc., Warwick, RI 02886, 401-732-3770                                | C•1089      |
| Simco, Miami, FL 33177, 305-233-9900, 800-780-9090                            | C•1094-1096 |
| † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                         | C•1098-1099 |
| TDJ Co., Inc., San Diego, CA 92110, 619-276-5920                              | C•1100-1101 |
| † Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                       | C•1102,1104 |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175, 800-848-4525 | C•1107      |

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| \$ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661, 800-423-5659 | C•1674 |
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|--------------------------------------------------------------------------|----------------------------|
| † Adams Rite Products, Inc., Glendale, CA 91204                          | 818-241-5121               |
| \$ Aimsco Inc., Chelcor Corp., Seattle, WA 98108                         | 206-762-8014, 800-426-0244 |
| \$ Amatone Electronic Hardware, New Haven, CT 06515                      | 203-397-3311               |
| † Avibank Manufacturing, Inc., Burbank, CA 91503-0391                    | 818-843-4330               |
| \$ Berg, W. M., Inc., East Rockaway, NY 11518                            | 516-599-5010               |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                            | 203-288-8001, 800-242-2863 |
| Davies Molding Co., Carol Stream, IL 60188                               | 708-510-8188               |
| \$ Eberhard Mfg. Co., Div., Eastern Co., Strongsville, OH 44136          | 216-238-9720               |
| Electronic Packaging System, Marion, IA 52302                            | 319-377-3423               |
| ELMA Electronic Inc., Fremont, CA 94538                                  | 510-656-3400               |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                    | 908-241-0710               |
| \$ Hammond Manufacturing Co., Buffalo, NY 14225                          | 716-894-5710               |
| \$ Handles Unlimited, Vemaline Products Division, Warwick, RI 02887-6979 | 800-227-0254, 401-739-7600 |

|                                                                   |                            |
|-------------------------------------------------------------------|----------------------------|
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017             | 718-956-8900               |
| \$ Lyn-Tron, Inc., Burbank, CA 91505                              | 213-849-6211, 800-423-2734 |
| \$ Martin Sound Prods. Inc., Cleveland, OH 44143-2297             | 216-442-2286               |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762 | 203-758-8272               |
| \$ Premier Metal Prods. Co., Bronx, NY 10451                      | 718-993-9200               |
| # Project Pro. Twinsburg, OH 44087                                | 216-425-8888               |
| \$ RAF Electronic Hardware, Seymour, CT 06483                     | 203-888-2133               |
| Raycon Technology, Costa Mesa, CA 92627                           | 714-646-7700               |

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|---------------------------------------------------------------------|----------------------------|
| Rittal Corp., Springfield, OH 45504-9807                            | 800-477-4000               |
| Skydine Div., AAR Mfg., Port Jarvis, NY 12771                       | 914-856-6655, 800-428-CASE |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                        | 814-724-6440               |
| † Southco, Inc., Concordville, PA 19331                             | 215-459-4000               |
| \$ Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416 | 516-328-3300               |

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| \$ Teknational Inds., Inc., Rochester, NY 14620-1103            | 716-232-1291               |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706             | 607-772-1161               |
| † Unicor, Orange, NJ 07050                                      | 201-674-1700, 800-526-1389 |
| Unitrack Industries, Inc., Milford, DE 19963                    | 302-424-5050               |
| \$ Useco Div., Litton Inds., Van Nuys, CA 91409                 | 818-786-6381               |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 | 801-298-5900               |

## Handsets, Chestsets, Headsets, etc.-1300 — See Vol. D

**Hardware** — See Fasteners (Vol. C), Clamps (Vol. C), Terminals (Vol. C), etc.

## Hardware (ML), Connector-2440 — See Vol. B

**Harnesses, Wire** — See Cable Assemblies & Harnesses (Vol. C)

**Headers, Connector** — See Connectors, Cable (Vol. C), Connectors, Flat Cable (Vol. C), etc.

## Headers, DIP-2100

|                                                                                     |             |
|-------------------------------------------------------------------------------------|-------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100, 800-522-6752                            | C•1163      |
| Andon Electms. Corp., Lincoln, RI 02865, 401-333-0388                               | C•1256      |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                            | C•1262-1263 |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                      | C•1280-1281 |
| Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200                            | C•1289      |
| \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C•1298      |

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| \$ Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C•1339                 |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                                                               | C•1361                 |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                                                           | C•1442                 |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                                                                   | C•1551                 |
| Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                                                                 | C•1462-1463, 1465-1466 |
| Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110                                       | C•1487                 |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                                                    | 516-546-1751           |
| Advanced Connector Technology, Ventura, CA 93003                                                                             | 805-644-9990           |
| Anco Electronics, Inc., Rancho Cucamonga, CA 91730                                                                           | 1-800-545-ANCO         |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                                      | 602-897-7001           |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                                             | 508-222-2202           |
| Autosplice, Inc., San Diego, CA 92121                                                                                        | 619-535-0077           |
| Crane Electronics, Inc., Cincinnati, OH 45212                                                                                | 800-676-7644           |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                                                    | 617-661-2454           |
| \$ Elpakco, Inc., Lowell, MA 01851                                                                                           | 508-453-3000           |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                                              | 201-288-4477           |
| ERNI Components, Richmond, VA 23236                                                                                          | 800-447-5639           |
| Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135                                                        | 408-922-9000           |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                                              | 714-761-5684           |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                                                                | 301-921-4600           |
| \$ McKenzie Technology, Fremont, CA 94538                                                                                    | 510-651-2700           |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                                                           | 215-699-5373           |
| Milton Ross Co., Warrington, PA 18976                                                                                        | 215-491-0600           |
| † Mini-Systems, Inc., Electronic Package Div., Plainville, MA 02762                                                          | 508-695-2000           |
| Morris Enterprises, Sepulveda, CA 91343                                                                                      | 818-894-9103           |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                                                                 | 800-777-3300           |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                                                    | 909-945-1365           |
| Schott Electronics, Seymour, CT 06483                                                                                        | 203-881-0102           |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                                               | 803-676-2900           |

**Headers, Hermetic** — See Seals, Hermetic (Vol. C), Services, Hermetic Sealing (Vol. D)

## Headers, Programmable-2100

|                                                                                                     |                |
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| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                            | C•1260,1268    |
| Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200                                            | C•1289         |
| Altech Corp., Flemington, NJ 08822-6000                                                             | 908-806-9400   |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                    | 508-222-2202   |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7956   |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                                          | 1-800-672-6832 |

## Headers, Relay & Transformer-2100

|                                                       |                              |
|-------------------------------------------------------|------------------------------|
| Altech Corp., Flemington, NJ 08822-6000, 908-806-9400 | C•1153                       |
| Alberox Corporation, New Bedford, MA 02745            | 508-995-1725                 |
| \$ Custom Connector, Cleveland, OH 44114              | 216-241-1679                 |
| D & L Electronics, Langhorne, PA 19047                | 800-942-3631                 |
| † Detronics Corporation, S. El Monte, CA 91733        | 818-579-7130                 |
| \$ Electrical Industries Corp., Murray Hill, NJ 07974 | 908-464-3200                 |
| † Electronic Specialty Corp., Vancouver, WA 98685     | 206-574-5000                 |
| † Hermetic Seal Corp., Rosemead, CA 91770             | 213-283-0411                 |
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017 | 718-956-8900                 |
| \$ Line Electric Products, Gastonbury, CT 06033       | 203-659-3573, 1-800-331-1137 |
| † Moldtronics, Inc., Downers Grove, IL 60515          | 708-968-7000                 |
| \$ Morris Enterprises, Sepulveda, CA 91343            | 818-894-9103                 |
| Staffall Inc., Cranston, RI 02910                     | 401-461-5554                 |
| United Technical Products, Fallsington, PA 19054      | 800-553-5300                 |
| \$ Useco Div., Litton Inds., Van Nuys, CA 91409       | 818-786-6381                 |

## Headers, Shrouded-2100

|                                                                |                  |
|----------------------------------------------------------------|------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100, 800-522-6752       | C•1163           |
| Andon Electms. Corp., Lincoln, RI 02865, 401-333-0388          | C•1256           |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887 | C•1280-1281,1286 |

## \$ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830

|                                                                                        |              |
|----------------------------------------------------------------------------------------|--------------|
| \$ CW Industries, Southhampton, PA 18966, 215-355-7080                                 | C•1304       |
| \$ J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                | C•1363       |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                            | C•1383,1391  |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896, 800-247-0564             | C•1395-1396  |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                     | C•1448       |
| Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                          | C•1472-1473  |
| Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110 | C•1485,1489  |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                              | 516-546-1751 |
| Advanced Connector Technology, Ventura, CA 93003                                       | 805-644-9990 |
| † Alpha Products, Inc., Westlake Village, CA 91362                                     | 818-889-9304 |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                           | 203-281-3200 |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                | 602-897-7001 |
| Autosplice, Inc., San Diego, CA 92121                                                  | 619-535-0077 |
| \$ Berg Electronics, Camp Hill, PA 17011                                               | 800-237-2374 |
| Crane Electronics, Inc., Cincinnati, OH 45212                                          | 800-676-7644 |
| D & L Electronics, Langhorne, PA 19047                                                 | 800-942-3631 |
| Electronic Precision Technology Inc., Cambridge, MA 02140                              | 617-661-2454 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                        | 201-288-4477 |
| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135               | 408-922-9000 |



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| General Electronic Materials Technology, Los Alamitos, CA 90720  | 714-761-5684                     |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501 | 310-328-0051                     |
| \$† 3M-Electronic Products Division, Austin, TX 78726            | 1-800-225-5373 Sl. & Prod. Info. |
| \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012 | 805-484-0540                     |
| \$† Panduit Corp., Tinley Park, IL 60477-0981                    | 800-777-3300                     |
| \$ Samtec, Inc., New Albany, IN 47151-1147                       | 1-800-672-6832                   |
| United Technical Products, Fallsington, PA 19054                 | 800-553-5300                     |

## Headers, Socket-2100

|                                                                                      |                    |
|--------------------------------------------------------------------------------------|--------------------|
| Attech Corp., Flemington, NJ 08822-6000, 908-806-9400                                | C*1152-1153, 1157  |
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                             | C*1163             |
| Andon Electrn. Corp., Lincoln, RI 02865, 401-333-0388                                | C*1256-1257        |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                             | C*1262             |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                       | C*1280, 1283       |
| \$# Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C*1297-1298        |
| \$† CW Industries, Southhampton, PA 18966, 215-355-7080                              | C*1304             |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949; 800-638-3226    | C*1310             |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454              | C*1317             |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                          | C*1382, 1384, 1387 |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564           | C*1395-1396, 1398  |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                   | C*1448             |
| \$† Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                     | C*1462-1463, 1466  |

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| Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                          | C*1472-1473                |
| Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110 | C*1485, 1487-1489          |
| \$ WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                    | C*1513                     |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136    | C*1512                     |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                              | 516-546-1751               |
| Advanced Connector Technology, Ventura, CA 93003                                       | 805-644-9990               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                    | 203-265-8910               |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                           | 203-281-3200               |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                | 602-897-7001               |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                       | 508-222-2202               |
| Autosplc, Inc., San Diego, CA 92121                                                    | 619-535-0077               |
| \$ Berg Electronics, Camp Hill, PA 17011                                               | 800-237-2374               |
| Crane Electronics, Inc., Cincinnati, OH 45212                                          | 800-676-7644               |
| \$ Custom Connector, Cleveland, OH 44114                                               | 216-241-1679               |
| D & L Electronics, Langhorne, PA 19047                                                 | 800-942-3631               |
| \$ Elpakco, Inc., Lowell, MA 01851                                                     | 508-453-3000               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                        | 201-288-4477; 800-447-5639 |

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| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135       | 408-922-9000                     |
| General Electronic Materials Technology, Los Alamitos, CA 90720                | 714-761-5684                     |
| † Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                               | 203-756-8847                     |
| \$ McKenzie Technology, Fremont, CA 94538                                      | 510-651-2700                     |
| \$ 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sl. & Prod. Info. |
| \$ Mhtronics, Inc., Vernon Hills, IL 60061                                     | 708-913-9566                     |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                     | 516-922-6000                     |
| Milton Ross Co., Warrington, PA 18976                                          | 215-491-0600                     |
| \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012               | 805-484-0540                     |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300                     |
| Raycon Technology, Costa Mesa, CA 92627                                        | 714-646-7700                     |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                     | 1-800-672-6832                   |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                     |
| United Technical Products, Fallsington, PA 19054                               | 800-553-5300                     |
| \$ West Electronic Sales Team, Huntington Beach, CA 92647                      | 714-375-8500; 310-495-5569       |

## Headers, Strip-2100

|                                                                                      |                        |
|--------------------------------------------------------------------------------------|------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                             | C*1163                 |
| Andon Electrn. Corp., Lincoln, RI 02865, 401-333-0388                                | C*1256                 |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                             | C*1262-1263            |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                       | C*1281-1283            |
| Comm Conn Connectors Inc., Duarte, CA 91010, 818-301-4200                            | C*1289                 |
| \$# Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830 | C*1297-1298            |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949; 800-638-3226    | C*1310                 |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                       | C*1361                 |
| \$ J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                              | C*1363                 |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                          | C*1382-1383, 1387      |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564           | C*1395-1396            |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                   | C*1443, 1446, 1448     |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                           | C*1551                 |
| \$† Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                     | C*1462-1463, 1465-1466 |

|                                                                                           |              |
|-------------------------------------------------------------------------------------------|--------------|
| Sullins Electronics Corp., San Marcos, CA 92079, 619-744-0125                             | C*1472-1473  |
| \$ Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110 | C*1485, 1489 |
| \$ WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                       | C*1513       |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136       | C*1512       |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                 | 516-546-1751 |

|                                                                                          |                            |
|------------------------------------------------------------------------------------------|----------------------------|
| Advanced Connector Technology, Ventura, CA 93003                                         | 805-644-9990               |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                             | 203-281-3200               |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                  | 602-897-7001               |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                         | 508-222-2202               |
| Autosplc, Inc., San Diego, CA 92121                                                      | 619-535-0077               |
| \$ Berg Electronics, Camp Hill, PA 17011                                                 | 800-237-2374               |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000               |
| \$ Components Corp., Denville, NJ 07834                                                  | 201-627-0290               |
| Concord Electronics Corporation, New York, NY 10012                                      | 1-212-777-6571             |
| Crane Electronics, Inc., Cincinnati, OH 45212                                            | 800-676-7644               |
| D & L Electronics, Langhorne, PA 19047                                                   | 800-942-3631               |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                | 617-661-2454               |
| E-Mark, Inc., Trumbull, CT 06611                                                         | 203-452-1003               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477; 800-447-5639 |

|                                                                                |              |
|--------------------------------------------------------------------------------|--------------|
| \$ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135       | 408-922-9000 |
| General Electronic Materials Technology, Los Alamitos, CA 90720                | 714-761-5684 |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501               | 310-328-0051 |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                     | 516-922-6000 |
| \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012               | 805-484-0540 |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300 |
| Raycon Technology, Costa Mesa, CA 92627                                        | 714-646-7700 |
| Siemens Components, Inc., Special Products Div., Iselin, NJ 08830              | 201-321-3400 |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900 |
| United Technical Products, Fallsington, PA 19054                               | 800-553-5300 |

## Headers, Transistor & Diode-2500

|                                                                                        |              |
|----------------------------------------------------------------------------------------|--------------|
| Comm Conn Connectors Inc., Duarte, CA 91010, 818-301-4200                              | C*1289       |
| Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110 | C*1487       |
| Alberox Corporation, New Bedford, MA 02745                                             | 508-995-1725 |
| D & L Electronics, Langhorne, PA 19047                                                 | 800-942-3631 |
| † Detonics Corporation, S. El Monte, CA 91733                                          | 818-579-7130 |
| \$† Electrical Industries Corp., Murray Hill, NJ 07974                                 | 908-464-3200 |
| † Hermetic Seal Corp., Rosemead, CA 91770                                              | 213-283-0411 |
| \$† Keystone Electronics Corp., Astoria, NJ 11105-2017                                 | 718-956-8900 |
| Milton Ross Co., Warrington, PA 18976                                                  | 215-491-0600 |
| † Philips Technologies, Airpax Protector Group, Cambridge, MD 21613                    | 410-228-4600 |
| United Technical Products, Fallsington, PA 19054                                       | 800-553-5300 |

## Headphones-1300 - See Vol. D

## Heads, Magnetic Recording-1300 - See Vol. D

## Headsets (MIL)-2440 - See Vol. B

## Heat Dissipators - See Heat Sinks, Semiconductor (Vol. C), Heat Sinks, Soldering (Vol. C)

## Heaters, Immersion-4100 - See Vol. D

## Heaters & Heating Elements (For Components & Equipment)-Also See Ovens-5300 - See Vol. B

## Heat Exchangers & Systems-2600

|                                                                                    |                            |
|------------------------------------------------------------------------------------|----------------------------|
| ebm Industries, Inc., Farmington, CT 06034, 203-674-1515                           | C*1578                     |
| Ecliptek Corporation, Costa Mesa, CA 92626, 714-433-1200                           | A*1385                     |
| \$ EG & G Wakefield Engineering, Wakefield, MA 01880, 617-245-5900                 | C*1580-1583                |
| † Marlow Industries, Inc., Dallas, TX 75238-1645, 214-340-4900                     | C*1604-1605                |
| † McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550, 609-799-0100 | C*1606-1607                |
| † McLean Midwest, Sub. of Zero Corporation, Brooklyn Pk., MN 55443, 612-561-9400   | C*1608-1609                |
| Melcor/Materials Electrn. Prods., Trenton, NJ 08648, 609-393-4178                  | C*1613-1616                |
| Micronel U.S., Vista, CA 92083, 619-727-7400                                       | C*1618-1625                |
| \$† AVID Engineering, Inc., Laconia, NH 03247-0400                                 | 603-528-3400               |
| Ahamtor Inc., 999 Inc., Temecula, CA 92589-9019                                    | 714-676-4151               |
| † ATI (Ahm Tor Inc.), 999 Company, Temecula, CA 92590-0739                         | 714-676-4151               |
| Bemco, Simi Valley, CA 93065                                                       | 805-583-4970               |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                      | 203-288-8001; 800-242-2863 |
| Brinkmann Instruments, Inc., Westbury, NY 11590-0207                               | 516-334-7500               |
| † Electro Impulse, Neptune, NJ 07754-0278                                          | 908-776-5800               |
| † Electro Optical Industries Inc., Santa Barbara, CA 93111                         | 805-964-6701 (ext. 280)    |
| Energy Systems, Vancouver, WA 98682                                                | 206-896-8310               |
| Frequency & Time Systems, Inc., Datum, Inc., Beverly, MA 01915                     | 508-927-8220               |
| † FTS Systems, Inc., Stone Ridge, NY 12484                                         | 914-687-0071               |
| \$ Hoffman Engineering, Anoka, MN 55303                                            | 612-421-2240               |
| † Kooltronic, Inc., Hopewell, NJ 08525                                             | 609-466-3400               |
| † Kooltronic, Inc., Ventura, CA 93003                                              | 805-642-8521               |
| † Lytron Incorporated, Woburn, MA 01801                                            | 617-933-7300               |
| Mediam Technologies Inc., Hudson, NH 03051                                         | 603-886-9460               |
| † Merrill, Inc., Bonita Springs, FL 33959                                          | 813-591-1626               |
| Neslab Instruments Inc., Portsmouth, NH 03802-1178                                 | 800-258-0830               |
| † Noren Products Inc., Menlo Pk., CA 94025                                         | 415-322-9500               |
| Power Devices Inc., Laguna Hills, CA 92653                                         | 714-582-6712               |
| Rittall Corp., Springfield, OH 45504-9807                                          | 800-477-4000               |
| Schroff, Inc., Warwick, RI 02886                                                   | 401-732-3770               |
| \$ Science/Electronics, Dayton, OH 45401-0986                                      | 513-859-5555               |
| Technipower, A Penril Co., Danbury, CT 06813                                       | 203-748-7001               |
| \$ Tempron Corporation, Newton, MA 02158                                           | 617-969-2501               |
| † Thermacore Inc., Lancaster, PA 17601                                             | 717-569-6551               |
| VA-Tran Systems Inc., Chula Vista, CA 91911                                        | 619-423-4555               |
| Vortec Corporation Illinois Tool Works, Cincinnati, OH 45242                       | 800-441-7475               |



## Heat Guns, Production-5400

|                                                                  |                |
|------------------------------------------------------------------|----------------|
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                    | 908-925-8000   |
| \$† Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201      | 1-800-537-6791 |
| \$ Brim Electronics, Fair Lawn, NJ 07410                         | 201-796-2886   |
| † Cole-Flex Corporation, West Babylon, NY 11704                  | 516-249-6150   |
| \$ Contact East, N. Andover, MA 01845                            | 508-682-2000   |
| \$ Dabum Electronics & Cable Corp., Northvale, NJ 07647          | 201-768-5400   |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162      | 708-547-5400   |
| # HMC/Hub Material Company, Canton, MA 02021                     | 617-821-1870   |
| Hydro-Gen Products Inc., Fort Collins, CO 80522-1517             | 800-779-0126   |
| \$ ICO-RALLY Corporation, Palo Alto, CA 94303                    | 415-856-9900   |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                    | 815-895-5181   |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044          | 602-968-6241   |
| \$† Master Appliance Corp., Racine, WI 53403                     | 414-633-7791   |
| Micronel U.S., Vista, CA 92083                                   | 619-727-7400   |
| Nemeth Engineering Associates, Inc., Crestwood, KY 40014         | 502-241-1502   |
| \$† M.M. Newman Corporation, Marblehead, MA 01945                | 617-631-7100   |
| \$ Newman, M. M., Corp., Hell-Tube Div., Marblehead, MA 01945    | 617-631-7100   |
| † OAL Associates, Inc., Rancho Bernardo, CA 92127-1904           | 619-451-1799   |
| \$ Pamran Inc., Racine, WI 53404                                 | 414-637-7999   |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                     | 800-777-3300   |
| \$ Steinel America, Inc., Minnetonka, MN 55345                   | 800-852-4343   |
| \$ Sylvania, Emissive Products/Process Heat, Exeter, NH 03833    | 603-772-4331   |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                       | 215-825-4990   |
| \$ Ungar, Rubbermaid Office Products Group, Buena Park, CA 90621 | 714-994-2510   |

**Heat Pumps** — See Cooling/Heating Modules, Thermoelectric (Vol. B)

**Heat Shrinkable Elastomers, Plastics** — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C), Tubing, Heat Shrinkable (Vol. C)

## Heat Sinks, Semiconductor-2600

|                                                                                     |                                        |
|-------------------------------------------------------------------------------------|----------------------------------------|
| \$† AAVID Engineering, Inc., Laconia, NH 03247-0400, 603-528-3400                   | C•1561                                 |
| \$† The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                          | C•1654, 1656-1657                      |
| Crydom Company, Long Beach, CA 90805, 310-865-3536                                  |                                        |
| A•2138, 2141, B•1464, 1466-1467, 1471                                               |                                        |
| \$† EG & G Wakefield Engineering, Wakefield, MA 01880, 617-245-5900                 |                                        |
| C•1580-1583                                                                         |                                        |
| \$ IERC, Burbank, CA 91502, 213-849-2481                                            | C•1592                                 |
| Marlow Industries, Inc., Dallas, TX 75238-1645, 214-340-4900                        | C•1602-1605                            |
| \$ Philips ECG, North American Philips Co., Williamsport, PA 17701, 717-323-4691    |                                        |
| A•2173                                                                              |                                        |
| \$ R-Theta Inc., Buffalo, NY 14220-8089, 1-800-388-5428                             | C•1643                                 |
| \$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                            | C•1646-1647                            |
| Unitrack Industries, Inc., Milford, DE 19963, 302-424-5050                          | C•1114                                 |
| Accel Industrial Heat Sink Corp., Los Angeles, CA 90063                             | 213-261-5156                           |
| Ahamtor Inc., 999 Inc., Temecula, CA 92589-9019                                     | 714-676-4151                           |
| Arow Components & Fasteners, Inc., Hayward, CA 94544                                | 510-487-2100                           |
| † Astro Dynamics, Inc., Woburn, MA 01801                                            | 617-935-4944                           |
| † ATI (Aham Tor Inc.), 999 Company, Temecula, CA 92390-0739                         | 714-676-4151                           |
| Atlee Inc., North Andover, MA 01845                                                 | 508-681-1003                           |
| Delbert Blinn Co., Inc., Pomona, CA 91769                                           | 909-629-3900                           |
| Dubbelde Harris Diamond Corp./D. Druker & Zn. NV., Mt. Arlington, NJ 07856          | 201-770-1420                           |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                               | 908-241-0710                           |
| \$ Handles Unlimited, Vemaline Products Division, Warwick, RI 02887-6979            | 800-227-0254/401-739-7600              |
| \$ Hobson Bros, Chicago, IL 60630-3884                                              | 312-283-3600                           |
| 3M-Electronic Products Division, Austin, TX 78726                                   | 1-800-225-5373 Sls. & Prod. Info.      |
| Merrill, Inc., Bonita Springs, FL 33959                                             | 813-591-1626                           |
| Milton Ross Co., Warrington, PA 18976                                               | 215-491-0600                           |
| Nedco Electronics, Inc., Morton Grove, IL 60053                                     | 708-967-0500                           |
| † Noren Products Inc., Menlo Pk., CA 94025                                          | 415-322-9500                           |
| Power Devices Inc., Laguna Hills, CA 92653                                          | 714-582-6712                           |
| \$† Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |                                        |
| C•401-433-7000                                                                      |                                        |
| \$ Semikron, Inc., Hudson, NH 03051-0066                                            | 603-883-8102/1-800-258-1308            |
| Shin-Etsu Polymer America, Inc., Union City, CA 94587                               | 510-475-9000                           |
| † Star-Tron Corporation, Providence, RI 02909                                       | 401-274-5090                           |
| Staver Co., Inc., Bay Shore, NY 11706-9998                                          | 516-666-8000                           |
| Texas Instruments, Connector Systems, Attleboro, MA 02703                           | 508-699-5269/508-699-3450/508-699-3800 |
| Texas Instrs, Matls. & Controls Grp., Attleboro, MA 02703                           | 508-699-3800                           |
| † Thermacore Inc., Lancaster, PA 17601                                              | 717-569-6551                           |
| † Tran-Tec Corp., Columbus, NE 68601                                                | 402-564-2748                           |

## Heat Sinks, Soldering-4600

|                                                                                     |                           |
|-------------------------------------------------------------------------------------|---------------------------|
| \$† AAVID Engineering, Inc., Laconia, NH 03247-0400, 603-528-3400                   | C•1561                    |
| Douglas Randall, Pawcatuck, CT 06379, 203-599-2075                                  | A•2144                    |
| \$ EG & G Wakefield Engineering, Wakefield, MA 01880, 617-245-5900                  |                           |
| C•1581-1583                                                                         |                           |
| \$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                            | C•1646-1647               |
| † American Etching & Mfg., Pacoima, CA 91331-2796                                   | 818-896-1187              |
| Arow Components & Fasteners, Inc., Hayward, CA 94544                                | 510-487-2100              |
| \$† Clauss Cutlery Co., Alco Industries, Fremont, OH 43420                          | 419-332-7344/800-225-2877 |
| \$ Contact East, N. Andover, MA 01845                                               | 508-682-2000              |
| \$† Cooper Tools, Raleigh, NC 27622                                                 | 919-881-7200              |
| Delbert Blinn Co., Inc., Pomona, CA 91769                                           | 909-629-3900              |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                              | 815-968-9661              |
| # HMC/Hub Material Company, Canton, MA 02021                                        | 617-821-1870              |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                             | 602-968-6241              |
| † Noren Products Inc., Menlo Pk., CA 94025                                          | 415-322-9500              |
| \$† Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |                           |
| C•401-433-7000                                                                      |                           |
| Staver Co., Inc., Bay Shore, NY 11706-9998                                          | 516-666-8000              |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                          | 215-825-4990              |
| † Tech Spray, Inc., Amarillo, TX 79105                                              | 806-372-8523              |

|                                        |              |
|----------------------------------------|--------------|
| † Thermacore Inc., Lancaster, PA 17601 | 717-569-6551 |
| Transene, Rowley, MA 01969             | 508-948-2501 |

## Heat Sinks, Surface Mount-2600

|                                                                                     |                             |
|-------------------------------------------------------------------------------------|-----------------------------|
| \$† AAVID Engineering, Inc., Laconia, NH 03247-0400, 603-528-3400                   | C•1561                      |
| The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                              | C•1654, 1656-1657           |
| \$ EG & G Wakefield Engineering, Wakefield, MA 01880, 617-245-5900                  |                             |
| C•1580-1583                                                                         |                             |
| IERC, Burbank, CA 91502, 213-849-2481                                               | C•1592                      |
| Powerbox Inc., Boulder, CO 80302, 303-444-1461/800-444-1461                         | C•1071                      |
| R-Theta Inc., Buffalo, NY 14220-8089, 1-800-388-5428                                | C•1643                      |
| \$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                            | C•1646-1647                 |
| Accel Industrial Heat Sink Corp., Los Angeles, CA 90063                             | 213-261-5156                |
| # Applied Design Company, Minneapolis, MN 55413                                     | 612-378-0094                |
| Arow Components & Fasteners, Inc., Hayward, CA 94544                                | 510-487-2100                |
| Bussco Inc., El Segundo, CA 90245                                                   | 310-322-6580                |
| Extrusion Technology, Inc., Randolph, MA 02368                                      | 617-963-7200                |
| Fujipoly, America Corp., Cranford, NJ 07016                                         | 908-272-3850                |
| # The Hiral Company, FL Lauderdale, FL 33309                                        | 305-974-4900                |
| † Micro-Etch Products, Inc., Stratford, CT 06497                                    | 203-378-8610                |
| † Noren Products Inc., Menlo Pk., CA 94025                                          | 415-322-9500                |
| † North Texas Circuit Board, Grand Prairie, TX 75050                                | 214-790-7610                |
| † Northwest Etch Technology, Tacoma, WA 98409                                       | 206-572-2401/1-800-343-2401 |
| Power Devices Inc., Laguna Hills, CA 92653                                          | 714-582-6712                |
| \$† Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |                             |
| C•401-433-7000                                                                      |                             |
| Shin-Etsu Polymer America, Inc., Union City, CA 94587                               | 510-475-9000                |
| † Star-Tron Corporation, Providence, RI 02909                                       | 401-274-5090                |
| † Thermacore Inc., Lancaster, PA 17601                                              | 717-569-6551                |

**Heat Sinks (MIL)-2440** — See Vol. B

**Hermetic Sealing** — See Machines, Hermetic Sealing (Vol. D), Seals, Hermetic (Vol. C), Services, Hermetic Sealing (Vol. D)

**High Vacuum Services** — See Services, High Vacuum (Vol. D)

## Hinges-2500

|                                                                  |              |
|------------------------------------------------------------------|--------------|
| \$† Eberhard Mfg. Co., Div., Eastern Co., Strongsville, OH 44136 | 216-238-9720 |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017           | 718-956-8900 |
| Southco, Inc., Concordville, PA 19331                            | 215-459-4000 |

**Holders, Battery** — See Retainers, Battery (Vol. C), Connectors, Battery (Vol. C)

**Holders, Brush** — See Brushes & Brush Assemblies (Vol. B)

**Holders, Circuit Board (Production Type)-4100** — See Vol. D

**Holders, Crystal-2300** — See Vol. A

## Holders, Diode-2500

|                                                                 |                           |
|-----------------------------------------------------------------|---------------------------|
| \$† Bivar, Inc., Irvine, CA 92718, 714-951-8808                 | C•1537                    |
| ELMA Electronic Inc., Fremont, CA 94538                         | 510-656-3400              |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07068 | 201-288-4477/800-447-5639 |
| † Gordon, L., Packaging, Baltimore, MD 21230                    | 410-539-6537              |
| † Milton Ross Co., Warrington, PA 18976                         | 215-491-0600              |
| † Sage Laboratories, Inc., Natick, MA 01760                     | 508-653-0844              |
| † Schott Electronics, Seymour, CT 06483                         | 203-881-0102              |
| Telephonics Corporation/PRD Instruments, Huntington, NY 11743   | 516-549-6415/6428         |

**Holders, Fuse** — See Clips & Holders, Fuse (Vol. B), Panels, Fuse (Vol. B)

**Holders, Lamp** — See Sockets, Lamp & Lamp Assemblies (Vol. B)

**Holders, Test Lead-2900** — See Vol. D

**Holders, Tube** — See Retainers, Tube (Vol. A)

## Holders & Carriers, Chip (Capacitor, IC, LSI)-2100

|                                                                                   |                                   |
|-----------------------------------------------------------------------------------|-----------------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                           | C•1163                            |
| JAE Electronics Inc., Irvine, CA 92718, 714-753-2600                              | C•1356                            |
| † Mini-Systems, Inc., Electronic Package Div., Plainville, MA 02762, 508-695-2000 | A•1710                            |
| † American Etching & Mfg., Pacoima, CA 91331-2796                                 | 818-896-1187                      |
| EDA Inc., Div. of Connector, La Habra, CA 90631                                   | 213-697-7151                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07068                   | 201-288-4477/800-447-5639         |
| † Gordon, L., Packaging, Baltimore, MD 21230                                      | 410-539-6537                      |
| \$† ITT Cannon, Santa Ana, CA 92705-5684                                          | 714-557-4700                      |
| Kycon Cable & Connector, Inc., San Jose, CA 95125                                 | 408-295-1110/800-544-6941         |
| \$ 3M-Electronic Products Division, Austin, TX 78726                              | 1-800-225-5373 Sls. & Prod. Info. |
| Milton Ross Co., Warrington, PA 18976                                             | 215-491-0600                      |
| The J. M. Ney Company, Bloomfield, CT 06002                                       | 203-242-2281                      |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                  | 219-287-5941                      |

**Holders & Carriers, IC, LSI (Packaged)-3130** — See Vol. A

## Honeycomb Sheets, Panels, etc.-2500

|                                                      |              |
|------------------------------------------------------|--------------|
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888 | 617-935-4850 |
| † Conductive System, Inc., Amsterdam, NY 12010       | 518-843-5740 |
| † Technit, Cranford, NJ 07016                        | 908-272-5500 |

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**Housings, Photomultiplier Tube** — See Photomultiplier Tube Housings (Vol. A)

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|                                                            |                   |
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| \$ Altech Corp., Flemington, NJ 08822-6000, 908-806-9400   | C•1006-1007, 1153 |
| \$ AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752    | C•1163            |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400      | C•1031            |
| Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710 | C•1049            |



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| POLYCASE PRODS., ECP Corp., Cleveland, OH 44103,<br>216-391-0444;800-248-1233                                                                      | C-1070                                |
| \$ Berg Electronics, Camp Hill, PA 17011                                                                                                           | 800-237-2374                          |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                                                                                      | 203-288-8001;1-800-242-2863           |
| Electronic Packaging System, Marion, IA 52302                                                                                                      | 319-377-3423                          |
| Electro Space Fabricators, Tipton, PA 19562-0067                                                                                                   | 215-682-7181                          |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                                                                    | 201-288-4477;<br>800-447-5639         |
| E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                                                                          | 818-446-6175                          |
| † Hudson Tool & Die Co., Ormond Beach, FL 32174                                                                                                    | 904-672-2000                          |
| Tracewell Enclosures, Inc., Westerville, OH 43081                                                                                                  | 614-846-6175;800-848-4525             |
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| <b>Indexing Mechanism, Electromechanical-2400</b>                                                                                                  |                                       |
| \$ Industrial Indexing Systems, Inc., Victor, NY 14564                                                                                             | 716-924-9181                          |
| International Machine & Tool Corp., Warwick, RI 02888                                                                                              | 401-467-6905                          |
| \$ Machine Components Corp., Plainville, NY 11803                                                                                                  | 516-694-7222                          |
| † Magtech Controls, Vernitron Corporation, San Diego, CA 92173                                                                                     | 619-662-2235                          |
| \$ Parker Hannifin Corp., Daedal Div., Harrison City, PA 15636                                                                                     | 412-744-4451                          |
| \$ ServoByte Inc., Millbury, MA 01527                                                                                                              | 508-865-0225                          |
| <b>Indexing Tables, Electromechanical-2400</b>                                                                                                     |                                       |
| † Anorad Corp., Hauppage, NY 11788                                                                                                                 | 516-231-1995                          |
| Automation Component Technology, Fremont, CA 94538                                                                                                 | 510-226-0900;<br>510-490-3587 (Sales) |
| \$ Design Components, Inc. (DCI), Franklin, MA 02038                                                                                               | 508-528-7300;800-341-4811             |
| International Machine & Tool Corp., Warwick, RI 02888                                                                                              | 401-467-6905                          |
| (MEI) Marpet Enterprises, Inc., Wakefield, MA 01880                                                                                                | 617-246-2040                          |
| \$ Parker Hannifin Corp., Daedal Div., Harrison City, PA 15636                                                                                     | 412-744-4451                          |
| <b>Indicator Lights — See Lights, Indicator (Vol. B)</b>                                                                                           |                                       |
| <b>Indicators, Angle-Also See Encoders, Shaft Position-3500 — See<br/>Vol. B</b>                                                                   |                                       |
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| <b>Inks for Thick Film Microcircuits-1700</b>                                                                    |                            |
| Advanced Connector Technology, Ventura, CA 93003                                                                 | 805-644-9990               |
| † Ercon Incorporated, Waltham, MA 02154                                                                          | 617-899-1497               |
| † Ferro Corporation, Electronic Materials Div., Santa Barbara, CA 93117-3092                                     | 805-968-5000               |
| Method Electronics, Inc., Chicago, IL 60656                                                                      | 708-867-9600               |
| Tocos America, Inc., Tokyo Cosmos Electric Co., Ltd., Schaumburg, IL 60173                                       | 708-884-6664               |
| Transene, Rowley, MA 01969                                                                                       | 508-948-2501               |
| <b>Input/Output Equipment, Voice-2000 — See Vol. D</b>                                                           |                            |
| <b>Input/Output Switching Modules — See Modules, Control &amp; Switching<br/>(Vol. D)</b>                        |                            |
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| <b>Insulation Materials-3100</b>                                                                                 |                            |
| † The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                                                         | C-1654-1657                |
| Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850                                                | C-1659-1660                |
| \$# Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8830                             | C-1294-1296                |
| \$# Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                                                           | C-1684                     |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                                          | C-1746                     |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                                                        | C-1663                     |
| The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                                                        | C-1664,1685                |
| \$ Newman, M. M., Corp., Hell-Tube Div., Marblehead, MA 01945, 617-631-7100                                      | C-1791                     |
| † Applied Plastics Technology, Bristol, RI 02809                                                                 | 401-253-0200               |
| † The Auburn Manufacturing Company, Middletown, CT 06457-0251                                                    | 203-346-6677               |
| Autosplice, Inc., San Diego, CA 92121                                                                            | 619-535-0077               |
| Berg Electronics, Camp Hill, PA 17011                                                                            | 800-237-2374               |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                                                                  | 203-423-6321               |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                                        | 201-796-2886               |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302                                            | 716-278-2521               |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8                                            | 1-800-361-9466             |
| \$† CHR, Furon, New Haven, CT 06509                                                                              | 203-777-3631               |
| Cogebi, Inc., Dover, NH 03820                                                                                    | 603-749-6896               |
| † Cole-Flex Corporation, West Babylon, NY 11704                                                                  | 516-249-6150               |
| Conap, Inc., Olean, NY 14760                                                                                     | 716-372-9650               |
| Dearborn Wire & Cable, LP., Wheeling, IL 60090                                                                   | 708-459-1000; 800-323-0198 |
| \$ Dolphin, John C. Co., Monmouth Junction, NJ 08852                                                             | 908-329-2333               |
| Dow Corning Corp., Midland, MI 48686-0994                                                                        | 517-496-4000               |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                                      | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                                                            | 708-632-1020               |
| Epic Resins, General Fiberglass Supply, Inc., Waukesha, WI 53186                                                 | 414-521-2255               |
| Fel-Pro Chemical Products LP., Commerce City, CO 80022                                                           | 303-289-5651               |
| Ferro Corporation, Electronic Materials Div., Santa Barbara, CA 93117-3092                                       | 805-968-5000               |
| \$ Flexible Technologies, Arlon, E. Providence, RI 02914                                                         | 401-434-2340               |
| Hardman: Harcros Chemicals Inc., Belleville, NJ 07109                                                            | 201-751-3000               |
| \$† HumiSeal Div., CHASE Corporation, Woodside, NY 11377                                                         | 718-932-0800               |
| \$† ICO-RALLY Corporation, Palo Alto, CA 94303                                                                   | 415-856-9900               |
| † Industrial Dielectrics, Inc., Noblesville, IN 46060                                                            | 317-773-1766               |
| Kam Components, Inc., Nesconset, NY 11767                                                                        | 516-585-0666               |
| \$† Liberty Polyglas, Inc., West Milford, PA 15122                                                               | 412-466-8611               |
| Lydall Inc., Manning Div., Troy, NY 12181                                                                        | 518-273-6320               |
| \$† MML Corp., Norristown, PA 19404                                                                              | 215-272-8960               |
| \$† M.M. Newman Corporation, Marblehead, MA 01945                                                                | 617-631-7100               |
| † Ny-Glass Plastics Inc., Calnetics Corp., Corona, CA 91720                                                      | 909-737-9110               |
| \$† Panduit Corp., Tinley Park, IL 60477-0981                                                                    | 800-777-3300               |
| Power Devices Inc., Laguna Hills, CA 92653                                                                       | 714-582-6712               |
| Precision Paper Tube Co., Wheeling, IL 60090                                                                     | 708-537-4250               |
| † Rogers Corp., Rogers, CT 06263                                                                                 | 203-774-9605               |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                                  | 714-251-1960               |
| \$ Saphikon, Inc., Milford, NH 03055                                                                             | 603-673-5831               |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                                       | 317-543-3540               |
|                                                                                                                  | 800-382-4635               |



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| Soundcoat Co., Inc., Deer Park, NY 11729-5701                                | 516-242-2200               |
| \$ Special Electric Co., Inc., Milwaukee, WI 53215                           | 414-383-6370               |
| † Stevens Products, Inc., E. Orange, NJ 07019                                | 201-672-2140               |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370 | 617-878-7015               |
| \$† Tech Spray, Inc., Amarillo, TX 79105                                     | 806-372-8523               |
| Thermagon, Inc., Cleveland, OH 44109                                         | 216-741-7659               |
| United Foam Plastics, Georgetown, MA 01833                                   | 508-352-2200               |
| \$† Vector Electronic Co., Inc., Sylmar, CA 91342                            | 818-365-9661; 800-423-5659 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                 | 516-254-2970               |
| \$† Zeus Indl. Prods. Inc., Orangeburg, SC 29116                             | 803-531-2174; 800-526-3842 |
| \$ Zippertubing Co., Los Angeles, CA 90061                                   | 310-527-0488               |

## Insulation Parts, Fabricated-3100

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| \$† The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                 | C•1654-1657                  |
| \$† Bivar, Inc., Irvine, CA 92718, 714-951-8808                            | C•1537                       |
| Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                         | C•1662, 1684                 |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850                  | C•1663                       |
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                |                              |
| \$† Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                  | C•1646                       |
| # Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730 |                              |
|                                                                            | C•1668, 1699                 |
| Accurate Electronics Corp., Elyria, OH 44036                               | 216-366-6330; 1-800-334-5904 |
| † Amatron Electronic Hardware, New Haven, CT 06515                         | 203-397-3311                 |
| † Applied Plastics Technology, Bristol, RI 02809                           | 401-253-0200                 |
| Aremco Products, Inc., Ossining, NY 10562                                  | 914-762-0685                 |
| \$† Atlantic Global Moulding, Webster, MA 01570                            | 508-943-1746                 |
| † The Auburn Manufacturing Company, Middletown, CT 06457-0251              | 203-346-6677                 |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                            | 203-423-6321                 |
| † The Carborundum Company, Electric Products, Niagara Falls, NY 14302      |                              |

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|-------------------------------------------------------------|-----------------------------|
|                                                             | 716-278-2521                |
| Cogebi, Inc., Dover, NH 03820                               | 603-749-6896                |
| \$† Concord Electronics Corporation, New York, NY 10012     | 1-212-777-6571              |
| \$† Dabum Electronics & Cable Corp., Northvale, NJ 07647    | 201-768-5400                |
| D & L Electronics, Langhorne, PA 19047                      | 800-942-3631                |
| Delbert Blinn Co., Inc., Pomona, CA 91769                   | 909-629-3900                |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162 | 708-547-5400                |
| † Electro Insulation Corp., Arlington Hgts., IL 60004       | 708-632-1020                |
| \$ Flexible Technologies, Arlon, E. Providence, RI 02914    | 401-434-2340                |
| Garner Glass Co., Claremont, CA 91711                       | 909-624-5071                |
| \$ Gasket Dynamics, Inc., Mt. Holly, NJ 08060               | 609-261-8100; 800-541-2500; |
|                                                             | 215-922-6046                |
| Heyco Molded Products, Inc., Kenilworth, NJ 07033           | 908-245-0033; 800-526-4182  |
| \$ Hiram Jones Electronics, No. Hollywood, CA 91605         | 213-875-0213                |
| † Industrial Dielectrics, Inc., Noblesville, IN 46060       | 317-773-1766                |
| Kam Components, Inc., Nesconset, NY 11767                   | 516-585-0666                |
| \$ Markel Corp., Norristown, PA 19044                       | 215-272-8960                |
| Power Devices Inc., Laguna Hills, CA 92653                  | 714-582-6712                |
| Precision Paper Tube Co., Wheeling, IL 60090                | 708-537-4250                |
| # Quartzite Processing, Inc., Malden, MA 02148              | 617-322-3611                |
| † Robison Electronics, San Luis Obispo, CA 93403-8121       | 805-544-8000                |
| \$ Saphikon, Inc., Milford, NH 03055                        | 603-673-5831                |
| Sjoberg, C. & Son, Inc., Cranston, RI 02910                 | 401-461-8220                |
| \$ Special Electric Co., Inc., Milwaukee, WI 53215          | 414-383-6370                |
| † Stevens Products, Inc., E. Orange, NJ 07019               | 201-672-2140                |
| \$† Teknall Inc., Inc., Rochester, NY 14620-1103            | 716-232-1291                |
| Thermagon, Inc., Cleveland, OH 44109                        | 216-741-7659                |
| † Tran-Tec Corp., Columbus, NE 68601                        | 402-564-2748                |
| † Unicorn, Orange, NJ 07050                                 | 201-674-1700; 800-526-1389  |
| United Foam Plastics, Georgetown, MA 01833                  | 508-352-2200                |
| † U.S. Terminals Inc., Cincinnati, OH 45243                 | 513-561-8145                |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342            | 818-365-9661; 800-423-5659  |

## Insulators, Antenna-3100

|                                                             |                              |
|-------------------------------------------------------------|------------------------------|
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900 | C•1685                       |
| Accurate Electronics Corp., Elyria, OH 44036                | 216-366-6330; 1-800-334-5904 |
| † Alberox Corporation, New Bedford, MA 02745                | 508-995-1725                 |
| † Applied Plastics Technology, Bristol, RI 02809            | 401-253-0200                 |
| \$† Brim Electronics, Fair Lawn, NJ 07410                   | 201-796-2886                 |
| \$ Dabum Electronics & Cable Corp., Northvale, NJ 07647     | 201-768-5400                 |
| † Joslyn Jennings Corporation, San Jose, CA 95122-2696      | 408-292-4025                 |
| \$ Markel Corp., Norristown, PA 19044                       | 215-272-8960                 |
| Unadilla Antenna Mfg. Co., Andover, MA 01810                | 508-475-7831                 |

## Insulators, Bushing (Metalized) — See Bushings, etc. (Vol. C)

## Insulators, Clip, Test & Battery-3100

|                                                                        |                              |
|------------------------------------------------------------------------|------------------------------|
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 |                              |
|                                                                        | C•1290                       |
| Accurate Electronics Corp., Elyria, OH 44036                           | 216-366-6330; 1-800-334-5904 |
| \$† Brim Electronics, Fair Lawn, NJ 07410                              | 201-796-2886                 |
| \$† Dabum Electronics & Cable Corp., Northvale, NJ 07647               | 201-768-5400                 |
| \$ ITT Pomona Electronics, Pomona, CA 91766                            | 909-469-2900                 |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                 | 718-956-8900                 |
| \$ Metermaster, Tempe, AZ 85282                                        | 602-431-0015                 |
| \$† Mueller Elec. Co., Cleveland, OH 44114                             | 216-771-5225                 |
| Shokai Far East Ltd., Peekskill, NY 10566                              | 914-736-3500                 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                             | 215-825-4990                 |

## Insulators, Heat Sinks-3100

|                                                                       |             |
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| AAVID Engineering, Inc., Laconia, NH 03247-0400, 603-528-3400         | C•1561      |
| The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                | C•1654-1657 |
| \$† Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850 |             |
|                                                                       | C•1659-1660 |
| Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                    | C•1662      |
| \$† EG & G Wakefield Engineering, Wakefield, MA 01880, 617-245-5900   | C•1580      |

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| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                   | C•1685       |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                     | 516-546-1751 |
| Advanced Connector Technology, Ventura, CA 93003                              | 805-644-9990 |
| # Applied Design Company, Minneapolis, MN 55413                               | 612-378-0094 |
| \$† CHR, Furon, New Haven, CT 06509                                           | 203-777-3631 |
| Dubbeldee Harris Diamond Corp.-D. Drukker & Zn. N.V., Mt. Arlington, NJ 07856 |              |
|                                                                               | 201-770-1420 |
| Fujipoly, America Corp., Cranford, NJ 07016                                   | 908-272-3850 |
| Power Devices Inc., Laguna Hills, CA 92653                                    | 714-582-6712 |
| \$† Teknall Inc., Inc., Rochester, NY 14620-1103                              | 716-232-1291 |
| Thermagon, Inc., Cleveland, OH 44109                                          | 216-741-7659 |

## Insulators, Mica-3100

|                                                                            |                |
|----------------------------------------------------------------------------|----------------|
| \$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                   | C•1646         |
| # Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730 |                |
|                                                                            | C•1668         |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                  | 516-546-1751   |
| † Apollo Magnetics Corp., Los Angeles, CA 90057                            | 213-381-2500   |
| Cogebi, Inc., Dover, NH 03820                                              | 603-749-6896   |
| \$ Concord Electronics Corporation, New York, NY 10012                     | 1-212-777-6571 |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162                  | 708-547-5400   |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                      | 708-632-1020   |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                     | 718-956-8900   |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106  |                |
|                                                                            | 708-766-7800   |
| Power Devices Inc., Laguna Hills, CA 92653                                 | 714-582-6712   |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                 | 317-543-3540;  |
|                                                                            | 800-382-4635   |
| \$ Teknall Inc., Inc., Rochester, NY 14620-1103                            | 716-232-1291   |

## Insulators, Silicon Fabricated-3100

|                                                             |              |
|-------------------------------------------------------------|--------------|
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900 | C•1664, 1685 |
| \$ NTE Electronics, Inc., Bloomfield, NJ 07003              | 201-748-5089 |
| Teknall Inc., Inc., Rochester, NY 14620-1103                | 716-232-1291 |

## Integrated Circuit Handlers — See Handlers, Integrated Circuit (Automatic) (Vol. D)

## Integrated Circuit Interconnect Systems-3200

|                                                                              |                                   |
|------------------------------------------------------------------------------|-----------------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                     | C•1163                            |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                     | A•1689-1691, C•1264               |
| \$ Bivar, Inc., Irvine, CA 92718, 714-951-8808                               | C•1537                            |
| U. S. Digital Corp., Vancouver, WA 98682, 206-260-7451                       | B•2023                            |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 |                                   |
|                                                                              | C•1025                            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                    | 516-546-1751                      |
| Advanced Interconnections Corp., West Warwick, RI 02893                      | 401-823-5200                      |
| Antona Corp., Los Angeles, CA 90024-5603                                     | 310-473-8995                      |
| \$ AT&T Microelectronics, Allentown, PA 18103                                | 1-800-372-2447; In                |
|                                                                              | Can: 1-800-553-2448               |
| Berg Electronics, Camp Hill, PA 17011                                        | 800-237-2374                      |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                | 203-288-8001; 1-800-242-2863      |
| \$ Burdury Corporation, An FCI Company, Norwalk, CT 06856                    | 203-838-4444                      |
| Calex Mfg. Co., Inc., Concord, CA 94520                                      | 510-687-4411                      |
| Coors Electronic Package Co., Chattanooga, TN 37405                          | 615-755-5452                      |
| \$† dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803            | 617-273-5800                      |
| Douglas Electronics, Inc., San Leandro, CA 94577                             | 510-483-8770                      |
| ELMA Electronic Inc., Fremont, CA 94538                                      | 510-656-3400                      |
| \$† Garry Electronics, WPI, Salem, NJ 08079                                  | 609-935-7603                      |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                 | 805-495-7673                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                         | 1-800-225-5373 Sys. & Prod. Info. |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                   | 516-922-6000                      |
| † Milton Ross Co., Warrington, PA 18976                                      | 215-491-0600                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                           | 508-588-6110                      |
| Product Technology, Inc., Irvine, CA 92714                                   | 714-474-8998                      |
| † Project Resources Inc., Wareham, MA 02571                                  | 508-295-7444                      |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                               | 812-948-0564                      |
| Rogers Corporation, Circuit Materials Div., Chandler, AZ 85244               | 602-963-4584                      |
| \$† Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310            | 801-298-5900                      |

## Integrated Circuit Design Aids-4200

|                                                                                                                |                            |
|----------------------------------------------------------------------------------------------------------------|----------------------------|
| Solitron Devices, Inc., Semiconductor Group, West Palm Beach, FL 33407-4697, 407-848-4311                      | A•2219                     |
| \$ American Microsystems, Inc., Nikko Kyodo, Ltd., Pocatello, ID 83201                                         | 208-233-4690               |
| † Applied Micro Circuits Corp., San Diego, CA 92121                                                            | 619-450-9333               |
| \$ Austria Mikro Systeme International, Unterpremstaetten, AUSTRIA A-8141                                      | (03136) 500                |
|                                                                                                                | 401-885-3600               |
| Cherry Semiconductor Corp., East Greenwich, RI 02818                                                           | 503-531-0765               |
| Data Environment, Inc., Portland, OR 97291                                                                     | 514-696-4753               |
| Design Workshop, D.D.O., Que., CANADA H9G 1X5                                                                  | 408-434-6400               |
| Exar Corp., San Jose, CA 95161-9007                                                                            | 408-922-9000               |
| \$ Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804 | 800-263-9353; 416-832-2996 |
| Gennum Corp., Burlington, ON, CANADA L7R 3Y3                                                                   | 1-800-4 HARRIS             |
| \$† Harris Semiconductor, Melbourne, FL 32902                                                                  | 714-573-1888               |
| HILEVEL Technology, Tustin, CA 92680                                                                           | 714-859-8800               |
| † Holt Inc., Irvine, CA 92718                                                                                  | 408-727-6116               |
| # Indiana Microelectronics Center, Indiana Bus. Modernization & Technology Corp., Fort Wayne, IN 46825         | 805-495-7673               |
| \$† Integrated Device Technology, Inc., Santa Clara, CA 95054-3090                                             | 408-433-8000               |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                                                   | 407-845-2837               |
| \$† LSI Logic Corp., Milpitas, CA 95035                                                                        | 613-591-0336               |
| MCE Semiconductor, Inc., West Palm Beach, FL 33407                                                             | 408-522-7068               |
| Optotek Limited, Kanata, Ont., CANADA K2K 2A9                                                                  | 214-466-6000               |
| \$† Raytheon Semiconductor, Mountain View, CA 94043                                                            | 800-835-9433               |
| SGS-THOMSON Microelectronics, Inc., Carrollton, TX 75006                                                       |                            |
| Tektronix, Inc., Wilsonville, OR 97070                                                                         |                            |



‡ VLSI Technology, Inc., San Jose, CA 95131 ..... 408-434-3000  
**Integrated Circuits, Custom/Semicustom-3130 — See Vol. A**  
**Integrated Circuits, Data Acquisition System-3130 — See Vol. A**  
**Integrated Circuits, Digital-3130 — See Vol. A**  
**Integrated Circuits, Gate Array-3130 — See Vol. A**  
**Integrated Circuits, Interface-3130 — See Vol. A**  
**Integrated Circuits, Linear-3130 — See Vol. A**  
**Integrated Circuits, Logic, Programmable-3130 — See Vol. A**  
**Integrated Circuits, Memory-3130 — See Vol. A**  
**Integrated Circuits, Microprocessor-3130 — See Vol. A**  
**Integrated Circuits, Standard Cells-3130 — See Vol. A**  
**Integrated Circuits, Telecommunications-3130 — See Vol. A**  
**Integrators, Electronic-2325 — See Vol. D**  
**Integrators, Mechanical & Electromechanical-2200 — See Vol. D**  
**Intercom Systems — See Switching Systems, Audio (Vol. D)**

## Interconnection Systems-3200

‡ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841  
 Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200 ..... C\*1289  
 Elastomeric Technologies, Inc., Hatboro, PA 19040, 215-672-0787; 215-672-4741 ..... C\*1314  
 Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 ..... C\*1334-1336,1338  
 LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700 ..... C\*1382  
 † Project Technology, Inc., Irvine, CA 92714, 714-474-8998 ..... C\*1673  
 ‡ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832 ..... C\*1549  
 WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810 ..... C\*1519-1521  
 ‡ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 ..... C\*1520-1521  
 Accessories For Electronics, Inc., Baldwin, NY 11510-3593 ..... 516-546-1751  
 ‡ Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 Amphenol Spectra-Strip/ITD, Hamden, CT 06514 ..... 203-281-3200  
 Andon Elctns. Corp., Lincoln, RI 02865 ..... 401-333-0388  
 † Assembly Specialists, Chelmsford, MA 01824 ..... 508-250-5900  
 ‡ AT&T Microelectronics, Allentown, PA 18103 ..... 1-800-372-2447; in Can.: 1-800-553-2448  
 Augat, Inc., Interconnection Products Group, Attleboro, MA 02703 ..... 508-222-2202  
 ‡ AVA Electronics Corporation, Drexel Hill, PA 19026 ..... 215-284-2500  
 ‡ Beau Interconnect Systems, Vemtron Corp., Laconia, NH 03247 ..... 603-524-5102  
 Berg Electronics, Camp Hill, PA 17011 ..... 800-237-2374  
 Bit 3 Computer Corporation, Minneapolis, MN 55431-1393 ..... 612-881-6955  
 Caton Connector Corp., Kingston, MA 02364 ..... 617-585-4315  
 Computer Peripherals Inc., Newbury Pk., CA 91320 ..... 805-499-5751; 800-854-7600  
 Coors Electronic Package Co., Chattanooga, TN 37405 ..... 615-755-5452  
 dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803 ..... 617-273-5800  
 E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260 ..... 602-443-1949; 800-638-3226  
 E-Z Hook, Tektest Inc., Arcadia, CA 91006 ..... 818-446-6175  
 Fujipoly, America Corp., Cranford, NJ 07016 ..... 908-272-3850  
 ‡ Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135 ..... 408-922-9000  
 Graham Electronic Manufacturing Inc., Escondido, CA 92025 ..... 619-747-9177; 800-628-4095  
 Hybricon Corporation, Ayer, MA 01432 ..... 508-772-5422  
 Interlogic Industries, Melville, NY 11747-4294 ..... 516-420-8111  
 L-Com Inc., N. Andover, MA 01845 ..... 508-682-6936  
 Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716 ..... 203-756-8847  
 MarLee Switch Co., Upland, CA 91786 ..... 714-982-8988  
 Marway Prods. Inc., Santa Ana, CA 92703 ..... 714-973-1800  
 ‡ McKenzie Technology, Fremont, CA 94538 ..... 510-651-2700  
 3M-Electronic Products Division, Austin, TX 78726 ..... 1-800-225-5373 Sls. & Prod. Info.  
 ‡ MOLEX, Inc., Lisle, IL 60532 ..... 708-969-4550  
 Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401 ..... 508-588-6110  
 Opto 22, Temecula, CA 92590 ..... 714-695-9299  
 ‡ Panduit Corp., Tinsley Park, IL 60477-0981 ..... 800-777-3300  
 ‡ Phoenix Contact Inc., Harrisburg, PA 17111 ..... 717-944-1300  
 Precision Filters, Inc., Ithaca, NY 14850 ..... 607-277-3550  
 Precision Interconnect, Subsidiary of AMP Incorporated, Portland, OR 97224 ..... 503-620-9400  
 † Project Resources Inc., Wareham, MA 02571 ..... 508-295-7444  
 Signal Switch Company, Corona, CA 91720 ..... 909-736-5404  
 ‡ Technical Services for Electronics, Inc., Arlington, MN 55307 ..... 612-964-2237  
 Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502 ..... 619-576-1005  
 † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 ..... 309-693-3300  
 Vector Electronic Co., Inc., Sylmar, CA 91342 ..... 818-365-9661; 800-423-5559  
 Weico Wire & Cable, Inc., Edgewood, NY 11717 ..... 516-254-2970

**Interconnection Systems, Extenders — See Extender Boards (Vol. D)**

**Interfaces, Computer/Peripheral-2000 — See Vol. D**

**Interfaces, Telex/Computer-1900 — See Vol. D**

**Interrupters & Detectors, Ground Fault-4300 — See Vol. B**

**Interrupters, Optoelectronic-3700 — See Vol. B**

**Interrupters, Photo-3700 — See Vol. B**

**Intervalometers — See Timers (Vol. D)**

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**Isolators, Antenna-1200 — See Vol. D**

**Isolators, Ferrite-3450 — See Vol. A**

**Isolators, High Voltage-4050 — See Vol. D**

**Isolators, Line-4050 — See Vol. D**

**Isolators, Microwave (all types)-3450 — See Vol. A**

**Isolators, Multi-channel-1900 — See Vol. D**

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**Isolators, Signal (I, V,)-1900 — See Vol. D**

**Isolators, Source — See Isolators, Line (Vol. D)**

**Isolator Systems, Multiplexed-1900 — See Vol. D**

## Jack Adapters (All Types)-2100

‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 ..... C\*1287  
 Alden Products Co., Brockton, MA 02403, 508-583-0160 ..... C\*1150  
 ‡ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 ..... C\*1291  
 ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116 ..... C\*1354,1753  
 ‡ ITT Pomona Electronics, Pomona, CA 91766, 909-469-2900 ..... C\*1355  
 Kyccon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941 ..... C\*1365-1366,1757  
 LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600 ..... C\*1403,1405,1411-1412, D\*1827  
 RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000 ..... C\*1440,1803  
 † Shoggy International Corp., Great Neck, NY 11021-4799, 516-466-0911 ..... C\*1459,1808  
 SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960 ..... C\*1461  
 ‡ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700 ..... C\*1478  
 TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218 ..... C\*1490

† Tru-Connector Corp., Peabody, MA 01960, 508-532-0775; 1-800-262-9787; 1-800-COAXTRU ..... C\*1507  
 Accessories For Electronics, Inc., Baldwin, NY 11510-3593 ..... 516-546-1751  
 Accurate Electronics Corp., Elyria, OH 44036 ..... 216-366-6330; 1-800-334-5904  
 ‡ Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 † ADC Telecommunications, Inc., Minneapolis, MN 55435 ..... 612-938-8080  
 Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492 ..... 203-265-8910  
 ‡ Amphenol Interconnect Products, LPL Technologies, Endicott, NY 13760 ..... 607-754-4444  
 ‡ AVA Electronics Corporation, Drexel Hill, PA 19026 ..... 215-284-2500  
 ‡ Coax Connection, Peekskill, NY 10566 ..... 914-736-1010  
 ‡ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 ..... 708-455-8830  
 ‡ Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411  
 ‡ EPD Electronics, Inc., Gardena, CA 90247 ..... 310-515-4996  
 ‡ E-Z Hook, Tektest Inc., Arcadia, CA 91006 ..... 818-446-6175  
 ‡ GC-Thorsen, Rockford, IL 61105-1209 ..... 815-969-9661  
 ‡ GTE Supply, GTE, Irving, TX 75038 ..... 800-433-4837  
 ‡ International Components Corp., Melville, NY 11747 ..... 516-293-1500  
 International Microelectronics, Arlington, TX 76003 ..... 817-473-1730  
 L-Com Inc., N. Andover, MA 01845 ..... 508-682-6936  
 † Lynn Electronics, Feasterville, PA 19053 ..... 215-355-8200; 800-523-6075  
 ‡ M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101 ..... 617-890-4750  
 ‡ Metermaster, Tempe, AZ 85282 ..... 602-431-0015  
 Mouser Electronics, Santee, CA 92071 ..... 800-346-6873  
 Mouser Electronics, Mansfield, TX 76063 ..... 800-346-6873  
 Mouser Electronics, Gilroy, CA 95020 ..... 800-346-6873  
 Mueller Elec. Co., Cleveland, OH 44114 ..... 216-771-5225  
 ‡ Panduit Corp., Tinsley Park, IL 60477-0981 ..... 800-777-3300  
 † Pasternack Enterprises, Irvine, CA 92713 ..... 714-261-1920  
 ‡ Philmore Manufacturing, Rockford, IL 61125-1386 ..... 815-229-7773  
 ‡ Rye Industries, Inc., Fuquay-Varina, NC 27526 ..... 919-557-0511; 800-626-1511  
 Shokai Far East Ltd., Peekskill, NY 10566 ..... 914-736-3500  
 ‡ H H Smith, NT-T Inc., Meadville, PA 16335 ..... 814-724-6440  
 Staffall Inc., Cranston, RI 02910 ..... 401-461-5554  
 ‡ Support Systems Intl. Corp., Richmond, CA 94804 ..... 510-234-9090  
 ‡ Trimm Inc., Libertyville, IL 60048 ..... 708-362-3700  
 † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047 ..... 818-767-2020

## Jack Covers-2100

Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 ..... C\*1291  
 † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 ..... C\*1524,1527  
 Beau Interconnect Systems, Vemtron Corp., Laconia, NH 03247 ..... 603-524-5102  
 ‡ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 ..... 708-455-8830  
 ‡ Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181  
 ‡ Metermaster, Tempe, AZ 85282 ..... 602-431-0015  
 ‡ Pass & Seymour/Legrand, Pass & Seymour/Inc., Syracuse, NY 13221 ..... 315-488-6211  
 ‡ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630 ..... 312-792-2700  
 † Tru-Connector Corp., Peabody, MA 01960 ..... 508-532-0775; 1-800-262-9787; 1-800-COAXTRU

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## Jacks (All Types)-2100

‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 ..... C\*1287  
 American Skynet Electronic Co., Milpitas, CA 95035, 408-945-6355 ..... D\*1569  
 ‡ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 ..... C\*1163  
 ‡ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 ..... C\*1290-1291,1540



|                                                                                            |                                 |
|--------------------------------------------------------------------------------------------|---------------------------------|
| Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                         | C•1301                          |
| § CUI Stack Inc., Beaverton, OR 97005, 503-643-4899                                        | D•1653                          |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116               |                                 |
|                                                                                            | C•1354, 1753                    |
| § Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                              | C•1361                          |
| § LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)               |                                 |
|                                                                                            | C•1369                          |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                | C•1382, 1392                    |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                |                                 |
|                                                                                            | C•1400-1406, 1411, 1759, D•1827 |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                                      | C•1440, 1803                    |
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                  | C•1451, 1455                    |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                      |                                 |
|                                                                                            | C•1459, 1808                    |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-998-0960                     |                                 |
|                                                                                            | C•1461                          |
| † Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561                      | C•1475                          |
| † Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                   |                                 |
|                                                                                            | C•1477-1481, 1810               |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218                        |                                 |
|                                                                                            | C•1491                          |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020               |                                 |
|                                                                                            | C•1500-1502, 1505               |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                  | 516-546-1751                    |
| Accurate Electronics Corp., Elyria, OH 44036                                               | 216-366-6330; 1-800-334-5904    |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                            | 404-751-9473; 800-221-4767      |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                      | 612-938-8080                    |
| † Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-889-9304                    |
| Andon Elctns. Corp., Lincoln, RI 02865                                                     | 401-333-0388                    |
| § Aries Electronics, Frenchtown, NJ 08825                                                  | 908-996-6841                    |
| § Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                     |                                 |
|                                                                                            | 602-897-7001                    |
|                                                                                            | 203-929-1401                    |
| Autoswage Products, Shelton, CT 06484                                                      |                                 |
|                                                                                            | 215-284-2500                    |
| § AVA Electronics Corporation, Drexel Hill, PA 19026                                       |                                 |
| Barber-Colman Co., Indl. Instrs. Div., Loves Park, IL 61132-2940                           | 815-637-3000                    |
| Bead Industries, Bridgeport, CT 06605-0571                                                 | 203-334-4124                    |
| Berg Electronics, Camp Hill, PA 17011                                                      | 800-237-2374                    |
| † Brim Electronics, Fair Lawn, NJ 07410                                                    | 201-796-2886                    |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                    |
|                                                                                            | 914-736-1010                    |
| § Coax Connection, Peekskill, NY 10566                                                     | 416-292-4463                    |
| § Communication Devices, Inc., Scarborough, Ont., CAN M1B3R6                               | 312-539-3108                    |
| Connector Corp., Chicago, IL 60646                                                         | 419-537-0020                    |
| Connectronics Corp., Toledo, OH 43607                                                      | 708-455-8830                    |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                       | 410-298-4411                    |
| § Control Cable, Inc., Baltimore, MD 21244                                                 | 317-659-1874                    |
| C-S Electronic Sales, Inc., Frankfurt, IN 46041                                            | 201-768-5400                    |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                                    | 215-537-4700                    |
| † EBY Company, Philadelphia, PA 19124                                                      | 201-288-4477;                   |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 800-447-5639                    |
|                                                                                            | 310-515-4996                    |
| EPD Electronics, Inc., Gardena, CA 90247                                                   | 515-968-9661                    |
| § GC-Thorsen, Rockford, IL 61105-1209                                                      | 213-875-0213                    |
| § Hiram Jones Electronics, No. Hollywood, CA 91605                                         | 800-225-9228                    |
| Hypertronics Corp., Hudson, MA 01749                                                       | 813-572-9010                    |
| † Imtronics Industries Inc., St. Petersburg, FL 33716                                      | 516-293-1500                    |
| § International Components Corp., Melville, NY 11747                                       | 817-473-1730                    |
| International Microelectronics, Arlington, TX 76003                                        | 909-469-2900                    |
| § ITT Pomona Electronics, Pomona, CA 91766                                                 | 1-800-247-8256                  |
| § Johnson, E. F. Co., Waseca, MN 56093                                                     | 718-956-8900                    |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 708-450-2600                    |
| § Lab-Line Instruments, Melrose Park, IL 60160                                             | 508-682-6936                    |
| L-Corn Inc., N. Andover, MA 01845                                                          | 416-292-4463                    |
| § Leecraft Industries Ltd., Scarborough, Ont., CANADA M1B 3R6                              | 617-890-4750                    |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                       | 602-431-0015                    |
| § Metemaster, Tempe, AZ 85282                                                              | 508-975-2711                    |
| James Millen Elctns., Caywood Elec. Inc., N. Andover, MA 01845                             | 516-922-6000                    |
| § Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                  | 215-491-0600                    |
| † Milton Ross Co., Warrington, PA 18976                                                    | 800-346-6873                    |
| Mouser Electronics, Santee, CA 92071                                                       | 800-346-6873                    |
| Mouser Electronics, Mansfield, TX 76063                                                    | 800-346-6873                    |
| Mouser Electronics, Gilroy, CA 95020                                                       | 216-771-5225                    |
| Mueller Elec. Co., Cleveland, OH 44114                                                     | 800-826-6342                    |
| Omega Engineering, Stamford, CT 06907                                                      | 800-777-3300                    |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                | 815-229-7773                    |
| § Philmore Manufacturing, Rockford, IL 61125-1386                                          | 201-736-5722                    |
| Power Dynamics Inc., West Orange, NJ 07052                                                 | 617-479-5300                    |
| † Raytheon Company, Quincy Operations, Quincy, MA 02269                                    | 1-800-828-7266                  |
| Re-An U.S.A. Inc., Re-An Ltd. (UK), Fairfield, NJ 07004                                    | 919-557-0511; 800-626-1511      |
| § Rye Industries, Inc., Fuquay-Varina, NC 27526                                            | 914-736-3500                    |
| Shokai Far East Ltd., Peekskill, NY 10566                                                  | 814-724-6440                    |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                                | 510-234-9090                    |
| § Support Systems Intl. Corp., Richmond, CA 94804                                          | 215-825-4990                    |
| § Techni-Tool, Plymouth Meeting, PA 19462                                                  | 708-964-2330                    |
| Tricon Industries, Inc., Electromechanical Division, Downers Grove, IL 60515-4076          | 708-362-3700                    |
| § Trimm Inc., Libertyville, IL 60048                                                       | 508-532-0775; 1-800-262-9787;   |
| † Tru-Connector Corp., Peabody, MA 01960                                                   | 1-800-COAXTRU                   |
|                                                                                            | 206-282-8823                    |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                | 513-561-8145                    |
| † Virginia Panel Corporation, Waynesboro, VA 22980                                         | 703-949-8376                    |

## Jacks, Coaxial-2100

|                                                 |                            |
|-------------------------------------------------|----------------------------|
| # Accu-Tech Corporation, Roswell, GA 30076-3890 | 404-751-9473; 800-221-4767 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711      | 908-925-8000               |

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|----------------------------------------------------------------|----------------------------|
| § AVA Electronics Corporation, Drexel Hill, PA 19026           | 215-284-2500               |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                 | 203-438-9684; 800-344-9684 |
| Electronic Precision Technology Inc., Cambridge, MA 02140      | 617-661-2454               |
| JH America, Inc., JBT International, Inc., Torrance, CA 90501  | 314-328-0051               |
| † Johnson, E. F. Co., Waseca, MN 56093                         | 1-800-247-8256             |
| § Leecraft Industries Ltd., Scarborough, Ont., CANADA M1B 3R6  | 416-292-4463               |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805      | 708-398-5311; 800-323-5207 |
| § Metemaster, Tempe, AZ 85282                                  | 602-431-0015               |
| † Pasternack Enterprises, Irvine, CA 92713                     | 714-261-1920               |
| Shokai Far East Ltd., Peekskill, NY 10566                      | 914-736-3500               |
| § H H Smith, NT-T Inc., Meadville, PA 16335                    | 814-724-6440               |
| § Trimm Inc., Libertyville, IL 60048                           | 708-362-3700               |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047 | 818-707-2020               |

## Jacks, Modular Telephones-2100

|                                                                                 |                           |
|---------------------------------------------------------------------------------|---------------------------|
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                         | C•1163                    |
| § Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941 |                           |
|                                                                                 | C•1365-1366, 1757         |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                     | C•1392                    |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                     |                           |
|                                                                                 | C•1400-1403, 1411, D•1827 |
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000                           | C•1440, 1803              |
| Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911             |                           |
|                                                                                 | C•1459, 1808              |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700          |                           |
|                                                                                 | C•1810                    |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218             |                           |
|                                                                                 | C•1490-1491               |

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| # Accu-Tech Corporation, Roswell, GA 30076-3890                     | 404-751-9473; 800-221-4767 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                          | 908-925-8000               |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492 |                            |
|                                                                     | 203-265-8910               |

|                                                                        |              |
|------------------------------------------------------------------------|--------------|
| § Amphenol Interconnect Products, LPL Technologies, Endicott, NY 13760 |              |
|                                                                        | 607-754-4444 |
| § Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 |              |
|                                                                        | 602-897-7001 |

|                                                                       |                            |
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| § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962 |                            |
|                                                                       | 1-800-344-0223, Ext. 1027  |
| § Berg Electronics, Camp Hill, PA 17011                               | 800-237-2374               |
| § Brim Electronics, Fair Lawn, NJ 07410                               | 201-796-2886               |
| § Clifford of Vermont, Inc., Bethel, VT 05032                         | 802-234-9921; 800-451-4381 |
| Connector Corp., Chicago, IL 60646                                    | 312-539-3108               |

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| # Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                                  | 708-455-8830               |
| § Control Cable, Inc., Baltimore, MD 21244                                                            | 410-298-4411               |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                                               | 201-768-5400               |
| § Dataprobe, Englewood, NJ 07631                                                                      | 201-569-6464               |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                                        | 203-438-9684; 800-344-9684 |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;              |
|                                                                                                       | 800-447-5639               |
| § EPD Electronics, Inc., Gardena, CA 90247                                                            | 310-515-4996               |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684               |
| § GTE Supply GTE, Irving, TX 75038                                                                    | 800-433-4837               |
| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958               |
| § Ideal Industries, Inc., Sycamore, IL 60178                                                          | 815-895-5181               |
| § International Components Corp., Melville, NY 11747                                                  | 516-293-1500               |
| International Microelectronics, Arlington, TX 76003                                                   | 817-473-1730               |

|                                                                    |                            |
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| # J.A.W. Industries, Inc., Warrington, PA 18976                    | 215-343-8990               |
| L-Corn Inc., N. Andover, MA 01845                                  | 508-682-6936               |
| § Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416    | 206-485-4288;              |
|                                                                    | 206-486-2222               |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805          | 708-398-5311; 800-323-5207 |
| § Lynn Electronics, Feasterville, PA 19053                         | 215-355-8200; 800-523-6075 |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936 | 215-699-5373               |
| Mouser Electronics, Santee, CA 92071                               | 800-346-6873               |
| Mouser Electronics, Mansfield, TX 76063                            | 800-346-6873               |
| Mouser Electronics, Gilroy, CA 95020                               | 800-346-6873               |
| § Panduit Corp., Tinley Park, IL 60477-0981                        | 800-777-3300               |
| § Philmore Manufacturing, Rockford, IL 61125-1386                  | 815-229-7773               |
| Power Dynamics Inc., West Orange, NJ 07052                         | 201-736-5722               |
| Shokai Far East Ltd., Peekskill, NY 10566                          | 914-736-3500               |

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| # Support Systems Intl. Corp., Richmond, CA 94804 | 510-234-9090 |
| USAPEX Corp., Santa Clara, CA 95051               | 408-982-9063 |
| U.S. Terminals Inc., Cincinnati, OH 45243         | 513-561-8145 |
| † Virginia Plastics Co., Roanoke, VA 24015-0577   | 703-375-0100 |

|                                                                    |                            |
|--------------------------------------------------------------------|----------------------------|
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805          | 708-398-5311; 800-323-5207 |
| § Lynn Electronics, Feasterville, PA 19053                         | 215-355-8200; 800-523-6075 |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936 | 215-699-5373               |
| Mouser Electronics, Santee, CA 92071                               | 800-346-6873               |
| Mouser Electronics, Mansfield, TX 76063                            | 800-346-6873               |
| Mouser Electronics, Gilroy, CA 95020                               | 800-346-6873               |
| § Panduit Corp., Tinley Park, IL 60477-0981                        | 800-777-3300               |
| § Philmore Manufacturing, Rockford, IL 61125-1386                  | 815-229-7773               |
| Power Dynamics Inc., West Orange, NJ 07052                         | 201-736-5722               |
| Shokai Far East Ltd., Peekskill, NY 10566                          | 914-736-3500               |
| # Support Systems Intl. Corp., Richmond, CA 94804                  | 510-234-9090               |
| USAPEX Corp., Santa Clara, CA 95051                                | 408-982-9063               |
| U.S. Terminals Inc., Cincinnati, OH 45243                          | 513-561-8145               |
| † Virginia Plastics Co., Roanoke, VA 24015-0577                    | 703-375-0100               |

## Jacks (MIL)-2440 - See Vol. B

## Jammers (MIL)-2440 - See Vol. B

## Jamming Systems (MIL)-2440 - See Vol. B

## Jigs And Fixtures, Chassis & Circuit Board-4100 - See Vol. D

## Joint Compounds, Semiconductor - See Coatings, Compounds,

## Lubricants, etc., Heat Conductive (Vol. C)

## Joints, Rotary, Fiber Optic-2475 - See Vol. B

## Joints, Rotary, Microwave-3450 - See Vol. A

## Joysticks - See Controls, Computer Input (Vol. D)

## Joysticks, Inductive-2200 - See Vol. D

## Joysticks, Potentiometer-2200 - See Vol. D

## Joystick, Toggle Switch-2200 - See Vol. D

## Jumpers, Bonding-2100

|                                                                |              |
|----------------------------------------------------------------|--------------|
| Aries Electronics, Frenchtown, NJ 08825, 908-996-6841          | C•1261       |
| † Janco Corp., Burbank, CA 91508, 818-846-1800                 | B•1759       |
| Autosplice, Inc., San Diego, CA 92121                          | 619-535-0077 |
| Beau Interconnect Systems, Vermontron Corp., Laconia, NH 03247 | 603-624-5102 |
| † Excel Specialty Corp., Chicago, IL 60660                     | 312-262-4781 |



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| † Mini-Systems, Inc., Thick/Thin Film Division, North Attleboro, MA 02761         | 508-695-0203 |
| Mini-Systems, Inc., Sunbelt Microelectronic Division, Deltona, FL 32725           | 407-574-0208 |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                              | 800-634-2356 |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                      | 516-254-2970 |

## Jumpers, Circuit Board-2100

|                                                                                          |                                   |
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| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                    | C*1163                            |
| § Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                  | C*1261, 1267                      |
| § Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                            | C*1283                            |
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                    |                                   |
| C*1291, 1540                                                                             |                                   |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                              | C*1382, 1388                      |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                | 516-546-1751                      |
| # Altron, Inc., Anoka, MN 55303                                                          | 612-427-7735                      |
| § Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                   | 602-897-7001                      |
| Augat/RDI, Carol Stream, IL 60188                                                        | 708-682-4100                      |
| Autosplice, Inc., San Diego, CA 92121                                                    | 619-535-0077                      |
| § Berg Electronics, Camp Hill, PA 17011                                                  | 800-237-2374                      |
| Bussco Inc., El Segundo, CA 90245                                                        | 310-322-6580                      |
| § Cinch Connector Division, Labin Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                      |
| § Components Corp., Denville, NJ 07834                                                   | 201-627-0290                      |
| § Contact East, N. Andover, MA 01845                                                     | 508-682-2000                      |
| Crane Electronics, Inc., Cincinnati, OH 45212                                            | 800-676-7644                      |
| § Cross Electronics, Warrendale, PA 15086                                                | 412-776-1591                      |
| Dale Electronics, Inc., Norfolk Div., Norfolk, NE 68701-2242                             | 402-371-0080                      |
| § E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512                    | 800-368-0880                      |
| § EBY Company, Philadelphia, PA 19124                                                    | 215-537-4700                      |
| Eldre Corporation, Rochester, NY 14623                                                   | 716-427-7280                      |
| E-Mark, Inc., Trumbull, CT 06611                                                         | 203-452-1003                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477;                     |
|                                                                                          | 800-447-5639                      |
| § E-Z Hook, Tektest Inc., Arcadia, CA 91006                                              | 818-446-6175                      |
| † Fanco Industries, Inc., W. Caldwell, NJ 07006                                          | 201-575-0610                      |
| Garry Electronics, WPI, Salem, NJ 08079                                                  | 609-935-7603                      |
| § GC-Thorsen, Rockford, IL 61105-1209                                                    | 815-968-9661                      |
| Hokuriku USA Ltd., Madison, AL 35758                                                     | 205-772-9620                      |
| International Components Corp., Melville, NY 11747                                       | 516-293-1500                      |
| § International Resistive Company, Boone, NC 28607                                       | 704-264-8861                      |
| § ITT Pomona Electronics, Pomona, CA 91766                                               | 909-469-2900                      |
| § Jolo Industries, Inc., Garden Grove, CA 92643                                          | 714-554-6840                      |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                     | 718-956-8900                      |
| § Kycon Cable & Connector, Inc., San Jose, CA 95125                                      | 408-295-1110; 800-544-6941        |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                | 708-398-5311; 800-323-5207        |
| Manger Electric Company, Inc., Stamford, CT 06902                                        | 203-348-7761                      |
| § 3M-Electronic Products Division, Austin, TX 78726                                      | 1-800-225-5373 Sls. & Prod. Info. |
| § Mettermaster, Tempe, AZ 85282                                                          | 602-431-0015                      |
| § Micro-Ohm Corp., Duarte, CA 91010                                                      | 818-357-5377                      |
| § Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                | 516-922-6000                      |
| § Mueller Elec. Co., Cleveland, OH 44115                                                 | 216-771-5225                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                       | 508-588-6110                      |
| Noble U.S.A., Inc., Rolling Meadows, IL 60008                                            | 708-364-6038                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                              | 800-777-3300                      |
| Quality Components, Inc., St. Marys, PA 15857                                            | 814-834-2817                      |
| † RCD Components, Inc., Manchester, NH 03109                                             | 603-669-0054                      |
| § Relay Specialties, Oakland, NJ 07436                                                   | 201-337-1000                      |
| § Techni-Tool, Plymouth Meeting, PA 19462                                                | 215-825-4990                      |
| TELCO International Corp., TECO, Houston, TX 77095                                       | 713-855-2218                      |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401            | 803-676-2900                      |
|                                                                                          | 703-949-8376                      |
| † Virginia Panel Corporation, Waynesboro, VA 22980                                       |                                   |

## Jumpers, Wire, Terminated - See Cords, Patch (Vol. C)

## Junctions, Hybrid, Microwave-3450 - See Vol. A

## Keyboard Legends and Symbols-5150 - See Vol. B

## Keyboards, Address Encoded-5150 - See Vol. B

## Keyboards, Capacitive-5150 - See Vol. B

## Keyboards, Conductive Rubber-5150 - See Vol. B

## Keyboards, Full Travel-5150 - See Vol. B

## Keyboards, Hard Contact-5150 - See Vol. B

## Keyboards, Lighted-5150 - See Vol. B

## Keyboards, Low Profile-5150 - See Vol. B

## Keyboards, Membrane-5150 - See Vol. B

## Keyboards, Modular-5150 - See Vol. B

## Keyboards, Pad - See Keypads (Vol. B)

## Keyboards, Programmable-5150 - See Vol. B

## Keyboards, Wireless-5150 - See Vol. B

## Keyboards & Keypads (MIL)-2440 - See Vol. B

## Keyers, Tone-1900 - See Vol. D

## Keypads-5150 - See Vol. B

## Kits, Breadboarding (For Engineers)-4200

|                                                                       |             |
|-----------------------------------------------------------------------|-------------|
| Caddell-Burns Mfg., Mineola, NY 11501-3508, 516-746-2310              | A*1199-1200 |
| § Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660     | C*1321      |
| § Fox Electronics, Ft. Myers, FL 33905, 813-693-0099                  | A*1400      |
| § Gowanda Electronics Corp., Gowanda, NY 14070, 716-532-2234          | A*1240      |
| § Injector Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388 |             |
|                                                                       | C*1136      |

## International Manufacturing Services, Portsmouth, RI 02871-2418, 401-683-9700

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|-----------------------------------------------------------------------------|------------------------------------------|
| A*1944                                                                      |                                          |
| KOA Speer Electronics, Bradford, PA 16701, 814-362-5536                     | A*1960, 1970                             |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                          | A*1245-1247                              |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500           | C*1082                                   |
| Standex Electronics, International, Cincinnati, OH 45209, 513-871-3777      |                                          |
| A*1295                                                                      |                                          |
| ABL Electronics Supply, Inc., Peekskill, NY 10566                           | 914-736-1010; 1-800-431-2103             |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703            | 508-222-2202                             |
| Balco Atlanta, Conceptual Enterprises Intl. Ltd., Snellville, GA 30278-1078 |                                          |
|                                                                             | 404-979-5900                             |
| § Berg, W. M., Inc., East Rockaway, NY 11518                                | 516-599-5010                             |
| Calex Mfg. Co., Inc., Concord, CA 94520                                     | 510-687-4411                             |
| § Contact East, N. Andover, MA 01845                                        | 508-682-2000                             |
| Data Environment, Inc., Portland, OR 97291                                  | 503-531-0765                             |
| § E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512       | 800-368-0880                             |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608             | 201-288-4477;                            |
|                                                                             | 800-447-5639                             |
| § E-Z Hook, Tektest Inc., Arcadia, CA 91006                                 | 818-446-6175                             |
| Gennum Corp., Burlington, ON, CANADA L7R 3Y3                                | 800-263-9353; 416-632-2996               |
| § Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509      | 203-624-3103                             |
| § Richard Hirschmann of America Inc., Riverdale, NJ 07457                   | 201-835-5002                             |
| # HMC/Hub Material Company, Canton, MA 02021                                | 617-821-1870                             |
| § International Components Corp., Melville, NY 11747                        | 516-293-1500                             |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                        | 718-956-8900                             |
| § 3M-Electronic Products Division, Austin, TX 78726                         | 1-800-225-5373 Sls. & Prod. Info.        |
| MicroSignals Inc., L.I.C., NY 11101                                         | 718-937-7955; 718-937-0391; 800-648-2252 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                          | 508-588-6110                             |
| § PACE, Inc., Laurel, MD 20723-1990                                         | 301-490-9660                             |
| § PIC Design, Remington Technologies, Inc., Middlebury, CT 06762            | 203-758-8272                             |
| † Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416          |                                          |
|                                                                             | 516-328-3300                             |
| Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416            | 516-328-0200; 328-3300                   |
| Stock Model Parts, a DSG Company, New Hyde Pk., NY 11042-5416               | 516-328-3300                             |
| § Techni-Tool, Plymouth Meeting, PA 19462                                   | 215-825-4990                             |
| § Victory Engineering Corp., Springfield, NJ 07081                          | 201-379-5900                             |

## Kits, Connector-2100

|                                                                            |                    |
|----------------------------------------------------------------------------|--------------------|
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                    | C*1163             |
| † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161             | C*1700             |
| Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228           | C*1348             |
| § ITT Pomona Electronics, Pomona, CA 91766, 909-469-2900                   | C*1355             |
| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571                | C*1358-1359        |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 |                    |
|                                                                            | C*1056             |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                  |                    |
|                                                                            | C*1426, 1431, 1434 |

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|------------------------------------------------------------------------------------------|-----------------------------------|
| † Accurate Electronics Corp., Elyria, OH 44036                                           | 216-366-6300; 1-800-334-5904      |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                          | 404-751-9473; 800-221-4767        |
| § Alpha Wire Corp., Elizabeth, NJ 07207-0711                                             | 908-925-8000                      |
| § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                    | 1-800-344-0223, Ext. 1027         |
| § AVA Electronics Corporation, Drexel Hill, PA 19026                                     | 215-284-2500                      |
| Babcock Display Products, Inc., A Subsidiary of Babcock, Inc., Anaheim, CA 92805         |                                   |
|                                                                                          | 714-491-5100                      |
| CableStar, Incorporated, Glasgow, KY 42141                                               | 800-338-8223                      |
| Calex Mfg. Co., Inc., Concord, CA 94520                                                  | 510-687-4411                      |
| § Cinch Connector Division, Labin Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                      |
| § Clifford of Vermont, Inc., Bethel, VT 05032                                            | 802-234-9921; 800-451-4381        |
| § Contact East, N. Andover, MA 01845                                                     | 508-682-2000                      |
| § Control Cable, Inc., Baltimore, MD 21244                                               | 410-298-4411                      |
| Covid, Inc., Tempe, AZ 85281                                                             | 602-966-2221                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477;                     |
|                                                                                          | 800-447-5639                      |
| § E-Z Hook, Tektest Inc., Arcadia, CA 91006                                              | 818-446-6175                      |
| Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059       | 800-452-4844                      |
| Heyco Molded Products, Inc., Kenilworth, NJ 07033                                        | 908-245-0033; 800-526-4182        |
| # HMC/Hub Material Company, Canton, MA 02021                                             | 617-821-1870                      |
| International Microelectronics, Arlington, TX 76003                                      | 817-473-1730                      |
| ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700                      |
| § J.A.W. Industries, Inc., Warrington, PA 18976                                          | 215-343-8990                      |
| § Jonard Industries Corp., Tukalohe, NY 10707                                            | 914-793-0700                      |
| § Klein Tools, Inc., Chicago, IL 60659-9033                                              | 708-677-9500                      |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                     | 617-890-4750                      |
| Mark Eylet Inc., AMP, Inc., Wolcott, CT 06716                                            | 203-756-8847                      |
| † Maury Microwave Corp., Ontario, CA 91764                                               | 909-987-4715                      |
| § 3M-Electronic Products Division, Austin, TX 78726                                      | 1-800-225-5373 Sls. & Prod. Info. |
| § Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008          |                                   |
|                                                                                          | 708-392-3500                      |
| Mouser Electronics, Santee, CA 92071                                                     | 800-346-6873                      |
| Mouser Electronics, Mansfield, TX 76063                                                  | 800-346-6873                      |
| Mouser Electronics, Gilroy, CA 95020                                                     | 800-346-6873                      |
| § Panduit Corp., Tinley Park, IL 60477-0981                                              | 800-777-3300                      |
| § Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300                      |
| † Rowe Industries, Inc., Toledo, OH 43612                                                | 419-729-9761                      |
| † Star-Tron Corporation, Providence, RI 02909                                            | 401-274-5090                      |
| § Support Systems Intl. Corp., Richmond, CA 94804                                        | 510-234-9090                      |
| § Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630                               | 312-792-2700                      |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401            |                                   |
|                                                                                          | 803-676-2900                      |
| § Weidmuller Inc., Paladin Tools, Newbury Park, CA 91320                                 | 805-499-0318                      |
| † Zippertubing Co., Los Angeles, CA 90061                                                | 310-527-0488                      |



## Kits, Enclosure Prototyping-1400

|                                                                               |                              |
|-------------------------------------------------------------------------------|------------------------------|
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                         | C•1031                       |
| † Lansing Instrument Corp., Ithaca, NY 14851-0730, 607-272-3265; 800-487-3535 | C•1054-1055                  |
| Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000      | C•1056                       |
| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400          | C•1062-1066, 1068            |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500             | C•1082                       |
| Simco, Miami, FL 33177, 305-233-9900; 800-780-9090                            | C•1094-1096                  |
| † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                         | C•1098-1099                  |
| † Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                       | C•1102-1104                  |
| Alusett U.S.A. Inc., Peekskill, NY 10566                                      | 914-737-0120                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                 | 203-288-8001; 1-800-242-2863 |
| Buckeye Stamping Co., Columbus, OH 43207                                      | 614-445-8433                 |
| † Bud Industries, Inc., Willoughby, OH 44094-0431                             | 216-946-3200                 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                            | 508-588-6110                 |
| § Precision Fabrication Technologies, Inc., Monon, IN 47959                   | 1-800-558-7297; 219-253-6666 |
| Rittall Corp., Springfield, OH 45504-9807                                     | 800-477-4000                 |
| Schroff, Inc., Warwick, RI 02886                                              | 401-732-3770                 |
| SKB Corporation, Orange, CA 92667                                             | 714-637-1252                 |
| Tracewell Enclosures, Inc., Westerville, OH 43081                             | 614-846-6175; 800-848-4525   |
| § Vector Electronic Co., Inc., Sylmar, CA 91342                               | 818-365-9661; 800-423-5659   |
| Zero Cabinets (Stanton), Pacoima, CA 91331-2226                               | 818-890-3445                 |

## Kits, Fiber Optic-2475 — See Vol. B

## Kits, Marking (Dial, Instrument, Equipment, etc.)-2400

|                                                                                 |                            |
|---------------------------------------------------------------------------------|----------------------------|
| † Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 | C•1677                     |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                           | C•1530                     |
| Kit Master, Peekskill, NY 10566, 914-736-1010                                   | C•1541                     |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                 | 404-751-9473; 800-221-4767 |
| Allen Avionics, Inc., Mineola, NY 11501                                         | 516-248-8080               |
| § Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201                       | 1-800-537-8791             |
| § Eastern Marking Machines, Hempstead, NY 11550                                 | 800-835-2393               |
| § Entelec, Inc., Irving, TX 75038                                               | 214-550-9025               |
| † Jonard Industries Corp., Tuckahoe, NY 10707                                   | 914-793-0700               |
| † Kepro Circuit Systems, Fenton, MO 63026-2992                                  | 314-343-1630               |
| Metron Optics Inc., Solana Beach, CA 92075-0690                                 | 619-755-4477               |
| § Panduit Corp., Tinley Park, IL 60477-0981                                     | 800-777-3300               |
| § Techni-Tool, Plymouth Meeting, PA 19462                                       | 215-825-4990               |
| Zipertubing Co., Los Angeles, CA 90061                                          | 310-527-0488               |

## Kits, Potentiometer, Rheostat-4750 — See Vol. A

## Kits, Printed Circuit-1700

|                                                                                 |              |
|---------------------------------------------------------------------------------|--------------|
| † Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 | C•1677       |
| § Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388        | C•1136       |
| † A.P.E. Corporation, Medford, NY 11763                                         | 516-654-1197 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                | 508-222-2202 |
| Balco Atlanta, Conceptual Enterprises Int'l. Ltd., Snellville, GA 30278-1078    | 404-979-5900 |
| Calex Mfg. Co., Inc., Concord, CA 94520                                         | 510-687-4411 |
| E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512             | 800-368-0880 |
| Foredom Elec. Co., Blackstone Inds. Inc., Bethel, CT 06801                      | 203-792-8622 |
| § GC-Thorsen, Rockford, IL 61105-1209                                           | 815-968-9661 |
| † Kepro Circuit Systems, Fenton, MO 63026-2992                                  | 314-343-1630 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                            | 718-956-8900 |
| § PACE, Inc., Laurel, MD 20723-1990                                             | 301-490-9860 |
| § Techni-Tool, Plymouth Meeting, PA 19462                                       | 215-825-4990 |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                 | 801-298-5900 |

## Kits, Programming Board-4200

|                                                                         |                            |
|-------------------------------------------------------------------------|----------------------------|
| † Crosspoint, Div. of Info-Lite Corp., Fairview, NJ 07022, 201-941-4455 | B•1701                     |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660         | C•1321                     |
| § Fox Electronics, Ft. Myers, FL 33905, 813-693-0099                    | A•1400                     |
| Data Environment, Inc., Portland, OR 97291                              | 503-531-0765               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608         | 201-288-4477; 800-447-5639 |
| † Project Resources Inc., Wareham, MA 02571                             | 508-295-7444               |
| Vector Electronic Co., Inc., Sylmar, CA 91342                           | 818-365-9661; 800-423-5659 |

## Kits, Shielding-4525

|                                                                                         |                                   |
|-----------------------------------------------------------------------------------------|-----------------------------------|
| Amunuel Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                       | C•1683                            |
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                             | B•1072                            |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                                      | A•1245-1246                       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C•1696                            |
| § 3M Electronic Specialties Division, Austin, TX 78726-9000, 800-328-1368               | C•1667                            |
| The Mushield Co. Inc., Goffstown, NH 03045, 603-666-4433                                | C•1698                            |
| ABL Electronics Supply, Inc., Peekskill, NY 10566                                       | 914-736-1010; 1-800-431-2103      |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                              | 908-925-8000                      |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                    | 617-935-4850                      |
| † Craig Systems Corp., Eastern Technologies, Ltd., Amesbury, MA 01913-4848              | 508-388-5662                      |
| Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                    | 317-297-1030                      |
| Fair-Rite Prods., Walkkill, NY 12589                                                    | 914-895-2055                      |
| Ferronics, Fairport, NY 14450                                                           | 716-388-1020                      |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                                   | 908-241-0710                      |
| Instrument Specialties Co., Headquarters, Delaware Water Gap, PA 18327-0136             | 717-424-8510                      |
| 3M-Electronic Products Division, Austin, TX 78726                                       | 1-800-225-5373 Sls. & Prod. Info. |
| Sealing Devices, Inc., Lancaster, NY 14086                                              | 716-684-7600                      |

|                                           |              |
|-------------------------------------------|--------------|
| Tech-Etch, Inc., Plymouth, MA 02360       | 508-747-0300 |
| Technit, Cranford, NJ 07016               | 908-272-5500 |
| † Zippertubing Co., Los Angeles, CA 90081 | 310-527-0488 |

## Kits, Terminal-2100

|                                                                     |                                   |
|---------------------------------------------------------------------|-----------------------------------|
| § Alttech Corp., Flemington, NJ 08822-6000, 908-806-9400            | C•1007                            |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752             | C•1163                            |
| † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161      | C•1700                            |
| ABL Electronics Supply, Inc., Peekskill, NY 10566                   | 914-736-1010; 1-800-431-2103      |
| † Accurate Electronics Corp., Elyria, OH 44035                      | 216-366-6330; 1-800-334-5904      |
| † Cole-Flex Corporation, West Babylon, NY 11704                     | 516-249-6150                      |
| Concord Electronics Corporation, New York, NY 10012                 | 1-212-777-6571                    |
| § Contact East, N. Andover, MA 01845                                | 508-682-2000                      |
| § ITT Pomona Electronics, Pomona, CA 91766                          | 909-469-2900                      |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                | 718-956-8900                      |
| § Klein Tools, Inc., Chicago, IL 60659-9033                         | 708-677-9500                      |
| 3M-Electronic Products Division, Austin, TX 78726                   | 1-800-225-5373 Sls. & Prod. Info. |
| § Nichifu America, Inc., Pottstown, PA 19464                        | 215-323-7120                      |
| § Panduit Corp., Tinley Park, IL 60477-0981                         | 800-777-3300                      |
| § Techni-Tool, Plymouth Meeting, PA 19462                           | 215-825-4990                      |
| † Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401 | 203-732-7025                      |
| § Weidmuller Inc., Paladino Tools, Newbury Park, CA 91320           | 805-499-0318                      |

## Kits, Training Aid-4200

|                                                                                    |                            |
|------------------------------------------------------------------------------------|----------------------------|
| † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161                     | C•1700                     |
| Data Environment, Inc., Portland, OR 97291                                         | 503-531-0765               |
| § E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512              | 800-368-0880               |
| § Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509             | 203-624-3103               |
| Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059 | 800-452-4844               |
| § LJ Technical Systems, Hauppauge, NY 11788                                        | 516-234-2100               |
| MCE Semiconductor, Inc., West Palm Beach, FL 33407                                 | 407-845-2837               |
| § Paccom Electronics, Redmond, WA 98052-5350                                       | 206-883-9200; 800-426-6254 |
| § PACE, Inc., Laurel, MD 20723-1990                                                | 301-490-9860               |
| § PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                   | 203-758-8272               |
| § Techni-Tool, Plymouth Meeting, PA 19462                                          | 215-825-4990               |
| § Verdule Industries Inc., Omaha, NE 68124                                         | 402-691-8300               |

## Knobs, Cast, Molded, & Machined-2400

|                                                                                                  |                              |
|--------------------------------------------------------------------------------------------------|------------------------------|
| § Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433                                         | C•1016                       |
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                            | C•1291, 1540                 |
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C•1523-1525, 1527, 1529      |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                            | C•1530                       |
| § MORS Components, Wakefield, MA 01880-4444, 617-246-1007                                        | C•1532                       |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500                                | C•1534                       |
| § Selco Products Co., SEL Sales, Inc., Buena Park, CA 90621, 714-521-8673                        | C•1535                       |
| § Augat Alcoswitch, Augat Inc., Attleboro Falls, MA 02763                                        | 508-699-9800                 |
| Bas Bleu Intl. Co., Ltd., Taipei, TAIWAN 10008                                                   | (02)331-6519                 |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                                     | 516-599-5010                 |
| § ClaroStat Sensors and Controls Group, BYR, PLC, Plano, TX 75075                                | 214-422-1844; 1-800-872-0044 |
| § Cole Hersee Co., Boston, MA 02127-2467                                                         | 617-268-2100                 |
| Connector Corp., Chicago, IL 60646                                                               | 312-539-3108                 |
| Cornell Manufacturing, An Elgin Co., Orangeburg, NY 10962                                        | 914-365-0400                 |
| § Cosmo Corporation, Cleveland, OH 44109                                                         | 216-861-5594                 |
| † Cosmos Plastic Co., Cleveland, OH 44109                                                        | 216-861-5594                 |
| § Davies Molding Co., Carol Stream, IL 60188                                                     | 708-510-8188                 |
| § Dimco-Gray, Dayton, OH 45458                                                                   | 513-433-7600                 |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                                            | 714-669-9473                 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                  | 201-288-4477; 800-447-5639   |

|                                                                        |                            |
|------------------------------------------------------------------------|----------------------------|
| † FISHERCAST, Fisher Gauge Limited, Peterborough, Ont., CANADA K9J 6Y9 | 705-748-9522               |
| Handles Unlimited, Vernaline Products Division, Warwick, RI 02887-6979 | 800-227-0254; 401-739-7600 |
| International Microelectronics, Arlington, TX 76003                    | 817-473-1730               |
| ISL Products Int'l. Ltd., Syosset, NY 11791-6093                       | 516-937-3475; 800-626-6116 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                   | 718-956-8900               |
| † Microavionics Corp., Costa Mesa, CA 92626                            | 714-957-6904               |
| James Millen Elctms, Caywood Elec. Inc., No. Andover, MA 01845         | 508-755-2711               |
| Milton Ross Co., Warrington, PA 18976                                  | 215-491-0600               |
| Mouser Electronics, Santa, CA 92071                                    | 800-346-6873               |
| Mouser Electronics, Mansfield, TX 76063                                | 800-346-6873               |
| Mouser Electronics, Gilroy, CA 95020                                   | 800-346-6873               |
| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153                 | 215-365-8400               |
| § Peter Parts & Assocs, Webster, NY 14580                              | 716-265-2540               |
| § PIC Design, Remington Technologies, Inc., Middlebury, CT 06762       | 203-758-8272               |
| Plasticorp, Harbor City, CA 90710                                      | 310-539-9530               |
| § Power Dynamics Inc., West Orange, NJ 07052                           | 201-736-5722               |
| # Project Pro, Twinsburg, OH 44087                                     | 216-425-8888               |
| † Radial Controls Inc., Indianapolis, IN 46220                         | 317-255-2796               |
| § Raytheon Company, Quincy Operation, Quincy, MA 02269                 | 617-479-5300               |
| Re-An U.S.A. Inc., Re-An Ltd. (UK), Fairfield, NJ 07004                | 1-800-828-7266             |
| † Rogan, Northbrook, IL 60062                                          | 708-498-2300               |
| Shokai Far East Ltd., Peekskill, NY 10566                              | 914-736-3500               |

## Knobs, Collet-2400

|                                                                                                |              |
|------------------------------------------------------------------------------------------------|--------------|
| Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                            | C•1291       |
| Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C•1523, 1529 |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                          | C•1530       |



|                                                                           |                |  |        |
|---------------------------------------------------------------------------|----------------|--|--------|
| § Selco Products Co., SEL Sales, Inc., Buena Park, CA 90621, 714-521-8673 |                |  | C-1535 |
| Bas Bleu Indl. Co., Ltd., Taipei, TAIWAN 10008                            | (02)331-6519   |  |        |
| † Cosmos Plastic Co., Cleveland, OH 44109                                 | 216-861-5594   |  |        |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                   | 714-669-9473   |  |        |
| § Power Dynamics Inc., West Orange, NJ 07052                              | 201-736-5722   |  |        |
| # Project Pro, Twinsburg, OH 44087                                        | 216-425-8888   |  |        |
| Re-An U.S.A., Inc., Re-An Ltd. (UK), Fairfield, NJ 07004                  | 1-800-828-7266 |  |        |
| † S & S Associates, Inc., San Luis Obispo, CA 93401                       | 805-544-2500   |  |        |

**Knobs, Limit Stop-2400**

|                                                                            |                            |  |  |
|----------------------------------------------------------------------------|----------------------------|--|--|
| Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY |                            |  |  |
| 11735, 516-752-1950                                                        | C-1523-1524, 1529          |  |  |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                      | C-1530                     |  |  |
| MORS Components, Wakefield, MA 01880-4444, 617-246-1007                    | C-1532                     |  |  |
| Augat Alcoswitch, Augat Inc., Attleboro Falls, MA 02763                    | 508-699-9800               |  |  |
| Bas Bleu Indl. Co., Ltd., Taipei, TAIWAN 10008                             | (02)331-6519               |  |  |
| † Berg, W. M., Inc., East Rockaway, NY 11518                               | 516-599-5010               |  |  |
| § Clarostat Sensors and Controls Group, BYR, PLC, Plano, TX 75075          | 214-422-1844;              |  |  |
|                                                                            | 1-800-872-0044             |  |  |
|                                                                            | 1-212-777-6571             |  |  |
| Concord Electronics Corporation, New York, NY 10012                        |                            |  |  |
| Handles Unlimited, Vernaline Products Division, Warwick, RI 02887-6979     |                            |  |  |
|                                                                            | 800-227-0254; 401-739-7600 |  |  |
| † Microavionics Corp., Costa Mesa, CA 92626                                | 714-957-6904               |  |  |
| § Power Dynamics Inc., West Orange, NJ 07052                               | 201-736-5722               |  |  |
| § Raytheon Company, Quincy Operation, Quincy, MA 02269                     | 617-479-5300               |  |  |
| † Ryan, Northbrook, IL 60062                                               | 708-498-2300               |  |  |
| † S & S Associates, Inc., San Luis Obispo, CA 93401                        | 805-544-2500               |  |  |

**Knobs, Locking, Control Shaft-2400**

|                                                                            |                         |  |  |
|----------------------------------------------------------------------------|-------------------------|--|--|
| Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY |                         |  |  |
| 11735, 516-752-1950                                                        | C-1523-1525, 1527, 1529 |  |  |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                      | C-1530                  |  |  |
| § ETI Systems, Polaris Indl. Entrs., Carlsbad, CA 92009, 619-929-0749      | A-2084                  |  |  |
| Bas Bleu Indl. Co., Ltd., Taipei, TAIWAN 10008                             | (02)331-6519            |  |  |
| † Berg, W. M., Inc., East Rockaway, NY 11518                               | 516-599-5010            |  |  |
| Concord Electronics Corporation, New York, NY 10012                        | 1-212-777-6571          |  |  |
| § Cosmo Corporation, Cleveland, OH 44109                                   | 216-861-5594            |  |  |
| † Cosmos Plastic Co., Cleveland, OH 44109                                  | 216-861-5594            |  |  |
| † Dupree, Inc., China, CA 91710                                            | 909-597-4889            |  |  |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                      | 714-669-9473            |  |  |
| † Kilo International, Provo, UT 84606                                      | 801-377-5530            |  |  |
| † Microavionics Corp., Costa Mesa, CA 92626                                | 714-957-6904            |  |  |
| § Power Dynamics Inc., West Orange, NJ 07052                               | 201-736-5722            |  |  |
| § Raytheon Company, Quincy Operation, Quincy, MA 02269                     | 617-479-5300            |  |  |
| † S & S Associates, Inc., San Luis Obispo, CA 93401                        | 805-544-2500            |  |  |

**Knobs, Push to Turn-2400**

|                                                                              |                    |  |  |
|------------------------------------------------------------------------------|--------------------|--|--|
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY |                    |  |  |
| 11735, 516-752-1950                                                          | C-1523, 1527, 1529 |  |  |
| MORS Components, Wakefield, MA 01880-4444, 617-246-1007                      | C-1532             |  |  |
| † Cosmos Plastic Co., Cleveland, OH 44109                                    | 216-861-5594       |  |  |
| † S & S Associates, Inc., San Luis Obispo, CA 93401                          | 805-544-2500       |  |  |

**Knobs, Slip Clutch-2400**

|                                                                            |                            |  |  |
|----------------------------------------------------------------------------|----------------------------|--|--|
| Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY |                            |  |  |
| 11735, 516-752-1950                                                        | C-1524, 1527, 1529         |  |  |
| Bas Bleu Indl. Co., Ltd., Taipei, TAIWAN 10008                             | (02)331-6519               |  |  |
| † Berg, W. M., Inc., East Rockaway, NY 11518                               | 516-599-5010               |  |  |
| Concord Electronics Corporation, New York, NY 10012                        | 1-212-777-6571             |  |  |
| Handles Unlimited, Vernaline Products Division, Warwick, RI 02887-6979     |                            |  |  |
|                                                                            | 800-227-0254; 401-739-7600 |  |  |
| § Illinois Lock Co., The Eastern Co., Wheeling, IL 60090                   | 708-537-1800               |  |  |
| † Machine Components Corp., Plainview, NY 11803                            | 516-694-7222               |  |  |
| † S & S Associates, Inc., San Luis Obispo, CA 93401                        | 805-544-2500               |  |  |

**Knobs, Torque, Incremental, Ratio Drive-2400**

|                                                                            |                              |  |  |
|----------------------------------------------------------------------------|------------------------------|--|--|
| Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY |                              |  |  |
| 11735, 516-752-1950                                                        | C-1523-1524, 1526-1527, 1529 |  |  |
| Selco Products Co., SEL Sales, Inc., Buena Park, CA 90621, 714-521-8673    |                              |  |  |
|                                                                            | C-1535                       |  |  |
| § Augat Alcoswitch, Augat Inc., Attleboro Falls, MA 02763                  | 508-699-9800                 |  |  |
| Bas Bleu Indl. Co., Ltd., Taipei, TAIWAN 10008                             | (02)331-6519                 |  |  |
| § Clarostat Sensors and Controls Group, BYR, PLC, Plano, TX 75075          | 214-422-1844;                |  |  |
|                                                                            | 1-800-872-0044               |  |  |
|                                                                            | 216-861-5594                 |  |  |
| § Cosmo Corporation, Cleveland, OH 44109                                   |                              |  |  |
| Handles Unlimited, Vernaline Products Division, Warwick, RI 02887-6979     |                              |  |  |
|                                                                            | 800-227-0254; 401-739-7600   |  |  |
| § Machine Components Corp., Plainview, NY 11803                            | 516-694-7222                 |  |  |
| † Microavionics Corp., Costa Mesa, CA 92626                                | 714-957-6904                 |  |  |
| § Raytheon Company, Quincy Operation, Quincy, MA 02269                     | 617-479-5300                 |  |  |
| † S & S Associates, Inc., San Luis Obispo, CA 93401                        | 805-544-2500                 |  |  |

**Labels, Coatings, Crayons, Pellets, etc., Temperature Indicating-5300 - See Vol. B****Labels, Pressure Sensitive, Adhesive-2400**

|                                                                                 |                            |  |        |
|---------------------------------------------------------------------------------|----------------------------|--|--------|
| † Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 |                            |  | C-1677 |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119, 206-284-2200         |                            |  |        |
|                                                                                 | B-1836-1837, C-1665        |  |        |
| † S & S Associates, Inc., San Luis Obispo, CA 93401, 805-544-2500               | C-1082-1083                |  |        |
| † Accu-Tech Corporation, Rosewell, GA 30076-3890                                | 404-751-9473; 800-221-4767 |  |        |
| Astro-Med, Inc., W. Warwick, RI 02893                                           | 401-828-4000               |  |        |
| † Barrington Plastics, Mt Laurel, NJ 08054                                      | 609-235-5151               |  |        |
| † Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201                       | 1-800-537-8791             |  |        |
| † Central Decal Co., Inc., Chicago, IL 60638                                    | 312-586-2012               |  |        |

|                                                                               |  |  |                              |
|-------------------------------------------------------------------------------|--|--|------------------------------|
| § Computerware, Inc., Vienna, VA 22182-2266                                   |  |  | 703-821-8200                 |
| The Cutting Edge, Controls Unlimited Inc., Perry, OH 44081                    |  |  | 1-800-962-2376               |
| † Eastprint, Inc., N. Andover, MA 01845                                       |  |  | 508-975-5255                 |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                   |  |  | 708-547-5400                 |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                         |  |  | 708-632-1020                 |
| § EPC Identification Sys., Rohnert Park, CA 94928                             |  |  | 707-585-8811                 |
| Flexible Technologies, Arlon, E. Providence, RI 02914                         |  |  | 401-434-2340                 |
| † GM Nameplate, Inc., Seattle, WA 98119                                       |  |  | 206-284-2200                 |
| § Grafoplast S.P.A., Wiremarkers, Genova, ITALY 16154                         |  |  | + 10, 621687                 |
| † Hallmark Technologies, Mt. Dora, FL 32757                                   |  |  | 800-874-9063                 |
| § Ideal Industries, Inc., Sycamore, IL 60178                                  |  |  | 815-895-5181                 |
| International Instrumentation, Inc., Westlake Vlg., CA 91361                  |  |  | 805-495-7673                 |
| Jayco Interface Technology, Orange, CA 92665                                  |  |  | 714-974-1701                 |
| † JRW Industries, Inc., Harrisburg, PA 17110                                  |  |  | 717-236-1418                 |
| § Mantex Corp., Oxford, MI 48371                                              |  |  | 313-628-8210                 |
| † Markem Corp., Keene, NH 03431                                               |  |  | 603-352-1130                 |
| † Miller Dial Corp., El Monte, CA 91731                                       |  |  | 818-444-4555                 |
| Pactec Corp., LaFrance Corp., Philadelphia, PA 19153                          |  |  | 215-365-8400                 |
| § Panduit Corp., Tinley Park, IL 60477-0981                                   |  |  | 800-777-3300                 |
| Paneltec, Santa Clara, CA 95054                                               |  |  | 408-496-1175                 |
| § Semtronics Corp., Peachtree City, GA 30269                                  |  |  | 404-487-6681                 |
| † Skyway Magnetics, Warner Springs, CA 92086-9714                             |  |  | 619-782-3342                 |
| † Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003                     |  |  | 214-231-6663;                |
|                                                                               |  |  | 214-924-3289; 1-800-331-6600 |
| Stanpat Prods., Woonsocket, RI 02895                                          |  |  | 401-766-8400                 |
| § Tapecon, Inc., Rochester, NY 14612                                          |  |  | 716-621-8400                 |
| † Thames & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 |  |  | 803-676-2900                 |
| † Toplight, York, PA 17404                                                    |  |  | 717-843-9901; 800-233-9386   |
| † Tyton Corp., Milwaukee, WI 53223                                            |  |  | 414-355-1130; 800-535-5552   |
| § Wieland Inc., Burgaw, NC 28425                                              |  |  | 919-259-5050                 |
| † Wontronics, Los Angeles, CA 90039                                           |  |  | 213-660-6230                 |
| † Zebra Technologies Corporation, Vernon Hills, IL 60061-3109                 |  |  | 708-634-6700                 |

**Laboratories, Testing - See Services, Electrical Measurement & Test (Vol. D)****Lacing, Cable - See Cords & Tapes, Lacing (Vol. C)****Laminates, Clad Metal, Continuous Strip-2500**

|                                                                          |  |  |                |
|--------------------------------------------------------------------------|--|--|----------------|
| Atlee Inc., North Andover, MA 01845, 508-681-1003                        |  |  | C-1671         |
| § Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850      |  |  | C-1659         |
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900              |  |  | B-1072, C-1685 |
| § Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388 |  |  | C-1136         |
| † Alinabal, Milford, CT 06460                                            |  |  | 203-877-3241   |
| Flexible Technologies, Arlon, E. Providence, RI 02914                    |  |  | 401-434-2340   |
| † Rogers Corporation, Circuit Materials Div., Chandler, AZ 85244         |  |  | 602-963-4584   |
| Rogers Corp., Rogers, CT 06263                                           |  |  | 203-774-9605   |
| † Sko-Die, Inc., Morton Grove, IL 60053                                  |  |  | 708-965-1130   |

**Laminates, Metal Clad (Including Copper)-2500**

|                                                                          |  |  |                |
|--------------------------------------------------------------------------|--|--|----------------|
| § Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850      |  |  | C-1659         |
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900              |  |  | B-1072, C-1685 |
| § Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388 |  |  | C-1136         |
| † Alinabal, Milford, CT 06460                                            |  |  | 203-877-3241   |
| AMP-AKZO Corporation, Chadds Ford, PA 19317                              |  |  | 215-459-2800   |
| Berg Electronics, Camp Hill, PA 17011                                    |  |  | 800-237-2374   |
| The Bergquist Co., Minneapolis, MN 55439                                 |  |  | 800-347-4572   |
| § Egis Corporation, Barrington Hills, IL 60010                           |  |  | 708-639-1555   |
| Flexible Technologies, Arlon, E. Providence, RI 02914                    |  |  | 401-434-2340   |
| † General Elec. Co., Electromaterials Dept., Coshocton, OH 43812         |  |  | 614-622-5310   |
| W.L. Gore & Assocs., Newark, DE 19714                                    |  |  | 302-738-4880   |
| † Kepro Circuit Systems, Fenton, MO 63026-2992                           |  |  | 314-343-1630   |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                     |  |  | 718-956-8900   |
| † Miller Dial Corp., El Monte, CA 91731                                  |  |  | 818-444-4555   |
| † Norplex Oak Inc., La Crosse, WI 54602-1448                             |  |  | 608-784-6070   |
| Polyton Company, Crane Co., New Rochelle, NY 10801                       |  |  | 914-636-7222   |
| † PolyPly Inc./Conductives Systems, Inc., Amsterdam, NY 12010            |  |  | 518-843-3900   |
| Rogers Corporation, Circuit Materials Div., Chandler, AZ 85244           |  |  | 602-963-4584   |
| † Rogers Corporation, Microwave & Circuit Mats. Div., Chandler, AZ 85226 |  |  | 602-961-1382   |
| † Rogers Corp., Rogers, CT 06263                                         |  |  | 203-774-9605   |
| Sealing Devices, Inc., Lancaster, NY 14086                               |  |  | 716-684-7600   |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543            |  |  | 914-698-5353   |
| § Tapecon, Inc., Rochester, NY 14612                                     |  |  | 716-621-8400   |
| Texas Instrs., Mats. & Controls Grp., Attleboro, MA 02703                |  |  | 508-699-3800   |

**Laminates, Plastic Impregnated (Unclad)-2500**

|                                                                          |  |  |              |
|--------------------------------------------------------------------------|--|--|--------------|
| § Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850      |  |  | C-1659       |
| # The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900              |  |  | B-1072       |
| American Cyanamid Co., Metal Coated Fibers Dept., Wallingford, CT 06492  |  |  |              |
| Autosplice, Inc., San Diego, CA 92121                                    |  |  | 203-284-4217 |
| † Barrington Plastics, Mt. Laurel, NJ 08054                              |  |  | 609-235-5151 |
| Berg Electronics, Camp Hill, PA 17011                                    |  |  | 800-237-2374 |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035   |  |  | 313-583-1200 |
| Flexible Technologies, Arlon, E. Providence, RI 02914                    |  |  | 401-434-2340 |
| † General Elec. Co., Electromaterials Dept., Coshocton, OH 43812         |  |  | 614-622-5310 |
| W.L. Gore & Assocs., Newark, DE 19714                                    |  |  | 302-738-4880 |
| † Kam Components, Inc., Nesconset, NY 11767                              |  |  | 516-585-0666 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                     |  |  | 718-956-8900 |
| Liberty Polyglas, Inc., West Milford, PA 15122                           |  |  | 412-466-8611 |
| † Norplex Oak Inc., La Crosse, WI 54602-1448                             |  |  | 608-784-6070 |
| Precision Paper Tube Co., Wheeling, IL 60090                             |  |  | 708-537-4250 |
| † Rogers Corporation, Microwave & Circuit Mats. Div., Chandler, AZ 85226 |  |  | 602-961-1382 |



Rogers Corp., Rogers, CT 06263 ..... 203-774-9605  
 † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218 ..... 317-543-3540;  
 800-382-4635

## Laminates, Plastic (With Integral Heating Elements)-5300 — See Vol. B

**Lamp Adapters-2460 — See Vol. B**  
**Lamp Assembly Color Filters, Lens Mountable-2460 — See Vol. B**  
**Lamp Drivers-2460 — See Vol. B**  
**Lamp Holders — See Sockets, Lamp & Lamp Assemblies (Vol. B)**  
**Lamps, Arc-2460 — See Vol. B**  
**Lamps, Deuterium-2460 — See Vol. B**  
**Lamps, Edge Lighting, Panel-2460 — See Vol. B**  
**Lamps, Electroluminescent-2460 — See Vol. B**  
**Lamps, Exciter, Photographic-2460 — See Vol. B**  
**Lamps, Flashtube-2460 — See Vol. B**  
**Lamps, Fluorescent-2460 — See Vol. B**  
**Lamps, Glow — See Lamps, Neon (Vol. B)**  
**Lamps, High Intensity Discharge (HID)-2460 — See Vol. B**  
**Lamps, Hollow Cathode-2460 — See Vol. B**  
**Lamps, Incandescent-2460 — See Vol. B**  
**Lamps, Indicator — See Lamps, Miniature & Subminiature (Vol. B)**  
**Lamps, Infrared-2460 — See Vol. B**  
**Lamps, Krypton-2460 — See Vol. B**  
**Lamps, LED & LCD — See Diodes, Light Emitting (Vol. B), Diodes, Liquid Crystal (Vol. B)**  
**Lamps, Magnifying, Inspection-4100 — See Vol. D**  
**Lamps, Mercury Vapor-2460 — See Vol. B**  
**Lamps, Nanopulse-2460 — See Vol. B**  
**Lamps, Neon-2460 — See Vol. B**  
**Lamps, Oil Tight-2460 — See Vol. B**  
**Lamps, Press-to-Test-2460 — See Vol. B**  
**Lamps, Projection-2460 — See Vol. B**  
**Lamps, Solid State — See Diodes, Light Emitting (Vol. B), Diodes, Liquid Crystal (Vol. B)**  
**Lamps, Stroboscopic Source-2460 — See Vol. B**  
**Lamps, Tritium (Hydrogen 3) Powered-2460 — See Vol. B**  
**Lamps, Tungsten Halogen-2460 — See Vol. B**  
**Lamps, Ultraviolet-2460 — See Vol. B**  
**Lamps, Xenon-2460 — See Vol. B**  
**LANs — See Networks, Computer, Local Area (Vol. D)**  
**Laser Systems-4100 — See Vol. D**  
**Laser Components & Laser Accessories-3700 — See Vol. B**  
**Laser Diodes — See Diodes, Laser (Vol. A)**

## Latches, Panels & Cabinets-2400

† Nielsen Hardware, Zero Corporation, Hartford, CT 06141, 203-522-8145 ..... C•1544  
 Adams Rite Products, Inc., Glendale, CA 91204 ..... 818-241-5121  
 † Avibank Manufacturing, Inc., Burbank, CA 91503-0391 ..... 818-843-4330  
 † Dzus Fastener, W. Islip, NY 11795 ..... 516-669-6000  
 † Eberhard Mfg. Co., Div. Eastern Co., Strongsville, OH 44136 ..... 216-238-9720  
 † Fastex, Illinois Tool Works, Des Plaines, IL 60016 ..... 708-299-2222  
 NEC Electronics, Inc., Mountain View, CA 94039-7241 ..... 1-800-366-9782  
 Skydne Div., AAR Mfg., Port Jervis, NY 12771 ..... 914-856-6655; 800-428-CASE  
**LCDs — See Diodes, Liquid Crystal (Vol. B)**

## Lead Assemblies, High Voltage-Also See Connectors;

**Cable Assemblies & Harnesses-6000**  
**AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 ..... C•1163**  
 † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571 ..... C•1358-1359  
 † Accurate Electronics Corp., Elyria, OH 44036 ..... 216-366-6330; 1-800-334-5904  
 Alberox Corporation, New Bedford, MA 02745 ..... 508-995-1725  
 † Alden Products Co., Brockton, MA 02403 ..... 508-583-0160  
 Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492 ..... 203-265-8910  
 Autosplince, Inc., San Diego, CA 92121 ..... 619-535-0077  
 Cardinal Control Co., Kensington, CT 06037 ..... 203-828-6379  
 † Caton Connector Corp., Kingston, MA 02364 ..... 617-585-4315  
 Ceramaseal, New Lebanon, NY 12125 ..... 518-794-7800  
 † Component Mfg. Svc., Inc., W. Bridgewater, MA 02379 ..... 508-580-0111  
 † Concord Electronics Corporation, New York, NY 10012 ..... 1-212-777-6571  
 Electronic Connection Corp., Bloomfield, CT 06002 ..... 203-243-3356  
 † Engineered Assemblies & Components Corp., Teterboro, NJ 07068 ..... 201-288-4477;  
 800-447-5639  
 † Excel Specialty Corp., Chicago, IL 60660 ..... 312-262-4781  
 E-Z Hook, Tektest Inc., Arcadia, CA 91006 ..... 818-446-6175  
 † FISHERTECH, Fisher Gauge Limited, Peterborough, Ontario, CANADA K9J 6V9 ..... 705-748-9522  
 † GSI Corp., Timonium, MD 21093 ..... 410-252-1768  
 † Hermetic Seal Corp., Rosemead, CA 91770 ..... 213-283-0411  
 Hipotronics Inc., Brewster, NY 10509 ..... 914-279-8091  
 † ITT Pomona Electronics, Pomona, CA 91766 ..... 909-469-2900  
 † Manger Electric Company, Inc., Stamford, CT 06902 ..... 203-348-7761  
 † Mueller Elec. Co., Cleveland, OH 44114 ..... 216-771-5225  
 Multi-Contact USA, Santa Rosa, CA 95403 ..... 707-575-7575  
 † Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 † Rowe Industries, Inc., Toledo, OH 43612 ..... 419-729-9761

Shokai Far East Ltd., Peekskill, NY 10566 ..... 914-736-3500  
 † Simmonds Precision Engine Systems, BF Goodrich Aerospace, Norwich, NY 13815 ..... 607-335-5000  
 SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 ..... 503-638-1000  
 † Techrand Corp. of America, Muskegon, MI 49444 ..... 616-798-2930  
 † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 ..... 309-693-3300  
 Tronics, Inc., St. Charles, IL 60174 ..... 708-365-6570

## Lead Preparation Equipment, Surface Mount-4100 — See Vol. D

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**Lenses, Optical & Camera-3700 — See Vol. B**  
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**Light Pens-2000 — See Vol. D**  
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## Limit Stops, Mechanical-2500

‡ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 ..... C•1524  
 † Berg, W. M., Inc., East Rockaway, NY 11518 ..... 516-599-5010  
 MagneTek Controls, MagneTek Inc., Clawson, MI 48017 ..... 313-435-0700  
 † Perfect Gear & Instrument, Designatronics, Inc., New Hyde Park, NY 11042-5416 ..... 516-328-3300  
 † Precision Mechanisms, Westbury, NY 11590 ..... 516-ED3-5955  
 † Tapeswitch Corp. of America, Farmingdale, NY 11735 ..... 516-694-6312  
**Limiters, Current-4300 — See Vol. B**  
**Limiters, Microwave-3450 — See Vol. A**  
**Limiters, Surge — See Suppressors, Transient Voltage (Vol. B)**  
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**Line Conditioners-4050 — See Vol. D**  
**Line Controlled Switches — See Switches, Data (Vol. D)**  
**Liners, Tube Shield — See Shields, Tube (Vol. C)**  
**LNA-LNB, Satellite Antennas-1200 — See Vol. D**  
**Loads, Electronic, Variable-Also See Dummy Loads-2900 — See Vol. D**  
**Locators, Static-2900 — See Vol. D**  
**Locators, Open Short-2900 — See Vol. D**

## Locks, Dial & Shaft-2400

‡ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 ..... C•1524-1525  
 † Illinois Lock Co., The Eastern Co., Wheeling, IL 60090, 708-537-1800 ..... B•1742  
 Accurate Electronics Corp., Elyria, OH 44036 ..... 216-366-6330; 1-800-334-5904  
 † Airmco Inc., Chelser Corp., Seattle, WA 98108 ..... 206-762-8014; 800-426-0244  
 † Berg, W. M., Inc., East Rockaway, NY 11518 ..... 516-599-5010  
 † Concord Electronics Corporation, New York, NY 10012 ..... 1-212-777-6571  
 ELMA Electronic Inc., Fremont, CA 94538 ..... 510-656-3400  
 † HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 † Keystone Electronics Corp., Astoria, NY 11105-2017 ..... 718-956-8900  
 James Millen Elctms., Caywood Elec. Inc., No. Andover, MA 01845 ..... 508-975-2711  
**Logic Cards (without Components) — See Boards, Plug-in (Vol. C)**  
**Logic Circuits — See Cards, Logic (Vol. D), Modules, Logic (Vol. A)**  
**Loudspeakers — See Speakers (Vol. D)**  
**Louvers, Vents, & Windows (For Equipment) — See Enclosures, Equipment & Panel Mounting (Vol. C)**

## Lubricants-1600

‡ William F. Nye, Inc., New Bedford, MA 02742-8927, 508-996-6721 ..... C•1134  
 † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747 ..... 313-984-5581  
 † American Chemical, Inc., Minneapolis, MN 55408-1047 ..... 612-374-1767  
 † Amoco Oil Co., Lubricants Business Unit, Oak Brook, IL 60521-1857 ..... 800-876-3221  
 † Berg, W. M., Inc., East Rockaway, NY 11518 ..... 516-599-5010  
 † Caig Laboratories, Rancho Bernardo, CA 92127-1904 ..... 619-451-1799  
 † Chemtronics Inc., Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244  
 † Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † The Cool-Amp Conducto-Luba Co., Lake Oswego, OR 97035 ..... 503-624-6426  
 † CVC Products, Inc., Rochester, NY 14603 ..... 716-458-2550  
 † Dow Corning Corp., Midland, MI 48686-0994 ..... 517-496-4000  
 † Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 † E/M Corporation, W. Lafayette, IN 47906 ..... 317-497-6346  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 † HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870



|                                                                                    |               |
|------------------------------------------------------------------------------------|---------------|
| \$ Ideal Industries, Inc., Sycamore, IL 60178 .....                                | 815-895-5181  |
| \$ Injectorall Electronics (Woman Owned), Bohemia, NY 11716 .....                  | 516-563-3388  |
| Jonard Industries Corp., Tuckahoe, NY 10707 .....                                  | 914-793-0700  |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033 .....                                 | 708-677-9500  |
| \$ Lilly-Ram Industries, Gardena, CA 90248 .....                                   | 213-321-0710  |
| † LNP Engineering Plastics, Exton, PA 19341 .....                                  | 215-363-4500  |
| Metron Optics Inc., Solana Beach, CA 92075-0690 .....                              | 619-755-4477  |
| † Miller-Stephenson Chem. Co., Inc., Danbury, CT 06810-0950 .....                  | 203-743-4447  |
| Monsanto Co., St. Louis, MO 63167 .....                                            | 314-694-1000  |
| \$ Panduit Corp., Tinley Park, IL 60477-0981 .....                                 | 800-777-3300  |
| \$ Phillips ECG, North American Phillips Co., Williamsport, PA 17701 .....         | 717-323-4691  |
| \$ Reliance Electric Co., Cleveland, OH 44117 .....                                | 800-245-4501  |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218 .....                     | 317-433-3540; |
| .....                                                                              | 800-382-4635  |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370 ..... | 617-878-7015  |
| .....                                                                              | 215-825-4990  |
| \$ Tech-Tool, Plymouth Meeting, PA 19462 .....                                     | 806-372-8523  |
| \$† Tech Spray, Inc., Amarillo, TX 79105 .....                                     | 908-272-5500  |
| † Technit, Cranford, NJ 07016 .....                                                |               |

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**LVDTs** — See Transducers, Displacement (Vol. B)

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**Machines & Tools, Crimping** — See Tools, Crimping & Swaging (Vol. C)

**Machines, Automatic End Splice-4100** — See Vol. D

**Machines, Capacitor Winding-4100** — See Vol. D

**Machines, Cleaning & Degreasing-Also See Cleaners, Ultrasonic-4100** — See Vol. D

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| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000         | C=1056                     |
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| § Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400          | C=1062       |
| Tracewell Enclosures, Inc., Westerville, OH 43081, 614-846-6175; 800-848-4525 | C=1111       |
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| † CELCO, Mahwah, NJ 07430                                                     | 201-327-1123 |
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| Enterprise Systems Corp., Dover, NH 03820                                     | 603-742-7363 |
| § Ergotron, Inc., Eagan, MN 55121                                             | 612-452-8135 |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373                | 413-665-2163 |
| § Hoffman Engineering, Anoka, MN 55303                                        | 612-421-2240 |
| † Magnetic Radiation Labs, Itasca, IL 60143                                   | 708-285-0800 |
| Qualogy Inc., San Jose, CA 95134                                              | 408-434-5200 |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                           | 607-772-1161 |

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| § CHR, Furon, New Haven, CT 06509                                        | 203-777-3631               |
| § E-A-R Specialty Composites, Cabot Safety Corp., Indianapolis, IN 46268 | 317-692-1111               |
| § Fastex, Illinois Tool Works, Des Plaines, IL 60018                     | 708-299-2222               |
| † Hardigg Cases, Hardigg Industries, South Deerfield, MA 01373           | 413-665-2163               |
| Minor Rubber Co., Inc., Bloomfield, NJ 07003                             | 201-338-6800; 800-433-6886 |
| Oriental Motor USA Corp., Torrance, CA 90505-5217                        | 310-515-2264               |
| † Q.V.S., Inc., East Orange, NJ 07017                                    | 201-673-3996               |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416       | 516-328-0200; 328-3300     |
| Techno-Isel USA Division, Designatronics, New Hyde Park, NY 11042-5416   | 516-328-3970               |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706                      | 607-772-1161               |
| United Technical Products, Fallsington, PA 19054                         | 800-553-5300               |

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## Nameplates-2400

|                                                                               |                     |
|-------------------------------------------------------------------------------|---------------------|
| The Hall Company, Urbana, OH 43078, 513-652-1376                              | B=1834              |
| † Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119, 206-284-2200       | B=1836-1837, C=1665 |
| Memtron Technologies, Inc., Frankenmuth, MI 48734, 517-652-2656; 800-234-7525 | B=1845              |



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| # Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730; 812-768-6730          | C•1668                       |
| Aztec Industries, Inc., Mesa, AZ 85210                                              | 602-833-3131; 800-729-3132   |
| † Barrington Plastics, Mt. Laurel, NJ 08054                                         | 609-235-5151                 |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                        | 516-599-5010                 |
| † Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201                           | 1-800-537-8791               |
| Control Laser Corp., Orlando, FL 32809                                              | 407-438-2500                 |
| The Cutting Edge, Controls Unlimited Inc., Perry, OH 44081                          | 1-800-962-2376               |
| \$ Furnas Elec., Batavia, IL 60510                                                  | 708-879-6000                 |
| † GM Nameplate, Inc., Seattle, WA 98119                                             | 206-284-2200                 |
| † Hallmark Technologies, Mt. Dora, FL 32757                                         | 800-874-9063                 |
| Jayco Interface Technology, Orange, CA 92665                                        | 714-974-1701                 |
| † JRW Industries, Inc., Harrisburg, PA 17110                                        | 717-236-1418                 |
| † Kepro Circuit Systems, Fenton, MO 63026-2992                                      | 314-343-1630                 |
| LaFrance Corp., Philadelphia, PA 19153-3893                                         | 215-365-8000                 |
| Lucas Control Systems Products, Lucas Industries PLC, Hampton, VA 23666             | 804-766-1500                 |
| Markem Corp., Keene, NH 03431                                                       | 603-352-1130                 |
| \$ Mecro Precision/Inds. Inc., Bridgeport, CT 06607                                 | 203-333-4900                 |
| † Miller Dial Corp., El Monte, CA 91731                                             | 818-444-4555                 |
| Pactec Corp., LaFrance Corp., Philadelphia, PA 19153                                | 215-365-8400                 |
| † Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003                           | 214-231-6663;                |
|                                                                                     | 214-924-3289; 1-800-331-6600 |
| \$ Stanpat Prods., Woonsocket, RI 02895                                             | 401-766-8400                 |
| † Tophlight, York, PA 17404                                                         | 717-843-9901; 800-233-9386   |
| 2M Sales Company, Burnsville, MN 55337                                              | 612-890-7774                 |
| † Wontronics, Los Angeles, CA 90039                                                 | 213-660-6230                 |
| <b>Network Processors-1900 — See Vol. D</b>                                         |                              |
| <b>Networks, Computer, LAN-2000 — See Vol. D</b>                                    |                              |
| <b>Networks, Crossover, Attenuator (Audio)-1300 — See Vol. D</b>                    |                              |
| <b>Networks, Digital Data, Equipment-1900 — See Vol. D</b>                          |                              |
| <b>Networks, Directional Antenna Phasing-1200 — See Vol. D</b>                      |                              |
| <b>Networks, Hybrid-4700 — See Vol. A</b>                                           |                              |
| <b>Networks, Hybrid Substrates-3130 — See Vol. A</b>                                |                              |
| <b>Networks, Ladder-4700 — See Vol. A</b>                                           |                              |
| <b>Networks, LC-2700 — See Vol. A</b>                                               |                              |
| <b>Networks, Line Impedance Stabilization-1900 — See Vol. D</b>                     |                              |
| <b>Networks, Matching-1900 — See Vol. D</b>                                         |                              |
| <b>Networks, Phase-2700 — See Vol. A</b>                                            |                              |
| <b>Networks, Pulse Forming-2700 — See Vol. A</b>                                    |                              |
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| <b>Networks, RC-4700 — See Vol. A</b>                                               |                              |
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| <b>Networks, Resistance, Trimmer-4700 — See Vol. A</b>                              |                              |
| <b>Networks, Resistance, Voltage Divider-4700 — See Vol. A</b>                      |                              |
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| <b>NuBus Cards — See Board Computers &amp; Subassemblies (Vol. D)</b>               |                              |
| <b>Nuts, Metal-2500</b>                                                             |                              |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)       | C•1369                       |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161                    | C•1543                       |
| Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561                 | C•1475                       |
| † Avibank Manufacturing, Inc., Burbank, CA 91503-0391                               | 818-843-4330                 |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                        | 516-599-5010                 |
| † Brim Electronics, Fair Lawn, NJ 07410                                             | 201-796-2886                 |
| \$ Concord Electronics Corporation, New York, NY 10012                              | 1-212-777-6571               |
| Cornell Manufacturing, An Elgin Co., Orangeburg, NY 10962                           | 914-365-0400                 |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                            | 201-768-5400                 |
| \$ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735 | 516-752-1950                 |
| † Equipto Electronics Corp., Aurora, IL 60506-9988                                  | 708-897-4691                 |
| † Morris, J. I. Co., Southbridge, MA 01550                                          | 508-764-4394                 |
| † Penn Engineering & Manufacturing Corp., Danboro, PA 18916                         | 215-766-8853;                |
|                                                                                     | 800-237-4736                 |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                   | 203-758-8272                 |
| # Project Pro, Twinsburg, OH 44087                                                  | 216-425-8888                 |
| Stock Drive Products, a DSG Company, New Hyde PK, NY 11042-5416                     | 516-328-0200; 328-3300       |

**Nuts, Plastic — See Fasteners, Nonmetallic (Vol. C)**

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**Opamps — See Amplifiers, Operational (Vol. D)**

## Optical Breadboards-4200

|                                            |                              |
|--------------------------------------------|------------------------------|
| Ealing Electro-Optics, Holliston, MA 01746 | 508-429-8370; 1-800-343-4912 |
| Noll, J. A. Co., Monroeville, PA 15146     | 412-856-7566                 |
| Oriel Corp., Stratford, CT 06497-0872      | 203-377-8282                 |

**Optical Component Mounts & Accessories-3700 — See Vol. B**

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**Optical Design Service — See Services, Optical Design (Vol. D)**

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**Oscillators, Crystal, Digitally Compensated Crystal (DCXO)-2300 — See Vol. A**

**Oscillators, Hybrid-2300 — See Vol. A**

**Oscillators, Low Frequency (Module)-2300 — See Vol. A**

**Oscillators, Microwave-3450 — See Vol. A**

**Oscillators, Ovenized-2300 — See Vol. A**

**Oscillators, Power (Module)-2300 — See Vol. A**

**Oscillators, Programmable-2300 — See Vol. A**

**Oscillators, Pulse (Module)-2300 — See Vol. A**

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**Oscillators, RF (Module)-2300 — See Vol. A**

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**Oscillators, Square Wave (Module)-2300 — See Vol. A**

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**Oscillators, Tuning Fork Controlled — Also see Resonators-2300 — See Vol. A**

**Oscillators, UHF/VHF (Module)-2300 — See Vol. A**

**Oscillators, UHF/VHF (Test) — See Generators, UHF/VHF (Vol. D)**

**Oscillators, Ultrasonic (Test) — See Generators, Ultrasonic (Vol. D)**

**Oscillators, Voltage Controlled Crystal (VCXO)-2300 — See Vol. A**

**Oscillators (MIL), Crystal &/or Ovens-2440 — See Vol. B**

**Oscillators (MIL), VCO, Solid State, RF-2440 — See Vol. B**

**Oscillographs, Direct Writing-3000 — See Vol. D**

**Oscilloscope Accessories-2975 — See Vol. D**

**Oscilloscopes, Analog-2975 — See Vol. D**

**Oscilloscopes, Digital-2975 — See Vol. D**

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**Oscilloscopes, Low Frequency (DC to 3 MHz)-2975 — See Vol. D**

**Oscilloscopes, Mid Frequency (DC to 200 MHz)-2975 — See Vol. D**

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**Oscilloscopes, Programmable-2975 — See Vol. D**

**Oscilloscopes, Sampling-2975 — See Vol. D**

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## Outlets, Power, International-2100

|                                                                     |                |
|---------------------------------------------------------------------|----------------|
| \$ GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                 | C•1340, D•1732 |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380 | C•1353         |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097           |                |

C•1426, 1428, 1430

\$ Qualtek Electronics Corp., Mentor, OH 44060, 216-951-3300

\$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62

A•1606-1607, C•1452-1454

\$ Brooks Power Systems, Bensalem, PA 19020

\$ Contact East, N. Andover, MA 01845

508-682-2000

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**Ovens, Aging, Burn-in, Life Test-2550 — See Vol. D**

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## Pads, Transistor Mounting-2100

\$ The Bergquist Co., Minneapolis, MN 55439, 800-347-4572

B•1822, C•1654, 1656-1657

\$ Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850

\$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321



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|-------------------------------------------------------------------------|---------------------|
| † Accessories For Electronics, Inc., Baldwin, NY 11510-3593             | 516-546-1751        |
| † Bivar, Inc., Irvine, CA 92718                                         | 714-951-8808        |
| § Concord Electronics Corporation, New York, NY 10012                   | 212-777-6571        |
| Delbert Blinn Co., Inc., Pomona, CA 91769                               | 909-629-3900        |
| † Dynaloy, Inc., Hanover, NJ 07936                                      | 201-887-9270        |
| International Resistive Company, Boone, NC 28607                        | 704-264-8861        |
| † Keystone Electronics Corp., Astoria, OR 97105-2017                    | 718-956-8900        |
| † Milton Ross Co., Warrington, PA 18976                                 | 215-491-0600        |
| Mini-Systems, Inc., Thick/Thin Film Division, North Attleboro, MA 02761 | 508-695-0203        |
| Mini-Systems, Inc., Sunbelt Microelectronic Division, Deltona, FL 32725 | 407-574-0208        |
| § NTE Electronics, Inc., Bloomfield, NJ 07003                           | 201-748-5089        |
| † Robison Electronics, San Luis Obispo, CA 93403-8121                   | 805-544-8000        |
| § Schurter, Inc., Petaluma, CA 94954                                    | 800-848-2600 ext.62 |
| Sealing Devices, Inc., Lancaster, NY 14088                              | 716-684-7600        |
| † Teknatonal Inc., Rochester, NY 14620-1103                             | 716-232-1291        |
| United Technical Products, Fallsington, PA 19054                        | 800-553-5300        |

**Paints, Conductive, Electric** — See Coatings, Conductive, Electric (Vol. C)

## Paints, Finishing-1600

|                                       |              |
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| † Casso-Solar Corp., Pomona, NY 10970 | 914-354-2500 |
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## Paints, Metallic, Conductive-1600

|                                                                                   |              |
|-----------------------------------------------------------------------------------|--------------|
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747   | 313-984-5581 |
| § Chromics, Inc./W.R. Grace & Co., Woburn, MA 01888                               | 617-935-4850 |
| § Contact East, N. Andover, MA 01845                                              | 508-682-2000 |
| § Electrostatic Consulting Assocs., Groton, MA 01450                              | 508-448-5485 |
| † E/M Corporation, W. Lafayette, IN 47906                                         | 317-497-6346 |
| † Ercon Incorporated, Waltham, MA 02154                                           | 617-899-1497 |
| § HMC/Hub Material Company, Canton, MA 02021                                      | 617-821-1870 |
| † Master Bond, Hackensack, NJ 07601                                               | 201-343-8983 |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000 |
| † Semtronics Corp., Peachtree City, GA 30269                                      | 404-847-6681 |
| † Tecknit, Cranford, NJ 07016                                                     | 908-272-5500 |
| § Wescorp Static Control Products, Mountain View, CA 94041                        | 415-969-7717 |

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## Paints, Resistive-Also See Inks for Thick Film Microcircuits-1600

|                                                                                            |              |
|--------------------------------------------------------------------------------------------|--------------|
| † Ablestik Electronic Materials & Adhesives-EMCA-REMEX Products, Montgomeryville, PA 18936 | 215-855-1000 |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747            | 313-984-5581 |
| § Contact East, N. Andover, MA 01845                                                       | 508-682-2000 |
| § Electrostatic Consulting Assocs., Groton, MA 01450                                       | 508-448-5485 |
| † Ercon Incorporated, Waltham, MA 02154                                                    | 617-899-1497 |
| Ferro Corporation, Electronic Materials Div., Santa Barbara, CA 93117-3092                 | 805-968-5000 |
| † Kipro Circuit Systems, Fenton, MO 63026-2992                                             | 314-343-1630 |
| Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893                        | 401-822-9300 |
| Transene, Rowley, MA 01969                                                                 | 508-948-2501 |

**Panel Equipment** — See Dials (Vol. C), Connectors (Vol. C), Jacks (Vol. C), Lights, Indicator (Vol. B), etc.

**Panel Marking Kits** — See Kits, Marking (Vol. C)

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**Panels, Electroluminescent Backlight** — See Backlight Panels, Electroluminescent-2450 — See Vol. B

**Panels, IC Packaging** — See Boards, Plug-in (Vol. C)

## Panels, Jack-2100

|                                                                                       |                              |
|---------------------------------------------------------------------------------------|------------------------------|
| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103     | C*1287                       |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                               | C*1163                       |
| Crosspoint, Div. of Info-Lite Corp., Fairview, NJ 07022, 201-941-4455                 | B*1701                       |
| The Hall Company, Urbana, OH 43078, 513-652-1376                                      | B*1834                       |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                           | C*1411                       |
| † Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700              | C*1481                       |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-0047, 818-707-2020          | C*1500-1502                  |
| † Accurate Electronics Corp., Elyria, OH 44036                                        | 216-366-6330; 1-800-334-5904 |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                       | 404-751-9473; 800-221-4767   |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                 | 612-438-8080                 |
| Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492                   | 203-265-8910                 |
| † Bud Industries, Inc., Willoughby, OH 44094-0431                                     | 216-946-3200                 |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                         | 802-234-9921; 800-451-4381   |
| † Coax Connection, Peekskill, NY 10566                                                | 914-736-1010                 |
| § Communication Devices, Inc., Scarborough, Ont., CAN M1B3R6                          | 416-292-4463                 |
| § Computer System Products, Minneapolis, MN 55447                                     | 612-476-8686; 800-422-2537   |
| Connector Corp., Chicago, IL 60646                                                    | 312-539-3108                 |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                  | 708-455-8830                 |
| § Control Cable, Inc., Baltimore, MD 21244                                            | 410-298-4411                 |
| § Dabum Electronics & Cable Corp., Northvale, NJ 07647                                | 201-768-5400                 |
| § Damac Products, Inc., Santa Fe Springs, CA 90670                                    | 310-946-0881                 |
| § Dataprobe, Englewood, NJ 07631                                                      | 201-569-6464                 |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                                        | 203-438-9684; 800-344-9684   |
| § Electro Standards Lab., Inc., Data Communications Products Div., Cranston, RI 02921 | 401-943-1164                 |

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|-----------------------------------------------------------------------------|---------------------------------------------|
| § Elite Electronics, Inc., Plano, TX 75074                                  | 214-881-0026; 800-553-4376                  |
| ELMA Electronic Inc., Fremont, CA 94538                                     | 510-656-3400                                |
| § Furman Sound, Inc., Greenbrae, CA 94904                                   | 415-927-1225                                |
| § Glasgal Communications, Inc., Northvale, NJ 07647                         | 201-768-8082                                |
| § GTE Control Devices, Inc., Standish, ME 04084                             | 207-642-4535                                |
| § GTE Supply, GTE, Irving, TX 75038                                         | 800-433-4837                                |
| § Kings Electronics Co., Inc., Tuckahoe, NY 10707                           | 914-793-5000                                |
| L-Corn Inc., N. Andover, MA 01845                                           | 508-682-6936                                |
| † Light Control Systems Inc., M/A COM Inc., Hudson, NH 03051                | 603-883-8300                                |
| † Meco Precision/Inds. Inc., Bridgeport, CT 06607                           | 203-333-4900                                |
| Nu Data, Inc., Little Silver, NJ 07739                                      | 908-842-5757                                |
| Omega Engineering, Stamford, CT 06907                                       | 800-826-6342                                |
| Richards, Arklay S. Co., Inc., Newton Highlands, MA 02161-1796              | 617-527-4385                                |
| Shokai Far East Ltd., Peekskill, NY 10566                                   | 914-736-3500                                |
| H H Smith, NT-T Inc., Meadville, PA 16335                                   | 814-724-6440                                |
| † STRONGBOX, Culver City, CA 90231-2726                                     | 310-305-8288                                |
| † Telenix/Grin Corp., Cherry Hill, NJ 08034                                 | 609-424-5220                                |
| § Telenex Corporation, A Unit of General Signal Corp., Mt. Laurel, NJ 08054 | 609-234-7900                                |
| † Thermo Electric, Saddle Brook, NJ 07662                                   | 201-843-5800                                |
| § Trimm Inc., Libertyville, IL 60048                                        | 708-362-3700                                |
| † Tru-Connector Corp., Peabody, MA 01960                                    | 508-532-0775; 1-800-262-9787; 1-800-COAXTRU |
| † Virginia Panel Corporation, Waynesboro, VA 22980                          | 703-949-8376                                |

**Panels, Metal** — See Enclosures, Circuit Board, Module & Relay Mounting (Vol. C)

**Panels, Meter** — See Enclosures, Circuit Board, Module, & Relay Mounting (Vol. C)

**Panels, Patch** — See Panels, Jack (Vol. C)

## Panels, Power BUS for ICs-3200

|                                                                           |              |
|---------------------------------------------------------------------------|--------------|
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 | C*1025, 1675 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703          | 508-222-2202 |
| § dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803           | 617-273-5800 |
| ELMA Electronic Inc., Fremont, CA 94538                                   | 510-656-3400 |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                     | 714-669-9473 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                        | 508-588-6110 |
| † Project Resources Inc., Wareham, MA 02571                               | 508-295-7444 |

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**PC Instruments** — See Instruments, Test & Measuring, Personal Computer (Vol. D)

**Peak Sense & Hold Amplifiers** — See Amplifiers, Peak Sense & Hold (Vol. D)

**Peltier (Thermoelectric) Heat Pumps** — See Cooling/Heating Modules, Thermoelectric (Vol. B)

**Personal Computer Instruments** — See Instruments, Test & Measuring, Personal Computer (Vol. D)

**Phones** — See Handsets, Chestsets, Headphones, Headsets, etc. (Vol. D)

**Photocells & Phototubes** — See Cells, Photoconductive (Vol. B)

**Photodetectors, GaAs-3700** — See Vol. B

**Photodetectors, Silicon-3700** — See Vol. B

**Photoelectric Equipment** — See Alarms, Controls, Photoelectric (Vol. B)

**Photoelectric Tubes** — See Cells, Photoconductive (Vol. B)

**Photoemissive Detectors** — See Cells, Photoemissive (Vol. B)

**Photographic Services** — See Services, Photographic (Vol. D)

**Photometers** — See Meters, Light (Vol. D)

## Photomultiplier Tube Housings-4525

|                                                                                       |              |
|---------------------------------------------------------------------------------------|--------------|
| Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C*1696       |
| Hamamatsu Corp., Hamamatsu Photonics, K.K., Bridgewater, NJ 08807                     | 908-231-0960 |
| Products for Research, Danvers, MA 01923                                              | 508-774-3250 |

**Photoresists-3700** — See Vol. B

## Photo Resists-4525

|                                                                                |              |
|--------------------------------------------------------------------------------|--------------|
| Datask Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-645-2262 | C*1677       |
| § Injectorall Electronics (Woman Owned), Bohemia, NY 11716                     | 516-563-3388 |

**Phototransistors, Surface Mount-4800** — See Vol. A

**Pick and Place Equipment, Automatic-4100** — See Vol. D

**Pick and Place Equipment, Manual-4100** — See Vol. D

**Pickups, Magnetic, Proximity, Torque, Vibration, etc.** — See Transducers, Specific Type (Vol. B)

**Pickups, Telephone (For Recording)-1300** — See Vol. D

**Piezoelectric Ceramics-2300** — See Vol. A

**Pilot Lights** — See Lights, Indicator (Vol. B)

**Pin Grid Arrays** — See Sockets, Pin Grid Array (Vol. C)

## Pin Straighteners, Tube-5400

|                                           |              |
|-------------------------------------------|--------------|
| § Techni-Tool, Plymouth Meeting, PA 19462 | 215-825-4990 |
|-------------------------------------------|--------------|



## Pins, Cotter, Dowel, Taper, etc.-2500

|                                                                   |                        |
|-------------------------------------------------------------------|------------------------|
| Aries Electronics, Frenchtown, NJ 08825, 908-996-6841             | C-1266-1267            |
| Autoswage Products, Shelton, CT 06484                             | 203-929-1401           |
| † Berg, W. M., Inc., East Rockaway, NY 11518                      | 516-599-5010           |
| † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762  | 203-758-8272           |
| Sterling Instruments, a DSG Company, New Hyde Pk, NY 11042-5416   | 516-328-3300           |
| † Stock Drive Products, a DSG Company, New Hyde Pk, NY 11042-5416 | 516-328-0200, 328-3300 |

## Pins, Electrically Conductive-2100

|                                                                         |             |
|-------------------------------------------------------------------------|-------------|
| Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                   | C-1266-1267 |
| Crosspoint, Div. of Info-Lite Corp., Fairview, NJ 07022, 201-941-4455   | B-1701      |
| § Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000 |             |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                      | C-1421      |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218     | C-1445      |

|                                                                                 |                              |
|---------------------------------------------------------------------------------|------------------------------|
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                       | 516-546-1751                 |
| Accurate Electronics Corp., Elyria, OH 44036                                    | 216-366-6330; 1-800-334-5904 |
| † AME Corporation, Towaco, NJ 07082-0195                                        | 201-263-1700                 |
| Augat/RDI, Carol Stream, IL 60188                                               | 708-682-4100                 |
| Autosplice, Inc., San Diego, CA 92121                                           | 619-535-0077                 |
| Autoswage Products, Shelton, CT 06484                                           | 203-929-1401                 |
| Bead Industries, Bridgeport, CT 06605-0571                                      | 203-334-4124                 |
| Berg Electronics, Camp Hill, PA 17011                                           | 800-237-2374                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                   | 203-288-8001; 1-800-242-2863 |
| Cold Header Machine Corp., Boca Raton, FL 33431                                 | 407-393-3201                 |
| § Concord Electronics Corporation, New York, NY 10012                           | 1-212-777-6571               |
| Connectronics Corp., Toledo, OH 43607                                           | 419-537-0020                 |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                           | 612-941-5651; 1-800-343-5553 |
| † dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803                 | 617-273-5800                 |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260                           | 602-443-1949;                |
|                                                                                 | 800-638-3226                 |
| † Garry Electronics, WPI, Salem, NJ 08079                                       | 609-935-7603                 |
| GTU/Electronics Div., Hadley, PA 16130-8815                                     | 412-253-3161                 |
| Hypertronics Corp., Hudson, MA 01749                                            | 508-568-0451; 800-225-9228   |
| ITT Cannon, Santa Ana, CA 92705-5684                                            | 714-557-4700                 |
| Ken-Tron Mfg. Inc., Owensboro, KY 42301                                         | 502-684-0431                 |
| § McKenzie Technology, Fremont, CA 94538                                        | 510-651-2700                 |
| § Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008 | 708-392-3500                 |
|                                                                                 | 215-757-1202                 |
| † Precicontact, Inc., Langhorne, PA 19047                                       | 508-532-5500                 |
| § Precision Metal Products Co., Peabody, MA 01960                               | 708-438-4000                 |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                    | 812-948-0564                 |
| § Robinson Nugent, Inc., New Albany, IN 47150                                   | 510-234-9090                 |
| § Support Systems Intl. Corp., Richmond, CA 94804                               | 312-792-2700                 |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630                        | 818-786-6381                 |
| § Useco Div., Litton Inds, Van Nuys, CA 91409                                   | 513-561-8145                 |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                     | 801-298-5900                 |
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                   |                              |

## Pins, Mechanical-2500

|                                                                             |                        |
|-----------------------------------------------------------------------------|------------------------|
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571       | C-1540                 |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 | C-1681                 |
| Autosplice, Inc., San Diego, CA 92121                                       | 619-535-0077           |
| Autoswage Products, Shelton, CT 06484                                       | 203-929-1401           |
| † Avibank Manufacturing, Inc., Burbank, CA 91503-0391                       | 818-843-4330           |
| Bead Industries, Bridgeport, CT 06605-0571                                  | 203-334-4124           |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                | 516-599-5010           |
| Cold Header Machine Corp., Boca Raton, FL 33431                             | 407-393-3201           |
| Control Cable, Inc., Baltimore, MD 21244                                    | 410-298-4411           |
| † dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803             | 617-273-5800           |
| † Garry Electronics, WPI, Salem, NJ 08079                                   | 609-935-7603           |
| GTU/Electronics Div., Hadley, PA 16130-8815                                 | 412-253-3161           |
| Ken-Tron Mfg. Inc., Owensboro, KY 42301                                     | 502-684-0431           |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                        | 718-956-8900           |
| † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762            | 203-758-8272           |
| § Precision Metal Products Co., Peabody, MA 01960                           | 508-532-5500           |
| † Sterling Instruments, a DSG Company, New Hyde Pk, NY 11042-5416           | 516-328-3300           |
| † Stock Drive Products, a DSG Company, New Hyde Pk, NY 11042-5416           | 516-328-0200, 328-3300 |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                 | 513-561-8145           |

## Plastic Raw Materials, Liquids, Pellets, Powders, Resins-1600

|                                                                            |                            |
|----------------------------------------------------------------------------|----------------------------|
| † Applied Plastics Technology, Bristol, RI 02809                           | 401-253-0200               |
| † Bacon Industries, Inc., Watertown, MA 02172-2399                         | 617-926-2550               |
| Conap, Inc., Olean, NY 14760                                               | 716-372-9650               |
| † Dennis Chemical, St. Louis, MO 63103                                     | 314-771-1800               |
| § Dolph, John C., Co., Monmouth Junction, NJ 08852                         | 908-329-2333               |
| † Dynaloy, Inc., Hanover, NJ 07936                                         | 201-887-9270               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                | 708-547-5400               |
| † ELF Atochem North America, Philadelphia, PA 19102                        | 215-587-7520               |
| Ferro Corporation, Filled & Reinforced Plastics Div., Evansville, IN 47711 | 812-423-5218               |
| Ferro Corporation, Plastic Colorants & Dispersions, Stryker, OH 43557      | 419-682-3311               |
| † Industrial Dielectrics, Inc., Noblesville, IN 46060                      | 317-773-1766               |
| Information Retrieval Systems, Inc., New York, NY 10128                    | 212-348-6268               |
| Insulcast, Permagine Inds. Inc., Plainview, NY 11803                       | 516-349-1100; 800-645-7546 |
| Leopony Plastics, Inc., Ft. Wayne, IN 46809                                | 219-747-7411               |
| § Lilly-Ram Industries, Gardena, CA 90248                                  | 213-321-0710               |
| † LNP Engineering Plastics, Exton, PA 19341                                | 215-363-4500               |

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|-----------------------------------------------------------------------------------|---------------|
| Mereco Products Div., Metachem Resins Corp., West Warwick, RI 02893               | 401-822-9300  |
| † Merix Chemical Co., Chicago, IL 60649                                           | 312-221-8242  |
| Monsanto Co., St. Louis, MO 63167                                                 | 314-694-1000  |
| † PolyPly Inc./Conductives Systems, Inc., Amsterdam, NY 12010                     | 518-843-3900  |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |               |
|                                                                                   | 401-433-7000  |
| † Rogers Corporation, Molding Materials Div., Manchester, CT 06040                | 203-646-5500  |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                        | 317-543-3540; |
|                                                                                   | 800-382-4635  |
| † Sigma Plastics, Inc., Whitmore Lake, MI 48189                                   | 810-231-2871  |
| Tra-Con, Inc., Medford, MA 02155                                                  | 617-391-5550  |
| § Wescorp Static Control Products, Mountain View, CA 94041                        | 415-969-7717  |

## Plastics, Custom Molding — See Services, Custom Molding, Plastic (Vol. D)

## Plastics, Encapsulating — See Compounds, Encapsulating, Molding, Potting (Vol. C)

## Plastics Fabrication — See Services, Plastics Fabrication (Vol. D)

## Plastics, Heat Shrinkable — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C), Tubing, Heat Shrinkable (Vol. C)

## Plated Wire Memory Systems — See Memory Systems (Vol. D)

## Plates, Instructional, Name, Silk Screen — See Nameplates (Vol. B)

## Plates, Multihole-2500

|                                                    |              |
|----------------------------------------------------|--------------|
| § Control Cable, Inc., Baltimore, MD 21244         | 410-298-4411 |
| §# Support Systems Intl. Corp., Richmond, CA 94804 | 510-234-9090 |

## Platforms, Thermal — See Thermal Platforms (Vol. D)

## Plating Services — See Services, Plating (Vol. D)

## Players, Magnetic Tape — See Recorders, Magnetic Tape (Vol. D)

## Pliers-5400

|                                                        |              |
|--------------------------------------------------------|--------------|
| § Contact East, N. Andover, MA 01845                   | 508-682-2000 |
| † Cooper Tools, Raleigh, NC 27622                      | 919-781-7200 |
| § GC-Thorsen, Rockford, IL 61105-1209                  | 815-968-9661 |
| § HMC/Hub Material Company, Canton, MA 02021           | 617-821-1870 |
| § Ideal Industries, Inc., Sycamore, IL 60178           | 815-895-5181 |
| § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 | 602-968-6241 |
| † Jonard Industries Corp., Tuckahoe, NY 10707          | 914-793-0700 |
| § Klein Tools, Inc., Chicago, IL 60659-9033            | 708-677-9500 |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101   | 617-890-4750 |
| Omega Engineering, Stamford, CT 06907                  | 800-826-6342 |
| § Pioneer Components, Brooklyn, NY 11234               | 718-444-3880 |
| § Shattuck Industries, Santa Cruz, CA 95060            | 408-427-3122 |
| † Sjoberg, C., & Son, Inc., Cranston, RI 02910         | 401-461-8220 |
| § Techni-Tool, Plymouth Meeting, PA 19462              | 215-825-4990 |
| § The Triangle Tool Group, Inc., Orangeburg, SC 29115  | 803-534-7010 |

## Plotters/Hard-Copy Devices-2000 — See Vol. D

## Plotters, X-Y, & Accessories-3000 — See Vol. D

## Plug & Jack Sets-2100

|                                                                          |                                 |
|--------------------------------------------------------------------------|---------------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                     | C-1150-1151                     |
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571    | C-1291, 1540                    |
| § Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002  | C-1347                          |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600              | C-1400-1407, 1761, D-1824, 1827 |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                | C-1433, 1437                    |
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                | C-1451                          |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911    | C-1459, 1808                    |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960   | C-1461                          |
| Stewart Connector Sys., Inc., Glen Rock, PA 17327, 717-235-7512          | C-1469                          |
| † Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561    | C-1475                          |
| § Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700 |                                 |

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|--------------------------------------------------------------------------------------------|------------------------------|
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                  | 516-546-1751                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                             | 216-366-6330; 1-800-334-5904 |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                                      | 612-938-8080                 |
| † Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-889-9304                 |
| § AVA Electronics Corporation, Drexel Hill, PA 19026                                       | 215-284-2500                 |
| Barber-Colman Co., Indl. Instrs. Div., Loves Park, IL 61132-2940                           | 815-637-3000                 |
| Berg Electronics, Camp Hill, PA 17011                                                      | 800-237-2374                 |
| † Brim Electronics, Fair Lawn, NJ 07410                                                    | 201-796-2886                 |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                 |
| § Communication Devices, Inc., Scarborough, Ont., CAN M1B3R6                               | 416-292-4463                 |
| † Connector Corp., Chicago, IL 60646                                                       | 312-539-3108                 |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                                    | 201-768-5400                 |
| § Direct Sound Corporation, Boston, MA 02116                                               | 1-800-372-1616               |
| Electronic Precision Technology Inc., Cambridge, MA 02140                                  | 617-661-2454                 |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477;                |
|                                                                                            | 800-447-5639                 |
| EPD Electronics, Inc., Gardena, CA 90247                                                   | 310-515-4996                 |
| § GC-Thorsen, Rockford, IL 61105-1209                                                      | 815-968-9661                 |
| § GIC Thermodynamics, Royal Oak, MI 48073                                                  | 313-280-1648                 |
| § GTE Supply, GTE, Irving, TX 75038                                                        | 800-433-4837                 |
| Hypertronics Corp., Hudson, MA 01749                                                       | 508-568-0451; 800-225-9228   |
| International Components Corp., Melville, NY 11747                                         | 516-293-1500                 |
| † ITT Pomona Electronics, Pomona, CA 91766                                                 | 909-469-2900                 |
| † Johnson, E. F., Co., Waseca, MN 56093                                                    | 1-800-247-8256               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 718-956-8900                 |



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|-----------------------------------------------------------------------------------|-------------------------------|--------------|
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                        | 708-398-5311                  | 800-323-5207 |
| \$† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                            | 617-890-4750                  |              |
| \$ MOLEX, Inc., Lisle, IL 60532                                                   | 708-969-4550                  |              |
| Mueller Elec. Co., Cleveland, OH 44114                                            | 216-771-5225                  |              |
| Omega Engineering, Stamford, CT 06907                                             | 800-826-6342                  |              |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                | 815-229-7773                  |              |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                      | 708-438-4000                  |              |
| Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796                   | 617-527-4385                  |              |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                  | 919-557-0511                  | 800-626-1511 |
| Shokai Far East Ltd., Peekskill, NY 10566                                         | 914-736-3500                  |              |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                                      | 814-724-6440                  |              |
| Soltron/Microwave, Soltron Devices, Inc., West Palm Beach, FL 33407-4697          | 407-848-4311                  |              |
| \$# Support Systems Intl. Corp., Richmond, CA 94804                               | 510-234-9090                  |              |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                        | 215-825-4990                  |              |
| Tricon Industries, Inc., Electromechanical Division, Downers Grove, IL 60515-4076 | 708-964-2330                  |              |
| \$ Trimm Inc., Libertyville, IL 60048                                             | 708-362-3700                  |              |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                    | 818-707-2020                  |              |
| † Tru-Connector Corp., Peabody, MA 01960                                          | 508-532-0775; 1-800-262-9787; |              |
|                                                                                   | 1-800-COAXTRU                 |              |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                       | 513-561-8145                  |              |

## Plug Adapters-2100

|                                                                                             |                                   |
|---------------------------------------------------------------------------------------------|-----------------------------------|
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103          | C-1287                            |
| American Skynet Electronic Co., Milpitas, CA 95035, 408-945-6355                            | D-1568-1569                       |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                              | C-1280, 1282                      |
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                      | C-1290                            |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                         | C-1745                            |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                          | C-1321                            |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                         | C-1353                            |
| \$ ITT Pomona Electronics, Pomona, CA 91766, 909-469-2900                                   | C-1355                            |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)               | C-1369                            |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                 | C-1403, 1405, 1407, 1411, D-1827  |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                   | C-1426, 1437                      |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                       | C-1459, 1808                      |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670, 714-996-0960                      | C-1461                            |
| \$ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                   | C-1482, 1810-1811                 |
| TELCO Intercontinental Corp., TECO, Houston, TX 77095, 713-855-2218                         | C-1490                            |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020                | C-1502                            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                   | 516-546-1751                      |
| Accurate Electronics Corp., Elyria, OH 44036                                                | 216-366-6330; 1-800-334-5904      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                            | 508-222-2202                      |
| \$ AVA Electronics Corporation, Drexel Hill, PA 19026                                       | 215-284-2500                      |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                   | 201-796-2886                      |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                      |
| \$ Coax Connection, Peekskill, NY 10566                                                     | 914-736-1010                      |
| Compac, Holbrook, NY 11741                                                                  | 516-585-3400                      |
| \$ Direct Sound Corporation, Boston, MA 02116                                               | 1-800-372-1616                    |
| \$† Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101                                | 718-937-8000                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                             | 201-288-4477;                     |
|                                                                                             | 800-447-5639                      |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                | 818-446-6175                      |
| \$† Garry Electronics, WPI, Salem, NJ 08079                                                 | 609-935-7603                      |
| \$ GTE Supply, GTE, Irving, TX 75038                                                        | 800-433-4837                      |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457                                  | 201-835-5002                      |
| International Components Corp., Melville, NY 11747                                          | 516-293-1500                      |
| International Microelectronics, Arlington, TX 76003                                         | 817-473-1730                      |
| ITT Cannon, Santa Ana, CA 92705-5684                                                        | 714-557-4700                      |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643                                            | 714-554-6840                      |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                                      | 718-956-8900                      |
| \$† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                                      | 617-890-4750                      |
| 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Midwest Microwave, Saline, MI 48176-9569                                                 | 313-429-4773; 800-521-4410        |
| Mouser Electronics, Santee, CA 92071                                                        | 800-346-6873                      |
| Mouser Electronics, Mansfield, TX 76063                                                     | 800-346-6873                      |
| Mouser Electronics, Gilroy, CA 95020                                                        | 800-346-6873                      |
| Mueller Elec. Co., Cleveland, OH 44114                                                      | 216-771-5225                      |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                                          | 815-229-7773                      |
| Potrans International Inc., Potrans Electrical Corp., Ltd., Irvine, CA 92714                | 714-975-1222                      |
| Power Dynamics Inc., West Orange, NJ 07052                                                  | 201-736-5722                      |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                                | 708-438-4000                      |
| † Rowe Industries, Inc., Toledo, OH 43612                                                   | 419-729-9761                      |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                            | 919-557-0511; 800-626-1511        |
| Samtec, Inc., New Albany, IN 47151-1147                                                     | 1-800-672-6832                    |
| \$ Secma, Inc., Secma, Irvine, CA 92714                                                     | 714-261-0610                      |
| Shokai Far East Ltd., Peekskill, NY 10566                                                   | 914-736-3500                      |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                                                | 814-724-6440                      |
| Soltron/Microwave, Soltron Devices, Inc., West Palm Beach, FL 33407-4697                    | 407-848-4311                      |
| Staffall Inc., Cranston, RI 02910                                                           | 401-461-5554                      |
| \$ Stancor, White-Rodgers, Logansport, IN 46947                                             | 219-722-2244                      |
| † Sunbank Electronics, Paso Robles, CA 93446                                                | 805-238-2840                      |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                                  | 215-825-4990                      |

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|------------------------------------------|-------------------------------|
| \$ Trimm Inc., Libertyville, IL 60048    | 708-362-3700                  |
| † Tru-Connector Corp., Peabody, MA 01960 | 508-532-0775; 1-800-262-9787; |
|                                          | 1-800-COAXTRU                 |

## Plug Buttons-2500

|                                                                     |                            |
|---------------------------------------------------------------------|----------------------------|
| Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000        | C-1555                     |
| \$ Concord Electronics Corporation, New York, NY 10012              | 1-212-777-6571             |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016               | 708-299-2222               |
| \$ Hayco Molded Products, Inc., Kenilworth, NJ 07033                | 908-245-0033; 800-526-4182 |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017              | 718-956-8900               |
| NRD Inc., Subsidiary of Mark IV Inds., Inc., Grand Island, NY 14072 | 716-773-7634               |
| \$ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630         | 312-792-2700               |

## Plug Caps & Shells-2100

|                                                                                             |                                   |
|---------------------------------------------------------------------------------------------|-----------------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                                        | C-1151                            |
| Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000                                | C-1555                            |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                            | 508-222-2202                      |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                      |
| \$† CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428       | 612-537-1010                      |
| Concord Electronics Corporation, New York, NY 10012                                         | 1-212-777-6571                    |
| \$ Hayco Molded Products, Inc., Kenilworth, NJ 07033                                        | 908-245-0033; 800-526-4182        |
| \$ ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700                      |
| 3M-Electronic Products Division, Austin, TX 78726                                           | 1-800-225-5373 Sls. & Prod. Info. |
| \$† NRD Inc., Subsidiary of Mark IV Inds., Inc., Grand Island, NY 14072                     | 716-773-7634                      |
| Power Dynamics Inc., West Orange, NJ 07052                                                  | 201-736-5722                      |
| † Rowe Industries, Inc., Toledo, OH 43612                                                   | 419-729-9761                      |
| \$† Sunbank Electronics, Paso Robles, CA 93446                                              | 805-238-2840                      |

## Plugboard Programming Systems — See Boards, Programming (Vol. C)

## Plugs, Coaxial-2100

|                                                                         |                               |
|-------------------------------------------------------------------------|-------------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                    | C-1151                        |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454 | C-1319                        |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121   | C-1323                        |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                         | 404-751-9473; 800-221-4767    |
| ADC Telecommunications, Inc., Minneapolis, MN 55435                     | 612-938-8080                  |
| \$ AVA Electronics Corporation, Drexel Hill, PA 19026                   | 215-284-2500                  |
| Data Set Cable Co., Inc., Ridgefield, CT 06877                          | 203-438-9684; 800-344-9684    |
| General Electronic Materials Technology, Los Alamitos, CA 90720         | 714-761-5684                  |
| \$† Johnson, E. F., Co., Waseca, MN 56093                               | 1-800-247-8256                |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805              | 708-398-5311; 800-323-5207    |
| † Pasternack Enterprises, Irvine, CA 92713                              | 714-261-1920                  |
| Shogyo International Corp., Great Neck, NY 11021-4799                   | 516-466-0911                  |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                            | 814-724-6440                  |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047          | 818-707-2020                  |
| † Tru-Connector Corp., Peabody, MA 01960                                | 508-532-0775; 1-800-262-9787; |
|                                                                         | 1-800-COAXTRU                 |

## Plugs, Electrical (All Types)-2100

|                                                                                          |                                            |
|------------------------------------------------------------------------------------------|--------------------------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                                     | C-1151                                     |
| \$† AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                | C-1163                                     |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                    | C-1323                                     |
| \$ GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                      | C-1340, D-1732                             |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                 | C-1347                                     |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                      | C-1353                                     |
| \$ LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)            | C-1369                                     |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                              | C-1386                                     |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                              | C-1403, 1406, 1411, D-1824, 1827           |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                    | C-1422-1424                                |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                | C-1426-1427, 1437, 1793, 1797-1798, D-2291 |
| RDI Electms., Inc., Mamaroneck, NY 10543, 914-777-7000                                   | C-1440                                     |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                               | C-1450-1451                                |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911                    | C-1459, 1808                               |
| Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000                             | C-1555                                     |
| \$† Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561                  | C-1475                                     |
| \$ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                | C-1479, 1810-1811                          |
| Accurate Electronics Corp., Elyria, OH 44036                                             | 216-366-6330; 1-800-334-5904               |
| Amphenol Spectra-Strip/ITD, Hamden, CT 06514                                             | 203-281-3200                               |
| Beau Interconnect Systems, Vernon Corp., Laconia, NH 03247                               | 603-524-5102                               |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                | 201-796-2886                               |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                               |
| Concord Electronics Corporation, New York, NY 10012                                      | 1-212-777-6571                             |
| † Connector Corp., Chicago, IL 60646                                                     | 312-539-3108                               |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                                | 201-768-5400                               |
| \$ Direct Sound Corporation, Boston, MA 02116                                            | 1-800-372-1616                             |
| \$† Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101                             | 718-937-8000                               |
| \$ EBY Company, Philadelphia, PA 19124                                                   | 215-537-4700                               |
| ELMA Electronic Inc., Fremont, CA 94538                                                  | 510-656-3400                               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477;                              |
|                                                                                          | 800-447-5639                               |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                   | 815-968-9661                               |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195                                   | 708-519-7700, ext. 200                     |
| Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451; 800-225-9228                 |
| International Components Corp., Melville, NY 11747                                       | 516-293-1500                               |



|                                                                                           |                |
|-------------------------------------------------------------------------------------------|----------------|
| ITT Cannon, Santa Ana, CA 92705-5684                                                      | 714-557-4700   |
| \$ Johnson, E. F., Co., Waseca, MN 56093                                                  | 1-800-247-8256 |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                                    | 718-956-8900   |
| Microdot, Interconnect Systems Division, Montgomeryville, PA 18936                        | 215-699-5373   |
| Mueller Elec. Co., Cleveland, OH 44114                                                    | 216-771-5225   |
| ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                             | 805-484-0540   |
| \$ Pass & Seymour/Legrand, Pass & Seymour/Inc., Syracuse, NY 13221                        | 315-468-6211   |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722   |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                              | 708-438-4000   |
| † Rowe Industries, Inc., Toledo, OH 43612                                                 | 419-729-9761   |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                          | 919-557-0511   |
| Shokai Far East Ltd., Peekskill, NY 10566                                                 | 914-736-3500   |
| \$ SL Waber, Inc., Mt. Laurel, NJ 08054                                                   | 609-866-8888   |
| Soltron/Microwave, Soltron Devices, Inc., West Palm Beach, FL 33407-4697                  | 407-848-4311   |
| \$ Spemco Switches, St. Clair Shores, MI 48080                                            | 800-482-2828   |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                                | 215-825-4890   |
| \$ Trimm Inc., Libertyville, IL 60048                                                     | 708-362-3700   |
| Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                              | 818-707-2020   |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166   |

## Plugs, Fused-2100

|                                                                     |                |
|---------------------------------------------------------------------|----------------|
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380 | C*1353         |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600         | D*1827         |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097           | C*1426         |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62          | C*1451         |
| Alden Products Co., Brockton, MA 02403                              | 508-583-0160   |
| Concord Electronics Corporation, New York, NY 10012                 | 1-212-777-6571 |
| ELMA Electronic Inc., Fremont, CA 94538                             | 510-656-3400   |
| \$ ITT Pomona Electronics, Pomona, CA 91766                         | 909-469-2900   |
| \$ Power Dynamics Inc., West Orange, NJ 07052                       | 201-736-5722   |
| \$ Qualtek Electronics Corp., Mentor, OH 44060                      | 216-951-3300   |
| Shokai Far East Ltd., Peekskill, NY 10566                           | 914-736-3500   |
| Stimpson Company, Inc., Bayport, NY 11705-1097                      | 516-472-2000   |

## Plugs, Hole-2500

|                                                                   |                |
|-------------------------------------------------------------------|----------------|
| Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000      | C*1555         |
| \$ Concord Electronics Corporation, New York, NY 10012            | 1-212-777-6571 |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016             | 708-299-2222   |
| † Heyco Molded Products, Inc., Kenilworth, NJ 07033               | 908-245-0033   |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017            | 718-956-8900   |
| \$ NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016 | 818-357-0901   |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                      | 814-724-6440   |

## Plugs, Power, International-2100

|                                                                                        |                   |
|----------------------------------------------------------------------------------------|-------------------|
| \$ Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                               | C*1152-1153       |
| American Skynet Electronic Co., Milpitas, CA 95035, 408-945-6355                       | D*1568-1569       |
| Ault, Incorporated, Minneapolis, MN 55428, 612-493-1900                                | D*1609            |
| Autec Power Systems, Simi Valley, CA 93065, 805-522-0888                               | D*1612            |
| Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                     | C*1300,1302       |
| CUI Stack Inc., Beaverton, OR 97005, 503-643-4899                                      | D*1653            |
| Dynage/Power & Magnetics, Division Of Oakleaf, Inc., Canistota, SD 57012, 605-296-3462 | A*2321, D*1663    |
| \$ GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                    | C*1340, D*1732    |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                    | C*1353            |
| Jerome Industries Corp., Elizabeth, NJ 07201, 908-353-5700                             | D*1756, 1758-1760 |

|                                                                        |                                         |
|------------------------------------------------------------------------|-----------------------------------------|
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600            | C*1405-1406, D*1818-1820,1824-1827      |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097              | C*1426-1427,1431-1436,1793-1798, D*2291 |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62             | C*1450-1451                             |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700 | C*1482                                  |

|                                                                                           |              |
|-------------------------------------------------------------------------------------------|--------------|
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                           | 201-288-4477 |
| Feller US Corporation, AFN Div., Somerset, NJ 08873                                       | 800-447-5639 |
| Potrans International Inc., Potrans Electrical Corp., Ltd., Irvine, CA 92714              | 908-247-7333 |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722 |
| \$ Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300 |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166 |

## Plugs (MIL)-2440 - See Vol. B

## Pointers, Dial-2400

|                                                                                                    |              |
|----------------------------------------------------------------------------------------------------|--------------|
| \$† Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C*1524,1527  |
| ELMA Electronic Inc., Fremont, CA 94538, 510-656-3400                                              | C*1530       |
| Selco Products Co., SEL Sales, Inc., Buena Park, CA 90621, 714-521-8673                            | C*1535       |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                                      | 201-736-5722 |
| \$† Raytheon Company, Quincy Operation, Quincy, MA 02269                                           | 617-479-5300 |
| Spectra Lux Corp., Kirkland, WA 98034                                                              | 206-823-6857 |
| Stimpson Company, Inc., Bayport, NY 11705-1097                                                     | 516-472-2000 |

## Polarizers-3700 - See Vol. B

## Polarizers, Satellite Antennas-1200 - See Vol. D

## Position Control Systems, Servo - See Controls, Servo Systems (Vol. D)

## Positioning Systems, Multiple Axis, Computer Guided-4900 - See Vol. D

## Posts, Binding-2100

|                                                                          |                             |
|--------------------------------------------------------------------------|-----------------------------|
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571   | C*1290-1291,1540            |
| \$ Grayhill Inc., La Grange, IL 60525, 708-354-1040                      | C*1341                      |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002 | C*1347                      |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911    | C*1459,1808                 |
| \$† Superior Electric, Warner Electric, Bristol, CT 06010, 203-582-9561  | C*1475                      |
| † Accurate Electronics Corp., Elyria, OH 44036                           | 216-366-6330;1-800-334-5904 |
| Autowage Products, Shelton, CT 06484                                     | 203-929-1401                |
| Bead Industries, Bridgeport, CT 06605-0571                               | 203-334-4124                |
| † Berg, W. M., Inc., East Rockaway, NY 11518                             | 516-599-5100                |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                | 201-796-2886                |
| \$ Bussco Inc., El Segundo, CA 90245                                     | 310-322-6580                |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                | 201-768-5400                |
| \$ EBY Company, Philadelphia, PA 19124                                   | 215-537-4700                |
| \$ EBY Electro Inc., Rockville Centre, NY 11571-1100                     | 516-536-6000                |
| \$ Eby Electro Inc., Rockville Centre, NY 11571-1100                     | 516-536-6000                |
| ELMA Electronic Inc., Fremont, CA 94538                                  | 510-656-3400                |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                             | 818-446-6175                |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                   | 815-968-9661                |
| † Graphite Metallizing Corp., Yonkers, NY 10702                          | 914-968-8400                |
| \$† ITT Pomona Electronics, Pomona, CA 91766                             | 909-469-2900                |
| \$ Johnson, E. F., Co., Waseca, MN 56093                                 | 1-800-247-8256              |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                   | 718-956-8900                |
| \$ Martin Sound Prods. Inc., Cleveland, OH 44143-2297                    | 216-442-2286                |
| James Millen Elctms., Caywood Elec. Inc., No. Andover, MA 01845          | 508-975-2711                |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                       | 815-229-7773                |
| \$ Power Dynamics Inc., West Orange, NJ 07052                            | 201-736-5722                |
| \$† Raytheon Company, Quincy Operation, Quincy, MA 02269                 | 617-479-5300                |
| Shokai Far East Ltd., Peekskill, NY 10566                                | 914-736-3500                |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                             | 814-724-6440                |
| Staffall Inc., Cranston, RI 02910                                        | 401-461-5554                |

## Posts, Harness Board-2500

|                                                               |                |
|---------------------------------------------------------------|----------------|
| JDK Controls, Inc., Grass Valley, CA 95945-0512, 916-273-4608 | A*2088         |
| Autowage Products, Shelton, CT 06484                          | 203-929-1401   |
| \$† Berg, W. M., Inc., East Rockaway, NY 11518                | 516-599-5100   |
| Concord Electronics Corporation, New York, NY 10012           | 1-212-777-6571 |
| \$† Contact East, N. Andover, MA 01845                        | 508-682-2000   |
| # HMC/Hub Material Company, Canton, MA 02021                  | 617-821-1870   |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                  | 800-777-3300   |

## Potentiometer Elements-4750 - See Vol. A

## Potentiometers, Air Operated-4750 - See Vol. A

## Potentiometers, Carbon Ceramic-4750 - See Vol. A

## Potentiometers, Carbon Film-4750 - See Vol. A

## Potentiometers, Ceramic Metal (CERMET)-4750 - See Vol. A

## Potentiometers, Composition, Carbon-4750 - See Vol. A

## Potentiometers, Conductive Plastic-4750 - See Vol. A

## Potentiometers, Hot Molded-4750 - See Vol. A

## Potentiometers, Hybrid-4750 - See Vol. A

## Potentiometers, Lab Type-4750 - See Vol. A

## Potentiometers, Linear-4750 - See Vol. A

## Potentiometers, Metal Film-4750 - See Vol. A

## Potentiometers, Metal, Glazed - See Potentiometers, Ceramic Metal (Vol. A)

## Potentiometers, Motorized-4750 - See Vol. A

## Potentiometers, Multiturn-4750 - See Vol. A

## Potentiometers, Nonlinear-4750 - See Vol. A

## Potentiometers, Power - See Rheostats (Vol. A)

## Potentiometers, Pushbutton-4750 - See Vol. A

## Potentiometers, Rectilinear-4750 - See Vol. A

## Potentiometers, Servo Mount-4750 - See Vol. A

## Potentiometers, Sliding-4750 - See Vol. A

## Potentiometers, Trimmer-4750 - See Vol. A

## Potentiometers, Trimmer, Carbon Composition - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Trimmer, Carbon Film - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Trimmer, Ceramic Metal (CERMET) - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Trimmer, Conductive Plastic - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Trimmer, Hot Molded - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Trimmer, Metal Film - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Trimmer, Wirewound - See Potentiometers, Trimmer (Vol. A)

## Potentiometers, Wirewound-4750 - See Vol. A

## Potentiometers (MIL)-2440 - See Vol. B

## Power Amplifiers - See Amplifiers, Power (Vol. D)

## Power Entry Module - See Adaptors, US to European Power (Vol. C)

## Power Development Systems-4000 - See Vol. D

## Power Distribution Modules-4000 - See Vol. D



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**Power Modules-4000** — See Vol. D  
**Power Receptacles** — See Sockets, Power (Vol. C)  
**Power Supplies, AC to DC, High Voltage-4000** — See Vol. D  
**Power Supplies, AC to DC, Modular, Plug-in-4000** — See Vol. D  
**Power Supplies, AC Input, Less than 1 W Output-4000** — See Vol. D  
**Power Supplies, 5 to 25 W Output** — See Power Supplies, 1 W to 300 W Output (Vol. D)  
**Power Supplies, 25 to 150 W Output** — See Power Supplies, 1 W to 300 W Output (Vol. D)  
**Power Supplies, 150 to 400 W Output** — See Power Supplies, Greater Than 300 W Output (Vol. D)  
**Power Supplies, 1 W to 300 W Output-4000** — See Vol. D  
**Power Supplies, 1000 to 1500 W Output** — See Power Supplies, Greater Than 300 W Output (Vol. D)  
**Power Supplies, 1500 to 3000 W Output** — See Power Supplies, Greater Than 300 W Output (Vol. D)  
**Power Supplies, Greater than 300 W Output-4000** — See Vol. D  
**Power Supplies, Avalanche, Photodiodes-4000** — See Vol. D  
**Power Supplies, AC Output-4050** — See Vol. D  
**Power Supplies, Analog Programmable-4000** — See Vol. D  
**Power Supplies, Bipolar-4000** — See Vol. D  
**Power Supplies, Constant Current-4000** — See Vol. D  
**Power Supplies, Constant Voltage** — See Power Supplies, Linear (Vol. D)  
**Power Supplies, Constant Voltage/Constant Current-4000** — See Vol. D  
**Power Supplies, DC Input, AC Output High Voltage-4050** — See Vol. D  
**Power Supplies, DC Input, DC Output** — See Converters, DC to DC (Vol. D)  
**Power Supplies, Digital Programmable-4000** — See Vol. D  
**Power Supplies, Disk Drive-4000** — See Vol. D  
**Power Supplies, Encapsulated-4000** — See Vol. D  
**Power Supplies, Enclosed-4000** — See Vol. D  
**Power Supplies, Ferroresonant-4000** — See Vol. D  
**Power Supplies, High Voltage-4000** — See Vol. D  
**Power Supplies, Isolated-4000** — See Vol. D  
**Power Supplies, Lab (Incl. Metered Units)-4000** — See Vol. D  
**Power Supplies, Laser-4000** — See Vol. D  
**Power Supplies, Laser Diodes-4000** — See Vol. D  
**Power Supplies, Linear-4000** — See Vol. D  
**Power Supplies, Linear, Medical-4000** — See Vol. D  
**Power Supplies, Logic Level (Incl. Microprocessor)** — See Power Supplies, AC Input, Up to 30 VDC Output (Vol. D)  
**Power Supplies, Microwave** — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)  
**Power Supplies, Multiple Output-4000** — See Vol. D  
**Power Supplies, Open Frame-4000** — See Vol. D  
**Power Supplies, Photomultiplier** — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)  
**Power Supplies, Plug-In-4000** — See Vol. D  
**Power Supplies, Precision, Low Noise-4000** — See Vol. D  
**Power Supplies, Printed Circuit Board Mounting-4000** — See Vol. D  
**Power Supplies, Printed Circuit Card-4000** — See Vol. D  
**Power Supplies, Programmable-4000** — See Vol. D  
**Power Supplies, Proportional (to Input)** — See Power Supplies, Programmable (Vol. D)  
**Power Supplies, Redundant-4000** — See Vol. D  
**Power Supplies, Standby (Emergency)-4000** — See Vol. D  
**Power Supplies, Submodular-4000** — See Vol. D  
**Power Supplies, Switching-4000** — See Vol. D  
**Power Supplies, Switching, Battery Backup-4000** — See Vol. D  
**Power Supplies, Switching, Medical-4000** — See Vol. D  
**Power Supplies, Uninterruptible (UPS)-4050** — See Vol. D  
**Power Supplies, Universal Input-4000** — See Vol. D  
**Power Supplies, Wall Plug-in** — See Power Supplies, Plug-in (Vol. D)  
**Power Supplies, Welding, Electroplating** — See Power Supplies, AC Input, Greater than 1,000 VDC Output (Vol. D)  
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**Power Supplies (MIL), AC-2440** — See Vol. B  
**Power Supplies for Displays** — See Converters, DC to DC (Vol. D), Power Supplies, AC Output (Vol. D)  
**Power Supply Interfaces & Accessories-4000** — See Vol. D  
**Power Supply Test Equipment** — See Testers, Power Supply (Vol. D)  
**Preamplifiers-1100** — See Vol. D  
**Prebonding Etchants** — See Chemicals, Etching (Vol. C)

## Preforms, Precious Metal-2500

Deringer Mfg. Co., Mundelein, IL 60060 708-566-4100

Doran Manufacturing Co., Cincinnati, OH 45225 513-681-5424  
† Indium Corporation of America, Utica, NY 13502 315-853-4900; 1-800-4INDIUM  
‡ Multicore Solders, Inc., Richardson, TX 75081 214-238-1224  
The J. M. Ney Company, Bloomfield, CT 06002 203-242-2281  
‡ Precision Products Group, Inc., Rockford, IL 61108 815-395-2155  
† Semiconductor Packaging Materials Co., Mamaroneck, NY 10543 914-698-5353  
† Sko-Die, Inc., Morton Grove, IL 60053 708-965-1130  
† Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., Downers Grove, IL 60515-4012 708-963-0220  
† Wilkinson, Westlake Village, CA 91359 818-889-0050; 800-822-4653

## Preforms, Soldering-4600

# Electrical Insulation Suppliers, Inc., Hillside, IL 60162 708-547-5400  
† Gardiner Solder Co., Div. of Gardiner Metal Co., Chicago, IL 60632 312-847-0100  
† Indium Corporation of America, Utica, NY 13502 315-853-4900; 1-800-4INDIUM  
Multicore Solders, Inc., Richardson, TX 75081 214-238-1224  
Semiconductor Packaging Materials Co., Mamaroneck, NY 10543 914-698-5353  
† Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., Downers Grove, IL 60515-4012 708-963-0220

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## Probes, Logic Test-2900 — See Vol. D

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## Probes, Temperature-2900 — See Vol. D

## Probes, Test Lead-2900 — See Vol. D

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## Prototyping Equipment, Circuit Board-4200

Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086

C\*1116, 1128

Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659

C\*1678-1679

Andufet Digital Corp., San Dimas, CA 91773 909-394-0171

Data Environment, Inc., Portland, OR 97291 503-531-0765

‡ HiTech Equipment Corp., San Diego, CA 92126 619-566-1892

‡ Ironwood Elctns., Inc., St. Paul, MN 55121 612-431-7025

‡ Regulus Systems, Nevada City, CA 95959 515-593-4197

† Telegenix/Grim Corp., Cherry Hill, NJ 08034 609-424-5220



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**Pullers, Circuit Board-5400**

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| AZ-COM, Orinda, CA 94563-2206, 510-254-5400                            | D•1235 |
| Bivar, Inc., Irvine, CA 92718, 714-951-8808                            | C•1537 |
| † Calmark Corp., San Gabriel, CA 91776, 818-287-0451                   | C•1018 |
| † EG & G Birtcher, EG & G, Inc., El Monte, CA 91734-1268, 818-442-2572 | C•1135 |

Electronic Solutions, Zero Corporation, San Diego, CA 92121, 800-854-7086

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|                                                                   | C•1128                       |
| \$ Electro Space Fabricators, Tipton, PA 19562-0067, 215-682-7181 | C•1027, 1029                 |
| \$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321          | C•1646                       |
| † Accessories For Electronics, Inc., Baldwin, NY 11510-3593       | 516-546-1751                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                     | 203-288-8001; 1-800-242-2863 |
| \$ Concord Electronics Corporation, New York, NY 10012            | 1-212-777-6571               |
| † dataCon, Inc., Interconnect Sub-Systems, Burlington, MA 01803   | 617-273-5800                 |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016             | 708-299-2222                 |
| Gary Electronics, WPI, Salem, NJ 08079                            | 609-935-7603                 |
| \$ GC-Thorsen, Rockford, IL 61105-1209                            | 815-968-9661                 |
| # HMC/Hub Material Company, Canton, MA 02021                      | 617-821-1870                 |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643                  | 714-554-6840                 |
| Jonard Industries Corp., Tuckahoe, NY 10707                       | 914-793-0700                 |
| Milton Ross Co., Warrington, PA 18976                             | 215-491-0600                 |
| \$ Richco Plastic Co., Chicago, IL 60680                          | 312-539-4060                 |
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| \$ Techni-Tool, Plymouth Meeting, PA 19462                        | 215-825-4990                 |
| † Teknatonl Inds., Inc., Rochester, NY 14620-1103                 | 716-232-1291                 |
| \$ TELTEC, Inc., Minneapolis, MN 55425                            | 612-854-9632                 |
| \$ TELTEC, Inc., Minneapolis, MN 55425                            | 612-854-9177                 |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706               | 607-772-1161                 |
| Unitrack Industries, Inc., Milford, DE 19963                      | 302-424-5050                 |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342                  | 818-365-9661; 800-423-5659   |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310   | 801-298-5900                 |

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| \$ GC-Thorsen, Rockford, IL 61105-1209                  | 815-968-9661   |
| \$ Jonard Industries Corp., Tuckahoe, NY 10707          | 914-793-0700   |
| \$ Wilson, H. F., Engineering Co., Glen Ellyn, IL 60137 | 708-469-7473   |

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| † Boston Gear, IMO Industries Inc., Quincy, MA 02171                                     | 617-328-3300; 1-800-225-5280 |
| \$ Dayco Products, Inc., Dayton, OH 45401-1004                                           | 513-226-5926                 |
| Perfect Gear & Instrument, Designatronics, Inc., New Hyde Park, NY 11042-5416            | 516-328-3300                 |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762                        | 203-758-8272                 |
| \$ Plastmatic, Inc., Putnam, CT 06260                                                    | 203-928-7911                 |
| \$ Reliance Electric Co., Cleveland, OH 44117                                            | 800-245-4501                 |
| SinoTECH Made in China, Inc., Technology Communications Group, Inc., West Linn, OR 97068 | 503-638-1000                 |
| Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416                         | 516-328-3300                 |
| † Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416                       | 516-328-0200; 328-3300       |

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| \$ Techni-Tool, Plymouth Meeting, PA 19462                               | 215-825-4990 |
| Texmate, Inc., Vista, CA 92083-8397                                      | 619-598-9899 |

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**Readers, Bar Code-2000** — See Vol. D

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**Readers, Magnetic Card-2000** — See Vol. D

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**Reamers-5400**

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| # HMC/Hub Material Company, Canton, MA 02021             | 617-821-1870 |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033             | 708-677-9500 |
| Parker Hannifin Corp., Tube Fittings, Columbus, OH 43228 | 614-279-7070 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462               | 215-825-4990 |

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**Receivers, Fiber Optic-2475** — See Vol. B

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**Recorders, Computer Data-2000** — See Vol. D

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**Recorders, Event/Multievent-3000** — See Vol. D

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**Recorders, Polar-3000** — See Vol. D

**Recorders, Program Loading-2000** — See Vol. D

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**Recorders, Strip Chart-3000** — See Vol. D

**Recorders, Thermal Array-3000** — See Vol. D

**Recorders, Vibration-3000** — See Vol. D

**Recorders, Video-1900** — See Vol. D

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**References, DC Voltage-2900 — See Vol. D**

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§ Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388  
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 † Chemtronics Inc., Hauppauge, NY 11788 ..... 516-582-3322; 800-645-5244  
 § Contact East, N. Andover, MA 01845 ..... 508-682-2000  
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 Power Designs, Inc., Westbury, NY 11590 ..... 516-333-6200  
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**Resistance Comparators — See Bridges, Resistance (Vol. D)**

**Resistor Hardware-2500**

KOA Speer Electronics, Bradford, PA 16701, 814-362-5536 ..... A•1960

Milwaukee Resistor Corp., Milwaukee, WI 53204, 414-271-9900

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§ Allen-Bradley Co., Div. of Industrial Control Grp., Milwaukee, WI 53201 ..... 414-382-2000  
 714-951-8808  
 † Bivar, Inc., Irvine, CA 92718 ..... 909-781-5500;  
 801-750-7200  
 § Bourns, Inc., Electronic Components Sls., Riverside, CA 92507-2114 ..... 402-563-6506  
 † Dale Electronics, Inc., Columbus Div., Columbus, NE 68601-3647 ..... 402-371-0080  
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 # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 ..... 704-264-8861  
 International Resistive Company, Boone, NC 28607 ..... 407-241-8600  
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 Resistors, Inc., Chicago, IL 60650 ..... 215-644-1300  
 Vishay Resistors, Malvern, PA 19355

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**Resonators, SAW-2300 — See Vol. A**

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| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 .....       | C-1540                                         |
| \$ Memory Protection Devices, Inc., Farmingdale, NY 11735, 516-293-5891 .....      | D-1455                                         |
| Plainview Batteries, Inc., Plainview, NY 11803, 800-642-2354 .....                 | D-1459                                         |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911 .....        | C-1457, D-1474                                 |
| Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824 .....                 | D-1475                                         |
| \$ Tauber Elctns. Inc., San Diego, CA 92117, 619-274-7242; 1-800-927-0004 .....    | D-1480, 1482                                   |
| † Acme Model Engineering Co., Ridgeland, NJ 07657 .....                            | 201-943-7650                                   |
| † Alexander Batteries, New Product/OEM Division, San Diego, CA 92198 .....         | 619-480-4445                                   |
| # Battery Specialties, Costa Mesa, CA 92626 .....                                  | 714-755-0888; 1-800-352-3706 (Toll free in CA) |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 .....              | 201-288-4777                                   |
| Golden Pacific Electronics, Inc., Placentia, CA 92670 .....                        | 714-993-6970                                   |
| # House of Batteries, Huntington Beach, CA 92647 .....                             | 1-800-432-3385; 714-375-0222                   |
| ISL Products Int'l Ltd., Syosset, NY 11791-6093 .....                              | 516-937-3475; 800-626-6116                     |
| \$ Jaro Components, Inc., Boca Raton, FL 33487-8295 .....                          | 407-241-8600                                   |
| † Keystone Electronics Corp., Astoria, NY 11105-2017 .....                         | 718-956-8900                                   |
| † NCE: National Custom Enterprises, Inc., Burnsville, MN 55337-2559 .....          | 612-890-1360                                   |
| Nesco Battery Systems, National Electro-Sales Corp., Van Nuys, CA 91406-3779 ..... | 818-781-0505; 1-800-423-2664                   |
| \$ Philmore Manufacturing, Rockford, IL 61125-1396 .....                           | 815-229-7773                                   |
| \$ Power Dynamics Inc., West Orange, NJ 07052 .....                                | 201-736-5722                                   |
| \$ Richco Plastic Co., Chicago, IL 60680 .....                                     | 312-539-4060                                   |
| \$ Rose Electronics, Inc., Energy Products Group, San Jose, CA 95131 .....         | 408-943-0440                                   |
| Shokai Far East Ltd., Peekskill, NY 10566 .....                                    | 914-736-3500                                   |

## Retainers, Relay-2500

|                                                                      |              |
|----------------------------------------------------------------------|--------------|
| \$ American Zettler, Aliso Viejo, CA 92656 .....                     | 714-831-5000 |
| \$ Potter & Brumfield, A Siemens Co., Princeton, IN 47671-0001 ..... | 812-386-1000 |

## Retainers, Transistor & Diode-2500

|                                                                         |              |
|-------------------------------------------------------------------------|--------------|
| Atlee Inc., North Andover, MA 01845 .....                               | 508-681-1003 |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016 .....             | 708-299-2222 |
| Gilway Technical Lamp, Woburn, MA 01801 .....                           | 617-935-4442 |
| Siemens Components, Inc., Special Products Div., Iselin, NJ 08830 ..... | 201-321-3400 |

## Retainers, Tube-2500

|                                               |        |
|-----------------------------------------------|--------|
| † IERC, Burbank, CA 91502, 213-849-2481 ..... | C-1592 |
|-----------------------------------------------|--------|

## Reticles-3700 - See Vol. B

## Retractors & Carriers - See Cable Retractors (Vol. C)

## RFI Measuring Equipment-2900 - See Vol. D

## RFI Shielding - See Shields, RF (Vol. C)

## RFI Testing Services - See Services, Electrical Measurement & Test (Vol. D)

## Rheostats-4750 - See Vol. A

## Rheostats, Motorized-4750 - See Vol. A

## Ribbons for Printers-2000 - See Vol. D

## Rings, Retaining-2500

|                                                                                                   |                        |
|---------------------------------------------------------------------------------------------------|------------------------|
| † Applied Plastics Technology, Bristol, RI 02809 .....                                            | 401-253-0200           |
| † Berg, W. M., Inc., East Rockaway, NY 11518 .....                                                | 516-599-5010           |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 ..... | 708-981-6000           |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016 .....                                       | 708-299-2222           |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016 .....                     | 708-350-8200           |
| \$ GC-Thorsen, Rockford, IL 61105-1209 .....                                                      | 815-968-9661           |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762 .....                           | 203-758-8272           |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201 .....                                        | 800-634-2356           |
| † Sterling Instruments, a DSG Company, New Hyde Pk, NY 11042-5416 .....                           | 516-328-3300           |
| † Stock Drive Products, a DSG Company, New Hyde Pk, NY 11042-5416 .....                           | 516-328-0200; 328-3300 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462 .....                                                  | 215-825-4990           |
| † Titchener, E. H., & Co., Binghamton, NY 13902-1706 .....                                        | 607-772-1161           |

## Rings, Slip - See Slip Rings (Vol. B)

## Rivets-2500

|                                                                                                        |                            |
|--------------------------------------------------------------------------------------------------------|----------------------------|
| Stimpson Company, Inc., Bayport, NY 11705-1097, 516-472-2000 .....                                     | C-1555                     |
| Autosplice, Inc., San Diego, CA 92121 .....                                                            | 619-535-0077               |
| Autoswage Products, Shelton, CT 06484 .....                                                            | 203-929-1401               |
| Deringer Mfg. Co., Mundelein, IL 60060 .....                                                           | 708-566-4100               |
| \$ Dynacast Inc., Yorktown Heights, NY 10598 .....                                                     | 914-962-6300               |
| \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016 .....                                            | 708-299-2222               |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016 .....                          | 708-350-8200               |
| \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033 .....                                             | 908-245-0033; 800-526-4182 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017 .....                                             | 718-956-8900               |
| The J. M. Ney Company, Bloomfield, CT 06002 .....                                                      | 203-242-2281               |
| \$ NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016 .....                                | 818-357-0901               |
| † Southco, Inc., Concordville, PA 19331 .....                                                          | 215-459-4000               |
| † Tricon Industries, Inc., Brazing Alloys & Chemical Products Div., Downers Grove, IL 60515-4012 ..... | 708-963-0220               |

## Robotic Pick & Place - See Arms & Manipulators, Robotic (Vol. D)

## Robotics - See Arms & Manipulators, Robotic (Vol. D), Control Systems, Robotic (Vol. D)

## Robots, Machine Vision-4900 - See Vol. D

## Robots, Pick and Place-4900 - See Vol. D

## Robots, X-Y-Z-4900 - See Vol. D

## Rods, Ground-2500

|                                                                                                                  |              |
|------------------------------------------------------------------------------------------------------------------|--------------|
| † Berg, W. M., Inc., East Rockaway, NY 11518 .....                                                               | 516-599-5010 |
| \$ GC-Thorsen, Rockford, IL 61105-1209 .....                                                                     | 815-968-9661 |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762 .....                                          | 203-758-8272 |
| † Union Carbide Chemicals & Plastics Company Inc., Industrial Chemicals Div., Crystal, San Diego, CA 92123 ..... | 619-279-4500 |

## Rotators - See Antenna Rotators (Vol. D)

## Rotors, Motor & Generator - See Motor & Generator Armatures, Rotors, Stators (Vol. B)

## Rubber, Conductive-1600

|                                                                                              |                              |
|----------------------------------------------------------------------------------------------|------------------------------|
| † AME Corporation, Towaco, NJ 07082-0195, 201-263-1700 .....                                 | B-1663                       |
| † Chomerics, Inc.: W.R. Grace & Co., Woburn, MA 01888, 617-935-4850 .....                    | C-1659                       |
| # Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151 .....                                   | C-1662, 1684                 |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850 .....                              | C-1663                       |
| \$ NTK Technical Ceramics, NGK Spark Plugs (USA), Mt. Prospect, IL 60056, 708-824-1133 ..... | A-1665                       |
| \$ CHR, Furon, New Haven, CT 06509 .....                                                     | 203-777-3631                 |
| † Conductive System, Inc., Amsterdam, NY 12010 .....                                         | 518-843-5740                 |
| Da/Pro Rubber, Inc., Broken Arrow, OK 74012 .....                                            | 918-258-9386                 |
| Elastomeric Technologies, Inc., Hatboro, PA 19040 .....                                      | 215-672-0787; 215-672-4741   |
| † Electro Insulation Corp., Arlington Hgts., IL 60004 .....                                  | 708-632-1020                 |
| † Ercon Incorporated, Waltham, MA 02154 .....                                                | 617-899-1497                 |
| \$ Gasket Dynamics, Inc., Mt. Holly, NJ 08060 .....                                          | 609-261-8100; 800-541-2500;  |
| International Instrumentation, Inc., Westlake Vlg., CA 91361 .....                           | 215-922-6046                 |
| Jayco Interface Technology, Orange, CA 92665 .....                                           | 805-495-7673                 |
| Lucas Control Systems Products, Lucas Industries PLC, Hampton, VA 23666 .....                | 714-974-1701                 |
| 800-766-1500                                                                                 |                              |
| † 3M Electrical Specialties Division, Austin, TX 78726-9000 .....                            | 800-328-1368                 |
| † Minor Rubber Co., Inc., Bloomfield, NJ 07003 .....                                         | 201-338-6800; 800-433-6886   |
| † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715 .....                             | 714-833-3000                 |
| † SAS Industries Inc., Manoville, NY 11949 .....                                             | 516-727-1441; 1-800-544-5238 |
| † Sealing Devices, Inc., Lancaster, NY 14086 .....                                           | 716-684-7600                 |
| \$ Semtronics Corp., Peachtree City, GA 30269 .....                                          | 404-487-6681                 |
| \$ Solder Absorbing Technology (SAT), A Spig Co., Springfield, MA 01108 .....                | 800-628-8862                 |
| Stetion International, Inc., Buffalo, NY 14203 .....                                         | 716-854-3443                 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462 .....                                             | 215-825-4990                 |
| † Technit, Cranford, NJ 07016 .....                                                          | 908-272-5500                 |
| \$ Wescorp Static Control Products, Mountain View, CA 94041 .....                            | 415-969-7717                 |

## Rubber Guards (For Equipment) - See Bumpers (Vol. C)

## Rubber, Silicone-1600

|                                                                                    |                              |
|------------------------------------------------------------------------------------|------------------------------|
| † AME Corporation, Towaco, NJ 07082-0195, 201-263-1700 .....                       | B-1663                       |
| # Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151 .....                         | C-1662, 1684                 |
| Fujipoly, America Corp., Cranford, NJ 07016, 908-272-3850 .....                    | C-1663                       |
| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571 .....                  | C-1358                       |
| † Accessories For Electronics, Inc., Baldwin, NY 11510-3593 .....                  | 516-546-1751                 |
| † Alasco Rubber & Plastics Corp., Belmont, CA 94002 .....                          | 415-595-4100                 |
| † Bacon Industries, Inc., Watertown, MA 02172-2399 .....                           | 617-926-2550                 |
| † Brim Electronics, Fair Lawn, NJ 07410 .....                                      | 201-796-2886                 |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 .....       | 313-583-1200                 |
| † Castall Inc., E. Weymouth, MA 02189 .....                                        | 617-377-6075                 |
| † CHR, Furon, New Haven, CT 06509 .....                                            | 203-777-3631                 |
| † Conap, Inc., Olean, NY 14760 .....                                               | 716-372-9650                 |
| † Conductive System, Inc., Amsterdam, NY 12010 .....                               | 518-843-5740                 |
| † Dow Corning Corp., Midland, MI 48686-0994 .....                                  | 517-496-4000                 |
| Elastomeric Technologies, Inc., Hatboro, PA 19040 .....                            | 215-672-0787; 215-672-4741   |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162 .....                  | 708-547-5400                 |
| † Electro Insulation Corp., Arlington Hgts., IL 60004 .....                        | 708-632-1020                 |
| \$ Gasket Dynamics, Inc., Mt. Holly, NJ 08060 .....                                | 609-261-8100; 800-541-2500;  |
| 815-968-9661                                                                       |                              |
| \$ GC-Thorsen, Rockford, IL 61105-1209 .....                                       | 815-968-9661                 |
| Hardman: Harcos Chemicals Inc., Belleville, NJ 07109 .....                         | 201-751-3000                 |
| Jayco Interface Technology, Orange, CA 92665 .....                                 | 714-974-1701                 |
| † Kam Components, Inc., Nesconset, NY 11767 .....                                  | 516-585-0666                 |
| \$ Lilly-Ram Industries, Gardena, CA 90248 .....                                   | 213-321-0710                 |
| Lucas Control Systems Products, Lucas Industries PLC, Hampton, VA 23666 .....      | 804-766-1500                 |
| † Minor Rubber Co., Inc., Bloomfield, NJ 07003 .....                               | 201-338-6800; 800-433-6886   |
| Moxness Products, Inc., Versa Technologies, Racine, WI 53405 .....                 | 414-554-5050;                |
| 800-558-5706                                                                       |                              |
| † Press-On Products, Addison, IL 60101 .....                                       | 708-628-2255                 |
| † SAS Industries Inc., Manoville, NY 11949 .....                                   | 516-727-1441; 1-800-544-5238 |
| † Sealing Devices, Inc., Lancaster, NY 14086 .....                                 | 716-684-7600                 |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218 .....                   | 317-543-3540;                |
| 800-382-4635                                                                       |                              |
| † Silicones Unlimited, Inc., Marietta, GA 30062 .....                              | 404-578-1274                 |
| † TACC International Corporation, Formulated Resins Grp., Rockland, MA 02370 ..... | 617-878-7015                 |
| Teknational Inds., Inc., Rochester, NY 14620-1103 .....                            | 716-232-1291                 |
| Tra-Con, Inc., Medford, MA 02155 .....                                             | 617-391-5550                 |

## Satellite Antennas - See Antennas, Satellite (Vol. D)

## Satellite Earth Stations, Transmit & Receive-1900 - See Vol. D

## Scale Expanders, Meter - See Multipliers, Meter (Vol. D)

## Scales, Binary, Decade-2325 - See Vol. D

## Scales, Dial-2400

|                                                                                                        |              |
|--------------------------------------------------------------------------------------------------------|--------------|
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 ..... | C-1525       |
| † Berg, W. M., Inc., East Rockaway, NY 11518 .....                                                     | 516-599-5010 |
| \$ Dillon, Weigh-Tronix, Inc., Fairmont, MN 56031 .....                                                | 507-238-4461 |
| † Donlad Industries Corp., Tuckahoe, NY 10707 .....                                                    | 914-793-0700 |



|                                                                 |                            |
|-----------------------------------------------------------------|----------------------------|
| \$† Mecro Precision/Inds. Inc., Bridgeport, CT 06607            | 203-333-4900               |
| \$ Sunshine Instruments, Philadelphia, PA 19115                 | 215-673-5600; 800-343-1199 |
| <b>Scales, Electronic (Counting/Weighing)-2900 — See Vol. D</b> |                            |
| <b>Scanners, Bar Code — See Readers, Bar Code (Vol. D)</b>      |                            |
| <b>Scanners, Crossbar-1900 — See Vol. D</b>                     |                            |
| <b>Scanners, Fiber Optic-2475 — See Vol. B</b>                  |                            |
| <b>Scanners, Flying Spot-1900 — See Vol. D</b>                  |                            |
| <b>Scanners, Infrared-2900 — See Vol. D</b>                     |                            |
| <b>Scanners, Instrument, Input/Output-2900 — See Vol. D</b>     |                            |
| <b>Scanners, Optical-2900 — See Vol. D</b>                      |                            |
| <b>Scanners, Optical, Page-2000 — See Vol. D</b>                |                            |
| <b>Scanners, Reed-2900 — See Vol. D</b>                         |                            |

**Scissors-5400**

|                                                            |                            |
|------------------------------------------------------------|----------------------------|
| \$† Clauss Cutlery Co., Alco Industries, Fremont, OH 43420 | 419-332-7344; 800-225-2877 |
| \$ Contact East, N. Andover, MA 01845                      | 508-682-2000               |
| \$† Cooper Tools, Raleigh, NC 27622                        | 919-781-7200               |
| # HMC/Hub Material Company, Canton, MA 02021               | 617-821-1870               |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044    | 602-968-6241               |
| \$ Jonard Industries Corp., Tuckahoe, NY 10707             | 914-793-0700               |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033               | 708-677-9500               |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                 | 215-825-4990               |
| \$ The Triangle Tool Group, Inc., Orangeburg, SC 29115     | 803-534-7010               |

**Scope Dollies — See Carts & Dollies, Instrument & Equipment (Vol. C)****SCRs — See Thyristors (Vol. A)****SCR Firing Controls — See Controls, SCR (Vol. D)****Scramblers, Data-2325 — See Vol. D****Scramblers/Descramblers, Video-1900 — See Vol. D****Scramblers, Speech-1900 — See Vol. D****Screening, Mesh, Conductive (Incl. Copper)-4525**

|                                                      |              |
|------------------------------------------------------|--------------|
| # Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151 | C•1662, 1684 |
| \$† CHR, Furon, New Haven, CT 06509                  | 203-777-3631 |
| Two Technologies, Inc., Horsham, PA 19044            | 215-441-5305 |
| TWP, Inc., Berkeley, CA 94710                        | 510-548-4434 |

**Screens, Printed Circuit-1700**

|                                             |              |
|---------------------------------------------|--------------|
| † Aremco Products, Inc., Ossining, NY 10562 | 914-762-0685 |
| Displays, Inc., Lewistown, PA 17044         | 717-242-2541 |
| Wontronics, Los Angeles, CA 90039           | 213-660-6230 |

**Screwdrivers-5400**

|                                                               |              |
|---------------------------------------------------------------|--------------|
| \$ Bondhus Corporation, Monticello, MN 55362                  | 612-295-2162 |
| \$ Contact East, N. Andover, MA 01845                         | 508-682-2000 |
| \$† Cooper Tools, Raleigh, NC 27622                           | 919-781-7200 |
| \$ Foreord Elec. Co., Blackstone Inds. Inc., Bethel, CT 06801 | 203-792-8622 |
| \$ GC-Thorsen, Rockford, IL 61105-1209                        | 815-968-9661 |
| # HMC/Hub Material Company, Canton, MA 02021                  | 617-821-1870 |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044       | 602-968-6241 |
| \$ Jonard Industries Corp., Tuckahoe, NY 10707                | 914-793-0700 |
| Kedman Co., Salt Lake City, UT 84125                          | 801-973-9112 |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                  | 708-677-9500 |
| \$† Moody Tools, Inc., E. Greenwich, RI 02818-0230            | 401-885-0911 |
| \$ Pioneer Components, Brooklyn, NY 11234                     | 718-444-3880 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                    | 215-825-4990 |
| \$ The Triangle Tool Group, Inc., Orangeburg, SC 29115        | 803-534-7010 |
| \$ Wilson, H. F., Engineering Co., Glen Ellyn, IL 60137       | 708-469-7473 |

**Screws, Lead, Feed & Translatory — See Drives & Drives Mechanisms (Dial) (Vol. C)****Screws, Fastening-2500**

|                                                                         |                            |
|-------------------------------------------------------------------------|----------------------------|
| \$ Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969      | C•1538-1539                |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161        | C•1543                     |
| All-States, Inc., Chicago, IL 60640                                     | 312-728-0525               |
| \$† Amatom Electronic Hardware, New Haven, CT 06515                     | 203-397-3311               |
| \$† Avibank Manufacturing, Inc., Burbank, CA 91503-0391                 | 818-843-4330               |
| \$† Berg, W. M., Inc., East Rockaway, NY 11518                          | 516-599-5010               |
| \$† Brim Electronics, Fair Lawn, NJ 07410                               | 201-796-2886               |
| Cold Header Machine Corp., Boca Raton, FL 33431                         | 407-383-3201               |
| \$ Concord Electronics Corporation, New York, NY 10012                  | 1-212-777-6571             |
| \$ Control Cable, Inc., Baltimore, MD 21244                             | 410-298-4411               |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647               | 201-768-5400               |
| ELMA Electronic Inc., Fremont, CA 94538                                 | 510-656-3400               |
| \$ Equipto Electronics Corp., Aurora, IL 60506-9988                     | 708-897-4691               |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016 | 708-350-8200               |
| \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033                    | 908-245-0033; 800-526-4182 |
| \$† Morris, J. I. Co., Southbridge, MA 01550                            | 508-764-4394               |
| \$ PIC Design, Remington Technologies, Inc., Middlebury, CT 06762       | 203-758-8272               |
| # Project Pro, Twinsburg, OH 44087                                      | 216-425-8888               |
| \$† Southco, Inc., Concordville, PA 19331                               | 215-459-4000               |
| Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416        | 516-328-3300               |
| Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416        | 516-328-0200; 328-3300     |
| \$† Unicorp, Orange, NJ 07050                                           | 201-674-1700; 800-526-1389 |

**Scribers-5400**

|                                                           |                            |
|-----------------------------------------------------------|----------------------------|
| Aremco Products, Inc., Ossining, NY 10562                 | 914-762-0685               |
| \$ Clauss Cutlery Co., Alco Industries, Fremont, OH 43420 | 419-332-7344; 800-225-2877 |
| \$† Coherent General, Inc., Sturbridge, MA 01566          | 508-347-2681               |
| \$† Coherent, Inc., Palo Alto, CA 95054                   | 408-764-4000               |
| \$ Contact East, N. Andover, MA 01845                     | 508-682-2000               |

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| Dubbeldee Harris Diamond Corp., D. Drukker & Zn. N.V., Mt. Arlington, NJ 07856 | 201-770-1420 |
| # HMC/Hub Material Company, Canton, MA 02021                                   | 617-821-1870 |
| Jonard Industries Corp., Tuckahoe, NY 10707                                    | 914-793-0700 |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                                   | 708-677-9500 |
| \$ Marking Methods, Inc., Alhambra, CA 91803-1531                              | 818-282-8823 |
| \$† Moody Tools, Inc., E. Greenwich, RI 02818-0230                             | 401-885-0911 |
| \$ OFTI, Westford, MA 01886                                                    | 508-692-8606 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                     | 215-825-4990 |
| U. S. Laser Corp., Wyckoff, NJ 07481                                           | 201-848-9200 |

**Scribers, Wafer-Also See Machines & Accessories, Semiconductor****Manufacturing-4100 — See Vol. D****Sealers — See Coatings (Vol. C)****Sealing Equipment, Metal to Glass/Ceramic-4100 — See Vol. D****Seals & Feedthrus, Environmental — See Feedthrus & Seals, Environmental (Vol. C)****Seals, Ceramic To Metal-2500**

|                                                                               |                             |
|-------------------------------------------------------------------------------|-----------------------------|
| † Albercor Corporation, New Bedford, MA 02745                                 | 508-995-1725                |
| Ceramaseal, New Lebanon, NY 12125                                             | 518-794-7800                |
| Coors Ceramics Co., Electronics, Golden, CO 80401                             | 303-277-4591                |
| † Deteronics Corporation, S. El Monte, CA 91733                               | 818-579-7130                |
| Ferro Corporation, Electronic Glass Department, Cleveland, OH 44101           | 216-641-8580                |
| † Hermetic Seal Corp., Rosemead, CA 91770                                     | 213-283-0411                |
| HiTemp Technologies, Inc., San Jose, CA 95131-1101                            | 408-922-0740                |
| Indium Corporation of America, Ulica, NY 13502                                | 315-853-4900; 1-800-4INDIUM |
| † Master Bond, Hackensack, NJ 07601                                           | 201-343-8993                |
| Philips Technologies, North American Philips Corporation, Cheshire, CT 06410  | 203-271-6525                |
| † Simmonds Precision Engine Systems, BF Goodrich Aerospace, Norwich, NY 13815 | 607-335-5000                |
| † United Supertek, Inc., San Jose, CA 95131-1101                              | 408-922-0730                |
| Wilbrecht Electronics, St. Paul, MN 55107                                     | 612-222-2791                |

**Seals, Glass To Metal-2500**

|                                                                                               |                             |
|-----------------------------------------------------------------------------------------------|-----------------------------|
| † Mini-Systems, Inc., Electronic Package Div., Plainville, MA 02762, 508-695-2000             | A•1710                      |
| † Reeves-Hoffman Div., Dynamics Corporation of America, Carlisle, PA 17013-2248, 717-243-5929 | A•1716                      |
| Aremco Products, Inc., Ossining, NY 10562                                                     | 914-762-0685                |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035                        | 313-583-1200                |
| Ceramaseal, New Lebanon, NY 12125                                                             | 518-794-7800                |
| † Connector Industries of America Div., Microdot Mfg., Cincinnati, OH 45215                   | 513-772-3680                |
| † Deteronics Corporation, S. El Monte, CA 91733                                               | 818-579-7130                |
| \$† Electrical Industries Corp., Murray Hill, NJ 07974                                        | 908-464-3200                |
| Ferro Corporation, Electronic Glass Department, Cleveland, OH 44101                           | 216-641-8580                |
| † Fifth Dimension, Inc., Trenton, NJ 08638                                                    | 609-393-8350                |
| The Fredericks Company, Huntingdon Valley, PA 19006                                           | 215-947-2500                |
| GTI/Electronics Div., Hadley, PA 16130-8815                                                   | 412-253-3161                |
| † Hermetic Seal Corp., Rosemead, CA 91770                                                     | 213-283-0411                |
| Indium Corporation of America, Ulica, NY 13502                                                | 315-853-4900; 1-800-4INDIUM |
| † Master Bond, Hackensack, NJ 07601                                                           | 201-343-8993                |
| † Micro Mode Prods., El Cajon, CA 92020                                                       | 619-449-3844                |
| Minor Rubber Co., Inc., Bloomfield, NJ 07003                                                  | 201-338-6800; 800-433-6886  |
| PAVE Technology Co., Inc., Dayton, OH 45414-3445                                              | 513-890-1100                |
| Philips Technologies, North American Philips Corporation, Cheshire, CT 06410                  | 203-271-6525                |
| † Philips Technologies, Airpax Protector Group, Cambridge, MD 21613                           | 410-228-4600                |
| † Schott Electronics, Seymour, CT 06483                                                       | 203-881-0102                |
| † Texas Instrs., Matts. & Controls Grp., Attleboro, MA 02703                                  | 508-699-3800                |
| Wilbrecht Electronics, St. Paul, MN 55107                                                     | 612-222-2791                |

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| † Reeves-Hoffman Div., Dynamics Corporation of America, Carlisle, PA 17013-2248, 717-243-5929 | A•1716                      |
| † Albercor Corporation, New Bedford, MA 02745                                                 | 508-995-1725                |
| Ceramaseal, New Lebanon, NY 12125                                                             | 518-794-7800                |
| † Connector Industries of America Div., Microdot Mfg., Cincinnati, OH 45215                   | 513-772-3680                |
| † Deteronics Corporation, S. El Monte, CA 91733                                               | 818-579-7130                |
| \$† Electrical Industries Corp., Murray Hill, NJ 07974                                        | 908-464-3200                |
| Ferrofluidics Corp., Nashua, NH 03061                                                         | 603-883-9800                |
| The Fredericks Company, Huntingdon Valley, PA 19006                                           | 215-947-2500                |
| † Hermetic Seal Corp., Rosemead, CA 91770                                                     | 213-283-0411                |
| HiTemp Technologies, Inc., San Jose, CA 95131-1101                                            | 408-922-0740                |
| Indium Corporation of America, Ulica, NY 13502                                                | 315-853-4900; 1-800-4INDIUM |
| † Master Bond, Hackensack, NJ 07601                                                           | 201-343-8993                |
| † Micro Mode Prods., El Cajon, CA 92020                                                       | 619-449-3844                |
| † Mini-Systems, Inc., Electronic Package Div., Plainville, MA 02762                           | 508-695-2000                |
| Mini-Systems, Inc., Thick/Thin Film Division, North Attleboro, MA 02761                       | 508-695-0203                |
| PAVE Technology Co., Inc., Dayton, OH 45414-3445                                              | 513-890-1100                |
| Philips Technologies, Airpax Protector Group, Cambridge, MD 21613                             | 410-228-4600                |
| † Schott Electronics, Seymour, CT 06483                                                       | 203-881-0102                |
| Syston-Donner Microwave Div., Sylmar, CA 91342                                                | 818-362-9900                |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                                    | 714-630-7127                |
| Wilbrecht Electronics, St. Paul, MN 55107                                                     | 612-222-2791                |

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| † AME Corporation, Towaco, NJ 07082-0195, 201-263-1700 | B•1663 |
| † Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151   | C•1662 |



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| † Applied Plastics Technology, Bristol, RI 02809                           | 401-253-0200                             |
| The Auburn Manufacturing Company, Middletown, CT 06457-0251                | 203-346-6677                             |
| Ceramaseal, New Lebanon, NY 12125                                          | 518-794-7800                             |
| \$ Gasnet Dynamics, Inc., Mt. Holly, NJ 08060                              | 609-261-8100; 800-541-2500; 215-922-6046 |
| # The Hrol Company, Ft. Lauderdale, FL 33309                               | 305-974-4900                             |
| Kam Components, Inc., Nesconset, NY 11767                                  | 516-585-0666                             |
| † Press-On Products, Addison, IL 60101                                     | 708-628-2255                             |
| † SAS Industries Inc., Manoville, NY 11949                                 | 516-727-1441; 1-800-544-5238             |
| Toplight, York, PA 17404                                                   | 717-843-9901; 800-233-9386               |

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| \$ Cooper Tools, Raleigh, NC 27622            | 919-781-7200 |
| \$ GC-Thorsen, Rockford, IL 61105-1209        | 815-968-9661 |
| † Jonard Industries Corp., Tuckahee, NY 10707 | 914-793-0700 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462    | 215-825-4990 |

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| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                   | C*1748, D*1732    |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116       | C*1354, 1753      |
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| Mechatronics Inc., Mercer Island, WA 98040, 206-232-4800                           | C*1610            |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611            | C*1768, 1788-1790 |

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| \$ American Wire & Electronics, Costa Mesa, CA 92626                                     | 714-957-5738                       |
| † Assembly Specialists, Chelmsford, MA 01824                                             | 508-250-5900                       |
| Automation Component Technology, Fremont, CA 94538                                       | 510-226-0900; 510-490-3587 (Sales) |
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| † Brim Electronics, Fair Lawn, NJ 07410                                                  | 201-796-2886                       |
| CableStar, Incorporated, Glasgow, KY 42141                                               | 800-338-8223                       |
| † Cable Systems, Inc., The HVT Group, Everett, MA 02149                                  | 617-389-7080                       |
| † CAD Engrg. & Assembly Inc., Mentor, OH 44060                                           | 216-255-7744                       |
| † Capewell Components, Cromwell, CT 06416                                                | 203-635-4045                       |
| † Cardinal Control Co., Kensington, CT 06037                                             | 203-828-6379                       |
| Circum Inc., Bensenville, IL 60106                                                       | 708-595-4460                       |
| Colt Technology Corp., Lenexa, KS 66219                                                  | 913-888-1673                       |
| \$ Communication Devices, Inc., Scarborough, Ont., CAN M1B3R6                            | 416-292-4463                       |
| Computer Systems Technical Support, Anaheim, CA 92807                                    | 714-632-1300                       |
| \$ Conn-2, Inc., Saline, MI 48176                                                        | 313-429-9027                       |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                     | 708-455-8830                       |
| \$ Control Cable, Inc., Baltimore, MD 21244                                              | 410-298-4411                       |
| † Corlund Electronics Corp., Newbury Park, CA 91320                                      | 805-499-6877                       |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                                   | 612-941-5651; 1-800-343-5553       |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                  | 201-768-5400                       |
| \$ Damac Products, Inc., Santa Fe Springs, CA 90670                                      | 310-946-0881                       |
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| † FISHERTECH, Fisher Gauge Limited, Peterborough, Ontario, CANADA K9J 6Y9                | 705-748-9522                       |
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| † General Technology Corp., Albuquerque, NM 87109                                        | 505-345-5591                       |
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| \$ Johnson, E. F. Co., Waseca, MN 56093                                                  | 1-800-247-8256                     |
| # KelTech Inc., Roanoke, VA 24019                                                        | 703-682-8466                       |
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| Kyon Cable & Connector, Inc., San Jose, CA 95125                                         | 408-295-1110; 800-544-6941         |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                               | 708-398-5311; 800-323-5207         |
| † Manger Electric Company, Inc., Stamford, CT 06902                                      | 203-348-7761                       |
| † Max Levy Autograph, Inc., Philadelphia, PA 19144-4298                                  | 215-842-3675                       |
| 3M-Electronic Products Division, Austin, TX 78726                                        | 1-800-225-5373 Sls. & Prod. Info.  |
| MicroTek, Inc., Chicopee, MA 01020                                                       | 413-594-5116                       |
| † Midamerica Design Service, Spirit of America Corp., Fort Wayne, IN 46818               | 219-489-2511                       |
| Mitech Electronics Corp., Otsego, MI 49078                                               | 616-694-9471                       |
| Molecu-Wire, Farmingdale, NY 07727                                                       | 908-938-9473                       |
| Mueller Elec. Co., Cleveland, OH 44114                                                   | 216-771-5225                       |
| National Telephone & Electronics Inc., Miami, FL 33172                                   | 305-592-0551                       |
| New England Keyboard Inc., Fitchburg, MA 01420                                           | 508-345-8332                       |
| # North Iowa Electronics, Inc., Winnebago Industries, Inc., Garner, IA 50438             | 515-923-3751                       |
| † Panduit Corp., Tintin Park, IL 60477-0981                                              | 800-777-3300                       |
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| Precision Interconnect, Subsidiary of AMP Incorporated, Portland, OR 97224               | 503-620-9400                       |
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 ‡ U.S. Power Converting Company/Relco, Leonard V. Snow & Assocs., Torrance, CA 90503 ..... 310-316-9984  
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 GlobTek, Inc., Northvale, NJ 07647 ..... 201-784-1000  
 † GM Nameplate, Inc., Seattle, WA 98119 ..... 206-284-2200  
 W.L. Gore & Assocs., Newark, DE 19714 ..... 302-738-4880  
 † GSI Corp., Timonium, MD 21093 ..... 410-252-1768  
 † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301 ..... 603-224-9585  
 Hokuriku USA Ltd., Madison, AL 35758 ..... 205-772-9620  
 Industrial Electronics Corp., Warren, MI 48089 ..... 313-759-4450  
 JAE Electronics Inc., Irvine, CA 92718 ..... 714-753-2600  
 JMJ Technical Prods., Westfield, NJ 07090 ..... 201-589-4257  
 † LectroMagnetics Division, Los Angeles, CA 90016 ..... 213-870-9383; USA 800-969-9383  
 † Lindgren RF Enclosures, Inc., Glendale Hgts., IL 60139 ..... 708-307-7200  
 † LNP Engineering Plastics, Exton, PA 19341 ..... 215-363-4500  
 LZR Electronics, Inc., Gathersburg, MD 20879 ..... 301-921-4600  
 † Magnetic Radiation Labs, Itasca, IL 60143 ..... 708-285-0800  
 † Microdot, Interconnect Systems Division, Montgomeryville, PA 18936 ..... 215-699-5373  
 † MMG-North America, Paterson, NJ 07509 ..... 201-345-8900  
 † MOLDCON Div. of ConTex Electronics, W. Springfield, MA 01089 ..... 413-736-0371  
 † Northwest Etch Technology, Tacoma, WA 98409 ..... 206-572-2401; 1-800-343-2401  
 † Orcus, Kansas City, MO 64112 ..... 913-897-5128  
 † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715 ..... 714-833-3000  
 † PolyPly Inc./Conductives Systems, Inc., Amsterdam, NY 12010 ..... 518-843-3900  
 Precision Thin Metal (LP), Beaver Dam, WI 53916 ..... 414-885-9000  
 Ray Proof, Shielding Systems Corp., Norwalk, CT 06854 ..... 800-243-5704  
 Robinson Nugent, Inc., New Albany, IN 47150 ..... 812-948-0564  
 Schlegel Corp., Rochester, NY 14692 ..... 800-828-6237, ext. 2126  
 † Sealing Devices, Inc., Lancaster, NY 14086 ..... 716-684-7600  
 # Seleco, Inc., Indianapolis, IN 46268 ..... 317-872-4148  
 † Semtronics Corp., Peachtree City, GA 30269 ..... 404-487-6681  
 Shipley Company, Inc., Newton, MA 02162 ..... 617-969-5500  
 † Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003 ..... 214-231-6663  
 † Spira Manufacturing Corp., North Hollywood, CA 91605 ..... 818-764-8222



|                                                                              |              |
|------------------------------------------------------------------------------|--------------|
| Stetron International, Inc., Buffalo, NY 14203                               | 716-854-3443 |
| Tech-Etch, Inc., Plymouth, MA 02360                                          | 508-747-0300 |
| Temp-Flex Cable, Inc., S. Grafton, MA 01560                                  | 508-839-5987 |
| Texas Instrs., Matls. & Controls Grp., Attleboro, MA 02703                   | 508-699-3800 |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807                   | 714-630-7127 |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615 | 309-693-3300 |
| TWP, Inc., Berkeley, CA 94710                                                | 510-548-4434 |
| † Zippertubing Co., Los Angeles, CA 90061                                    | 310-527-0488 |

## Shielding (MIL), EMI/RFI-2440 — See Vol. B

## Shielding Beads, Ferrite-4525

|                                                                                                          |              |
|----------------------------------------------------------------------------------------------------------|--------------|
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                                                       | A-1244-1245  |
| † Capcon, Inc., New York, NY 10001                                                                       | 212-243-6275 |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                              | 708-547-5400 |
| † Fair-Rite Prods., Walkill, NY 12589                                                                    | 914-895-2055 |
| Ferronics, Fairport, NY 14450                                                                            | 716-388-1020 |
| Frontier Electronics, Simi Valley, CA 93065                                                              | 805-522-9998 |
| † GC International Inc., Plano, TX 75074                                                                 | 214-423-8411 |
| † MMG-North America, Paterson, NJ 07509                                                                  | 201-345-8900 |
| Philips Components Discrete Products Division, A North American Philips Company, Riviera Beach, FL 33404 | 407-881-3200 |
| Philips Components Discrete Products Div., A North American Philips Co., NY 12477                        | 914-246-2811 |
| Sealing Devices, Inc., Lancaster, NY 14086                                                               | 716-684-7600 |
| † Steward, Inc., Chattanooga, TN 37401                                                                   | 615-867-4100 |
| † Tokin America, Inc., San Jose, CA 95134                                                                | 408-432-8020 |

## Shields, Cable — See Braid, Cable (Vol. C)

## Shields, Cathode-Ray Tube-4525

|                                                                                         |              |
|-----------------------------------------------------------------------------------------|--------------|
| † Amunual Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                     | C-1683       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C-1696       |
| † The Mushield Co. Inc., Goffstown, NH 03045, 603-666-4433                              | C-1698       |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747         | 313-984-5581 |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                         | 219-223-3158 |
| † CELCO, Mahwah, NJ 07430                                                               | 201-327-1123 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                    | 617-935-4850 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                  | 317-297-1030 |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                                   | 908-241-0710 |
| Inter-Technical Group Inc., WIMA Div., Elmsford, NY 10523                               | 914-347-2474 |
| † Magnetic Radiation Labs, Itasca, IL 60143                                             | 708-285-0800 |

## Shields, Coil-4525

|                                                                                         |              |
|-----------------------------------------------------------------------------------------|--------------|
| † Amunual Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                     | C-1683       |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                                      | A-1244-1245  |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C-1696       |
| † The Mushield Co. Inc., Goffstown, NH 03045, 603-666-4433                              | C-1698       |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                         | 219-223-3158 |
| Atlee Inc., North Andover, MA 01845                                                     | 508-681-1003 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                    | 617-935-4850 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                  | 317-297-1030 |
| † Egis Corporation, Barrington Hills, IL 60010                                          | 708-639-1555 |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                                   | 908-241-0710 |
| Kyocera Industrial Ceramics Corp., San Diego, CA 92123                                  | 619-576-2688 |
| † Magnetic Radiation Labs, Itasca, IL 60143                                             | 708-285-0800 |
| † Microtran Co., Inc., Valley Stream, NY 11582-0236                                     | 516-561-6050 |
| † MMG-North America, Paterson, NJ 07509                                                 | 201-345-8900 |
| Staver Co., Inc., Bay Shore, NY 11706-9998                                              | 516-666-8000 |
| † Tapecon, Inc., Rochester, NY 14612                                                    | 716-621-8400 |
| United Technical Products, Fallsington, PA 19054                                        | 800-553-5300 |

## Shields, Corona-4525

|                                                                                 |              |
|---------------------------------------------------------------------------------|--------------|
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747 | 313-984-5581 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                            | 617-935-4850 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                          | 317-297-1030 |
| † Electrostatic Consulting Assocs., Groton, MA 01450                            | 508-448-5485 |
| Hipotonics Inc., Brewster, NY 10509                                             | 914-279-8091 |
| † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301                 | 603-224-9585 |
| † Ross Engineering Corp., Campbell, CA 95008                                    | 408-377-4621 |
| † Rowe Industries, Inc., Toledo, OH 43612                                       | 419-729-9761 |
| † Tech Spray, Inc., Amarillo, TX 79105                                          | 806-372-8523 |

## Shields, Electrostatic — See Shields, Tube (Vol. C)

## Shields, Magnetic-4525

|                                                                                          |              |
|------------------------------------------------------------------------------------------|--------------|
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975, 219-223-3158                            | C-1682       |
| † Amunual Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                      | C-1683       |
| † Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                                     | C-1662-1684  |
| Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136, 717-424-8510 | C-1687-1694  |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                                       | A-1246       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800  | C-1696-1697  |
| † The Mushield Co. Inc., Goffstown, NH 03045, 603-666-4433                               | C-1698       |
| † Applied Design Company, Minneapolis, MN 55413                                          | 612-378-0094 |
| † CELCO, Mahwah, NJ 07430                                                                | 201-327-1123 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                     | 617-935-4850 |
| † Dabum Electronics & Cable Corp., Northvale, NJ 07647                                   | 201-768-5400 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                   | 317-297-1030 |
| † Egis Corporation, Barrington Hills, IL 60010                                           | 708-639-1555 |
| Framar Metal Products Co., Inc., Kenilworth, NJ 07033                                    | 908-241-0710 |
| Hamamatsu Photonics K.K., Hamamatsu City, Shizuoka Pref., JAPAN                          | 053-452-2141 |
| The Hirol Company, Ft. Lauderdale, FL 33309                                              | 305-974-4900 |

|                                                            |                                |
|------------------------------------------------------------|--------------------------------|
| † Hudson Tool & Die Co., Ormond Beach, FL 32174            | 904-672-2000                   |
| Inter-Technical Group Inc., WIMA Div., Elmsford, NY 10523  | 914-347-2474                   |
| † Lector Magnetics Division, Los Angeles, CA 90016         | 213-870-9383; USA 800-969-9383 |
| Lindgren RF Enclosures, Inc., Glendale Hgts., IL 60139     | 708-307-7200                   |
| † Magnetic Radiation Labs, Itasca, IL 60143                | 708-285-0800                   |
| † Magnetics, Spang & Co., Butler, PA 16003-0391            | 412-282-8282                   |
| Microtran Co. Inc., Valley Stream, NY 11582-0236           | 516-561-6050                   |
| † MMG-North America, Paterson, NJ 07509                    | 201-345-8900                   |
| Permaluster, Inc., Burbank, CA 91504                       | 213-849-4543; 213-849-6454     |
| † Products Engrg. Corp., Azusa, CA 91702-5131              | 818-969-5879                   |
| Quality Components, Inc., St. Marys, PA 15857              | 814-834-2817                   |
| Schlegel Corp., Rochester, NY 14692                        | 800-828-6237; ext. 2126        |
| † Schonsted Instrument Co., Reston, VA 22090               | 703-771-1050                   |
| † Tapecon, Inc., Rochester, NY 14612                       | 716-621-8400                   |
| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807 | 714-630-7127                   |
| Thorn EMI Electron Tubes Inc., Fairfield, NJ 07006         | 201-575-5586                   |
| † Toplight, York, PA 17404                                 | 717-843-9901; 800-233-9386     |
| Worltronic, Los Angeles, CA 90039                          | 213-660-6230                   |
| † Zippertubing Co., Los Angeles, CA 90061                  | 310-527-0488                   |

## Shields, Photomultiplier-4525

|                                                                                         |              |
|-----------------------------------------------------------------------------------------|--------------|
| † Amunual Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                     | C-1683       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C-1696       |
| † The Mushield Co. Inc., Goffstown, NH 03045, 603-666-4433                              | C-1698       |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                         | 219-223-3158 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                  | 317-297-1030 |
| Inter-Technical Group Inc., WIMA Div., Elmsford, NY 10523                               | 914-347-2474 |
| † Magnetic Radiation Labs, Itasca, IL 60143                                             | 708-285-0800 |
| † Thorn EMI Electron Tubes Inc., Fairfield, NJ 07006                                    | 201-575-5586 |

## Shields, RF-Also See Gaskets, Shielding, RF-4525

|                                                                                          |                |
|------------------------------------------------------------------------------------------|----------------|
| Ad-Vance Magnetics, Inc., Rochester, IN 46975, 219-223-3158                              | C-1682         |
| The Bergquist Co., Minneapolis, MN 55439, 800-347-4572                                   | B-1823         |
| Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151                                       | C-1662         |
| † The Hirol Company, Ft. Lauderdale, FL 33309, 305-974-4900                              | B-1072         |
| Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136, 717-424-8510 | C-1687-1694    |
| † 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368                | D-2311         |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                            | A-1652, C-1419 |
| Pactec Corp., LaFrance Corp., Philadelphia, PA 19153, 215-365-8400                       | C-1062         |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                               | C-1843         |
| † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747          | 313-984-5581   |
| ADE, Inc., Chicago, IL 60633                                                             | 312-646-3400   |
| † Air/Flex Inds. Inc., S. El Monte, CA 91733                                             | 818-579-7060   |
| † AME Corporation, Towaco, NJ 07082-0195                                                 | 201-263-1700   |
| American Cyanamid Co., Metal Coated Fibers Dept., Wallingford, CT 06492                  | 203-284-4217   |

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| Amunual Manufacturing Corp., Philadelphia, PA 19124                  | 215-535-3000                   |
| † Applied Design Company, Minneapolis, MN 55413                      | 612-378-0094                   |
| † Applied Plastics Technology, Bristol, RI 02809                     | 401-253-0200                   |
| Arrem Plastics, Inc., Addison, IL 60101                              | 708-628-2450                   |
| Atlee Inc., North Andover, MA 01845                                  | 508-681-1003                   |
| Ceramaseal, New Lebanon, NY 12125                                    | 518-794-7800                   |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                 | 617-935-4850                   |
| † CHR, Furon, New Haven, CT 06509                                    | 203-777-3631                   |
| † Compac, Holbrook, NY 11741                                         | 516-585-3400                   |
| † Conductive System, Inc., Amsterdam, NY 12010                       | 518-843-5740                   |
| † Dabum Electronics & Cable Corp., Northvale, NJ 07647               | 201-768-5400                   |
| † Dantech, Inc., Doylestown, PA 18901                                | 215-348-5010                   |
| Eagle Magnetic Company, Inc., Indianapolis, IN 46224                 | 317-297-1030                   |
| † Egis Corporation, Barrington Hills, IL 60010                       | 708-639-1555                   |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162          | 708-547-5400                   |
| Evaporated Coatings, Inc., Willow Grove, PA 19090                    | 215-659-3080                   |
| Filteron, RFI Corporation, Bayshore, NY 11706                        | 516-231-6400                   |
| † Hobart Tafa Technologies, Hobart Bros. Co., Concord, NH 03301      | 603-224-9585                   |
| † ITT Pomona Electronics, Pomona, CA 91766                           | 909-469-2900                   |
| † Lector Magnetics Division, Los Angeles, CA 90016                   | 213-870-9383; USA 800-969-9383 |
| Lindgren RF Enclosures, Inc., Glendale Hgts., IL 60139               | 708-307-7200                   |
| † Max Levy Autograph, Inc., Philadelphia, PA 19144-4298              | 215-842-3675                   |
| † McLean Engineering, Zero Corporation, Princeton Junction, NJ 08550 | 609-799-0100                   |
| † MMG-North America, Paterson, NJ 07509                              | 201-345-8900                   |
| The Mushield Co. Inc., Goffstown, NH 03045                           | 603-666-4433                   |
| † Orcus, Kansas City, MO 64112                                       | 913-897-5128                   |
| Oxley Inc., Branford, CT 06405                                       | 203-488-1033                   |
| † Parker Hannifin Corporation, Seal Grp., Irvine, CA 92715           | 714-833-3000                   |
| † Penn Engineering & Manufacturing Corp., Danboro, PA 18916          | 215-766-8853; 800-237-4736     |

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|-------------------------------------------------------------------------|--------------------------------------------|
| † Rantec Microwave & Electronics, Esco Electronics, Calabasas, CA 91302 | 818-591-8189                               |
| Ray Proof, Shielding Systems Corp., Norwalk, CT 06854                   | 800-243-5704                               |
| † SAS Industries Inc., Manorsville, NY 11949                            | 516-727-1441; 1-800-544-5238               |
| Schlegel Corp., Rochester, NY 14692                                     | 800-828-6237; ext. 2126                    |
| † Southwall Technologies Inc., Palo Alto, CA 94303                      | 415-962-9111                               |
| Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003                 | 214-231-6663; 214-924-3289; 1-800-331-6600 |
| † Spira Manufacturing Corp., North Hollywood, CA 91605                  | 818-764-8222                               |
| Staver Co., Inc., Bay Shore, NY 11706-9998                              | 516-666-8000                               |
| † Stevens Products, Inc., E. Orange, NJ 07019                           | 201-672-2140                               |
| † Tapecon, Inc., Rochester, NY 14612                                    | 716-621-8400                               |
| † Tech-Etch, Inc., Plymouth, MA 02360                                   | 508-747-0300                               |
| † Tech Spray, Inc., Amarillo, TX 79105                                  | 806-372-8523                               |
| † Technit, Cranford, NJ 07016                                           | 908-272-5500                               |



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| † TFD Inc. (DBA Thin Film Devices Inc.), Anaheim, CA 92807 | 714-630-7127              |
| † Titchener, E. H. & Co., Binghamton, NY 13902-1706        | 607-772-1161              |
| † Topflight, York, PA 17404                                | 717-843-9901/800-233-9386 |
| † Zippertubing Co., Los Angeles, CA 90061                  | 310-527-0488              |

**Shields, Transformer-4525**

|                                                                                         |              |
|-----------------------------------------------------------------------------------------|--------------|
| † Amunuel Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                     | C*1683       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C*1696       |
| † The Mushfield Co. Inc., Goffstown, NH 03045, 603-666-4433                             | C*1698       |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                         | 219-223-3158 |
| Atlee Inc., North Andover, MA 01845                                                     | 508-681-1003 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                    | 617-935-4850 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                  | 317-297-1030 |
| Frarm Metal Products Co., Inc., Kenilworth, NJ 07033                                    | 908-241-0710 |
| † Hudson Tool & Die Co., Ormond Beach, FL 32174                                         | 904-672-2000 |
| † Magnetic Radiation Labs, Itasca, IL 60143                                             | 708-285-0800 |
| † Microtran Co. Inc., Valley Stream, NY 11582-0236                                      | 516-561-6050 |
| Staver Co., Inc., Bay Shore, NY 11706-9998                                              | 516-666-8000 |
| † Tapecon, Inc., Rochester, NY 14612                                                    | 716-621-8400 |

**Shields, Tube-4525**

|                                                                                            |              |
|--------------------------------------------------------------------------------------------|--------------|
| † Amunuel Manufacturing Corp., Philadelphia, PA 19124, 215-535-3000                        | C*1683       |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800    | C*1696       |
| † The Mushfield Co. Inc., Goffstown, NH 03045, 603-666-4433                                | C*1698       |
| ADE, Inc., Chicago, IL 60633                                                               | 312-646-3400 |
| † Ad-Vance Magnetics, Inc., Rochester, IN 46975                                            | 219-223-3158 |
| † Chomerics, Inc./W.R. Grace & Co., Woburn, MA 01888                                       | 617-935-4850 |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000 |
| † Dearborn Wire & Cable, LP., Wheeling, IL 60090                                           | 800-323-0198 |
| † Eagle Magnetic Company, Inc., Indianapolis, IN 46224                                     | 317-297-1030 |
| † Egis Corporation, Barrington Hills, IL 60010                                             | 708-639-1555 |
| Hamamatsu Photonics KK, Hamamatsu City, Shizuoka Pref, JAPAN                               | 053-452-2141 |
| † IERC, Burbank, CA 91502                                                                  | 213-849-2481 |
| † Magnetic Radiation Labs, Itasca, IL 60143                                                | 708-285-0800 |
| Staver Co., Inc., Bay Shore, NY 11706-9998                                                 | 516-666-8000 |
| Zippertubing Co., Los Angeles, CA 90061                                                    | 310-527-0488 |

**Shields, Wire — See Braid, Cable (Vol. C)****Shift Registers-2325 — See Vol. D****Shifters, Frequency — See Converters, Frequency to Frequency (Vol. D)****Shifters, Phase, Ferrite-3450 — See Vol. A****Shifters, Phase, Microwave-3450 — See Vol. A****Shifters, Phase, RF-3450 — See Vol. A****Shifters, Phase 60/400 Hz-4050 — See Vol. D****Shrinkable Plastics & Elastomers — See Caps, Forms & Tapes, Heat Shrinkable (Vol. C), Tubing, Heat Shrinkable (Vol. C)****Shunts, Connector-2100**

|                                                                         |                           |
|-------------------------------------------------------------------------|---------------------------|
| † AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                  | B*1666-1667, C*1163       |
| † Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200              | C*1289                    |
| Electronic Precision Components, ML Vernon, NY 10550-4430, 914-664-2333 |                           |
|                                                                         | D*1254                    |
| † Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840           | C*1361                    |
| † Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824          | C*1466                    |
| † Teppo of Florida, Clearwater, FL 34623, 813-796-1044                  | A*2035                    |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703        | 508-222-2202              |
| Autosplince, Inc., San Diego, CA 92121                                  | 619-535-0077              |
| † Berg Electronics, Camp Hill, PA 17011                                 | 800-237-2374              |
| † Components Corp., Denville, NJ 07834                                  | 201-627-0290              |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608         | 201-288-4477              |
|                                                                         | 800-447-5639              |
| † Excel Specialty Corp., Chicago, IL 60660                              | 312-262-4781              |
| General Electronic Materials Technology, Los Alamitos, CA 90720         | 714-761-5684              |
| Hypertronics Corp., Hudson, MA 01749                                    | 508-568-0451/800-225-9228 |
| † JH America, Inc., JBT International, Inc., Torrance, CA 90501         | 310-328-0051              |
| † Kycon Cable & Connector, Inc., San Jose, CA 95125                     | 408-295-1110/800-544-6941 |
| † McKenzie Technology, Fremont, CA 94538                                | 510-651-2700              |
| † NRD Inc., Subsidiary of Mark IV Inds., Inc., Grand Island, NY 14072   | 716-773-7634              |
| † Panduit Corp., Tinley Park, IL 60477-0981                             | 800-777-3300              |
| † Samtec, Inc., New Albany, IN 47151-1147                               | 1-800-672-6832            |
| † Wells Electronics, Inc., South Bend, IN 46613                         | 219-287-5941              |

**Shunts, Meter-2900 — See Vol. D****Shutters, Microwave-3450 — See Vol. A****SIDACs-4800 — See Vol. A****Signal Averagers-2900 — See Vol. D****Signal Conditioners & Equipment-1100 — See Vol. D****Signal Generators — See Generators, Specific Type (Vol. D)****Signal Systems, Fiber Optic-2325 — See Vol. D****Signal Tracers — See Testers, Signal Tracing (Vol. D)****Silica, Fused-2500**

|                                                                                     |              |
|-------------------------------------------------------------------------------------|--------------|
| Electro-Films, Inc., Warwick, RI 02886, 401-738-9150                                | A*1933       |
| † Accumet Engineering, Hudson, MA 01749                                             | 508-568-8311 |
| † Alomeric Chemetals Corp., Farmingdale, NY 11735-1718                              | 516-694-9000 |
| † Alread Advanced Materials, A Readle Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000 |

**Silicon Foundry Services-4100 — See Vol. D****Silk Screening Services — See Services, Silk Screening (Vol. D)****Simulation Systems, Electromagnetic Pulse-1100 — See Vol. D****Simulators, Data-2900 — See Vol. D****Simulators, Digital Satellite-1900 — See Vol. D****Simulators, Motion-2550 — See Vol. D****Simulators, Optics-3700 — See Vol. B****Simulators, Power Failure-2900 — See Vol. D****Simulators, Powerline Disturbance-2900 — See Vol. D****Simulators, Radar-2440 — See Vol. B****Simulators, Resolvers-2900 — See Vol. D****Simulators, Thermocouple-2900 — See Vol. D****Simulators (MIL)-2440 — See Vol. B****Sinks, Heat — See Heat Sinks, Semiconductor (Vol. C), Heat Sinks, Soldering (Vol. C)****Sleeves — See Tubing (Vol. C)****Slides, Cabinet & Chassis-1400**

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| † Cabtron Systems, Inc., Northbrook, IL 60062, 708-498-6090                              | C*1017                      |
| † General Devices Co., Inc., Indianapolis, IN 46239-0100, 317-897-7000, 1-800-626-9484   | C*1048                      |
| † Hammond Manufacturing Co., Buffalo, NY 14225, 716-894-5710                             | C*1049                      |
| † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000               | C*1056-1058, 1061           |
| Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900       | C*1069                      |
| † Precision Fabrication Technologies, Inc., Monon, IN 47959, 1-800-558-7297/219-253-6666 | C*1076, 1079                |
| † STRONGBOX, Culver City, CA 90231-2726, 310-305-8288                                    | C*1098-1099                 |
| TDJ Co., Inc., San Diego, CA 92110, 619-276-5920                                         | C*1100-1101                 |
| † Techmar Corp., Marina Del Rey, CA 90292, 310-827-8897                                  | C*1102                      |
| † Accuride, Santa Fe Springs, CA 90670                                                   | 310-903-0200                |
| † Barnes Engineering, West Coast Sls. & Mktg., Santa Ana, CA 92704                       | 714-533-7530                |
| Barnes Engineering Company, Colorado Springs, CO 80910                                   | 719-390-6500                |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                            | 203-288-8001/1-800-242-2863 |
| Dynacast Inc., Yorktown Heights, NY 10598                                                | 914-962-6300                |
| Electronic Packaging System, Marion, IA 52302                                            | 319-377-3423                |
| ELMA Electronic Inc., Fremont, CA 94538                                                  | 510-656-3400                |
| Jonathan Manufacturing Corp., Fullerton, CA 92631                                        | 714-526-4651                |
| Lambda Electronics Inc., Melville, NY 11747-3700                                         | 516-694-4200                |
| † NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016                         | 918-357-0901                |
| † Premier Metal Prods. Co., Bronx, NY 10451                                              | 718-993-9200                |
| Schroff, Inc., Warwick, RI 02886                                                         | 401-732-3770                |
| TDK Corporation of America, Electronic Components & Material, Mount Prospect, IL 60056   | 708-803-6100                |
| Techno-Isel USA Division, Designatronics, New Hyde Park, NY 11042-5416                   | 516-328-3970                |
| Vector Electronic Co., Inc., Sylmar, CA 91342                                            | 818-365-9661/800-423-5659   |
| † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310                          | 801-298-5900                |
| † Zero Corp., Zero East Div., Monson, MA 01057-0128                                      | 413-267-5561                |

**Slides, Linear-4900 — See Vol. D****Slip Clutch — See Knobs, Slip Clutch (Vol. C)****Slip Rings & Assemblies-3500 — See Vol. B****Slip Rings & Assemblies (MIL)-2440 — See Vol. B****Slotted Lines, Microwave-3450 — See Vol. A****Socket Adapters-2100**

|                                                                                          |                           |
|------------------------------------------------------------------------------------------|---------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                                     | C*1150                    |
| † Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                  | A*1689-1691, C*1265       |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                  |                           |
|                                                                                          | C*1320                    |
| † Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                        | C*1321                    |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                      | C*1353                    |
| † McKenzie Technology, Fremont, CA 94538, 510-651-2700                                   | C*1415                    |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000                  |                           |
|                                                                                          | C*1421                    |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                | C*1426, 1437, 1793        |
| † Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                                | C*1548-1549               |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                | 516-546-1751              |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                          | 404-751-9473/800-221-4767 |
| † Advanced Interconnections Corp., West Warwick, RI 02893                                | 401-823-5200              |
| AMP, Harrisburg, PA 17105                                                                | 717-564-0100/800-522-6752 |
| Andon Elctns. Corp., Lincoln, RI 02865                                                   | 401-333-0388              |
| Antona Corp., Los Angeles, CA 90024-5603                                                 | 310-473-8995              |
| † Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                   | 602-897-7001              |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                         | 508-222-2202              |
| Autosplince, Inc., San Diego, CA 92121                                                   | 619-535-0077              |
| † Bivar, Inc., Irvine, CA 92718                                                          | 714-951-8808              |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000              |
| Concord Electronics Corporation, New York, NY 10012                                      | 1-212-777-6571            |
| Connector Corp., Chicago, IL 60646                                                       | 312-539-3108              |
| † Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101                               | 718-937-8000              |
| Elan Systems, Inc., Morgan Hill, CA 95037                                                | 800-541-3526              |
| † Elpakco, Inc., Lowell, MA 01851                                                        | 508-453-3000              |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477              |
|                                                                                          | 800-447-5639              |
| † Garry Electronics, WPI, Salem, NJ 08079                                                | 609-935-7603              |
| † GC-Thorsen, Rockford, IL 61105-1209                                                    | 815-968-9661              |
| † Ironwood Elctns. Inc., St. Paul, MN 55121                                              | 612-431-7025              |
| ITT Cannon, Santa Ana, CA 92705-5684                                                     | 714-557-4700              |
| † ITT Pomona Electronics, Pomona, CA 91766                                               | 909-469-2900              |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                | 708-398-5311/800-323-5207 |



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|--------------------------------------------------------------------------------|-----------------------------------|
| Logical Systems Corporation, Syracuse, NY 13217-6184                           | 315-478-0722                      |
| Loranger Intl. Corp., Warren, PA 16365                                         | 814-723-2250                      |
| Master Electronic Controls, Los Angeles, CA 90025                              | 310-452-1336                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sls. & Prod. Info. |
| Methode Electronics, Inc., Chicago, IL 60656                                   | 708-867-9600                      |
| Milton Ross Co., Warrington, PA 18976                                          | 215-491-0600                      |
| MOLEX, Inc., Lisle, IL 60532                                                   | 708-969-4550                      |
| MSD3, Morgan Hill, CA 95037                                                    | 800-541-3526/408-778-7267         |
| MSD3, Morgan Hill, CA 95037                                                    | 800-541-3526/408-778-7267         |
| The J. M. Ney Company, Bloomfield, CT 06002                                    | 203-242-2281                      |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                  | 201-736-5722                      |
| \$ Precicontact, Inc., Langhorne, PA 19047                                     | 215-577-1202                      |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                   | 708-438-4000                      |
| † Project Resources Inc., Wareham, MA 02571                                    | 508-295-7444                      |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                 | 812-948-0564                      |
| † Rowe Industries, Inc., Toledo, OH 43612                                      | 419-729-9761                      |
| Shokai Far East Ltd., Peekskill, NY 10566                                      | 914-736-3500                      |
| Staffall Inc., Cranston, RI 02910                                              | 401-461-5554                      |
| Sunrise Electronics, Inc., Glendora, CA 91740                                  | 818-914-1926                      |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895                            | 401-769-2625                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                      |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342                               | 818-365-9661/800-423-5659         |
| Yamaichi Electronics Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112  | 408-452-0797                      |

## Sockets, Array-2100

|                                                                                |                                   |
|--------------------------------------------------------------------------------|-----------------------------------|
| † Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388                         | C*1256-1257                       |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                       | A*1689-1690, C*1260               |
| \$ McKenzie Technology, Fremont, CA 94538, 510-651-2700                        | C*1415                            |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                     | C*1548                            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                      | 516-546-1751                      |
| Aeroflex Laboratories Inc., ARX, Inc., Plainview, NY 11803                     | 516-694-6700                      |
| Assembly Specialists, Chelmsford, MA 01824                                     | 508-250-5900                      |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283        | 602-897-7001                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703               | 508-222-2202                      |
| Autosplice, Inc., San Diego, CA 92121                                          | 619-535-0077                      |
| ELMA Electronic Inc., Fremont, CA 94538                                        | 510-656-3400                      |
| \$† Hollingshead International, Santa Fe Springs, CA 90670                     | 310-921-3438                      |
| \$† Keystone Electronics Corp., Astoria, NY 11105-2017                         | 718-956-8900                      |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                     | 708-398-5311/800-323-5207         |
| Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                 | 203-756-8847                      |
| Master Electronic Controls, Los Angeles, CA 90025                              | 310-452-1336                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                     | 516-922-6000                      |
| Power Dynamics Inc., West Orange, NJ 07052                                     | 201-736-5722                      |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                 | 812-948-0564                      |
| \$ Schurter, Inc., Petaluma, CA 94954                                          | 800-848-2600 ext.62               |
| † Stetco, Inc., Franklin Pk., IL 60131                                         | 708-671-4208                      |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895                            | 401-769-2625                      |
| \$ TELTEC, INC., Minneapolis, MN 55425                                         | 612-854-9632                      |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                         | 612-854-9177                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                      | 513-561-8145                      |
| \$ Wells Electronics, Inc., South Bend, IN 46613                               | 219-287-5941                      |

## Sockets, Burn-In / Test-2100

|                                                                                      |                                   |
|--------------------------------------------------------------------------------------|-----------------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                              | C*1163                            |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                             | C*1260                            |
| Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269/508-699-3450 | C*1493-1498                       |
| Azimut Electronics, Inc., San Clemente, CA 92672                                     | 714-492-6481                      |
| Electronic Precision Technology Inc., Cambridge, MA 02140                            | 617-661-2454                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                      | 201-288-4477/800-447-5639         |
| Loranger Intl. Corp., Warren, PA 16365                                               | 814-723-2250                      |
| Master Electronic Controls, Los Angeles, CA 90025                                    | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                            | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                 | 1-800-225-5373 Sls. & Prod. Info. |
| Milton Ross Co., Warrington, PA 18976                                                | 215-491-0600                      |
| The J. M. Ney Company, Bloomfield, CT 06002                                          | 203-242-2281                      |
| \$ PCD, Peabody, MA 01960                                                            | 508-532-8800                      |
| \$† Temptron Corporation, Newton, MA 02158                                           | 617-969-2501                      |
| \$ Texas Instrs., Matts. & Controls Grp., Attleboro, MA 02703                        | 508-699-3800                      |
| Wells Electronics, Inc., South Bend, IN 46613                                        | 219-287-5941                      |
| Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112       | 408-452-0797                      |

## Sockets, Capacitor-2100

|                                                                         |                           |
|-------------------------------------------------------------------------|---------------------------|
| AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                    | C*1163                    |
| † Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388                  | C*1256                    |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                | A*1689, C*1262            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593               | 516-546-1751              |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893             | 401-823-5200              |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 | 602-897-7001              |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703        | 508-222-2202              |
| Autosplice, Inc., San Diego, CA 92121                                   | 619-535-0077              |
| Berg Electronics, Camp Hill, PA 17011                                   | 800-237-2374              |
| \$ Elpakco, Inc., Lowell, MA 01851                                      | 508-453-3000              |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608         | 201-288-4477/800-447-5639 |
| \$† Garry Electronics, WPI, Salem, NJ 08079                             | 609-935-7603              |
| Loranger Intl. Corp., Warren, PA 16365                                  | 814-723-2250              |

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|--------------------------------------------------------------------------------|-----------------------------------|
| Master Electronic Controls, Los Angeles, CA 90025                              | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                      | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                     | 516-922-6000                      |
| † Milton Ross Co., Warrington, PA 18976                                        | 215-491-0600                      |
| \$ Precicontact, Inc., Langhorne, PA 19047                                     | 215-577-1202                      |
| † Project Resources Inc., Wareham, MA 02571                                    | 508-295-7444                      |
| Raycon Technology, Costa Mesa, CA 92627                                        | 714-646-7700                      |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                     | 1-800-672-6832                    |
| Shokai Far East Ltd., Peekskill, NY 10566                                      | 914-736-3500                      |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895                            | 401-769-2625                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                      | 513-561-8145                      |

## Sockets, Chip Carrier, Surface Mount-2100

|                                                                                                        |                                   |
|--------------------------------------------------------------------------------------------------------|-----------------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752                                                | C*1163                            |
| † Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388                                                 | C*1256-1257, 1259                 |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                               | A*1689-1691, C*1265               |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                                         | C*1284                            |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949/800-638-3226                       | C*1310                            |
| Elastomeric Technologies, Inc., Hatboro, PA 19040, 215-672-0787/215-672-4741                           | C*1314                            |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110/800-544-6941                        | C*1367                            |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                                                     | A*1245-1247                       |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                              | 516-546-1751                      |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893                                            | 401-823-5200                      |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                     | 818-889-9304                      |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 602-897-7001                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                       | 508-222-2202                      |
| Autosplice, Inc., San Diego, CA 92121                                                                  | 619-535-0077                      |
| † Azimut Electronics, Inc., San Clemente, CA 92672                                                     | 714-492-6481                      |
| \$ Components Corp., Denville, NJ 07834                                                                | 201-627-0290                      |
| C-S Electronic Sales, Inc., Frankfort, IN 46041                                                        | 317-659-1874                      |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051                                                   | 408-982-0660                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477/800-447-5639         |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311/800-323-5207         |
| Loranger Intl. Corp., Warren, PA 16365                                                                 | 814-723-2250                      |
| Master Electronic Controls, Los Angeles, CA 90025                                                      | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                                              | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| \$† Methode Electronics, Inc., Chicago, IL 60656                                                       | 708-867-9600                      |
| \$ Methode Electronics, Inc., Interconnect Prods Div, Rolling Meadows, IL 60008                        | 708-392-3500                      |
| \$ Mhotronics, Inc., Vernon Hills, IL 60061                                                            | 708-913-9566                      |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                             | 516-922-6000                      |
| † Milton Ross Co., Warrington, PA 18976                                                                | 215-491-0600                      |
| \$ Nephente, Inc., Palo Alto, CA 94303                                                                 | 415-496-6666                      |
| The J. M. Ney Company, Bloomfield, CT 06002                                                            | 203-242-2281                      |
| \$ Onshore Technology, Tempe, AZ 85281                                                                 | 602-921-3000                      |
| \$ Precicontact, Inc., Langhorne, PA 19047                                                             | 215-577-1202                      |
| † Project Resources Inc., Wareham, MA 02571                                                            | 508-295-7444                      |
| Raycon Technology, Costa Mesa, CA 92627                                                                | 714-646-7700                      |
| Sunrise Electronics, Inc., Glendora, CA 91740                                                          | 818-914-1926                      |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895                                                    | 401-769-2625                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         | 803-676-2900                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                                              | 513-561-8145                      |
| \$† Wells Electronics, Inc., South Bend, IN 46613                                                      | 219-287-5941                      |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112                      | 408-452-0797                      |

## Sockets, CRT-2100

|                                                             |              |
|-------------------------------------------------------------|--------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160        | C*1149       |
| † Connector Corp., Chicago, IL 60646, 312-539-3108          | C*1292       |
| † Jettron Products Inc., E. Hanover, NJ 07936, 201-887-0571 | C*1358-1359  |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500     | C*1460       |
| C-S Electronic Sales, Inc., Frankfort, IN 46041             | 317-659-1874 |
| Loranger Intl. Corp., Warren, PA 16365                      | 814-723-2250 |
| Master Electronic Controls, Los Angeles, CA 90025           | 310-452-1336 |
| SMK Electronics Corporation, U.S.A., Piacentia, CA 92670    | 714-996-0960 |

## Sockets, Crystal-2100

|                                                                                  |                                   |
|----------------------------------------------------------------------------------|-----------------------------------|
| Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388                             | C*1256                            |
| † Connector Corp., Chicago, IL 60646, 312-539-3108                               | C*1292                            |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949/800-638-3226 | C*1310                            |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283          | 602-897-7001                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                 | 508-222-2202                      |
| Autosplice, Inc., San Diego, CA 92121                                            | 619-535-0077                      |
| C-S Electronic Sales, Inc., Frankfort, IN 46041                                  | 317-659-1874                      |
| \$† EBY Company, Philadelphia, PA 19124                                          | 215-537-4700                      |
| El & S, Prime Technology Inc., North Branford, CT 06471                          | 203-481-5721                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                  | 201-288-4477/800-447-5639         |
| \$ Johnson, E. F., Co., Waseca, MN 56093                                         | 1-800-247-8256                    |
| Master Electronic Controls, Los Angeles, CA 90025                                | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                        | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                             | 1-800-225-5373 Sls. & Prod. Info. |



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| James Millen Elctns., Caywood Elec. Inc., No. Andover, MA 01845 | 508-975-2711   |
| \$ Precicontact, Inc., Langhorne, PA 19047                      | 215-757-1202   |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                  | 812-948-0564   |
| \$ Samtec, Inc., New Albany, IN 47151-1147                      | 1-800-672-6832 |
| Shokai Far East Ltd., Peekskill, NY 10566                       | 914-736-3500   |

**Sockets, Diode-2100**

|                                                                                  |             |
|----------------------------------------------------------------------------------|-------------|
| \$† Data Display Products, El Segundo, CA 90245-4630, 310-640-0442; 800-421-6815 | B-1136-1138 |
| Grayhill Inc., La Grange, IL 60525, 708-354-1040                                 | C-1341      |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564       | C-1398      |

**\$ Visual Communications Co., Inc., San Diego, CA 92126, 619-549-6900**

|                                                                         |              |
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| Accessories For Electronics, Inc., Baldwin, NY 11510-3593               | 516-546-1751 |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 | 602-897-7001 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703        | 508-222-2202 |
| Augat/RDI, Carol Stream, IL 60188                                       | 708-682-4100 |
| Autosplice, Inc., San Diego, CA 92121                                   | 619-535-0077 |
| Autowage Products, Shelton, CT 06484                                    | 203-929-1401 |
| Berg Electronics, Camp Hill, PA 17011                                   | 800-237-2374 |

**\$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL**

|                                                                 |              |
|-----------------------------------------------------------------|--------------|
| 60007                                                           | 708-981-6000 |
| ELMA Electronic Inc., Fremont, CA 94538                         | 510-656-3400 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 | 201-288-4477 |

|                                                      |                                   |
|------------------------------------------------------|-----------------------------------|
| Gilway Technical Lamp, Woburn, MA 01801              | 617-935-4442                      |
| Leecraft Mfg., Long Island City, NY 11101            | 718-392-8800                      |
| Loranger Intl. Corp., Warren, PA 16365               | 814-723-2250                      |
| Mark Eylet Inc., AMP, Inc., Wolcott, CT 06716        | 203-756-8847                      |
| Master Electronic Controls, Los Angeles, CA 90025    | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538            | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726 | 1-800-225-5373 Sls. & Prod. Info. |
| Teknolind Inds., Inc., Rochester, NY 14620-1103      | 716-232-1291                      |
| † U.S. Terminals Inc., Cincinnati, OH 45243          | 513-561-8145                      |
| \$ Wells Electronics, Inc., South Bend, IN 46613     | 219-287-5941                      |

**Sockets, DIP and DIL-2100**

|                                                          |                          |
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| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 | C-1163                   |
| † Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388   | C-1256-1257              |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841 | A-1689-1690, C-1262-1264 |

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| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887 | C-1283-1284                |
| Comm Con Connectors Inc., Duarte, CA 91010, 818-301-4200       | C-1289                     |
| CW Industries, Southampton, PA 18966, 215-355-7080             | C-1304                     |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260,         | 602-443-1949; 800-638-3226 |

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| Fujitsu Microelectronics Inc., Semiconductor Division & Electronic Components Div., San Jose, CA 95134-1804, 408-922-9000 | C-1336, 1339 |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                                                            | C-1361       |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                                               | C-1382, 1389 |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                                                               | C-1412       |
| \$ McKenzie Technology, Fremont, CA 94538, 510-651-2700                                                                   | C-1415       |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000                                                  | C-1421       |

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|---------------------------------------------------------------|----------------------------|
| RDI Elctns., Inc., Mamaroneck, NY 10543, 914-777-7000         | C-1440                     |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832    | C-1548-1549, 1552          |
| \$ Texas Instruments, Connector Systems, Attleboro, MA 02703, | 508-699-5269; 508-699-3450 |

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| Accessories For Electronics, Inc., Baldwin, NY 11510-3593               | 516-546-1751 |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893             | 401-823-5200 |
| † Alpha Products, Inc., Westlake Village, CA 91362                      | 818-889-9304 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                              | 908-925-8000 |
| Assembly Specialists, Chelmsford, MA 01824                              | 508-250-5900 |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 | 602-897-7001 |

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| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                      | 508-222-2202 |
| Autosplice, Inc., San Diego, CA 92121                                                 | 619-535-0077 |
| Azimuth Electronics, Inc., San Clemente, CA 92672                                     | 714-492-6481 |
| \$ Burndy Corporation, An FCI Company, Norwalk, CT 06856                              | 203-838-4444 |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL | 60007        |

|                                                  |                            |
|--------------------------------------------------|----------------------------|
| Connector Corp., Chicago, IL 60646               | 312-539-3108               |
| C-S Electronic Sales, Inc., Frankfurt, IN 46041  | 317-659-1874               |
| Diodes Inc., Chatsworth, CA 91311                | 818-882-4920; 800-821-1178 |
| Douglas Electronics, Inc., San Leandro, CA 94577 | 510-483-8770               |

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| \$ Elpakco, Inc., Lowell, MA 01851                              | 508-453-3000 |
| E-Mark, Inc., Trumbull, CT 06611                                | 203-452-1003 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 | 201-288-4477 |
| ERNI Components, Richmond, VA 23236                             | 804-794-6367 |

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| Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135 | 408-922-9000 |
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| \$† Garry Electronics, WPI, Salem, NJ 08079                     | 609-935-7603 |
| \$ GC-Thorsen, Rockford, IL 61105-1209                          | 815-968-9661 |
| General Electronic Materials Technology, Los Alamitos, CA 90720 | 714-761-5684 |
| \$ Injector Electronics (Woman Owned), Bohemia, NY 11716        | 516-563-3388 |
| ITT Cannon, Santa Ana, CA 92705-5684                            | 714-557-4700 |

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| \$ Jaro Components, Inc., Boca Raton, FL 33487-8295        | 407-241-8600                      |
| \$ Loran Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311; 800-323-5207        |
| Loranger Intl. Corp., Warren, PA 16365                     | 814-723-2250                      |
| † Mark Eylet Inc., AMP, Inc., Wolcott, CT 06716            | 203-756-8847                      |
| Master Electronic Controls, Los Angeles, CA 90025          | 310-452-1336                      |
| \$† 3M-Electronic Products Division, Austin, TX 78726      | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Methode Electronics, Inc., Chicago, IL 60656            | 708-867-9600                      |

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| \$ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008 | 708-392-3500 |
| † Milton Ross Co., Warrington, PA 18976                                          | 215-491-0600 |
| \$ MOLEX, Inc., Lisle, IL 60532                                                  | 708-969-4550 |
| \$ Nepenthe, Inc., Palo Alto, CA 94303                                           | 415-496-6666 |
| \$ The J. M. Ney Company, Bloomfield, CT 06002                                   | 203-242-2281 |
| \$ North American Capacitor Co., Indianapolis, IN 46224                          | 317-273-0090 |
| \$ Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                        | 416-475-9320 |

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| 1-800-456-1875                                           | 215-757-1202 |
| \$ Precicontact, Inc., Langhorne, PA 19047               | 508-295-7444 |
| † Project Resources Inc., Wareham, MA 02571              | 714-646-7700 |
| Raycon Technology, Costa Mesa, CA 92627                  | 201-337-1000 |
| \$ Relay Specialties, Oakland, NJ 07436                  | 812-948-0564 |
| \$ Robinson Nugent, Inc., New Albany, IN 47150           | 914-736-3500 |
| Shokai Far East Ltd., Peekskill, NY 10566                | 714-996-0960 |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670 | 818-914-1926 |
| Sunrise Electronics, Inc., Glendora, CA 91740            | 401-769-2625 |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895      | 612-854-9632 |
| \$ TELTEC, INC., Minneapolis, MN 55425                   | 612-854-9177 |
| \$ TELTEC, INC., Minneapolis, MN 55425                   | 612-854-9177 |

**\$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401**

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| U.S. Terminals Inc., Cincinnati, OH 45243                                         | 803-676-2900               |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342                                  | 513-561-8145               |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                  | 818-365-9661; 800-423-5659 |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 219-287-5941               |

|                                                               |              |
|---------------------------------------------------------------|--------------|
| Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 | 408-452-0797 |
|                                                               | 801-298-5900 |

**Sockets, Disposable Carrier-2100**

|                                                                          |        |
|--------------------------------------------------------------------------|--------|
| Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388                     | C-1258 |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000 | C-1421 |

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|-------------------------------------------------------------------------|--------------|
| \$† Advanced Interconnections Corp., West Warwick, RI 02893             | 401-823-5200 |
| \$ Aries Electronics, Frenchtown, NJ 08825                              | 908-996-6841 |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 | 602-897-7001 |

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| Autosplice, Inc., San Diego, CA 92121                 | 619-535-0077  |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260 | 602-443-1949; |

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| 800-638-3226                       | 508-453-3000  |
| \$ Elpakco, Inc., Lowell, MA 01851 | 201-288-4477; |

|                                                   |              |
|---------------------------------------------------|--------------|
| 800-447-5639                                      | 203-756-8847 |
| † Mark Eylet Inc., AMP, Inc., Wolcott, CT 06716   | 310-452-1336 |
| Master Electronic Controls, Los Angeles, CA 90025 | 510-651-2700 |

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| \$ McKenzie Technology, Fremont, CA 94538         | 1-800-225-5373 Sls. & Prod. Info. |
| 3M-Electronic Products Division, Austin, TX 78726 | 602-921-3000                      |
| \$ Onshore Technology, Tempe, AZ 85281            | 215-757-1202                      |
| \$ Precicontact, Inc., Langhorne, PA 19047        | 1-800-672-6832                    |
| \$ Samtec, Inc., New Albany, IN 47151-1147        | 401-769-2625                      |

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| † Taurus Electronics, Inc., N. Smithfield, RI 02895                            | 803-676-2900 |
| Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401    | 219-287-5941 |
| \$ Wells Electronics, Inc., South Bend, IN 46613                               | 408-452-0797 |
| Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 |              |

**Sockets, Integrated Circuit-2100**

|                                                          |                     |
|----------------------------------------------------------|---------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 | C-1163              |
| \$ Andon Elctns. Corp., Lincoln, RI 02865, 401-333-0388  | C-1256-1259         |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841 | A-1689-1690, C-1265 |

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| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887 | C-1284                     |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260,         | 602-443-1949; 800-638-3226 |

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| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                   | C-1361 |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941 | C-1367 |

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|-------------------------------------------------------------|--------------|
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700 | C-1382, 1389 |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600 | C-1406       |

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| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000 | C-1421 |
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| \$ Philips ECG, North American Philips Co., Williamsport, PA 17701, 717-323-4691 | A-2173 |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                       | C-1548 |

|                                                               |                            |
|---------------------------------------------------------------|----------------------------|
| \$ Texas Instruments, Connector Systems, Attleboro, MA 02703, | 508-699-5269; 508-699-3450 |
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| Accessories For Electronics, Inc., Baldwin, NY 11510-3593   | 516-546-1751                 |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893 | 401-823-5200                 |
| \$ Alpha Dist. Corp., Richfield, OH 44286                   | 216-659-7100; 1-800-628-0841 |
| † Alpha Products, Inc., Westlake Village, CA 91362          | 818-889-9304                 |
| Assembly Specialists, Chelmsford, MA 01824                  | 508-250-5900                 |

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| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 | 602-897-7001 |
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| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703 | 508-222-2202 |
| Augat/RDI, Carol Stream, IL 60188                                | 708-682-4100 |
| Autosplice, Inc., San Diego, CA 92121                            | 619-535-0077 |
| † Azimuth Electronics, Inc., San Clemente, CA 92672              | 714-492-6481 |
| Berg Electronics, Camp Hill, PA 17011                            | 800-237-2374 |
| \$ Burndy Corporation, An FCI Company, Norwalk, CT 06856         | 203-838-4444 |
| Calex Mfg. Co., Inc., Concord, CA 94520                          | 510-687-4411 |

|                                                                                       |                                                                     |
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| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL | 60007                                                               |
| 708-981-6000                                                                          | C-S Electronic Sales, Inc., Frankfurt, IN 46041                     |
| 317-659-1874                                                                          | Curtis Industries, Milwaukee, WI 53234-3925                         |
| 414-649-4200                                                                          | Douglas Electronics, Inc., San Leandro, CA 94577                    |
| 510-483-8770                                                                          | E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512 |
| 800-368-0880                                                                          |                                                                     |



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| EDA Inc., Div. of Connector, La Habra, CA 90631                                   | 213-697-7151                      |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051                              | 408-982-0660                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                   | 201-288-4477;                     |
|                                                                                   | 800-447-5639                      |
| \$† Garry Electronics, WPI, Salem, NJ 08079                                       | 609-935-7603                      |
| General Electronic Materials Technology, Los Alamitos, CA 90720                   | 714-761-5684                      |
| \$ Injectorall Electronics (Woman Owned), Bohemia, NY 11716                       | 516-563-3388                      |
| International Microelectronics, Arlington, TX 76003                               | 817-473-1730                      |
| \$ TTT Cannon, Santa Ana, CA 92705-5684                                           | 714-557-4700                      |
| Master Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                  | 203-756-8847                      |
| Master Electronic Controls, Los Angeles, CA 90025                                 | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                         | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                              | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Mhtronics, Inc., Vernon Hills, IL 60061                                        | 708-913-9566                      |
| Milton Ross Co., Warrington, PA 18976                                             | 215-491-0600                      |
| \$ MOLEX, Inc., Lisle, IL 60532                                                   | 708-969-4550                      |
| Mouser Electronics, Santee, CA 92071                                              | 800-346-6873                      |
| Mouser Electronics, Mansfield, TX 76063                                           | 800-346-6873                      |
| Mouser Electronics, Gilroy, CA 95020                                              | 800-346-6873                      |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                | 508-588-6110                      |
| \$ Nepenthe, Inc., Palo Alto, CA 94303                                            | 415-496-6666                      |
| The J. M. Ney Company, Bloomfield, CT 06002                                       | 203-242-2281                      |
| \$ Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                         | 416-475-9320;                     |
|                                                                                   | 1-800-456-1875                    |
| \$ NTE Electronics, Inc., Bloomfield, NJ 07003                                    | 201-748-5099                      |
| \$ PCD, Peabody, MA 01960                                                         | 508-532-8800                      |
| \$† Precicontact, Inc., Langhorne, PA 19047                                       | 215-757-1202                      |
| † Project Resources Inc., Wareham, MA 02571                                       | 508-295-7444                      |
| Raycon Technology, Costa Mesa, CA 92627                                           | 714-646-7700                      |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                    | 812-948-0564                      |
| \$ SMK Electronics Corporation, U.S.A., Placentia, CA 92670                       | 714-996-0960                      |
| Staffall Inc., Cranston, RI 02910                                                 | 401-461-5554                      |
| \$ Taurus Electronics, Inc., N. Smithfield, RI 02895                              | 401-769-2625                      |
| \$ TELTEC, INC., Minneapolis, MN 55425                                            | 612-854-9632                      |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                            | 612-854-9177                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401    | 803-676-2900                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                         | 513-561-8145                      |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                  | 219-287-5941                      |
| \$ West Electronic Sales Team, Huntington Beach, CA 92647                         | 714-375-6500;                     |
|                                                                                   | 310-495-5569                      |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 408-452-0797                      |

## Sockets, International-2100

|                                                                                           |                                                       |
|-------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Ault, Incorporated, Minneapolis, MN 55428, 612-493-1900                                   | D•1609                                                |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                       | C•1353                                                |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                | C•1398                                                |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                               | C•1405-1406, D•1818-1820, 1824, 1827                  |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                 | C•1426-1431, 1433-1436, 1438, 1793-1794, 1798, D•2291 |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                | C•1450-1452, 1454                                     |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                    | C•1482                                                |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                   | 602-897-7001                                          |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007  | 708-981-6000                                          |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                           | 201-288-4477;                                         |
|                                                                                           | 800-447-5639                                          |
| Master Electronic Controls, Los Angeles, CA 90025                                         | 310-452-1336                                          |
| \$ McKenzie Technology, Fremont, CA 94538                                                 | 510-651-2700                                          |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722                                          |
| Precicontact, Inc., Langhorne, PA 19047                                                   | 215-757-1202                                          |
| Preh Electronic Industries, Inc., Lake Zurich, IL 60047-2578                              | 708-438-4000                                          |
| \$ Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300                                          |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166                                          |

## Sockets, Lamp & Lamp Assemblies-2460 — See Vol. B

## Sockets, Leadless Carrier-2100

|                                                                                                        |                            |
|--------------------------------------------------------------------------------------------------------|----------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                               | C•1163                     |
| † Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                                                 | C•1257                     |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                               | C•1265                     |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949; 800-638-3226                      | C•1310                     |
| Genisico Electronics, A Division of GTC, Anaheim, CA 92805, 714-563-4300                               | B•1151                     |
| Advanced Connector Technology, Ventura, CA 93003                                                       | 805-644-9990               |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893                                            | 401-823-5200               |
| † Alpha Products, Inc., Westlake Village, CA 91362                                                     | 818-889-9304               |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 602-897-7001               |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                       | 508-222-2202               |
| † Azimuth Electronics, Inc., San Clemente, CA 92672                                                    | 714-492-6481               |
| E-Mark, Inc., Trumbull, CT 06611                                                                       | 203-452-1003               |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051                                                   | 408-982-0660               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477;              |
|                                                                                                        | 800-447-5639               |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                        | 714-761-5684               |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958               |
| \$ J.H. America, Inc., JBT International, Inc., Torrance, CA 90501                                     | 310-328-0051               |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125                                                   | 408-295-1110; 800-544-6941 |

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| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                        | 708-398-5311; 800-323-5207        |
| Loranger Intl. Corp., Warren, PA 16365                                            | 814-723-2250                      |
| Master Electronic Controls, Los Angeles, CA 90025                                 | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                         | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                              | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008  | 708-392-3500                      |
| † Milton Ross Co., Warrington, PA 18976                                           | 215-491-0600                      |
| The J. M. Ney Company, Bloomfield, CT 06002                                       | 203-242-2281                      |
| Precicontact, Inc., Langhorne, PA 19047                                           | 215-757-1202                      |
| Raycon Technology, Costa Mesa, CA 92627                                           | 714-646-7700                      |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                    | 812-948-0564                      |
| Shokai Far East Ltd., Peekskill, NY 10566                                         | 914-736-5500                      |
| Sunrise Electronics, Inc., Glendora, CA 91740                                     | 818-914-1926                      |
| \$ TELTEC, INC., Minneapolis, MN 55425                                            | 612-854-9632                      |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                            | 612-854-9177                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401    | 803-676-2900                      |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                  | 219-287-5941                      |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 408-452-0797                      |

## Sockets, LIF & ZIF-2100

|                                                                                                        |                                   |
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| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                               | C•1163                            |
| Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                                                   | C•1257                            |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                               | A•1690, C•1260, 1262, 1265        |
| Hypertronics Corp., Hudson, MA 01749, 508-568-0451; 800-225-9228                                       | C•1348                            |
| \$ LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                                         | C•1382                            |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                                             | C•1552-1553                       |
| Teka Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110                 | C•1484-1485, 1488                 |
| \$ Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450               | C•1493-1498                       |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                              | 516-546-1751                      |
| Advanced Connector Technology, Ventura, CA 93003                                                       | 805-644-9990                      |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893                                            | 401-823-5200                      |
| Assembly Specialists, Chelmsford, MA 01824                                                             | 508-250-5900                      |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                                | 602-897-7001                      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                       | 508-222-2202                      |
| Azimuth Electronics, Inc., San Clemente, CA 92672                                                      | 714-492-6481                      |
| \$ Elpakco, Inc., Lowell, MA 01851                                                                     | 508-453-3000                      |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                        | 201-288-4477;                     |
|                                                                                                        | 800-447-5639                      |
| \$† Garry Electronics, WPI, Salem, NJ 08079                                                            | 609-935-7603                      |
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| Master Electronic Controls, Los Angeles, CA 90025                                                      | 310-452-1336                      |
| \$ McKenzie Technology, Fremont, CA 94538                                                              | 510-651-2700                      |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| \$ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008                       | 708-392-3500                      |
| Mhtronics, Inc., Vernon Hills, IL 60061                                                                | 708-913-9566                      |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                             | 516-922-6000                      |
| † Milton Ross Co., Warrington, PA 18976                                                                | 215-491-0600                      |
| \$ Nepenthe, Inc., Palo Alto, CA 94303                                                                 | 415-496-6666                      |
| Precicontact, Inc., Langhorne, PA 19047                                                                | 215-757-1202                      |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         | 803-676-2900                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                                              | 513-561-8145                      |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                                       | 219-287-5941                      |

## Sockets, Miniature & Subminiature — See Sockets, Diode (Vol. C)

## Sockets, Pin Grid Array-2100

|                                                                                          |                     |
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| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                 | C•1163              |
| † Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                                   | C•1256-1258         |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                 | A•1689-1691, C•1265 |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                           | C•1284              |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949; 800-638-3226        | C•1310              |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                       | C•1321              |
| Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941            | C•1367              |
| \$ LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                           | C•1382, 1389        |
| \$ McKenzie Technology, Fremont, CA 94538, 510-651-2700                                  | C•1415              |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000                 | C•1421              |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                               | C•1553              |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                                  | C•1460              |
| \$ Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450 | C•1493-1498         |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                | 516-546-1751        |
| Advanced Connector Technology, Ventura, CA 93003                                         | 805-644-9990        |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893                              | 401-823-5200        |
| Alpha Products, Inc., Westlake Village, CA 91362                                         | 818-889-9304        |
| Assembly Specialists, Chelmsford, MA 01824                                               | 508-250-5900        |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                  | 602-897-7001        |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                         | 508-222-2202        |
| Autosplac, Inc., San Diego, CA 92121                                                     | 619-535-0077        |
| \$ Azimuth Electronics, Inc., San Clemente, CA 92672                                     | 714-492-6481        |
| Burdry Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444        |
| DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2                                     | 416-470-1346        |
| Electronic Precision Technology, Inc., Cambridge, MA 02140                               | 617-661-2454        |
| \$ Elpakco, Inc., Lowell, MA 01851                                                       | 508-453-3000        |



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|-------------------------------------------------------------------------------------------------------|-----------------------------------|
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                       | 201-288-4477;<br>800-447-5639     |
| † Garry Electronics, WPI, Salem, NJ 08079                                                             | 609-935-7603                      |
| General Electronic Materials Technology, Los Alamitos, CA 90720                                       | 714-761-5684                      |
| § Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                      |
| § Ironwood Elctms, Inc., St. Paul, MN 55121                                                           | 612-431-7025                      |
| † Keystone Electronics Corp., Astoria, NY 1105-2017                                                   | 718-956-8900                      |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311                      |
| † Mark Eylet Inc., AMP, Inc., Wolcott, CT 06716                                                       | 203-756-8847                      |
| Master Electronic Controls, Los Angeles, CA 90025                                                     | 310-452-1336                      |
| § 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 Sls. & Prod. Info. |
| † Methode Electronics, Inc., Chicago, IL 60656                                                        | 708-867-9600                      |
| § Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008                       |                                   |
|                                                                                                       | 708-392-3500                      |
| § Mthronics, Inc., Vernon Hills, IL 60061                                                             | 708-913-9566                      |
| † Milton Ross Co., Warrington, PA 18976                                                               | 215-491-0600                      |
| § MOLEX, Inc., Lisle, IL 60532                                                                        | 708-969-4550                      |
| § Nepenthe, Inc., Palo Alto, CA 94303                                                                 | 415-496-6666                      |
| § The J. M. Ney Company, Bloomfield, CT 06002                                                         | 203-242-2281                      |
| § Onshore Technology, Tempe, AZ 85281                                                                 | 602-921-3000                      |
| Power Dynamics Inc., West Orange, NJ 07052                                                            | 201-736-5722                      |
| § Precicontact, Inc., Langhorne, PA 19047                                                             | 215-757-1202                      |
| † Project Resources Inc., Wareham, MA 02571                                                           | 508-295-7444                      |
| Raycon Technology, Costa Mesa, CA 92627                                                               | 714-646-7700                      |
| § Robinson Nugent, Inc., New Albany, IN 47150                                                         | 812-948-0564                      |
| Sunrise Electronics, Inc., Glendora, CA 91740                                                         | 818-914-1926                      |
| † Taurus Electronics, Inc., N. Smithfield, RI 02895                                                   | 401-769-2625                      |
| § TELTEC, INC., Minneapolis, MN 55425                                                                 | 612-854-9632                      |
| § TELTEC, Inc., Minneapolis, MN 55425                                                                 | 612-854-9177                      |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         |                                   |
|                                                                                                       | 803-676-2900                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                                             | 513-561-8145                      |
| § Wells Electronics, Inc., South Bend, IN 46613                                                       | 219-287-5941                      |
| § West Electronic Sales Team, Huntington Beach, CA 92647                                              | 714-375-6500;                     |
|                                                                                                       | 310-495-5569                      |
| § Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112                      | 408-452-0797                      |

## Sockets, Power (Receptacles)-2100

|                                                                                          |                               |
|------------------------------------------------------------------------------------------|-------------------------------|
| Connectronics Corp., Toledo, OH 43607, 419-537-0020                                      | C*1293                        |
| Corcom, Inc., Libertyville, IL 60048, 708-680-7400                                       | C*1300,1302                   |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                  |                               |
|                                                                                          | C*1319                        |
| W.W. Fischer Electronic Connectors, Atlanta, GA 30338, 1-800-551-0121                    |                               |
|                                                                                          | C*1323                        |
| § GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                       | C*1340                        |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                      | C*1353                        |
| LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366)               |                               |
|                                                                                          | C*1369                        |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                              | C*1382,1386                   |
| LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                              | C*1412                        |
| Multi-Contact USA, Santa Rosa, CA 95403, 707-575-7575                                    | C*1422-1424                   |
| Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097                                |                               |
|                                                                                          | C*1429,1432-1433,1437, D*2291 |
| RDI Elctms., Inc., Mamaroneck, NY 10543, 914-777-7000                                    | C*1440                        |
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                | A*1606, C*1450-1454           |
| Shogy International Corp., Great Neck, NY 11021-4799, 516-466-0911                       | A*2534                        |
| Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                             | C*1463-1467                   |
| Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630, 312-792-2700                   |                               |
|                                                                                          | C*1477,1480,1482              |
| § Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                                  | C*1646                        |
| Todd Systems, Inc., Yonkers, NY 10701, 914-963-3400                                      | A*2584-2585                   |
| AMP, Harrisburg, PA 17105                                                                | 717-564-0100;800-522-6752     |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                         | 508-222-2202                  |
| † Azimuth Electronics, Inc., San Clemente, CA 92672                                      | 714-492-6481                  |
| Berg Electronics, Camp Hill, PA 17011                                                    | 800-237-2374                  |
| † Brooks Power Systems, Bensalem, PA 19020                                               | 215-244-0264;1-800-523-1551   |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                  |
| † Eagle Electric Mfg. Co. Inc., Long Island City, NY 11101                               | 718-937-8000                  |
| § EBY Electro Inc., Rockville Centre, NY 11571-1100                                      | 516-536-6000                  |
| § Eby Electro Inc., Rockville Centre, NY 11571-1100                                      | 516-536-6000                  |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477;<br>800-447-5639 |
|                                                                                          | 408-441-9614                  |
| IMC Power Sources, San Jose, CA 95112                                                    | 714-973-1800                  |
| Marway Prods. Inc., Santa Ana, CA 92703                                                  | 714-973-1800                  |
| Master Electronic Controls, Los Angeles, CA 90025                                        | 310-452-1336                  |
| § MOLEX, Inc., Lisle, IL 60532                                                           | 708-969-4550                  |
| ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012                            | 805-484-0540                  |
| Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                | 909-945-1365                  |
| Perma Power Elctms., Niles, IL 60714                                                     | 312-763-0763                  |
| § Power Dynamics Inc., West Orange, NJ 07052                                             | 201-736-5722                  |
| § Qualtek Electronics Corp., Mentor, OH 44060                                            | 216-951-3300                  |
| § Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166                  |
| † The Wiremold Company, W. Hartford, CT 06110                                            | 203-233-6251                  |

## Sockets, Programmable-2100

|                                                                         |                          |
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| § Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                 | A*1690                   |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454 |                          |
|                                                                         | C*1320                   |
| Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660         | C*1321                   |
| § McKenzie Technology, Fremont, CA 94538, 510-651-2700                  | C*1415                   |
| Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                 |                          |
|                                                                         | A*1606-1607, C*1453-1454 |

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| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                     | 201-288-4477;<br>800-447-5639 |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                  |

## Sockets, Relay-2100

|                                                                                                  |                             |
|--------------------------------------------------------------------------------------------------|-----------------------------|
| § AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752                                           | C*1163                      |
| § Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                          | A*1689, C*1264-1265         |
| Bosch, Robert, Corp., Broadview, IL 60153, 708-865-5301                                          | B*1435                      |
| † Connector Corp., Chicago, IL 60646, 312-539-3108                                               | C*1292                      |
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735, 516-752-1950 | C*1527                      |
| § IDEC Corporation, Sunnyvale, CA 94089-2211, 408-747-0550                                       | B*1522-1523                 |
| † Leach Corporation, Buena Park, CA 90622-5032, 714-739-0770                                     | B*1547-1548                 |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564                        |                             |
|                                                                                                  | C*1398                      |
| Master Electronic Controls, Los Angeles, CA 90025, 310-452-1336                                  | B*1558-1559                 |
| § Potter & Brumfield, A Siemens Co., Princeton, IN 47671-0001, 812-386-1000                      |                             |
|                                                                                                  | B*1577-1578,1580,1582       |
| § Alarm Controls Corporation, Deer Park, NY 11729                                                | 516-586-4220                |
| § Allied Controls Incorporated, Waterbury, CT 06705-3827                                         | 203-757-4200                |
| § American Zettler, Aliso Viejo, CA 92656                                                        | 714-831-5000                |
| † Arnel Electronics, N. Bergen, NJ 07047                                                         | 201-869-4201                |
| § Aromat Corp., Matsushita Electrical Works Ltd., New Providence, NJ 07974                       | 908-454-3550                |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                                 | 508-222-2202                |
| § Augat/RDI, Carol Stream, IL 60188                                                              | 708-682-4100                |
| Autosplice, Inc., San Diego, CA 92121                                                            | 619-535-0077                |
| Berg Electronics, Camp Hill, PA 17011                                                            | 800-237-2374                |
| Brill Electronics, Los Angeles, CA 90025                                                         | 310-452-8002                |
| § Burdy Corporation, An FCI Company, Norwalk, CT 06856                                           | 203-838-4444                |
| Cardinal Control Co., Kensington, CT 06037                                                       | 203-828-6379                |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007       | 708-981-6000                |
| § C.P. Clare Corp., Chicago, IL 60645                                                            | 312-262-7700                |
| † Computer Components, Inc., East Granby, CT 06026                                               | 203-653-9909                |
| § Curtis Industries, Milwaukee, WI 53234-3925                                                    | 414-649-4200                |
| § Custom Connector, Cleveland, OH 44114                                                          | 216-241-1679                |
| † DAN-L Inc., E. Northport, NY 11731                                                             | 516-757-8000                |
| § Deutsch Relays, Inc., East Northport, NY 11731                                                 | 516-499-6000                |
| § Diversified Electronics, Inc., Evansville, IN 47706-1140                                       | 812-426-2806                |
| § Eagle Signal Controls, Mark IV Industries, Inc., Austin, TX 78753                              | 512-837-8300                |
| † EBY Company, Philadelphia, PA 19124                                                            | 215-537-4700                |
| § Electromatic Controls Corp., Hoffman Estates, IL 60195-2010                                    | 708-882-5757                |
| † Garry Electronics, WPI, Salem, NJ 08079                                                        | 609-935-7603                |
| § Inmark Corp., Norwalk, CT 06850                                                                | 203-866-8474                |
| International Microelectronics, Arlington, TX 76003                                              | 817-473-1730                |
| § ITT Components, ITT Corporation, Irvine, CA 92718                                              | 714-727-3001                |
| § Line Electric Products, Gastonbury, CT 06033                                                   | 203-659-3573;1-800-331-1137 |
| Lumberg, Inc., Richmond, VA 23236                                                                | 804-379-2010                |
| § Magnecraft Electric Co., Northbrook, IL 60062-5376                                             | 708-564-5800                |
| § McKenzie Technology, Fremont, CA 94538                                                         | 510-651-2700                |
| § Methode Electronics, Inc., Chicago, IL 60656                                                   | 708-867-9600                |
| § Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                        | 516-922-6000                |
| Modor Technical Products Inc., Tampa, FL 33626                                                   | 813-855-5736                |
| Mouser Electronics, Santee, CA 92071                                                             | 800-346-6873                |
| Mouser Electronics, Mansfield, TX 76063                                                          | 800-346-6873                |
| Mouser Electronics, Gilroy, CA 95020                                                             | 800-346-6873                |
| § Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                         | 416-475-9320;               |
|                                                                                                  | 1-800-456-1875              |
| § Omron Electronics, Inc., Control Components Division, Schaumburg, IL 60173                     | 708-843-7900;1-800-626-6766 |
| † PCD, Peabody, MA 01960                                                                         | 508-532-8800                |
| § Phoenix Contact Inc., Harrisburg, PA 17111                                                     | 717-944-1300                |
| § Relay Specialties, Oakland, NJ 07436                                                           | 201-337-1000                |
| § Robinson Nugent, Inc., New Albany, IN 47150                                                    | 812-948-0564                |
| § Schrack Components, Inc., Ft. Lauderdale, FL 33309                                             | 305-733-3330                |
| Shokai Far East Ltd., Peekskill, NY 10566                                                        | 914-736-3500                |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                                      | 814-724-6440                |
| § Square D Co., Palatine, IL 60067                                                               | 708-397-2600                |
| § Struthers-Dunn, Inc. and Hi-G Co., Inc., Pitman, NJ 08071-0901                                 | 609-589-7500                |
| § Switches Unlimited, Inc., Woodside, NY 11777                                                   | 718-478-5000;800-221-0487   |
| § Time Mark Corp., Tulsa, OK 74116                                                               | 918-438-1220                |
| § TURCK Inc., Minneapolis, MN 55441-2656                                                         | 612-553-9224;1-800-328-0580 |
| U.S. Terminals Inc., Cincinnati, OH 45243                                                        | 513-561-8145                |
| § Viking Electronics, Inc., Chatsworth, CA 91311                                                 | 818-341-4330                |
| § Weidmuller Inc., Richmond, VA 23236                                                            | 804-794-2877                |
| § Wilkerson Instrument Company Inc., Lakeland, FL 33811                                          | 813-646-3909                |

## Sockets, SIMM-2100

|                                                                                |              |
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| § AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752                         | C*1163       |
| § Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                         | C*1256       |
| § Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                        | C*1265       |
| Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                    | C*1285       |
| § Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110;800-544-6941 |              |
|                                                                                | C*1367,1757  |
| § LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                  | C*1382,1388  |
| Advanced Connector Technology, Ventura, CA 93003                               | 805-644-9990 |
| Advanced Interconnections Corp., West Warwick, RI 02893                        | 401-823-5200 |
| Assmann Electronics Inc., Assmann Electronics GMBH, Tempe, AZ 85283            | 602-897-7001 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703               | 508-222-2202 |
| Autosplice, Inc., San Diego, CA 92121                                          | 619-535-0077 |
| Burdy Corporation, An FCI Company, Norwalk, CT 06856                           | 203-838-4444 |
| EDA Inc., Div. of Connector, La Habra, CA 90631                                | 213-697-7151 |
| E-Mark Inc., Trumbull, CT 06611                                                | 203-452-1003 |



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|-----------------------------------------------------------------------------------|----------------|--------------------|
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                   | 201-288-4477;  |                    |
|                                                                                   | 800-447-5639   |                    |
| General Electronic Materials Technology, Los Alamitos, CA 90720                   | 714-761-5684   |                    |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                        | 708-398-5311;  | 800-323-5207       |
| Master Electronic Controls, Los Angeles, CA 90025                                 |                | 310-452-1336       |
| \$ 3M-Electronic Products Division, Austin, TX 78726                              | 1-800-225-5373 | Sls. & Prod. Info. |
| \$† Methode Electronics, Inc., Chicago, IL 60656                                  |                | 708-867-9600       |
| Mhtronics, Inc., Vernon Hills, IL 60061                                           |                | 708-913-9566       |
| \$ Onshore Technology, Tempe, AZ 85281                                            |                | 602-921-3000       |
| Raycon Technology, Costa Mesa, CA 92627                                           |                | 714-646-7700       |
| Shokai Far East Ltd., Peekskill, NY 10566                                         |                | 914-736-3500       |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                            |                | 612-854-9632       |
| U.S. Terminals Inc., Cincinnati, OH 45243                                         |                | 513-561-8145       |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 |                |                    |
|                                                                                   |                | 408-452-0797       |

## Sockets, SIP-2100

|                                                                                       |                                |                   |
|---------------------------------------------------------------------------------------|--------------------------------|-------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                              |                                | C-1163            |
| \$ Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                               |                                | C-1256-1257, 1259 |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                              |                                |                   |
|                                                                                       | A-1689-1690, C-1260, 1262-1263 |                   |
| \$ Circuit Assembly Corp., Irvine, CA 92718-2703, 714-855-7887                        |                                | C-1283            |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                        |                                | C-1361            |
| Shokai Far East Ltd., Peekskill, NY 10566, 914-736-3500                               |                                | C-1460            |
| Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450 |                                | C-1493-1498       |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                             |                                | 516-546-1751      |
| Advanced Connector Technology, Ventura, CA 93003                                      |                                | 805-644-9990      |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893                           |                                | 401-823-5200      |
| \$ Alpha Products, Inc., Westlake Village, CA 91362                                   |                                | 818-889-9304      |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283               |                                |                   |

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|-----------------------------------------------------------------------------------|----------------|--------------------|
|                                                                                   | 602-897-7001   |                    |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                  | 508-222-2202   |                    |
| Autosipco, Inc., San Diego, CA 92121                                              | 619-535-0077   |                    |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260                             | 602-443-1949;  |                    |
|                                                                                   | 800-638-3226   |                    |
| \$ Eipakco, Inc., Lowell, MA 01851                                                | 508-453-3000   |                    |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                   | 201-288-4477;  |                    |
|                                                                                   | 800-447-5639   |                    |
| \$† Garry Electronics, WPI, Salem, NJ 08079                                       | 609-935-7603   |                    |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                        | 708-398-5311;  | 800-323-5207       |
| Loranger Intl. Corp., Warren, PA 16365                                            |                | 814-723-2250       |
| \$ Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                 |                | 203-756-8847       |
| Master Electronic Controls, Los Angeles, CA 90025                                 |                | 310-452-1336       |
| \$ McKenzie Technology, Fremont, CA 94538                                         |                | 510-651-2700       |
| \$ 3M-Electronic Products Division, Austin, TX 78726                              | 1-800-225-5373 | Sls. & Prod. Info. |
| \$† Methode Electronics, Inc., Chicago, IL 60656                                  |                | 708-867-9600       |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                        |                | 516-922-6000       |
| \$ Nepenthe, Inc., Palo Alto, CA 94303                                            |                | 415-496-6666       |
| \$ Onshore Technology, Tempe, AZ 85281                                            |                | 602-921-3000       |
| \$ Precicontact, Inc., Langhorne, PA 19047                                        |                | 215-757-1202       |
| Raycon Technology, Costa Mesa, CA 92627                                           |                | 714-646-7700       |
| \$ Relay Specialties, Oakland, NJ 07436                                           |                | 201-337-1000       |
| \$ Robinson Nugent, Inc., New Albany, IN 47150                                    |                | 812-948-0564       |
| \$ Samtec, Inc., New Albany, IN 47151-1147                                        |                | 1-800-672-6832     |
| \$ Taurus Electronics, Inc., N. Smithfield, RI 02895                              |                | 401-769-2625       |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401    |                |                    |
|                                                                                   | 803-676-2900   |                    |
| U.S. Terminals Inc., Cincinnati, OH 45243                                         |                | 513-561-8145       |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                  |                | 219-287-5941       |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 |                |                    |
|                                                                                   |                | 408-452-0797       |

## Sockets, Surface Mount-2100

|                                                                                  |  |                     |
|----------------------------------------------------------------------------------|--|---------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                         |  | C-1163              |
| \$ Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                          |  | C-1256-1257, 1259   |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                         |  | A-1689-1691, C-1262 |
| \$ Kycon Cable & Connector, Inc., San Jose, CA 95125, 408-295-1110; 800-544-6941 |  |                     |
|                                                                                  |  | C-1757              |
| Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                               |  | A-1245-1247         |
| \$ Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000         |  |                     |
|                                                                                  |  | C-1421              |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                       |  | C-1548, 1552        |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                       |  | B-1386, 1803        |
| \$† Specialty Electronics, Inc., Landrum, SC 29356, 803-457-3824                 |  |                     |

|                                                                                            |                   |                            |
|--------------------------------------------------------------------------------------------|-------------------|----------------------------|
|                                                                                            | C-1463-1465, 1467 |                            |
| \$ Tekra Interconnection Systems, Interplex Industries, Providence, RI 02907, 401-785-4110 |                   | C-1485, 1487-1488          |
| \$ Visual Communications Co., Inc., San Diego, CA 92126, 619-549-6900                      |                   |                            |
|                                                                                            | B-1196-1197       |                            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                  |                   | 516-546-1751               |
| \$† Advanced Interconnections Corp., West Warwick, RI 02893                                |                   | 401-823-5200               |
| Aromat Corp., Matsushita Electrical Works Ltd., New Providence, NJ 07974                   |                   |                            |
|                                                                                            | 908-464-3550      |                            |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                           |                   | 508-222-2202               |
| Autosipco, Inc., San Diego, CA 92121                                                       |                   | 619-535-0077               |
| \$ Azimuth Electronics, Inc., San Clemente, CA 92672                                       |                   | 714-492-6481               |
| \$ C-S Electronic Sales, Inc., Frankfurt, IN 46041                                         |                   | 317-659-1874               |
| Curtis Industries, Milwaukee, WI 53234-3925                                                |                   | 414-649-4200               |
| \$† Deutsch Relays, Inc., East Northport, NY 11731                                         |                   | 516-499-6000               |
| Elastomeric Technologies, Inc., Hattboro, PA 19040                                         |                   | 215-672-0787; 215-672-4741 |
| \$ Eipakco, Inc., Lowell, MA 01851                                                         |                   | 508-453-3000               |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051                                       |                   | 408-982-0660               |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            |                   | 201-288-4477;              |
|                                                                                            |                   | 800-447-5639               |

|                                                                                                        |                |                    |
|--------------------------------------------------------------------------------------------------------|----------------|--------------------|
| \$ Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 |                | 805-522-7958       |
| International Configurations, Inc., Enfield, CT 06082                                                  |                | 203-749-6380       |
| \$ Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                             | 708-398-5311;  | 800-323-5207       |
| Master Electronic Controls, Los Angeles, CA 90025                                                      |                | 310-452-1336       |
| \$ McKenzie Technology, Fremont, CA 94538                                                              |                | 510-651-2700       |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                                   | 1-800-225-5373 | Sls. & Prod. Info. |
| \$† Methode Electronics, Inc., Chicago, IL 60656                                                       |                | 708-867-9600       |
| \$ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008                       |                |                    |
|                                                                                                        |                | 708-392-3500       |
| Milton Ross Co., Warrington, PA 18976                                                                  |                | 215-491-0600       |
| Modor Technical Products Inc., Tampa, FL 33626                                                         |                | 813-855-5736       |
| \$ Nepenthe, Inc., Palo Alto, CA 94303                                                                 |                | 415-496-6666       |
| The J. M. Ney Company, Bloomfield, CT 06002                                                            |                | 203-242-2281       |
| \$ Onshore Technology, Tempe, AZ 85281                                                                 |                | 602-921-3000       |
| \$ Power Dynamics Inc., West Orange, NJ 07052                                                          |                | 201-736-5722       |
| \$ Precicontact, Inc., Langhorne, PA 19047                                                             |                | 215-757-1202       |
| Raycon Technology, Costa Mesa, CA 92627                                                                |                | 714-646-7700       |
| Sunrise Electronics, Inc., Glendora, CA 91740                                                          |                | 818-914-1926       |
| \$ Taurus Electronics, Inc., N. Smithfield, RI 02895                                                   |                | 401-769-2625       |
| \$ TELTEC, Inc., Minneapolis, MN 55425                                                                 |                | 612-854-9632       |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                         |                |                    |
|                                                                                                        |                | 803-676-2900       |
| \$ Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816              |                | 908-238-1166       |
| \$ Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112                      |                |                    |
|                                                                                                        |                | 408-452-0797       |

## Sockets, Test-2100

|                                                                                             |                |                    |
|---------------------------------------------------------------------------------------------|----------------|--------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                    |                | C-1163             |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                    |                | A-1689, C-1260     |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454                     |                |                    |
|                                                                                             |                | C-1320             |
| \$ Emulation Technology, Inc., Santa Clara, CA 95051, 408-982-0660                          |                | C-1321             |
| \$ Richard Hirschmann of America Inc., Riverdale, NJ 07457, 201-835-5002                    |                |                    |
|                                                                                             |                | C-1347             |
| \$ Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                                  |                | C-1451, 1455       |
| \$† Texas Instruments, Connector Systems, Attleboro, MA 02703, 508-699-5269; 508-699-3450   |                | C-1493-1498        |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                            |                | 508-222-2202       |
| Azimuth Electronics, Inc., San Clemente, CA 92672                                           |                | 714-492-6481       |
| Berg Electronics, Camp Hill, PA 17011                                                       |                | 800-237-2374       |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 |                | 708-981-6000       |
| \$ Concord Electronics Corporation, New York, NY 10012                                      |                | 1-212-777-6571     |
| ELMA Electronic Inc., Fremont, CA 94538                                                     |                | 510-656-3400       |
| E-Mark, Inc., Trumbull, CT 06611                                                            |                | 203-452-1003       |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                             |                | 201-288-4477;      |
|                                                                                             |                | 800-447-5639       |
| E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                   |                | 818-446-6175       |
| \$† Garry Electronics, WPI, Salem, NJ 08079                                                 |                | 609-935-7603       |
| \$ Global Specialties, Interplex Electronics, Inc., New Haven, CT 06509                     |                | 203-624-3103       |
| \$ Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451;  | 800-225-9228       |
| \$ Interconnect Devices, Inc., Kansas City, KS 66106                                        |                | 913-342-5544       |
| ITF Corp., Buford, GA 30518                                                                 |                | 404-945-3844       |
| \$ ITT Pomona Electronics, Pomona, CA 91766                                                 |                | 909-469-2900       |
| Loranger Intl. Corp., Warren, PA 16365                                                      |                | 814-723-2250       |
| Master Electronic Controls, Los Angeles, CA 90025                                           |                | 310-452-1336       |
| \$ McKenzie Technology, Fremont, CA 94538                                                   |                | 510-651-2700       |
| \$ 3M-Electronic Products Division, Austin, TX 78726                                        | 1-800-225-5373 | Sls. & Prod. Info. |
| \$† Milton Ross Co., Warrington, PA 18976                                                   |                | 215-491-0600       |
| \$ Nepenthe, Inc., Palo Alto, CA 94303                                                      |                | 415-496-6666       |
| The J. M. Ney Company, Bloomfield, CT 06002                                                 |                | 203-242-2281       |
| \$† Oxley Inc., Branford, CT 06405                                                          |                | 203-488-1033       |
| \$ PCD, Peabody, MA 01960                                                                   |                | 508-532-8800       |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                               |                | 717-944-1300       |
| Precicontact, Inc., Langhorne, PA 19047                                                     |                | 215-757-1202       |
| Robinson Nugent, Inc., New Albany, IN 47150                                                 |                | 812-948-0564       |
| \$ Rye Industries, Inc., Fuquay-Varina, NC 27526                                            | 919-557-0511;  | 800-626-1511       |
| Sunrise Electronics, Inc., Glendora, CA 91740                                               |                | 818-914-1926       |
| Texas Instrs., Matls. & Controls Grp., Attleboro, MA 02703                                  |                | 508-699-3800       |
| \$ Wells Electronics, Inc., South Bend, IN 46613                                            |                | 219-287-5941       |
| \$ "World" Test Systems, Inc., Waynesboro, VA 22980                                         |                | 703-949-6753       |
| Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112              |                |                    |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                             |                | 408-452-0797       |

## Sockets, Transistor-2100

|                                                                                             |  |                   |
|---------------------------------------------------------------------------------------------|--|-------------------|
| \$ Andon Elctms. Corp., Lincoln, RI 02865, 401-333-0388                                     |  | C-1256            |
| \$ Aries Electronics, Frenchtown, NJ 08825, 908-996-6841                                    |  | C-1264            |
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                      |  |                   |
|                                                                                             |  | C-1540            |
| \$† Connector Corp., Chicago, IL 60646, 312-539-3108                                        |  | C-1292            |
| Grayhill Inc., La Grange, IL 60525, 708-354-1040                                            |  | C-1341            |
| \$ Philips ECG, North American Philips Co., Williamsport, PA 17701, 717-323-4691            |  |                   |
|                                                                                             |  | A-2173            |
| \$ Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                                  |  | C-1548, 1552-1553 |
| \$ Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321                                    |  | C-1646            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                   |  | 516-546-1751      |
| \$ Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283                     |  |                   |
|                                                                                             |  | 602-897-7001      |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                            |  | 508-222-2202      |
| Autosipco, Inc., San Diego, CA 92121                                                        |  | 619-535-0077      |
| Autoswage Products, Shelton, CT 06484                                                       |  | 203-929-1401      |
| Berg Electronics, Camp Hill, PA 17011                                                       |  | 800-237-2374      |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 |  | 708-981-6000      |



|                                                                                |                                   |
|--------------------------------------------------------------------------------|-----------------------------------|
| Delbert Blinn Co., Inc., Pomona, CA 91769                                      | 909-629-3900                      |
| † EBY Company, Philadelphia, PA 19124                                          | 215-537-4700                      |
| † EBY Electro Inc., Rockville Centre, NY 11571-1100                            | 516-536-6000                      |
| † Eby Electro Inc., Rockville Centre, NY 11571-1100                            | 516-536-6000                      |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                | 201-288-4477;<br>800-447-5639     |
| † Garry Electronics, WPI, Salem, NJ 08079                                      | 609-935-7603                      |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                           | 718-956-8900                      |
| Master Electronic Controls, Los Angeles, CA 90025                              | 310-452-1336                      |
| † McKenzie Technology, Fremont, CA 94538                                       | 510-651-2700                      |
| † 3M-Electronic Products Division, Austin, TX 78726                            | 1-800-225-5373 Sls. & Prod. Info. |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                      | 516-922-6000                      |
| † Milton Ross Co., Warrington, PA 18976                                        | 215-491-0600                      |
| † MOLEX, Inc., Lisle, IL 60532                                                 | 708-969-4550                      |
| † Nepenthe, Inc., Palo Alto, CA 94303                                          | 415-966-6666                      |
| † Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                       | 416-475-9320;<br>1-800-456-1875   |
| † NTE Electronics, Inc., Bloomfield, NJ 07003                                  | 201-748-5089                      |
| † Robinson Nugent, Inc., New Albany, IN 47150                                  | 812-948-0564                      |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                    | 513-561-8145                      |
| † Wells Electronics, Inc., South Bend, IN 46613                                | 219-287-5941                      |
| Yamaichi Electronics, Inc., Yamaichi Electronics Co., Ltd., San Jose, CA 95112 | 408-452-0797                      |

## Sockets, Tube-2100

|                                                                                |                                 |
|--------------------------------------------------------------------------------|---------------------------------|
| † Connector Corp., Chicago, IL 60646, 312-539-3108                             | C-1292                          |
| Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911            | C-1808                          |
| Alden Products Co., Brockton, MA 02403                                         | 508-583-0160                    |
| † Augat/RDI, Carol Stream, IL 60188                                            | 708-682-4100                    |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove 60007 | 708-981-6000                    |
| † EBY Company, Philadelphia, PA 19124                                          | 215-537-4700                    |
| † EBY Electro Inc., Rockville Centre, NY 11571-1100                            | 516-536-6000                    |
| † Eby Electro Inc., Rockville Centre, NY 11571-1100                            | 516-536-6000                    |
| † El & S, Prime Technology Inc., North Branford, CT 06471                      | 203-481-5721                    |
| † Garry Electronics, WPI, Salem, NJ 08079                                      | 609-935-7603                    |
| † ITT Pomona Electronics, Pomona, CA 91766                                     | 909-469-2900                    |
| † Jettron Products Inc., E. Hanover, NJ 07936                                  | 201-887-0571                    |
| † Johnson, E. F., Co., Waseca, MN 56093                                        | 1-800-247-8256                  |
| Master Electronic Controls, Los Angeles, CA 90025                              | 310-452-1336                    |
| † McKenzie Technology, Fremont, CA 94538                                       | 510-651-2700                    |
| Method Electronics, Inc., Chicago, IL 60656                                    | 708-867-9600                    |
| James Millen Elctms., Caywood Elec. Inc., No. Andover, MA 01845                | 508-975-2711                    |
| Modor Technical Products Inc., Tampa, FL 33626                                 | 813-855-5736                    |
| † Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                       | 416-475-9320;<br>1-800-456-1875 |
| Shokai Far East Ltd., Peekskill, NY 10566                                      | 914-736-3500                    |
| Staffall Inc., Cranston, RI 02910                                              | 401-461-5554                    |
| † Thom EMI Electron Tubes Inc., Fairfield, NJ 07006                            | 201-575-5586                    |

## Sockets (MIL)-2440 - See Vol. B

## Software, Applications-2050 - See Vol. D

## Software, CAD-2050 - See Vol. D

## Software, Communications-2050 - See Vol. D

## Software, Compilers/Languages-2050 - See Vol. D

## Software, Computer Performance Measurement-2050 - See Vol. D

## Software, Data Base Management-2050 - See Vol. D

## Software, DC Motor Control-2050 - See Vol. D

## Software, Emulation/Simulation-2050 - See Vol. D

## Software, Graphics-2050 - See Vol. D

## Software, Image Processing-2050 - See Vol. D

## Software, Information Storage &amp; Retrieval-2050 - See Vol. D

## Software, Job Scheduling/Accounting-2050 - See Vol. D

## Software, Label Printing-2050 - See Vol. D

## Software, Motion Control-2050 - See Vol. D

## Software, Neural Networks-2050 - See Vol. D

## Software, Operating Systems-2050 - See Vol. D

## Software, Operating Systems Enhancement-2050 - See Vol. D

## Software, Programming/Systems Development Aids-2050 - See Vol. D

## Software, Program Translators-2050 - See Vol. D

## Software, Quality Control-2050 - See Vol. D

## Software, Security-2050 - See Vol. D

## Solar Cells - See Cells, Photovoltaic (Vol. B)

## Solder (All Types)-4600

|                                                                      |                             |
|----------------------------------------------------------------------|-----------------------------|
| † Alpha Metals, Jersey City, NJ 07304                                | 201-434-6778                |
| † Chemtronics Inc., Hauppauge, NY 11788                              | 516-582-3322; 800-645-5244  |
| † Contact East, N. Andover, MA 01845                                 | 508-682-2000                |
| † Cramco Inc., Scarborough, Ont., CAN M1L 4M7                        | 416-757-2876                |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162          | 708-547-5400                |
| † Electro-Science Labs., Inc., King of Prussia, PA 19406-1533        | 215-272-8000                |
| † ESP solder plus, Lincoln, RI 02865                                 | 800-338-4353; 401-333-3800  |
| † Gardiner Solder Co., Div. of Gardiner Metal Co., Chicago, IL 60632 | 312-847-0100                |
| † GC-Thorsen, Rockford, IL 61105-1209                                | 815-968-9661                |
| † HMC/Hub Material Company, Canton, MA 02021                         | 617-821-1870                |
| † IEM-Fusion Inc., Cleveland, OH 44139                               | 216-349-1960                |
| † Indium Corporation of America, Utica, NY 13502                     | 315-853-4900; 1-800-4INDIUM |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044               | 602-968-6241                |
| † Kester Solder Div., Litton Sys., Inc., Des Plaines, IL 60018       | 708-297-1600                |
| † Mouser Electronics, Santee, CA 92071                               | 800-346-6873                |
| † Mouser Electronics, Mansfield, TX 76063                            | 800-346-6873                |

|                                                                                   |              |
|-----------------------------------------------------------------------------------|--------------|
| † Mouser Electronics, Gilroy, CA 95020                                            | 800-346-6873 |
| † Multicore Solders, Inc., Richardson, TX 75081                                   | 214-238-1224 |
| † Read Advanced Materials, A Readie Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000 |
| Sanwa Components USA Inc., Marlboro, MA 01752                                     | 508-480-9555 |
| † Techni-Tool, Plymouth Meeting, PA 19462                                         | 215-825-4990 |
| † Tech Spray, Inc., Amarillo, TX 79105                                            | 806-372-8523 |
| Transene, Rowley, MA 01969                                                        | 508-948-2501 |
| † WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4              | 514-694-9136 |

## Solder Lugs - See Terminals, Lug (All Types) (Vol. C)

## Solder Pots &amp; Baths-4600

|                                                              |                            |
|--------------------------------------------------------------|----------------------------|
| Air-Vac Engrg., Milford, CT 06460                            | 203-874-2541               |
| Atlantic Magnetics, Inc., Pompano Beach, FL 33069            | 305-979-7920               |
| † Caig Laboratories, Rancho Bernardo, CA 92127-1904          | 619-451-1799               |
| † Chemtronics Inc., Hauppauge, NY 11788                      | 516-582-3322; 800-645-5244 |
| † Contact, Inc., Edgcomb, ME 04556                           | 207-882-6116               |
| † Contact East, N. Andover, MA 01845                         | 508-682-2000               |
| † Electrovert USA Corp., Grand Prairie, TX 75050             | 214-606-1900               |
| EPM Corporation, Baltimore, MD 21221                         | 410-686-7800               |
| † ESICO/TRITON, Triton Industries Inc., Deep River, CT 06417 | 203-526-5361               |
| † Exselect Engineering Ltd., Concord, Ont., CANADA LK42G2    | 416-738-4077               |
| † Hexacon Electric Co., Roselle Park, NJ 07204               | 908-245-6200               |
| † HMC/Hub Material Company, Canton, MA 02021                 | 617-821-1870               |
| Kester Solder Div., Litton Sys., Inc., Des Plaines, IL 60018 | 708-297-1600               |
| Multicore Solders, Inc., Richardson, TX 75081                | 214-238-1224               |
| Necoa, Inc., Nitoku Engineering Group, Baltimore, MD 21237   | 410-574-4960               |
| † Plato Products, Inc., Industry, CA 91748                   | 818-965-8044; 800-423-4510 |
| † Portasol, Oglesby and Botler Ltd., Charlotte, NC 28226     | 704-543-6239               |
| † Techni-Tool, Plymouth Meeting, PA 19462                    | 215-825-4990               |
| † Trent, Inc., Philadelphia, PA 19127                        | 215-482-5000               |
| † Unit Design, Orange, CA 92665                              | 714-282-8100               |

## Soldering Accessories-4600

|                                                                              |                            |
|------------------------------------------------------------------------------|----------------------------|
| † Air-Vac Engrg., Milford, CT 06460                                          | 203-874-2541               |
| † Antex Division, Marblehead, MA 01945                                       | 617-631-7100               |
| † A.P.E. Corporation, Medford, NY 11763                                      | 516-654-1197               |
| † Beau Tech, Portland, ME 04101                                              | 207-775-6139               |
| † Caig Laboratories, Rancho Bernardo, CA 92127-1904                          | 619-451-1799               |
| † Chemtronics Inc., Hauppauge, NY 11788                                      | 516-582-3322; 800-645-5244 |
| † Contact, Inc., Edgcomb, ME 04556                                           | 207-882-6116               |
| † Contact East, N. Andover, MA 01845                                         | 508-682-2000               |
| † Cooper Tools, Raleigh, NC 27622                                            | 919-781-7200               |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162                    | 708-547-5400               |
| Electrovert USA Corp., Grand Prairie, TX 75050                               | 214-606-1900               |
| † ELVO/Division of Zumbach Electronics Corporation, Mt. Kisco, NY 10549-1407 | 914-241-1008               |
| † ESICO/TRITON, Triton Industries Inc., Deep River, CT 06417                 | 203-526-5361               |
| † Exselect Engineering Ltd., Concord, Ont., CANADA LK42G2                    | 416-738-4077               |
| † Gardiner Solder Co., Div. of Gardiner Metal Co., Chicago, IL 60632         | 312-847-0100               |
| † GC-Thorsen, Rockford, IL 61105-1209                                        | 815-968-9661               |
| † Gordon Brush Mfg. Co., Inc., Los Angeles, CA 90021-1786                    | 213-627-6889               |
| † Hexacon Electric Co., Roselle Park, NJ 07204                               | 908-245-6200               |
| † HMC/Hub Material Company, Canton, MA 02021                                 | 617-821-1870               |
| Hughes Aircraft Co., Industrial Products Division, Carlsbad, CA 92009        | 619-931-3000               |
| International Microelectronics, Arlington, TX 76003                          | 817-473-1730               |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                       | 602-968-6241               |
| Jonard Industries Corp., Tuckahoe, NY 10707                                  | 914-793-0700               |
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| † McKenzie Technology, Fremont, CA 94538                                     | 510-651-2700               |
| † Metcal, Inc., Menlo Park, CA 94025                                         | 800-776-1778               |
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| † Mouser Electronics, Gilroy, CA 95020                                       | 800-346-6873               |
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| † PACE, Inc., Laurel, MD 20723-1990                                          | 301-490-9860               |
| † PlanoVise Products, Inc., Sparks, NV 89431                                 | 702-353-2900               |
| † Plato Products, Inc., Industry, CA 91748                                   | 818-965-8044; 800-423-4510 |
| † Portasol, Oglesby and Botler Ltd., Charlotte, NC 28226                     | 704-543-6239               |
| † Solder Absorbing Technology (SAT), A Sprigg Co., Springfield, MA 01108     | 800-628-8862               |
| † Techni-Tool, Plymouth Meeting, PA 19462                                    | 215-825-4990               |
| † Tech Spray, Inc., Amarillo, TX 79105                                       | 806-372-8523               |
| † TEGAM, Inc., Madison, OH 44057                                             | 800-668-1010               |
| † The Triangle Tool Group, Inc., Orangeburg, SC 29115                        | 803-534-7010               |
| † Ungar, Rubbermaid Office Products Group, Buena Park, CA 90621              | 714-994-2510               |
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| † Jonard Industries Corp., Tuckahoe, NY 10707                                                                      | 914-793-0700                 |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                                        | 800-777-3300                 |
| † Shattuck Industries, Santa Cruz, CA 95060                                                                        | 408-427-3122                 |
| † Tru-Connector Corp., Peabody, MA 01960                                                                           | 508-532-0775;1-800-262-9787; |
|                                                                                                                    | 1-800-COAXTRU                |
| † Western Electronic Products Co., San Clemente, CA 92673                                                          | 714-492-4677                 |
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| † Clifford of Vermont, Inc., Bethel, VT 05032                                                                      | 802-234-9921;800-451-4381    |
| † Cole-Flex Corporation, West Babylon, NY 11704                                                                    | 516-249-6150                 |
| † Concord Electronics Corporation, New York, NY 10012                                                              | 1-212-777-6571               |
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| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                                          | 708-398-5311;800-323-5207    |
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| † Nichifu America, Inc., Pottstown, PA 19464                                                                       | 215-323-7120                 |
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- ♣ Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300
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- † Zero East, Zero Corporation, Monson, MA 01057-0128, 413-267-5561 ..... C\*1124
- Autosplice, Inc., San Diego, CA 92121 ..... 619-535-0077
- Buckeye Stamping Co., Columbus, OH 43207 ..... 614-445-8433
- Electronic Components & Materials, GTE Sylvania, Warren, PA 16365 ..... 814-726-6500
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## Standards, Voltage-2900 — See Vol. D

## Standards, Voltage Ratio-2900 — See Vol. D

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## Stands, Instruments-1400

- ♣ Buckeye Stamping Co., Columbus, OH 43207, 614-445-8433 ..... C\*1016
- † Equipto Electronics Corp., Aurora, IL 60506-9988, 708-897-4691 ..... C\*1041
- † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 ..... C\*1056,1058,1061
- D. L. Custom, Markham, Ont, CANADA L3R 2M5 ..... 416-475-0275
- ELMA Electronic Inc., Fremont, CA 94538 ..... 510-656-3400
- ♣ Hodge Manufacturing Co., Inc., Springfield, MA 01107 ..... 413-781-6800
- † Mobile-Tronics Co., Inc., San Clemente, CA 92674 ..... 714-361-4305
- Omega Engineering, Stamford, CT 06907 ..... 800-826-6342
- Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216 ..... 718-774-5900
- ♣ Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990
- † Zero Enclosures, Zero Corp., North Salt Lake, UTAH 84054-0310 ..... 801-298-5900

## Stands, Printer/Terminal-1400

- † Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 ..... C\*1056,1058,1061
- ♣ Ritze Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0, 519-696-2616 ..... C\*1081
- ♣ U.S. Power Converting Company/Relco, Leonard V. Snow & Assoc., Torrance, CA 90503, 310-316-9984 ..... C\*1081
- ♣ Bud Industries, Inc., Willoughby, OH 44094-0431 ..... 216-946-3200
- D. L. Custom, Markham, Ont, CANADA L3R 2M5 ..... 416-475-0275
- † Equipto Electronics Corp., Aurora, IL 60506-9988 ..... 708-897-4691
- ♣ Ergotron, Inc., Eagan, MN 55121 ..... 612-452-8135
- General Devices Co., Inc., Indianapolis, IN 46239-0100 ..... 317-897-7000;1-800-626-9484
- Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059 ..... 800-452-4844
- † Mobile-Tronics Co., Inc., San Clemente, CA 92674 ..... 714-361-4305
- Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216 ..... 718-774-5900
- Tektronix, Inc., Wilsonville, OR 97070 ..... 800-833-9433
- † Terminal Data Corp., Rockville, MD 20855 ..... 301-921-8282

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## Static Eliminating Materials, Devices, & Equipment-4525

- Instrument Specialties Co. Headquarters, Delaware Water Gap, PA 18327-0136, 717-424-8510 ..... C\*1687,1689,1693
- ♣ 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368 ..... C\*1667, D\*2311
- † Acheson Colloids, Div. of Acheson Industries, Inc., Port Huron, MI 48061-1747 ..... 313-984-5581
- ♣ ACL Inc., Elk Grove Village, IL 60007 ..... 708-981-9212;1-800-782-8420
- ♣ ADE, Inc., Chicago, IL 60633 ..... 312-646-3400
- ♣ Amherst International Corp., Manchester, NH 03101 ..... 603-644-3555;1-800-547-5600
- ♣ Amstat Industries, Inc., Glenview, IL 60025 ..... 708-998-6210
- Baxter Industrial Division, Valencia, CA 91355 ..... 805-253-7466
- † BayStat, Menlo Park, CA 94025 ..... 415-384-3205
- † Chapman Corp., Portland, ME 04104 ..... 207-773-4726
- † Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888 ..... 617-935-4850
- ♣ CHR, Fulton, New Haven, CT 06509 ..... 203-777-3631
- ♣ Clauss Cutlery Co., Alco Industries, Fremont, OH 43420 ..... 419-332-7344;800-225-2877
- ♣ Clean Room Products, Inc., Ronkonkoma, NY 11779-6528 ..... 516-588-7000
- † Contact East, N. Andover, MA 01845 ..... 508-682-2000
- ♣ Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411
- ♣ Cut Craft, Inc., Ft. Worth, TX 76102 ..... 817-332-6151
- Eagle Magnetic Company, Inc., Indianapolis, IN 46224 ..... 317-297-1030
- ♣ Electra-Tec, Inc., Div. of Impert Industries, Inc., Otsego, MI 49078 ..... 800-225-3532
- 616-694-2058
- ♣ Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400
- ♣ Electrostatic Consulting Assocs., Grotton, MA 01450 ..... 508-448-5485
- † Electro-Tech Systems, Inc., Glenview, PA 19038 ..... 215-887-2196
- ♣ Fancort Industries, Inc., W. Caldwell, NJ 07006 ..... 201-575-0610
- † Gordon, L. Packaging, Baltimore, MD 21230 ..... 410-539-6537
- ♣ Herbert Prods. Inc., Westbury, NY 11590-0384 ..... 516-334-6500
- ♣ HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870
- ♣ ITT Pomona Electronics, Pomona, CA 91766 ..... 909-469-2900
- ♣ Klein Tools, Inc., Chicago, IL 60659-9033 ..... 708-677-9500
- ♣ LNP Engineering Plastics, Exton, PA 19341 ..... 215-363-4500
- 3M-Electronic Products Division, Austin, TX 78726 ..... 1-800-225-5373 Sl. & Prod. Info.
- 3M Private Network Products, 3M, Austin, TX 78726 ..... 512-984-3400;800-426-8626
- ♣ Merix Chemical Co., Chicago, IL 60649 ..... 312-221-8242
- ♣ Midwest Container Systems, Minneapolis, MN 55428 ..... 612-533-4532
- ♣ NRD Inc., Subsidiary of Mark IV Inds., Inc., Grand Island, NY 14072 ..... 716-773-7634
- ♣ Nu-Concept Systems, Colmar, PA 18915 ..... 215-822-8400;800-762-4278
- picosecond ATE Inc., Beaverton, OR 97075 ..... 503-641-3295
- Plastic Systems Inc., Marlboro, MA 01752-3004 ..... 508-485-7390
- ♣ Plato Products, Inc., Industry, CA 91748 ..... 818-965-8044;800-423-4510
- ♣ Polygenex International Inc., Cary, NC 27512-1487 ..... 919-380-8100
- Quantum Scientific Inc., Toronto, Ont M8W 4Y4 ..... 416-503-8555;800-268-6000
- Schlegel Corp., Rochester, NY 14692 ..... 800-828-6237, ext. 2126
- ♣ Semtronics Corp., Peachtree City, GA 30269 ..... 404-487-6681
- ♣ Simco Co., Hatfield, PA 19440 ..... 215-822-2171
- ♣ Solder Absorbing Technology (SAT), A Spring Co., Springfield, MA 01108 ..... 800-628-8862
- ♣ Spectrascan, Inc., Colorado Springs, CO 80907 ..... 719-599-9254
- † Stanley-Vidmar, Stanley Works, Allentown, PA 18103 ..... 215-797-6600
- ♣ Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990
- ♣ Tech Spray, Inc., Amarillo, TX 79105 ..... 806-372-8523
- † Tecknit, Cranford, NJ 07016 ..... 908-272-5500
- † Testone Inc., Skippack, PA 19474-1589 ..... 215-584-9658
- ♣ Ungar, Rubbermaid Office Products Group, Buena Park, CA 90621 ..... 714-994-2510
- ♣ Wescorp Static Control Products, Mountain View, CA 94041 ..... 415-969-7717
- Westvaco-Static Control, Springfield, MA 01101-1675 ..... 413-787-9783



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## STD Bus Cards — See Board Computers & Subassemblies (Vol. D)

## Stiffeners, PCB, Glass Epoxy-2700

- \$† Kam Components, Inc., Nesconset, NY 11767 516-585-0666
- † Stevens Products, Inc., E. Orange, NJ 07019 201-672-2140

## Strain Reliefs, Cable & Wire-2500

- \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 C-1163
- International Configurations, Inc., Enfield, CT 06082, 203-749-6380 C-1353
- Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 C-1854
- \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 401-726-0700
- Autosplice, Inc., San Diego, CA 92121 619-535-0077
- \$ Bopla Enclosures, Frederick, MD 21701-8353 301-696-9300
- \$† Brim Electronics, Fair Lawn, NJ 07410 201-796-2886
- Cinch Connector Division, Lابل Components & Systems Inc., Elk Grove Village, IL 60007 708-981-6000
- Compac, Holbrook, NY 11741 516-585-3400
- \$† Concord Mfg. Svc., Inc., W. Bridgewater, MA 02379 508-580-9111
- \$ Concord Electronics Corporation, New York, NY 10012 1-212-777-6571
- \$ Control Cable, Inc., Baltimore, MD 21244 410-298-4411
- \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647 201-768-5400
- # Electrical Insulation Suppliers, Inc., Hillside, IL 60162 708-547-5400
- \$ Engineered Assemblies & Components Corp., Teterboro, NJ 07608 201-288-4477
- 800-447-5639
- \$ Fastex, Illinois Tool Works, Des Plaines, IL 60016 708-299-2222
- \$ GC-Thorsen, Rockford, IL 61105-1209 815-968-9661
- \$ Harwil Corporation, Santa Monica, CA 90404 310-829-2310
- \$ Heyco Molded Products, Inc., Kenilworth, NJ 07033 908-245-0033; 800-526-4182
- \$ ICO-RALLY Corporation, Palo Alto, CA 94303 415-856-9900
- \$ ITT Pomona Electronics, Pomona, CA 91766 909-469-2900
- \$ Markel Corp., Norristown, PA 19004 215-272-8960
- \$ M-Electronic Products Division, Austin, TX 78726 1-800-225-5373 Sls. & Prod. Info.
- \$† M.M. Newman Corporation, Marblehead, MA 01945 617-631-7100
- † Newman, M. A. Corp., Heli-Tube Div., Marblehead, MA 01945 617-631-7100
- \$ ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012 805-484-0540
- \$ Olfex Wire & Cable, Inc., Fairfield, NJ 07004 201-575-1101
- \$† Panduit Corp., Tinley Park, IL 60477-0981 800-777-3300
- Panel Components Corp., Oskaloosa, IA 52577 515-673-0097
- † Rowe Industries, Inc., Toledo, OH 43612 419-729-9761
- \$† Sjoberg, C. & Son, Inc., Cranston, RI 02910 401-461-8220
- \$ Techni-Tool, Plymouth Meeting, PA 19462 215-825-4990
- \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 803-676-2900
- Zipertubing Co., Los Angeles, CA 90061 310-527-0488

## Strip-Line Components, Microwave-3450 — See Vol. A

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## Strips, Marker & Fanning-6000

- Altech Corp., Flemington, NJ 08822-6000, 908-806-9400 C-1154
- AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 C-1163
- \$ Beau Interconnect Systems, Vemtron Corp., Laconia, NH 03247 603-524-5102
- \$ Cinch Connector Division, Lابل Components & Systems Inc., Elk Grove Village, IL 60007 708-981-6000
- The Cutting Edge, Controls Unlimited Inc., Perry, OH 44081 1-800-962-2376
- \$† Datak Corp., An LKG Company, Rockford, IL 61104 815-229-7773; 1-800-645-2262
- \$† Grafopast S.P.A., Wiremarkers, Genova, ITALY 16154 + 10, 621687
- \$ Ideal Industries, Inc., Sycamore, IL 60178 815-895-5181
- \$ M-Electronic Products Division, Austin, TX 78726 1-800-225-5373 Sls. & Prod. Info.
- \$† Mecro Precision/Inds. Inc., Bridgeport, CT 06607 203-333-4900
- \$ Panduit Corp., Tinley Park, IL 60477-0981 800-777-3300
- \$ WECC Electrical Connectors, Inc., Moores, NY 12958 518-298-4810
- \$ WECC Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4 514-694-9136
- \$ Zipertubing Co., Los Angeles, CA 90061 310-527-0488

## Stroboscopes — See Lamps, Stroboscopic Source (Vol. B)

## Substrates, Ceramic-2500

- \$† AMITRON, American Micro-Tronix, Inc., North Andover, MA 01845, 508-686-1882 A-1688
- † Electro-Films, Inc., Warwick, RI 02886, 401-738-9150 A-1721, 1932
- Mini-Systems, Inc., Thick/Thin Film Division, North Attleboro, MA 02761, 508-695-0203 A-1993
- † Noritake Co., Inc., Arlington Heights, IL 60005, 708-439-9020 A-1711
- \$ NTK Technical Ceramics, NGK Spark Plugs (USA), Mt. Prospect, IL 60056, 708-824-1133 A-1664
- † Accumet Engineering, Hudson, MA 01749 508-568-8311
- American Technical Ceramics Corporation, Huntington Sta., NY 11746-2102 516-547-5700
- AVX Corporation, A Kyocera Group Company, Myrtle Beach, SC 29577 803-448-9411
- Berg Electronics, Camp Hill, PA 17011 800-237-2374
- Bourns, Inc., Electronic Components Sls., Riverside, CA 92507-2114 909-781-5500
- 801-750-7200
- † The Carborundum Company, Electric Products, Niagara Falls, NY 14302 716-278-2521
- † Compex Corp., Medford, NJ 08055 609-596-9388
- Coors Ceramics Co., Electronics, Golden, CO 80401 303-277-4591
- Coors Electronic Package Co., Chattanooga, TN 37405 615-755-5452
- \$ Corning Incorporated, Advanced Materials Business, Corning, NY 14831 607-974-7920
- Dielectric Labs., Cazenovia, NY 13035 315-655-8710
- EPH Engineering Associates, Inc., Orem, UT 84058 801-226-1383
- † Film Microelectronics Inc., Peabody, MA 01960 508-532-9913

- Frequency Electronics, Inc., Mitchel Field, NY 11553 516-794-4500
- † Hybridyne, Inc., Tucson, AZ 85745 602-629-0001
- † Hycomp, Inc., Marlborough, MA 01752 508-485-6300
- \$ KCK America Inc., Mitsubishi Materials Corporation, Rolling Meadows, IL 60008 708-577-0200
- Laser Tech Inc., Minnetonka, MN 55345 612-935-9277
- † Microplex, Inc., Anaheim, CA 92806 714-634-1535
- Mini-Systems, Inc., Sunbelt Microelectronic Division, Deltona, FL 32725 407-574-0208
- † Modular Devices, Shirley, NY 11967 516-345-3100
- † Ohmite Manufacturing Co., Skokie, IL 60076 708-675-2600
- # Quartzite Processing, Inc., Malden, MA 02148 617-322-3611
- Sanwa Components USA Inc., Marlboro, MA 01752 508-480-9555
- Submarine Signal Division, Raytheon Company, Portsmouth, RI 02871 401-847-8000
- \$ TDK Corporation of America, Electronic Components & Material, Mount Prospect, IL 60056 708-803-6100
- † Teledyne Microelectronics, Los Angeles, CA 90066 310-822-8229; 310-305-0248
- Tokin America, Inc., San Jose, CA 95134 408-432-8020
- TOYOOCOM USA INC., Arlington Heights, IL 60005 708-593-8780/1-800-TOYOOCOM
- † United Supertek, Inc., San Jose, CA 95131-1101 408-922-0730

## Substrates, Flexible-2500

\$† Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388

- NTK Technical Ceramics, NGK Spark Plugs (USA), Mt. Prospect, IL 60056, 708-824-1133 A-1664
- Berg Electronics, Camp Hill, PA 17011 800-237-2374
- International Resistive Company, Boone, NC 28607 704-264-8861
- K&L Microwave, Inc., Salisbury, MD 21801 410-749-2424
- Lydall Inc., Manning Div., Troy, NY 12181 518-273-6320
- Polyflon Company, Crane Co., New Rochelle, NY 10801 914-636-7222

## Substrates, Glass-2500

- † Accumet Engineering, Hudson, MA 01749 508-568-8311
- \$† Atlantic Optical Moulding, Webster, MA 01570 508-943-1746
- Corning Incorporated, Advanced Materials Business, Corning, NY 14831 607-974-7920
- \$† Ercona, Patchogue, NY 11772 516-758-0700
- Frequency Electronics, Inc., Mitchel Field, NY 11553 516-794-4500
- † Hycomp, Inc., Marlborough, MA 01752 508-485-6300
- KLC/Karl Lambrecht Corp., Chicago, IL 60618 312-472-5442
- Lydall Inc., Manning Div., Troy, NY 12181 518-273-6320
- † Max Levy Autograph, Inc., Philadelphia, PA 19144-4298 215-842-3675
- Oxley Inc., Branford, CT 06405 203-488-1033
- † Schott Glass Technologies, Inc., Duryea, PA 18642 717-457-7485

## Substrates, Metallic-2500

- The Bergquist Co., Minneapolis, MN 55439, 800-347-4572 C-1654, 1656
- International Sensor Systems, Inc., Aurora, NE 68818, 402-694-6111 A-1704-1705
- NTK Technical Ceramics, NGK Spark Plugs (USA), Mt. Prospect, IL 60056, 708-824-1133 A-1664, 1849
- Ohmtek Inc., Vishay, Niagara Falls, NY 14304, 716-283-4025 A-2002
- Accumet Engineering, Hudson, MA 01749 508-568-8311
- † Alpha Industries, Inc., Woburn, MA 01801 617-935-5150
- Deringer Mfg. Co., Mundelein, IL 60060 708-566-4100
- Flexible Technologies, Arion, E. Providence, RI 02914 401-434-2340
- † Hycomp, Inc., Marlborough, MA 01752 508-485-6300
- International Resistive Company, Boone, NC 28607 704-264-8861
- Lincoln Laser Co., Phoenix, AZ 85004 602-257-0407
- † Ohmite Manufacturing Co., Skokie, IL 60076 708-675-2600
- Texas Instrs., Mattis, & Controls Grp., Attleboro, MA 02703 508-699-3800
- Thermagon, Inc., Cleveland, OH 44109 216-741-7659

## Substrates, Sapphire-2500

- † Atomergic Chemetals Corp., Farmingdale, NY 11735-1718 516-694-9000
- Laser Tech Inc., Minnetonka, MN 55345 612-935-9277
- \$ Saphikon, Inc., Milford, NH 03055 603-673-5831
- Swiss Jewel Company, Philadelphia, PA 19106 215-925-2867
- † Union Carbide Chemicals & Plastics Company Inc., Industrial Chemicals Div., Crystal, San Diego, CA 92123 619-279-4500

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## Switch Hardware-2500

A.P.M. Hexseal Corporation, Englewood, NJ 07631, 201-569-5700 ..... B\*1669  
 \$ Electro-Mech Components, Inc., South El Monte, CA 91733-3689, 818-442-7180 ..... B\*1744  
 ITT Schadow, Eden Prairie, MN 55344, 612-934-4400 ..... B\*1715  
 † Veetronix, Inc., Lexington, NE 68850, 308-324-4600 ..... B\*1817  
 † Adams Rite Products, Inc., Glendale, CA 91204 ..... 818-241-5121  
 Arcoelectric Corp., Canoga Park, CA 91304 ..... 818-700-1933  
 \$ Augat Alcoswitch, Augat Inc., Attleboro Falls, MA 02763 ..... 508-699-9800  
 Autoswage Products, Shelton, CT 06484 ..... 203-929-1401  
 \$ Bay Technical Associates, Inc., Bay St. Louis, MS 39520 ..... 800-523-2702; 601-467-8231  
 C & K Components, Inc., Newton, MA 02158-1082 ..... 617-964-6400  
 \$ Carlingswitch, Inc., Plainville, CT 06062-1177 ..... 203-793-9281; 800-243-8556  
 \$ Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411  
 CRL Components, Inc., Roxboro Group, Fort Dodge, IA 50501 ..... 515-573-1300  
 \$ DataLux Corp., Winchester, VA 22602 ..... 703-662-1500  
 † Eaton Corp., Aerospace & Commercial Controls, Milwaukee, WI 53216 ..... 414-449-7326  
 † Electrospace Systems, Inc., Richardson, TX 75083-1359 ..... 214-470-2106  
 # Engineered Assemblies & Components Corp., Teterboro, NJ 07608 ..... 201-288-4477;  
 800-447-5639  
 † FISHERCAST, Fisher Gauge Limited, Peterborough, Ont, CANADA K9J 6Y9 ..... 705-748-9522  
 \$ Gaynor Electric Co., Thomaston, CT 06787-0316 ..... 203-283-4388  
 \$ GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 \$ Grayhill Inc., La Grange, IL 60525 ..... 708-354-1040  
 \$ ITW Switches, Illinois Tool Works, Chicago, IL 60634 ..... 312-282-4040  
 Janco Corp., Burbank, CA 91508 ..... 818-846-1800  
 Judco Mfg. Inc., Harbor City, CA 90710 ..... 310-534-0959  
 \$ MEC A/S, Ballerup, DENMARK DK-2750 ..... 011-45-44973366  
 \$ Micro Switch, A Honeywell Div., Freeport, IL 61032 ..... 1-800-537-6945  
 \$ MORIS Components, Wakefield, MA 01880-4444 ..... 617-246-1007  
 † Multi-Tech Industries, Inc., Marlboro, NJ 07746 ..... 908-462-6100  
 † Oak-Grigsby Inc., Sugar Grove, IL 60554 ..... 708-556-4200  
 \$ Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 Relay Service Co., Chicago, IL 60651 ..... 312-252-2700  
 Sjoberg, C. & Son, Inc., Cranston, RI 02910 ..... 401-461-8220

\$ Switchcraft, Inc., A Raytheon Company, Chicago, IL 60630 ..... 312-792-2700  
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 Switching Systems, Test & Measurement-2900 — See Vol. D  
 Switch Seals, Environmental-2500  
 † AME Corporation, Towaco, NJ 07082-0195, 201-263-1700 ..... B\*1663  
 † A.P.M. Hexseal Corporation, Englewood, NJ 07631, 201-569-5700 ..... B\*1669  
 † George Risk Industries, Inc., Kimball, NE 69145, 308-235-4645 ..... B\*1832  
 † Otto Controls, Otto Engineering, Carpentersville, IL 60110, 708-428-7171 ..... B\*1798-1799  
 † Secma, Inc., Secme, Irvine, CA 92714, 714-261-0610 ..... B\*1805-1807, 1850-1851  
 † Applied Plastics Technology, Bristol, RI 02809 ..... 401-253-0200  
 \$ Augat Alcoswitch, Augat Inc., Attleboro Falls, MA 02763 ..... 508-699-9800  
 \$ C.I.T.O.H. Technology, Inc., Electronic Comp. Div., Irvine, CA 92713-9657 ..... 800-347-2484 ext. 4529  
 \$ Eaton Corp., Aerospace & Commercial Controls, Milwaukee, WI 53216 ..... 414-449-7326  
 # Intaq Key Panels, GM Nameplate, Inc., Seattle, WA 98119 ..... 206-284-2200  
 Micro Switch, A Honeywell Div., Freeport, IL 61032 ..... 1-800-537-6945  
 \$ MORIS Components, Wakefield, MA 01880-4444 ..... 617-246-1007  
 \$ Spemco Switches, St. Clair Shores, MI 48080 ..... 800-482-2828  
 † Switches Unlimited, Inc., Woodside, NY 11377 ..... 718-478-5000; 800-221-0487  
 † Tecknit, Cranford, NJ 07016 ..... 908-272-5500  
 Synchronizers, PCM Bit-1900 — See Vol. D  
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 Synchros-4900 — See Vol. D  
 Synchros & Resolvers (MIL)-2440 — See Vol. B  
 Synchro Transmitters, Solid State-4900 — See Vol. D  
 Synthesizers, Frequency-2900 — See Vol. D  
 Synthesizers, Speech-2325 — See Vol. D  
 Synthesizers, Waveform-2900 — See Vol. D  
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 Tables, Rotary-4900 — See Vol. D  
 Tables, X-Y Axis-4900 — See Vol. D  
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 Tachometers, Generator-4900 — See Vol. D  
 Tachometers, Optical-4900 — See Vol. D  
 Tachometers, Pulse-4900 — See Vol. D  
 Tachometers, Stroboscopic-4900 — See Vol. D  
 Tape and Reel Packaging-4100 — See Vol. D  
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 Tape Duplicators — See Duplicators, Magnetic Tape (Vol. D);  
 Perforators, Paper Tape (Vol. D)  
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 Tape Search Equipment-2000 — See Vol. D  
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 Tape Winders-2000 — See Vol. D  
 Tapes, Electrical Insulation-3100  
 The Bergquist Co., Minneapolis, MN 55439, 800-347-4572 ..... C\*1654-1657  
 Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850 ..... C\*1659-1661  
 # Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151 ..... C\*1662  
 \$ 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368 ..... C\*1667  
 † Brand Dielectrics, Inc., N. Windham, CT 06256 ..... 203-423-6321  
 † Brim Electronics, Fair Lawn, NJ 07410 ..... 201-796-2886  
 † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 ..... 313-583-1200  
 Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8 ..... 1-800-361-9466  
 † CHR, Furon, New Haven, CT 06509 ..... 203-777-3631  
 # Clifford of Vermont, Inc., Bethel, VT 05032 ..... 802-234-9921; 800-451-4381  
 Cogebi, Inc., Dover, NH 03820 ..... 603-749-6896  
 \$ Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647 ..... 201-768-5400  
 # Electrical Insulation Suppliers, Inc., Hillsdale, IL 61062 ..... 708-547-5400  
 † Electro Insulation Corp., Arlington Hgts., IL 60004 ..... 708-632-1020  
 † Fibertek Inc., Franklin, TN 37065 ..... 615-794-1400  
 \$ Flexible Technologies, Arlon, E. Providence, RI 02914 ..... 401-434-2340  
 \$ Gasket Dynamics, Inc., Mt. Holly, NJ 08060 ..... 609-261-8100; 800-541-2500;  
 215-922-6046  
 # The Hirol Company, Ft. Lauderdale, FL 33309 ..... 305-974-4900  
 \$ ICO-RALLY Corporation, Palo Alto, CA 94303 ..... 415-856-9900  
 † Ideal Tape Co., American Biltrite Inc., Lowell, MA 01851 ..... 508-458-6833  
 † Liberty Polyglas, Inc., West Milford, PA 15122 ..... 412-466-8611  
 Lydall Inc., Manning Div., Troy, NY 12181 ..... 518-273-6320  
 † Markel Corp., Norristown, PA 19404 ..... 215-272-8960  
 3M-Electronic Products Division, Austin, TX 78726 ..... 1-800-225-5373 Sls. & Prod. Info.  
 † Moxness Products, Inc., Versa Technologies, Racine, WI 53405 ..... 414-554-5050;  
 800-558-5706  
 † Mutual Industries, Inc., Philadelphia, PA 19120 ..... 215-927-6000  
 † Press-On Products, Addison, IL 61011 ..... 708-628-2255  
 Rogers Corporation, Circuit Materials Div., Chandler, AZ 85244 ..... 602-963-4584  
 † SAS Industries Inc., Manorsville, NY 11949 ..... 516-727-1441; 1-800-544-5238  
 † Special Electric Co., Inc., Milwaukee, WI 53215 ..... 414-383-6370  
 \$ Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092 ..... 904-829-5600



\$ Tyton Corp., Milwaukee, WI 53223 ..... 414-355-1130;800-535-5552  
 Weico Wire & Cable, Inc., Edgewood, NY 11717 ..... 516-254-2970

## Tapes, Films & Foils, Pressure Sensitive-2500

\$† Chomerics, Inc.:W.R. Grace & Co., Woburn, MA 01888, 617-935-4850

C•1659-1660

# Cut Craft, Inc., Ft. Worth, TX 76102, 817-332-6151 ..... C•1662,1684

\$ Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388

C•1136

\$ 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368

C•1667

Schaffner EMC, Inc. Components Division, Springfield, NJ 07081,

201-379-7778;800-367-5566 ..... D•1322

# Thrust Industries, Inc., Haubstadt, IN 47639, 800-467-6730;812-768-6730

C•1668

Ad-Vance Magnetics, Inc., Rochester, IN 46975 ..... 219-223-3158

The Auburn Manufacturing Company, Middletown, CT 06457-0251 ..... 203-346-6677

\$† Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201 ..... 1-800-537-8791

† Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 ..... 313-583-1200

\$† CHR, Furon, New Haven, CT 06509 ..... 203-777-3631

\$ Contact East, N. Andover, MA 01845 ..... 508-682-2000

\$ Egis Corporation, Barrington Hills, IL 60010 ..... 708-639-1555

\$ Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400

† Electro Insulation Corp., Arlington Hgts., IL 60004 ..... 708-632-1020

Fibertek Inc., Franklin, TN 37065 ..... 615-794-1400

\$ Flexible Technologies, Arlon, E. Providence, RI 02914 ..... 401-434-2340

\$ Gasket Dynamics, Inc., Mt. Holly, NJ 08060 ..... 609-261-8100;800-541-2500;

215-922-6046

GM Nameplate, Inc., Seattle, WA 98119 ..... 206-284-2200

# The Hirol Company, Ft. Lauderdale, FL 33309 ..... 305-974-4900

\$ Ideal Tape Co., American Biltrite Inc., Lowell, MA 01851 ..... 508-458-6833

\$ Lydall Inc., Manning Div., Troy, NY 12181 ..... 518-273-6320

Markem Corp., Keene, NH 03431 ..... 603-352-1130

\$ 3M-Electronic Products Division, Austin, TX 78726 ..... 1-800-225-5373 Sls. & Prod. Info.

\$ Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300

† Press-On Products, Addison, IL 60101 ..... 708-628-2255

\$ SAS Industries Inc., Manville, NY 11949 ..... 516-727-1441;1-800-544-5238

Sealing Devices, Inc., Lancaster, NY 14086 ..... 716-684-7600

\$ Special Electric Co., Inc., Milwaukee, WI 53215 ..... 414-383-6370

\$ Tapecon, Inc., Rochester, NY 14612 ..... 716-621-8400

\$ Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990

† Technit, Cranford, NJ 07016 ..... 908-272-5500

† Toplight, York, PA 17404 ..... 717-843-9901;800-233-9386

\$ Zipper tubing Co., Los Angeles, CA 90061 ..... 310-527-0488

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**Tapes, Magnetic, Reel-2000 — See Vol. D**

**Tapes, Magnetic, Digital Cassette-2000 — See Vol. D**

**Tapes, Numerical Control-2000 — See Vol. D**

**Tapes, Plastic Coated for Cable-2500**

Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8

1-800-361-9466

\$ Recoton Corp., Long Island City, NY 11101 ..... 718-392-6442

\$ Tyton Corp., Milwaukee, WI 53223 ..... 414-355-1130;800-535-5552

**Technical Books-4200**

Omega Engineering, Stamford, CT 06907, 800-826-6342

B•1796,1886-1887,2004, C•1792, D•1016,1101,1166,1199,1314,1362

† Analog Devices, Inc., Norwood, MA 02062-9106 ..... 617-329-4700

\$† Berg, W. M., Inc., East Rockaway, NY 11518 ..... 516-599-5010

\$ Beta Review, Inc., Millwood, VA 22646 ..... 703-837-1436

Coast Book Distributors, Anaheim, CA 92817 ..... 1-800-552-6276

\$ E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512 ..... 800-368-0880

\$ International Rectifier Corp., El Segundo, CA 90245 ..... 310-322-3331

Reliance Motion Control, Reliance Electric, Eden Prairie, MN 55344 ..... 612-942-3600

\$† TAB/McGraw-Hill, McGraw-Hill Inc., Blue Ridge Summit, PA 17294-0850

717-794-2191

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**Tees, Waveguide-3450 — See Vol. A**

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**Telephone Handsets — See Handsets, etc. (Vol. D)**

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**Temperature Sensors — See Transducers, Temperature (Vol. B)**

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## Terminal Blocks (Incl. Barrier Types)-2100

\$ Atech Corp., Flemington, NJ 08822-6000, 908-806-9400 ..... C•1006,1155,1157

\$ AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752 ..... C•1163

Andon Electms. Corp., Lincoln, RI 02865, 401-333-0388 ..... C•1256

\$ Beau Interconnect Systems, Veritron Corp., Laconia, NH 03247, 603-524-5102

C•1269,1272

GlobTek, Inc., Northvale, NJ 07647, 201-784-1000 ..... C•1340

\$ Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840 ..... C•1360

\$ LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564

C•1394

Panel Components Corp., Oskaloosa, IA 52577, 515-673-0097 ..... C•1799

\$ WEA Electronics, Eatontown, NJ 07724, 908-389-1300 ..... C•1442,1445

\$ RICO Electrical Connectors, Inc., Moores, NJ 12958, 518-298-4810

C•1510,1517

\$† WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4,

514-694-9136 ..... C•1510,1513

† Accurate Electronics Corp., Elyria, OH 44036 ..... 216-366-6330;1-800-334-5904

† ADC Telecommunications, Inc., Minneapolis, MN 55435 ..... 612-938-8080

Alberox Corporation, New Bedford, MA 02745 ..... 508-995-1725

\$ Allen-Bradley Co., Div. of Industrial Control Grp., Milwaukee, WI 53201

414-382-2000

\$ Alpha Dist. Corp., Richfield, OH 44286 ..... 216-659-7100;1-800-628-0841

† Armel Electronics, N. Bergen, NJ 07047 ..... 201-869-4201

Augat, Inc., Interconnection Products Group, Attleboro, MA 02703 ..... 508-222-2202

\$ Augat/RDI, Carol Stream, IL 60188 ..... 708-682-4100

AVO International, TBG, Dallas, TX 75237 ..... 214-333-3201

\$ Amerace Electronic Components, Punta Gorda, FL 33950 ..... 813-575-8400

\$ Burndy Corporation, An FCI Company, Norwalk, CT 06856 ..... 203-838-4444

\$ Bussmann Division, Cooper Industries, St. Louis, MO 63178 ..... 314-394-2877

† Caton Connector Corp., Kingston, MA 02364 ..... 617-585-4315

\$† Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL

60007 ..... 708-981-6000

\$ Cole Hersee Co., Boston, MA 02127-2467 ..... 617-269-2100

Concord Electronics Corporation, New York, NY 10012 ..... 1-212-777-6571

\$ Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411

\$ Curtis Industries, Milwaukee, WI 53234-3925 ..... 414-649-4200

\$ Custom Connector, Cleveland, OH 44114 ..... 216-241-1679

Doran Manufacturing Co., Cincinnati, OH 45225 ..... 513-681-5424

\$ EBY Electro Inc., Rockville Centre, NY 11571-1100 ..... 516-536-6000

\$ Eby Electro Inc., Rockville Centre, NY 11571-1100 ..... 516-536-6000

# Engineered Assemblies & Components Corp., Teterboro, NJ 07608 ..... 201-288-4477;

800-447-5639

\$ Entelec Inc., Irving, TX 75038 ..... 214-550-9025

† FIC Corp., Rockville, MD 20852 ..... 301-881-8124;800-638-6594

Fuses Unlimited, D.E.L. Van Nuys, CA 91406 ..... 818-786-8111

\$ GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661

\$ GTE Supply, GTE, Irving, TX 75038 ..... 800-433-4837

\$ Heyco Molded Products, Inc., Kenilworth, NJ 07033 ..... 908-245-0033;800-526-4182

\$ Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181

\$ IDEC Corporation, Sunnyvale, CA 94089-2211 ..... 408-747-0550

\$† Keystone Electronics Corp., Astoria, NY 11105-2017 ..... 718-956-8900

Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 ..... 708-398-5311;800-323-5207

\$ Marathon Special Prods., Marathon Electric, Bowling Green, OH 43402

419-352-8441

Marco Manufacturing Co., Inc., Philadelphia, PA 19145 ..... 215-463-2332

\$ Methode Electronics, Inc., Chicago, IL 60656 ..... 708-867-9600

Milton Ross Co., Warrington, PA 16976 ..... 215-491-0600

Modor Technical Products Inc., Tampa, FL 33626 ..... 813-855-5736

Nedco Electronics, Inc., Morton Grove, IL 60053 ..... 708-967-0500

Omega Engineering, Stamford, CT 06907 ..... 800-826-6342

\$ Pass & Seymour/LeGrand, Pass & Seymour/Inc., Syracuse, NY 13221

315-468-8211

\$ PCD, Peabody, MA 01960 ..... 508-532-8800

\$ Relay Specialties, Oakland, NJ 07436 ..... 201-337-1000

\$ Reliance Comm/Tec, Reliance Electric, Cleveland, OH 44117 ..... 800-245-4501

\$ Reliance Electric Co., Cleveland, OH 44117 ..... 800-245-4501

Seastrom Manufacturing Co., Inc., Glendale, CA 91201 ..... 800-634-2356

Selco Products Co., SEL Sales, Inc., Buena Park, CA 90621 ..... 714-521-8673

Shokai Far East Ltd., Peekskill, NY 10566 ..... 914-736-3500

SMK Electronics Corporation, U.S.A., Placentia, CA 92670 ..... 714-996-0960

\$ Square D Co., Palatine, IL 60067 ..... 708-397-2600

Square D Company, Control Products, Knightdale, NC 27545 ..... 919-266-3671

Staffall Inc., Cranston, RI 02910 ..... 401-461-5554

Teledyne Penn-Union, Edinboro, PA 16412 ..... 814-734-1831 Ext. 382

\$ TELTEC, INC., Minneapolis, MN 55425 ..... 612-854-9632

\$ TELTEC, Inc., Minneapolis, MN 55425 ..... 612-854-9177

\$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401

803-676-2900

\$ TII Industries Inc., Copiague, NY 11726 ..... 516-789-5000

\$ Trimm Inc., Libertyville, IL 60048 ..... 708-362-3700

United Switch Company, Seattle, WA 98199 ..... 206-282-8823

\$ USD Products, Div. of Bussmann, Chicago, IL 60656 ..... 708-867-4800

Vector Electronic Co., Inc., Sylmar, CA 91342 ..... 818-365-9661;800-423-5659

\$ Wago Corp., Brown Deer, WI 53223 ..... 414-354-5511

\$ Weidmuller Inc., Richmond, VA 23236 ..... 804-794-2877

Wieland Inc., Burgaw, NC 28425 ..... 919-259-5050

**Terminal Blocks, DIN Rail Mounted-2100**

\$ Atech Corp., Flemington, NJ 08822-6000, 908-806-9400

B•1342, C•1006-1007,1152,1156-1157



|                                                                                    |                            |
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| § LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564        | C•1398-1399                |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                 | C•1510,1518,1520-1521      |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C•1510,1519-1521           |
| § Allen-Bradley Co., Div. of Industrial Control Grp., Milwaukee, WI 53201          | 414-382-2000               |
| § Bussmann Division, Cooper Industries, St. Louis, MO 63178                        | 314-394-2877               |
| § Curtis Industries, Milwaukee, WI 53234-3925                                      | 414-649-4200               |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608                    | 201-288-4477; 800-447-5639 |
| § Entrellec Inc., Irving, TX 75038                                                 | 214-550-9025               |
| § Harting Elektronik Inc., Hoffman Estates, IL 60195                               | 708-519-7700, ext. 200     |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                          | 708-398-5311;800-323-5207  |
| § Marco Manufacturing Co., Inc., Philadelphia, PA 19145                            | 215-463-2332               |
| § Milton Ross Co., Warrington, PA 18976                                            | 215-491-0600               |
| § Pass & Seymour Canada, Inc., Legrand, Concord, ONT L4K 3M9                       | 416-738-9195               |
| § Pass & Seymour/Legrand, Pass & Seymour/Inc., Syracuse, NY 13221                  | 315-468-6211               |
| § Phoenix Contact Inc., Harrisburg, PA 17111                                       | 717-944-1300               |
| § Shokai Far East Ltd., Peekskill, NY 10566                                        | 914-736-3500               |
| § Square D Company, Control Products, Knightdale, NC 27545                         | 919-266-3671               |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401      | 803-676-2900               |
| § Weidmuller Inc., Richmond, VA 23236                                              | 804-794-2877               |
| § West Electronic Sales Team, Huntington Beach, CA 92647                           | 714-375-6500;              |
|                                                                                    | 310-495-5569               |
| § Wieland Inc., Burgaw, NC 28425                                                   | 919-259-5050               |

## Terminal Blocks, Panel Mounting-2100

|                                                                                    |                             |
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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                            | C•1156-1157                 |
| § Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102      | C•1269-1272                 |
| § LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564        | C•1394,1397                 |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                 | C•1510,1515,1517            |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C•1510,1513,1516            |
| † Accurate Electronics Corp., Elyria, OH 44036                                     | 216-366-6330;1-800-334-5904 |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473;800-221-4767   |
| § Amerace Electronic Components, Punta Gorda, FL 33950                             | 813-575-8400                |
| § Bussmann Division, Cooper Industries, St. Louis, MO 63178                        | 314-394-2877                |
| § Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921;800-451-4381   |
| § Cole Hersee Co., Boston, MA 02127-2467                                           | 617-268-2100                |
| § Curtis Industries, Milwaukee, WI 53234-3925                                      | 414-649-4200                |
| § EBY Electro Inc., Rockville Centre, NY 11571-1100                                | 516-536-6000                |
| § Eby Electro Inc., Rockville Centre, NY 11571-1100                                | 516-536-6000                |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608                    | 201-288-4477; 800-447-5639  |
|                                                                                    | 214-550-9025                |
| § Harting Elektronik Inc., Hoffman Estates, IL 60195                               | 708-519-7700, ext. 200      |
| § Ideal Industries, Inc., Sycamore, IL 60178                                       | 815-895-5181                |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                          | 708-398-5311;800-323-5207   |
| § Marco Manufacturing Co., Inc., Philadelphia, PA 19145                            | 215-463-2332                |
| § Milton Ross Co., Warrington, PA 18976                                            | 215-491-0600                |
| § MOLEX, Inc., Lisle, IL 60532                                                     | 708-969-4550                |
| § PCD, Peabody, MA 01960                                                           | 508-532-8800                |
| § Phoenix Contact Inc., Harrisburg, PA 17111                                       | 717-944-1300                |
| § RIA Electronics, Eatontown, NJ 07724                                             | 908-389-1300                |
| § Shokai Far East Ltd., Peekskill, NY 10566                                        | 914-736-3500                |
| § Square D Company, Control Products, Knightdale, NC 27545                         | 919-266-3671                |
| § Teledyne Penn-Union, Edinboro, PA 16412                                          | 814-734-1631 Ext. 382       |
| § TELTEC, Inc., Minneapolis, MN 55425                                              | 612-854-9177                |
| § U.S. Terminals Inc., Cincinnati, OH 45243                                        | 513-561-8145                |
| § Weidmuller Inc., Richmond, VA 23236                                              | 804-794-2877                |
| § Wieland Inc., Burgaw, NC 28425                                                   | 919-259-5050                |

## Terminal Blocks, PC Board Mounting-2100

|                                                                                    |                             |
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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                            | C•1152,1154-1155,1157       |
| § Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102      | C•1256                      |
| § Bivar, Inc., Irvine, CA 92718, 714-951-8808                                      | C•1537                      |
| § E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949;800-638-3226 | C•1310                      |
| § Jolo Industries, Inc., Garden Grove, CA 92643, 714-554-6840                      | C•1360                      |
| § LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564        | C•1394,1398-1399            |
| § Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                               | A•1245-1247                 |
| § RIA Electronics, Eatontown, NJ 07724, 908-389-1300                               | C•1442-1444,1446-1447,1449  |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                 | C•1510-1511                 |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C•1510,1513                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                     | 216-366-6330;1-800-334-5904 |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                    | 404-751-9473;800-221-4767   |
| § Assmann Electronics, Inc., Assmann Electronics GmbH, Tempe, AZ 85283             | 602-897-7001                |
| § Augat/RDI, Carol Stream, IL 60188                                                | 708-682-4100                |
| § Amerace Electronic Components, Punta Gorda, FL 33950                             | 813-575-8400                |
| § Bussmann Division, Cooper Industries, St. Louis, MO 63178                        | 314-394-2877                |
| § Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921;800-451-4381   |

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|-----------------------------------------------------------------|----------------------------|
| § Curtis Industries, Milwaukee, WI 53234-3925                   | 414-649-4200               |
| § Custom Connector, Cleveland, OH 44114                         | 216-241-1679               |
| § Dixon, Inc., Grand Junction, CO 81503                         | 303-244-1241               |
| § EBY Electro Inc., Rockville Centre, NY 11571-1100             | 516-536-6000               |
| § Eby Electro Inc., Rockville Centre, NY 11571-1100             | 516-536-6000               |
| § E-Mark, Inc., Trumbull, CT 06611                              | 203-452-1003               |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608 | 201-288-4477; 800-447-5639 |
|                                                                 | 214-550-9025               |
| § Entrellec Inc., Irving, TX 75038                              | 214-550-9025               |
| § Fuses Unlimited, D.E.I., Van Nuys, CA 91406                   | 818-786-8111               |
| § International Microelectronics, Arlington, TX 76003           | 817-473-1730               |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805       | 708-398-5311;800-323-5207  |
| § Lumberg, Inc., Richmond, VA 23236                             | 804-379-2010               |
| § Marco Manufacturing Co., Inc., Philadelphia, PA 19145         | 215-463-2332               |
| § Milton Ross Co., Warrington, PA 18976                         | 215-491-0600               |
| § Mouser Electronics, Santee, CA 92071                          | 800-346-6873               |
| § Mouser Electronics, Mansfield, TX 76063                       | 800-346-6873               |
| § Mouser Electronics, Gilroy, CA 95020                          | 800-346-6873               |
| § Onshore Technology, Tempe, AZ 85281                           | 602-921-3000               |
| § PCD, Peabody, MA 01960                                        | 508-532-8800               |
| § Phoenix Contact Inc., Harrisburg, PA 17111                    | 717-944-1300               |
| § Shokai Far East Ltd., Peekskill, NY 10566                     | 914-736-3500               |
| § TELTEC, Inc., Minneapolis, MN 55425                           | 612-854-9177               |
| § U.S. Terminals Inc., Cincinnati, OH 45243                     | 513-561-8145               |
| § Weidmuller Inc., Richmond, VA 23236                           | 804-794-2877               |
| § Wieland Inc., Burgaw, NC 28425                                | 919-259-5050               |

## Terminal Boards-2100

|                                                                               |                             |
|-------------------------------------------------------------------------------|-----------------------------|
| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                       | C•1157                      |
| § Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102 | C•1272-1273                 |
| § LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564   | C•1398                      |
| § RIA Electronics, Eatontown, NJ 07724, 908-389-1300                          | C•1442                      |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911         | C•1459,1808                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                | 216-366-6330;1-800-334-5904 |
| § Airlyrite Elctms. Co., Bayonne, NJ 07002                                    | 201-436-2230                |
| § Aries Electronics, Frenchtown, NJ 08825                                     | 908-996-6841                |
| † Armel Electronics, N. Bergen, NJ 07047                                      | 201-869-4201                |
| § Augat/RDI, Carol Stream, IL 60188                                           | 708-682-4100                |
| § Concord Electronics Corporation, New York, NY 10012                         | 1-212-777-6571              |
| § Connector Corp., Chicago, IL 60646                                          | 312-539-3108                |
| § Curtis Industries, Milwaukee, WI 53234-3925                                 | 414-649-4200                |
| § Doran Manufacturing Co., Cincinnati, OH 45225                               | 513-681-5424                |
| § E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512         | 800-368-0880                |
| § E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                       | 714-669-9473                |
| § Engineered Assemblies & Components Corp., Teterboro, NJ 07608               | 201-288-4477; 800-447-5639  |
|                                                                               | 214-550-9025                |
| † FIC Corp., Rockville, MD 20852                                              | 301-881-8124;800-638-6594   |
| § International Microelectronics, Arlington, TX 76003                         | 817-473-1730                |
| § Keystone Electronics Corp., Astoria, NY 11105-2017                          | 718-956-8900                |
| § KMC Systems, Inc., Midland Pl., NJ 07432                                    | 201-447-0007                |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                     | 708-398-5311;800-323-5207   |
| § Marco Manufacturing Co., Inc., Philadelphia, PA 19145                       | 215-463-2332                |
| † Mecco Precision/Inds. Inc., Bridgeport, CT 06607                            | 203-333-4900                |
| § Mouser Electronics, Santee, CA 92071                                        | 800-346-6873                |
| § Mouser Electronics, Mansfield, TX 76063                                     | 800-346-6873                |
| § Mouser Electronics, Gilroy, CA 95020                                        | 800-346-6873                |
| † North Texas Circuit Board, Grand Prairie, TX 75050                          | 214-790-7610                |
| § Onshore Technology, Tempe, AZ 85281                                         | 602-921-3000                |
| § Reliance Comm/Tec, Reliance Electric, Cleveland, OH 44117                   | 800-245-4501                |
| § Reliance Electric Co., Cleveland, OH 44117                                  | 800-245-4501                |
| § Shokai Far East Ltd., Peekskill, NY 10566                                   | 914-736-3500                |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                   | 814-724-6440                |
| § Staffall Inc., Cranston, RI 02910                                           | 401-461-5554                |
| § United Technical Products, Fallsington, PA 19054                            | 800-553-5300                |
| § Vector Electronic Co., Inc., Sylmar, CA 91342                               | 818-365-9661;800-423-5659   |
| § Weidmuller Inc., Richmond, VA 23236                                         | 804-794-2877                |

## Terminal Boards, Blocks, Strips (MIL)-2440 — See Vol. B

## Terminal Equipment, Digital-2000 — See Vol. D

## Terminal Strips (Incl. Barrier Types)-2100

|                                                                                    |                             |
|------------------------------------------------------------------------------------|-----------------------------|
| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                            | C•1152,1155,1159            |
| § AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752                             | C•1163                      |
| § Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102      | C•1269-1273                 |
| § ISL Products Int'l, Ltd., Syosset, NY 11791-6093, 516-937-3475;800-626-6116      | C•1354,1753                 |
| § LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896;800-247-0564        | C•1394,1398                 |
| § RIA Electronics, Eatontown, NJ 07724, 908-389-1300                               | C•1442-1444,1446-1449       |
| § Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                          | C•1550                      |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911              | C•1808                      |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                 | C•1510,1514-1515            |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C•1510,1513,1516-1517       |
| † Accurate Electronics Corp., Elyria, OH 44036                                     | 216-366-6330;1-800-334-5904 |
| § Acme Model Engineering Co., Ridgefield, NJ 07657                                 | 201-943-7650                |
| § Andon Elctms. Corp., Lincoln, RI 02865                                           | 401-333-0388                |
| § Aries Electronics, Frenchtown, NJ 08825                                          | 908-996-6841                |
| † Armel Electronics, N. Bergen, NJ 07047                                           | 201-869-4201                |
| § Augat/RDI, Carol Stream, IL 60188                                                | 708-682-4100                |
| § Autosplince, Inc., San Diego, CA 92121                                           | 619-535-0077                |
| § Brim Electronics, Fair Lawn, NJ 07410                                            | 201-796-2886                |



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| \$ Amerace Electronic Components, Punta Gorda, FL 33950                                     | 813-575-8400                    |
| \$ Bussmann Division, Cooper Industries, St. Louis, MO 63178                                | 314-394-2877                    |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                    |
| \$ Concord Electronics Corporation, New York, NY 10012                                      | 1-212-777-6571                  |
| \$ Curtis Industries, Milwaukee, WI 53234-3925                                              | 414-649-4200                    |
| \$ Custom Connector, Cleveland, OH 44114                                                    | 216-241-1679                    |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                    | 201-768-5400                    |
| Doran Manufacturing Co., Cincinnati, OH 45225                                               | 513-681-5424                    |
| \$ EBY Electro Inc., Rockville Centre, NY 11571-1100                                        | 516-536-6000                    |
| \$ Eby Electro Inc., Rockville Centre, NY 11571-1100                                        | 516-536-6000                    |
| Eldre Corporation, Rochester, NY 14623                                                      | 716-427-7280                    |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                             | 201-288-4477;<br>800-447-5639   |
| \$ Entrellec Inc., Irving, TX 75038                                                         | 214-550-9025                    |
| ERNI Components, Richmond, VA 23236                                                         | 804-794-6367                    |
| † FIC Corp., Rockville, MD 20852                                                            | 301-881-8124; 800-638-6594      |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                                               | 815-895-5181                    |
| \$ Interconnect Devices, Inc., Kansas City, KS 66106                                        | 913-342-5544                    |
| International Microelectronics, Arlington, TX 76003                                         | 817-473-1730                    |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643                                            | 714-554-6840                    |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                        | 718-956-8900                    |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                     | 708-398-5311; 800-323-5207      |
| Marco Manufacturing Co., Inc., Philadelphia, PA 19145                                       | 215-463-2332                    |
| \$ Mecc Precision/Inds. Inc., Bridgeport, CT 06607                                          | 203-333-4900                    |
| Mouser Electronics, Santee, CA 92071                                                        | 800-346-6873                    |
| Mouser Electronics, Mansfield, TX 76063                                                     | 800-346-6873                    |
| Mouser Electronics, Gilroy, CA 95020                                                        | 800-346-6873                    |
| \$ Northern Technologies Inc., Markham, Ont., CAN L3R 8N4                                   | 416-475-9320;<br>1-800-456-1875 |
| Omega Engineering, Stamford, CT 06907                                                       | 800-826-6342                    |
| \$ Pass & Seymour/Legrand, Pass & Seymour/Inc., Syracuse, NY 13221                          | 315-468-6211                    |
| \$ PCD, Peabody, MA 01960                                                                   | 508-532-8800                    |
| \$ Reliance Comm/Tec, Reliance Electric, Cleveland, OH 44117                                | 800-245-4501                    |
| \$ Reliance Electric Co., Cleveland, OH 44117                                               | 800-245-4501                    |
| \$ Ritiz Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0                                | 519-696-2616                    |
| Shokai Far East Ltd., Peekskill, NY 10566                                                   | 914-736-3500                    |
| † Sjoberg, C., & Son, Inc., Cranston, RI 02910                                              | 401-461-8220                    |
| \$ H H Smith, NT-T Inc., Meadville, PA 16335                                                | 814-724-6440                    |
| \$ SMK Electronics Corporation, U.S.A., Placentia, CA 92670                                 | 714-996-0960                    |
| United Technical Products, Fallsington, PA 19054                                            | 800-553-5300                    |
| \$ Usco Div., Litton Inds., Van Nuys, CA 91409                                              | 818-786-6381                    |
| \$ Wago Corp., Brown Deer, WI 53223                                                         | 414-354-5511                    |
| \$ Weidmuller Inc., Richmond, VA 23236                                                      | 804-794-2877                    |

## Terminals, Communications-2000 - See Vol. D

## Terminals, Credit Authorization-2000 - See Vol. D

## Terminals, Crimp-2100

|                                                                               |                               |
|-------------------------------------------------------------------------------|-------------------------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                      | C-1163                        |
| ISL Products Int'l., Ltd., Syosset, NY 11791-6093, 516-937-3475; 800-626-6116 |                               |
| LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700                   | C-1354, 1753                  |
| † Accurate Electronics Corp., Elyria, OH 44036                                | 216-366-6330; 1-800-334-5904  |
| Advanced Connector Technology, Ventura, CA 93003                              | 805-644-9990                  |
| Autosplice, Inc., San Diego, CA 92121                                         | 619-535-0077                  |
| \$ Brim Electronics, Fair Lawn, NJ 07410                                      | 201-796-2886                  |
| Burndy Corporation, An FCI Company, Norwalk, CT 06856                         | 203-838-4444                  |
| \$ Catamount Manufacturing, Inc., Orange, MA 01364                            | 1-800-222-5969                |
| \$ Cole Hersee Co., Boston, MA 02127-2467                                     | 617-268-2100                  |
| \$ Concord Electronics Corporation, New York, NY 10012                        | 1-212-777-6571                |
| \$ Custom Computer Cable, Inc., Eden Prairie, MN 55344                        | 612-941-5651; 1-800-343-5553  |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                      | 201-768-5400                  |
| Electronic Connection Corp., Bloomfield, CT 06002                             | 203-243-3356                  |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608               | 201-288-4477;<br>800-447-5639 |
| \$ Grafoplast S.P.A., Wiremarkers, Genova, ITALY 16154                        | + 10. 621687                  |
| \$ Harting Elektronik, Inc., Hoffman Estates, IL 60195                        | 708-519-7700, ext. 200        |
| \$ Hiram Jones Electronics, No. Hollywood, CA 91605                           | 213-875-0213                  |
| \$ Interconnect Devices, Inc., Kansas City, KS 66106                          | 913-342-5544                  |
| \$ JH America, Inc., JBT International, Inc., Torrance, CA 90501              | 310-328-0051                  |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                          | 718-956-8900                  |
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                                  | 708-677-9500                  |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                       | 708-398-5311; 800-323-5207    |
| \$ MOLEX, Inc., Lisle, IL 60532                                               | 708-969-4550                  |
| Omega Engineering, Stamford, CT 06907                                         | 800-826-6342                  |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                  | 800-777-3300                  |
| \$ Pioneer Components, Brooklyn, NY 11234                                     | 718-444-3880                  |
| \$ Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401          | 203-732-7025                  |
| \$ Teledyne Penn-Union, Edinboro, PA 16412                                    | 814-734-1631 Ext. 382         |
| - U.S. Terminals Inc., Cincinnati, OH 45243                                   | 513-561-8145                  |

## Terminals, Data Display (Incl. Alphanumeric & Graphic)-2000 - See Vol. D

## Terminals, Data Entry, Multimedia-2000 - See Vol. D

## Terminals, Disconnecting-2100

|                                                                            |                   |
|----------------------------------------------------------------------------|-------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                       | C-1149-1150       |
| \$ Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                   | C-1152, 1155-1156 |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564 |                   |
| \$ C-1394, 1398                                                            |                   |
| Autosplice, Inc., San Diego, CA 92121                                      | 619-535-0077      |
| \$ Concord Electronics Corporation, New York, NY 10012                     | 1-212-777-6571    |
| Connectronics Corp., Toledo, OH 43607                                      | 419-537-0020      |
| Hiram Jones Electronics, No. Hollywood, CA 91605                           | 213-875-0213      |
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017                      | 718-956-8900      |

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| \$ Klein Tools, Inc., Chicago, IL 60659-9033                          | 708-677-9500 |
| \$ McKenzie Technology, Fremont, CA 94538                             | 510-651-2700 |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                          | 800-777-3300 |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                         | 717-944-1300 |
| \$ WECO Electrical Connectors, Inc., Moores, NY 12958                 | 518-298-4810 |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4 |              |
|                                                                       | 514-694-9136 |
| \$ Weidmuller Inc., Richmond, VA 23236                                | 804-794-2877 |

## Terminals, Display-2000 - See Vol. D

## Terminals, Double Level-2100

|                                                                                     |              |
|-------------------------------------------------------------------------------------|--------------|
| \$ Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                            | C-1152, 1154 |
| \$ WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                 | C-1515       |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C-1516       |
| \$ EBY Electro Inc., Rockville Centre, NY 11571-1100                                | 516-536-6000 |
| \$ Eby Electro Inc., Rockville Centre, NY 11571-1100                                | 516-536-6000 |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                       | 717-944-1300 |
| \$ Weidmuller Inc., Richmond, VA 23236                                              | 804-794-2877 |

## Terminals, Feedthru-2500

|                                                                                             |                              |
|---------------------------------------------------------------------------------------------|------------------------------|
| Alden Products Co., Brockton, MA 02403, 508-583-0160                                        | C-1150                       |
| \$ Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                                    | C-1156                       |
| \$ Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                      | C-1291                       |
| † Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                 | 516-546-1751                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                              | 216-366-6330; 1-800-334-5904 |
| † Alberox Corporation, New Bedford, MA 02745                                                | 508-995-1725                 |
| Andon Elctns. Corp., Lincoln, RI 02865                                                      | 401-333-0388                 |
| † Arnel Electronics, N. Bergen, NJ 07047                                                    | 201-869-4201                 |
| Augal, Inc., Interconnection Products Group, Attleboro, MA 02703                            | 508-222-2202                 |
| Augat/RDI, Carol Stream, IL 60188                                                           | 708-682-4100                 |
| Autosplice, Inc., San Diego, CA 92121                                                       | 619-535-0077                 |
| Autoswage Products, Shelton, CT 06484                                                       | 203-929-1401                 |
| Bead Industries, Bridgeport, CT 06605-0571                                                  | 203-334-4124                 |
| Berg Electronics, Camp Hill, PA 17011                                                       | 800-237-2374                 |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                               | 203-288-8001; 1-800-242-2863 |
| Ceramaseal, New Lebanon, NY 12125                                                           | 518-794-7800                 |
| \$ Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                 |
| † Compac, Holbrook, NY 11741                                                                | 516-585-3400                 |
| † CTS Corp., Connector Products, New Hope, MN 55428                                         | 612-533-3533                 |
| Curtis Industries, Milwaukee, WI 53234-3925                                                 | 414-649-4200                 |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                                    | 201-768-5400                 |
| Doran Manufacturing Co., Cincinnati, OH 45225                                               | 513-681-5424                 |
| Elcom Systems, Inc., Boca Raton, FL 33487                                                   | 407-994-1774                 |
| \$ Electrical Industries Corp., Murray Hill, NJ 07974                                       | 908-464-3200                 |
| \$ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735         | 516-752-1950                 |
| ELMA Electronic Inc., Fremont, CA 94538                                                     | 510-656-3400                 |
| \$ Elpacco, Inc., Lowell, MA 01851                                                          | 508-453-3000                 |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                                       | 714-669-9473                 |
| \$ Garry Electronics, WPI, Salem, NJ 08079                                                  | 609-935-7603                 |
| \$ General Manufacturing, Glendale, CA 91201                                                | 818-243-2069                 |
| † Hermetic Seal Corp., Rosemead, CA 91770                                                   | 213-283-0411                 |
| \$ Hiram Jones Electronics, No. Hollywood, CA 91605                                         | 213-875-0213                 |
| \$ Injecto Mold Inc., Crellin International, Chicago, IL 60639                              | 312-384-6000                 |
| \$ Injectoral Electronics (Woman Owned), Bohemia, NY 11716                                  | 516-563-3388                 |
| \$ Johnson, E. F., Co., Waseca, MN 56093                                                    | 1-800-247-8256               |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643                                            | 714-554-6840                 |
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 718-956-8900                 |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                     | 708-398-5311; 800-323-5207   |
| † Oxley Inc., Branford, CT 06405                                                            | 203-488-1033                 |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                               | 717-944-1300                 |
| Precision Metal Products Co., Peabody, MA 01960                                             | 508-532-5500                 |
| \$ Rowe Industries, Inc., Toledo, OH 43612                                                  | 419-729-9761                 |
| Sjoberg, C., & Son, Inc., Cranston, RI 02910                                                | 401-461-8220                 |
| \$ Usco Div., Litton Inds., Van Nuys, CA 91409                                              | 818-786-6381                 |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                 | 513-561-8145                 |
| \$ WECO Electrical Connectors, Inc., Moores, NY 12958                                       | 518-298-4810                 |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                       |                              |
|                                                                                             | 514-694-9136                 |
| \$ Weidmuller Inc., Richmond, VA 23236                                                      | 804-794-2877                 |

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| ELMA Electronic Inc., Fremont, CA 94538                               | 510-656-3400               |
| \$ Elpacco, Inc., Lowell, MA 01851                                    | 508-453-3000               |
| E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                 | 714-669-9473               |
| \$ Garry Electronics, WPI, Salem, NJ 08079                            | 609-935-7603               |
| \$ General Manufacturing, Glendale, CA 91201                          | 818-243-2069               |
| † Hermetic Seal Corp., Rosemead, CA 91770                             | 213-283-0411               |
| \$ Hiram Jones Electronics, No. Hollywood, CA 91605                   | 213-875-0213               |
| \$ Injecto Mold Inc., Crellin International, Chicago, IL 60639        | 312-384-6000               |
| \$ Injectoral Electronics (Woman Owned), Bohemia, NY 11716            | 516-563-3388               |
| \$ Johnson, E. F., Co., Waseca, MN 56093                              | 1-800-247-8256             |
| \$ Jolo Industries, Inc., Garden Grove, CA 92643                      | 714-554-6840               |
| \$ Keystone Electronics Corp., Astoria, NY 11105-2017                 | 718-956-8900               |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805               | 708-398-5311; 800-323-5207 |
| † Oxley Inc., Branford, CT 06405                                      | 203-488-1033               |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                         | 717-944-1300               |
| Precision Metal Products Co., Peabody, MA 01960                       | 508-532-5500               |
| \$ Rowe Industries, Inc., Toledo, OH 43612                            | 419-729-9761               |
| Sjoberg, C., & Son, Inc., Cranston, RI 02910                          | 401-461-8220               |
| \$ Usco Div., Litton Inds., Van Nuys, CA 91409                        | 818-786-6381               |
| † U.S. Terminals Inc., Cincinnati, OH 45243                           | 513-561-8145               |
| \$ WECO Electrical Connectors, Inc., Moores, NY 12958                 | 518-298-4810               |
| \$ WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4 |                            |
|                                                                       | 514-694-9136               |
| \$ Weidmuller Inc., Richmond, VA 23236                                | 804-794-2877               |

## Terminals, Ferrule, Cable-End-2100

|                                                                                     |              |
|-------------------------------------------------------------------------------------|--------------|
| Alberox Corporation, New Bedford, MA 02745                                          | 508-995-1725 |
| \$ Altech Corp., Flemington, NJ 08822-6000                                          | 908-806-9400 |
| Autosplice, Inc., San Diego, CA 92121                                               | 619-535-0077 |
| \$ Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735 | 516-752-1950 |
| \$ Grafoplast S.P.A., Wiremarkers, Genova, ITALY 16154                              | + 10. 621687 |
| Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                      | 203-756-8847 |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                       | 717-944-1300 |
| \$ Rowe Industries, Inc., Toledo, OH 43612                                          | 419-729-9761 |
| † Sjoberg, C., & Son, Inc., Cranston, RI 02910                                      | 401-461-8220 |
| U.S. Terminals Inc., Cincinnati, OH 45243                                           | 513-561-8145 |
| \$ Weidmuller Inc., Richmond, VA 23236                                              | 804-794-2877 |
| \$ Weidmuller Inc., Paladim Tools, Newbury Park, CA 91320                           | 805-499-0318 |

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| \$ Altech Corp., Flemington, NJ 08822-6000, 908-806-9400            | C-1156       |
| Gossen/Textmate, Vista, CA 92083-8397, 619-598-9899; 1-800-394-8344 |              |
|                                                                     | D-1379       |
| Textmate, Inc., Vista, CA 92083-8397, 619-598-9899                  | D-1379       |
| Curtis Industries, Milwaukee, WI 53234-3925                         | 414-649-4200 |



|                                                                      |              |
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| § McKenzie Technology, Fremont, CA 94538                             | 510-651-2700 |
| § Phoenix Contact Inc, Harrisburg, PA 17111                          | 717-944-1300 |
| San-O Industrial Corp., Holbrook, NY 11741                           | 516-472-6666 |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958                 | 518-298-4810 |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4 | 514-694-9136 |
| § Weidmuller Inc, Richmond, VA 23236                                 | 804-794-2877 |

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| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571              | C•1540                |
| WECO Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810                   | C•1517                |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136 | C•1515                |
| § Altech Corp., Flemington, NJ 08822-6000                                          | 908-806-9400          |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                            | 201-768-5400          |
| § Hiram Jones Electronics, No. Hollywood, CA 91605                                 | 213-875-0213          |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                          | 708-398-5311          |
| § McKenzie Technology, Fremont, CA 94538                                           | 510-651-2700          |
| § Phoenix Contact Inc, Harrisburg, PA 17111                                        | 717-944-1300          |
| Staffall Inc, Cranston, RI 02910                                                   | 401-461-5554          |
| Teledyne Penn-Union, Edinboro, PA 16412                                            | 814-734-1631 Ext. 382 |
| † U.S. Terminals Inc, Cincinnati, OH 45243                                         | 513-561-8145          |
| § Weidmuller Inc, Richmond, VA 23236                                               | 804-794-2877          |

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| Terminals, Intelligent/Programmable, Batch-2000 — See Vol. D                  |  |
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| Terminals, Intelligent/Programmable, Multiprogramming-2000 — See Vol. D       |  |
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| † Genisco Electronics, A Division of GTC, Anaheim, CA 92805, 714-563-4300  | B•1151       |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564 | C•1398       |
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                  | B•1803       |
| § Allen-Bradley Co., Div. of Industrial Control Grp., Milwaukee, WI 53201  | 414-382-2000 |
| § Altech Corp., Flemington, NJ 08822-6000                                  | 908-806-9400 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703           | 508-222-2202 |
| § Leecraft Industries Ltd., Scarborough, Ont., CANADA M1B 3R6              | 416-292-4463 |
| § McKenzie Technology, Fremont, CA 94538                                   | 510-651-2700 |
| § Phoenix Contact Inc, Harrisburg, PA 17111                                | 717-944-1300 |
| Vorne Industries, Inc., Chicago, IL 60631                                  | 312-775-9440 |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958                       | 518-298-4810 |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4       | 514-694-9136 |
| § Weidmuller Inc, Richmond, VA 23236                                       | 804-794-2877 |

**Terminals, LED/Lamp Indicators-2100**

|                                                                            |              |
|----------------------------------------------------------------------------|--------------|
| † Genisco Electronics, A Division of GTC, Anaheim, CA 92805, 714-563-4300  | B•1151       |
| LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564 | C•1398       |
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext.62                  | B•1803       |
| § Allen-Bradley Co., Div. of Industrial Control Grp., Milwaukee, WI 53201  | 414-382-2000 |
| § Altech Corp., Flemington, NJ 08822-6000                                  | 908-806-9400 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703           | 508-222-2202 |
| § Leecraft Industries Ltd., Scarborough, Ont., CANADA M1B 3R6              | 416-292-4463 |
| § McKenzie Technology, Fremont, CA 94538                                   | 510-651-2700 |
| § Phoenix Contact Inc, Harrisburg, PA 17111                                | 717-944-1300 |
| Vorne Industries, Inc., Chicago, IL 60631                                  | 312-775-9440 |
| § WECO Electrical Connectors, Inc., Mooers, NY 12958                       | 518-298-4810 |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4       | 514-694-9136 |
| § Weidmuller Inc, Richmond, VA 23236                                       | 804-794-2877 |

**Terminals, Lug (All Types)-2100**

|                                                                                            |                              |
|--------------------------------------------------------------------------------------------|------------------------------|
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                    | C•1163                       |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                      | C•1290-1291                  |
| J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                       | C•1363                       |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                  | C•1678, 1681                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                             | 216-366-6330; 1-800-334-5904 |
| Alberox Corporation, New Bedford, MA 02745                                                 | 508-995-1725                 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                           | 508-222-2202                 |
| Autosplice, Inc., San Diego, CA 92121                                                      | 619-535-0077                 |
| † Brim Electronics, Fair Lawn, NJ 07410                                                    | 201-796-2886                 |
| § Burndy Corporation, An FCI Company, Norwalk, CT 06856                                    | 203-838-4444                 |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                 |
| Connector Corp., Chicago, IL 60646                                                         | 312-539-3108                 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                    | 201-768-5400                 |
| § EBY Electro Inc., Rockville Centre, NY 11571-1100                                        | 516-536-6000                 |
| § Eby Electro Inc., Rockville Centre, NY 11571-1100                                        | 516-536-6000                 |
| † Electrical Industries Corp., Murray Hill, NJ 07974                                       | 908-464-3200                 |
| ELMA Electronic Inc., Fremont, CA 94538                                                    | 510-656-3400                 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477; 800-447-5639   |
| † Garry Electronics, WPI, Salem, NJ 08079                                                  | 609-935-7603                 |
| † General Manufacturing, Glendale, CA 91201                                                | 818-243-2069                 |
| § Hiram Jones Electronics, No. Hollywood, CA 91605                                         | 213-875-0213                 |
| † ICO-RALLY Corporation, Palo Alto, CA 94303                                               | 415-856-9900                 |
| § Ideal Industries, Inc., Sycamore, IL 60178                                               | 815-895-5181                 |
| ITT Pomona Electronics, Pomona, CA 91766                                                   | 909-869-2900                 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 718-956-8900                 |
| § Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                  | 708-398-5311                 |
| § Marco Manufacturing Co., Inc., Philadelphia, PA 19145                                    | 215-463-2332                 |
| Modor Technical Products Inc., Tampa, FL 33626                                             | 813-855-5736                 |
| † Nichifu America, Inc., Pottstown, PA 19464                                               | 215-323-7120                 |
| Omega Engineering, Stamford, CT 06907                                                      | 800-826-6342                 |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                | 800-777-3300                 |
| † Patton-MacGyver Inc., Providence, RI 02905                                               | 401-941-6000                 |
| § Pioneer Components, Brooklyn, NY 11234                                                   | 718-444-3880                 |
| † Precision Metal Products Co., Peabody, MA 01960                                          | 508-532-5500                 |
| § Ritiz Electronics/Relco, New Dundee, Ont., CANADA NOB 2E0                                | 519-696-2616                 |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                                       | 800-634-2356                 |
| Shokai Far East Ltd., Peekskill, NY 10566                                                  | 914-736-3500                 |

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| † Sjoberg, C. & Son, Inc., Cranston, RI 02910                                 | 401-461-8220               |
| § H H Smith, NT-T Inc., Meadville, PA 16335                                   | 814-724-6404               |
| Staffall Inc, Cranston, RI 02910                                              | 401-461-5554               |
| Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401             | 203-732-7025               |
| Teledyne Penn-Union, Edinboro, PA 16412                                       | 814-734-1631 Ext. 382      |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900               |
| § TII Industries Inc, Copiague, NY 11726                                      | 516-789-5000               |
| § Tyton Corp., Milwaukee, WI 53223                                            | 414-355-1130; 800-535-5552 |
| United Switch Company, Seattle, WA 98199                                      | 206-282-8823               |
| § Useco Div., Litton Inds., Van Nuys, CA 91409                                | 818-786-6381               |
| † U.S. Terminals Inc, Cincinnati, OH 45243                                    | 513-561-8145               |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4          | 514-694-9136               |

**Terminals, Miniature & Subminiature-2100**

|                                                                                   |                   |
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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                           | C•1154-1155, 1157 |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                           | C•1163            |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571             | C•1290-1291       |
| E-Cam Technology Inc., E-Cam AG, Scottsdale, AZ 85260, 602-443-1949; 800-638-3226 | C•1310            |
| § Samtec, Inc., New Albany, IN 47151-1147, 1-800-672-6832                         | C•1549-1550       |
| † Shogyo International Corp., Great Neck, NY 11021-4799, 516-466-0911             | C•1459, 1808      |

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| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                         | C•1678, 1681                 |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                           | 516-546-1751                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                                      | 216-366-6330; 1-800-334-5904 |
| Alberox Corporation, New Bedford, MA 02745                                                          | 508-995-1725                 |
| Andon Elctms. Corp., Lincoln, RI 02865                                                              | 401-333-0388                 |
| † Arnel Electronics, N. Bergen, NJ 07047                                                            | 201-869-4201                 |
| Autosplice, Inc., San Diego, CA 92121                                                               | 619-535-0077                 |
| Autoswage Products, Shelton, CT 06484                                                               | 203-929-1401                 |
| Bead Industries, Bridgeport, CT 06605-0571                                                          | 203-334-4124                 |
| Berg Electronics, Camp Hill, PA 17011                                                               | 800-237-2374                 |
| † Brim Electronics, Fair Lawn, NJ 07410                                                             | 201-796-2886                 |
| § Burndy Corporation, An FCI Company, Norwalk, CT 06856                                             | 203-838-4444                 |
| Burr-Brown Corp., Tucson, AZ 85734                                                                  | 602-746-1111                 |
| Ceramaseal, New Lebanon, NY 12125                                                                   | 518-794-7800                 |
| § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007          | 708-981-6000                 |
| Connector Corp., Chicago, IL 60646                                                                  | 312-539-3108                 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                             | 201-768-5400                 |
| Doran Manufacturing Co., Cincinnati, OH 45225                                                       | 516-681-5424                 |
| § EBY Electro Inc., Rockville Centre, NY 11571-1100                                                 | 516-536-6000                 |
| § Eby Electro Inc., Rockville Centre, NY 11571-1100                                                 | 516-536-6000                 |
| † Electrical Industries Corp., Murray Hill, NJ 07974                                                | 908-464-3200                 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608                                     | 201-288-4477; 800-447-5639   |
| † Garry Electronics, WPI, Salem, NJ 08079                                                           | 609-935-7603                 |
| § GC-Thorsen, Rockford, IL 61105-1209                                                               | 815-969-9661                 |
| † General Manufacturing, Glendale, CA 91201                                                         | 818-243-2069                 |
| § Hiram Jones Electronics, No. Hollywood, CA 91605                                                  | 213-875-0213                 |
| Hirose Electric U.S.A., Inc. (HRS), Div. of Hirose Electric Co. Ltd. (Japan), Simi Valley, CA 93065 | 805-522-7958                 |
| † Hypertronics Corp., Hudson, MA 01749                                                              | 508-568-0451; 800-225-9228   |
| † Injecto Mold Inc., Crellin International, Chicago, IL 60639                                       | 312-384-6000                 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                                | 718-956-8900                 |
| § Lyn-Tron, Inc., Burbank, CA 91505                                                                 | 213-849-6211; 800-423-2734   |
| Marco Manufacturing Co., Inc., Philadelphia, PA 19145                                               | 215-463-2332                 |
| § McKenzie Technology, Fremont, CA 94538                                                            | 510-651-2700                 |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                                           | 516-922-6000                 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                                  | 508-588-6110                 |
| § Panduit Corp., Tinley Park, IL 60477-0981                                                         | 800-777-3300                 |
| † Precision Metal Products Co., Peabody, MA 01960                                                   | 508-532-5500                 |
| Robinson Nugent, Inc., New Albany, IN 47150                                                         | 812-948-0564                 |
| Shokai Far East Ltd., Peekskill, NY 10566                                                           | 914-736-3500                 |
| Sjoberg, C. & Son, Inc., Cranston, RI 02910                                                         | 401-461-8220                 |
| SMK Electronics Corporation, U.S.A., Placentia, CA 92670                                            | 714-996-0960                 |
| Staffall Inc, Cranston, RI 02910                                                                    | 401-461-5554                 |
| United Technical Products, Fallington, PA 19054                                                     | 800-553-5300                 |
| † Useco Div., Litton Inds., Van Nuys, CA 91409                                                      | 818-786-6381                 |
| † U.S. Terminals Inc, Cincinnati, OH 45243                                                          | 513-561-8145                 |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4                                | 514-694-9136                 |
| § Weidmuller Inc, Richmond, VA 23236                                                                | 804-794-2877                 |

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| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                     | C•1006, 1152, 1154 |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                     | C•1163             |
| Beau Interconnect Systems, Vernitron Corp., Laconia, NH 03247, 603-524-5102 | C•1269-1273        |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571       | C•1290             |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454     | C•1317             |
| Electro Space Fabricators, Topton, PA 19562-0067, 215-682-7181              | C•1026             |
| † Lodestone Pacific, Anaheim, CA 92807, 714-630-1343                        | A•1246-1247        |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000     | C•1421             |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                          | C•1447             |
| § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 | C•1678, 1681       |



# PRODUCT INDEX & DIRECTORY

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| <b>\$ WECC Electrical Connectors, Inc., Mooers, NY 12958, 518-298-4810</b>                   | <b>C*1510,1514</b>           |
| <b>\$ WECC Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136</b>   | <b>C*1510,1513,1517</b>      |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                    | 516-546-1751                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                               | 216-366-6330; 1-800-334-5904 |
| Advanced Interconnections Corp., West Warwick, RI 02893                                      | 401-823-5200                 |
| Andon Elctns. Corp., Lincoln, RI 02865                                                       | 401-333-0388                 |
| † Aries Electronics, Frenchtown, NJ 08825                                                    | 908-986-6841                 |
| Assembly Specialists, Chelmsford, MA 01824                                                   | 508-250-5900                 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                             | 508-222-2202                 |
| Autosplice, Inc., San Diego, CA 92121                                                        | 619-535-0077                 |
| Autoswage Products, Shelton, CT 06484                                                        | 203-929-1401                 |
| Bead Industries, Bridgeport, CT 06605-0571                                                   | 203-334-4124                 |
| Berg Electronics, Camp Hill, PA 17011                                                        | 800-237-2374                 |
| BIICC-VERO Electronics, Inc., Hamden, CT 06514                                               | 203-288-8001; 1-800-242-2863 |
| † Burndy Corporation, An FCI Company, Norwalk, CT 06856                                      | 203-838-4444                 |
| † Caton Connector Corp., Kingston, MA 02364                                                  | 617-585-4315                 |
| † Cinch Connector Division, Labyrinth Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                 |
| † Components Corp., Denville, NJ 07834                                                       | 201-627-0290                 |
| Connector Corp., Chicago, IL 60646                                                           | 312-539-3108                 |
| Cosmo Corporation, Cleveland, OH 44109                                                       | 216-861-5594                 |
| † CTS Corp., Connector Products, New Hope, MN 55428                                          | 612-533-3533                 |
| Curtis Industries, Milwaukee, WI 53234-3925                                                  | 414-649-4200                 |
| Doran Manufacturing Co., Cincinnati, OH 45225                                                | 513-681-5424                 |
| Douglas Electronics, Inc., San Leandro, CA 94577                                             | 510-483-8770                 |
| † EBY Electro Inc., Rockville Centre, NY 11571-1100                                          | 516-536-6000                 |
| † Eby Electro Inc., Rockville Centre, NY 11571-1100                                          | 516-536-6000                 |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                              | 201-288-4477; 800-447-5639   |
| † Entelec Inc., Irving, TX 75038                                                             | 214-550-9025                 |
| † Gary Electronics, WPI, Salem, NJ 08079                                                     | 609-935-7603                 |
| † GC-Thorsen, Rockford, IL 61105-1209                                                        | 815-968-9661                 |
| † General Manufacturing, Glendale, CA 91201                                                  | 818-243-2069                 |
| † Hiram Jones Electronics, No. Hollywood, CA 91605                                           | 213-875-0213                 |
| † Hypertronics Corp., Hudson, MA 01749                                                       | 508-568-0451; 800-225-9228   |
| Jolo Industries, Inc., Garden Grove, CA 92643                                                | 714-524-6840                 |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                         | 718-956-8900                 |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                    | 708-398-5311; 800-323-5207   |
| Marco Manufacturing Co., Inc., Philadelphia, PA 19145                                        | 215-463-2332                 |
| † Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                             | 203-756-8847                 |
| † MOLEX, Inc., Lisle, IL 60532                                                               | 708-969-4550                 |
| Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                           | 508-588-6110                 |
| † Oxley Inc., Branford, CT 06405                                                             | 203-488-1033                 |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                  | 800-777-3300                 |
| † Phoenix Contact Inc., Harrisburg, PA 17111                                                 | 717-944-1300                 |
| † Precision Metal Products Co., Peabody, MA 01960                                            | 508-532-5500                 |
| Robinson Nugent, Inc., New Albany, IN 47150                                                  | 812-948-0564                 |
| Samtec, Inc., New Albany, IN 47151-1147                                                      | 1-800-672-6832               |
| Shokai Far East Ltd., Peekskill, NY 10566                                                    | 914-736-3500                 |
| † Sjöberg, C. & Son, Inc., Cranston, RI 02910                                                | 401-461-8220                 |
| H.H. Smith, NT-T Inc., Meadville, PA 16335                                                   | 814-724-6440                 |
| Staffall Inc., Cranston, RI 02910                                                            | 401-461-5554                 |
| † Usco Div., Litton Inds., Van Nuys, CA 91409                                                | 818-786-6381                 |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                  | 513-561-8145                 |
| † Wago Corp., Brown Deer, WI 53223                                                           | 414-354-5511                 |
| † Weidmuller Inc., Richmond, VA 23236                                                        | 804-794-2877                 |

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## Terminals, Solderless-2100

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| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                      | <b>C*1163</b>                |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                        | <b>C*1291,1540</b>           |
| † J.S.T. Corp., Mt. Prospect, IL 60056, 1-800-947-1110                                       | <b>C*1363</b>                |
| † LMI Connectors Inc., Boca Raton, FL 33487-2710, 407-994-5896; 800-247-0564                 | <b>C*1398</b>                |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                                | <b>C*1419</b>                |
| † Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                  | <b>C*1681</b>                |
| † Accurate Electronics Corp., Elyria, OH 44036                                               | 216-366-6330; 1-800-334-5904 |
| Alberox Corporation, New Bedford, MA 02745                                                   | 508-995-1725                 |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                   | 908-925-8000                 |
| † Altech Corp., Flemington, NJ 08822-6000                                                    | 908-806-9400                 |
| Andon Elctns. Corp., Lincoln, RI 02865                                                       | 401-333-0388                 |
| † Assembly Specialists, Chelmsford, MA 01824                                                 | 508-250-5900                 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                             | 508-222-2202                 |
| Augat/RDI, Carl Stream, IL 60188                                                             | 708-682-4100                 |
| Autosplice, Inc., San Diego, CA 92121                                                        | 619-535-0077                 |
| Autoswage Products, Shelton, CT 06484                                                        | 203-929-1401                 |
| AVO International, TBG, Dallas, TX 75237                                                     | 214-333-3201                 |
| Bead Industries, Bridgeport, CT 06605-0571                                                   | 203-334-4124                 |
| † Berg Electronics, Camp Hill, PA 17011                                                      | 800-237-2374                 |
| BIICC-VERO Electronics, Inc., Hamden, CT 06514                                               | 203-288-8001; 1-800-242-2863 |
| † Brim Electronics, Fair Lawn, NJ 07410                                                      | 201-796-2886                 |
| † Burndy Corporation, An FCI Company, Norwalk, CT 06856                                      | 203-838-4444                 |
| † Bussco Inc., El Segundo, CA 90245                                                          | 310-322-6580                 |
| † Catamount Manufacturing, Inc., Orange, MA 01364                                            | 1-800-222-5969               |
| † Cinch Connector Division, Labyrinth Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                 |
| † Cole Hersee Co., Boston, MA 02127-2467                                                     | 617-268-2100                 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                      | 201-768-5400                 |
| Doran Manufacturing Co., Cincinnati, OH 45225                                                | 513-681-5424                 |
| † E & L Instruments, Interplex Electronics, Inc., New Haven, CT 06512                        | 800-368-0880                 |

# Terminals, Threaded-2100

|                                                                               |                                   |
|-------------------------------------------------------------------------------|-----------------------------------|
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608               | 201-288-4477; 800-447-5639        |
| † Fuses Unlimited, D.E.I., Van Nuys, CA 91406                                 | 818-786-8111                      |
| † Garry Electronics, WPI, Salem, NJ 08079                                     | 609-935-7603                      |
| † Heyco Molded Products, Inc., Kenilworth, NJ 07033                           | 908-245-0033; 800-526-4182        |
| † Hypertronics Corp., Hudson, MA 01749                                        | 508-568-0451; 800-225-9228        |
| † ICO-RALLY Corporation, Palo Alto, CA 94303                                  | 415-856-9900                      |
| † Ideal Industries, Inc., Sycamore, IL 60178                                  | 815-895-5181                      |
| † Injecto Mold Inc., Crellin International, Chicago, IL 60639                 | 312-384-6000                      |
| Interconnect Devices, Inc., Kansas City, KS 66106                             | 913-342-5544                      |
| International Microelectronics, Arlington, TX 76003                           | 817-473-1730                      |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                          | 718-956-8900                      |
| † Klein Tools, Inc., Chicago, IL 60659-9033                                   | 708-677-9500                      |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                     | 708-398-5311; 800-323-5207        |
| 3M-Electronic Products Division, Austin, TX 78726                             | 1-800-225-5373 Sls. & Prod. Info. |
| † MOLEX, Inc., Lisle, IL 60532                                                | 708-969-4550                      |
| † Mouser Electronics, Santee, CA 92071                                        | 800-346-6873                      |
| † Mouser Electronics, Mansfield, TX 76063                                     | 800-346-6873                      |
| † Mouser Electronics, Gilroy, CA 95020                                        | 800-346-6873                      |
| † Nichifu America, Inc., Pottstown, PA 19464                                  | 215-323-7120                      |
| † Omega Engineering, Stamford, CT 06907                                       | 800-826-6342                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300                      |
| † Patton-MacGuer, Inc., Providence, RI 02905                                  | 401-941-6000                      |
| † Pioneer Components, Brooklyn, NY 11234                                      | 718-444-3880                      |
| Robinson Nugent, Inc., New Albany, IN 47150                                   | 812-948-0564                      |
| † Shokai Far East Ltd., Peekskill, NY 10566                                   | 914-736-3500                      |
| † Sjöberg, C. & Son, Inc., Cranston, RI 02910                                 | 401-461-8220                      |
| † Square D Co., Palatine, IL 60067                                            | 708-397-2600                      |
| Staffall Inc., Cranston, RI 02910                                             | 401-461-5554                      |
| † Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401           | 203-732-7025                      |
| Teledyne Penn-Union, Edinboro, PA 16412                                       | 814-734-1631 Ext. 382             |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                      |
| † Tyton Corp., Milwaukee, WI 53223                                            | 414-355-1130; 800-535-5552        |
| † Usco Div., Litton Inds., Van Nuys, CA 91409                                 | 818-786-6381                      |
| U.S. Terminals Inc., Cincinnati, OH 45243                                     | 513-561-8145                      |
| † Wearnes Hollingsworth, Electrical Products Division, Pompano Bch., FL 33069 | 305-979-2050                      |
| † WECC Electrical Connectors, Inc., Mooers, NY 12958                          | 518-298-4810                      |
| † WECC Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4          | 514-694-9136                      |
| † Weidmuller Inc., Richmond, VA 23236                                         | 804-794-2877                      |
| Wire Graphics, Inc., Farmingdale, NY 11735                                    | 516-293-1525                      |

## Terminals, Standoff-2100

|                                                                                    |                              |
|------------------------------------------------------------------------------------|------------------------------|
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571              | <b>C*1290-1291</b>           |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659          | <b>C*1681</b>                |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                          | 516-546-1751                 |
| † Accurate Electronics Corp., Elyria, OH 44036                                     | 216-366-6330; 1-800-334-5904 |
| † Alberox Corporation, New Bedford, MA 02745                                       | 508-995-1725                 |
| † Amatrom Electronic Hardware, New Haven, CT 06515                                 | 203-397-3311                 |
| Andon Elctns. Corp., Lincoln, RI 02865                                             | 401-333-0388                 |
| † Armel Electronics, N. Bergen, NJ 07047                                           | 201-869-4201                 |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                   | 508-222-2202                 |
| Autosplice, Inc., San Diego, CA 92121                                              | 619-535-0077                 |
| Autoswage Products, Shelton, CT 06484                                              | 203-929-1401                 |
| Bead Industries, Bridgeport, CT 06605-0571                                         | 203-334-4124                 |
| Berg Electronics, Camp Hill, PA 17011                                              | 800-237-2374                 |
| Ceramaseal, New Lebanon, NY 12125                                                  | 518-794-7800                 |
| Curtis Industries, Milwaukee, WI 53234-3925                                        | 414-649-4200                 |
| † Electrical Industries Corp., Murray Hill, NJ 07974                               | 908-664-3200                 |
| † Electronic Hardware Corp., Formerly Jan Hardware Mfg. Co., Farmingdale, NY 11735 | 516-752-1950                 |
| ELMA Electronic Inc., Fremont, CA 94538                                            | 510-656-3400                 |
| † Elpakco, Inc., Lowell, MA 01851                                                  | 508-453-3000                 |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                    | 201-288-4477; 800-447-5639   |
| † Garry Electronics, WPI, Salem, NJ 08079                                          | 609-935-7603                 |
| † General Manufacturing, Glendale, CA 91201                                        | 818-243-2069                 |
| † Hermetic Seal Corp., Rosemead, CA 91770                                          | 213-283-0411                 |
| † Hiram Jones Electronics, No. Hollywood, CA 91605                                 | 213-875-0213                 |
| † Injecto Mold Inc., Crellin International, Chicago, IL 60639                      | 312-384-6000                 |
| † Johnson, E. F. Co., Waseca, MN 56093                                             | 1-800-247-8256               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                               | 718-956-8900                 |
| † Lyn-Tron, Inc., Burbank, CA 91505                                                | 213-849-6211; 800-423-2734   |
| † Mark Eyelet Inc., AMP, Inc., Wolcott, CT 06716                                   | 203-756-8847                 |
| † McKenzie Technology, Fremont, CA 94538                                           | 510-651-2700                 |
| James Millen Elctns., Caywood Elec. Inc., No. Andover, MA 01845                    | 508-975-2711                 |
| † Panduit Corp., Tinley Park, IL 60477-0981                                        | 800-777-3300                 |
| † Positronic Industries, Inc., Springfield, MO 65801                               | 417-866-2322                 |
| † Precicon Inc., Langhorne, PA 19047                                               | 215-757-1202                 |
| † Precision Metal Products Co., Peabody, MA 01960                                  | 508-532-5500                 |
| † Rowe Industries, Inc., Toledo, OH 43612                                          | 419-729-9761                 |
| † Sjöberg, C. & Son, Inc., Cranston, RI 02910                                      | 401-461-8220                 |
| † H.H. Smith, NT-T Inc., Meadville, PA 16335                                       | 814-724-6440                 |
| † Uniproc, Orange, NJ 07050                                                        | 201-674-1700; 800-526-1389   |
| † Usco Div., Litton Inds., Van Nuys, CA 91409                                      | 818-786-6381                 |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                        | 513-561-8145                 |
| † WECC Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4               | 514-694-9136                 |

## Terminals, Threaded-2100

|                                                         |                         |
|---------------------------------------------------------|-------------------------|
| † Altech Corp., Flemington, NJ 08822-6000, 908-806-9400 | <b>C*1152,1154,1156</b> |
|---------------------------------------------------------|-------------------------|



|                                                                                          |                             |
|------------------------------------------------------------------------------------------|-----------------------------|
| Beau Interconnect Systems, Vergitron Corp., Laconia, NH 03247, 603-524-5102              | C•1269-1270,1272            |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571                    | C•1291                      |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366                            | C•1419                      |
| RIA Electronics, Eatontown, NJ 07724, 908-389-1300                                       | C•1443                      |
| WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                         | C•1510-1511,1514            |
| WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136         | C•1510,1513,1517            |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                                | 516-546-1751                |
| † Accurate Electronics Corp., Elyria, OH 44036                                           | 216-366-6330;1-800-334-5904 |
| Albercor Corporation, New Bedford, MA 02745                                              | 508-995-1725                |
| Andon Elctms. Corp., Lincoln, RI 02865                                                   | 401-333-0388                |
| † Arnel Electronics, N. Bergen, NJ 07047                                                 | 201-869-4201                |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703                         | 508-222-2202                |
| Augat/RDI, Carol Stream, IL 60188                                                        | 708-682-4100                |
| Autosplice, Inc., San Diego, CA 92121                                                    | 619-535-0077                |
| Autoswage Products, Shelton, CT 06484                                                    | 203-929-1401                |
| Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                  | 201-768-5400                |
| † Elpakco, Inc., Lowell, MA 01851                                                        | 508-453-3000                |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                          | 201-288-4477; 800-447-5639  |
| † Garry Electronics, WPI, Salem, NJ 08079                                                | 609-935-7603                |
| † General Manufacturing, Glendale, CA 91201                                              | 818-243-2069                |
| † Hiram Jones Electronics, No. Hollywood, CA 91605                                       | 213-875-0213                |
| Hypertronics Corp., Hudson, MA 01749                                                     | 508-568-0451;800-225-9228   |
| † Ideal Industries, Inc., Sycamore, IL 60178                                             | 815-895-5181                |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                     | 718-956-8900                |
| † Lyn-Tron, Inc., Burbank, CA 91505                                                      | 213-849-6211;800-423-2734   |
| † Positronic Industries, Inc., Springfield, MO 65801                                     | 417-866-2322                |
| † Precision Metal Products Co., Peabody, MA 01960                                        | 508-532-5500                |
| † Unicor, Orange, NJ 07050                                                               | 201-674-1700;800-526-1389   |
| † Usco Div., Liton Inds., Van Nuys, CA 91409                                             | 818-786-6381                |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                              | 513-561-8145                |
| † Weidmuller Inc., Richmond, VA 23236                                                    | 804-794-2877                |

## Terminals, Touch — See Touch Terminals (Vol. D)

## Terminals, Turret-2100

|                                                                          |                             |
|--------------------------------------------------------------------------|-----------------------------|
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571    | C•1290-1291                 |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661;800-423-5659 | C•1681                      |
| † Accessories For Electronics, Inc., Baldwin, NY 11510-3593              | 516-546-1751                |
| † Accurate Electronics Corp., Elyria, OH 44036                           | 216-366-6330;1-800-334-5904 |
| Andon Elctms. Corp., Lincoln, RI 02865                                   | 401-333-0388                |
| † Arnel Electronics, N. Bergen, NJ 07047                                 | 201-869-4201                |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703         | 508-222-2202                |
| Augat/RDI, Carol Stream, IL 60188                                        | 708-682-4100                |
| Autosplice, Inc., San Diego, CA 92121                                    | 619-535-0077                |
| Autoswage Products, Shelton, CT 06484                                    | 203-929-1401                |
| † EBY Electro Inc., Rockville Centre, NY 11571-1100                      | 516-536-6000                |
| † Eby Electro Inc., Rockville Centre, NY 11571-1100                      | 516-536-6000                |
| † Electrical Industries Corp., Murray Hill, NJ 07974                     | 908-464-3200                |
| † Elpakco, Inc., Lowell, MA 01851                                        | 508-453-3000                |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608          | 201-288-4477; 800-447-5639  |
| † Garry Electronics, WPI, Salem, NJ 08079                                | 609-935-7603                |
| † General Manufacturing, Glendale, CA 91201                              | 818-243-2069                |
| † Hiram Jones Electronics, No. Hollywood, CA 91605                       | 213-875-0213                |
| Hypertronics Corp., Hudson, MA 01749                                     | 508-568-0451;800-225-9228   |
| † Injecto Mold Inc., Crellin International, Chicago, IL 60639            | 312-384-6000                |
| † ITT Pomona Electronics, Pomona, CA 91766                               | 909-469-2900                |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                     | 718-956-8900                |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                | 708-398-5311;800-323-5207   |
| † Lyn-Tron, Inc., Burbank, CA 91505                                      | 213-849-6211;800-423-2734   |
| † Marco Manufacturing Co., Inc., Philadelphia, PA 19145                  | 215-463-2332                |
| † McKenzie Technology, Fremont, CA 94538                                 | 510-651-2700                |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300                | 516-922-6000                |
| † Precicon, Inc., Langhorne, PA 19047                                    | 215-757-1202                |
| † Precision Metal Products Co., Peabody, MA 01960                        | 508-532-5500                |
| † Usco Div., Liton Inds., Van Nuys, CA 91409                             | 818-786-6381                |
| † U.S. Terminals Inc., Cincinnati, OH 45243                              | 513-561-8145                |

## Terminals, Wirewrap-2100

|                                                                          |                             |
|--------------------------------------------------------------------------|-----------------------------|
| AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752                     | C•1163                      |
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571    | C•1291                      |
| Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454  | C•1317                      |
| Metuchen Capacitors, Inc., Old Bridge, NJ 08857, 908-679-3366            | C•1419                      |
| † Mill-Max Manufacturing Corp., Oyster Bay, NY 11771-0300, 516-922-6000  | C•1421                      |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661;800-423-5659 | C•1678                      |
| Accessories For Electronics, Inc., Baldwin, NY 11510-3593                | 516-546-1751                |
| † Accurate Electronics Corp., Elyria, OH 44036                           | 216-366-6330;1-800-334-5904 |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                    | 612-938-8080                |
| † Advanced Interconnections Corp., West Warwick, RI 02893                | 401-823-5200                |
| † Atech Corp., Flemington, NJ 08822-6000                                 | 908-806-9400                |
| † Andon Elctms. Corp., Lincoln, RI 02865                                 | 401-333-0388                |
| † Aries Electronics, Frenchtown, NJ 08825                                | 908-996-6841                |
| † Assembly Specialists, Chelmsford, MA 01824                             | 508-250-5900                |
| Augat, Inc., Interconnection Products Group, Attleboro, MA 02703         | 508-222-2202                |

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| † Augat/RDI, Carol Stream, IL 60188                                                        | 708-682-4100                |
| Autosplice, Inc., San Diego, CA 92121                                                      | 619-535-0077                |
| † Autoswage Products, Shelton, CT 06484                                                    | 203-929-1401                |
| Bead Industries, Bridgeport, CT 06605-0571                                                 | 203-334-4124                |
| † Berg Electronics, Camp Hill, PA 17011                                                    | 800-237-2374                |
| BICC-VERO Electronics, Inc., Hamden, CT 06514                                              | 203-288-8001;1-800-242-2863 |
| † Bussco Inc., El Segundo, CA 90245                                                        | 310-322-6580                |
| † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 | 708-981-6000                |
| † CTS Corp., Connector Products, New Hope, MN 55428                                        | 612-533-3533                |
| Douglas Electronics, Inc., San Leandro, CA 94577                                           | 510-483-8770                |
| † EBY Electro Inc., Rockville Centre, NY 11571-1100                                        | 516-536-6000                |
| † Eby Electro Inc., Rockville Centre, NY 11571-1100                                        | 516-536-6000                |
| † Elpakco, Inc., Lowell, MA 01851                                                          | 508-453-3000                |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                                    | 714-669-9473                |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608                            | 201-288-4477; 800-447-5639  |
| † Entrellec Inc., Irving, TX 75038                                                         | 214-550-9025                |
| † Garry Electronics, WPI, Salem, NJ 08079                                                  | 609-935-7603                |
| † General Manufacturing, Glendale, CA 91201                                                | 818-243-2069                |
| † Hiram Jones Electronics, No. Hollywood, CA 91605                                         | 213-875-0213                |
| † Injecto Mold Inc., Crellin International, Chicago, IL 60639                              | 312-384-6000                |
| † Interconnect Devices, Inc., Kansas City, KS 66106                                        | 913-342-5544                |
| † ITT Pomona Electronics, Pomona, CA 91766                                                 | 909-469-2900                |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                                       | 718-956-8900                |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                  | 708-398-5311;800-323-5207   |
| † Marco Manufacturing Co., Inc., Philadelphia, PA 19145                                    | 215-463-2332                |
| † McKenzie Technology, Fremont, CA 94538                                                   | 510-651-2700                |
| † Mupac Corp., Carlo Gavazzi Co., Brockton, MA 02401                                       | 508-588-6110                |
| † Napepthe, Inc., Palo Alto, CA 94303                                                      | 415-946-6666                |
| † Panduit Corp., Tinley Park, IL 60477-0981                                                | 800-777-3300                |
| † Precicon, Inc., Langhorne, PA 19047                                                      | 215-757-1202                |
| † Reliance Comm/Tec, Reliance Electric, Cleveland, OH 44117                                | 800-245-4501                |
| † Reliance Electric Co., Cleveland, OH 44117                                               | 800-245-4501                |
| † Robinson Nugent, Inc., New Albany, IN 47150                                              | 812-948-0564                |
| † Samtec, Inc., New Albany, IN 47151-1147                                                  | 1-800-672-6832              |
| † U.S. Terminals Inc., Cincinnati, OH 45243                                                | 513-561-8145                |
| † Weidmuller Inc., Richmond, VA 23236                                                      | 804-794-2877                |

## Terminals (MIL), Ground Data-2440 — See Vol. B

## Terminals & Splices, Solderless, Less Than 30 A, Insul/Uninsul-2100

|                                                           |                           |
|-----------------------------------------------------------|---------------------------|
| Burdny Corporation, An FCI Company, Norwalk, CT 06856     | 203-838-4444              |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647   | 201-768-5400              |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311;800-323-5207 |
| † Teledyne Penn-Union, Edinboro, PA 16412                 | 814-734-1631 Ext. 382     |

## Terminals & Splices, Solderless, Greater Than 30 A, Insul/Uninsul-2100

|                                                           |                           |
|-----------------------------------------------------------|---------------------------|
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311;800-323-5207 |
| † Teledyne Penn-Union, Edinboro, PA 16412                 | 814-734-1631 Ext. 382     |

## Terminals & Splices, Solderless, Compression, Insul/Uninsul-2100

|                                                           |                           |
|-----------------------------------------------------------|---------------------------|
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647   | 201-768-5400              |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311;800-323-5207 |
| † Teledyne Penn-Union, Edinboro, PA 16412                 | 814-734-1631 Ext. 382     |

## Terminals & Splices, Solderless, Crimp, Insul/Uninsul-2100

|                                                           |                            |
|-----------------------------------------------------------|----------------------------|
| † AMP, Harrisburg, PA 17105, 717-564-0100;800-522-6752    | C•1163                     |
| Burdny Corporation, An FCI Company, Norwalk, CT 06856     | 203-838-4444               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647   | 201-768-5400               |
| † Klein Tools, Inc., Chicago, IL 60659-9033               | 708-677-9500               |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311;800-323-5207  |
| † Packard Electric, General Motors, Warren, OH 44486      | 216-373-2121;1-800-PACKARD |
| † Teledyne Penn-Union, Edinboro, PA 16412                 | 814-734-1631 Ext. 382      |

## Terminals & Splices, Solderless, Wire Nuts, Insul/Uninsul-2100

|                                                           |                           |
|-----------------------------------------------------------|---------------------------|
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647   | 201-768-5400              |
| † Klein Tools, Inc., Chicago, IL 60659-9033               | 708-677-9500              |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311;800-323-5207 |

## Terminals & Splices, Solderless, Wire Wrap, Insul/Uninsul-2100

|                                                           |                           |
|-----------------------------------------------------------|---------------------------|
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647   | 201-768-5400              |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311;800-323-5207 |
| † McKenzie Technology, Fremont, CA 94538                  | 510-651-2700              |

## Terminations, Antenna-Also See Dummy Loads-2500

|                                                                                  |                            |
|----------------------------------------------------------------------------------|----------------------------|
| † Microwave Filter Inc., East Syracuse, NY 13057-0486, 315-437-3953;800-448-1666 | A•1656,1658-1659           |
| † Airtiron, Liton Industries, Inc., Morris Plains, NJ 07950                      | 201-539-5500               |
| † Alan Industries Inc., Columbus, IN 47202                                       | 812-372-8869               |
| Autosplice, Inc., San Diego, CA 92121                                            | 619-535-0077               |
| † AVA Electronics Corporation, Drexel Hill, PA 19026                             | 215-284-2500               |
| † Bird Electronic Corp., Cleveland, OH 44139-2794                                | 216-248-1200               |
| † Coaxial Dynamics, Cleveland, OH 44135                                          | 1-800-COAXIAL              |
| † Connecticut Microwave Corp., Cheshire, CT 06410                                | 203-250-9678               |
| † Dielectric Communications, General Signal, Raymond, ME 04071                   | 207-655-4555; 800-341-9678 |
| † Elcom Systems, Inc., Boca Raton, FL 33487                                      | 407-994-1774               |
| † Electro Impulse, Neptune, NJ 07754-0278                                        | 908-776-5800               |
| † EMC Technology Inc., Cherry Hill, NJ 08034                                     | 609-429-7800               |



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|------------------------------------------------------------------|----------------------------|
| † Gabriel Elctms. Inc., Scarborough, ME 04070                    | 207-883-5161               |
| † JFW Industries, Inc., Indianapolis, IN 46237                   | 317-887-1340               |
| † KDI/Triangle Electronics, Whippany, NJ 07981                   | 201-887-5700               |
| † Lectronic Research Labs., Inc., Camden, NJ 08104               | 800-358-8378               |
| † Loral Microwave Narda, Hauppauge, NY 11788                     | 516-231-1700               |
| † Maury Microwave Corp., Ontario, CA 91764                       | 909-987-4715               |
| † MicroLab/FXR, Livingston, NJ 07039                             | 201-992-7700               |
| † Microwave Development Laboratories, Natick, MA 01760           | 508-655-0060               |
| † Pro Com Technology Inc., Plainview, NY 11803                   | 516-293-4443; 800-762-3785 |
| † Relm Communications, Inc., Adage, Inc., Indianapolis, IN 46226 | 317-545-4281               |
| † RLC Electronics, Inc., Mt. Kisco, NY 10549                     | 914-241-1334               |
| † Rowe Industries, Inc., Toledo, OH 43612                        | 419-729-9761               |
| † Sage Laboratories, Inc., Natick, MA 01760                      | 508-653-0844               |
| † Sjoberg, C. & Son, Inc., Cranston, RI 02910                    | 401-461-8220               |

## Terminations, Cable-2100

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 | C•1287, 1709               |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                           | B•1205, C•1163             |
| Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571               | C•1291                     |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                     | C•1751                     |
| † LZR Electronics, Inc., Gaithersburg, MD 20879, 301-921-4600                     | C•1412, D•1827             |
| † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047, 818-707-2020      | C•1502, 1505               |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                   | 404-751-9473; 800-221-4767 |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                             | 612-938-8080               |
| † Alden Products Co., Brockton, MA 02403                                          | 508-583-0160               |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                      | 908-925-8100               |
| § Altech Corp., Flemington, NJ 08822-6000                                         | 908-806-9400               |
| † Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492             | 203-265-8910               |
| § Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810                 | 203-743-9272               |
|                                                                                   | 800-627-7100               |

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| § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962     | 1-800-344-0223, Ext. 1027 |
| † Augat, Inc., Interconnection Products Group, Attleboro, MA 02703        | 508-222-2202              |
| § AYA Electronics Corporation, Drexel Hill, PA 19026                      | 215-284-2500              |
| † Berg Electronics, Camp Hill, PA 17011                                   | 800-237-2374              |
| † Bird Electronic Corp., Cleveland, OH 44139-2794                         | 216-248-1200              |
| † Compac, Holbrook, NY 11741                                              | 516-585-3400              |
| † Connectronics Corp., Toledo, OH 43607                                   | 419-537-0020              |
| § Control Cable, Inc., Baltimore, MD 21244                                | 410-298-4411              |
| † Covid, Inc., Tempe, AZ 85281                                            | 602-966-2221              |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                     | 708-632-1020              |
| † Electronic Connection Corp., Bloomfield, CT 06002                       | 203-243-3356              |
| † Engineered Assemblies & Components Corp., Teterboro, NJ 07608           | 201-288-4477              |
| † FISHERTech, Fisher Gauge Limited, Peterborough, Ontario, CANADA K9J 6Y9 | 800-447-5639              |

|                                                                              |                                   |
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| Interconnect Devices, Inc., Kansas City, KS 66106                            | 705-748-9522                      |
| ISL Products Int'l, Ltd., Syosset, NY 11791-6093                             | 516-937-3475; 800-626-6116        |
| † ITT Pomona Electronics, Pomona, CA 91766                                   | 909-469-2900                      |
| † L-Corn Inc., N. Andover, MA 01845                                          | 508-682-6936                      |
| † Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416              | 206-485-4288                      |
|                                                                              | 206-486-2222                      |
| † MACOM, Inc., Lowell, MA 01851                                              | 617-272-3000                      |
| † 3M-Electronic Products Division, Austin, TX 78726                          | 1-800-225-5373 Sls. & Prod. Info. |
| † Panduit Corp., Tintin Park, IL 60477-0981                                  | 800-777-3300                      |
| † Precision Interconnect, Subsidiary of AMP Incorporated, Portland, OR 97224 | 503-620-9400                      |

|                                                                               |                       |
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| § Support Systems Intl. Corp., Richmond, CA 94804                             | 510-234-9090          |
| † Teledyne Penn-Union, Edinboro, PA 16412                                     | 814-734-1631 Ext. 382 |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900          |

|                                                                           |              |
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| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300 |
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|                                          |                                             |
|------------------------------------------|---------------------------------------------|
| † Tru-Connector Corp., Peabody, MA 01960 | 508-532-0775; 1-800-262-9787; 1-800-COAXTRU |
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| § Virginia Plastics Co., Roanoke, VA 24015-0577 | 703-375-0100 |
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| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4 | 514-694-9136 |
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| Welco Wire & Cable, Inc., Edgewood, NY 11717       | 516-254-2970 |
| Wide Band Engineering Co., Inc., Phoenix, AZ 85036 | 602-254-1570 |
| § Wiltron, Morgan Hill, CA 95037-2809              | 408-778-2000 |

## Terminations, Fiber Optic-2475 — See Vol. B

## Terminations, Microwave-3450 — See Vol. A

## Terminations, VHF, Video, Pulse-1900 — See Vol. D

## Termination Systems, Wire & Cable-2100

|                                                                                   |                           |
|-----------------------------------------------------------------------------------|---------------------------|
| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 | C•1709                    |
| § Altech Corp., Flemington, NJ 08822-6000, 908-806-9400                           | C•1152, 1154, 1157        |
| AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                             | C•1163                    |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                     | C•1750-1751               |
| † ADC Telecommunications, Inc., Minneapolis, MN 55435                             | 612-938-8080              |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962             | 1-800-344-0223, Ext. 1027 |
| Autosplice, Inc., San Diego, CA 92121                                             | 619-535-0077              |
| † Berg Electronics, Camp Hill, PA 17011                                           | 800-237-2374              |
| † Connectronics Corp., Toledo, OH 43607                                           | 419-537-0020              |
| † Eubanks Engineering, Monrovia, CA 91016                                         | 818-357-7011              |
| † FISHERTech, Fisher Gauge Limited, Peterborough, Ontario, CANADA K9J 6Y9         | 705-748-9522              |
| § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                            | 602-968-6241              |

|                                                                           |                            |
|---------------------------------------------------------------------------|----------------------------|
| § Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416           | 206-485-4288; 206-486-2222 |
| Meritec, Associated Enterprises, Painesville, OH 44077                    | 216-354-3148               |
| † Patton-MacGuyver Inc., Providence, RI 02905                             | 401-941-6000               |
| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300               |
| § WECO Electrical Connectors, Inc., Moores, NY 12958                      | 518-298-4810               |
| § WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4      | 514-694-9136               |

## Test Assemblies (MIL)-2440 — See Vol. B

## Test Equipment — See Meters, Acceleration, Admittance, etc. (Vol. D)

## Test Equipment, Closed Circuit TV-Also See Television Systems &

## Equipment, Closed-Circuit-2900 — See Vol. D

## Test Equipment, Color TV-2900 — See Vol. D

## Test Equipment, Data Communications, Monitors & Recorders-2900

## — See Vol. D

## Test Equipment, Fiber Optic-2475 — See Vol. B

## Test Equipment, Mechanical Impedance-2900 — See Vol. D

## Test Equipment, Memory Systems, Disk-2900 — See Vol. D

## Test Equipment, Motor-2900 — See Vol. D

## Test Equipment, Rental & Lease — Also See Services, Electrical

## Measurement & Test-2900 — See Vol. D

## Test Equipment, RFI Susceptibility-2900 — See Vol. D

## Test Equipment (MIL)-2440 — See Vol. B

## Test Fixtures, ATE-2900 — See Vol. D

## Test Methods (MIL)-2440 — See Vol. B

## Test Points, PCB Mounted-2500

|                                                                   |              |
|-------------------------------------------------------------------|--------------|
| § Schurter, Inc., Petaluma, CA 94954, 800-848-2600 ext. 62        | C•1455       |
| § Components Corp., Denville, NJ 07834                            | 201-627-0290 |
| † E-Mark, Inc., Trumbull, CT 06611                                | 203-452-1003 |
| † General Electronic Materials Technology, Los Alamitos, CA 90720 | 714-761-5684 |
| † Interconnect Devices, Inc., Kansas City, KS 66106               | 913-342-5544 |
| † Oxley Inc., Branford, CT 06405                                  | 203-488-1033 |
| § H H Smith, NT-T Inc., Meadville, PA 16335                       | 814-724-6440 |

## Test Sets, Communications-1900 — See Vol. D

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## Test Systems, Automatic DC-2900 — See Vol. D

## Test Systems, Board-2900 — See Vol. D

## Test Systems, Component-2900 — See Vol. D

## Test Systems, Computer Controlled (Automatic)-2900 — See Vol. D

## Test Systems, Development Engineering — See Services, Assembly & Fabrication (Vol. D)

## Test Systems, Functional-2900 — See Vol. D

## Test Systems, Hall Effect-2900 — See Vol. D

## Test Systems, IC-2900 — See Vol. D

## Test Systems, Thermal Stress-2550 — See Vol. D

## Test Systems, Ultrasonic, Computer Controlled-2900 — See Vol. D

## Test Systems, VLSI & Memory-2900 — See Vol. D

## Testers, Accelerometer — See Calibrators, Accelerometer (Vol. D)

## Testers, Armature-2900 — See Vol. D

## Testers, Battery-2900 — See Vol. D

## Testers, Bit Rate-2900 — See Vol. D

## Testers, Burn-in, Aging-2550 — See Vol. D

## Testers, Cable-2900 — See Vol. D

## Testers, Capacitor-2900 — See Vol. D

## Testers, Circuit — See Testers, Signal Tracing (Vol. D)

## Testers, Coil & Transformer-2900 — See Vol. D

## Testers, Communication Equipment (Automatic)-2900 — See Vol. D

## Testers, Component Linearity-2900 — See Vol. D

## Testers, Corona-2900 — See Vol. D

## Testers, CRT-2900 — See Vol. D

## Testers, Diode-2900 — See Vol. D

## Testers, Electron Beam-2900 — See Vol. D

## Testers, Electrical Parameter-2900 — See Vol. D

## Testers, Electric Power — See Monitors, Power, AC & DC (Vol. D)

## Testers, Encoder-2900 — See Vol. D

## Testers, Fiber Optic-2900 — See Vol. D

## Testers, Ground Resistance — See Meters, Ohm (Vol. D)

## Testers, Heat, Manual-2550 — See Vol. D

## Testers, Hipot — See Testers, Insulation Breakdown (Vol. D)

## Testers, Insulation Breakdown-2900 — See Vol. D

## Testers, Insulation Resistance-2900 — See Vol. D

## Testers, Integrated Circuit (Automatic)-2900 — See Vol. D

## Testers, Integrated Circuit (Manual)-2900 — See Vol. D

## Testers, Interface-2900 — See Vol. D

## Testers, LED & LED Arrays-2900 — See Vol. D

## Testers, Life, Component-2550 — See Vol. D

## Testers, Logic Card-2900 — See Vol. D

## Testers, Loopback-2900 — See Vol. D

## Testers, Magnetic Core-2900 — See Vol. D

## Testers, Magnetic Head Media-2900 — See Vol. D



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 Testers, Potentiometer-2900 — See Vol. D  
 Testers, Power Supply-2900 — See Vol. D  
 Testers, Pulse Jitter-2900 — See Vol. D  
 Testers, RAM-2900 — See Vol. D  
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 Testers, ROM Devices-2900 — See Vol. D  
 Testers, Servo — See Analyzers, Servo (Vol. D)  
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 Testers, Signal Tracing-2900 — See Vol. D  
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 Testers, Synchro/Resolver-2900 — See Vol. D  
 Testers, Thickness (all types)-2900 — See Vol. D  
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 Testers, Tracking & Erosion Resistance (Insulation)-2900 — See Vol. D  
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 Testers, Tube-2900 — See Vol. D  
 Testers, Vibration-Also See Services, Environmental Test-2900 — See Vol. D  
 Testers, Voltage-2900 — See Vol. D  
 Testers, Voltage Breakdown-2900 — See Vol. D  
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 Thermistors (MIL)-2440 — See Vol. B  
 Thermocouple Devices & Materials — See Cooling/Heating Modules, Thermoelectric (Vol. B)  
 Thermocouple Interfaces for Personal Computers-2000 — See Vol. D  
 Thermocouples, Elements & Accessories-5300 — See Vol. B  
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 Thermographs-2900 — See Vol. D  
 Thermometers, Electronic (All Types) — See Meters, Temperature (Vol. D)  
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 Thermometers, Resistance-2900 — See Vol. D  
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 Thermowells-5300 — See Vol. B  
 Thin-Film Memory Systems, Planar — See Memory Systems (Vol. D)  
 Thyristors and SCRs, Surface Mount-4800 — See Vol. A  
 Thyristors (Incl. Silicon Controlled Rectifiers) - Also see DIACs; TRIACs, SIDACs-4800 — See Vol. A  
 Thyristors (MIL)-2440 — See Vol. B  
 Ties, Wire & Cable — See Wire & Cable Ties (Vol. C)  
 Time Delays, Precision-2900 — See Vol. D  
 Time Dispenser, Microprocessor based-2200 — See Vol. D  
 Time Management Systems-2200 — See Vol. D  
 Timers, Counting-2200 — See Vol. D  
 Timers, Cycle & Reset-2200 — See Vol. D  
 Timers, Delay-2200 — See Vol. D  
 Timers, Electrolytic Cell-2200 — See Vol. D  
 Timers, Interval-2200 — See Vol. D  
 Timers, Programmed-2200 — See Vol. D  
 Timers, Sequence-2200 — See Vol. D  
 Timers, Solid State-2200 — See Vol. D

**Tool Kits & Sets-5400**

† Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161 ..... C-1700  
 Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161 ..... C-1543  
 # Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000

† Astro Tool Corp., Beaverton, OR 97006 ..... 503-642-9853  
 AVO International, TBG, Dallas, TX 75237 ..... 214-333-3201  
 Bearing Inspection, Santa Fe Springs, CA 90670 ..... 310-944-6251  
 † Beau Tech, Portland, ME 04101 ..... 207-775-6139  
 CIG Components Inds. Co., Ltd., Hsin Tien City, TAIWAN R.O.C. .... 886-2-9174302  
 § Clauss Cutlery Co., Alco Industries, Fremont, OH 43420 .. 419-332-7344; 800-225-2877  
 § Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Cooper Tools, Raleigh, NC 27622 ..... 919-781-7200  
 § Elite Electronics, Inc., Plano, TX 75074 ..... 214-881-0026; 800-553-4376  
 § GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 § Harris Corp., Dracon Div., Camarillo, CA 93012 ..... 805-987-9511  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 § Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 † Keystone Electronics Corp., Astoria, NY 11105-2017 ..... 718-956-8900  
 § Klein Tools, Inc., Chicago, IL 60659-9033 ..... 708-677-9500  
 † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101 ..... 617-890-4750  
 3M-Electronic Products Division, Austin, TX 78726 ... 1-800-225-5373 Sls. & Prod. Info.  
 § Metermaster, Tempe, AZ 85282 ..... 602-431-0015  
 † Micro Mode Prods., El Cajon, CA 92020 ..... 619-449-3844  
 † Moody Tools, Inc., E. Greenwich, RI 02818-0230 ..... 401-885-0911  
 § Omega Engineering, Stamford, CT 06907 ..... 800-826-6342  
 § PACE, Inc., Laurel, MD 20723-1990 ..... 301-490-9860  
 § Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 The Pedro Companies, St. Paul, MN 55101 ..... 612-224-9491  
 § Philmore Manufacturing, Rockford, IL 61125-1386 ..... 815-229-7773  
 # Print Products Intl., Silver Spring, MD 20910 ..... 301-587-7824; 800-638-2020  
 † Russtech Engineering Company, Inc., Mission Viejo, CA 92691 ..... 714-472-0880  
 § Shattuck Industries, Santa Cruz, CA 95060 ..... 408-427-3122  
 Specialized Products Company, Irving, TX 75063 ..... 214-550-1923  
 § Switches Unlimited, Inc., Woodside, NY 11377 ..... 718-478-5000; 800-221-0487  
 § Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 § Westmuller Inc., Paladim Tools, Newbury Park, CA 91320 ..... 805-499-0318  
 † Western Electronic Products Co., San Clemente, CA 92673 ..... 714-492-4677

**Tools & Kits, Contact Insertion/Removal-5400**

§ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 ..... C-1163  
 † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161 ..... C-1700  
 Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454 ..... C-1320  
 § Injectorall Electronics (Woman Owned), Bohemia, NY 11716, 516-563-3388 ..... C-1136  
 Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161 .... C-1543  
 § Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 ..... C-1678  
 † Astro Tool Corp., Beaverton, OR 97006 ..... 503-642-9853  
 Berg Electronics, Camp Hill, PA 17011 ..... 800-237-2374  
 Brandywine Abrasives, Spring City, PA 19475 ..... 215-948-7028  
 § Burdy Corporation, An FCI Company, Norwalk, CT 06856 ..... 203-838-4444  
 CIG Components Inds. Co., Ltd., Hsin Tien City, TAIWAN R.O.C. .... 886-2-9174302  
 § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 ..... 708-981-6000  
 † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428 ..... 612-537-1010  
 § Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4 ..... 416-475-8500  
 † Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 § Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411  
 DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2 ..... 416-470-1346  
 § Elite Electronics, Inc., Plano, TX 75074 ..... 214-881-0026; 800-553-4376  
 § Emulation Technology, Inc., Santa Clara, CA 95051 ..... 408-982-0660  
 E-Z Hook, Tektest Inc., Arcadia, CA 91006 ..... 818-446-6175  
 Garry Electronics, WPI, Salem, NJ 08079 ..... 609-935-7603  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714 ..... 714-660-5772  
 § ITT Cannon, Santa Ana, CA 92705-5684 ..... 714-557-4700  
 § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 † Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 † Keystone Electronics Corp., Astoria, NY 11105-2017 ..... 718-956-8900  
 † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101 ..... 617-890-4750  
 Mes Industries Co., Ltd., Taipei ..... 886-2-2180302  
 Omega Engineering, Stamford, CT 06907 ..... 800-826-6342  
 § PACE, Inc., Laurel, MD 20723-1990 ..... 301-490-9860  
 § Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 § Phoenix Contact Inc., Harrisburg, PA 17111 ..... 717-944-1300  
 § Robinson Nugent, Inc., New Albany, IN 47150 ..... 812-948-0564  
 † Russtech Engineering Company, Inc., Mission Viejo, CA 92691 ..... 714-472-0880  
 § Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 § The Triangle Tool Group, Inc., Orangeburg, SC 29115 ..... 803-534-7010  
 † Virginia Panel Corporation, Waynesboro, VA 22980 ..... 703-949-8376

**Tools, Alignment & Tuning-5400**

Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161 .... C-1543  
 † Spectrol Electronics Corp., Ontario, CA 91761, 909-923-3313 ..... B-2016  
 § Sprague-Goodman Elctms., Inc., Garden City Pk., NY 11040, 516-746-1385 ..... A-1165  
 CIG Components Inds. Co., Ltd., Hsin Tien City, TAIWAN R.O.C. .... 886-2-9174302  
 § Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 § GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 † Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 † Max Levy Autograph, Inc., Philadelphia, PA 19144-4298 ..... 215-842-3675  
 Mes Industries Co., Ltd., Taipei ..... 886-2-2180302  
 † Pioneer Components, Brooklyn, NY 11234 ..... 718-444-3880  
 § PTS Corporation, Bloomington, IN 47401 ..... 812-824-9331



§ Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990

## Tools, Specialty-5400

Electronic Precision Technology Inc., Cambridge, MA 02140 ..... 617-661-2454  
 § Klein Tools, Inc., Chicago, IL 60659-9033 ..... 708-677-9500  
 § Moody Tools, Inc., E. Greenwich, RI 02818-0230 ..... 401-885-0911

## Tools, Cable Tie-5400

§ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 ..... C-1163  
 § Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969 ..... C-1722  
 † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161 ..... C-1700  
 Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161 ..... C-1543  
 # Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 All-States, Inc., Chicago, IL 60640 ..... 312-728-0525  
 Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000  
 § Arrow Fastener, Saddlebrook, NJ 07662 ..... 201-843-6900  
 § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962 ..... 1-800-344-0223, Ext. 1027

Autosplice, Inc., San Diego, CA 92121 ..... 619-535-0077  
 § Avery Dennison, Framingham, MA 01701 ..... 508-879-0511  
 Bumdy Corporation, An FCI Company, Norwalk, CT 06856 ..... 203-838-4444  
 CIC Components Inds. Co., Ltd., Hsin Tien City, TAIWAN R.O.C. .... 886-2-9174302  
 § Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Dabum Electronics & Cable Corp., Northvale, NJ 07647 ..... 201-768-5400  
 † Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 § Elite Electronics, Inc., Plano, TX 75074 ..... 214-881-0026; 800-553-4376  
 † Fuses Unlimited, D.E.I., Van Nuys, CA 91406 ..... 818-786-8111  
 Hanscom, H. F. Co., Inc., Providence, RI 02905 ..... 401-941-1455  
 Heyco Molded Products, Inc., Kenilworth, NJ 07033 ..... 908-245-0033; 800-526-4182  
 § HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 § Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181  
 International Microelectronics, Arlington, TX 76003 ..... 817-473-1730  
 § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 ..... 708-398-5311; 800-323-5207  
 MACOM, Inc., Lowell, MA 01851 ..... 617-272-3000  
 Mes Industries Co., Ltd., Taipei ..... 886-2-2180302  
 Mouser Electronics, Santee, CA 92071 ..... 800-346-6873  
 Mouser Electronics, Mansfield, TX 76063 ..... 800-346-6873  
 Mouser Electronics, Gilroy, CA 95020 ..... 800-346-6873  
 § Nichifu America, Inc., Pottstown, PA 19464 ..... 215-323-7120  
 † Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 § Richco Plastic Co., Chicago, IL 60680 ..... 312-539-4060  
 § Shattuck Industries, Santa Cruz, CA 95060 ..... 408-427-3122  
 § Switches Unlimited, Inc., Woodside, NY 11377 ..... 718-478-5000; 800-221-4487  
 § Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 ..... 803-676-2900

§ The Triangle Tool Group, Inc., Orangeburg, SC 29115 ..... 803-534-7010  
 † Tyton Corp., Milwaukee, WI 53223 ..... 414-355-1130; 800-535-5552  
 § Weidmuller Inc., Palmdale Tools, Newbury Park, CA 91320 ..... 805-499-0318

## Tools, Connector-5400

§ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 ..... C-1163  
 † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412, 708-455-8183 ..... C-1298  
 † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161 ..... C-1700  
 Electronic Precision Technology Inc., Cambridge, MA 02140, 617-661-2454 ..... C-1320  
 LEOCO (U.S.A.) Corporation, Fremont, CA 94538, 510-651-4700 ..... C-1382  
 Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161 ..... C-1543  
 Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659 ..... C-1678

§ Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 All-States, Inc., Chicago, IL 60640 ..... 312-728-0525  
 § Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000  
 Amphenol Corporation, Corporate Headquarters, Wallingford, CT 06492 ..... 203-265-8910  
 † Amphenol RF Operations, Amphenol Corporation, Danbury, CT 06810 ..... 203-743-9272;  
 800-627-7100  
 § Aries Electronics, Frenchtown, NJ 08825 ..... 908-996-6841  
 § Assmann Electronics, Inc., Assmann Electronics GMBH, Tempe, AZ 85283 ..... 602-897-7001  
 † Astro Tool Corp., Beaverton, OR 97006 ..... 503-642-9853  
 § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962 ..... 1-800-344-0223, Ext. 1027

Autosplice, Inc., San Diego, CA 92121 ..... 619-535-0077  
 § AVA Electronics Corporation, Drexel Hill, PA 19026 ..... 215-284-2500  
 Berg Electronics, Camp Hill, PA 17011 ..... 800-237-2374  
 § Bumdy Corporation, An FCI Company, Norwalk, CT 06856 ..... 203-838-4444  
 Cabletron Systems, Inc., Rochester, NH 03867 ..... 603-332-9400  
 † Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 ..... 708-981-6000  
 † CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428 ..... 612-537-1010  
 § Clifford of Vermont, Inc., Bethel, VT 05032 ..... 802-234-9921; 800-451-4381  
 § Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4 ..... 416-475-8500

† Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 § Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411  
 Data Set Cable Co., Inc., Ridgely, CT 06877 ..... 203-438-9684; 800-344-9684  
 DDK Electronics, Inc., Markham, Ont., CANADA L3R 9T2 ..... 416-470-1346  
 § Elite Electronics, Inc., Plano, TX 75074 ..... 214-881-0026; 800-553-4376  
 § Emulation Technology, Inc., Santa Clara, CA 95051 ..... 408-982-0660  
 § Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135 ..... 408-922-9000

† Glenair Inc., Glendale, CA 91201-2497 ..... 818-247-6000  
 § GTE Supply, GTE, Irving, TX 75038 ..... 800-433-4837  
 § Harris Corp., Dracon Div., Camarillo, CA 93012 ..... 805-987-9511  
 § Harting Elektronik, Inc., Hoffman Estates, IL 60195 ..... 708-519-7700, ext. 200  
 § Heyco Molded Products, Inc., Kenilworth, NJ 07033 ..... 908-245-0033; 800-526-4182  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714 ..... 714-660-5772  
 § Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181  
 International Microelectronics, Arlington, TX 76003 ..... 817-473-1730  
 ITT Cannon, Santa Ana, CA 92705-5684 ..... 714-557-4700  
 § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 † Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 § Klein Tools, Inc., Chicago, IL 60659-9033 ..... 708-677-9500  
 Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 ..... 708-398-5311; 800-323-5207  
 MACOM, Inc., Lowell, MA 01851 ..... 617-272-3000

† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101 ..... 617-890-4750  
 § 3M-Electronic Products Division, Austin, TX 78726 ..... 1-800-225-5373 Sls. & Prod. Info.  
 Mes Industries Co., Ltd., Taipei ..... 886-2-2180302  
 § Methode Electronics, Inc., Chicago, IL 60656 ..... 708-867-9600  
 § Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008 ..... 708-392-3500  
 † Micro Mode Prods., El Cajon, CA 92020 ..... 619-449-3844  
 § MOLEX, Inc., Lisle, IL 60532 ..... 708-969-4550  
 Mouser Electronics, Santee, CA 92071 ..... 800-346-6873  
 Mouser Electronics, Mansfield, TX 76063 ..... 800-346-6873  
 Mouser Electronics, Gilroy, CA 95020 ..... 800-346-6873  
 § Nichifu America, Inc., Pottstown, PA 19464 ..... 215-323-7120  
 § ODU-USA, Inc., ODU-Kontakt GmbH, Germany, Camarillo, CA 93012 ..... 805-484-0540  
 § OFTI, Westford, MA 01886 ..... 508-692-6606  
 Omega Engineering, Stamford, CT 06907 ..... 800-826-6342  
 § PanaVise Products, Inc., Sparks, NV 89431 ..... 702-353-2900  
 § Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 § Penstock Engineering Labs, Penstock, Inc., Sunnyvale, CA 94086-4018 ..... 408-730-0300; 800-PENSTOCK

Philmore Manufacturing, Rockford, IL 61125-1386 ..... 815-229-7773  
 Quality Microwave Interconnects, Inc., Wilmington, MA 01887 ..... 508-988-9090  
 § Robinson Nugent, Inc., New Albany, IN 47150 ..... 812-948-0564  
 † Russtech Engineering Company, Inc., Mission Viejo, CA 92691 ..... 714-472-0880  
 § Shattuck Industries, Santa Cruz, CA 95060 ..... 408-427-3122  
 † Sjoberg, C. & Son, Inc., Cranston, RI 02910 ..... 401-461-8220  
 § Square D Co., Palatine, IL 60067 ..... 708-397-2600  
 † Support Systems Intl. Corp., Richmond, CA 94804 ..... 510-234-9090  
 § Techni-Tool, Plymouth Meeting, PA 19462 ..... 215-825-4990  
 Teledyne Penn-Union, Edinboro, PA 16412 ..... 814-734-1631 Ext. 382  
 § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 ..... 803-676-2900

§ The Triangle Tool Group, Inc., Orangeburg, SC 29115 ..... 803-534-7010  
 † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047 ..... 818-707-2020  
 † Virginia Panel Corporation, Waynesboro, VA 22980 ..... 703-949-8376  
 Virginia Plastics Co., Roanoke, VA 24015-0577 ..... 703-375-0100  
 § Weidmuller Inc., Palmdale Tools, Newbury Park, CA 91320 ..... 805-499-0318  
 † Western Electronic Products Co., San Clemente, CA 92673 ..... 714-492-4677

§ The Triangle Tool Group, Inc., Orangeburg, SC 29115 ..... 803-534-7010  
 † Trompeter Electronics, Inc., Westlake Village, CA 91362-4047 ..... 818-707-2020  
 † Virginia Panel Corporation, Waynesboro, VA 22980 ..... 703-949-8376  
 Virginia Plastics Co., Roanoke, VA 24015-0577 ..... 703-375-0100  
 § Weidmuller Inc., Palmdale Tools, Newbury Park, CA 91320 ..... 805-499-0318  
 † Western Electronic Products Co., San Clemente, CA 92673 ..... 714-492-4677

## Tools, Crimping & Swaging-5400

§ AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752 ..... C-1163  
 † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161 ..... C-1700  
 Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161 ..... C-1543  
 # Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 All-States, Inc., Chicago, IL 60640 ..... 312-728-0525  
 Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000  
 § Altech Corp., Flemington, NJ 08822-6000 ..... 908-806-9400  
 Amatom Electronic Hardware, New Haven, CT 06515 ..... 203-397-3311  
 † Astro Tool Corp., Beaverton, OR 97006 ..... 503-642-9853

Augat, Inc., Interconnect Products Group, Attleboro, MA 02703 ..... 508-222-2202  
 Autosplice, Inc., San Diego, CA 92121 ..... 619-535-0077  
 § AVA Electronics Corporation, Drexel Hill, PA 19026 ..... 215-284-2500  
 Bead Industries, Bridgeport, CT 06605-0571 ..... 203-334-4124  
 Berg Electronics, Camp Hill, PA 17011 ..... 800-237-2374  
 § Bumdy Corporation, An FCI Company, Norwalk, CT 06856 ..... 203-838-4444  
 Cabletron Systems, Inc., Rochester, NH 03867 ..... 603-332-9400  
 § Cinch Connector Division, Labinal Components & Systems Inc., Elk Grove Village, IL 60007 ..... 708-981-6000  
 CINCH Cylindrical Division, Labinal Comps. & Systems, Inc., Minneapolis, MN 55428 ..... 612-537-1010  
 § Clauss Cutlery Co., Alco Industries, Fremont, OH 43420 ..... 419-332-7344; 800-225-2877  
 § Compar, D.G.W. Electronics Corporation, Markham, Ontario, CANADA L3R 4Z4 ..... 416-475-8500

§ Concord Electronics Corporation, New York, NY 10012 ..... 1-212-777-6571  
 † Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 § Elite Electronics, Inc., Plano, TX 75074 ..... 214-881-0026; 800-553-4376  
 § Fujitsu Microelectronics Inc., Component Division, San Jose, CA 95135 ..... 408-922-9000

Hiram Jones Electronics, No. Hollywood, CA 91605 ..... 213-875-0213  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 Hughes Aircraft Co., Interconnect Systems Div., Irvine, CA 92714 ..... 714-660-5772  
 IGO-RALLY Corporation, Palo Alto, CA 94303 ..... 415-856-9900  
 § Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181  
 International Eyelets, Inc., Carlsbad, CA 92008-9812 ..... 619-931-1446; 1-800-333-9353  
 International Microelectronics, Arlington, TX 76003 ..... 817-473-1730  
 ITT Cannon, Santa Ana, CA 92705-5684 ..... 714-557-4700  
 † ITT Pomona Electronics, Pomona, CA 91766 ..... 909-469-2900  
 † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 † Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 † Keystone Electronics Corp., Astoria, NY 11105-2017 ..... 718-956-8900



|                                                                                  |                           |
|----------------------------------------------------------------------------------|---------------------------|
| \$ Klein Tools, Inc., Chicago, IL 60659-9033                                     | 708-677-9500              |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                          | 708-398-5311/800-323-5207 |
| LZR Electronics, Inc., Gaithersburg, MD 20879                                    | 301-921-4600              |
| MACOM, Inc., Lowell, MA 01851                                                    | 617-272-3000              |
| \$† M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                           | 617-890-4750              |
| Mes Industries Co., Ltd., Taipei                                                 | 886-2-2180302             |
| \$ Methode Electronics, Inc., Interconnect Prods Div., Rolling Meadows, IL 60008 | 708-392-3500              |
|                                                                                  | 708-969-4550              |
| \$ MOLEX, Inc., Lisle, IL 60532                                                  | 800-346-6873              |
| Mouser Electronics, Santee, CA 92071                                             | 800-346-6873              |
| Mouser Electronics, Mansfield, TX 76063                                          | 800-346-6873              |
| Mouser Electronics, Gilroy, CA 95020                                             | 215-323-7120              |
| \$ Nichifu America, Inc., Pottstown, PA 19464                                    | 800-826-6342              |
| Omega Engineering, Stamford, CT 06907                                            | 702-353-2900              |
| \$ PanaVise Products, Inc., Sparks, NV 89431                                     | 800-777-3300              |
| \$ Panduit Corp., Tinley Park, IL 60477-0981                                     | 800-272-7537/800-C-PARKER |
| Parker Hannifin Corp., Cleveland, OH 44112-1290                                  | 216-943-5700              |
| Parker Hannifin Corp., Hose Products Division, Wickliffe, OH 44092               | 815-229-7773              |
| \$ Philmore Manufacturing, Rockford, IL 61125-1386                               | 717-944-1300              |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111                                    | 408-427-3122              |
| \$ Shattuck Industries, Santa Cruz, CA 95060                                     | 401-461-8220              |
| \$ Sjoberg, C., & Son, Inc., Cranston, RI 02910                                  | 510-234-9090              |
| \$ Support Systems Intl. Corp., Richmond, CA 94804                               | 215-825-4990              |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                       | 203-732-7025              |
| \$ Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401             | 814-734-1631 Ext. 382     |
| \$ Teledyne Penn-Union, Edinboro, PA 16412                                       | 803-676-2900              |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401   | 803-534-7010              |
|                                                                                  | 818-707-2020              |
| \$ The Triangle Tool Group, Inc., Orangeburg, SC 29115                           | 714-994-2510              |
| \$ Trompeter Electronics, Inc., Westlake Village, CA 91362-4047                  | 703-949-8376              |
| † Ungar, Rubbermaid Office Products Group, Buena Park, CA 90621                  | 804-794-2877              |
| † Virginia Panel Corporation, Waynesboro, VA 22980                               | 805-499-0318              |
| \$ Weidmuller Inc., Richmond, VA 23236                                           |                           |
| \$ Weidmuller Inc., Paladim Tools, Newbury Park, CA 91320                        |                           |

## Tools, Heat Sealing-5400

|                                                         |               |
|---------------------------------------------------------|---------------|
| \$ AMP, Harrisburg, PA 17105, 717-564-0100/800-522-6752 | C-1163        |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711              | 908-925-8000  |
| † Cole-Flex Corporation, West Babylon, NY 11704         | 516-249-6150  |
| \$ Contact East, N. Andover, MA 01845                   | 508-682-2000  |
| \$ Harwil Corporation, Santa Monica, CA 90404           | 310-829-2310  |
| \$ ICO-RALLY Corporation, Palo Alto, CA 94303           | 415-856-9900  |
| \$ Ideal Industries, Inc., Sycamore, IL 60178           | 815-895-5181  |
| Jonard Industries Corp., Tuckahoe, NY 10707             | 914-793-0700  |
| \$† Master Appliance Corp., Racine, WI 53403            | 414-633-7791  |
| Mes Industries Co., Ltd., Taipei                        | 886-2-2180302 |
| \$ Pamran Inc., Racine, WI 53404                        | 414-637-7999  |
| \$ Techni-Tool, Plymouth Meeting, PA 19462              | 215-825-4990  |

## Tools, Lead Bending &amp; Insertion-5400

|                                                                              |                           |
|------------------------------------------------------------------------------|---------------------------|
| \$ Aries Electronics, Fitchtown, NJ 08825                                    | 908-996-6841              |
| \$† Beau Tech, Portland, ME 04101                                            | 207-775-6139              |
| \$ Contact East, N. Andover, MA 01845                                        | 508-682-2000              |
| † ELVO, Division of Zumbach Electronics Corporation, ML Kisco, NY 10549-1407 | 914-241-1008              |
| \$ Eraser Co., Syracuse, NY 13221                                            | 315-454-3237              |
| \$† Fancort Industries, Inc., W. Caldwell, NJ 07006                          | 201-575-0610              |
| \$ Harwil Corporation, Santa Monica, CA 90404                                | 310-829-2310              |
| \$ HMC/Hub Material Company, Canton, MA 02021                                | 617-821-1870              |
| Jonard Industries Corp., Tuckahoe, NY 10707                                  | 914-793-0700              |
| \$† Plato Products, Inc., Industry, CA 91748                                 | 818-965-8044/800-423-4510 |
| Ragen Systems, Inc., Ragen Corp., Warren, NJ 07059                           | 908-561-4200              |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                   | 215-825-4990              |
| \$ The Triangle Tool Group, Inc., Orangeburg, SC 29115                       | 803-534-7010              |
| \$ Ungar, Rubbermaid Office Products Group, Buena Park, CA 90621             | 714-994-2510              |

## Tools, Magnetic Pickup-5400

|                                                                |                             |
|----------------------------------------------------------------|-----------------------------|
| \$ Contact East, N. Andover, MA 01845                          | 508-682-2000                |
| † E-Z Hook Tektest Inc., Arcadia, CA 91006                     | 818-448-6175                |
| \$ HMC/Hub Material Company, Canton, MA 02021                  | 617-821-1870                |
| † Jobmaster Corp., Randallstown, MD 21133-0207                 | 410-655-1400/1-800-642-1400 |
| \$ Jonard Industries Corp., Tuckahoe, NY 10707                 | 914-793-0700                |
| \$† Moody Tools, Inc., E. Greenwich, RI 02818-0230             | 401-885-0911                |
| \$ Orbit Industries, Countis Industries, Carson City, NV 89706 | 702-882-6123                |
| \$ The Triangle Tool Group, Inc., Orangeburg, SC 29115         | 803-534-7010                |

## Tools, Marking, Numbering, Engraving-5400

|                                                         |                           |
|---------------------------------------------------------|---------------------------|
| All States, Inc., Chicago, IL 60640                     | 312-728-0525              |
| \$ Contact East, N. Andover, MA 01845                   | 508-682-2000              |
| † Control Laser Corp., Orlando, FL 32809                | 407-438-2500              |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805 | 708-398-5311/800-323-5207 |
| \$ Panduit Corp., Tinley Park, IL 60477-0981            | 800-777-3300              |
| \$ Phoenix Contact Inc., Harrisburg, PA 17111           | 717-944-1300              |

## Tools, Parts Handling, Vacuum Operated-5400

|                                                                |              |
|----------------------------------------------------------------|--------------|
| \$ Air-Vac Engrg., Milford, CT 06460                           | 203-874-2541 |
| \$ Contact East, N. Andover, MA 01845                          | 508-682-2000 |
| International Microelectronics, Arlington, TX 76003            | 817-473-1730 |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044        | 602-968-6241 |
| Mouser Electronics, Santee, CA 92071                           | 800-346-6873 |
| Mouser Electronics, Mansfield, TX 76063                        | 800-346-6873 |
| Mouser Electronics, Gilroy, CA 95020                           | 800-346-6873 |
| \$ Orbit Industries, Countis Industries, Carson City, NV 89706 | 702-882-6123 |
| \$ PACE, Inc., Laurel, MD 20723-1990                           | 301-490-9860 |
| Panduit Corp., Tinley Park, IL 60477-0981                      | 800-777-3300 |
| \$ SC Technology, Inc., Livermore, CA 94550                    | 510-373-9230 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                     | 215-825-4990 |

## Tools, Relay Servicing-5400

|                                                         |              |
|---------------------------------------------------------|--------------|
| AVO International, TBG, Dallas, TX 75237                | 214-333-3201 |
| \$ Contact East, N. Andover, MA 01845                   | 508-682-2000 |
| \$ GTE Supply, GTE, Irving, TX 75038                    | 800-433-4837 |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 | 602-968-6241 |
| \$ Jonard Industries Corp., Tuckahoe, NY 10707          | 914-793-0700 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462              | 215-825-4990 |

## Tools, Resistance Soldering — See Soldering Equip., Resistance (Vol. C)

## Tools, Wire Wrapping-5400

|                                                                                       |                           |
|---------------------------------------------------------------------------------------|---------------------------|
| \$ Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161                       | C-1700                    |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161                      | C-1543                    |
| \$ Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661/800-423-5659           | C-1678                    |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                       | 404-751-9473/800-221-4767 |
| \$† Advance Wire & Cable Assembly, Electrical Insulation Suppliers, Belmont, CA 94002 | 415-592-4550              |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                | 1-800-344-0223, Ext. 1027 |
| Berg Electronics, Camp Hill, PA 17011                                                 | 800-237-2374              |
| Burndy Corporation, An FCI Company, Norwalk, CT 06856                                 | 203-838-4444              |
| \$ Contact East, N. Andover, MA 01845                                                 | 508-682-2000              |
| \$† Cooper Tools, Raleigh, NC 27622                                                   | 919-781-7200              |
| Garry Electronics, WPI, Salem, NJ 08079                                               | 609-935-7603              |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                | 815-968-9661              |
| # HMC/Hub Material Company, Canton, MA 02021                                          | 617-821-1870              |
| International Microelectronics, Arlington, TX 76003                                   | 817-473-1730              |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                               | 602-968-6241              |
| \$ Jonard Industries Corp., Tuckahoe, NY 10707                                        | 914-793-0700              |
| Mouser Electronics, Santee, CA 92071                                                  | 800-346-6873              |
| Mouser Electronics, Mansfield, TX 76063                                               | 800-346-6873              |
| Mouser Electronics, Gilroy, CA 95020                                                  | 800-346-6873              |
| Omega Engineering, Stamford, CT 06907                                                 | 800-826-6342              |
| Product Technology, Inc., Irvine, CA 92714                                            | 714-474-8998              |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                            | 215-825-4990              |
| \$ TELTEC, INC., Minneapolis, MN 55425                                                | 612-854-9632              |
| \$ Wilson, H. F., Engineering Co., Glen Ellyn, IL 60137                               | 708-469-7473              |

## Torches, Soldering, Welding &amp; Accessories-4600

|                                                                          |              |
|--------------------------------------------------------------------------|--------------|
| \$ Contact East, N. Andover, MA 01845                                    | 508-682-2000 |
| \$ Cooper Tools, Raleigh, NC 27622                                       | 919-781-7200 |
| # HMC/Hub Material Company, Canton, MA 02021                             | 617-821-1870 |
| † Hydro-Gen Products Inc., Fort Collins, CO 80522-1517                   | 800-779-0126 |
| \$ Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                  | 602-968-6241 |
| Jonard Industries Corp., Tuckahoe, NY 10707                              | 914-793-0700 |
| \$ Master Appliance Corp., Racine, WI 53403                              | 414-633-7791 |
| \$ Pamran Inc., Racine, WI 53404                                         | 414-637-7999 |
| \$ Portasol, Oglesby and Botler Ltd., Charlotte, NC 28226                | 704-543-6239 |
| \$ Solder Absorbing Technology (SAT), A Sprig Co., Springfield, MA 01108 | 800-628-8862 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                               | 215-825-4990 |
| \$† Wall Lenk Corporation, Kinston, NC 28502-3349                        | 919-527-4186 |

## Toroids — See Coils, Toroidal (Vol. A)

## Torque Control — See Knobs, Torque, Incremental, Ratio Drive (Vol. C)

## Torquers, Gyro — See Motors, Torque (Vol. B)

## Totalizers, Digital-2200 — See Vol. D

## Touch Monitors-2000 — See Vol. D

## Touch Panels-2000 — See Vol. D

## Touch Screens-2450 — See Vol. B

## Touch Terminals-2000 — See Vol. D

## Tracers, Curve-2900 — See Vol. D

## Tracers, Signal — See Testers, Signal Tracing (Vol. D)

## Trackballs, XY Positioning-2200 — See Vol. D

## Tracking Systems (MIL)-2440 — See Vol. B

## Training Systems (MIL)-2440 — See Vol. B

## Transceivers-1900 — See Vol. D

## Transceivers, Fiber Optic-2475 — See Vol. B

## Transceivers (MIL)-2440 — See Vol. B

## Transducer Elements-5500 — See Vol. B

## Transducers, Acceleration — See Accelerometers (Vol. B)

## Transducers, Audio-5500 — See Vol. B

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## Transducers, Current-2200 — See Vol. B

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**Tubes (MIL), Microwave-2440 — See Vol. B**  
**Tubes (MIL), Power & Gas, Planar-2440 — See Vol. B**  
**Tubes (MIL), Receiving, & Tube Shields-2440 — See Vol. B**

## Tubing, Ceramic-2500

- Alberox Corporation, New Bedford, MA 02745 ..... 508-995-1725  
 Aremco Products, Inc., Ossining, NY 10562 ..... 914-762-0685  
 † The Carborundum Company, Electric Products, Niagara Falls, NY 14302 ..... 716-278-2521  
 † Cole-Flex Corporation, West Babylon, NY 11704 ..... 516-249-6150  
 Coors Ceramics Co., Electronics, Golden, CO 80401 ..... 303-277-4591  
 Daburn Electronics & Cable Corp., Northvale, NJ 07647 ..... 201-768-5400  
 Omega Engineering, Stamford, CT 06907 ..... 800-826-6342  
 # Quartzite Processing, Inc., Malden, MA 02148 ..... 617-322-3611  
 Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885 ..... 714-251-1960  
 † Saphikon, Inc., Milford, NH 03055 ..... 603-673-5831

## Tubing, Expandable-6000

- Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 ..... C-1850  
 † Cole-Flex Corporation, West Babylon, NY 11704 ..... 516-249-6150  
 Daburn Electronics & Cable Corp., Northvale, NJ 07647 ..... 201-768-5400  
 # Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 † GSI Corp., Timonium, MD 21093 ..... 410-252-1768  
 † Markel Corp., Norristown, PA 19404 ..... 215-272-8960  
 † Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300

## Tubing, Fiberglass-2500

- ‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 ..... C-1706-1707  
 Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 ..... C-1740  
 † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 ..... C-1768  
 † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 ..... C-1852  
 † Brand Dielectrics, Inc., N. Windham, CT 06256 ..... 203-423-6321  
 † Brim Electronics, Fair Lawn, NJ 07410 ..... 201-796-2886  
 † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 ..... 313-583-1200  
 † Cole-Flex Corporation, West Babylon, NY 11704 ..... 516-249-6150  
 † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 ..... 708-455-8830  
 † Dearborn Wire & Cable, L.P., Wheeling, IL 60090 ..... 708-459-1000; 800-323-0198  
 # Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 † Electro Insulation Corp., Arlington Hts., IL 60004 ..... 708-632-1020  
 † ICO-RALLY Corporation, Palo Alto, CA 94303 ..... 415-856-9900  
 † Liberty Polygas, Inc., West Milford, PA 15122 ..... 412-466-8611  
 † Markel Corp., Norristown, PA 19404 ..... 215-272-8960  
 Omega Engineering, Stamford, CT 06907 ..... 800-826-6342  
 Precision Paper Tube Co., Wheeling, IL 60090 ..... 708-537-4250  
 † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885 ..... 714-251-1960  
 Sealing Devices, Inc., Lancaster, NY 14086 ..... 716-684-7600  
 Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218 ..... 317-543-3540; 800-382-4635  
 Special Electric Co., Inc., Milwaukee, WI 53215 ..... 414-383-6370  
 † Stevens Products, Inc., E. Orange, NJ 07019 ..... 201-672-2140

## Tubing, Glass-2500

- ‡ Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 ..... 708-455-8830  
 † Corning Incorporated, Advanced Materials Business, Corning, NY 14831 ..... 607-974-7920  
 Garner Glass Co., Claremont, CA 91711 ..... 909-624-5071  
 GTI/Electronics Div., Hadley, PA 16130-8815 ..... 412-253-3161  
 † Voltarc Technologies, Inc., Fairfield, CT 06430 ..... 203-255-2633

## Tubing, Heat Shrinkable-Also See Caps, Forms & Tapes, Heat Shrinkable-2500

- ‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 ..... C-1706-1707  
 † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886 ..... C-1720-1721  
 † Chomerics, Inc., W.R. Grace & Co., Woburn, MA 01888, 617-935-4850 ..... C-1659  
 † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 ..... C-1740  
 † GSI Corp., Timonium, MD 21093, 410-252-1768 ..... C-1751  
 † Markel Corp., Norristown, PA 19404, 215-272-8960 ..... C-1666  
 † 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368 ..... C-1667, D-2311  
 † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 ..... C-1768  
 † Newman, M. M., Corp., Heli-Tube Div., Marblehead, MA 01945, 617-631-7100 ..... C-1791  
 † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 ..... C-1853-1855  
 † Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 † Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000  
 † Antex Division, Marblehead, MA 01945 ..... 617-631-7100

## PRODUCT INDEX & DIRECTORY

- ‡ Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201 ..... 1-800-537-8791  
 † Brand Dielectrics, Inc., N. Windham, CT 06256 ..... 203-423-6321  
 † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 ..... 313-583-1200  
 † Cole-Flex Corporation, West Babylon, NY 11704 ..... 516-249-6150  
 † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 ..... 708-455-8830  
 † Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Control Cable, Inc., Baltimore, MD 21244 ..... 410-298-4411  
 † Dearborn Wire & Cable, L.P., Wheeling, IL 60090 ..... 708-459-1000; 800-323-0198  
 † Dilwail Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5 ..... 416-681-2143  
 Dynacast Inc., Yorktown Heights, NY 10598 ..... 914-962-6300  
 # Electrical Insulation Suppliers, Inc., Hillside, IL 60162 ..... 708-547-5400  
 † Electro Insulation Corp., Arlington Hts., IL 60004 ..... 708-632-1020  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 † HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 † ICO-RALLY Corporation, Palo Alto, CA 94303 ..... 415-856-9900  
 † Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181  
 † MSC Automation, Miller Sales Co., Wauconda, IL 60084 ..... 708-526-9200; 800-323-5294  
 † M.M. Newman Corporation, Marblehead, MA 01945 ..... 617-631-7100  
 † Olympic Wire & Cable, Fairfield, NJ 07004 ..... 201-227-7996  
 † Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 Precision Paper Tube Co., Wheeling, IL 60090 ..... 708-537-4250  
 † Precision Products Group, Inc., Rockford, IL 61108 ..... 815-395-2155  
 Sealing Devices, Inc., Lancaster, NY 14086 ..... 716-684-7600  
 † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218 ..... 317-543-3540; 800-382-4635  
 Shin-Etsu Polymer America, Inc., Union City, CA 94587 ..... 510-475-9000  
 Special Electric Co., Inc., Milwaukee, WI 53215 ..... 414-383-6370  
 † Standard Wire & Cable Co., Rancho Dominguez, CA 90220 ..... 310-609-1811; 800-326-0006  
 † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 ..... 803-676-2900  
 Toplight, York, PA 17404 ..... 717-843-9901; 800-233-9386  
 † Tyton Corp., Milwaukee, WI 53223 ..... 414-355-1130; 800-535-5552  
 † Zeus Indl. Prods. Inc., Orangeburg, SC 29116 ..... 803-531-2174; 800-526-3842  
 Zippertubing Co., Los Angeles, CA 90061 ..... 310-527-0488

## Tubing, Metal-2500

- Omega Engineering, Stamford, CT 06907, 800-826-6342 ..... C-1547  
 † Alexandria Extrusion Co., Alexandria, MN 56308 ..... 612-763-6537  
 Indium Corporation of America, Utica, NY 13502 ..... 315-853-4900; 1-800-4INDIUM  
 † ITT Higbie Baylock, Auburn Hills, MI 48321-7016 ..... 313-340-3000  
 † Micro-Coax, Collegeville, PA 19426 ..... 215-489-3700  
 Parker Hannifin Corp., Cleveland, OH 44112-1290 ..... 800-272-7537; 800-C-PARKER  
 Scott Specialty Gases, Inc., Plumsteadville, PA 18949-0130 ..... 215-766-8861  
 † Wall, A. T., Co., Warwick, RI 02886 ..... 401-739-0740

## Tubing, Paper-2500

- Precision Paper Tube Co., Wheeling, IL 60090 ..... 708-537-4250  
 † Precision Products Group, Inc., Rockford, IL 61108 ..... 815-395-2155  
 Special Electric Co., Inc., Milwaukee, WI 53215 ..... 414-383-6370

## Tubing, Plastic-Also See Tubing, Spaghetti-2500

- ‡ ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 ..... C-1706-1707  
 † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886 ..... C-1720-1721  
 † Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969 ..... C-1538  
 † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 ..... C-1740  
 † GSI Corp., Timonium, MD 21093, 410-252-1768 ..... C-1751  
 † Markel Corp., Norristown, PA 19404, 215-272-8960 ..... C-1666  
 † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 ..... C-1768  
 † Newman, M. M., Corp., Heli-Tube Div., Marblehead, MA 01945, 617-631-7100 ..... C-1791  
 Omega Engineering, Stamford, CT 06907, 800-826-6342 ..... C-1547  
 † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 ..... C-1851-1853  
 Acme Model Engineering Co., Ridgefield, NJ 07657 ..... 201-943-7650  
 † Antex Division, Marblehead, MA 01945 ..... 617-631-7100  
 † Applied Plastics Technology, Bristol, RI 02809 ..... 401-253-0200  
 † Bivar, Inc., Irvine, CA 92718 ..... 714-951-8808  
 † Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201 ..... 1-800-537-8791  
 † Brand Dielectrics, Inc., N. Windham, CT 06256 ..... 203-423-6321  
 † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035 ..... 313-583-1200  
 † Cole-Flex Corporation, West Babylon, NY 11704 ..... 516-249-6150  
 † Concord Electronics Corporation, New York, NY 10012 ..... 212-777-6571  
 † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 ..... 708-455-8830  
 † Dayco Products, Inc., Dayton, OH 45401-1004 ..... 513-226-5926  
 † Dearborn Wire & Cable, L.P., Wheeling, IL 60090 ..... 708-459-1000; 800-323-0198  
 † Dilwail Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5 ..... 416-681-2143  
 † Electro Insulation Corp., Arlington Hts., IL 60004 ..... 708-632-1020  
 † GC-Thorsen, Rockford, IL 61105-1209 ..... 815-968-9661  
 † Glenair Inc., Glendale, CA 91201-2497 ..... 818-247-6000  
 † ICO-RALLY Corporation, Palo Alto, CA 94303 ..... 415-856-9900  
 ITT Higbie Baylock, Auburn Hills, MI 48321-7016 ..... 313-340-3000  
 # MEGA Systems & Chemicals, Phoenix, AZ 85040 ..... 602-437-9105  
 Moxness Products, Inc., Versa Technologies, Racine, WI 53405 ..... 414-554-5050; 800-558-5706  
 † M.M. Newman Corporation, Marblehead, MA 01945 ..... 617-631-7100  
 Norgren, Littleton, CO 80120-1663 ..... 303-794-2611  
 † Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 Parker Hannifin Corp., Instrumentation Connectors Div., Huntsville, AL 35802 ..... 205-881-2040  
 Parker Hannifin Corp., Parflex Div., Ravenna, OH 44266 ..... 216-296-2871  
 Phoenix Wire, Inc., S. Hero, VT 05486 ..... 802-372-4561  
 † Precision Products Group, Inc., Rockford, IL 61108 ..... 815-395-2155  
 † Richco Plastic Co., Chicago, IL 60680 ..... 312-539-4060



|                                                            |                               |
|------------------------------------------------------------|-------------------------------|
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218 | 317-543-3540;<br>800-382-4635 |
| Special Electric Co., Inc., Milwaukee, WI 53215            | 414-383-6370                  |
| † Stevens Products, Inc., E. Orange, NJ 07019              | 201-672-2140                  |
| † Sunbank Electronics, Paso Robles, CA 93446               | 805-238-2840                  |
| † Zeus Indl. Prods. Inc., Orangeburg, SC 29116             | 803-531-2174; 800-526-3842    |
| Zippertubing Co., Los Angeles, CA 90061                    | 310-527-0488                  |

## Tubing, Shrinkable-6000

|                                                                           |                               |
|---------------------------------------------------------------------------|-------------------------------|
| † 3M Electrical Specialties Division, Austin, TX 78726-9000, 800-328-1368 |                               |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611   | C-1676, D-2311                |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                           | 404-751-9473; 800-221-4767    |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                | 908-925-8000                  |
| † Cole-Flex Corporation, West Babylon, NY 11704                           | 516-249-6150                  |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162                 | 708-547-5400                  |
| † GSI Corp., Timonium, MD 21093                                           | 410-252-1768                  |
| † Markel Corp., Norristown, PA 19404                                      | 215-272-8960                  |
| † Precision Products Group, Inc., Rockford, IL 61108                      | 815-395-2155                  |
| Sealing Devices, Inc., Lancaster, NY 14086                                | 716-684-7600                  |
| Standard Wire & Cable Co., Rancho Dominguez, CA 90220                     | 310-609-1811;<br>800-326-0006 |
| † Zeus Indl. Prods. Inc., Orangeburg, SC 29116                            | 803-531-2174; 800-526-3842    |

## Tubing, Spaghetti-2500

|                                                                            |                               |
|----------------------------------------------------------------------------|-------------------------------|
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                      | C-1720-1721                   |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                              | C-1751                        |
| † Newman, M. M., Corp., Heli-Tube Div., Marblehead, MA 01945, 617-631-7100 | C-1791                        |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                        | C-1547                        |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970               | C-1850-1851                   |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                               | 908-925-8000                  |
| † Applied Plastics Technology, Bristol, RI 02809                           | 401-253-0200                  |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                            | 203-423-6321                  |
| † Cadillac Plastic & Chem. Co. Div. of M.A. Hanna, Troy, MI 48007-7035     | 313-583-1200                  |
| † Cole-Flex Corporation, West Babylon, NY 11704                            | 516-249-6150                  |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412       | 708-455-8830                  |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                    | 201-768-5400                  |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                          | 708-459-1000; 800-323-0198    |
| † Dilwol Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5               | 416-681-2343                  |
| Electrical Insulation Suppliers, Inc., Hillside, IL 60162                  | 708-547-5400                  |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                      | 708-632-1020                  |
| † GC-Thorsen, Rockford, IL 61105-1209                                      | 815-968-9661                  |
| † ICC-RALLY Corporation, Palo Alto, CA 94303                               | 415-856-9900                  |
| † Markel Corp., Norristown, PA 19404                                       | 215-272-8960                  |
| Minor Rubber Co., Inc., Bloomfield, NJ 07003                               | 201-338-6800; 800-433-6886    |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780                  | 213-225-5611                  |
| † M.M. Newman Corporation, Marblehead, MA 01945                            | 617-631-7100                  |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                | 201-227-7996                  |
| Phoenix Wire, Inc., S. Hero, VT 05486                                      | 802-372-4561                  |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                 | 317-543-3540;<br>800-382-4635 |
| † Zeus Indl. Prods. Inc., Orangeburg, SC 29116                             | 803-531-2174; 800-526-3842    |

## Tubing, Spiral Wrap-2500

|                                                                            |                            |
|----------------------------------------------------------------------------|----------------------------|
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                    | C-1163                     |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                      | C-1721                     |
| † Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969          | C-1538-1539, 1722          |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400      | C-1746                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611    | C-1768                     |
| † Newman, M. M., Corp., Heli-Tube Div., Marblehead, MA 01945, 617-631-7100 | C-1791                     |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                 | 908-925-8000               |
| † Antex Division, Marblehead, MA 01945                                     | 617-631-7100               |
| † Applied Plastics Technology, Bristol, RI 02809                           | 401-253-0200               |
| Avery Dennison, Framingham, MA 01701                                       | 508-879-0511               |
| † Cole-Flex Corporation, West Babylon, NY 11704                            | 516-249-6150               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412       | 708-455-8830               |
| † Dayco Products, Inc., Dayton, OH 45401-1004                              | 513-226-5926               |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                            | 708-459-1000; 800-323-0198 |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                | 708-547-5400               |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                      | 708-632-1020               |
| † ICC-RALLY Corporation, Palo Alto, CA 94303                               | 415-856-9900               |
| † Markel Corp., Norristown, PA 19404                                       | 215-272-8960               |
| Minor Rubber Co., Inc., Bloomfield, NJ 07003                               | 201-338-6800; 800-433-6886 |
| † M.M. Newman Corporation, Marblehead, MA 01945                            | 617-631-7100               |
| † Nichifu America, Inc., Pottstown, PA 19464                               | 215-323-7120               |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                | 201-227-7996               |
| Omega Engineering, Stamford, CT 06907                                      | 800-826-6342               |
| † Panduit Corp., Tinley Park, IL 60477-0981                                | 800-777-3300               |
| Precision Paper Tube Co., Wheeling, IL 60090                               | 708-537-4250               |
| † Precision Products Group, Inc., Rockford, IL 61108                       | 815-395-2155               |
| † Richco Plastic Co., Chicago, IL 60680                                    | 312-539-4060               |
| Sunbank Electronics, Paso Robles, CA 93446                                 | 805-238-2840               |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                               | 516-254-2970               |
| † Zeus Indl. Prods. Inc., Orangeburg, SC 29116                             | 803-531-2174; 800-526-3842 |

## Tubing, Waveguide-3450 — See Vol. A

## Tubing, Zipper-2500

|                                                             |                            |
|-------------------------------------------------------------|----------------------------|
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                  | 908-925-8000               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162 | 708-547-5400               |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                | 516-254-2970               |
| † Zeus Indl. Prods. Inc., Orangeburg, SC 29116              | 803-531-2174; 800-526-3842 |

|                                                         |              |
|---------------------------------------------------------|--------------|
| † Zippertubing Co., Los Angeles, CA 90061               | 310-527-0488 |
| <b>Tuners, AM/FM-1300 — See Vol. D</b>                  |              |
| <b>Tuners, Microwave-3450 — See Vol. A</b>              |              |
| <b>Tuning Circuits, Surface Mount-3130 — See Vol. A</b> |              |
| <b>Tuning Forks-2300 — See Vol. A</b>                   |              |

## Tweezers, Manual & Vacuum-5400

|                                                               |                            |
|---------------------------------------------------------------|----------------------------|
| † Air-Vac Engrg., Milford, CT 06460                           | 203-874-2541               |
| † Clauss Cutlery Co., Alco Industries, Fremont, OH 43420      | 419-332-7344; 800-225-2877 |
| Contact East, N. Andover, MA 01845                            | 508-682-2000               |
| † Cooper Tools, Raleigh, NC 27622                             | 919-781-7200               |
| † GC-Thorsen, Rockford, IL 61105-1209                         | 815-968-9661               |
| † HMC/Hub Material Company, Canton, MA 02021                  | 617-821-1870               |
| ITT Pomona Electronics, Pomona, CA 91766                      | 909-469-2900               |
| † Jonard Industries Corp., Tuckahoe, NY 10707                 | 914-793-0700               |
| † Mouser Electronics, Santee, CA 92071                        | 800-346-6873               |
| † Mouser Electronics, Mansfield, TX 76063                     | 800-346-6873               |
| † Mouser Electronics, Gilroy, CA 95020                        | 800-346-6873               |
| † Orbit Industries, Countis Industries, Carson City, NV 89706 | 702-882-6123               |
| † Plato Products, Inc., Industry, CA 91748                    | 818-965-8044; 800-423-4510 |
| † Shattuck Industries, Santa Cruz, CA 95060                   | 408-427-3122               |
| † Techni-Tool, Plymouth Meeting, PA 19462                     | 215-825-4990               |

## Ultrasonic Transceivers, High Resolution, Narrow Beam-5500 — See Vol. B

## Ultraviolet Inspection Lighting-Also See Microscopes, Ultraviolet-4100 — See Vol. D

## Unibus Cards — See Board Computers & Subassemblies (Vol. D)

## Urea Formaldehyde — See Plastic Raw Materials (Vol. C)

## Valve Position Indicators/Transmitters-3500 — See Vol. B

## Valve Positioners & Actuators-3500 — See Vol. B

## Valves, Solenoid-4550 — See Vol. B

## Valves, Vacuum-4100 — See Vol. D

## Varactors — See Diodes, Varactor (Vol. A)

## Varactors, Surface Mount-4800 — See Vol. A

## Varistors — See Resistors, Voltage Sensitive (Vol. A)

## VXCO — See Oscillators, Voltage Controlled Crystal

## VHF Equipment — See Generators (Vol. D), Receivers (Vol. D), etc.

## Vibration Surveys — See Services, Vibration Surveys (Vol. D)

## Vibration Test Systems — See Testers, Vibration (Vol. D)

## Vibrators-4050 — See Vol. D

## Video Components & Equipment — See Specific Component:

## Amplifiers (Vol. D), Cameras (Vol. D), Networks (Vol. D), etc.

## Video/Audio Links, Fiber Optic-2475 — See Vol. B

## Viewers (MIL)-2440 — See Vol. B

## Viewing Hoods, Cathode Ray Tube-2975 — See Vol. D

## Vinyl Compounds — See Plastic Raw Materials (Vol. C)

## Vises-5400

|                                                  |              |
|--------------------------------------------------|--------------|
| † Contact East, N. Andover, MA 01845             | 508-682-2000 |
| † HMC/Hub Material Company, Canton, MA 02021     | 617-821-1870 |
| † Moody Tools, Inc., E. Greenwich, RI 02818-0230 | 401-885-0911 |
| † PanaVise Products, Inc., Sparks, NV 89431      | 702/353-2900 |

## Visual Micro Inspection Systems-2900 — See Vol. D

## VLF Equipment — See Receivers (Vol. D), Transmitters (Vol. D), etc.

## VME Bus Cards — See Board Computers & Subassemblies (Vol. D)

## Voice Recognition Equipment — See Recognition Equipment, Speech (Vol. D)

## Voltage Selector — See Adaptors, US to European Power (Vol. C)

## Voltage Sources-4000 — See Vol. D

## Voltmeter, Electrostatic-2900 — See Vol. D

## VXibus Cards — See Instruments, Test & Measuring, VXibus Compatible (Vol. D)

## VXibus Cards — See Board Computers & Subassemblies (Vol. D), Instruments, Test & Measuring, VXibus compatible (Vol. D)

## VXibus Modular Test Systems-2900 — See Vol. D

## Wafer Fabrication, Semiconductor — See Semiconductor Wafer Fabrication (Vol. D)

## Wall Plates — See Boxes, Junction, Outlet & Wall Plates (Vol. C)

## Warning Systems (MIL)-2440 — See Vol. B

## Washers, Lock-2500

|                                                                       |                        |
|-----------------------------------------------------------------------|------------------------|
| † Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 | C-1290                 |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161      | C-1543                 |
| † Berg, W. M., Inc., East Rockaway, NY 11518                          | 516-599-5010           |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647               | 201-768-5400           |
| ELMA Electronic Inc., Fremont, CA 94538                               | 510-656-3400           |
| † Karn Components, Inc., Nesconset, NY 11767                          | 516-585-0666           |
| † Morris, J. I., Co., Southbridge, MA 01550                           | 508-764-4394           |
| † PIC Design, Remington Technologies, Inc., Middlebury, CT 06762      | 203-758-8272           |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                  | 800-634-2356           |
| Sterling Instruments, a DSG Company, New Hyde Pk., NY 11042-5416      | 516-328-3300           |
| Stock Drive Products, a DSG Company, New Hyde Pk., NY 11042-5416      | 516-328-0200; 328-3300 |



## Washers, Plain-2500

|                                                                              |                            |
|------------------------------------------------------------------------------|----------------------------|
| § Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969            | C#1538-1539                |
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571        | C#1290                     |
| § LEMO U.S.A., Inc., Santa Rosa, CA 95406, 707-578-8811, 800-444-LEMO (5366) | C#1369                     |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161             | C#1543                     |
| All-States, Inc., Chicago, IL 60640                                          | 312-728-0525               |
| † Amatol Electronic Hardware, New Haven, CT 06515                            | 203-397-3311               |
| † Berg, W. M., Inc., East Rockaway, NY 11518                                 | 516-599-5010               |
| † Boker's, Inc., Minneapolis, MN 55406-1937                                  | 612-729-9365               |
| § Boston Gear, IMO Industries Inc., Quincy, MA 02171                         | 617-328-3300; 800-225-5280 |
| † Brim Electronics, Fair Lawn, NJ 07410                                      | 201-796-2886               |
| † Cut Craft, Inc., Ft. Worth, TX 76102                                       | 817-332-6151               |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                      | 201-768-5400               |
| ELMA Electronic Inc., Fremont, CA 94538                                      | 510-656-3400               |
| Forma Scientific, Inc., Marietta, OH 45750                                   | 614-373-4763               |
| Kam Components, Inc., Nesconset, NY 11767                                    | 516-585-0666               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                         | 718-956-8900               |
| † Morris, J. L. Co., Southbridge, MA 01550                                   | 508-764-4394               |
| § PIC Design, Remington Technologies, Inc., Middlebury, CT 06762             | 203-758-8272               |
| Seastrom Manufacturing Co., Inc., Glendale, CA 91201                         | 800-634-2356               |
| † Unicorp, Orange, NJ 07050                                                  | 201-674-1700; 800-526-1389 |

## Washers, Shoulder-2500

|                                                                       |                            |
|-----------------------------------------------------------------------|----------------------------|
| § Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969     | C#1538-1539                |
| § Concord Electronics Corporation, New York, NY 10012, 1-212-777-6571 | C#1290                     |
| Makk-O Industries, Yonkers, NY 10703, 914-376-0160; 914-376-0161      | C#1543                     |
| † Thermalloy, Inc., Dallas, TX 75381-0839, 214-243-4321               | C#1646                     |
| † Amatol Electronic Hardware, New Haven, CT 06515                     | 203-397-3311               |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647                 | 201-768-5400               |
| † Kam Components, Inc., Nesconset, NY 11767                           | 516-585-0666               |
| † Keystone Electronics Corp., Astoria, NY 11105-2017                  | 718-956-8900               |
| § MSC Automation, Miller Sales Co., Wauconda, IL 60084                | 708-526-9200; 800-323-5294 |
| † Teknical Inds., Inc., Rochester, NY 14620-1103                      | 716-232-1291               |
| Unicorp, Orange, NJ 07050                                             | 201-674-1700; 800-526-1389 |

## Waveguide-Coax Adapters-3450 — See Vol. A

## Waveguides-3450 — See Vol. A

## Waveguides (MIL)-2440 — See Vol. B

## Wave Soldering Equipment — See Soldering Equip, Printed Circuit (Vol. C)

## Wave Traps — See Filters, Antenna (Vol. A), Filters, Microwave (Vol. A), etc.

## Welding Equipment &amp; Accessories (Excl. Equipment for Semiconductor Devices)-5400

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| Alpha-Core Inc., Bridgeport, CT 06608                                             | 203-335-6805               |
| † Coherent General, Inc., Sturbridge, MA 01566                                    | 508-347-2681               |
| Dukane Corp., Communications Sys. Div., St. Charles, IL 60174-9984                | 708-584-2300               |
| † Ewald Instruments Corp., Kent, CT 06757                                         | 203-927-3278               |
| GTI/ Electronics Div., Hadley, PA 16130-8815                                      | 412-253-3161               |
| Hughes Aircraft Co., Industrial Products Division, Carlsbad, CA 92009             | 619-931-3000               |
| † Hydro-Gen Products Inc., Fort Collins, CO 80522-1517                            | 800-779-0126               |
| § J & R Mfg. Co., Kearny, NJ 07032                                                | 201-991-5330               |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| † Solder Absorbing Technology (SAT), A Sping Co., Springfield, MA 01108           | 800-628-8862               |
| † Sonobond Ultrasonics Inc., Inductotherm Industries, West Chester, PA 19382      | 610-696-4710; 800-323-1269 |
| † Stenning Instruments, Inc., Camarillo, CA 93010                                 | 805-484-4996               |

## Welding Machines, Laser-4100 — See Vol. D

## Welding Machines, Ultrasonic, Metals &amp; Plastics-4100 — See Vol. D

## White Noise Generator Modules — See Generators, White Noise (Vol. D), Diodes, Noise

## White Printers-4200

|                                     |              |
|-------------------------------------|--------------|
| § Teledyne Rotolite, Owen, WI 54460 | 800-524-0105 |
|-------------------------------------|--------------|

## Windows, Sapphire-2500

|                                                                                                            |              |
|------------------------------------------------------------------------------------------------------------|--------------|
| † Atomergic Chemetals Corp., Farmingdale, NY 11735-1718                                                    | 516-694-9000 |
| Ceramaseal, New Lebanon, NY 12125                                                                          | 518-794-7800 |
| § Saphikon, Inc., Milford, NH 03055                                                                        | 603-673-5831 |
| Swiss Jewel Company, Philadelphia, PA 19106                                                                | 215-925-2867 |
| † Union Carbide Chemicals & Plastics Company Inc., Industrial Chemicals Div., Crystal, San Diego, CA 92123 | 619-279-4500 |

## Windows, Shielded — See Shields, RF (Vol. C)

## Wire &amp; Cable Ties-2500

|                                                                                   |                              |
|-----------------------------------------------------------------------------------|------------------------------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 | C#1708                       |
| § AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                           | C#1163                       |
| † Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969                 | C#1538-1539, 1722-1723       |
| † DEK, Inc., St. Charles, IL 60174, 708-377-2575                                  | C#1747                       |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                     | C#1751                       |
| § Newman, M. M., Corp., Hell-Tube Div., Marblehead, MA 01945, 617-631-7100        | C#1791                       |
| † Accurate Electronics Corp., Elyria, OH 44036                                    | 216-386-6330; 1-800-334-5904 |
| § Accu-Tech Corporation, Roswell, GA 30076-3890                                   | 404-751-9473; 800-221-4767   |

|                                                                                    |                                  |
|------------------------------------------------------------------------------------|----------------------------------|
| § All-States, Inc., Chicago, IL 60640                                              | 312-728-0525                     |
| Alpha Wire Corp., Elizabeth, NJ 07207-0711                                         | 908-925-8000                     |
| † Amrad & Transcon Mfg. Co., Div. of D.J. Assocs., Inc., Fort Smith, AR 72903-7097 | 501-452-3987                     |
| Antex Division, Marblehead, MA 01945                                               | 617-631-7100                     |
| § AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962              | 1-800-344-0223, Ext. 1027        |
| † Avery Dennison, Framingham, MA 01701                                             | 508-879-0511                     |
| § Band-It - Ilex, Inc., Denver, CO 80216                                           | 303-320-4555                     |
| † Brim Electronics, Fair Lawn, NJ 07410                                            | 201-796-2886                     |
| § Burmy Corporation, An FCI Company, Norwalk, CT 06856                             | 203-838-4444                     |
| Caristrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8              | 1-800-361-9466                   |
| § Clifford of Vermont, Inc., Bethel, VT 05032                                      | 802-234-9921; 800-451-4381       |
| † Cole-Flex Corporation, West Babylon, NY 11704                                    | 516-249-6151                     |
| § Concord Electronics Corporation, New York, NY 10012                              | 1-212-777-6571                   |
| § Contact East, N. Andover, MA 01845                                               | 508-682-2000                     |
| § Control Cable, Inc., Baltimore, MD 21244                                         | 410-298-4411                     |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                            | 201-768-5400                     |
| § Dynacast Inc., Yorktown Heights, NY 10598                                        | 914-962-6300                     |
| § Electrical Insulation Suppliers, Inc., Hillside, IL 60162                        | 708-547-5400                     |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                              | 708-632-1020                     |
| § Fastex, Illinois Tool Works, Des Plaines, IL 60016                               | 708-299-2222                     |
| Fastex Distributor Business, Illinois Tool Works, Des Plaines, IL 60016            | 708-350-8200                     |
| † Fuses Unlimited, D.E.I., Van Nuys, CA 91406                                      | 818-786-8111                     |
| § GC-Thorsen, Rockford, IL 61105-1209                                              | 815-968-9661                     |
| Hanscom, H. F. Co., Inc., Providence, RI 02905                                     | 401-941-1452                     |
| † Heyco Molded Products, Inc., Kenilworth, NJ 07033                                | 908-245-0033; 800-526-8142       |
| § HMC/Hub Material Company, Canton, MA 02021                                       | 617-821-1870                     |
| † ICO-RALLY Corporation, Palo Alto, CA 94303                                       | 415-856-9900                     |
| § Ideal Industries, Inc., Sycamore, IL 60178                                       | 815-895-5181                     |
| Injecto Mold Inc., Crellin International, Chicago, IL 60639                        | 312-384-6000                     |
| International Microelectronics, Arlington, TX 76003                                | 817-473-1730                     |
| § J.S.T. Corp., Mt. Prospect, IL 60056                                             | 1-800-947-1110                   |
| § Klein Tools, Inc., Chicago, IL 60659-9033                                        | 708-677-9500                     |
| § Lyn-Tron, Inc., Burbank, CA 91505                                                | 213-849-6211; 800-423-2734       |
| † Manger Electric Company, Inc., Stamford, CT 06902                                | 203-348-7761                     |
| 3M-Electronic Products Division, Austin, TX 78726                                  | 1-800-225-5373 Sls. & Prod. Inf. |
| Mouser Electronics, Santee, CA 92071                                               | 800-346-6873                     |
| Mouser Electronics, Mansfield, TX 76063                                            | 800-346-6873                     |
| Mouser Electronics, Gilroy, CA 95020                                               | 800-346-6873                     |
| † M.M. Newman Corporation, Marblehead, MA 01945                                    | 617-631-7100                     |
| § Nichifu America, Inc., Pottstown, PA 19464                                       | 215-323-7120                     |
| † NMC Fastening Systems, Nylon Molding Corp., Monrovia, CA 91016                   | 818-357-0901                     |
| § NTE Electronics, Inc., Bloomfield, NJ 07003                                      | 201-748-5089                     |
| † Panduit Corp., Tintin Park, IL 60477-0981                                        | 800-777-3300                     |
| † Pass & Seymour/Legrand, Pass & Seymour/Inc., Syracuse, NY 13221                  | 315-468-6211                     |
| Permaluster, Inc., Burbank, CA 91504                                               | 213-849-4543; 213-849-6454       |
| † Pioneer Components, Brooklyn, NY 11234                                           | 718-444-3880                     |
| † Richco Plastic Co., Chicago, IL 60680                                            | 312-539-4060                     |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                         | 317-543-3540;                    |
|                                                                                    | 800-382-4635                     |
| § Switches Unlimited, Inc., Woodside, NY 11377                                     | 718-478-5000; 800-221-0487       |
| K.L. Tannehill Inc., Bloomington, MN 55431                                         | 612-881-6700                     |
| § Techni-Tool, Plymouth Meeting, PA 19462                                          | 215-825-4990                     |
| § Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401                | 203-732-7025                     |
| § Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401      | 803-676-2900                     |
| † Tylon Corp., Milwaukee, WI 53223                                                 | 414-355-1130; 800-535-5552       |
| § West Electronic Sales Team, Huntington Beach, CA 92647                           | 714-375-6500;                    |
|                                                                                    | 310-495-5569                     |
| Wieland Inc., Burgaw, NC 28425                                                     | 919-259-5050                     |
| § Zeus Intl. Prods. Inc., Orangeburg, SC 29116                                     | 803-531-2174; 800-526-3842       |

## Wire, Airframe-2440 — See Vol. B

## Wire, Aluminum-6000

|                                                                 |                                   |
|-----------------------------------------------------------------|-----------------------------------|
| † Magnet Wire Co., Welco Wire & Cable, Inc., Edgewood, NY 11717 | 516-667-9315                      |
| Permaluster, Inc., Burbank, CA 91504                            | 213-849-4543; 213-849-6454        |
| § Phelps Dodge Magnet Wire, Ft. Wayne, IN 46801                 | 219-458-4444; 800-255-CLIC (2542) |

## Wire, Antenna (All Types)-6000

|                                                                         |              |
|-------------------------------------------------------------------------|--------------|
| MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553           | C#1764       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 | C#1768, 1784 |

|                                                                      |                            |
|----------------------------------------------------------------------|----------------------------|
| Alcalat Chester Cable Corp., Chester, NY 10918                       | 914-469-2141               |
| § Alpha Wire Corp., Elizabeth, NJ 07207-0711                         | 908-925-8000               |
| American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 | 401-726-0700               |
| † Brim Electronics, Fair Lawn, NJ 07410                              | 201-796-2886               |
| † Carolina Steel & Wire, Lexington, SC 29073-0829                    | 803-359-5501               |
| † Cat Wire and Cable Corp., Miami, FL 33150                          | 305-836-3600               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 | 708-455-8830               |
| § Cooper Industries/Belden Div., Richmond, IN 47375                  | 317-983-5200; 800-BELDEN-1 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647              | 201-768-5400               |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                    | 708-459-1000; 800-323-0198 |
| § EPD Electronics, Inc., Gardena, CA 90247                           | 310-515-4996               |
| § GC-Thorsen, Rockford, IL 61105-1209                                | 815-968-9661               |
| International Microelectronics, Arlington, TX 76003                  | 817-473-1730               |
| JEMA, Wilmette, IL 60091                                             | 708-251-3600               |
| § JSC Wire & Cable, Wayne, NJ 07474-0248                             | 201-694-6200; 800-572-9473 |
| Molecu-Wire, Farmingdale, NJ 07727                                   | 908-938-9473               |
| Mouser Electronics, Santee, CA 92071                                 | 800-346-6873               |
| Mouser Electronics, Mansfield, TX 76063                              | 800-346-6873               |
| Mouser Electronics, Gilroy, CA 95020                                 | 800-346-6873               |



|                                                           |               |
|-----------------------------------------------------------|---------------|
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220 | 310-609-1811; |
|                                                           | 800-326-0006  |
| † Storm Products Co., Hinsdale, IL 60521                  | 708-323-9121  |
| † K.L. Tannehill Inc., Bloomington, MN 55431              | 612-881-6700  |
| Unadilla Antenna Mfg. Co., Andover, MA 01810              | 508-475-7831  |

## Wire, Bare, Copper-6000

|                                                                         |             |
|-------------------------------------------------------------------------|-------------|
| Betatherm Corp., Shrewsbury, MA 01545, 508-842-0516                     | B-1866      |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400 | C-1741-1742 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000    | C-1763      |
| \$ MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553        | C-1764      |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 |             |

|                                                                                               |                                        |
|-----------------------------------------------------------------------------------------------|----------------------------------------|
|                                                                                               | C-1768                                 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                               | 404-751-9473; 800-221-4767             |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                               | 703-369-0440                           |
| Alcatel Chester Cable Corp., Chester, NY 10918                                                | 914-469-2141                           |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                 | 908-925-8000                           |
| \$† American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                      | 401-726-0700                           |
| \$ AT&T Microelectronics, Allentown, PA 18103                                                 | 1-800-372-2447; In Can. 1-800-553-2448 |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                     | 201-796-2886                           |
| Carroll Cable Co., Highland Heights, KY 41076                                                 | 606-572-8303; 800-572-8000             |
| # Clifford of Vermont, Inc., Bethel, VT 05032                                                 | 802-234-9921; 800-451-4381             |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                        | 708-455-8830                           |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                      | 818-882-8311                           |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                          | 317-983-5200; 800-BELDEN-1             |
| \$ Custom Cable Corp., Westbury, NY 11590                                                     | 516-334-3600                           |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                           | 708-459-1000; 800-323-0198             |
| \$ Electrical Insulation Suppliers, Inc., Hillside, IL 60162                                  | 708-547-5400                           |
| † Feller US Corporation, AFN Div., Somerset, NJ 08873                                         | 908-247-7333                           |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                   | 606-572-8303                           |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                                                      | 502-684-0431                           |
| † Leonische of America, Chicago, IL 61022                                                     | 413-593-6618                           |
| \$ Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416                              | 206-485-4288; 206-486-2222             |
| \$ Lynn Electronics, Feasterville, PA 19053                                                   | 215-355-8200; 800-523-6075             |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                               | 516-667-9315                           |
| Materials Research Corporation, Orangeburg, NY 10962                                          | 914-359-4200                           |
| † Molecu-Wire, Farmingdale, NJ 07727                                                          | 908-938-9473                           |
| New England Electric Wire Corp., Lisbon, NH 03585                                             | 603-838-6624                           |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                  | 201-227-7996                           |
| Omega Engineering, Stamford, CT 06907                                                         | 800-826-6342                           |
| \$ Phelps Dodge Magnet Wire, Ft Wayne, IN 46801                                               | 219-458-4444; 800-255-CLIC (2542)      |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357             |
| Qualtek Electronics Corp., Mentor, OH 44060                                                   | 216-951-3300                           |
| \$† Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039           | 401-433-7000                           |
| Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796                               | 617-527-4385                           |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543                                 | 914-698-5353                           |
| \$ Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                      | 310-609-1811; 800-326-0006             |
| † Wilkinson, Westlake Village, CA 91359                                                       | 818-889-0050; 800-822-4653             |

## Wire, Bare, Nickel-6000

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| Betatherm Corp., Shrewsbury, MA 01545, 508-842-0516                               | B-1866                     |
| \$† MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                 | C-1764                     |
| \$† Atomergic Chemetals Corp., Farmingdale, NY 11735-1718                         | 516-694-9000               |
| \$ Brim Electronics, Fair Lawn, NJ 07410                                          | 201-796-2886               |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                          | 818-882-8311               |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647                         | 201-768-5400               |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                   | 708-459-1000; 800-323-0198 |
| † Feller US Corporation, AFN Div., Somerset, NJ 08873                             | 908-247-7333               |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                                          | 502-684-0431               |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                   | 516-667-9315               |
| Materials Research Corporation, Orangeburg, NY 10962                              | 914-359-4200               |
| † Molecu-Wire, Farmingdale, NJ 07727                                              | 908-938-9473               |
| Omega Engineering, Stamford, CT 06907                                             | 800-826-6342               |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543                     | 914-698-5353               |
| † Wilkinson, Westlake Village, CA 91359                                           | 818-889-0050; 800-822-4653 |

## Wire, Bare, Nickel-Chrome-6000

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| \$† MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                 | C-1764                     |
| \$† Atomergic Chemetals Corp., Farmingdale, NY 11735-1718                         | 516-694-9000               |
| \$ Brim Electronics, Fair Lawn, NJ 07410                                          | 201-796-2886               |
| † Carpenter Technology Corp., Reading, PA 19612                                   | 215-208-2000               |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412            | 708-455-8830               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                          | 201-768-5400               |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                   | 708-459-1000; 800-323-0198 |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                   | 516-667-9315               |
| Materials Research Corporation, Orangeburg, NY 10962                              | 914-359-4200               |
| † Molecu-Wire, Farmingdale, NJ 07727                                              | 908-938-9473               |
| Omega Engineering, Stamford, CT 06907                                             | 800-826-6342               |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 | 401-433-7000               |
| Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796                   | 617-527-4385               |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543                     | 914-698-5353               |

## Wire, Bonding-6000

|                                                               |              |
|---------------------------------------------------------------|--------------|
| MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553 | C-1764       |
| Alpha-Core Inc., Bridgeport, CT 06608                         | 203-335-6805 |

|                                                                        |              |
|------------------------------------------------------------------------|--------------|
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 | 708-455-8830 |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717        | 516-667-9315 |
| (MEI) Marpet Enterprises, Inc., Wakefield, MA 01880                    | 617-246-2040 |
| Northwest Microcircuits, Inc., Philomath, OR 97370                     | 503-929-6424 |
| Semiconductor Packaging Materials Co., Mamaroneck, NY 10543            | 914-698-5353 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                           | 516-254-2970 |

## Wire, Braid (Excluding Shielding)-6000

|                                                                           |                              |
|---------------------------------------------------------------------------|------------------------------|
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                   | C-1719                       |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400   | C-1742                       |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                             | C-1750                       |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                | C-1843                       |
| \$† ABL Electronics Supply, Inc., Peekskill, NY 10566                     | 914-736-1010; 1-800-431-2103 |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                           | 404-751-9473; 800-221-4767   |
| Alcatel Chester Cable Corp., Chester, NY 10918                            | 914-469-2141                 |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                             | 908-925-8000                 |
| Cat Wire and Cable Corp., Miami, FL 33150                                 | 305-836-3600                 |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412    | 708-455-8830                 |
| \$ Control Cable, Inc., Baltimore, MD 21244                               | 410-298-4411                 |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                  | 818-882-8311                 |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                      | 317-983-5200; 800-BELDEN-1   |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                       | 708-459-1000; 800-323-0198   |
| † Electroweave, Inc., Worcester, MA 01604                                 | 508-752-8932                 |
| † Gavitt Wire & Cable, Brookfield, MA 01506                               | 508-867-6476                 |
| † General Wire Products, Inc., Worcester, MA 01604                        | 617-752-8260                 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                    | 914-967-8000                 |
| † Molecu-Wire, Farmingdale, NJ 07727                                      | 908-938-9473                 |
| New England Electric Wire Corp., Lisbon, NH 03585                         | 603-838-6624                 |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                              | 201-227-7996                 |
| Omega Engineering, Stamford, CT 06907                                     | 800-826-6342                 |
| \$ Pyrocom Co., Seattle, WA 98133                                         | 206-365-3535                 |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885           | 714-251-1960                 |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                 | 310-609-1811; 800-326-0006   |
| Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822             | 919-236-4311                 |
| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 | 309-693-3300                 |
| † United Wire & Cable Corp., Worcester, MA 01604                          | 508-757-3872                 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                        | 213-870-9933                 |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                        | 805-257-2400                 |
| Zipper tubing Co., Los Angeles, CA 90061                                  | 310-527-0488                 |

## Wire, Braid (Shielding) — See Braid, Cable (Vol. C)

## Wire, Ceramic Insulated-6000

|                                                                          |                            |
|--------------------------------------------------------------------------|----------------------------|
| Omega Engineering, Stamford, CT 06907, 800-826-6342                      | C-1792                     |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                | 201-796-2886               |
| Ceramawire, Cranford, NJ 07016                                           | 908-276-1710               |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412   | 708-455-8830               |
| \$ Daburn Electronics & Cable Corp., Northvale, NJ 07647                 | 201-768-5400               |
| † DELTA M Corporation, Oak Ridge, TN 37830                               | 615-483-1569               |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3           | 514-293-5304               |
| † Permaluster, Inc., Burbank, CA 91504                                   | 213-849-4543; 213-849-6454 |
| Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796          | 617-527-4385               |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885          | 714-251-1960               |
| \$ Specialty Cable Corporation, Wallingford, CT 06492                    | 800-456-SPEC               |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092 | 904-829-5600               |
| † Thermo Electric, Saddle Brook, NJ 07662                                | 201-843-5800               |

## Wire, Clad (All Types)-6000

|                                                                   |                                    |
|-------------------------------------------------------------------|------------------------------------|
| Betatherm Corp., Shrewsbury, MA 01545, 508-842-0516               | B-1866                             |
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886           | C-1713                             |
| \$† MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553 | C-1764-1765, 1767                  |
| Omega Engineering, Stamford, CT 06907, 800-826-6342               | C-1547, 1792                       |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375              | 317-983-5200; 800-BELDEN-1         |
| \$† Cooper Tools, Raleigh, NC 27622                               | 919-781-7200                       |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647         | 201-768-5400                       |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                   | 708-459-1000; 800-323-0198         |
| † Feller US Corporation, AFN Div., Somerset, NJ 08873             | 908-247-7333                       |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                          | 502-684-0431                       |
| \$ Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416  | 206-485-4288; 206-486-2222         |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717   | 516-667-9315                       |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721               | 612-642-1800; 1-800-258-6922(MWCC) |
| † Molecu-Wire, Farmingdale, NJ 07727                              | 908-938-9473                       |
| Mouser Electronics, Santee, CA 92071                              | 800-346-6873                       |
| Mouser Electronics, Mansfield, TX 76063                           | 800-346-6873                       |
| Mouser Electronics, Gilroy, CA 95020                              | 800-346-6873                       |
| Mueller Elec. Co., Cleveland, OH 44114                            | 216-771-5225                       |
| † Permaluster, Inc., Burbank, CA 91504                            | 213-849-4543; 213-849-6454         |
| Rodale Technical Sales Inc., Islip, NY 11751                      | 516-277-5454                       |
| Rowe Industries, Inc., Toledo, OH 43612                           | 419-729-9761                       |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543     | 914-698-5353                       |
| Texas Instruments, Connector Systems, Attleboro, MA 02703         | 508-699-5269; 508-699-3450         |
| Texas Instrs. Mtlts. & Controls Grp., Attleboro, MA 02703         | 508-699-3800                       |

## Wire Cutting & Stripping — See Services, Wire Cutting & Stripping (Vol. D)

## Wire, Enamel Insulated — See Wire, Hookup (All Types) (Vol. C)

## Wire, Fiberglass Insulated — See Wire, Glass Insulated (Vol. C)

## Wire, Flame Retardant-6000

|                                                                         |        |
|-------------------------------------------------------------------------|--------|
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833 | C-1756 |
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|-----------------------------------------------------------------------------|------------------------------|
| § MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553             | C-1764                       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611     |                              |
|                                                                             | C-1768                       |
| § Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                     | C-1807                       |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                | C-1818-1825                  |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                             | 404-751-9473; 800-221-4767   |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895          |                              |
|                                                                             | 1-401-769-1600               |
| § Alcatel Canada Wire Inc., Manassas, VA 22024                              | 703-369-0440                 |
| § Alcatel Chester Cable Corp., Chester, NY 10918                            | 914-469-2141                 |
| § Alpha Wire Corp., Elizabeth, NJ 07207-0711                                | 908-925-8000                 |
| § American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862      | 401-726-0700                 |
| § Berk-Tek Inc., New Holland, PA 17557-9722                                 | 717-354-6200                 |
| § BIW Cable Systems, Inc., N. Dighton, MA 02764                             | 508-520-1200                 |
| § Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128    |                              |
|                                                                             | 203-456-8000                 |
| § Brim Electronics, Fair Lawn, NJ 07410                                     | 201-796-2886                 |
| § Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950     |                              |
|                                                                             | 717-757-6600                 |
| Carol Cable Co., Highland Heights, KY 41076                                 | 606-572-8303; 606-572-8000   |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446       |                              |
|                                                                             | 802-655-2121                 |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412        | 708-455-8830                 |
| § Control Cable, Inc., Baltimore, MD 21244                                  | 410-298-4411                 |
| § Cooner Wire Co., Chatsworth, CA 91311                                     | 818-882-8311                 |
| § Cooper Industries/Belden Div., Richmond, IN 47375                         | 317-983-5200; 800-BELDEN-1   |
| § Custom Cable Corp., Westbury, NY 11590                                    | 516-334-3600                 |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                     | 201-768-5400                 |
| § Dearborn Wire & Cable, L.P., Wheeling, IL 60090                           | 708-459-1000; 800-323-0198   |
| § Delta Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                 | 416-681-2343                 |
| † Electroweave, Inc., Worcester, MA 01604                                   | 508-752-8932                 |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                 | 508-867-6476                 |
| † General Wire Products, Inc., Worcester, MA 01604                          | 617-752-8260                 |
| † W.L. Gore & Assocs., Newark, DE 19714                                     | 302-738-4880                 |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076 |                              |
|                                                                             | 606-572-8303                 |
| § Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3               | 514-293-5304                 |
| § JSC Wire & Cable, Wayne, NJ 07474-0248                                    | 201-694-6200; 1-800-572-9473 |
| § Judd Wire Inc., San Marcos, CA 92069                                      | 619-744-7720; 800-344-5251   |
| § Leviton Telcom, Leviton Manufacturing, Bothell, WA 98021-4416             | 206-485-4288;                |
|                                                                             | 206-486-2222                 |
| § Lynn Electronics, Feasterville, PA 19053                                  | 215-355-8200; 800-523-6075   |
| § Manhattan Electric Cable Corporation, Rye, NY 10580                       | 914-967-8000                 |
| § Markel Corp., Norristown, PA 19404                                        | 215-272-8960                 |
| Molecu-Wire, Farmingdale, NJ 07727                                          | 908-938-9473                 |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                   | 508-791-3161                 |
| § Olympic Wire & Cable, Fairfield, NJ 07004                                 | 201-227-7996                 |
| † Permaluster, Inc., Burbank, CA 91504                                      | 213-849-4543; 213-849-6454   |
| Phoenix Wire, Inc., S. Hero, VT 05486                                       | 802-372-4561                 |
| § Remeo Products Corp., Florida, NY 10921                                   | 914-651-4431                 |
| Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885               | 714-251-1960                 |
| § Specialty Cable Corporation, Wallingford, CT 06492                        | 800-456-SPEC                 |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                     | 310-609-1811;                |
|                                                                             | 800-326-0006                 |
| † Storm Products Co., Hinsdale, IL 60521                                    | 708-323-9121                 |
| K.L. Tannehill Inc., Bloomington, MN 55431                                  | 612-881-6700                 |
| † Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822             | 919-236-4311                 |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092  |                              |
|                                                                             | 904-829-5600                 |
| † Thermax Wire Corp., Flushing, NY 11354-2897                               | 718-939-8300                 |
| † United Wire & Cable Corp., Worcester, MA 01604                            | 508-757-3872                 |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                          | 213-870-9933                 |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                            | 805-257-2400                 |

## Wire, Flat Strip-6000

|                                                                        |                              |
|------------------------------------------------------------------------|------------------------------|
| Alpha-Core Inc., Bridgeport, CT 06608                                  | 203-335-6805                 |
| § American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862 | 401-726-0700                 |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412   | 708-455-8830                 |
| § Custom Computer Cable, Inc., Eden Prairie, MN 55344                  | 612-941-5651; 1-800-343-5553 |
| # Engineered Assemblies & Components Corp., Teterboro, NJ 07608        | 201-288-4477;                |
|                                                                        | 800-447-5639                 |
| † Gavitt Wire & Cable, Brookfield, MA 01506                            | 508-867-6476                 |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717          | 516-667-9315                 |
| † Permaluster, Inc., Burbank, CA 91504                                 | 213-849-4543; 213-849-6454   |
| United Technical Products, Fallsington, PA 19054                       | 800-553-5300                 |

## Wire, Glass Insulated-6000

|                                                                          |                            |
|--------------------------------------------------------------------------|----------------------------|
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400    | C-1741                     |
| § MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553          | C-1764                     |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                      | C-1792                     |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                          | 404-751-9473; 800-221-4767 |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                          | 508-520-1200               |
| † Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128 |                            |
|                                                                          | 203-456-8000               |
| § Brim Electronics, Fair Lawn, NJ 07410                                  | 201-796-2886               |
| § Cable USA, Inc., Naples, FL 33942-3560                                 | 813-643-6400               |
| Carisrap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8     |                            |
|                                                                          | 1-800-361-9466             |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412     | 708-455-8830               |
| § Cooner Wire Co., Chatsworth, CA 91311                                  | 818-882-8311               |
| § Cooper Industries/Belden Div., Richmond, IN 47375                      | 317-983-5200; 800-BELDEN-1 |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                        | 708-459-1000; 800-323-0198 |
| § Delta Wire & Cable Co., North Chicago, IL 60064                        | 708-473-4990               |
| † Electroweave, Inc., Worcester, MA 01604                                | 508-752-8932               |
| § Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3            | 514-293-5304               |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717            | 516-667-9315               |

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|-----------------------------------------------------------------------------------------------|----------------------------|
| § Manhattan Electric Cable Corporation, Rye, NY 10580                                         | 914-967-8000               |
| † Molecu-Wire, Farmingdale, NJ 07727                                                          | 908-938-9473               |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357 |
| Richards, Arklay S. Co., Inc., Newton Highlands, MA 02161-1796                                | 617-527-4385               |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                               | 714-251-1960               |
| § Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC               |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;              |
|                                                                                               | 800-326-0006               |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                    | 612-881-6700               |
| § Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    |                            |
|                                                                                               | 904-829-5600               |
| † United Wire & Cable Corp., Worcester, MA 01604                                              | 508-757-3872               |

## Wire, Gold, Silver, Platinum-6000

|                                                                                   |                             |
|-----------------------------------------------------------------------------------|-----------------------------|
| MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                     | C-1764                      |
| Atomergic Chemetals Corp., Farmingdale, NY 11735-1718                             | 516-694-9000                |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647                           | 201-768-5400                |
| † Feller US Corporation, AFN Div., Somerset, NJ 08873                             | 908-247-7333                |
| Indium Corporation of America, Utica, NY 13502                                    | 315-853-4900; 1-800-4INDIUM |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                     | 516-667-9315                |
| Molecu-Wire, Farmingdale, NJ 07727                                                | 908-938-9473                |
| The J. M. Ney Company, Bloomfield, CT 06002                                       | 203-242-2281                |
| † Reade Advanced Materials, A Reade Intl. business unit, Riverside, RI 02915-0039 |                             |
|                                                                                   | 401-433-7000                |
| Semiconductor Packaging Materials Co., Mamaroneck, NY 10543                       | 914-698-5353                |

## Wire, Guy-6000

|                                                   |                            |
|---------------------------------------------------|----------------------------|
| § Brim Electronics, Fair Lawn, NJ 07410           | 201-796-2886               |
| § Carolina Steel & Wire, Lexington, SC 29073-0829 | 803-359-5501               |
| # Clifford of Vermont, Inc., Bethel, VT 05032     | 802-234-9921; 800-451-4381 |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090   | 708-459-1000; 800-323-0198 |
| § Lance Industries, Sylmar, CA 91342-3832         | 818-367-1811               |

## Wire, Heater — See Cable, Heater (Vol. C)

## Wire, High Temperature (Over 125°C)-6000

|                                                                                   |             |
|-----------------------------------------------------------------------------------|-------------|
| § ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 |             |
|                                                                                   | C-1706      |
| Caton Connector Corp., Kingston, MA 02364, 617-585-4315                           | C-1725      |
| § Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400             |             |
|                                                                                   | C-1741-1742 |

|                                                                         |        |
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| § Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833   | C-1756 |
| § MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553         | C-1764 |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611 |        |
|                                                                         | C-1768 |

|                                                         |        |
|---------------------------------------------------------|--------|
| Omega Engineering, Stamford, CT 06907, 800-826-6342     | C-1792 |
| Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561     | C-1802 |
| § Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761 | C-1807 |

|                                                              |                            |
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| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970 | C-1822-1825                |
| # Accu-Tech Corporation, Roswell, GA 30076-3890              | 404-751-9473; 800-221-4767 |
| Aerospace Wire & Cable Inc., College Point, NY 11356         | 718-358-2345;              |
|                                                              | 1-800-395-0200             |

|                                                                          |              |
|--------------------------------------------------------------------------|--------------|
| § Alcatel Canada Wire Inc., Manassas, VA 22024                           | 703-369-0440 |
| § Alpha Wire Corp., Elizabeth, NJ 07207-0711                             | 908-925-8000 |
| § American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862   | 401-726-0700 |
| § Atomergic Chemetals Corp., Farmingdale, NY 11735-1718                  | 516-694-9000 |
| § Berk-Tek Inc., New Holland, PA 17557-9722                              | 717-354-6200 |
| § BIW Cable Systems, Inc., N. Dighton, MA 02764                          | 508-520-1200 |
| † Brand Dielectrics, Inc., N. Windham, CT 06256                          | 203-423-6321 |
| § Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128 |              |
|                                                                          | 203-456-8000 |
| § Brim Electronics, Fair Lawn, NJ 07410                                  | 201-796-2886 |
| § Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950  |              |
|                                                                          | 717-757-6600 |

|                                                                               |                            |
|-------------------------------------------------------------------------------|----------------------------|
| § Cable USA, Inc., Naples, FL 33942-3560                                      | 813-643-6400               |
| † Carol Cable Co., Highland Heights, KY 41076                                 | 606-572-8303; 606-572-8000 |
| † Carpenter Technology Corp., Reading, PA 19612                               | 215-208-2000               |
| Ceramawire, Cranford, NJ 07016                                                | 908-276-1170               |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446         |                            |
|                                                                               | 802-655-2121               |
| § Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412          | 708-455-8830               |
| § Control Cable, Inc., Baltimore, MD 21244                                    | 410-298-4411               |
| § Cooner Wire Co., Chatsworth, CA 91311                                       | 818-882-8311               |
| § Cooper Industries/Belden Div., Richmond, IN 47375                           | 317-983-5200; 800-BELDEN-1 |
| § Custom Cable Corp., Westbury, NY 11590                                      | 516-334-3600               |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                             | 708-459-1000; 800-323-0198 |
| § Delta Wire & Cable Co., North Chicago, IL 60064                             | 708-473-4990               |
| † Electroweave, Inc., Worcester, MA 01604                                     | 508-752-8932               |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                   | 508-867-6476               |
| † General Wire Products, Inc., Worcester, MA 01604                            | 617-752-8260               |
| † W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                               | 602-431-0077               |
| † W.L. Gore & Assocs., Newark, DE 19714                                       | 302-738-4880               |
| † Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076 |                            |
|                                                                               | 606-572-8303               |

|                                                               |                            |
|---------------------------------------------------------------|----------------------------|
| § Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3 | 514-293-5304               |
| § Independent Cable, Inc., Hudson, MA 01749                   | 508-562-9913               |
| § Judd Wire Inc., San Marcos, CA 92069                        | 619-744-7720; 800-344-5251 |
| Ken-Tron Mfg. Inc., Owensboro, KY 42301                       | 502-684-0431               |
| § Lutze, Inc., Charlotte, NC 28217-9805                       | 704-357-8835; 800-647-2371 |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717 | 516-667-9315               |
| § Manhattan Electric Cable Corporation, Rye, NY 10580         | 914-967-8000               |
| § Markel Corp., Norristown, PA 19404                          | 215-272-8960               |
| Monhawk CDT, Leominster, MA 01453                             | 508-537-9961; 800-422-9961 |
| † Molecu-Wire, Farmingdale, NJ 07727                          | 908-938-9473               |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501     | 508-791-3161               |
| New England Electric Wire Corp., Lisbon, NH 03585             | 603-838-6624               |



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|-------------------------------------------------------------------------------------------------|-------------------------------|
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                                                    | 201-227-7996                  |
| † Permaluster, Inc., Burbank, CA 91504                                                          | 213-849-4543; 213-849-6454    |
| \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357    |
| \$ Radix Wire Co., Cleveland, OH 44132                                                          | 216-731-9191                  |
| \$ Remeo Products Corp., Florida, NY 10921                                                      | 914-651-4431                  |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                                 | 714-251-1960                  |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                        | 317-543-3540;<br>800-382-4635 |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;<br>800-326-0006 |
| † Storm Products Co., Hinsdale, IL 60521                                                        | 708-323-9121                  |
| \$† Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                  |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                  |
| \$† Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                  |
| † Thermo Electric, Saddle Brook, NJ 07662                                                       | 201-843-5800                  |
| † United Wire & Cable Corp., Worcester, MA 01604                                                | 508-757-3872                  |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                              | 213-870-9933                  |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                  |
| \$† Wilco Wire & Cable Co., Inc., San Jose, CA 95133                                            | 408-926-8880                  |
| † Wilkinson, Westlake Village, CA 91359                                                         | 818-889-0050; 800-822-4653    |

## Wire, High Voltage (1000 Volts & Over)-6000

|                                                                                                 |                                       |
|-------------------------------------------------------------------------------------------------|---------------------------------------|
| † Caton Connector Corp., Kingston, MA 02364, 617-585-4315                                       | C-1725                                |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                         | C-1742                                |
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833                         | C-1756                                |
| \$† MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                               | C-1764                                |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C-1768, 1770                          |
| \$† Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                                       | C-1807                                |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                                    | C-1818-1820                           |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                            | 914-736-1010; 1-800-431-2103          |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                 | 404-751-9473; 800-221-4767            |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                                                 | 703-369-0440                          |
| Alcatel Chester Cable Corp., Chester, NY 10918                                                  | 914-469-2141                          |
| Alden Products Co., Brockton, MA 02403                                                          | 508-583-0160                          |
| \$† American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                        | 401-726-0700                          |
| \$ Astec High Voltage, Ashland, MA 01721                                                        | 508-881-8407                          |
| \$† BW Cable Systems, Inc., N. Dighton, MA 02764                                                | 508-520-1200                          |
| \$† Brim Electronics, Fair Lawn, NJ 07410                                                       | 201-796-2886                          |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303; 606-572-8000            |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                           | 802-655-2121                          |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                          |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                                            | 317-983-5200; 800-BELDEN-1            |
| \$ Custom Cable Corp., Westbury, NY 11590                                                       | 516-334-3600                          |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198            |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                              | 708-473-4990                          |
| Dymec Inc., Winchester, MA 01890                                                                | 617-729-7870                          |
| † Electrowave, Inc., Worcester, MA 01604                                                        | 508-752-8932                          |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                                     | 508-867-6476                          |
| † W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                  | 602-431-0077                          |
| † W.L. Gore & Assocs., Newark, DE 19714                                                         | 302-738-4880                          |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                          |
| \$ Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                  | 514-293-5304                          |
| \$† Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720; 800-344-5251            |
| \$† Market Corp., Norristown, PA 19404                                                          | 215-272-8960                          |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                             | 612-642-1800;<br>1-800-258-6922(MWCC) |
| Molecu-Wire, Farmingdale, NJ 07272                                                              | 908-938-9473                          |
| \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357            |
| \$ Radix Wire Co., Cleveland, OH 44132                                                          | 216-731-9191                          |
| † Storm Products Co., Hinsdale, IL 60521                                                        | 708-323-9121                          |
| K.L. Tannehill Inc., Bloomington, MN 55431                                                      | 612-881-6700                          |
| \$† Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                          |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                          |
| † United Wire & Cable Corp., Worcester, MA 01604                                                | 508-757-3872                          |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                              | 213-870-9933                          |
| \$ Voltarc Technologies, Inc., Fairfield, CT 06430                                              | 203-255-2633                          |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                          |
| <b>Wire, Hookup (All Types)-6000</b>                                                            |                                       |
| \$† ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103             | C-1706-1708                           |
| \$† Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                         | C-1713                                |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                         | C-1741-1742                           |
| GlobTek, Inc., Northvale, NJ 07647, 201-784-1000                                                | C-1748                                |
| International Configurations, Inc., Enfield, CT 06082, 203-749-6380                             | C-1353                                |
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833                         | C-1756                                |
| \$† Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000                           | C-1763                                |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                         | C-1768-1770, 1781-1782                |
| Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561                                             | C-1802                                |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                                      | C-1804                                |
| Vector Electronic Co., Inc., Sylmar, CA 91342, 818-365-9661; 800-423-5659                       | C-1678                                |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                                    | C-1818-1825                           |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                 | 404-751-9473; 800-221-4767            |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895                              | 401-769-1600                          |

|                                                                                                 |                                       |
|-------------------------------------------------------------------------------------------------|---------------------------------------|
| Aerospace Wire & Cable Inc., College Point, NY 11356                                            | 718-358-2345;<br>1-800-395-0200       |
| \$† Alcatel Canada Wire Inc., Manassas, VA 22024                                                | 703-369-0440                          |
| \$ Alcatel Chester Cable Corp., Chester, NY 10918                                               | 914-469-2141                          |
| \$† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                          |
| \$† American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862                        | 401-726-0700                          |
| \$† American Wire & Electronics, Costa Mesa, CA 92626                                           | 714-957-5738                          |
| Antona Corp., Los Angeles, CA 90024-5603                                                        | 310-473-8995                          |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                          | 1-800-344-0223, Ext. 1027             |
| \$† Berk-Tek Inc., New Holland, PA 17557-9722                                                   | 717-354-6200                          |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                                   | 508-520-1200                          |
| † Brand Dielectrics, Inc., N. Windham, CT 06255                                                 | 203-423-6321                          |
| \$† Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000                          |
| Carol Cable Co., Highland Heights, KY 41076                                                     | 606-572-8303; 606-572-8000            |
| Cat Wire and Cable Corp., Miami, FL 33150                                                       | 305-836-3600                          |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                           | 802-655-2121                          |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                          |
| \$ Control Cable, Inc., Baltimore, MD 21244                                                     | 410-298-4411                          |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                        | 818-882-9311                          |
| \$† Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELDEN-1            |
| Custom Cable Corp., Westbury, NY 11590                                                          | 516-334-3600                          |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198            |
| \$ Delta Wire & Cable Co., North Chicago, IL 60064                                              | 708-473-4990                          |
| † Dilwil Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5                                    | 416-681-2343                          |
| # Electrical Insulation Suppliers, Inc., Hillsdale, IL 60162                                    | 708-547-5400                          |
| † Electrowave, Inc., Worcester, MA 01604                                                        | 508-752-8932                          |
| \$ E-Z Hook, Tektest Inc., Arcadia, CA 91006                                                    | 818-446-6175                          |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                                     | 508-867-6476                          |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                                          | 815-968-9661                          |
| † General Wire Products, Inc., Worcester, MA 01604                                              | 817-752-8260                          |
| † W.L. Gore & Assocs., Inc., Phoenix, AZ 85044                                                  | 602-431-0077                          |
| † W.L. Gore & Assocs., Newark, DE 19714                                                         | 302-738-4880                          |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076                     | 606-572-8303                          |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                   | 514-293-5304                          |
| \$† Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                          |
| \$† ITT Pomona Electronics, Pomona, CA 91766                                                    | 909-469-2900                          |
| Jonard Industries Corp., Tuckahoe, NY 10707                                                     | 914-793-0700                          |
| \$ JSC Wire & Cable, Wayne, NJ 07474-0248                                                       | 201-694-6200; 1-800-572-9473          |
| \$† Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720; 800-344-5251            |
| Lozan Electronics, Inc., Arlington Hgts., IL 60004-7805                                         | 708-398-5311; 800-323-5207            |
| \$ Lutze, Inc., Charlotte, NC 28217-9805                                                        | 704-357-8835; 800-447-2371            |
| \$† Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200; 800-523-6075            |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                                   | 516-667-9315                          |
| \$† Market Corp., Norristown, PA 19404                                                          | 215-272-8960                          |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                             | 612-642-1800;<br>1-800-258-6922(MWCC) |
| Mohawk/CDT, Leominster, MA 01453                                                                | 508-537-9961; 800-422-9961            |
| Molecu-Wire, Farmingdale, NJ 07272                                                              | 908-938-9473                          |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                                       | 508-791-3161                          |
| New England Electric Wire Corp., Lisbon, NH 03085                                               | 603-838-6624                          |
| \$† Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                          |
| \$† Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357            |
| \$ Radix Wire Co., Cleveland, OH 44132                                                          | 216-731-9191                          |
| \$ Remeo Products Corp., Florida, NY 10921                                                      | 914-651-4431                          |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                         | 914-429-3103                          |
| \$† Rowe Industries, Inc., Toledo, OH 43612                                                     | 419-729-9761                          |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                      | 317-543-3540;<br>800-382-4635         |
| \$† Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;<br>800-326-0006         |
| † Storm Products Co., Hinsdale, IL 60521                                                        | 708-323-9121                          |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                                    | 612-881-6700                          |
| TELCO International Corp., TECO, Houston, TX 77095                                              | 713-855-2218                          |
| \$† Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                               | 919-236-4311                          |
| \$† Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    | 904-829-5600                          |
| \$† Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                          |
| † Thermo Electric, Saddle Brook, NJ 07662                                                       | 201-843-5800                          |
| † United Wire & Cable Corp., Worcester, MA 01604                                                | 508-757-3872                          |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                              | 213-870-9933                          |
| \$† Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                          |
| <b>Wire, Irradiated-6000</b>                                                                    |                                       |
| \$† Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                         | C-1741                                |
| \$† Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833                         | C-1756                                |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                                    | C-1820, 1825                          |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                                            | 914-736-1010; 1-800-431-2103          |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                                                 | 404-751-9473; 800-221-4767            |
| \$† Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                          |
| \$ AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                          | 1-800-344-0223, Ext. 1027             |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                                                   | 508-520-1200                          |
| † Brand Dielectrics, Inc., N. Windham, CT 06255                                                 | 203-423-6321                          |
| \$† Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                      | 203-456-8000                          |
| Brim Electronics, Fair Lawn, NJ 07410                                                           | 201-796-2886                          |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                           | 802-655-2121                          |
| \$† Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                          |
| Custom Cable Corp., Westbury, NY 11590                                                          | 516-334-3600                          |
| \$† Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198            |



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| \$ Delta Wire & Cable Co., North Chicago, IL 60064              | 708-473-4990               |
| \$ DiIwoll Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5  | 416-681-2343               |
| † Electrowave, Inc., Worcester, MA 01604                        | 508-752-8932               |
| † Judd Wire Inc., San Marcos, CA 92069                          | 619-744-7720; 800-344-5251 |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805       | 708-398-5311; 800-323-5207 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580          | 914-967-8000               |
| † Molecu-Wire, Farmingdale, NJ 07727                            | 908-938-9473               |
| \$ Olympic Wire & Cable, Fairfield, NJ 07004                    | 201-227-7996               |
| † Permaluster, Inc., Burbank, CA 91504                          | 213-849-4543; 213-849-6454 |
| † Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218      | 317-543-3540;              |
|                                                                 | 800-382-4635               |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220         | 310-609-1811;              |
|                                                                 | 800-326-0006               |
| Storm Products Co., Hinsdale, IL 60521                          | 708-323-9121               |
| † K.L. Tannehill Inc., Bloomington, MN 55431                    | 612-881-6700               |
| † Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822 | 919-236-4311               |
| † United Wire & Cable Corp., Worcester, MA 01604                | 508-757-3872               |

**Wire, Lead-in & Ground-6000**

|                                                                          |                            |
|--------------------------------------------------------------------------|----------------------------|
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                    | C-1712, 1714               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400    | C-1741-1743                |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                  | C-1807                     |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970             | C-1819-1825, 1843-1844     |
| # Accu-Tech Corporation, Roswell, GA 30076-3890                          | 404-751-9473; 800-221-4767 |
| Alcatel Chester Cable Corp., Chester, NY 10918                           | 914-469-2141               |
| \$ American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862  | 401-726-0700               |
| BIW Cable Systems, Inc., N. Dighton, MA 02764                            | 508-520-1200               |
| † Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128 | 203-456-8000               |
| \$ Carol Cable Co., Highland Heights, KY 41076                           | 606-572-8303; 606-572-8000 |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446    | 802-655-2121               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412     | 708-455-8830               |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                 | 818-882-8311               |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                     | 317-983-5200; 800-BELDEN-1 |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                       | 708-459-1000; 800-323-0198 |
| \$ DiIwoll Wire & Cable Inc., Burlington, Ont., CANADA L7T 2X5           | 416-681-2343               |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162              | 708-547-5400               |
| † Electrowave, Inc., Worcester, MA 01604                                 | 508-752-8932               |
| \$ GC-Thorsen, Rockford, IL 61105-1209                                   | 815-968-9661               |
| Judd Wire Inc., Turners Falls, MA 01376                                  | 413-863-4357; 800-545-5833 |
| \$ Lance Industries, Sylmar, CA 91342-3832                               | 818-867-1811               |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                  | 708-398-5311; 800-323-5207 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                   | 914-967-8000               |
| † Markel Corp., Norristown, PA 19044                                     | 215-272-8960               |
| Montrose/CDT, Cable Design Technologies, Auburn, MA 01501                | 508-791-3161               |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                  | 310-609-1811;              |
|                                                                          | 800-326-0006               |
| \$ Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822         | 919-236-4311               |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092 | 904-829-5600               |
| † United Wire & Cable Corp., Worcester, MA 01604                         | 508-757-3872               |

**Wire, Litz-6000**

|                                                                             |                            |
|-----------------------------------------------------------------------------|----------------------------|
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553             | C-1764                     |
| \$ Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128   | 203-456-8000               |
| † Brim Electronics, Fair Lawn, NJ 07410                                     | 201-796-2886               |
| † Carol Cable Co., Highland Heights, KY 41076                               | 606-572-8303; 606-572-8000 |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412        | 708-455-8830               |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                    | 818-882-8311               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                     | 201-768-5400               |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                          | 708-459-1000; 800-323-0198 |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076 | 606-572-8303               |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717               | 516-667-9315               |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                         | 612-642-1800;              |
|                                                                             | 1-800-258-6922(MWCC)       |
| New England Electric Wire Corp., Lisbon, NH 03585                           | 603-838-6624               |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                     | 310-609-1811;              |
|                                                                             | 800-326-0006               |

**Wire, Magnet-6000**

|                                                                            |                              |
|----------------------------------------------------------------------------|------------------------------|
| Betatherm Corp., Shrewsbury, MA 01545, 508-842-0516                        | B-1866                       |
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553            | C-1764-1767                  |
| † Phenix Wire, Inc., S. Hero, VT 05486, 802-372-4561                       | C-1802                       |
| \$ ABL Electronics Supply, Inc., Peekskill, NY 10566                       | 914-736-1010; 1-800-431-2103 |
| \$ Alcatel Canada Wire Inc., Manassas, VA 22024                            | 703-369-0440                 |
| † Brim Electronics, Fair Lawn, NJ 07410                                    | 201-796-2886                 |
| Ceramawire, Cranford, NJ 07016                                             | 908-276-1170                 |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412       | 708-455-8830                 |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                   | 818-882-8311                 |
| \$ Cooper Industries/Belden Div., Richmond, IN 47375                       | 317-983-5200; 800-BELDEN-1   |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                    | 201-768-5400                 |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                          | 708-459-1000; 800-323-0198   |
| Eastern Marking Machines, Hempstead, NY 11550                              | 800-835-2393                 |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                | 708-547-5400                 |
| † Electrotech, Inc., Irvington, NJ 07111                                   | 201-318-7999                 |
| † Elektrisola Inc., Boscawen N, NH 03303                                   | 603-796-2114                 |
| # High Voltage Systems, Inc., Universal Designs Corp., Chappaqua, NY 10514 | 914-238-8462                 |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717              | 516-667-9315                 |
| † Molecu-Wire, Farmingdale, NJ 07727                                       | 908-938-9473                 |
| † Permaluster, Inc., Burbank, CA 91504                                     | 213-849-4543; 213-849-6454   |

|                                                            |                                   |
|------------------------------------------------------------|-----------------------------------|
| \$ Phelps Dodge Magnet Wire, FL Wayne, IN 46801            | 219-458-4444; 800-255-CLIC (2542) |
| Special Electric Co., Inc., Milwaukee, WI 53215            | 414-383-6370                      |
| Texas Instruments, Connector Systems, Attleboro, MA 02703  | 508-699-5269;                     |
|                                                            | 508-699-3450                      |
| Texas Instrs., Matis. & Controls Grp., Attleboro, MA 02703 | 508-699-3800                      |

**Wire Markers (All Types)-Also See Strips Marker & Fanning-6000**

|                                                                                 |                              |
|---------------------------------------------------------------------------------|------------------------------|
| \$ Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969              | C-1722                       |
| † Datak Corp., An LKG Company, Rockford, IL 61104, 815-229-7773; 1-800-845-2262 | C-1677                       |
| † GSI Corp., Timonium, MD 21093, 410-252-1768                                   | C-1751                       |
| \$ Alpha Wire Corp., Elizabeth, NJ 07207-0711                                   | 908-925-8000                 |
| \$ Altech Corp., Flemington, NJ 08822-6000                                      | 908-806-9400                 |
| † Brady USA, Inc., Indl. Prods. Div., Milwaukee, WI 53201                       | 1-800-537-8791               |
| † Brim Electronics, Fair Lawn, NJ 07410                                         | 201-796-2886                 |
| Caristap International, Inc., Chomedey, Laval, QUEBEC, CANADA H7S1N8            | 1-800-361-9466               |
| † Cole-Flax Corporation, West Babylon, NY 11704                                 | 516-249-6150                 |
| \$ Contact East, N. Andover, MA 01845                                           | 508-682-2000                 |
| \$ Control Cable, Inc., Baltimore, MD 21244                                     | 410-298-4411                 |
| The Cutting Edge, Controls Unlimited Inc., Perry, OH 44081                      | 1-800-962-2376               |
| Daburn Electronics & Cable Corp., Northvale, NJ 07647                           | 201-768-5400                 |
| # Electrical Insulation Suppliers, Inc., Hillside, IL 60162                     | 708-547-5400                 |
| † Electro Insulation Corp., Arlington Hgts., IL 60004                           | 708-632-1020                 |
| † Electrowave, Inc., Worcester, MA 01604                                        | 508-752-8932                 |
| † ELVO-Division of Zumbach Electronics Corporation, Mt. Kisco, NY 10549-1407    | 914-241-1008                 |
| Eubanks Engineering, Monrovia, CA 91016                                         | 818-357-7011                 |
| † Excel Specialty Corp., Chicago, IL 60660                                      | 312-262-4781                 |
| Fuses Unlimited, D.E.I., Van Nuys, CA 91406                                     | 818-786-8111                 |
| \$ Grafoplast S.P.A., Wiremarkers, Genova, ITALY 16154                          | + 10. 621687                 |
| \$ Ideal Industries, Inc., Sycamore, IL 60178                                   | 815-895-5181                 |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                         | 708-398-5311; 800-323-5207   |
| † Manger Electric Company, Inc., Stamford, CT 06902                             | 203-348-7761                 |
| † Markel Corp., Norristown, PA 19044                                            | 215-272-8960                 |
| † M.M. Newman Corporation, Marblehead, MA 01945                                 | 617-631-7100                 |
| \$ Newman, M. M. Corp., Heli-Tube Div., Marblehead, MA 01945                    | 617-631-7100                 |
| \$ Panduit Corp., Tinsley Park, IL 60477-0981                                   | 800-777-3300                 |
| Pass & Seymour Canada, Inc., Legrand, Concord, ONT L4K 3M9                      | 416-738-9195                 |
| Southwestern Nameplate & Mfg. Co., Inc., Anna, TX 75003                         | 214-231-6663;                |
|                                                                                 | 214-924-3289; 1-800-331-6600 |
| \$ Techni-Tool, Plymouth Meeting, PA 19462                                      | 215-825-4990                 |
| \$ Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401  | 803-676-2900                 |
| † Tyton Corp., Milwaukee, WI 53223                                              | 414-355-1130; 800-535-5552   |
| † United Wire & Cable Corp., Worcester, MA 01604                                | 508-757-3872                 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                    | 516-254-2970                 |
| \$ Weidmuller Inc., Richmond, VA 23236                                          | 804-794-2877                 |
| Wieland Inc., Burgaw, NC 28425                                                  | 919-259-5050                 |
| Zippertubing Co., Los Angeles, CA 90061                                         | 310-527-0488                 |

**Wire, Multiconductor** — See Cable, Multiconductor (Vol. C)  
**Wire, Plastic Insulated** — See Wire, Hookup (All Types) (Vol. C)

**Wire, Plated (All Types)-6000**

|                                                                                             |                            |
|---------------------------------------------------------------------------------------------|----------------------------|
| Betatherm Corp., Shrewsbury, MA 01545, 508-842-0516                                         | B-1866                     |
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                             | C-1764-1765, 1767          |
| † Rowe Industries, Inc., Toledo, OH 43612, 419-729-9761                                     | C-1807                     |
| † Brim Electronics, Fair Lawn, NJ 07410                                                     | 201-796-2886               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                        | 708-455-8830               |
| \$ Cooner Wire Co., Chatsworth, CA 91311                                                    | 818-882-8311               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                     | 201-768-5400               |
| \$ Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                          | 708-459-1000; 800-323-0198 |
| † Handy & Harman Elctm. Matis. Corp., N. Attleboro, MA 02760                                | 508-695-1401               |
| Ken-Tron Mfg., Inc., Owensboro, KY 42301                                                    | 502-684-0431               |
| Laser Technology, Inc., N. Hollywood, CA 91604-3593                                         | 818-763-7091               |
| † Leonische of America, Chicopee, MA 01022                                                  | 413-593-6618               |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                               | 516-667-9315               |
| † Molecu-Wire, Farmingdale, NJ 07727                                                        | 908-938-9473               |
| Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 41076 | 606-572-8306; 800-257-8357 |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543                               | 914-698-5353               |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                    | 317-543-3540;              |
|                                                                                             | 800-382-4635               |

**Wire, Radiation Resistant-6000**

|                                                                        |                            |
|------------------------------------------------------------------------|----------------------------|
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                  | C-1712-1713                |
| MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553          | C-1764                     |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                        | 508-520-1200               |
| Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128 | 203-456-8000               |
| Ceramawire, Cranford, NJ 07016                                         | 908-276-1170               |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446  | 802-655-2121               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412   | 708-455-8830               |
| \$ Cooner Wire Co., Chatsworth, CA 91311                               | 818-882-8311               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                | 201-768-5400               |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                        | 708-459-1000; 800-323-0198 |
| † W.L. Gore & Assocs., Newark, DE 19714                                | 302-738-4188               |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3          | 514-293-5034               |
| † Judd Wire Inc., Turners Falls, MA 01376                              | 413-863-4357; 800-545-5833 |
| Judd Wire Inc., San Marcos, CA 92069                                   | 619-744-7720; 800-344-5251 |
| \$ Manhattan Electric Cable Corporation, Rye, NY 10580                 | 914-967-8000               |
| Molecu-Wire, Farmingdale, NJ 07727                                     | 908-938-9473               |



## PRODUCT INDEX & DIRECTORY

|                                                                                               |                            |
|-----------------------------------------------------------------------------------------------|----------------------------|
| † Permaluster, Inc., Burbank, CA 91504                                                        | 213-849-4543; 213-849-6454 |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357 |
| † Rowe Industries, Inc., Toledo, OH 43612                                                     | 419-729-9761               |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                      | 317-543-3540;              |
|                                                                                               | 800-382-4635               |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;              |
|                                                                                               | 800-326-0006               |
| † Storm Products Co., Hinsdale, IL 60521                                                      | 708-323-9121               |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                                  | 612-881-6700               |
| Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822                                 | 919-236-4311               |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    |                            |
|                                                                                               | 904-829-5600               |
| † Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300               |
| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                     |                            |
|                                                                                               | 309-693-3300               |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400               |

### Wire, Resistance-6000

|                                                                          |                            |
|--------------------------------------------------------------------------|----------------------------|
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553          | C-1764                     |
| National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611    |                            |
|                                                                          | C-1768                     |
| † Brim Electronics, Fair Lawn, NJ 07410                                  | 201-796-2886               |
| † Carpenter Technology Corp., Reading, PA 19612                          | 215-208-2000               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412     | 708-455-8830               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                  | 201-768-5400               |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                          | 708-459-1000; 800-323-0198 |
| Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717            | 516-667-9315               |
| † Molecu-Wire, Farmingdale, NY 07727                                     | 908-938-9473               |
| The J. M. Ney Company, Bloomfield, CT 06002                              | 203-242-2281               |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543            | 914-698-5353               |
| † Specialty Cable Corporation, Wallingford, CT 06492                     | 800-456-SPEC               |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                  | 310-609-1811;              |
|                                                                          | 800-326-0006               |
| † K.L. Tannehill Inc., Bloomington, MN 55431                             | 612-881-6700               |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092 |                            |
|                                                                          | 904-829-5600               |

### Wire, Semiconductor Lead-6000

|                                                                      |                            |
|----------------------------------------------------------------------|----------------------------|
| MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553        | C-1764                     |
| Alcatel Chester Cable Corp., Chester, NY 10918                       | 914-469-2141               |
| † Carpenter Technology Corp., Reading, PA 19612                      | 215-208-2000               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 | 708-455-8830               |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647              | 201-768-5400               |
| Dearborn Wire & Cable, L.P., Wheeling, IL 60090                      | 708-459-1000; 800-323-0198 |
| GTI/ Electronics Div., Hadley, PA 16130-8815                         | 412-253-3161               |
| Judd Wire Inc., Turners Falls, MA 01376                              | 413-863-4357; 800-545-5833 |
| † Molecu-Wire, Farmingdale, NY 07727                                 | 908-938-9473               |
| † Rowe Industries, Inc., Toledo, OH 43612                            | 419-729-9761               |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543        | 914-698-5353               |
| Texas Instrs., Matls. & Controls Grp., Attleboro, MA 02703           | 508-699-3800               |

### Wire, Shielded-6000

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 |                            |
|                                                                                   | C-1708                     |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                             | C-1712-1714                |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400             |                            |
|                                                                                   | C-1741-1742                |
| † Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833             | C-1756                     |
| MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                     | C-1764                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611           |                            |
|                                                                                   | C-1768                     |
| Rodale Technical Sales Inc., Islip, NY 11751, 516-277-5454                        | C-1804                     |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                   | 404-751-9473; 800-221-4767 |
| Adirondack Wire & Cable, ACS Industries Inc., Woonsocket, RI 02895                |                            |
|                                                                                   | 1-401-769-1600             |
| † Alcatel Chester Cable Corp., Chester, NY 10918                                  | 914-469-2141               |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                      | 908-925-8000               |
| † American Insulated Wire Corp., Levittown, PA 19006                              | 610-276-0700               |
| † AT&T Microelectronics, Allentown, PA 18103                                      | 1-800-372-2447; In         |
|                                                                                   | Can. 1-800-553-2448        |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962             |                            |
|                                                                                   | 1-800-344-0223, Ext. 1027  |
| † Berk-Tek Inc., New Holland, PA 17557-9722                                       | 717-354-6200               |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                                   | 508-520-1200               |
| † Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128          |                            |
|                                                                                   | 203-456-8000               |
| † Capcon Inc., New York, NY 10001                                                 | 212-243-6275               |
| Carol Cable Co., Highland Heights, KY 41076                                       | 606-572-8303; 606-572-8000 |
| Cat Wire and Cable Corp., Miami, FL 33150                                         | 305-836-3600               |
| Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446             |                            |
|                                                                                   | 802-655-2121               |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412              | 708-455-8830               |
| † Control Cable, Inc., Baltimore, MD 21244                                        | 410-298-4411               |
| † Cooner Wire Co., Chatsworth, CA 91311                                           | 818-882-8311               |
| † Cooper Industries/Belden Div., Richmond, IN 47375                               | 317-983-5200; 800-BELDEN-1 |
| † Custom Cable Corp., Westbury, NY 11590                                          | 516-334-3600               |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                 | 708-459-1000; 800-323-0198 |
| † Delta Wire & Cable Co., North Chicago, IL 60064                                 | 708-473-4990               |
| † Electrical Insulation Suppliers, Inc., Hillside, IL 60162                       | 708-547-5400               |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                       | 508-867-6476               |
| † General Wire Products, Inc., Worcester, MA 01604                                | 617-752-8260               |
| † W. L. Gore & Assocs., Inc., Phoenix, AZ 85044                                   | 602-431-0077               |
| † W.L. Gore & Assocs., Newark, DE 19714                                           | 302-738-4880               |
| Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076       |                            |
|                                                                                   | 606-572-8303               |

## Wire Shielding-Also See Braid, Cable-4525

|                                                                                               |                              |
|-----------------------------------------------------------------------------------------------|------------------------------|
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                 | 514-293-5304                 |
| JEMA, Wilmette, IL 60091                                                                      | 708-251-3600                 |
| † JSC Wire & Cable, Wayne, NJ 07474-0248                                                      | 201-694-6200; 1-800-572-9473 |
| † Judd Wire Inc., San Marcos, CA 92069                                                        | 619-744-7720; 800-344-5251   |
| Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                       | 708-398-5311; 800-323-5207   |
| † Lynn Electronics, Feasterville, PA 19053                                                    | 215-355-8200; 800-523-6075   |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                                         | 914-967-8000                 |
| † Markel Corp., Norristown, PA 19404                                                          | 215-272-8960                 |
| † Midstates Marketing, Inc., Indianapolis, IN 46202                                           | 317-639-9999                 |
| Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                                           | 612-642-1800;                |
|                                                                                               | 1-800-258-6922(MWCC)         |
| † Molecu-Wire, Farmingdale, NJ 07727                                                          |                              |
| Olympic Wire & Cable, Fairfield, NJ 07004                                                     | 201-227-7996                 |
| Omega Engineering, Stamford, CT 06907                                                         | 800-826-6342                 |
| † Pacific Electricord, Gardena, CA 90247                                                      | 310-532-6600                 |
| † Pan International (USA), Inc., Rancho Cucamonga, CA 91730                                   | 909-945-1365                 |
| Permaluster, Inc., Burbank, CA 91504                                                          | 213-849-4543; 213-849-6454   |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, KY 40176 | 606-572-8306; 800-257-8357   |
| † Radix Wire Co., Cleveland, OH 44132                                                         | 216-731-9191                 |
| † Rockland Insulated Wire & Cable, Haverstraw, NY 10927                                       | 914-429-3103                 |
| † Rowe Industries, Inc., Toledo, OH 43612                                                     | 419-729-9761                 |
| † Rye Industries, Inc., Fuquay-Varina, NC 27526                                               | 919-557-0511; 800-626-1511   |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                               | 714-251-1960                 |
| Shamrock Plastics & Rubber, Inc., Indianapolis, IN 46218                                      | 317-543-3540;                |
|                                                                                               | 800-382-4635                 |
| † Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC                 |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811;                |
|                                                                                               | 800-326-0006                 |
| † Storm Products Co., Hinsdale, IL 60521                                                      | 708-323-9121                 |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                                  | 612-881-6700                 |
| † Tappan Wire & Cable Inc., Tappan, NY 10983                                                  | 914-359-9300                 |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                    |                              |
|                                                                                               | 904-829-5600                 |
| † Thermax Wire Corp., Flushing, NY 11354-2897                                                 | 718-939-8300                 |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401                 |                              |
|                                                                                               | 803-676-2900                 |
| Transtech Electronics, Transtechnology Corporation, Peoria, IL 61615-1584                     |                              |
|                                                                                               | 309-693-3300                 |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                             | 401-821-1700; SALES          |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                            | 213-870-9933                 |
| † Virginia Plastics Co., Roanoke, VA 24015-0577                                               | 703-375-0100                 |
| Weico Wire & Cable, Inc., Edgewood, NY 11717                                                  | 516-254-2970                 |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                              | 805-257-2400                 |
| † Wilco Wire & Cable Co., Inc., San Jose, CA 95133                                            | 408-926-8880                 |

### Wire Shielding-Also See Braid, Cable-4525

|                                                                                         |                                   |
|-----------------------------------------------------------------------------------------|-----------------------------------|
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                   | C-1719                            |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                   | C-1742                            |
| † Magnetic Shield Corporation, Perfection Mica Co., Bensenville, IL 60106, 708-766-7800 | C-1696                            |
| Omega Engineering, Stamford, CT 06907, 800-826-6342                                     | C-1547                            |
| Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                              | C-1843                            |
| Alcatel Chester Cable Corp., Chester, NY 10918                                          | 914-469-2141                      |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                            | 908-925-8000                      |
| † American Insulated Wire Corp., Levittown, PA 19006                                    | 610-276-0700                      |
| Burdny Corporation, An FCI Company, Norwalk, CT 06856                                   | 203-838-4444                      |
| † Cable Systems, Inc., The HVT Group, Everett, MA 02149                                 | 617-389-7800                      |
| † Conductive System, Inc., Amsterdam, NY 12010                                          | 518-843-5740                      |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                    | 708-455-8830                      |
| † Cooner Wire Co., Chatsworth, CA 91311                                                 | 818-882-8311                      |
| † Cooper Industries/Belden Div., Richmond, IN 47375                                     | 317-983-5200; 800-BELDEN-1        |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                       | 708-459-1000; 800-323-0198        |
| † Egis Corporation, Barrington Hills, IL 60010                                          | 708-639-1555                      |
| † Electrowave, Inc., Worcester, MA 01604                                                | 508-752-8932                      |
| Flexible Technologies, Arlon, E. Providence, RI 02914                                   | 401-434-2340                      |
| † General Wire Products, Inc., Worcester, MA 01604                                      | 617-752-8260                      |
| † GSI Corp., Timonium, MD 21093                                                         | 410-252-1768                      |
| Instrument Specialties Co., Headquarters, Delaware Water Gap, PA 18327-0136             |                                   |
|                                                                                         | 717-424-8510                      |
| † Manger Electric Company, Inc., Stamford, CT 06902                                     | 203-348-7761                      |
| † Markel Corp., Norristown, PA 19404                                                    | 215-272-8960                      |
| † M&E Electronic Products Division, Austin, TX 78726                                    | 1-800-225-5373 Sls. & Prod. Info. |
| † Molecu-Wire, Farmingdale, NJ 07727                                                    | 908-938-9473                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                             | 800-777-3300                      |
| † Pan International (USA), Inc., Rancho Cucamonga, CA 91730                             | 909-945-1365                      |
| † Rowe Industries, Inc., Toledo, OH 43612                                               | 419-729-9761                      |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                         | 714-251-1960                      |
| † Storm Products Co., Hinsdale, IL 60521                                                | 708-323-9121                      |
| † Sunbank Electronics, Paso Robles, CA 93446                                            | 805-238-2840                      |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                            | 612-881-6700                      |
| † Tecknit, Cranford, NJ 07016                                                           | 908-272-5500                      |
| Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092                |                                   |
|                                                                                         | 904-829-5600                      |
| Texas Instruments, Connector Systems, Attleboro, MA 02703                               | 508-699-5269;                     |
|                                                                                         | 508-699-3450                      |
|                                                                                         | 508-699-3800                      |
| † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584       |                                   |
|                                                                                         | 309-693-3300                      |
| † United Wire & Cable Corp., Worcester, MA 01604                                        | 508-757-3872                      |
| † Victor Elec. Wire & Cable, W. Warwick, RI 02893                                       | 401-821-1700; SALES               |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                      | 213-870-9933                      |
| † Virginia Plastics Co., Roanoke, VA 24015-0577                                         | 703-375-0100                      |
| † Whitmor Wire & Cable Corp., Valencia, CA 91355                                        | 805-257-2400                      |
| † Zippertubing Co., Los Angeles, CA 90061                                               | 310-527-0488                      |



## Wire, Stainless Steel-6000

|                                                                 |              |
|-----------------------------------------------------------------|--------------|
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553 | C-1764       |
| † Carpenter Technology Corp., Reading, PA 19612                 | 215-208-2000 |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647         | 201-768-5400 |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717 | 516-667-9315 |
| † Molecu-Wire, Farmingdale, NJ 07727                            | 908-938-9473 |

## Wire, Strain Gauge-6000

|                                                                      |              |
|----------------------------------------------------------------------|--------------|
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553      | C-1764       |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412 | 708-455-8830 |
| † Cooner Wire Co., Chatsworth, CA 91311                              | 818-882-8311 |
| † Molecu-Wire, Farmingdale, NJ 07727                                 | 908-938-9473 |
| † Omega Engineering, Stamford, CT 06907                              | 800-826-6342 |
| † Semiconductor Packaging Materials Co., Mamaroneck, NY 10543        | 914-698-5353 |
| † Specialty Cable Corporation, Wallingford, CT 06492                 | 800-456-SPEC |

## Wire Connectors-2100

|                                                                                          |                            |
|------------------------------------------------------------------------------------------|----------------------------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103        | C-1706                     |
| † AMP, Harrisburg, PA 17105, 717-564-0100; 800-522-6752                                  | C-1163                     |
| † WECO Electrical Connectors, Inc., Moores, NY 12958, 518-298-4810                       | C-1510-1511, 1514          |
| † WECO Electrical Connectors, Inc., Kirkland, Quebec, CANADA H9H 3L4, 514-694-9136       | C-1510, 1513, 1517         |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                          | 404-751-9473; 800-221-4767 |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                             | 908-925-8000               |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962                    | 1-800-344-0223, Ext. 1027  |
| † Autosplint, Inc., San Diego, CA 92121                                                  | 619-535-0077               |
| † Autoswage Products, Shelton, CT 06484                                                  | 203-929-1401               |
| † Catamount Manufacturing, Inc., Orange, MA 01364                                        | 1-800-222-5969             |
| † Clifford of Vermont, Inc., Bethel, VT 05032                                            | 802-234-9921; 800-451-4381 |
| † Concord Electronics Corporation, New York, NY 10012                                    | 1-212-777-6571             |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647                                  | 201-768-5400               |
| † Hypertronics Corp., Hudson, MA 01749                                                   | 508-568-0451; 800-225-9228 |
| † Ideal Industries, Inc., Sycamore, IL 60178                                             | 815-895-5181               |
| † Klein Tools, Inc., Chicago, IL 60659-9033                                              | 708-677-9500               |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                                | 708-398-5311; 800-323-5207 |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                                    | 914-967-8000               |
| † Panduit Corp., Tinley Park, IL 60477-0981                                              | 800-777-3300               |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                             | 612-881-6700               |
| † Teledyne Penn-Union, Edinboro, PA 16412                                                | 814-734-1631 Ext. 382      |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401            | 803-676-2900               |
| † Tyton Corp., Milwaukee, WI 53223                                                       | 414-355-1130; 800-535-5552 |
| † Walther Electric Corporation, WALTHER WERKE, Ferdinand Walther, E. Brunswick, NJ 08816 | 908-238-1166               |

## Wire Strippers, Automatic-4100 — See Vol. D

## Wire Strippers, Chemical — See Chemicals, Wire Stripping (Vol. C)

## Wire Strippers, Manual-5400

|                                                                               |                                   |
|-------------------------------------------------------------------------------|-----------------------------------|
| † Daniels Manufacturing Corp., Orlando, FL 32824, 407-855-6161                | C-1700                            |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                               | 404-751-9473; 800-221-4767        |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                  | 908-925-8000                      |
| † Altech Corp., Flemington, NJ 08822-6000                                     | 908-806-9400                      |
| † AT&T Network Systems, Network Cable Sys. Div., Morristown, NJ 07962         | 1-800-344-0223, Ext. 1027         |
| † Burdy Corporation, An FCI Company, Norwalk, CT 06856                        | 203-838-4444                      |
| † Claibb Cutlery Co., Alco Industries, Fremont, OH 43420                      | 419-332-7344; 800-225-2877        |
| † Contact East, N. Andover, MA 01845                                          | 508-682-2000                      |
| † Control Cable, Inc., Baltimore, MD 21244                                    | 410-298-4411                      |
| † Cooper Tools, Raleigh, NC 27622                                             | 919-781-7200                      |
| † Eraser Co., Syracuse, NY 13221                                              | 315-454-3237                      |
| † Ewald Instruments Corp., Kent, CT 06757                                     | 203-927-3278                      |
| † GC-Thorsen, Rockford, IL 61105-1209                                         | 815-968-9661                      |
| † GreenLee Textron Inc., Subsidiary of Textron Inc., Rockford, IL 61109       | 815-397-7070                      |
| † GTE Supply, GTE, Irving, TX 75038                                           | 800-433-4837                      |
| † HMC/Hub Material Company, Canton, MA 02021                                  | 617-821-1870                      |
| † Ideal Industries, Inc., Sycamore, IL 60178                                  | 815-895-5181                      |
| † Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044                        | 602-968-6241                      |
| † Jonard Industries Corp., Tuckahoe, NY 10707                                 | 914-793-0700                      |
| † Klein Tools, Inc., Chicago, IL 60659-9033                                   | 708-677-9500                      |
| † Lodan Electronics, Inc., Arlington Hgts., IL 60004-7805                     | 708-398-5311; 800-323-5207        |
| † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101                          | 617-890-4750                      |
| † 3M-Electronic Products Division, Austin, TX 78726                           | 1-800-225-5373 Sls. & Prod. Info. |
| † Mouser Electronics, Santee, CA 92071                                        | 800-346-6873                      |
| † Mouser Electronics, Mansfield, TX 76063                                     | 800-346-6873                      |
| † Mouser Electronics, Gilroy, CA 95020                                        | 800-346-6873                      |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                   | 201-227-7996                      |
| † Omega Engineering, Stamford, CT 06907                                       | 800-826-6342                      |
| † Panduit Corp., Tinley Park, IL 60477-0981                                   | 800-777-3300                      |
| † Pasternack Enterprises, Irvine, CA 92713                                    | 714-261-1920                      |
| † K.L. Tannehill Inc., Bloomington, MN 55431                                  | 612-881-6700                      |
| † Techni-Tool, Plymouth Meeting, PA 19462                                     | 215-825-4990                      |
| † Teledyne Penn-Union, Solderless Connector Div., Ansonia, CT 06401           | 203-732-7025                      |
| † Thomas & Betts Corporation, Electronics Division, Greenville, SC 29616-2401 | 803-676-2900                      |
| † The Triangle Tool Group, Inc., Orangeburg, SC 29115                         | 803-534-7010                      |
| † Weidmuller Inc., Palatin Tools, Newbury Park, CA 91320                      | 805-499-0318                      |
| † Western Electronic Products Co., San Clemente, CA 92673                     | 714-492-4677                      |

## Wire Strippers, Thermal-5400

|                                                          |                            |
|----------------------------------------------------------|----------------------------|
| † Clauss Cutlery Co., Alco Industries, Fremont, OH 43420 | 419-332-7344; 800-225-2877 |
| † Coherent General, Inc., Sturbridge, MA 01566           | 508-347-2681               |
| † Contact Inc., Edgemoor, ME 04558                       | 207-882-6116               |
| † Contact East, N. Andover, MA 01845                     | 508-682-2000               |

|                                                                       |              |
|-----------------------------------------------------------------------|--------------|
| † Eraser Co., Syracuse, NY 13221                                      | 315-454-3237 |
| † HMC/Hub Material Company, Canton, MA 02021                          | 617-821-1870 |
| † Hydro-Gen Products Inc., Fort Collins, CO 80522-1517                | 800-779-0126 |
| † Ideal Industries, Inc., Sycamore, IL 60178                          | 815-895-5181 |
| † Jonard Industries Corp., Tuckahoe, NY 10707                         | 914-793-0700 |
| † Klein Tools, Inc., Chicago, IL 60659-9033                           | 708-677-9500 |
| † Omega Engineering, Stamford, CT 06907                               | 800-826-6342 |
| † PACE, Inc., Laurel, MD 20723-1990                                   | 301-490-9860 |
| † Techni-Tool, Plymouth Meeting, PA 19462                             | 215-825-4990 |
| † Teledyne Kinetics, Div. of Teledyne, Inc., San Diego, CA 92123-1502 | 619-576-1005 |
| † Teledyne Ryan Electronics, San Diego, CA 92123                      | 619-560-6400 |
| † Western Electronic Products Co., San Clemente, CA 92673             | 714-492-4677 |

## Wire, Test Lead-6000

|                                                                                   |                            |
|-----------------------------------------------------------------------------------|----------------------------|
| † ABL Electronics Supply, Inc., Peekskill, NY 10566, 914-736-1010; 1-800-431-2103 | C-1708                     |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                             | C-1714                     |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400             | C-1743                     |
| † Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833             | C-1756                     |
| † MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553                   | C-1764                     |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611           | C-1768                     |
| † Alcatel Chester Cable Corp., Chester, NY 10918                                  | 914-469-2141               |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                      | 908-925-8000               |
| † American Insulated Wire Corp., Leviton Mfg. Co., Pawtucket, RI 02862            | 401-726-0700               |
| † Carol Cable Co., Highland Heights, KY 41076                                     | 606-572-8303; 606-572-8000 |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412              | 708-455-8830               |
| † Cooner Wire Co., Chatsworth, CA 91311                                           | 818-882-8311               |
| † Cooper Industries/Belden Div., Richmond, IN 47375                               | 317-983-5200; 800-BELDEN-1 |
| † Custom Cable Corp., Westbury, NY 11590                                          | 516-334-3600               |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                 | 708-459-1000; 800-323-0198 |
| † E.M.S., Div. of Sandberg Industries, Tustin, CA 92680                           | 714-669-9473               |
| † E-Z Hook, Tektest Inc., Arcadia, CA 91006                                       | 818-446-6175               |
| † Gavitt Wire & Cable, Brookfield, MA 01506                                       | 508-867-6476               |
| † ITT Pomona Electronics, Pomona, CA 91766                                        | 909-469-2900               |
| † Jonard Industries Corp., Tuckahoe, NY 10707                                     | 914-793-0700               |
| † Lynn Electronics, Feasterville, PA 19053                                        | 215-355-8200; 800-523-6075 |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                             | 914-967-8000               |
| † Minnesota Wire & Cable Co., St. Paul, MN 55108-2721                             | 612-642-1800               |
|                                                                                   | 1-800-259-6922(MWCC)       |
| † Mouser Electronics, Santee, CA 92071                                            | 800-346-6873               |
| † Mouser Electronics, Mansfield, TX 76063                                         | 800-346-6873               |
| † Mouser Electronics, Gilroy, CA 95020                                            | 800-346-6873               |
| † Mueller Elec. Co., Cleveland, OH 44114                                          | 216-771-5225               |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                       | 201-227-7996               |
| † Rowe Industries, Inc., Toledo, OH 43612                                         | 419-729-9761               |
| † Rye Industries, Inc., Fuquay-Varina, NC 27526                                   | 919-557-0511; 800-626-1511 |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                           | 310-609-1811               |
|                                                                                   | 800-326-0006               |
| † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092        | 904-829-5600               |
| † Victor Wire & Cable Corp., Los Angeles, CA 90016                                | 213-870-9933               |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717                                    | 516-254-2970               |

## Wire, TFE Insulated-6000

|                                                                                               |                              |
|-----------------------------------------------------------------------------------------------|------------------------------|
| † Betathern Corp., Shrewsbury, MA 01545, 508-842-0516                                         | B-1866                       |
| † Brim Electronics, Fair Lawn, NJ 07410, 201-796-2886                                         | C-1712-1713                  |
| † Daburn Electronics & Cable Corp., Northvale, NJ 07647, 201-768-5400                         | C-1742                       |
| † National Wire & Cable Corp., Los Angeles, CA 90031-1780, 213-225-5611                       | C-1768-1770                  |
| † Omega Engineering, Stamford, CT 06907, 800-826-6342                                         | C-1792                       |
| † Phoenix Wire, Inc., S. Hero, VT 05486, 802-372-4561                                         | C-1802                       |
| † Weico Wire & Cable, Inc., Edgewood, NY 11717, 516-254-2970                                  | C-1818, 1823-1824            |
| † ABL Electronics Supply, Inc., Peekskill, NY 10566                                           | 914-736-1010; 1-800-431-2103 |
| † Accu-Tech Corporation, Roswell, GA 30076-3890                                               | 404-751-9473; 800-221-4767   |
| † Alcatel Chester Cable Corp., Chester, NY 10918                                              | 914-469-2141                 |
| † Alpha Wire Corp., Elizabeth, NJ 07207-0711                                                  | 908-925-8000                 |
| † BIW Cable Systems, Inc., N. Dighton, MA 02764                                               | 508-520-1200                 |
| † Brand-Flex Company, BICC Cables Corporation, Willimantic, CT 06226-1128                     | 203-456-8000                 |
| † Champlain Cable Corp., Huber & Suhner(USA)Corp., Colchester, VT 05446                       | 802-655-2121                 |
| † Consolidated Electronic Wire & Cable, Franklin Park, IL 60131-1412                          | 708-455-8830                 |
| † Cooper Industries/Belden Div., Richmond, IN 47375                                           | 317-983-5200; 800-BELDEN-1   |
| † Custom Cable Corp., Westbury, NY 11590                                                      | 516-334-3600                 |
| † Dearborn Wire & Cable, L.P., Wheeling, IL 60090                                             | 708-459-1000; 800-323-0198   |
| † Delta Wire & Cable Co., North Chicago, IL 60064                                             | 708-473-4990                 |
| † Electroweave, Inc., Worcester, MA 01604                                                     | 508-752-8932                 |
| † General Wire Products, Inc., Worcester, MA 01604                                            | 617-752-8260                 |
| † W.L. Gore & Assocs., Newark, DE 19714                                                       | 302-738-4880                 |
| † Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3                                 | 514-293-5304                 |
| † Independent Cable, Inc., Hudson, MA 01749                                                   | 508-562-9913                 |
| † Magnet Wire Co., Weico Wire & Cable, Inc., Edgewood, NY 11717                               | 516-667-9315                 |
| † Manhattan Electric Cable Corporation, Rye, NY 10580                                         | 914-967-8000                 |
| † Markel Corp., Norristown, PA 19404                                                          | 215-272-9860                 |
| † Molecu-Wire, Farmingdale, NJ 07727                                                          | 908-938-9473                 |
| † Olympic Wire & Cable, Fairfield, NJ 07004                                                   | 201-227-7996                 |
| † Philadelphia Insulated Wire Co. Inc., General Cable Corporation, Highland Heights, OH 40176 | 606-572-8306; 800-257-8357   |
| † Pyrocom Co., Seattle, WA 98133                                                              | 206-365-3535                 |
| † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885                               | 714-251-1960                 |
| † Specialty Cable Corporation, Wallingford, CT 06492                                          | 800-456-SPEC                 |
| † Standard Wire & Cable Co., Rancho Dominguez, CA 90220                                       | 310-609-1811                 |
|                                                                                               | 800-326-0006                 |
| † Storm Products Co., Hinsdale, IL 60521                                                      | 708-323-9121                 |



† K.L. Tannehill Inc., Bloomington, MN 55431 ..... 612-881-6700

**Wire, Thermocouple-6000**

Judd Wire Inc., Turners Falls, MA 01376, 413-863-4357; 800-545-5833 ..... C-1756  
 § Manhattan Electric Cable Corporation, Rye, NY 10580, 914-967-8000 ..... C-1763  
 MWS Wire Industries, Westlake Village, CA 91362, 818-991-8553 ..... C-1764  
 § Newport Electronics, Santa Ana, CA 92704-4426, 714-540-4914; 800-NEWPORT ..... B-1978  
 Omega Engineering, Stamford, CT 06907, 800-826-6342 ..... C-1792  
 # Accu-Tech Corporation, Roswell, GA 30076-3890 ..... 404-751-9473; 800-221-4767  
 Aerospace Wire & Cable Inc., College Point, NY 11356 ..... 718-358-2345;  
 1-800-395-0200

§ Alcatel Chester Cable Corp., Chester, NY 10918 ..... 914-469-2141  
 § Alpha Wire Corp., Elizabeth, NJ 07207-0711 ..... 908-925-8000  
 Barber-Colman Co., Indl. Instrs. Div., Loves Park, IL 61132-2940 ..... 815-637-3000  
 † BIW Cable Systems, Inc., N. Dighton, MA 02764 ..... 508-520-1200  
 § Brand-Rex Company, BICC Cables Corporation, Willimantic, CT 06226-1128 ..... 203-456-8000  
 § Brim Electronics, Fair Lawn, NJ 07410 ..... 201-796-2886  
 § Cablec Continental Cables Co., BICC Cables Corp., York, PA 17402-9950 ..... 717-757-6600  
 § Cable USA, Inc., Naples, FL 33942-3560 ..... 813-643-6400  
 Carol Cable Co., Highland Heights, KY 41076 ..... 606-572-8303; 800-572-8000  
 † Carpenter Technology Corp., Reading, PA 19612 ..... 215-208-2000  
 Conax Buffalo Corporation, Buffalo, NY 14225 ..... 716-684-4500  
 § Custom Cable Corp., Westbury, NY 11590 ..... 516-334-3600  
 † Daburn Electronics & Cable Corp., Northvale, NJ 07647 ..... 201-768-5400  
 † DELTA M Corporation, Oak Ridge, TN 37830 ..... 615-483-1569  
 § EDL, Inc., Danville, VA 24540 ..... 804-799-0807; 1-800-DIAL EDL  
 † Electroweave, Inc., Worcester, MA 01604 ..... 508-752-8932  
 † General Wire Products, Inc., Worcester, MA 01604 ..... 617-752-8260  
 § GIC Thermodynamics, Royal Oak, MI 48073 ..... 313-280-1648  
 † L.J. Gore & Assocs., Newark, DE 19714 ..... 302-738-4880  
 Guardian Electronics, General Cable Corporation, Highland Heights, KY 41076 ..... 606-572-8303  
 § Harbour Ind. (Canada) Ltd., Farnham, Quebec, CANADA J2N 2X3 ..... 514-293-5304  
 Incotherm Limited, Inco Alloys Ltd., Hereford, UNITED KINGDOM HR4 9SL ..... (44) 432 355880

ITT Cannon, Santa Ana, CA 92705-5684 ..... 714-557-4700  
 § Love Controls Division, Dwyer Instruments, Inc., Wheeling, IL 60090 ..... 708-541-3232  
 Lynn Electronics, Feasterville, PA 19053 ..... 215-355-8200; 800-523-6075  
 † Markel Corp., Norristown, PA 19404 ..... 215-272-8960  
 † Molecu-Wire, Farmingdale, NJ 07727 ..... 908-938-9473  
 # Olympic Wire & Cable, Fairfield, NJ 07004 ..... 201-227-7996  
 PYCO, Inc., Penndel, PA 19047 ..... 215-757-3704  
 § Pyrooom Co., Seattle, WA 98133 ..... 206-365-3535  
 § Radix Wire Co., Cleveland, OH 44132 ..... 216-731-9191  
 Richards, Arklay S., Co., Inc., Newton Highlands, MA 02161-1796 ..... 617-527-4385  
 Rodale Technical Sales Inc., Islip, NY 11751 ..... 516-277-5454  
 Rowe Industries, Inc., Toledo, OH 43612 ..... 419-729-9761  
 † Santa Fe Textiles, Barcel Wire & Cable, Irvine, CA 92714-5885 ..... 714-251-1960  
 § Science/Electronics, Dayton, OH 45401-0986 ..... 513-859-5555  
 † Specialty Cable Corporation, Wallingford, CT 06492 ..... 800-456-SPEC  
 † Standard Wire & Cable Co., Rancho Dominguez, CA 90220 ..... 310-609-1811;  
 800-326-0006  
 K.L. Tannehill Inc., Bloomington, MN 55431 ..... 612-881-6700  
 Teledyne Thermatics, Teledyne Inds., Inc., Elm City, NC 27822 ..... 919-236-4311  
 † Tensolite Company, Subsidiary of Carlisle Corp., St. Augustine, FL 32092 ..... 904-829-5600  
 † Thermax Wire Corp., Flushing, NY 11354-2897 ..... 718-939-8300  
 † Thermo Electric, Saddle Brook, NJ 07662 ..... 201-843-5800  
 † Thermometrics, Inc., Edison, NJ 08817-4695 ..... 908-287-2870  
 † United Wire & Cable Corp., Worcester, MA 01604 ..... 508-757-3872  
 § West Instrument, A Mark IV Company, E. Greenwich, RI 02818 ..... 401-884-4188

**Wire, Tinsel-6000**

§ Brim Electronics, Fair Lawn, NJ 07410 ..... 201-796-2886  
 † Gavitt Wire & Cable, Brookfield, MA 01506 ..... 508-867-6476  
 † Leonische of America, Chicopee, MA 01022 ..... 413-593-6618  
 Minnesota Wire & Cable Co., St. Paul, MN 55108-2721 ..... 612-642-1800;  
 1-800-258-6922(MWCC)

**Wire, Transmission — See Cable, Transmission Line (Vol. C)**

**Wire, Twisted Pair — See Cable, Twisted Pair (Vol. C)**

**Wire (MIL)-2440 — See Vol. B**

**Wire Twisters, Automatic-5400**

A/Z-Tech, Inc. R&D Lab, Indiana Institute of Technlg., Fort Wayne, IN 46803 ..... 219-422-5561  
 § Eraser Co., Syracuse, NY 13221 ..... 315-454-3237  
 Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 § Nichifu America, Inc., Pottstown, PA 19464 ..... 215-323-7120  
 Rutherford Research, Rutherford, NJ 07070 ..... 201-933-2091  
 Systron-Donner Microwave Div., Sylmar, CA 91342 ..... 818-362-9900

**Wire Twisters, Manual-5400**

A/Z-Tech, Inc. R&D Lab, Indiana Institute of Technlg., Fort Wayne, IN 46803 ..... 219-422-5561  
 § Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 Eraser Co., Syracuse, NY 13221 ..... 315-454-3237  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241

Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 § Mouser Electronics, Santee, CA 92071 ..... 800-346-6873  
 § Mouser Electronics, Mansfield, TX 76063 ..... 800-346-6873  
 § Mouser Electronics, Gilroy, CA 95020 ..... 800-346-6873

**Wire Ways-6000**

§ Catamount Manufacturing, Inc., Orange, MA 01364, 1-800-222-5969 ..... C-1538-1539  
 § Nichifu America, Inc., Pottstown, PA 19464 ..... 215-323-7120  
 § Panduit Corp., Tinley Park, IL 60477-0981 ..... 800-777-3300  
 § Square D Co., Palatine, IL 60067 ..... 708-397-2600  
 † Transtechnology Electronics, Transtechnology Corporation, Peoria, IL 61615-1584 ..... 309-693-3300  
 † Tylon Corp., Milwaukee, WI 53223 ..... 414-355-1130; 800-535-5552

**Wirewrapping Services — See Services, Wirewrapping (Vol. D)**

**Wiring Panels & Boards, Computer — See Boards, Programming (Vol. C)**

**Work Positioners, Circuit Board & Chassis — See Holders, Circuit Board (Vol. D), Jigs (Vol. D)**

**Work Stations, Computer-2000 — See Vol. D**

**Work Stations, Laminar Flow-4100 — See Vol. D**

**Work Stations, 3-D Video Microscope-4100 — See Vol. D**

**Work Stations/Decks, Data Entry-1400**

† Optima Electronic Packaging Systems, Tucker, GA 30084-5088, 404-496-4000 ..... C-1056, 1061  
 Par Metal Products, Inc., Par Industrial Complex, Brooklyn, NY 11216, 718-774-5900 ..... C-1069  
 TECLAB, Kalamazoo Technical Furniture, Kalamazoo, MI 49005, 616-372-6000; 800-832-5227 ..... C-1105  
 Alusett U.S.A., Inc., Peekskill, NY 10566 ..... 914-737-0120  
 ASC Systems, St. Clair Shores, MI 48080 ..... 313-882-1133  
 † Bud Industries, Inc., Willoughby, OH 44094-0431 ..... 216-946-3200  
 † Compucart, Versa Tec, Tampa, FL 33601-2095 ..... 800-237-9024; 813-251-2431  
 D. L. Custom, Markham, Ont, CANADA L3R 2M5 ..... 416-475-0275  
 Electronic Packaging System, Marion, IA 52302 ..... 319-377-3423  
 § Ergotron, Inc., Eagan, MN 55121 ..... 612-452-8135  
 Everest Electronic Equipment, Buford, GA 30518 ..... 404-932-2900  
 Everest Electronic Equipment, Inc., Anaheim, CA 92806 ..... 714-634-2200  
 † General Devices Co., Inc., Indianapolis, IN 46239-0100 ..... 317-897-7000, 1-800-626-9484

§ Hammond Manufacturing Co., Buffalo, NY 14225 ..... 716-894-5710  
 § Hewlett-Packard Company, Direct Marketing Organization, Santa Clara, CA 95051-8059 ..... 800-452-4844

§ Hodge Manufacturing Co., Inc., Springfield, MA 01107 ..... 413-781-6800  
 Kewaunee Scientific Corp., Technical Workstation Div., Lockhart, TX 78644 ..... 512-398-5292

Mobile-Tronics Co., Inc., San Clemente, CA 92674 ..... 714-361-4305  
 § Uticor Technology, Bettendorf, IA 52722 ..... 319-359-7501  
 Zero Cabinets (Stantnor), Pacoima, CA 91331-2226 ..... 818-890-3445  
 Zero Corp., Zero East Div., Monson, MA 01057-0128 ..... 413-267-5561

**Wrenches-5400**

§ Bondhus Corporation, Monticello, MN 55362 ..... 612-295-2162  
 § Contact East, N. Andover, MA 01845 ..... 508-682-2000  
 † Cooper Tools, Raleigh, NC 27622 ..... 919-781-7200  
 # HMC/Hub Material Company, Canton, MA 02021 ..... 617-821-1870  
 § Ideal Industries, Inc., Sycamore, IL 60178 ..... 815-895-5181  
 § Jensen Tools, Inc., Stanley Works, Phoenix, AZ 85044 ..... 602-968-6241  
 † Jonard Industries Corp., Tuckahoe, NY 10707 ..... 914-793-0700  
 § Klein Tools, Inc., Chicago, IL 60659-9033 ..... 708-677-9500  
 † M/A-COM Omni Spectra, Inc., Waltham, MA 02254-9101 ..... 617-890-4750  
 † Moody Tools, Inc., E. Greenwich, RI 02818-0230 ..... 401-885-0911  
 § Ridge Tool Co., Sub. Emerson Elec. Co., Elyria, OH 44036 ..... 216-323-5581  
 § The Triangle Tool Group, Inc., Orangeburg, SC 29115 ..... 803-534-7010

**X-ray Detector Arrays (For Industrial Inspections)-4100 — See Vol. D**

**X-ray Imaging System-4100 — See Vol. D**

**X-ray Inspection Equipment-4100 — See Vol. D**

**X-Y Axis Tables — See Tables, X-Y (Vol. D)**

**X-Y-Z Systems, Programmable-2550 — See Vol. D**

**Yokes, Deflection, CRT-1800 — See Vol. A**

**Zener Diodes — See Diodes, Zener (Vol. A)**

**Zone Boxes, Thermocouple — See Thermocouples, Elements & Accessories (Vol. B)**





## MINIGLOSSARY TIMERS

### Accuracy

The variation of unit performance, i.e., time delay, voltage trip point, etc., over the specified conditions of ambient temperature, input voltage range, and time between operations.

### Adjustability

The changing of a unit set point, within the specified range of unit operation, by means of internal or external adjustment mechanism (i.e., changing time delay with potentiometer).

### Contact Rating

The electrical power-handling capability of relay contacts under specified environmental conditions and for a prescribed number of operations.

### Delayed Interval Timing Function

Input voltage is applied continuously. The timing cycle is started by momentarily actuating the control circuit. The functions of separate Delay-On-Operate and interval type timers are combined in one package providing a single OFF-ON-OFF output cycles

*Also called:* single shot.

### Delay-On-Operate Timing Function

Application of the input voltage starts the time delay. At completion of the time delay, the relay contacts transfer.

*Also called:* Delay-On-Make, On-Delay, Delay Relay, Delay-On-Pickup.

### Delay-On-Release Timing Function

Input voltage must be supplied continuously to timer. Actuation of control circuit causes relay contacts to transfer immediately. Time delay starts when control circuit is released. The relay remains energized for the duration of the time delay—then de-energizes.

*Also called:* Delay-On-Break, Off-Delay, Delay-On-Dropout, Delay-On-Energization.

### Frequency Sensor

A device that monitors a predetermined overfrequency and/or underfrequency condition, and changes output state when these conditions exist.

### Hysteresis

The difference between the response of a unit or system to an increasing and a decreasing signal (example: a voltage sensor).

### Interval Timer Timing Function

Application of input voltage causes relay contacts to transfer and time delay to begin. At completion of the time delay, the relay contacts return to de-energized state.

*Also called:* Delay Interval, One Shot.

### Output Control

The switching device, either solid-state or electromechanical, used in the unit to control the load connected to the output terminal(s).

### Phase Sensor

A device that monitors for proper phase rotation in 3-phase systems.

### Programmability

Ability to modify function, time delay or input voltage of a timer.

### Recovery Timer

#### (Delay-On-Operate/Interval Timer)

The minimum time that input voltage must be interrupted *prior* to time-out to insure a successive timing cycle within the specified limits.

#### (Delay-On-Release)

The minimum duration of time that control circuit must be re-actuated to insure a new timing cycle when the control circuit is released.

### Recycle Time

#### (Delay-On-Operate or Interval Timer)

The minimum time that input voltage must be interrupted after the

timing cycle is completed to assure a successive timing cycle within the repeatability specified.

### (Delay-On-Release)

The minimum duration of time that control circuit must be actuated to insure a successive timing cycle within the repeatability specified when the control circuit is released.

### Repeat Cycle Timer Timing Function

Application of power automatically initiates continuous off-on cycling of the output relay.

*Also called:* flasher, intervalometer

### Reset Time

The time required for the contacts to return to normal position when power is removed.

### Reverse Polarity Protection

Blocking circuitry arrangement within the timer to prevent damage or output actuation if reverse polarity input voltage is applied.

### Tolerance

The difference between specified and actual timing or sense point (factory setup tolerance).

### Transient Protection

Prevents damage to unit if positive or negative transients are applied to the unit. Insures proper operation of the unit during and after transient occurrence. Max. transients are usually specified as to amplitude and duration, i.e., 1000V for 1 second.

### Trip Point

The predetermined point at which a sensing device is set to change the output state.

### Voltage Sensor

A device that monitors for a predetermined overvoltage and/or undervoltage condition, and changes output state when these conditions exist.



# 93 94 Manufacturers and Sales Offices Directory

Each manufacturer is listed alphabetically with complete address and telephone number of main offices. The names of those with data pages in this edition of EEM are shown in **boldface**.

Many manufacturers also show FAX, TWX and Telex numbers, FSC (Federal Supply Code), other pertinent company data, their sales and/or local distributor offices and phones. The page numbers of their data pages in this edition are shown in all volumes.

**AAA CIRCUITS, INC.**, 827 Black Oak Ridge Road, Wayne, NJ 07470, Tel: 201-835-2765, FAX: 201-835-2768; FSC No.: 5998; Empl: 18; Sls. Mgr.: F. J. La Manna; Dist. Mgr.: f. J. La Manna

**AAK CORP.**, 747 River St, Haverhill, MA 01832, Tel: 508-373-3769, 800-886-2225, TELEX: 04 26 3109-1, FAX: 508-373-8881; FSC No.: 04 26 3109-1; Empl: 20; Sls. Mgr.: Marie Credit; D-2052-2055

*Local Sales Offices & Reps*  
CA Los Angeles, Power Partners ..... 213-215-0800  
OH Cleveland, Tiby Co. .... 216-371-5335

**AALPHA PRECISION**, Pacific Resistor Co., 18300 Oxnard St, Tarzana, CA 91356, Tel: 818-345-7811, 800-835-3355, FAX: 818-345-1507; FSC No.: 06416; Sls. Mgr.: Douglas Trewthitt

**A & D ELEC. INSTRS.**, 73-07 88th St, Glendale, NY 11385, Tel: 718-275-6516, FAX: 718-275-6516; FSC No.: 01914; Empl: 7

**A & J MANUFACTURING CO.**, 14131 Franklin Ave, Tustin, CA 92680, Tel: 714-544-9570, FAX: 714-544-4215; FSC No.: 08060; Empl: 70; Sls. Mgr.: B. M. Evers



**FAX: 603-528-1478**

**AAVID ENGINEERING, INC.**, One Kool Path, P.O. Box 400, Laconia, NH 03247-0400, Tel: 603-528-3400, TWX: 510-298-1127; FSC No.: 30161; Empl: 450; Sls. Mgr.: Charles Nelson; Dist. Mgr.: Patrick SandeFur ... C-1561

*Local Sales Offices & Reps*  
AL Huntsville, Cartwright & Bean, Inc. .... 205-830-1540, FAX: 205-830-1542  
AZ Phoenix, Gregory & Assocs. .... 602-870-8797, FAX: 602-870-8796  
CA Brea, Masco Elctms. .... 714-990-6991, FAX: 714-990-2053

CA Julian, Sontronics ..... 619-765-3294, FAX: 619-765-0868  
CA Santa Clara, WestRep ..... 408-988-8833, FAX: 408-988-3186  
CO Broomfield, SummitWest Mktg. .... 303-460-9600, FAX: 303-460-9074  
FL Apopka, Cartwright & Bean, Inc. .... 407-889-9100, FAX: 407-889-2168  
FL Deerfield Bch, Cartwright & Bean, Inc. .... 305-429-3400, FAX: 305-429-3402  
GA Norcross, Cartwright & Bean, Inc. .... 404-368-0160, FAX: 404-368-0125  
IL Itasca, Beta Technlg. Sls, Inc. .... 708-250-9586, FAX: 708-250-9592  
IN Carmel, Kahsar Sls. Inc. .... 317-844-9353, FAX: 317-844-9353  
IA Des Moines, S P S Assocs. .... 515-225-0607, FAX: 515-225-8713  
KS Olathe, S P S Assocs. .... 913-764-4480, FAX: 913-764-6161  
LA Covington, Cartwright & Bean, Inc. .... 504-892-2326, FAX: 504-892-2326  
MD Sykesville, Eastern Technlg. .... 410-442-2952, FAX: 410-489-7780  
MA Milford, Selmark Assocs, Inc. .... 508-478-9088, FAX: 508-478-5145  
MI Muskegon, Kahsar Sls. Inc. .... 616-798-4451, FAX: 616-798-4451  
MI Sterling Heights, Kahsar Sls, Inc. .... 313-795-3530, FAX: 313-795-4181  
MN Edina, Foster (Mel) Tech. Sls. .... 612-941-9790, FAX: 612-944-0634  
MS Jackson, Cartwright & Bean, Inc. .... 601-981-1170, FAX: 601-981-1171  
MO Earth City, S P S Assocs. .... 314-291-0520, FAX: 314-291-7138  
NJ Berkeley Hgts, Cambridge-Allen & Assocs. .... 908-464-0203, FAX: 908-468-9090  
NJ Medford, McCoy Group ..... 609-953-0770, FAX: 609-953-1238  
NM Albuquerque, Ron-Tek, Inc. .... 505-299-3771, FAX: 505-299-3771  
NY Endwell, Reagan/Compar ..... 607-754-2171, FAX: 607-754-4270  
NY Rochester, Reagan/Compar Rochester ..... 716-271-2230, FAX: 607-754-4270  
NY Syracuse, Reagan/Compar Syracuse ..... 315-432-8232, FAX: 607-754-4270  
NC Charlotte, Cartwright & Bean, Inc. .... 704-536-0303, FAX: 704-536-0313  
NC Raleigh, Cartwright & Bean, Inc. .... 919-876-4130, FAX: 919-876-4130  
OH Cincinnati, Kahsar Sls. Inc. .... 513-598-1484, FAX: 513-598-6870

OH Columbus, Kahsar Sls. Inc. .... 614-252-4009, FAX: 614-252-4009  
OH Elyria, Kahsar Sls, Inc. .... 216-365-5219, FAX: 216-365-5219  
OH Parma, Kahsar Sls. Inc. .... 216-845-0103, FAX: 216-845-0103  
OR Lake Oswego, S P S Elctms. .... 503-697-7768, FAX: 503-697-7764  
PA Exton, McCoy Group ..... 215-363-0350  
PA Pittsburgh, Kahsar Sls, Inc. .... 412-734-8797, FAX: 412-734-8797  
TN Germantown, Cartwright & Bean, Inc. .... 901-758-8113, FAX: 901-758-8068  
TN Knoxville, Cartwright & Bean, Inc. .... 615-693-7450, FAX: 615-693-6885  
TX Austin, MIL-REP Assocs, Inc. .... 512-346-6331, FAX: 512-346-1975  
TX Houston, MIL-REP Assocs, Inc. .... 713-444-2557, FAX: 713-444-2751  
TX Richardson, MIL-REP Assocs, Inc. .... 214-644-6731, FAX: 214-644-8161  
UT Bountiful, TQ (Butterworth) Mktg. .... 801-298-8388, FAX: 801-298-8840  
WA Mt. Lake Terrace, S P S Elctms. .... 206-323-4140, FAX: 206-323-4140  
WI Milwaukee, Beta Technlg. Sls, Inc. .... 414-543-6609, FAX: 414-543-9288  
PR Guaynabo, ISLA Caribe Electro Sls. .... 809-720-4430, FAX: 809-720-1097  
Can Calgary, Alb, Intelatech ..... 403-230-3190, FAX: 403-230-3183  
Can Mississauga, Ont, Intelatech ..... 416-629-0082, FAX: 416-629-1795  
Can Nepean, Ont, Intelatech ..... 613-769-5618, FAX: 613-596-2442  
Can Pointe Claire, Que, Intelatech ..... 514-630-6041, FAX: 514-630-5612

## Local Distributors

AL Huntsville, Century Fasteners Corp. .... 205-883-5344  
AL Huntsville, Hammond Elctms. Inc. .... 205-830-4764  
AL Huntsville, Time Elctms. .... 205-721-1133  
AZ Phoenix, Aero-Space Southwest Inc. .... 602-582-2779  
AZ Phoenix, Future Elctms. Inc. .... 602-968-7140  
AZ Scottsdale, Kent Elctms. .... 602-968-0399  
AZ Tempe, Acacia/Deanco ..... 602-894-2874  
AZ Tempe, Time Elctms. .... 602-967-2000  
AR Little Rock, Carlton-Bates Co. Inc. .... 501-562-9100  
AR Springdale, Carlton-Bates Co. Inc. .... 501-756-5012  
CA Chatsworth, Future Elctms. Inc. .... 818-772-6240  
CA Chatsworth, Time Elctms. .... 508-532-6200  
CA Compton, Time Elctms. .... 213-979-5090  
CA Culver City, Time Elctms. .... 314-391-6444  
CA Culver City, Time Elctms. .... 508-532-6200  
CA Fountain Valley, Comps. Ctr. Inc. .... 714-979-0437



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| CA Fremont, Acacia/Deanco                   | 415-623-7500   | MI Ann Arbor, Wedemeyer                   | 313-665-8611   | TX Dallas, Allied Elctms.                    | 1-800-433-5700 |
| CA Fremont, Allied Elctms.                  | 415-770-0590   | MI Farmington Hills, Advent Elctms. Inc.  | 313-477-1650   | TX Dallas, Wofford Elctms.                   | 214-340-8555   |
| CA Irvine, Acacia/Deanco                    | 714-660-0834   | MI Grand Rapids, R M Elctms.              | 616-531-9300   | TX Ft. Worth, Allied Elctms.                 | 817-336-5401   |
| CA Irvine, Future Elctms. Inc.              | 714-260-4141   | MI Livonia, Future Elctms.                | 313-261-5270   | TX Ft. Worth, Allied Elctms.                 | 817-595-3500   |
| CA Los Angeles, Bell Inds. Inc.             | 213-826-6778   | MN Eden Prairie, Allied Elctms.           | 612-829-7554   | TX Ft. Worth, Carlton-Bates Co. Inc.         | 817-831-0395   |
| CA Los Angeles, Bell Inds. Inc.             | 213-826-6778   | MN Eden Prairie, Future Elctms.           | 612-944-2200   | TX Houston, Carlton-Bates Co. Inc.           | 817-831-0395   |
| CA Los Angeles, Bell Inds. Inc.             | 313-826-2355   | MN Edina, Bergquist Co.                   | 612-835-2322   | TX Houston, Carlton-Bates Co. Inc.           | 817-831-0395   |
| CA Milpitas, Kent Elctms./PYR               | 408-262-5300   | MN Edina, Time Elctms.                    | 612-943-2433   | TX Houston, Kent Elctms.                     | 713-780-7770   |
| CA Mtn. View, Energy Sys. Inc.              | 415-969-0800   | MN Minneapolis, Aero-Space Computer Supp. |                | TX Houston, Kent Elctms.                     | 713-978-5849   |
| CA San Diego, Acacia/Deanco                 | 619-597-0577   |                                           | 612-884-4725   | TX Irving, Time Elctms.                      | 214-621-0500   |
| CA San Diego, Future Elctms. Inc.           | 619-625-2800   | MN St. Paul, Kent Elctms.                 | 612-642-2828   | TX Lorado, REM                               | 216-373-1300   |
| CA San Diego, Kent Elctms./PYA              | 619-271-5404   | MN Thief River, Digi-Key Corp.            | 218-681-6674   | TX Richardson, All American                  | 800-541-1435   |
| CA San Diego, Kent Elctms./SHE              | 619-453-7133   | MO Hazelwood, Kent Elctms.                | 314-895-1515   | TX Richardson, Kent Elctms.                  | 713-780-7770   |
| CA San Diego, Time Elctms.                  | 619-674-2800   | MO Independence, Kent Elctms.             | 816-254-3410   | TX Richardson, R S C Elctms.                 | 214-644-3444   |
| CA San Jose, Future Elctms. Inc.            | 408-435-9100   | MO Manchester, Time Elctms.               | 314-391-6444   | TX Richardson, Time Elctms.                  | 214-644-4644   |
| CA San Jose, Time Elctms.                   | 408-943-9490   | MO Springfield, Carlton-Bates Co. Inc.    | 501-562-9100   | TX Tomball, Wofford Elctms.                  | 713-351-2255   |
| CA Santa Ana, B D S Elctms. Inc.            | 714-662-1050   | MO St. Charles, Finnigan Elctms.          | 314-946-6201   | UT Salt Lake City, Future Elctm. Inc.        | 801-972-8489   |
| CA Santa Ana, Bell Inds. Inc.               | 714-835-1464   | MO St. Louis, Rio-Tronics                 | 314-997-4707   | UT Salt Lake City, Future Elctms. Inc.       | 801-972-8489   |
| CA Santa Clara, Comps. Cen.                 | 408-988-3751   | NH Atkinson, Astrum Elctms.               | 603-898-3399   | UT West Lake City, Added Value Elctm.        | 801-975-9500   |
| CA Santa Fe Springs, Bell Inds. Inc.        | 213-826-6778   | NH Manchester, Cronin Elctms. Inc.        | 800-982-7777   | UT West Valley City, Time Elctms.            | 801-973-8494   |
| CA Sunnyvale, Time Elctms.                  | 408-734-9888   | NJ Blackwood, Hardware Specialty          | 609-228-6800   | VA Ashland, Century Fasteners Corp.          | 804-550-2058   |
| CA Torrance, Kent Elctms./PYR               | 213-691-0561   | NJ Cherry Hill, Hardware Specialties      | 609-663-0034   | WA Kent, Comps. Resources                    | 206-340-1646   |
| CA Torrance, Time Elctms.                   | 213-320-0880   | NJ Fairfield, Bell Inds. Inc.             | 201-227-6060   | WA Kirland, Time Elctms.                     | 206-820-1525   |
| CA Tustin, Added Value Elctm.               | 714-258-9501   | NJ Fairfield, Future Elctms.              | 201-299-4000   | WA Redmond, Acacia/Deanco Inc.               | 206-881-5566   |
| CA Tustin, Added Value Elctm.               | 714-259-8258   | NJ Marlton, Time Elctms.                  | 609-596-6700   | WA Redmond, Energy Sys. Inc.                 | 206-883-2342   |
| CA Tustin, Time Elctms.                     | 714-669-0100   | NJ Mountainside, Route Elctms.            | 908-654-8283   | WA Redmond, Future Elctms. Inc.              | 206-881-8199   |
| CO Broomfield, Future Elctms.               | 303-421-0123   | NJ Parsippany, Future Elctms.             | 609-778-7600   | WA Redmond, Kent Elctms./PYR                 | 206-883-7200   |
| CO Englewood, Kent Elctms.                  | 303-762-0670   | NJ Wayne, Time Elctms.                    | 201-785-8250   | WA Redmond, Murphy Elctms.                   | 206-881-1234   |
| CO Englewood, N E P Elctms. Inc.            | 303-799-9898   | NY Alexandria Bay, Carsten Elctms.        | 416-477-9898   | WI Milwaukee, Progressive Image Inc.         | 414-321-4722   |
| CO Englewood, Time Elctms.                  | 303-721-8882   | NY Amherst, Rush Elctms.                  | 800-343-5247   | WI New Berlin, N E P Elctms. Inc.            | 414-785-9100   |
| CO Littleton, Indelco Inc.                  | 303-795-3431   | NY Baldwin, Accessories for Elec.         | 516-546-1751   | WI New Berlin, Rekco                         | 414-784-3430   |
| CO Wheat Ridge, Added Value Elctm. Inc.     |                | NY Bohemia, Car-Lac Elctms.               | 516-567-4200   | WI W. Allis, Advent Elctms.                  | 414-475-6860   |
|                                             | 303-422-1701   | NY Buffalo, Irwin Indl.                   | 416-889-9100   | WI Waukesha, Future Elctms.                  | 414-700-1004   |
| CO Wheatridge, Acacia/Deanco Inc.           | 303-421-7004   | NY Buffalo, Summit Dists. inc.            | 716-887-2800   | Can Edward, Future Elctms. Inc.              | 204-786-7711   |
| CO Wheatridge, Bell Inds. Inc.              | 303-431-8732   | NY Champlain, Preko Elctms.               | 514-389-8051   | Can Galgary, Future Elctms. Inc.             | 403-250-5550   |
| CT Berlin, Kent Elctms. Inc.                | 203-829-2100   | NY Elmhurst, Century Fasteners Co.        | 718-446-5222   | Can Markham, Ont., Carsten Elctms.           | 416-477-7705   |
| CT Bethel, Future Elctms.                   | 203-743-9594   | NY Elmhurst, Century Fasteners Corp.      | 718-446-5000   | Can Mississauga, Ont., Rush Elctms.          | 416-677-7280   |
| CT Cheshire, Allied Elctms.                 | 1-800-433-5700 | NY Fairport, Allied Elctms.               | 1-800-433-5700 | Can Nepean, Ont., Carsten Elctms. Ltd.       | 613-726-9250   |
| CT Oxford, Tower Fasteners Comp.            | 203-264-3000   | NY Hauppauge, Future Elctms.              | 516-234-4000   | Can Ottawa, Ont., Carsten Elctms.            | 416-495-7705   |
| CT South Winds, Car-Lac Elctms.             | 203-282-0631   | NY Hauppauge, Time Elctms.                | 516-273-0100   | Can Pointe Claire, Que., Future Elctms. Inc. |                |
| CT Southbury, Time Elctms.                  | 203-271-3200   | NY Holtville, Tower Fasteners             | 516-289-8800   |                                              | 514-694-7710   |
| CT Wallingford, Arnold Indl.                | 203-215-7168   | NY Long Island City, Hardware Specialties |                | Can Port Royal, Preko Elctms.                | 514-389-8051   |
| CT Wallingford, Cronin Elctms. Inc.         | 800-982-4449   |                                           | 718-361-9393   | Can Richmond Hill, Ont., Irwin Indl.         | 416-889-9100   |
|                                             | 203-265-3134   | NY Mineola, Hardware Sepp.                | 516-741-7100   | Can St. Laurent, Que., Carsten Elctms.       | 514-334-8321   |
| CT Wallingford, Midstate Elctms.            | 203-265-9900   | NY Mt. Sinai, Kent Elctms.                | 516-447-2000   | Can Vancouver, BC, Future Elctms. Inc.       | 604-294-1166   |
| FL Altamonte Springs, Bell Inds.            | 813-541-4434   | NY Rochester, Future Elctms.              | 716-272-1120   | Can Victoria, BC, Queale Elctms. Ltd.        | 604-388-6111   |
| FL Altamonte Springs, Future Elctms.        | 407-767-8414   | NY Rochester, Masline Elctms. Inc.        | 716-546-5373   |                                              |                |
| FL Ft. Lauderdale, Hammond Elctms. Inc.     |                | NY Syracuse, Future Elctms.               | 315-451-2371   |                                              |                |
|                                             | 305-973-7103   | NY Syracuse, Hardware Specialty           | 315-434-9093   |                                              |                |
| FL Ft. Lauderdale, Time Elctms.             | 305-484-1778   | NY Syracuse, Time Elctms.                 | 315-432-0355   |                                              |                |
| FL Largo, Elctm./Precepts                   | 813-544-3636   | NC Charlotte, Century Fasteners Corp.     | 704-554-0444   |                                              |                |
| FL Largo, Future Elctms.                    | 813-530-1222   | NC Charlotte, Future Elctms.              | 704-455-9030   |                                              |                |
| FL Largo, Kent Elctms.                      | 813-545-0057   | NC Greensboro, Golden Elctms.             | 919-294-4653   |                                              |                |
| FL Miami, All American                      | 305-621-8282   | NC Greensboro, Hammond Elctms. Inc.       | 919-275-6391   |                                              |                |
| FL Orlando, Hammond Elctms. Inc.            | 407-849-6060   | NC Raleigh, Allied Elctms.                | 1-800-433-5700 |                                              |                |
| FL Orlando, Time Elctms.                    | 407-841-6565   | NC Raleigh, Century Elctm. Comps.         | 919-782-2116   |                                              |                |
| FL Pompano Beach, Allied Elctms.            | 305-486-0500   | NC Raleigh, Century Elctms.               | 919-596-2220   |                                              |                |
| FL Tampa, Century Fasteners Co.             | 813-886-5770   | NC Raleigh, Century Fasteners Corp.       | 919-787-1800   |                                              |                |
| FL Tampa, Century Fasteners Corp.           | 813-886-5770   | NC Raleigh, Dixie/Resource Elctms.        | 919-724-5961   |                                              |                |
| FL Winter Park, Servtronics                 | 407-677-8191   | NC Raleigh, Time Elctms.                  | 919-847-9650   |                                              |                |
| GA Duluth, All American                     | 404-476-0194   | NC Winston-Salem, Dixie Elctms.           | 919-724-5961   |                                              |                |
| GA Lawrenceville, Century Fasteners         | 404-516-1620   | NC Winston-Salem, Kirkman Elctms.         | 919-722-9131   |                                              |                |
| GA Norcross, Atlanta Hardware Special       | 404-449-3000   | OH Cincinnati, Schuster Elctms.           | 513-489-1400   |                                              |                |
| GA Norcross, Future Elctms. Inc.            | 404-441-7675   | OH Cleveland, Darrah Elec.                | 216-631-0912   |                                              |                |
|                                             | 404-441-7676   | OH Columbus, Time Elctms.                 | 614-794-3301   |                                              |                |
| GA Norcross, Hammond Elctms. Inc.           | 404-449-1996   | OH Columbus, Wedemeyer                    | 614-436-9600   |                                              |                |
| GA Norcross, Time Elctms.                   | 404-368-0969   | OH Dayton, Bell Inds. Inc.                | 513-435-8660   |                                              |                |
| IL Elk Grove, Bell Inds.                    | 708-640-1910   | OH Hooven, Bell Inds. Inc.                | 513-353-2355   |                                              |                |
| IL Elk Grove, Kent Elctms.                  | 708-364-1300   | OH Twinsburg, Schuster Elctms.            | 216-425-8134   |                                              |                |
| IL Gurnee, N E P Elctms. Inc.               | 708-662-0185   | OH Warren, REM Elctms.                    | 216-373-1300   |                                              |                |
| IL Hoffman Estates, Future Elctms. Inc.     | 312-882-1255   | OK Oklahoma City, R S C Elctms.           | 405-631-7729   |                                              |                |
| IL Lisle, Comps. Inc.                       | 708-852-7707   | OK Tulsa, Carlton-Bates Co. Inc.          | 918-250-1626   |                                              |                |
| IL Rosemont, Advent Elctms. Inc.            | 708-297-6200   | OR Beaverton, Acacia/Deanco               | 503-646-3377   |                                              |                |
| IL Schaumburg, Time Elctms.                 | 708-303-3037   | OR Beaverton, Comp. Resources             | 503-641-8488   |                                              |                |
| IL Wood Dale, Allied Elctms.                | 312-697-8200   | OR Beaverton, Future Elctms. Inc.         | 503-626-2977   |                                              |                |
| IL Wood Dale, N E P Elctms. Inc.            | 708-595-8500   | OR Beaverton, Kent Elctms.                | 503-626-8300   |                                              |                |
| IN Ft. Wayne, Bell Inds. Inc.               | 219-423-3422   | OR Beaverton, Murphy Elctms.              | 503-642-2001   |                                              |                |
| IN Indianapolis, Bell Inds.                 | 317-875-8200   | PA Erie, REM Elctms.                      | 814-453-5626   |                                              |                |
| IN Indianapolis, Bell Elctms. Inc.          | 317-633-6699   | PA Harrisburg, Cumberland Elctms.         | 717-232-5999   |                                              |                |
| IN Indianapolis, P E I Genesis Elctm.       | 219-287-2911   | PA Huntington, REM Elctms.                | 412-864-7423   |                                              |                |
| IN Indianapolis, R M Elctms.                | 317-291-7110   | PA Norristown, Century Elctm. Comp.       | 215-631-5400   |                                              |                |
| IN South Bend, P E I Genesis Elctm.         | 219-287-2911   |                                           | 215-631-5404   |                                              |                |
| IA Cedar Rapids, Advent Elctms. Inc.        | 319-363-0221   | PA Philadelphia, P E I-Genesis            | 215-673-0400   |                                              |                |
| IA Cedar Rapids, Kent Elctms.               | 319-373-0525   | PA Philadelphia, Snap Elctms.             | 215-969-3300   |                                              |                |
| KS Wichita, R S C Elctms.                   | 316-267-5213   | SC Columbia, Dixie Elctms.                | 704-377-5413   |                                              |                |
| MD Columbia, Future Elctms. Inc.            | 301-995-1222   | SC Columbia, Dixie Elctms.                | 803-779-5332   |                                              |                |
| MD Columbia, Kent Elctms.                   | 301-621-8100   | SC Greenville, Hammond Elctms. Inc.       | 803-233-4121   |                                              |                |
| MD Columbia, Time Elctms.                   | 301-964-3090   | SC W. Columbia, Century Fasteners Corp.   |                |                                              |                |
| MD Jessup, Treko Sls. Inc.                  | 301-470-3300   |                                           | 803-791-1800   |                                              |                |
| MA Bolton, Future Elctms. Inc.              | 508-366-2400   | TN Memphis, Carlton-Bates Co. Inc.        | 901-365-3539   |                                              |                |
| MA Chelmsford, Kent Elctms.                 | 508-250-9666   | TN Nashville, Carlton-Bates Co. Inc.      | 615-885-3322   |                                              |                |
| MA Chelsea, Future Elctms.                  | 617-889-9440   | TN Oakridge, Dixie Elctms.                | 615-481-3393   |                                              |                |
| MA Marlborough, Hardware Specialty Co. Inc. |                | TX Austin, Added Value Elctms.            | 512-346-6331   |                                              |                |
|                                             | 508-481-8622   | TX Austin, Carlton-Bates Co. Inc.         | 512-837-9098   |                                              |                |
| MA Needham, Cronin Elctms. Inc.             | 617-449-5000   | TX Austin, Kent Elctms.                   | 512-834-1900   |                                              |                |
| MA Peabody, Time Elctms.                    | 508-532-6200   | TX Austin, Time Elctms.                   | 512-346-7346   |                                              |                |
| MA Wilmingon, North Star Elctm.             | 508-657-5155   | TX Austin, Wofford Elctms. Inc.           | 512-339-1131   |                                              |                |
| MI Ann Arbor, Bell Inds. Inc.               | 313-971-9093   | TX Dallas, Added Value Elctm.             | 214-404-1144   |                                              |                |



FAX: 908-526-6866

**ABACUS CONTROLS INC.**, 80 Readington Rd.,  
Somerville, NJ 08876, Tel: 908-526-6010; FSC No. 54241;  
Empl: 30; Sis. Mgr: R.J. Swinger **D-2223-2225**

## Local Sales Offices &amp; Reps

|    |                                                    |              |
|----|----------------------------------------------------|--------------|
| AL | Gurly, Saber Assocs. Inc.                          | 205-776-9481 |
| CA | Jamul, Power Partners                              | 919-560-0099 |
| CA | Los Angeles, Power Partners                        | 310-215-0800 |
| CA | Sunnyvale, N-S Westronics                          | 408-745-1102 |
| CA | Ventura, Power Partners                            | 805-659-5356 |
| CT | New London, Elctm. Sls. of New England             |              |
|    |                                                    | 203-443-2646 |
| FL | Melbourne, Saber Assocs. Inc.                      | 407-724-0920 |
| FL | Tampa, Saber Assocs. Inc.                          | 813-961-0689 |
| GA | Dacula, Saber Assocs. Inc.                         | 404-962-8740 |
| IN | Fishers, Carter, McCormick & Peirce, Inc.          |              |
|    |                                                    | 317-842-9277 |
| MA | N. Dartmouth, Elctm. Sls. of New England           |              |
|    |                                                    | 508-997-8016 |
| MI | Farmington Hills, Carter, McCormick & Peirce, Inc. |              |
|    |                                                    | 313-477-7700 |
| NC | Clayton, Saber Assocs. Inc.                        | 919-553-5009 |
| OH | Englewood, Carter, McCormick & Peirce, Inc.        |              |
|    |                                                    | 513-836-0951 |
| OH | Parma, Carter, McCormick & Peirce, Inc.            |              |
|    |                                                    | 216-398-0400 |
| PA | Pittsburgh, Carter, McCormick & Peirce, Inc.       |              |
|    |                                                    | 412-826-3800 |
| TX | Houston, Scientific Sls. Co.                       | 713-645-6218 |
| TX | Richardson, Scientific Sls. Co.                    | 214-231-6541 |

**ABALON PRECISION MFG.**, 1040 Home Street, Bronx,  
NY 10459, Tel: 718-589-5682, 1-800-888-ABALON, FAX:  
718-589-0300; Empl: 25

**ABATRON, INC.**, 33 Center Dr., Gilberts, IL 60136, Tel: 708-  
426-2200, 800-445-1754, FAX: 708-426-5966

**ABB KENT-TAYLOR INC.**, Asea Brown Boveri, P.O.  
Box 20550, Rochester, NY 14602-0550, Tel: 716-292-  
6050, FAX: 716-273-6207; Empl: 350; Dist. Mgr: Jim  
Wicker



ABB SEMICONDUCTOR, See IXYS Corporation



FAX: 310-836-1027

**ABBOTT ELECTRONICS**, 2727 S. La Cienega Blvd., Los Angeles, CA 90034, Tel: 310-202-8820; FSC No.: 6130, 5999, 15755; Empl: 120; *Sls. Mgr.*: William G. Standen  
**D•1491-1511, 2226-2227**

*Local Sales Offices & Reps*

MA Whitinsville, Power Factor & Assoc. .... 508-234-6415  
 NJ Ft. Lee, Abbott Elctms. .... 201-461-4411  
 TX Richardson, Abbott Elctms. .... 214-437-0697  
 Can Ottawa, Subtec Ltd. .... 613-738-1470



The Powerhouse of Quality

FAX: 818-768-0395/7

**ABBOTT TECHNOLOGIES, INC.**, 8203 Vineland Ave., Sun Valley, CA 91352, Tel: 818-504-0644, 1-800-367-8200; FSC No.: 58910; Empl: 62; *Sls. Mgr.*: Suresh Soni, *Sls. Mgr.* ..... **A•2234-2253; D•1512-1515, 2228-2229**

*Local Sales Offices & Reps*

CA Sun Valley, Abbott Technlgs, Inc. .... 818-504-0644  
 NJ Palisades Pk, Abbott Technlgs, Inc. .. 201-461-4005

**ABBOTT TRANSISTOR LABS**, Power Supplies, See Abbott Electronics, Power Supplies

**AB CONTROLS & TECHNOLOGY INC.**, 1700 Rockville Pike, Rockville, MD 20852, Tel: 301-984-6020, FAX: 301-981-3270; *Sls. Mgr.*: Andrew Kassman

**A.B. CONTROLS & TECHNOLOGY, INC.**, 255 Pennbright, Ste. 200, Houston, TX 77090, Tel: 713-876-3728, 301-984-6020, FAX: 713-876-4853; Empl: 15; *Sls. Mgr.*: Andrew Kassman; *Dist. Mgr.*: Andrew Kassman

**ABL ELECTRONICS SUPPLY, INC.**, 11 S. Broad St., Peekskill, NY 10566, Tel: 914-736-1010, 1-800-431-2103, FAX: 914-736-1899; Empl: 18; *Sls. Mgr.*: George Wiesol  
**C•1287, 1706-1709**

**ABLESTIK ELECTRONIC MATERIALS & ADHESIVES-EMCA-REMEX PRODUCTS**, 160 Commerce Dr., Montgomeryville, PA 18936, Tel: 215-855-1000, TWX: 710-566-1128, FAX: 215-855-8202; Empl: 50; *Sls. Mgr.*: Jeff Gausepohl

**ABLESTIK LABORATORIES**, 20021 Susana Rd., Rancho Dominguez, CA 90221, Tel: 310-764-4600, FAX: 310-764-2545; FSC No.: 21109; Empl: 150; *Sls. Mgr.*: J. Gausepohl

**ABORN ELECTRONICS INC.**, 2108 D Bering Dr., San Jose, CA 95131, Tel: 408-436-5444, FAX: 408-436-0969; FSC No.: 82441; *Sls. Mgr.*: V. Lumba

**ABRACON CORPORATION**, 1010 Calle Cordillera Bldg. 103, San Clemente, CA 92673, Tel: 714-498-4505, FAX: 714-498-1714; *Sls. Mgr.*: Jeff Trusiak; *Dist. Mgr.*: Dean Nessen ..... **A•1180, 1330-1331**

**ABRAMS INSTRUMENT CORP.**, 1322 Rensen St., Lansing, MI 48910-3688, Tel: 517-882-7211, FAX: 517-882-3136; FSC No.: 00048; *Sls. Mgr.*: Marilyn Gates

**ABSOLUTE FILTER CO.**, P.O. Box 594, Ambler, PA 19002, Tel: 215-886-9176, FAX: 215-886-9179; Empl: 2; *Sls. Mgr.*: Ed Borzelleca

**ABSOPULSE ELECTRONICS LTD.**, 110 Walgreen Rd., Carp, Ont., Can K0A 1L0, Tel: 613-836-3511, FAX: 613-836-7488; Empl: 31; *Sls. Mgr.*: Tony Plangger; *Dist. Mgr.*: Nanno Habets

**ABWJ SYSTEMS CORP.**, 2700 Gateway Centre Blvd., Morrisville, NC 27560, Tel: 919-481-1001, FAX: 919-460-7664; Empl: 25; *Sls. Mgr.*: Lino D'Andretti/Dieter Brammer; *Dist. Mgr.*: Max Bachofen

**ABW SYSTEMS, CORPORATION**, 2700 Gateway Centre Blvd., Morrisville, NC 27560, Tel: 919-481-1001, FAX: 919-460-7664; Empl: 25; *Sls. Mgr.*: Lino D'Andretti / Dieter Brammer; *Dist. Mgr.*: Max Bachofen

**ACC ELECTRONICS COMPANY**, Echlin Inc., 1300 W. Oak, Independence, KS 67301, Tel: 316-331-1000, FAX: 316-331-0449; Empl: 1000; *Sls. Mgr.*: Leon Allen

**ACCEL INDUSTRIAL HEAT SINK CORP.**, 3709 Medford St., Los Angeles, CA 90063, Tel: 213-261-5156, FAX: 213-261-5159; FSC No.: 26701; *Sls. Mgr.*: Ron Ruby

**ACCEL TECHNOLOGIES, INC.**, 6825 Flanders Dr., San Diego, CA 92121, Tel: 619-554-1000, FAX: 619-554-1019; Empl: 33; *Sls. Mgr.*: Earl Therien

**ACCESSORIES FOR ELECTRONICS, INC.**, 800 Merrick Rd., Baldwin, NY 11510-3593, Tel: 516-546-1751, FAX: 516-867-1922; FSC No.: 54355; Empl: 27; *Sls. Mgr.*: Bill Harris

**ACC RELAYS**, Echlin Inc., 1300 West Oak St., Independence, KS 67301-0778, Tel: 316-331-1000, FAX: 316-331-0449; Empl: 900; *Sls. Mgr.*: Neil Heisler; *Dist. Mgr.*: Gary Ledbetter

**ACCULEX CORPORATION**, 440 Myles Standish Blvd., Taunton, MA 02780, Tel: 508-880-3660, TELEX: 503989, FAX: 508-880-0179; *Sls. Mgr.*: Richard A. Mullen

**ACCU LIN, INC.**, 209 W. Central St., Natick, MA 01760, Tel: 508-650-1012, FAX: 508-650-1457; Empl: 5; *Sls. Mgr.*: Barry Hilton

**ACCUMET ENGINEERING**, 518 Main St., Hudson, MA 01749, Tel: 508-568-8311, FAX: 508-562-4384; *Sls. Mgr.*: C. T. Haering

**ACCU-NOISE LAB**, Marek Technology Inc., 23 Padanaram Rd., Ste. 5, Danbury, CT 06811, Tel: 203-743-3633; *Sls. Mgr.*: R. L. Longo; *Dist. Mgr.*: Robert L. Longo

**ACCUPROBE, INC.**, 1 Harrison Ave., Box 1044, Salem, MA 01970, Tel: 508-745-7878, FAX: 508-745-7922; Empl: 15; *Sls. Mgr.*: Thomas H. Murphy; *Dist. Mgr.*: T. H. Murphy

**ACCURATE ELECTRONICS CORP.**, 169 S. Abbe Rd., P.O. Box 1287, Elyria, OH 44036, Tel: 216-366-6330, 1-800-334-5904, FAX: 216-366-0522; FSC No.: 11375; Empl: 35; *Sls. Mgr.*: Roger M. Mahoney

**ACCURIDE**, 12311 Shoemaker, Santa Fe Springs, CA 90670, Tel: 310-903-0200, TWX: 910-586-1632, FAX: 310-903-0208

**ACCUSONIC DIVISION, O.R.E. International Inc.**, Box 709, Falmouth, MA 02541, Tel: 508-548-5800, TELEX: 6817399 OREFAL UW, FAX: 508-540-3835; Empl: 100; *Sls. Mgr.*: Robert Beede

**ACCUSONIC PRODUCTS**, Global Market Development, 2101 Jericho Turnpike, New Hyde Park, NY 11040, Tel: 516-437-6000, FAX: 516-358-2307; FSC No.: 11-3044326; Empl: 11; *Sls. Mgr.*: Anthony W. Mazzeo; *Dist. Mgr.*: Anthony W. Mazzeo

**ACCUTECH**, Adaptive Instrs. Corp., 15 Bunazzoli Ave., Riverside Indl. Park, Hudson, MA 01749, Tel: 508-568-0500, FAX: 508-568-9085; *Sls. Mgr.*: Cliff Lewis

**ACCUTECH BENCHMARK SERVICES**, P.O. Box 252, Brick, NJ 08723, Tel: 1-908-206-0026, FAX: 908-206-0280

**ACCU-TECH CORPORATION**, 200 Hembree Park Dr., Roswell, GA 30076-3890, Tel: 404-751-9473, 800-221-4767, FAX: 404-475-4659; Empl: 52; *Sls. Mgr.*: Randy Guhl; *Dist. Mgr.*: Dale Yarber

**ACCUTRONICS/CONNOR-WINFIELD**, See Connor-Winfield

**ACCU-TRONICS MFG., INC.**, 4255 White Bear Pkwy., St. Paul, MN 55110, Tel: 612-653-1961, FAX: 612-653-1041; Empl: 35; *Sls. Mgr.*: Jeffrey H. Zappa

**ACDC ELECTRONICS, DIV. OF ASTEC AMERICA**, See Astec America

**ACD-ELCOR PRODUCTS**, P.O. Box 244, Bethel, CT 06801, Tel: 203-743-3510; Empl: 3

**ACHESON COLLOIDS**, Div. of Acheson Industries, Inc., P.O. Box 611747, Port Huron, MI 48061-1747, Tel: 313-984-5581, FAX: 313-984-1446; Empl: 200

**ACI COMPONENTS, INC.**, 23422 Peralta, Ste. D, Laguna Hills, CA 92653, Tel: 714-588-9611, FAX: 714-588-1855; FSC No.: 5930; Empl: 5; *Sls. Mgr.*: Christian Dwyer

**ACL INC.**, 1960 E. Devon Ave., Elk Grove Village, IL 60007, Tel: 708-981-9212, 1-800-782-8420, TELEX: 4330251, ESYLNK: 708-981-9212; Empl: 12

**ACME ELECTRIC CORPORATION**, 20 Water Street, Cuba, NY 14727, Tel: 716-968-2400, FAX: 716-968-3948; *Sls. Mgr.*: Dale Guilford

**ACME MODEL ENGINEERING CO.**, 654 Bergen Blvd., Ridgefield, NJ 07657, Tel: 201-943-7650, FAX: 201-943-0516; Empl: 29

**ACME TRANSFORMER**, Acme Electric Corporation, 4815 West 5th St., Lumberton, NC 28358, Tel: 919-738-1121, FAX: 919-739-0024; *Sls. Mgr.*: George Mergel

**ACME-URDC, INC.**, 7915 South 1530 West, Box 10, West Jordan, UT 84084, Tel: 801-561-9385, FAX: 801-562-9004; *Sls. Mgr.*: Al Haag

**ACON, INC.**, 22 Bristol Dr., South Easton, MA 02375, Tel: 508-230-8022, FAX: 508-230-2371; Empl: 15; *Sls. Mgr.*: Frank Gurley ..... **D•2058-2066**

*Local Sales Offices & Reps*

|     |                                             |              |
|-----|---------------------------------------------|--------------|
| CA  | Carlsbad, Zerimar Sls. ....                 | 619-436-3379 |
| CA  | San Jose, Silicon Valley Sls. ....          | 408-432-1967 |
| FL  | Oldsmar, Suncoast Elctm. Sls. ....          | 813-787-9221 |
| IN  | Columbus, High Tech Assocs. ....            | 812-378-4835 |
| MA  | Tyngsboro, AMS Mktg. ....                   | 508-263-9712 |
| MI  | Rochester Hills, Geotronics ....            | 313-373-4334 |
| MN  | Minneapolis, Electro-Serv Co. ....          | 612-338-3475 |
| OH  | Richfield, Geotronics ....                  | 216-659-6100 |
| OK  | Tulsa, Advance Tech Sls. ....               | 918-664-0482 |
| PA  | Drexel Hill, DNE Sls. ....                  | 215-789-6822 |
| TX  | Austin, Advance Tech. Sls. ....             | 512-331-9979 |
| TX  | Dallas, Advance Tech. Sls. ....             | 214-340-1300 |
| TX  | Houston, Advance Tech. Sls. ....            | 713-440-3888 |
| Can | Don Mills, Ont., Canadian Source Corp. .... | 416-445-0211 |

**ACOPIAN TECHNICAL COMPANY**, Box 638, Easton, PA 18044, Tel: 215-258-5441, FAX: 215-258-2842; FSC No.: 14749; *Sls. Mgr.*: T. Skopal ..... **D•1517-1548**

*Local Sales Offices & Reps*

FL Melbourne, Acopian ..... 407-727-1172

**ACRODYNE CONTROLS**, See Accudyne Corp.

**ACROLOOP MOTION CONTROL SYSTEMS, INC.**, 7801 Park Dr., Chanhassen, MN 55317, Tel: 612-474-4500, FAX: 612-474-7674; Empl: 13; *Sls. Mgr.*: Mike Wagner; *Dist. Mgr.*: Mike Wagner

**ACROMAG INC.**, 30765 Wixom Rd., P.O. Box 437, Wixom, MI 48393-7037, Tel: 313-624-1541, FAX: 313-624-9234; Empl: 75; *Sls. Mgr.*: L. Anderson

**ACR SYSTEMS INC.**, 8561-132nd St., Surrey, B.C., Canada V3W 4N8, Tel: 604-591-1128, FAX: 604-591-2252; Empl: 5; *Sls. Mgr.*: Rick Schellenberg; *Dist. Mgr.*: Rick Schellenberg

**ACTEL CORPORATION**, 955 E. Arques Ave., Sunnyvale, CA 94086, Tel: 408-739-1010, FAX: 408-739-1540; Empl: 86; *Sls. Mgr.*: Bob Duyen

**ACTION INSTRUMENTS**, 8601 Aero Dr., San Diego, CA 92123, Tel: 619-279-5726, FAX: 619-279-6290; Empl: 230; *Sls. Mgr.*: Frank Williams, Sls. VP

**ACTION USA**, 6 Brightwater Cir., St. Petersburg, FL 33704, Tel: 813-821-5000, 800-821-5001, FAX: 813-822-8800

**ACTIVE CONTROL INSTRUMENTATION**, P.O. Box 243-Wildwood Circle, Key Largo, FL 33037, Tel: 305-451-1000, FAX: 305-451-3232; FSC No.: 55116; Empl: 6 ..... **D•1149**

**ACTIVE ELECTRONICS**, Future Electronics, 237 Hymus Blvd., Pointe-Claire, Que., Canada H9R 5C7, Tel: 514-694-7710, 1-800-677-8899, FAX: 514-697-8112; Empl: 1700; *Dist. Mgr.*: Mike Zuppa (USA), Doug Kisway (CAN)

**ACTOWN-ELECTROCOIL, INC.**, 2414 Highway, Spring Grove, IL 60081, Tel: 815-675-6641, FAX: 815-675-2050; Empl: 200; *Sls. Mgr.*: Les Friedman; *Dist. Mgr.*: Bill Karmell



AC TRANSFORMER, 89 Madison St., Newark, NJ 07105,  
Tel: 201-589-8574, FAX: 201-589-3155; FSC No.: 3677;  
Empl: 13; Sls. Mgr.: George Giangrande, Sls. Const.

ADAC CORPORATION, 70 Tower Office Pk., Woburn, MA  
01801, Tel: 617-935-6668, FAX: 617-938-6553; Empl: 40

ADALET-PLM/DIV. OF SCOTT & FETZER CO., 4801  
W. 150th St., Cleveland, OH 44135, Tel: 216-267-9000,  
TELEX: 98-5349, FAX: 216-267-1681; FSC No.: 73389;  
Empl: 177

ADAMS RITE PRODUCTS, INC., 540 W. Chevy Chase  
Dr., Glendale, CA 91204, Tel: 818-241-5121, TELEX:  
62262290, FAX: 818-500-7239; Empl: 150; Sls. Mgr.:  
Jonas Williams

ADAM TECHNOLOGIES INC., 211 Clay Ave. W., Roselle  
Park, NJ 07204, Tel: 908-245-4000, FAX: 908-245-4455;  
Empl: 152; Sls. Mgr.: Brett Hammerschmidt

ADAPTEC, INC., 691 South Milpitas Blvd., Milpitas, CA  
95035, Tel: 408-945-8600, TELEX: 910-338-0060, FAX:  
408-262-2533; Empl: 6000; Sls. Mgr.: Wayne Gartin; Dist.  
Mgr.: Roy Safire

ADAPTIVE NETWORKS, P.O. Box 1020 Kendall Sq.,  
Cambridge, MA 02142, Tel: 617-497-5150; Empl: 20; Sls.  
Mgr.: Sumin Tchen

ADATEK, INC., 700 Airport Way, Sandpoint, ID 83864, Tel:  
208-263-1471, 800-323-3343, TELEX: 62903932, FAX:  
208-263-6596; Empl: 18; Sls. Mgr.: William Chambers;  
Dist. Mgr.: Carolyn Pennington/Lynn LaDuca

ADCOUR, INC., 18 Billings St., PO Box 277, Sharon, MA  
02067, Tel: 617-784-8123, FAX: 617-784-5563; Empl: 16;  
Sls. Mgr.: William O'Connell; Dist. Mgr.: William O'Connell

ADC TELECOMMUNICATIONS, INC., 4900 W. 78th St.,  
Minneapolis, MN 55435, Tel: 612-938-8080, TELEX:  
290321, FAX: 612-946-3292; Empl: 2000; Sls. Mgr.: Larry  
Asten

ADDACON GREENSBORO, 3702-C Alliance Dr.,  
Greensboro, NC 27407, Tel: 919-852-6200, FAX: 919-852-  
6256; Sls. Mgr.: Lynn Cummings

A.D. DATA SYSTEMS CORP., Photographic  
Sciences Corp., 770 Basket Rd., Webster, NY 14580-  
0478, Tel: 716-265-1600, FAX: 716-872-6142; FSC No.:  
23389; Empl: 11; Sls. Mgr.: J. Cessna, J. Butters; Dist.  
Mgr.: Jack Petz

#### Local Sales Offices & Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| CA | Torrance, AMASCO-South                 | 213-781-9494 |
| FL | Melbourne, Saber Assocs.               | 800-327-0853 |
| MD | Landover, Set-Tronics                  | 301-341-2700 |
| MA | Hopkinton, Eastern Sys.                | 508-435-2151 |
| MN | Minneapolis, Engineering Prods. Assoc. | 612-835-9022 |
| NJ | Newark, Rical Assocs.                  | 201-643-0880 |
| NM | Albuquerque, Trembley Assocs.          | 505-266-8616 |
| OH | Westlake, TMS, Inc.                    | 216-327-3527 |
| PA | N. Wales, Scientific Devs.             | 215-699-7707 |
| TX | Richardson, Scientific Devs. (SW)      | 214-231-8106 |
| WA | Woodinville, Test & Measurement, Inc.  | 206-485-1111 |

|      |                                      |               |
|------|--------------------------------------|---------------|
| EXP  | Leport Marly, France, Euromasure, SA | 33 160 131110 |
| Intl | Ramat-Gan, Israel, IES               | 972 37526333  |
| Intl | Warwickshire, England, Fozmula Ltd.  | 926 335411    |
| Can  | Quebec, Interfax Sys.                | 514-336-0392  |

ADE, INC., 1430 E. 130th St., Chicago, IL 60633, Tel: 312-  
646-3400, FAX: 312-646-3919; FSC No.: 62049

ADIRONACK WIRE & CABLE, ACS Industries Inc.,  
160 Hamlet Ave., Woonsocket, RI 02895, Tel: 1-401-769-  
1600, FAX: 1-401-769-1607; Empl: 650; Sls. Mgr.: Julian  
Caduto



**FAX: 714-634-0802**

ADTECH POWER INC., 2220 S. Dupont Dr., Anaheim, CA  
92806, Tel: 714-634-9211; FSC No.: 56410; Empl: 55; Sls.  
Mgr.: Bernie Smilak; Dist. Mgr.: Bernie Smilak

**D-1549-1551**

#### Local Sales Offices & Reps

|    |                              |              |
|----|------------------------------|--------------|
| NY | New York, Morgan Elctm. Sls. | 516-549-5180 |
|----|------------------------------|--------------|

#### Local Distributors

|    |                                    |                |
|----|------------------------------------|----------------|
| AL | Birmingham, Industrial Elec. Supp. | 205-956-8504   |
| CA | Palo Alto, Zack Elctms.            | 415-326-5432   |
| CA | San Francisco, Zack Elctms.        | 415-626-1444   |
| LA | Lafayette, Ralph's of Lafayette    | 318-233-0105   |
| MD | Gaithersburg, M S Elctms.          | 301-921-0200   |
| MA | Woburn, Mac Bearing                | 617-933-2110   |
| PA | Philadelphia, Philadelphia Elctms. | 215-673-4000   |
| TX | FL Worth, Allied Elctms.           | 1-800-433-5700 |

ADTRON CORPORATION, 3050 S. Country Club Dr.,  
# 24, Mesa, AZ 85210, Tel: 602-926-9324, FAX: 602-926-  
9359; Empl: 10; Sls. Mgr.: Tony Giallella

ADTRON INSTRUMENTS, 13801 N. 7th St., Ste. 201,  
Phoenix, AZ 85022, Tel: 602-863-2250, FAX: 602-863-  
0914; Empl: 2; Sls. Mgr.: H. Painter

ADVACOM, INC., 5620 West Rd., McKean, PA 16426, Tel:  
1-800-458-0512, 814-476-7774

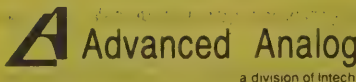
ADVANCE CONVERSION DEVICES CO. UNIT OF  
TRANSITOR DVCS., INC., 85 Horsehill Rd., Cedar  
Knolls, NJ 07927, Tel: 201-267-1900, FAX: 201-267-2047;  
FSC No.: 52298; Empl: 100; Sls. Mgr.: Ron Zeman

**D-2230-2231**

#### Local Sales Offices & Reps

|     |                                         |                            |
|-----|-----------------------------------------|----------------------------|
| AL  | Huntsville, Reynolds & Assocs., Inc.    | 205-539-1485               |
| AZ  | Scottsdale, Dave Menegay & Assocs.      | 602-994-9519               |
| AR  | El Dorado, Kemp Instrs. Co., Inc.       | 501-862-5869               |
| CA  | Bakersfield, FLW, Inc.                  | 805-398-0720               |
| CA  | Campbell, SMA                           | 408-370-6900               |
| CA  | Canoga Park, FLW, Inc.                  | 818-719-0037               |
| CA  | Carlsbad, FLW, Inc.                     | 619-434-5251               |
| CA  | Costa Mesa, FLW, Inc.                   | 714-751-7513               |
| CA  | Costa Mesa, FLW, Inc.                   | 714-751-7512               |
| CO  | Denver, Elcom, Inc.                     | 303-337-2300               |
| CT  | Watertown, May Technlg.                 | 203-274-3777               |
| FL  | FL Lauderdale, Reynolds & Assocs., Inc. | 305-344-4536               |
| FL  | Melbourne, Reynolds & Assocs., Inc.     | 407-259-7000               |
| FL  | Tampa, Reynolds & Assocs., Inc.         | 818-372-8369               |
| GA  | Duluth, Reynolds & Assocs.              | 404-476-4992               |
| IL  | Wheeling, Ed Joyner & Co.               | 708-520-1200               |
| IA  | Cedar Rapids, Midwest Tech. Sls.        | 319-377-1688               |
| KS  | Kansas City, MTS                        | 913-888-5100               |
| MD  | Hunt Valley, Elctm. Resources, Inc.     | 301-584-8157               |
| MA  | Lexington, E.F. Delfino, Inc.           | 617-862-1118               |
| MI  | Ann Arbor, Ashby Assocs., Inc.          | 313-995-4082               |
| MN  | St. Louis Pk., Elctm. Innovation, Inc.  | 612-922-2945               |
| MO  | Earth City, Midwest Tech. Sls.          | 314-298-8787               |
| NY  | Endicott, Advanced Comp. Corp.          | 607-785-3191               |
| NY  | Kingston, Advanced Comp. Corp.          | 914-339-1730               |
| NY  | N. Syracuse, Advance Comps.             | 315-699-2671               |
| NY  | Rochester, Advanced Comps. Corp.        | 716-544-7017               |
| NY  | Scottsville, Advanced Comps. Corp.      | 716-889-1429               |
| NC  | Raleigh, Reynolds & Assocs., Inc.       | 919-876-0282               |
| OH  | Arcanum, Ashby Assocs., Inc.            | 513-692-8713               |
| OH  | Cleveland, Ashby Assocs., Inc.          | 216-461-0826               |
| OK  | Tulsa, Kemp Instrs., Inc.               | 918-663-4501               |
| PA  | Pittsburgh, Ashby Assocs., Inc.         | 412-343-5103               |
| PA  | Southampton, Campbell Assocs.           | 215-322-6630               |
| PA  | West Chester, Elctm. Resources, Inc.    | 215-431-0198               |
| SC  | Greenville, Reynolds & Assocs., Inc.    | 803-288-8701               |
| TX  | Lewisville, J. Hughes Co.               | 214-221-1536               |
|     |                                         | 214-221-1538               |
| UT  | Murray, Elcom                           | 801-262-2400, 801-262-2472 |
| VA  | Alexandria, Dyna-Rep Co.                | 703-354-1222               |
| VA  | Harrisburg, Elctm. Resources, Inc.      | 703-289-5571               |
| VA  | Norfolk, Elctm. Resources, Inc.         | 804-583-4859               |
| EXP | NY/New York, Robum Agencies, Inc.       | 914-968-1016               |

|     |                                           |              |
|-----|-------------------------------------------|--------------|
| Can | Weston, Ont., Duncan Instrs., Canada Ltd. | 416-742-4448 |
|-----|-------------------------------------------|--------------|



**FAX: 408-988-2702**

ADVANCED ANALOG, Intech, 2270 Martin Ave., Santa  
Clara, CA 95050, Tel: 408-988-4930; FSC No.: 52467;  
Empl: 200; Sls. Mgr.: Michael Sullivan **D-2067**

#### Local Sales Offices & Reps

|    |                           |                   |
|----|---------------------------|-------------------|
| AL | Huntsville, Sides Assocs. | 205-859-9395      |
|    |                           | FAX: 205-851-8785 |
| AZ | Tempe, Thor Engrg.        | 602-438-8494      |
|    |                           | FAX: 602-438-6879 |

|    |                                   |                   |
|----|-----------------------------------|-------------------|
| CA | La Jolla, Keller-Simonsen Assocs. | 619-453-5720      |
|    |                                   | FAX: 619-453-1695 |

|    |                              |                   |
|----|------------------------------|-------------------|
| CA | Manhattan Bch., Pacific Edge | 408-735-9040      |
|    |                              | FAX: 310-546-3005 |

|    |                         |                   |
|----|-------------------------|-------------------|
| CA | Sunnyvale, Pass Assocs. | 408-735-9040      |
|    |                         | FAX: 408-735-0882 |

|    |                            |                   |
|----|----------------------------|-------------------|
| FL | Coral Springs, CBC Elctms. | 305-755-1111      |
|    |                            | FAX: 305-341-8379 |

|    |                       |                   |
|----|-----------------------|-------------------|
| FL | Longwood, CBC Elctms. | 407-831-5380      |
|    |                       | FAX: 407-831-0965 |

|    |                    |                   |
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| FL | Tampa, CBC Elctms. | 813-969-1901      |
|    |                    | FAX: 813-264-2744 |

|    |                            |                   |
|----|----------------------------|-------------------|
| GA | Liibun, Adams Elctms. Inc. | 404-925-9115      |
|    |                            | FAX: 404-925-4116 |

|    |                           |                   |
|----|---------------------------|-------------------|
| IL | Berkeley, ESA Tech. Mktg. | 708-544-0120      |
|    |                           | FAX: 708-544-0266 |

|    |                               |                   |
|----|-------------------------------|-------------------|
| IN | Indianapolis, CC Electro Sls. | 317-921-5000      |
|    |                               | FAX: 317-921-5005 |

|    |                       |                   |
|----|-----------------------|-------------------|
| IA | Cedar Rapids, Deltron | 319-393-0075      |
|    |                       | FAX: 319-393-0058 |

|    |                           |                   |
|----|---------------------------|-------------------|
| KS | Wichita, Miller Aerospace | 316-689-8292      |
|    |                           | FAX: 316-689-8247 |

|    |                               |              |
|----|-------------------------------|--------------|
| MD | Randallstown, Beacon North    | 703-478-2480 |
| MA | Burlington, Kitchen & Kutchin | 617-229-2660 |

|    |                          |                   |
|----|--------------------------|-------------------|
| MI | Madison Hgts., Pine Sls. | 313-589-0350      |
|    |                          | FAX: 313-589-3420 |

|    |                            |                   |
|----|----------------------------|-------------------|
| MN | Eden Prairie, Electro Mark | 612-944-5850      |
|    |                            | FAX: 612-944-5855 |

|    |                       |                                 |
|----|-----------------------|---------------------------------|
| MO | St. Louis, Acorn      | 314-421-1751, FAX: 314-421-1752 |
| NH | Nashua, Bell Controls | 603-882-6984                    |

|    |                 |                   |
|----|-----------------|-------------------|
|    |                 | FAX: 603-882-9049 |
| NJ | Elberon, Compar | 908-229-3666      |

|    |                    |                   |
|----|--------------------|-------------------|
|    |                    | FAX: 908-229-3687 |
| NJ | Wool-Ridge, Compar | 201-460-3569      |

|    |                          |                   |
|----|--------------------------|-------------------|
| NY | Belmore, Compar New York | 516-221-7300      |
|    |                          | FAX: 516-221-7600 |

|    |                                     |                                 |
|----|-------------------------------------|---------------------------------|
| NC | Sanford, Adams Elctms. Inc.         | 919-774-8816                    |
| OH | Beachwood, Thompson & Assocs., Inc. | 216-831-6277, FAX: 216-831-2553 |

|    |                                  |                   |
|----|----------------------------------|-------------------|
| OH | Dayton, Thompson & Assocs., Inc. | 513-435-7733      |
|    |                                  | FAX: 513-435-1898 |

|    |                                  |                   |
|----|----------------------------------|-------------------|
| OH | Orient, Thompson & Assocs., Inc. | 614-877-4304      |
|    |                                  | FAX: 614-877-0872 |

|    |                       |                   |
|----|-----------------------|-------------------|
| OR | Beaverton, Micro Sls. | 503-645-2841      |
|    |                       | FAX: 503-645-3754 |

|    |                                 |                   |
|----|---------------------------------|-------------------|
| PA | Carnegie, Del Steffen & Assocs. | 412-276-7366      |
|    |                                 | FAX: 412-276-4616 |

|    |                           |                   |
|----|---------------------------|-------------------|
| TX | Dallas, Converter Elctms. | 214-333-2028      |
|    |                           | FAX: 214-333-2028 |

|    |                     |                   |
|----|---------------------|-------------------|
| UT | Ogden, Taylor Mktg. | 801-546-9570      |
|    |                     | FAX: 801-546-9590 |

|    |                        |                   |
|----|------------------------|-------------------|
| VA | Sterling, Beacon North | 703-478-2480      |
|    |                        | FAX: 703-478-2480 |

|    |                      |                   |
|----|----------------------|-------------------|
| WA | Bellevue, Micro Sls. | 206-451-0568      |
|    |                      | FAX: 206-453-0092 |

ADVANCED CIRCUIT TECHNOLOGY, 118  
Northeastern Blvd., Nashua, NH 03062, Tel: 603-880-6000,  
TWX: 710-228-8961, FAX: 603-880-1785; FSC No.: 57034;  
Empl: 130; Sls. Mgr.: David Bouley, V.P. of Sls.



**ADVANCED  
COMPONENTS  
INDUSTRIES,  
INC.**

**FAX: 310-328-0062**

ADVANCED COMPONENTS INDS., INC., Div of  
Kaschke, 1308 Sartori Ave., No. 105, Torrance, CA  
90501, Tel: 310-328-0060; Sls. Mgr.: Irma Spreitzer  
**A-1318, 2254-2255; B-1403**

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| CT | Hopkinton, Berkshire Elctms.        | 508-435-9356 |
| IL | Schaumburg, Terry McNulty & Assocs. | 708-780-9868 |
| MA | Hopkinton, Berkshire Elctms.        | 508-435-9356 |

ADVANCED CONNECTOR TECHNOLOGY, 2368  
Eastman Ave., # 5, Ventura, CA 93003, Tel: 805-644-9990,  
FAX: 805-644-9664; Empl: 5; Sls. Mgr.: Karin Kalli

ADVANCED CONTROL SYS., 10 Old Mine Rock Way,  
Hingham, MA 02043, Tel: 617-740-0223, FAX: 617-740-  
4227; Empl: 13; Sls. Mgr.: Leopold Bric **D-1150**

ADVANCED CONTROL SYSTEMS, 1117 Baker St., Ste.  
C, Costa Mesa, CA 92626-4114, Tel: 714-540-9010, FAX:  
714-540-5313; Empl: 7; Sls. Mgr.: Gary Rasmussen

ADVANCED CONVERSION TECH., 2001 Filling Mill  
Rd. P.O.B. 70, Middletown, PA 17057, Tel: 717-939-2300,  
FAX: 717-939-7170; FSC No.: 60642; Empl: 100; Sls.  
Mgr.: L.M. Reis



**ADVANCED ELECTRONIC PACKAGING**, 21562 Surveyor Circle, Huntington Beach, CA 92646, Tel: 714-969-1150, FAX: 714-536-0936; Empl: 8; Sls. Mgr.: Douglas A. Hill

**ADVANCED FILTER DEVICES, INC.**, 6241 Yarrow Dr., Ste. D, Carlsbad, CA 92009, Tel: 619-438-2074, FAX: 619-438-5937; FSC No.: 56620; Empl: 45; Sls. Mgr.: Herbert Johnson

**ADVANCED HARDWARE ARCHITECTURES, INC.**, P. O. Box 9669, Moscow, ID 83843, Tel: 208-883-8000, FAX: 208-883-8001; Empl: 50; Sls. Mgr.: Jack Maynard

**ADVANCED HARDWARE MANUFACTURING, INC.**, 925 Horan Drive, Fenton, MO 63026, Tel: 314-343-3850, FAX: 314-343-3937; Empl: 16

**ADVANCED HIGH VOLTAGE COMPANY**, P.O. Box 32408, Tucson, AZ 85751, Tel: 602-721-2424, 818-997-7222, FAX: 602-721-2322; Sls. Mgr.: John Richardson  
D-1553

**ADVANCED INPUT DEVICES**, W. 250 A.D. Dr., Coeur d'Alene, ID 83814, Tel: 208-765-8000, 800-444-5923, FAX: 208-772-7613; FSC No.: 95666; Empl: 300; Sls. Mgr.: Jeff Petkevicius  
B-1815

**ADVANCED INTERCONNECTIONS CORP.**, P.O. Box 1019, West Warwick, RI 02893, Tel: 401-823-5200, TWX: 910-240-3454, FAX: 401-823-8723; FSC No.: 05-0394638; Sls. Mgr.: Max E. Rice

**ADVANCED LINEAR DEVICES, INC.**, 1180F Miralama Way, Sunnyvale, CA 94086-4606, Tel: 408-720-8737, FAX: 408-720-8297; Empl: 10

**ADVANCED MATERIALS SYSTEMS**, See Handy & Harman Electronic Materials Corp.

**ADVANCED METALLURGY**, 1003 Corporate Dr., Murray Corp. Park, Export, PA 15632, Tel: 412-733-8332, FAX: 412-733-2880

**ADVANCED MICRO COMPUTER**, 1321 NW 65th Pl. Ft. Lauderdale, FL 33309, Tel: 305-975-9515, FAX: 305-975-9698; Empl: 20; Sls. Mgr.: Lee Maxey

**ADVANCED MICRO DEVICES, INC.**, 901 Thompson Place, Sunnyvale, CA 94088, Tel: 408-732-2400, TELEX: 34-6306

**ADVANCED MICRO SYSTEMS, INC.**, 2 Townsend West, Nashua, NH 03063-1277, Tel: 603-882-1447, FAX: 603-881-7600; Empl: 50

**ADVANCED MOTION CONTROLS, INC.**, 518 W. Water St., P.O. Box 64, Princeton, WI 54968, Tel: 414-295-3500, FAX: 414-295-3504

**ADVANCED PHOTONIX, INC.**, 1240 Avenida Acaso, Camarillo, CA 93012, Tel: 805-484-2884, FAX: 805-484-9935; Empl: 90; Sls. Mgr.: D. Tingley, W. Bandel, R. Dahl

**ADVANCED POWER DESIGNS INC.**, 17744 Skypark Circle No. 250, Irvine, CA 92714, Tel: 714-263-8605, FAX: 714-263-8607; Empl: 23

**ADVANCED POWER PRODUCTS**, 32249 Murrieta Rd., Menifee, CA 92584, Tel: 714-672-7704; Empl: 2

**ADVANCED POWER TECHNOLOGY**, 405 S.W. Columbia Street, Bend, OR 97702, Tel: 503-382-0028, FAX: 503-388-0364; Empl: 106; Sls. Mgr.: Tom Loder; Dist. Mgr.: Tom Loder

**ADVANCED PROCESS CONTROLS**, 500 West Cummings Park, Woburn, MA 01801, Tel: 617-932-9262, FAX: 617-932-0939; Sls. Mgr.: Richard Smith



**ARC**  
ADVANCED RUBBER CONCEPTS, INC.  
P. O. BOX 489 - HWY. 77 SOUTH  
PAULS VALLEY, OKLA. 73075

**FAX: 405-238-3029**  
**ADVANCED RUBBER CONCEPTS, Formerly Goliote Sales Ltd.**, Hwy 77 South, Pauls Valley, OK 73075, Tel: 405-238-5541, 800-654-3662; Empl: 10  
B-1820

| Local Sales Offices & Reps |                                  |              |
|----------------------------|----------------------------------|--------------|
| AZ                         | Peoria, Sem of Arizona           | 602-486-1191 |
| CA                         | Mission Viejo, Champa Assocs.    | 714-581-3459 |
| IL                         | Berkeley, ESA Tech. Mktg.        | 708-544-0120 |
| MD                         | Baltimore, Chesapeake Ind. Mktg. | 410-653-0476 |
| NY                         | Hauppauge, Aurora-Schmitt        | 516-434-1313 |

**ADVANCED TECHNICAL MATERIALS, INC.**, 20 River Ave., Patchogue, NY 11772, Tel: 516-363-9018, 516-289-0363, FAX: 516-363-8002; FSC No.: OR8N4; Sls. Mgr.: Mike Geraci



**FAX: 619-727-4436**  
**ADVANCED TECHNOLOGY COMPANY**, 1280 Liberty Way, Vista, CA 92083, Tel: 619-727-7430; Empl: 10; Sls. Mgr.: Bill Linko  
C-1562-1573

**ADVANCED THERMAL PRODUCTS, INC.**, P.O. Box 249, St. Marys, PA 15857, Tel: 814-834-1541, FAX: 814-834-1556; Empl: 22; Sls. Mgr.: John M. Sidoni  
B-1858-1859

| Local Sales Offices & Reps |                                    |              |
|----------------------------|------------------------------------|--------------|
| GA                         | Atlanta, DHR Mktg.                 | 404-564-0529 |
| MA                         | Andover, Crawford & Assoc.         | 508-470-2122 |
| NY                         | Syracuse, John R. Costello         | 315-472-0322 |
| NC                         | Raleigh, DHR Mktg.                 | 919-829-1970 |
| TX                         | Dallas, Eatman Engineering         | 214-771-1903 |
| WI                         | New Berlin, Thomas Labant          | 414-425-7157 |
| Can                        | Dundas, Ontario, D.J. Hyslop & Co. | 416-628-0266 |

**ADVANCED THERMISTOR DIV. U.S. SENSOR**

**FAX: 714-639-1220**  
**ADVANCED THERMISTOR DIV., U.S. Sensor Corp.**, 1832 W. Collins Ave., Orange, CA 92667, Tel: 714-639-1000; Empl: 25  
B-1860-1862

| Local Sales Offices & Reps |                                        |              |
|----------------------------|----------------------------------------|--------------|
| AZ                         | Phoenix, Compass Mktg. & Sls. Inc.     | 602-996-0635 |
| AZ                         | Tucson, Compass Mktg. & Sls. Inc.      | 602-577-0580 |
| CA                         | Los Angeles, Landa & Assocs.           | 213-879-0770 |
| CA                         | San Jose, Arnold Tech. Sls.            | 408-954-0400 |
| CA                         | Santa Ana, Landa & Assocs.             | 714-543-7805 |
| CO                         | Englewood, Compass Mktg. & Sls. Inc.   | 303-721-9663 |
| FL                         | Orlando, Richmar Elctms. Corp.         | 407-352-3755 |
| IL                         | Downers Grove, Richmar Elctms. Corp.   | 708-968-0118 |
| IN                         | Indianapolis, Richmar Elctms. Corp.    | 317-577-9950 |
| IA                         | Iowa City, Richmar Elctms. Corp.       | 319-354-8894 |
| MA                         | Canton, John Ferrari Co.               | 617-821-4599 |
| MI                         | Brighton, AP Assocs., Inc.             | 313-229-6550 |
| NM                         | Albuquerque, Compass Mktg. & Sls. Inc. | 505-344-9990 |
| NY                         | North Syracuse, Entec Corp.            | 315-458-7936 |
| OH                         | Rocky River, Hiltibrant Indl. Sls.     | 216-333-5600 |
| PA                         | Dowington, Grassco Tech. Sls.          | 215-458-8967 |
| PA                         | Pipersville, Yax Assocs.               | 215-766-2100 |

|    |                                   |              |
|----|-----------------------------------|--------------|
| TX | Plano, Richmar Elctms. Corp.      | 214-424-8388 |
| TX | Round Rock, Richmar Elctms. Corp. | 512-255-2551 |
| WI | Butler, Richmar Elctms. Corp.     | 414-781-1730 |

**ADVANCED VIDEO PRODUCTS, E-Systems**, 2 Robbins Rd., Westford, MA 01886, Tel: 508-692-2020, FAX: 508-692-2140; Empl: 65; Sls. Mgr.: Christopher Mohen

**AD-VANCE MAGNETICS, INC.**, 625 Monroe St., Rochester, IN 46975, Tel: 219-223-3158, FAX: 219-223-2524; FSC No.: 50788; Empl: 31; Sls. Mgr.: Kay Nixon  
C-1682

| Local Sales Offices & Reps |                                       |                            |
|----------------------------|---------------------------------------|----------------------------|
| CA                         | El Cajon, ATronix Technlg.            | 619-444-1501               |
| CA                         | Mountain View, Frauman Assoc.         | 415-964-9464               |
| CA                         | Solvang, ATronix Technlg.             | 805-686-4366               |
| CO                         | Arvada, Arrowhead                     | 303-423-5556               |
| FL                         | Davie, DAN-Tech Sls. Inc.             | 305-581-2884               |
| IL                         | Elk Grove, W. G. Brouillette & Assoc. | 708-290-1313               |
| KY                         | Frankfort, Fred A. Dorsey Assoc.      | 502-695-2250               |
| NJ                         | Flanders, K & R Engrg. Sls. Corp.     | 201-584-5235, 800-631-9362 |

|     |                                      |              |
|-----|--------------------------------------|--------------|
| OR  | Lake Oswego, Caruso & Assocs., Inc.  | 503-635-5282 |
| PA  | W. Conshohocken, Eastern Comps.      | 215-825-8610 |
| MD  | Baltimore, Eastern Comps. Sls. Corp. | 301-788-7050 |
| TX  | Dallas, Materials Technlg. Co.       | 214-484-4677 |
| UT  | Ogden, Arrowhead                     | 801-479-7151 |
| Can | Nepean, Ont., Subtec Ltd.            | 613-723-7720 |
| WA  | Bellevue, Caruso & Assocs.           | 206-455-8811 |

**ADVANCE POWER SUPPLIES, INC.**, See Famell Advance Power, Inc.

**ADVANCE WIRE & CABLE ASSEMBLY**, Electrical Insulation Suppliers, 1661 Industrial Way, Belmont, CA 94002, Tel: 415-592-4550, TELEX: 334475, FAX: 415-593-8859; FSC No.: 57775; Empl: 158; Sls. Mgr.: Ed Mittelbush; Dist. Mgr.: Ed Mittelbush

**ADVANTEST AMERICA, INC.**, 1100 Busch Parkway, Buffalo Grove, IL 60089-4503, Tel: 800-441-0852, FAX: 708-634-2610; Empl: 233; Sls. Mgr.: Atlee Jacobson Instruments

**ADVANTEST CORPORATION**, NS Bldg. 2-4-1, Nishi-Shinjuku, Tokyo 163, Japan, Tel: 03-3342-7500, TELEX: 232-4914 ADVAN, FAX: J-03-3342-7510; Empl: 1827; Sls. Mgr.: Shinpei Takeshita

**ADVIN SYSTEMS INC.**, 1050-L East Duane Ave., Sunnyvale, CA 94086, Tel: 408-243-7000, FAX: 408-736-2503; Sls. Mgr.: Wing Hui

**ADVOTECH, INC.**, 422 North Main St., Butler, PA 16001, Tel: 412-283-4497, FAX: 412-283-8830

**A E G CORPORATION**, Mt. Airy Corners III, 180 Mt. Airy Rd., Basking Ridge, NJ 07920, Tel: 908-204-8900, FAX: 908-231-8353; Empl: 200; Dist. Mgr.: Don Walsh

**AEG TELEFUNKEN, SEMICONDUCTOR GRP.**, See AEG Corp.

**AEL DEFENSE CORP.**, 305 Richardson Rd., Lansdale, PA 19446, Tel: 215-822-2929, FAX: 215-822-9165; FSC No.: 93346; Empl: 1,600; Sls. Mgr.: Denis Ritchie

**AEMC CORPORATION**, 99 Chauncy Street, Boston, MA 02111, Tel: 617-451-0227, 800-343-1391, FAX: 617-423-2952; Sls. Mgr.: George Wood; Dist. Mgr.: Daniel Wiswell  
D-1223

**AEROCOM**, 3090 S.W. 37th Ave., Miami, FL 33133, Tel: 305-448-6503, FAX: 305-448-6916; FSC No.: 81535; Empl: 55; Sls. Mgr.: Wladimir Dorta

**AERODYNE CONTROLS CORPORATION**, 30 Haynes Court, Ronkonkoma, NY 11779, Tel: 516-737-1900, FAX: 516-737-1912; FSC No.: 14923; Empl: 80; Sls. Mgr.: Anthony R. Pipitone

**AEROFLEX LABORATORIES INC., ARX, Inc.**, 35 South Service Road, Plainview, NY 11803, Tel: 516-694-6700, TWX: 510-224-6417, FAX: 516-694-6771; FSC No.: 88379; Empl: 490

**AEROSPACE OPTICS, INC.**, 3201 Sandy La., Fort Worth, TX 76112, Tel: 817-451-1141, FAX: 817-654-3405; Empl: 60; Sls. Mgr.: Ben L. Fryrear

**APS**  
ADVANCED POWER SOLUTIONS

**FAX: 510-460-5498**  
**ADVANCED POWER SOLUTIONS, M & L Enterprises**, 5994 W. Las Positas Blvd., Ste. 117, Pleasanton, CA 94588, Tel: 510-734-3060; Empl: 15; Sls. Mgr.: Bill Smith; Dist. Mgr.: Bill Smith  
D-1554-1556

| Local Sales Offices & Reps |                               |              |
|----------------------------|-------------------------------|--------------|
| CA                         | West Lake Village, MPL Assoc. | 805-379-9251 |
| FL                         | Del Ray Beach, Phelps Assoc.  | 407-276-7591 |
| MA                         | Bellingham, OEM Mktg.         | 508-528-4983 |
| MO                         | Bridgeton, Dytronix           | 314-291-4777 |
| NH                         | Salem, OEM Mktg.              | 603-893-0009 |
| NY                         | Hauppauge, Sticor             | 516-366-4221 |
| PA                         | Pittsburgh, Catalyst Sls.     | 412-826-3434 |
| UT                         | Layton, Taylor Mktg.          | 801-546-9570 |
| VA                         | Vienna, The Walters Grp.      | 703-660-3799 |



**AEROSPACE PRODUCTS DIV.**, A Subsidiary of Ametek, Inc., 50 Fordham Rd, Wilmington, MA 01887, Tel: 508-988-4947, FAX: 508-988-4944

**AEROSPACE SYSTEMS**, Communication Cable Inc., 1007 E. 10th St, Fairmont, MN 56031, Tel: 507-235-3355, FAX: 507-235-6088; FSC No.: 24600; Empl: 170; Sls. Mgr.: Robert L. Johnson

**AEROSPACE WIRE & CABLE INC.**, 129-09 18 Ave., College Point, NY 11356, Tel: 718-358-2345, 1-800-395-0200, FAX: 718-358-2522; Empl: 15

**AEROTECH, INC.**, 101 Zeta Dr., Pittsburgh, PA 15238, Tel: 412-963-7470, TWX: 710-795-3125, FAX: 412-963-7459; Empl: 156; Sls. Mgr.: K. Wyman; Dist. Mgr.: K. Ross

**AEROVOX INC.**, 370 Faunce Corner Rd, North Dartmouth, MA 02747-1217, Tel: 508-995-8000, FAX: 508-995-3000; FSC No.: 4K459; Empl: 1500 Worldwide; Sls. Mgr.: Jack Chmura; Dist. Mgr.: Jack Chmura

A-1008-1009, 1585

#### Local Sales Offices & Reps

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AL  | Huntsville, 20th Century Mktg.          | 205-772-9999 |
| AZ  | Phoenix, Interstate Mktg.               | 602-263-8044 |
| CA  | Santa Clara, Ross Mktg.                 | 408-988-8111 |
| CA  | Woodland Hills, Interstate Mktg.        | 818-883-7606 |
| CO  | Englewood, Elcom, Inc.                  | 303-792-3330 |
| CT  | Wallingford, J.E. Boeing Co.            | 203-265-1318 |
| DE  | Greenville, H. Anderson                 | 302-655-2917 |
| FL  | Margate, E.P.M. Corp.                   | 305-977-0331 |
| GA  | Norcross, 20th Century Mktg.            | 404-446-1999 |
| IL  | Chicago, Rowe Mktg.                     | 312-664-3744 |
| IL  | Elk Grove VI, Carlson Elctms. Sls.      | 708-956-8240 |
| IN  | Fl. Wayne, F.J. Campisano Co.           | 219-486-6443 |
| IN  | Indianapolis, F.J. Campisano Co.        | 317-577-0319 |
| IA  | Cedar Rapids, Carlson Elctm. Sls.       | 319-378-1450 |
| KS  | Overland Park, Beneke & McCaul Inc.     | 913-765-2298 |
| MA  | Chelmsford, J.E. Boeing Co.             | 508-256-5800 |
| MA  | Marion, R.F. Swolsch Co.                | 508-748-2536 |
| MI  | Farmington Hills, Carrier & Gable, Inc. | 313-477-8700 |
| MN  | Minneapolis, Comstrand Inc.             | 612-574-9480 |
| NJ  | Cherry Hill, Trinkle Sls., Inc.         | 609-995-4200 |
| NY  | Ithaca, Bob Dean, Inc.                  | 607-257-1111 |
| NY  | Ronkonkoma, Comtronic Assocs.           | 516-737-2400 |
| NC  | Raleigh, 20th Century Mktg.             | 919-790-9383 |
| OH  | Cincinnati, F.J. Campisano Co.          | 513-574-7111 |
| OH  | Columbus, F.J. Campisano Co.            | 614-538-1176 |
| OH  | Mentor, F.J. Campisano Co.              | 216-975-9300 |
| OK  | Tulsa, Ammon & Rizos Co.                | 918-749-6116 |
| OR  | Beaverton, Luscombe Engrg. Co.          | 503-636-6664 |
| PA  | Leechburg, F.J. Campisano Co.           | 412-845-2577 |
| TN  | Knoxville, 20th Century Mktg.           | 615-539-0676 |
| TX  | Austin, Ammon & Rizos Co.               | 512-454-5131 |
| TX  | El Paso, Ammon & Rizos Co.              | 915-534-7533 |
| TX  | Houston, Ammon & Rizos Co.              | 713-781-6240 |
| TX  | Richardson, Ammon & Rizos Co.           | 214-644-5591 |
| TX  | San Antonio, Welaire                    | 214-666-1800 |
| WA  | Bellevue, Luscombe Engrg. Co.           | 206-223-1541 |
| WI  | Milwaukee, Carlson Elct. Sls.           | 414-476-2790 |
| Can | Mississauga, Ont., Longman Sls.         | 416-670-8100 |

#### Local Distributors

|    |                                |              |
|----|--------------------------------|--------------|
| AZ | Phoenix, Arizona Comp. Co.     | 602-269-5655 |
| CA | Garden Grove, National Elctms. | 714-892-7749 |
| CA | Milpitas, California Cap.      | 408-262-6000 |
| CA | Milpitas, Projections Unltd.   | 408-942-1717 |
| CA | Riverside, Elctm. Supply Co.   | 714-683-7300 |
| CA | Sacramento, IEC Sacramento     | 916-363-6030 |
| CA | San Diego, Elctm. Supply Co.   | 619-693-8222 |
| CA | San Diego, Projections Unltd.  | 619-453-8444 |



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|    |                                           |              |
|----|-------------------------------------------|--------------|
| CA | San Jose, Elctm. Supply Co.               | 408-453-3770 |
| CA | Tustin, Jaco Elctms.                      | 714-258-9003 |
| CA | Tustin, Projections Unltd.                | 714-544-2702 |
| CA | Westlake Vipe, Jaco Elctms.               | 805-495-9998 |
| CO | Arvada, Denver Beta Wintronics            | 303-431-7161 |
| CO | Denver, IEC Headquarters                  | 303-292-5537 |
| FL | Boca Raton, Jaco Elctms.                  | 407-241-7943 |
| FL | Boca Raton, NRC Elctms.                   | 407-241-8600 |
| IL | Hoffman Estates, IEC Chicago              | 708-843-2040 |
| IL | Schaumburg, Marsh Elctms.                 | 708-240-9290 |
| IN | Indianapolis, R.S. Elctms.                | 800-488-9065 |
| IA | Cedar Rapids, Dee Elctms.                 | 319-365-7551 |
| KS | Overland Pk., R.S. Elctms.                | 800-251-0067 |
| MD | Columbia, Jaco Elctms.                    | 301-995-6620 |
| MA | Andover, Bell Inds.                       | 508-474-8880 |
| MA | Tewksbury, Jaco Elctms.                   | 508-640-0010 |
| MI | Grand Rapids, R.S. Elctms.                | 800-776-1155 |
| MI | Livonia, R.S. Elctms.                     | 800-366-7750 |
| NM | Albuquerque, Bell Inds.                   | 505-292-2700 |
| NY | Rome, Rome Elctms.                        | 315-337-5400 |
| NC | Raleigh, Jaco Elctms.                     | 919-876-7767 |
| OH | Akron, Aesco Elctms.                      | 216-762-8818 |
| OH | Columbus, Aesco Elctms.                   | 800-962-0191 |
| OH | Maumee, R.S. Elctms.                      | 800-472-3231 |
| OR | Beaverton, IEC Portland                   | 503-641-1690 |
| PA | McKean, Advacom                           | 814-4 7-7774 |
| TX | Austin, Jaco Elctms.                      | 512-835-0200 |
| UT | W. Valley City, Salt Lake Beta Wintronics | 801-966-0236 |
| WA | Bellevue, IEC Seattle                     | 206-455-2727 |
| WI | Milwaukee, Marsh Elctms.                  | 414-475-6000 |

**AERTECH INDS.**, See TRW Microwave

**AES CORP.**, 285 Newbury St., Peabody, MA 01960, Tel: 508-535-7310, TELEX: 387852 AES CORP INTL, FAX: 508-535-7313; Empl: 25; Sls. Mgr.: Brian Rockett

**AETNA ENGINEERING**, P.O. Box 7749, Van Nuys, CA 91409-7749, Tel: 818-831-0607, FAX: 818-363-6292; Empl: 6; Sls. Mgr.: T. W. Collins

**AEE TECHNOLOGIES INC.**, 3046A Berkmar Dr., Charlottesville, VA 22901, Tel: 804-974-7801, FAX: 804-974-7803; Empl: 7(USA) 75(UK); Sls. Mgr.: Rob Brooks; Dist. Mgr.: Rob Brooks

**AFI/DATATROL**, See Datatrol, Div. of Data Card Corp.

**AFP ISOREG**, AFP Transformers, Inc., 234 Taylor St., P.O. Box 486, Littleton, MA 01460, Tel: 508-486-9483, FAX: 508-486-3539; FSC No.: 7Y052; Empl: 75; Sls. Mgr.: Paul Foss; Dist. Mgr.: Paul Foss

**AHAMTOR INC.**, 999 Inc., 27901 Front St., Temecula, CA 92589-9019, Tel: 714-676-4151, FAX: 714-676-3031; Sls. Mgr.: John Markley

**AIR DIV. CUTLER-HAMMER**, See Eaton Corp. AIR Div.

**AIR SYSTEMS, INC.**, Eaton Corp., Commack Rd., Deer Park, NY 11729, Tel: 516-595-3094, TWX: 510-227-6073; FSC No.: 00752; Empl: 1700; Sls. Mgr.: J.B. Migliaccio

**AIRTEC DIV. CUTLER-HAMMER**, See Eaton Corp., Elctm. Instrmn. Div.

**AIMSCO INC.**, Chelcor Corp., 5707 Airport Way So., Seattle, WA 98108, Tel: 206-762-8014, 800-426-0244, TWX: 910-444-1333, FAX: 206-762-8394; FSC No.: 3D536; Empl: 30; Sls. Mgr.: C. Ernst; Dist. Mgr.: Carl Teichman

**AIPHONE**, 1700 130th Ave. NE, Bellevue, WA 98005, Tel: 206-455-0510, FAX: 206-455-0071; Empl: 44; Sls. Mgr.: Clyde Pfifer

**AirBorn**

**FAX: 214-931-9305**

**AIRBORN, INC.**, 4321 AirBorn Dr., Addison, TX 75001-0519, Tel: 214-931-3200; FSC No.: 10400; Multiple; Empl: 313; Sls. Mgr.: Win Clark; Dist. Mgr.: Win Clark

C-1147

#### Local Sales Offices & Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Huntsville, South Design & Mktg. | 205-880-3623 |
| AZ | Tempe, Piper Sls. Co.            | 602-949-0048 |
| CA | Downey, Buffa Co., Inc.          | 310-923-4618 |

|     |                                        |              |
|-----|----------------------------------------|--------------|
| CA  | Sunnyvale, Advanced Tech. Sls.         | 510-847-2060 |
| CO  | Aurora, Piper Sls.                     | 303-340-1300 |
| MD  | Hunt Valley, Eagle Sls. Corp.          | 410-666-3930 |
| NH  | Nashua, Solla - Tronics                | 603-882-7146 |
| NY  | Glen Cove, Dynorep                     | 516-676-1598 |
| NJ  | Sommerville, Dynorep                   | 908-874-4670 |
| NY  | Port Jefferson Sta., Dynorep           | 516-928-5135 |
| OH  | Kettering, Electro-Com                 | 513-299-0864 |
| OR  | Tigard, Eltech, Inc.                   | 503-684-3458 |
| UT  | Salt Lake City, Piper Sls.             | 801-466-9336 |
| VA  | Powhatan, Eagle Sls.                   | 804-492-9027 |
| WA  | Bellevue, Eltech Inc.                  | 206-643-4330 |
| Can | Mississauga, Ont., Source Elctms. Ltd. | 416-676-0830 |
| Can | Montreal, Source Elctms. Ltd.          | 514-388-8979 |

#### Local Distributors

|    |                            |              |
|----|----------------------------|--------------|
| MD | Timonium, D.C. Elctms.     | 410-252-6576 |
| NY | Elmsford, Gemini Elect     | 914-592-5252 |
| TX | Dallas, Hall Mark Elctms.  | 214-343-5000 |
| CA | Monrovia, Erik-A-Elect     | 818-574-1020 |
| AZ | Scottsdale, Spirit Elctms. | 602-998-1533 |

**AIR ELECTRO INC.**, 7700 Gloria Ave., Van Nuys, CA 91406, Tel: 213-873-6400, 818-988-4400, TELEX: 66-2459, TWX: 910-495-1794, FAX: 818-988-4746

**AIR FILTRATION PRODUCTS, INC.**, 707 No. Main Ave., Tucson, AZ 85705, Tel: 602-624-2272, FAX: 602-624-2279; Empl: 10; Sls. Mgr.: Ike Campos C-1612

**AIR/FLEX INDS. INC.**, 2422 Merced Ave., S. El Monte, CA 91733, Tel: 818-579-7060, FAX: 1-818-579-7063; FSC No.: 22782; Sls. Mgr.: Brett Hoffman

**Airflyte ELECTRONICS CO.**

**FAX: 201-436-6024**

**AIRFLYTE ELCTRNS. CO.**, 56 New Hook Rd., P. O. Box 231, Bayonne, NJ 07002, Tel: 201-436-2230; Empl: 85; Sls. Mgr.: John Piret B-1234-1239

#### Local Sales Offices & Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| CA | Mountain View, Thorson-West       | 415-964-9300 |
| CA | Signal Hill, Thorson Co.          | 310-595-0361 |
| CT | No. Haven, Kitchen & Kutchin      | 203-239-0212 |
| FL | Naples, Techtron Sls. Corp.       | 813-566-3800 |
| IL | Park Ridge, Probe Elctms.         | 312-698-2044 |
| MA | Lexington, Kitchen & Kutchin      | 617-862-8230 |
| MN | St. Paul, Motion Technlg., Inc.   | 612-481-8691 |
| NY | Kinmelton, Avionics Equip.        | 201-838-8105 |
| NJ | Rochester, Milton C. Matthews Co. | 716-271-1910 |
| PA | Downtown, Budd Elctms. Corp.      | 215-458-8258 |
| TX | Austin, Electra Reps, Inc.        | 512-339-1163 |
| TX | Dallas, Electra Reps, Inc.        | 214-248-3852 |

**AIRMAR TECHNOLOGY**, 69 Meadowbrook Dr., Milford, NH 03055, Tel: 603-673-9570, FAX: 603-673-4624; Empl: 75; Sls. Mgr.: Cindy Russell

**AIR-O-TRONICS**, Pelco Electronics, 2747 Rt 20 E., P.O. Box 326, Cazenovia, NY 13035, Tel: 315-655-2387, FAX: 315-655-3862; FSC No.: 16663; Empl: 15; Sls. Mgr.: Randy Page, Dave Dice

**AIRPAX-CAMBRIDGE DIV.**, See Philips Technologies, Airpax Protector Grp.

**AIRPAX-CHESHIRE DIV.**, See Philips Technologies, Automotive Elctms. Grp.

**AIRPAX-FREDERICK DIV.**, See Philips Technologies, Airpax Protector Grp.

**AIRPAX-INTERNATIONAL DIV.**, See Philips Technologies, Airpax Mechatronics Grp.

**AIRPAX SENSOR DIV.**, See Philips Technologies, Sensor Prods.

**AIRTRON**, Litton Industries, Inc., 200 E. Hanover Ave., Morris Plains, NJ 07950, Tel: 201-539-5500, TWX: 710-966-7473, FAX: 201-539-0357; FSC No.: 80006; Empl: 500; Sls. Mgr.: M. R. Grosso, Natl. Sls. Mgr.

**AIR-VAC ENGRG.**, 100 Gulf St., Milford, CT 06460, Tel: 203-874-2541, FAX: 203-783-1383; Empl: 40

**AJAX MAGNETHERMIC CORP.**, 1745 Overland Ave., N.E., Warren, OH 44483, Tel: 216-372-8511, TELEX: 098-2482, FAX: 216-372-8644; Empl: 500; Sls. Mgr.: Dan Gagliano V.P. Sls.





## AJ'S POWER SOURCE, INC.

FAX: 813-996-5037

A.J.'S POWER SOURCE, INC., 4105 Cox Dr., Land-O-Lakes, FL 34639, Tel: 800-933-7725; Empl: 10; Sls. Mgr.: Allen L. Johnson Jr. D-1557-1559

## Local Sales Offices &amp; Reps

AZ Phoenix, Hartland Sls. 602-492-0012  
CA Mission Viejo, Champa Assocs. 714-581-3459  
CA San Diego, Power Assocs. 619-275-0641  
FL Land O'Lakes, AJ's Power Source 813-996-2583  
KS Lenexa, The Beams Co. 913-541-9197  
NH Salem, OEM Mktg. 603-893-1197  
NY Pittsford, Franklin Sls. 716-248-8251  
TX Richmond, Jim D. Gray & Assoc., Inc. 713-342-1710  
VA Sterling, Beacon North, Inc. 703-478-2480

AKG ACOUSTICS, INC., 1525 Alvarado St., San Leandro, CA 94577, Tel: 510-351-3500, FAX: 510-351-0500; Empl: 120; Sls. Mgr.: David Angress

AKRO-MILS, Myers Industries, 1293 S. Main St., Akron, OH 44301, Tel: 216-253-5593, TELEX: 98-6321, FAX: 216-253-9801; Empl: 200; Sls. Mgr.: W. J. Tonachio; Dist. Mgr.: D. Martin

ALADDIN ELCTRNS., See AIE Div. of Vernitron

ALAN INDUSTRIES INC., P.O. Box 1203, Columbus, IN 47202, Tel: 812-372-8866, FAX: 812-372-5909; FSC No.: 52750; Empl: 36; Sls. Mgr.: Blayde A. Kennedy

ALARM CONTROLS CORPORATION, P.O. Box 280, Deer Park, NY 11729, Tel: 516-586-4220, FAX: 516-586-6500; FSC No.: 55042; Empl: 50; Sls. Mgr.: John Beredetto

ALASCO RUBBER & PLASTICS CORP., 617 Mountain View Ave., #7, Belmont, CA 94002, Tel: 415-595-4100, FAX: 415-595-0298; FSC No.: 13862; Empl: 25

ALBAR, INC., 19013 36th Ave. W., Lynnwood, WA 98036, Tel: 206-771-4006, 800-822-5227, FAX: 206-771-2163; Empl: 50 A-1181, 2256; D-1560

## Local Sales Offices &amp; Reps

OR Portland, Halbar RTS 503-244-4123  
PA Newtown, Indl. Sls. Assocs. 215-860-2076  
WA Redmond, Halbar RTS 206-882-0990

ALBEROX CORPORATION, New Bedford Ind'l Pk., New Bedford, MA 02745, Tel: 508-995-1725, FAX: 508-995-6954; Empl: 180

ALBION INDUSTRIES, 800 N. Clark St., Albion, MI 49224, Tel: 517-629-9441, FAX: 517-629-9501; Sls. Mgr.: Dale A. Bash

ALCATEL CANADA WIRE INC., 10376 Battleville Parkway, Manassas, VA 22024, Tel: 703-369-0440, FAX: 703-369-4087; Empl: 5,000; Sls. Mgr.: John Murphy

ALCATEL CHESTER CABLE CORP., 15 Oakland Ave., Chester, NY 10918, Tel: 914-469-2141, FAX: 914-469-9935

ALCOMET, INC., 110 Mary Ann Rd., Beaver Dam, WI 53916, Tel: 414-885-9200, FAX: 414-885-5078; Empl: 12; Sls. Mgr.: Philip F. Lauf

ALDEC, INC., 3525 Old Conejo Rd., Newbury Park, CA 91320, Tel: 805-499-6867, TELEX: 239-447, FAX: 805-498-7945; Empl: 57; Sls. Mgr.: Harry Tosado

ALDEN COMPUTER SYSTEMS, One Salem Green, Ste. 420, Salem, MA 01970, Tel: 508-744-1314; Sls. Mgr.: Donald O'Brien

ALDEN ELECTRONICS, INC., 40 Washington Street, Westboro, MA 01581, Tel: 508-366-8851, TELEX: 94-8404, FAX: 508-898-2427; Empl: 125; Sls. Mgr.: L. A. Farrington

ALDEN PRODUCTS CO., P.O. Box 510, 117 N. Main St., Brockton, MA 02403, Tel: 508-583-0160, FAX: 508-583-0164; FSC No.: 01009; Empl: 150; Sls. Mgr.: Donald J. Paul C-1148-1151

ALDEN SYSTEMS, Alden Products Co., 262 N. Main St., P.O. Box 860, Brockton, MA 02403-0860, Tel: 508-583-0160, FAX: 508-583-0164; Empl: 150; Sls. Mgr.: D. Paul

A. L. DESIGN, INC., 1411 Military Rd., Buffalo, NY 14217, Tel: 716-875-6240, FAX: 716-875-2404; Empl: 25



FAX: 818-365-7274

ALEPH INTERNATIONAL CORP., 1026 Griswold Ave., San Fernando, CA 91340, Tel: 818-365-9856, 800-423-5622; Empl: 15; Sls. Mgr.: Frank Mastrolonardo; Dist. Mgr.: Janis Dingman B-1404-1405, 1662

## Local Sales Offices &amp; Reps

AL Huntsville, Beacon Elctms. 205-881-5031  
AZ Mesa, Sys. Sls. of Arizona 602-464-9989  
CA Garden Grove, ELSCO Elctms. 714-891-4621  
CA San Jose, Arnold Tech. Sls. 408-954-0400  
CO Englewood, Omega Ltd. 303-762-1921  
FL Longwood, Beacon Elctms. 407-332-1940  
GA Atlanta, Beacon Elctms. 404-256-9640  
IL Chicago, Meca Sls. 312-334-4020  
IA Marian, MSB Assocs. 319-377-6261  
KS Roeland Park, MSB Assocs. 913-432-2131  
MD Randallstown, Beacon North 703-478-2480  
MA Taunton, Focus Sls. 508-824-2480  
MI Lathrup Village, RC Nordstrom & Co. 313-559-7373  
MN Minneapolis, Intl. Elctms. 612-571-0000  
MO St. Louis, MSB Assocs. 314-946-5577  
NM Albuquerque, Sys. Sls. of Arizona 505-889-2901  
NY Fairport, TAC Sls. 716-223-7610  
NY Glen Cove, Dynorep 516-676-1598  
NC Raleigh, Beacon Elctms. 919-787-0330  
OH Centerville, Engrg. Mktg. Assoc. 513-433-2800  
SC Greenville, Beacon Elctms. 803-297-7830  
TN Knoxville, Beacon Elctms. 615-691-0062  
TX Irving, Aid Elctms. 214-790-4761  
VA Sterling, Beacon North 703-478-2480  
WA Redmond, Sls. & Engrg. Assoc. 206-883-4999  
Can Toronto, Deskin Sls. 416-475-1412

## Local Distributors

AZ Tempe, Acacia Sls. 602-894-2874  
CA Fremont (North), Acacia Sls. 510-623-7500  
CA Los Angeles, Bell Inds. 310-826-2355  
CA San Jose, Spectra Elctms. 408-955-7800  
CA Santa Monica (South), Master Distrs. 310-452-1229  
CO Englewood, Comp. Distrs. 303-770-6214  
CO Wheatridge, Acacia Sls. 303-421-7004  
CT Hartford, Wes-Garde Comps. 203-527-7705  
FL Clearwater, Comp. Distrs. 813-796-0466  
FL Lakeland, Wes-Garde Comps. 813-644-7564  
IL Chicago, Leeds Electro Comps. 312-625-3800  
IN Indianapolis, Bell Inds. 317-875-8200  
KS Overland Park, Wes-Garde Comps. 913-262-2718  
MA Woburn, Control Design 317-932-9404  
MI Grand Rapids, SF Elctms. 616-459-0216  
MN Plymouth, Leeds Electro Comps. 612-557-1277  
MO St. Louis, Wes-Garde Comps. 314-567-7776  
NH Nashua, Wes-Garde Comps. 603-880-1971  
NJ Mt. Laurel, Wes-Garde Comps. 609-778-8190  
OH Westerville, Wes-Garde Comps. 614-885-0319  
OR Wilsonville, Wes-Garde Comps. 503-682-1333  
PA Malvern, Control Design 215-296-0150  
TX Dallas, Off the Shelf 214-247-0052  
TX Richardson, RSC Elctms. 214-644-3444  
WA Redmond, Acacia Sls. 206-881-5566

ALE. SYS. INC., 150 Homer Ave., Ashland, MA 01721, Tel: 508-881-5252, FAX: 617-235-6588; Empl: 60; Sls. Mgr.: Tom Conklin/John Boyd; Dist. Mgr.: Tom Conklin/John Boyd

ALEXANDER BATTERIES, New Product/OEM Division, P.O. Box 28880, San Diego, CA 92198, Tel: 619-480-4445, TELEX: 371-9855, FAX: 619-480-1351; Empl: 390; Sls. Mgr.: Dave Zeman D-1423

## Local Sales Offices &amp; Reps

CA San Diego, Alexander Batteries/New Prod./OEM Div. 619-480-4445, 619-480-1351

ALEXANDER MANUFACTURING COMPANY, P.O. Box 1508, Mason City, IA 50402, Tel: 800-247-1821, 515-423-8955, TELEX: 3719855, FAX: 515-423-1644; Empl: 350 D-1423

ALEXANDRIA EXTRUSION CO., P.O. Box 847 Cty. Rd. 22 North, Alexandria, MN 56308, Tel: 612-763-6537, FAX: 612-763-6530; Empl: 175; Sls. Mgr.: Brian L. Bloedorn

ALEXANDRIA METAL FINISHER, INC., 9418 Gunston Cove Rd., Lorton, VA 22079, Tel: 703-643-1636, FAX: 703-690-6731; Empl: 75; Sls. Mgr.: Larry Capocchia

ALFA ELECTRONICS, INC., P.O. Box 8089, Princeton, NJ 08543-8089, Tel: 609-275-0220, FAX: 609-275-9536; Empl: 9; Sls. Mgr.: Jeff Kao

ALFCO, Div. of Air Maze, 1000 Cindy Lane, Carpinteria, CA 93013, Tel: 805-684-7651, FAX: 805-684-3654; FSC No.: 17504; Empl: 100; Sls. Mgr.: Barbara McIntyre

ALINABAL, 28 Woodmont Rd., Milford, CT 06460, Tel: 203-877-3241, FAX: 203-874-5063; Empl: 255

ALLEGRO MICROSYSTEMS, INC., formerly Sprague Semiconductor Grp., 363 Plantation St., Worcester, MA 01605, Tel: 508-795-1300, FAX: 508-792-9024; FSC No.: OCVK3; Empl: 2000; Sls. Mgr.: D. Ax; Dist. Mgr.: K. Gutkowski

ALLEN AVIONICS, INC., 224 E. 2nd St., Minola, NY 11501, Tel: 516-248-8080, FAX: 516-747-6724; Empl: 300; Sls. Mgr.: Jeffrey Buchman A-1514, 1619

## Local Sales Offices &amp; Reps

AZ Phoenix, J. F. Hurlbut Co. 602-952-2079  
CA Arcadia, Van Gott & Assocs. 818-445-9728  
CA Palo Alto, Adtek Assocs. 415-323-5414  
CA San Diego, Van Gott & Assocs. 619-308-0667  
CO Golden, J. F. Hurlbut Co. 303-279-7796  
FL Melbourne, Reynolds & Assocs., Inc. 407-259-7000  
MA Scituate, D&M Tech. Sls. 617-545-9369  
MI Ann Arbor, Tech. Sls. Assocs. 313-995-4082  
OH Cleveland, Tech. Sls. Assocs. 216-461-0826  
OH Dayton, Tech. Sls. Assocs. 513-298-2062  
NC Raleigh, Reynolds Assocs. 407-259-7000  
PA W. Conshohocken, Eastern Comp. Sls. Inc. 215-270-9530  
TX Dallas, Bradenco Corp. 214-352-3554  
VA Alexandria, Vanguard Engrg. Sls. 703-768-1660  
WA Seattle, Evergreen Mktg. Grp. 206-633-3160

ALLEN-BRADLEY CO., Div. of Industrial Control Grp., 1201 S. Second St., Milwaukee, WI 53201, Tel: 414-382-2000, TELEX: 26699, TWX: 4311016, FAX: 414-382-4444; Empl: 1600; Dist. Mgr.: Dick Zajork



FAX: 818-765-2387

ALLEN CO., INC., ROBERT G. 7267 Coldwater Canyon, N. Hollywood, CA 91605, Tel: 818-765-8300, 800-827-7422; Empl: 35; Sls. Mgr.: Brad Hammarquist A-1010-1013, 1860-1863

## Local Sales Offices &amp; Reps

AL Huntsville, JWL Assocs. 205-565-4019  
AR Little Rock, Design Mktg. 501-336-8122  
CA Cupertino, Prism Technical Sls., Inc. 408-435-7377, 408-257-8847  
CA Irvine, Gravley & Assocs., Inc. 714-852-9339  
CT Windsor, Janeco 203-688-4513  
GA Atlanta, JWL Assocs. 404-518-8500  
IL Chicago, Rendell Sls. 312-967-1513  
IN Indianapolis, Century Tech. Sls. 513-677-5088  
MI Warren, Burcaw Co. 313-573-4605  
NJ Cooper-Simon 201-428-0600  
NY Franklin Square, Cooper-Simon 516-489-0404  
NC JWL Assocs. 919-414-8887  
NC Charlotte, JWL Assocs. 704-541-5750  
OH Cincinnati, Century Tech. Sls. 513-677-5088  
OK Oklahoma, Design Mktg. 405-789-5911  
MN Oakdale, Complete Sls. 612-731-2923  
TX Austin, Design Mktg. 512-263-9151  
TX Houston, Design Mktg. 713-469-7949  
WA Redmond, Interstate Elctms. 206-885-5257  
WA Seattle, Interstate Elctms. 206-885-5257  
EXP Dublin, Ireland, Standard Comps. Ltd. 375-25025

## Local Distributors

CA Costa Mesa, Orange Cnty. Comps. 714-979-3597  
CA Oakland, Brill Elctms. 405-834-5888  
CA San Diego, Mock Ill 619-560-0515  
CA San Jose, Spectra 408-955-7800  
CA Santa Clara, Bravo 408-980-8500  
ID Boise, Radar Elec. Co., Inc. 208-336-2227  
IL Itasca, Voyager Elctms. Corp. 312-773-4900



MN Hibbing, Minntech Elctms. .... 218-262-5227  
 NJ Garfield, B & R Elctms. .... 201-470-0700  
 OR Portland, Radar Elec. Co., Inc. .... 503-232-3404  
 WA Richland, Radar Elec. Co., Inc. .... 509-943-8336  
 WA Seattle, Radar Elec. Co., Inc. .... 206-282-2511  
 WA Spokane, Radar Elec. Co., Inc. .... 509-747-3053

**ALLEN DATAGRAPH, INC.**, 2 Industrial Way, Salem, NH 03079, Tel: 603-893-1983, FAX: 603-893-9042; *Sls. Mgr.*: Tom Allen

**ALLEN SYSTEMS**, 2346 Brandon Rd, Columbus, OH 43221, Tel: 614-488-7122; Empl: 10

**ALLEN TECHNOLOGY**, PO Box 575, Sutton, NE 68979, Tel: 402-773-5285

**ALLIANCE ELECTRONICS CORP.**, 8560 SW Salish Lane, Wilsonville, OR 97070-0503, Tel: 503-682-4976, FAX: 503-682-0390; Empl: 21; *Sls. Mgr.*: Nate Olson

**ALLIANCE LABORATORIES, INC.**, 555 Price Ave., Redwood City, CA 94063, Tel: 415-366-8220, FAX: 415-366-0634; Empl: 10; *Sls. Mgr.*: Michael Munroe

**ALLIED CONTROLS INCORPORATED**, 562 Captain Neville Dr., Waterbury, CT 06705-3827, Tel: 203-757-4200, FAX: 203-757-4202; FSC No.: 5945; *Sls. Mgr.*: John T. Kryjak, VP Sls. & Mktg.; *Dist. Mgr.*: J. Kronenberger

**ALLIED ELCTRNS.**, Subsidiary of Hall-Mark 7410 Pebble, Fort Worth, TX 76118, Tel: 800-433-5700, FAX: 817-595-6470; Empl: 250; *Sls. Mgr.*: Ed Bridges

**ALLIEDSIGNAL AEROSPACE**, Aerospace Systems & Equipment, 118 Hwy. 35, Eatontown, NJ 07724, Tel: 908-389-7761, TELEX: 132-444, FAX: 908-389-7301; FSC No.: 83298; Multiple; Empl: 1,000; *Sls. Mgr.*: R. Freeman

**ALLIEDSIGNAL INC.**, Communications Systems, 1300 E. Joppa Rd., Towson, MD 21286-5999, Tel: 410-583-4000, TWX: 710-232-1823, FAX: 410-337-7485; FSC No.: 06845; Empl: 1500; *Sls. Mgr.*: Jack L. Shagena

**ALLIGATOR TECHNOLOGIES**, 17150 Newhope St., Ste. 114, Fountain Valley, CA 92708, Tel: 714-850-9984, FAX: 714-850-9987; Empl: 10; *Sls. Mgr.*: Bertil Wanner

**A-L-L MAGNETICS INC./THE MAGNET SOURCE**, 930 S. Placentia Ave., Placentia, CA 92670, Tel: 800-262-4638, 800-525-3536, FAX: 714-632-1754, 714-632-1757; FSC No.: 5999; Empl: 43; *Sls. Mgr.*: Tim Pollett; *Dist. Mgr.*: Steve Alexander ..... **A-1319**

**ALL-STATES, INC.**, 1801 W. Foster Ave., Chicago, IL 60640, Tel: 312-728-0525, TELEX: 317027, FAX: 312-728-6410; FSC No.: 26863

**ALMOND INSTRUMENTS**, See EG & G Almond Instruments

**ALPHA COMPONENTS**, 1106 E. Simpson Rd., Mechanicsburg, PA 17055, Tel: 717-697-8595, FAX: 717-697-8608; FSC No.: 52748; *Sls. Mgr.*: Jerry Buckwalter

**ALPHA-CORE INC.**, 915 Pembroke St., Bridgeport, CT 06608, Tel: 203-335-6805, FAX: 203-384-8120; Empl: 20; *Sls. Mgr.*: Sandu Pescaru

**ALPHA DIST. CORP.**, 3554 Brecksville Rd., Richfield, OH 44286, Tel: 216-659-7100, 1-800-628-0841, FAX: 216-659-3459

**BRILL ELECTRONICS**  
 (510) 834-5888  
 610 E. 10th St., Oakland, CA 94608  
**apha**  
 (310) 452-8002  
 1220 Olympic Bl., Santa Monica CA 90404

**ALPHA INDUSTRIES, INC.**, 20 Sylvan Rd., Woburn, MA 01801, Tel: 617-935-5150, TELEX: 949436, TWX: 710-393-1236; FSC No.: 17540; Empl: 1400; *Sls. Mgr.*: David Barker

**ALPHA-M CORP.**, 11518 Reeder Rd S.W., 115, Dallas, TX 75229, Tel: 214-406-0424, FAX: 214-241-6778; Empl: 8; *Sls. Mgr.*: W. L. Cowley

**ALPHA METALS**, 600 Rte 440, Jersey City, NJ 07304, Tel: 201-434-6778, FAX: 201-434-7508; Empl: 350; *Sls. Mgr.*: Dave Zerfoss, VP Assembly Prods.

**ALPHA OMEGA COMPUTER SYSTEMS**, 33815 Eastgate Circle, Corvallis, OR 97331, Tel: 503-754-1911, FAX: 503-754-1913; Empl: 8; *Sls. Mgr.*: Gary Oliver; *Dist. Mgr.*: Gary Oliver

**ALPHA PRODUCTS, INC.**, 5740 Corsa Ave. #104, Westlake Village, CA 91362, Tel: 818-889-9304, TELEX: 215-305, FAX: 818-706-8986

**ALPHA-TECH INC.**, P.O. Box 209, Riverdale, NJ 07457, Tel: 201-838-1188, FAX: 201-838-1188; FSC No.: 1X300; Empl: 8; *Sls. Mgr.*: M. Rice

**ALPHATEST CORP.**, 557 E. Juanita Ave., # 6, Mesa, AZ 85204-6597, Tel: 602-545-5518, FAX: 602-545-5521; FSC No.: 07-411732-F; Empl: 6; *Sls. Mgr.*: Dan Rodgers; *Dist. Mgr.*: Dan Rodgers

**ALPHA THERMISTOR, INC.**, 7181 Construction Ct., San Diego, CA 92121, Tel: 619-549-4660, 800-235-5445, FAX: 619-549-4791; Empl: 30; *Sls. Mgr.*: David Pyle

**ALPHA WIRE CORP.**, 711 Lidgerwood Ave., P.O. Box 711, Elizabeth, NJ 07207-0711, Tel: 908-925-8000, TELEX: 6853017, TWX: 710-996-5895, FAX: 908-925-7938; Empl: 376; *Sls. Mgr.*: Linda Smith

**ALTAIR EXCHANGE CORPORATION**, 24907 Avenue Tibbets Unit-C, Valencia, CA 91355, Tel: 805-257-6964, FAX: 805-257-6490

**ALTECH CORP.**, 35 Royal Rd., Flemington, NJ 08822-6000, Tel: 908-806-9400, FAX: 908-806-9490; Empl: 35; *Sls. Mgr.*: Steve Stahovic, VP Sls.; *Dist. Mgr.*: Mort Gelfand, VP Ops. .... **B-1342; C-1006-1007, 1138, 1152-1159**

**ALTEK CO.**, P.O. Box 1128, Torrington, CT 06790, Tel: 203-482-7626, FAX: 203-496-7113; FSC No.: 53939; Empl: 65; *Sls. Mgr.*: Stephen Altschuler

**ALTEK CORPORATION**, 12210 Plum Orchard Dr., Silver Springs, MD 20904-7802, Tel: 301-572-2555, TWX: 710-825-0422, FAX: 301-572-2510; FSC No.: 70336; Empl: 46; *Sls. Mgr.*: Frank D. Augustino; *Dist. Mgr.*: Frank D. Augustino

**ALTERA CORPORATION**, 2610 Orchard Parkway, San Jose, CA 95134-2020, Tel: 408-894-7000, TELEX: 888496, FAX: 408-248-7097

**ALTERNATIVE MANUFACTURING, INC.**, 8 Summer St., P.O. Box 200, Winthrop, ME 04364-200, Tel: 207-377-9377, FAX: 207-377-9379; Empl: 20

**altran**  
 ALTRAN CORP

**FAX: 815-455-3171**

**ALTRAN CORPORATION**, 6101 Factory Rd., Crystal Lake, IL 60014, Tel: 815-455-5650 ..... **A-2257-2259**

**ALTRON, INC.**, 6700 Industry Ave., N.W., Anoka, MN 55303, Tel: 612-427-7735, FAX: 612-427-3980; Empl: 185; *Sls. Mgr.*: Jim Ruid

**AlumaPak**

**ALUMAPAK, Electronic Precepts of Florida**, 11651 87th St., N., Largo, FL 34643, Tel: 800-775-6077; Empl: 7; *Sls. Mgr.*: Roy Bloomquist ..... **C-1009**

*Local Distributors*  
 FL Largo, Elctm. Precepts of FL ..... 800-367-4649

**ALUSETT U.S.A., INC.**, 200 N. Water St., Peekskill, NY 10566, Tel: 914-737-0120, FAX: 914-737-8697; Empl: 35

**AMADOR**, 1775 Old Highway 8, New Brighton, MN 55112-1891, Tel: 612-631-2487, TELEX: 5106007012, ESYLNK: 62911738, FAX: 612-631-3515; Empl: 44; *Sls. Mgr.*: Gene A. Panger

**AMASCO**, 370 Amapola, Torrance, CA 90501, Tel: 310-781-9494, FAX: 310-781-9059; Empl: 20; *Sls. Mgr.*: William Barten

**AMATOM ELECTRONIC HARDWARE**, 446 Blake St., New Haven, CT 06515, Tel: 203-397-3311, TELEX: 963-419, FAX: 203-387-4101; FSC No.: 06540; Empl: 125; *Sls. Mgr.*: James Marshall

**AMBER ELECTRIC DESIGN**, 6969 Trans-Canada Hwy., St. Laurent, PQ., Canada H4T 1V8, Tel: 514-333-8748, 800-361-3697, TELEX: 514-333-1388; FSC No.: 38047; Empl: 40; *Sls. Mgr.*: Wayne Jones

**AMBER INDS., INC.**, 3312 Wiley Post Rd., Carrollton, TX 75006, Tel: 214-490-9801, FAX: 214-980-0329; *Sls. Mgr.*: Paul Russell ..... **B-1343**

*Local Sales Offices & Reps*  
 CO Englewood, Dynatech ..... 303-773-2830  
 IL Park Ridge, G. McL. Cole Co. .... 708-827-6040  
 TX Dallas, Seaton Corp. .... 214-980-9860  
 TX Houston, Seaton Corp. .... 713-731-2649

**AMBIT ASSOCIATES**, 2038 San Rafael Ct., Santa Clara, CA 95051-2311, Tel: 408-241-5767, FAX: 408-241-4051

**AMBI-TECH INDS.**, 319 Knickerbocker Ave., Hillsdale, NJ 07642, Tel: 201-666-0504, FAX: 201-666-0597; Empl: 20; *Sls. Mgr.*: Al Nagler; *Dist. Mgr.*: Al Nagler

**AMBROID CO.**, P.O. Box 38, Springfield, VT 05156, Tel: 802-885-9244, FAX: 802-885-9223; Empl: 5; *Sls. Mgr.*: Manuel F. Usle

**AMCO**

**FAX: 708-671-9469**

**AMCO ENGINEERING**, 3801 N. Rose St., Schiller Pk., IL 60176, Tel: 708-671-6670, 800-833-3156; Empl: 350; *Sls. Mgr.*: Tom Ligman ..... **C-1010-1013, 1574**

*Local Sales Offices & Reps*  
 AL Huntsville, Kemp Instrs. .... 205-837-4304  
 AZ Phoenix, C. T. Carlberg ..... 602-468-0750  
 CA Los Angeles, Knight Co. .... 310-670-2833  
 CA Orange County, Knight Co. .... 714-838-8250  
 CA Santa Clara, Interconnect Sls. Grp. .... 408-980-1166  
 CA Temecula, The Knight Co. .... 714-699-2495  
 CO Englewood, FG Mktg. Co. .... 303-795-9176  
 CT Bethel, Instr. Dynamics ..... 203-743-5045  
 FL Tampa, Temco Sls. Inc. .... 813-855-7566  
 GA Atlanta, Kemp Instrs. .... 800-282-6815  
 IL Bensenville, Electronic Solutions, Inc. .... 404-452-8050  
 IN Indianapolis, Precision Elctm. Comps. .... 708-766-3667  
 IA Cedar Rapids, Dy-Tronix Inc. .... 317-842-3740  
 KS Leawood, Dy-Tronix Inc. .... 319-377-8275  
 KS Wichita, Dy-Tronix Inc. .... 913-339-6333  
 LA Lafayette, Kemp Instruments ..... 316-838-0884  
 MD Columbia, L. G. White & Co. .... 813-269-9452  
 MA Wakefield, Instr. Dynamics ..... 410-290-8880  
 MI Livonia, Electro Sls. Assocs. .... 617-245-5100  
 MI Portage, Electro Sls. Assocs. .... 313-421-7500  
 MN St. Paul, Heyda/Hanks Assoc. .... 616-323-2416  
 MO Bridgeton, Dy-Tronix Inc. .... 612-484-8531  
 NM Albuquerque, C. T. Carlberg Assocs. .... 314-291-4777  
 NY Endwell, Reagan/Compur Albany .... 505-899-2155  
 NY Great Neck, F & F Metro, Inc. .... 607-754-2171  
 NY Rochester, Reagan/Compur Albany .... 516-482-4080  
 NY Syracuse, Reagan Campar, Albany .... 716-271-2230  
 NC Cary, L. G. White & Co. .... 315-432-8232  
 NC Winston Salem, L. G. White & Co. .... 919-380-8084  
 OH Chesterland, Electro Sls. Assocs. .... 919-765-1665  
 OH Dayton, Electro Sls. Assocs. .... 216-729-0190  
 OK Tulsa, Kemp Engr. .... 513-426-5551  
 OR Beaverton, Eclipse Mktg. Grp. .... 918-663-4501  
 PA Edgemont, White/Whiddett Co. .... 503-642-1661  
 PA Pittsburgh, Electro Sls. Assocs. .... 215-353-6343  
 SC Greenville, L. G. White & Co. .... 412-322-9000  
 TX Addison, Kemp Instrs. .... 803-271-0630  
 TX Addison, Kemp Instrs. .... 214-931-7100



TX Houston, Kemp Instrs. .... 713-466-1465  
 TX Marble Falls, Kemp Instrs. .... 512-598-6115  
 VA Ashland, L. G. White & Co. .... 804-752-7055  
 WA Redmond, Eclipse Mktg. Grp. .... 206-885-6991  
 EXP NJ, Mahwah, Intl. Sls. Div. .... 201-825-0473



**FAX: 714-634-0905**

**AMECON, INC.**, 1900 S. Chris La, Anaheim, CA 92805,  
 Tel: 714-634-2220, 800-392-2292, TWX: 510-1000-364;  
 Sls. Mgr.: Frank Carleone **A•1178, 1182-1185, 2260-2265**

**AME CORPORATION**, 33 Jacksonville Rd., P.O. Box 195,  
 Towaco, NJ 07082-0195, Tel: 201-263-1700, FAX: 201-  
 263-8199; Empl: 20; Sls. Mgr.: Edward Dimitry **B•1663**

*Local Sales Offices & Reps*

CT Woodbridge, White Indl. Assoc. .... 203-387-7037  
 FL Longwood, EAB, Inc. .... 407-339-4986  
 MD Jamesburg, Decco Sls. Co. .... 908-521-0323  
 NJ Wyckoff, Chanco .... 201-891-7866  
 TX Dallas, Control Comps. Corp. .... 214-458-8877  
 Can Scarborough, Ont, Leecraft Inds. .... 416-292-4463

*Local Distributors*

Can Scarborough, Ont, Leecraft Inds. .... 416-439-6320

**AMERACE ELECTRONIC COMPONENTS**, 7474  
 Utilities Road, Punta Gorda, FL 33950, Tel: 813-575-8400,  
 FAX: 813-575-8484; Empl: 300

**AMEREX**, 888 Marlborough Ave., Riverside, CA 92507, Tel:  
 909-686-1400, FAX: 909-683-4221; Sls. Mgr.: Dan R.  
 Prillwitz

**AMERICAN ADVANTECH CORP.**, 1310 Tully Rd., Ste.  
 115, San Jose, CA 95122, Tel: 408-293-6786, FAX: 408-  
 293-4697; Empl: 72; Sls. Mgr.: Thomas Chen

**AMERICAN AEROSPACE CONTROLS**, 570 Smith  
 St, Farmingdale, NY 11735, Tel: 516-694-5100, FAX: 516-  
 694-6739; Empl: 48; Sls. Mgr.: Gregory D'Abramo  
**B•1914-1915**

**AMERICAN ALUMINUM**, 230 Sheffield St, Dept. EEM,  
 Mountainside, NJ 07092, Tel: 908-233-3500, FAX: 908-  
 233-3241; Empl: 125; Sls. Mgr.: Ronald R. King

**AMERICAN ASSEMBLY INC.**, P.O. Box 515, 7 Industrial  
 Dr., Florida, NY 10921, Tel: 914-651-3433, FAX: 914-651-  
 2055; FSC No.: 74795; Empl: 5

**AMERICAN ARIUM**, 14281 Chambers Rd, Tustin, CA  
 92680-7207, Tel: 714-731-1661, FAX: 714-731-6344;  
 Empl: 39; Sls. Mgr.: Jeff Acampora

**AMERICAN CAPACITOR CORPORATION**, 5367 Third  
 St, Irwindale, CA 91706, Tel: 818-814-4444, ESYLNK: 910-  
 333-9810, FAX: 818-814-4434; FSC No.: 59366; Empl: 65;  
 Sls. Mgr.: Joseph Latourelle; Dist. Mgr.: Joseph Latourelle

**AMERICAN CHEMICAL ETCHING**, See American  
 Etching & Mfg.

**AMERICAN CHEMICAL, INC.**, 2630 S. Irving Ave.,  
 Minneapolis, MN 55408-1047, Tel: 612-374-1767, FAX:  
 612-377-3590; Sls. Mgr.: Dennis Werneke; Dist. Mgr.: Karl  
 Westernman

**AMERICAN CONTROL PRODUCTS**, Div. of  
 Precision Timer Co., Inc., 47 Westbrook Indl Pk,  
 Westbrook, CT 06498, Tel: 203-399-6253, FAX: 203-399-  
 5619; Empl: 35; Sls. Mgr.: R.D. Florin; Dist. Mgr.: R.D.  
 Florin

**AMERICAN CONTROL TECHNOLOGY, INC.**, 1447  
 Holmes Rd, Elgin, IL 60123-1203, Tel: 708-468-6000, FAX:  
 708-468-8959; Sls. Mgr.: Al Shrock **B•1665**

**AMERICAN CYANAMID CO.**, Metal Coated Fibers  
 Dept., South Cherry St, Wallingford, CT 06492, Tel: 203-  
 284-4217

**AMERICAN ELECTRONIC COMPONENTS**, 1010 N.  
 Main St, Elkhart, IN 46514, Tel: 219-264-1116, FAX: 219-  
 264-4681; Empl: 400; Sls. Mgr.: J. J. Willis, East/S. Kalin,  
 West; Dist. Mgr.: Lonnie Haley **B•1711**

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AL Birmingham, Tenn Tech, Inc. .... 205-879-0676  
 AL Decatur, Tenn Tech, Inc. .... 205-350-5548  
 AL Huntsville, World Dists. .... 205-539-0441

AZ Tempe, H-D Assocs., Inc. .... 602-784-2944  
 CA Canoga Park, C & W Comp. Sls. .... 818-700-2684  
 CA Sunnyvale, Pass Assocs. .... 408-735-9040  
 CT Waterbury, Cannon Assocs., Inc. .... 203-597-0240  
 FL Clearwater, J. J. Galleher Co. .... 813-461-7706  
 GA Marietta, Tenn Tech, Inc. .... 404-971-1419  
 IN Mishawaka, Power Comps. of Midwest

219-256-6630  
 KS Lenexa, Richard Greene Co. .... 913-492-6886  
 MI Kentwood, Millmore .... 616-554-9292  
 MI Novi, Millmore Sls. .... 313-349-0260  
 MI St. Clair Shores, American Elctms. .... 313-778-8440  
 MN Minneapolis, Volco Co. .... 612-933-6631  
 MO St. Louis, R. Greene Co. .... 314-994-0222  
 NE Omaha, Volco Co. .... 402-330-6700  
 NH Nashua, Cannon Assocs., Inc. .... 603-598-4766  
 NJ Lawrenceville, DVS Co. .... 609-896-1112  
 NY Phoenix, Adcon .... 315-695-3124  
 NY Wantagh, DONY Tech. Sls. .... 516-826-5550  
 NY Williams, CEF Tech. Sls. .... 716-633-7324  
 NC Garner, Tenn Tech, Inc. .... 919-779-3309  
 OH Cleveland, Orr Assocs. .... 216-871-1800, 800-837-2700  
 PA Erie, Orr Assocs. .... 814-456-2404  
 RI Barrington, Cannon Assocs. .... 401-245-0850  
 TN Brentwood, Tenn Tech, Inc. .... 615-373-4970  
 TX Dallas, Dawson & Assocs., Inc. .... 214-241-3843  
 UT Salt Lake City, Western Controls .... 801-292-5900  
 WA Bothell, Temco N.W. .... 206-481-6150  
 WA Spokane, Temco Northwest .... 509-534-8635  
 Can Oakville, Ont, Davis Controls, Ltd. .... 416-829-2000

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AZ Tempe, H-D Assocs., Inc. .... 602-784-2944  
 CA Canoga Pk, Acort .... 818-700-2001  
 CA San Carlos, Campbell & George .... 415-594-1994  
 FL Clearwater, J.J. Galleher Co. .... 813-461-7706  
 GA Smyrna, Tech Controls, Inc. .... 404-333-9883  
 IN Mishawaka, Power Comps. of Midwest  
 219-256-6630  
 KS Lenexa, Richard Greene Co. .... 913-492-6886  
 MA Hingham, Hingham Bay Corp. .... 617-740-1900  
 MI Grand Rapids, North Coast Comps., Inc.  
 616-452-0800, 800-944-0325  
 MS Corinth, World Dists. .... 601-287-2915  
 MO St. Louis, Richard Greene Co. .... 314-994-0222  
 NE Omaha, Volco Co. .... 402-330-6700  
 NJ Lawrenceville, Riverside Comp. Supp. Co.  
 609-896-1611  
 NY Buffalo, Niagara Elec. Sls. .... 716-825-3100  
 NY E. Syracuse, Niagara Elec. Sls. .... 315-437-1656  
 NY Phoenix, Adcon .... 315-695-3124  
 NY Rochester, Niagara Elec. Sls. .... 716-272-9150  
 NY Wantagh, Dony Tech. Sls. .... 516-826-5550  
 NC Charlotte, Mel Sls. .... 704-541-5750  
 OH Cleveland, Orr Assocs. .... 216-871-1800, 800-837-2700  
 PA Erie, Orr Assocs. .... 814-456-2404  
 TX Dallas, Dawson & Assocs. .... 214-241-3843  
 TX Dallas, Dawson & Assocs., Inc. .... 214-241-3843  
 UT N. Salt Lake City, Western Controls Co.  
 801-292-5900  
 WA Bothell, Aztek .... 206-481-6032  
 Can Oakville, Ont, Davis Controls, Ltd. .... 416-829-2000

**AMERICAN ELECTRONIC LABS, SEE AEL,  
 DEFENSE CORP.**

**AMERICAN ELECTRONICS, INC.**, 1600 E. Valencia Dr.,  
 Fullerton, CA 92631, Tel: 714-871-3020, TWX: 910-592-  
 1256; FSC No.: 89321; Empl: 200; Sls. Mgr.: Bill Holland;  
 Dist. Mgr.: 109

**AMERICAN ETCHING & MFG.**, 13730 Desmond St,  
 Pacoima, CA 91331-2796, Tel: 818-896-1187, FAX: 818-  
 896-0095; Empl: 49

**AMERICAN HOFMANN CORP.**, P.O. Box 10369, 3700  
 Cohen Pl, Lynchburg, VA 24506, Tel: 804-522-0300,  
 ESYLNK: 5106000480, FAX: 804-846-1340; Empl: 180;  
 Sls. Mgr.: C. DeVuyst

**AMERICAN INSULATED WIRE CORP.**, Leviton Mfg.  
 Co., 36 Freeman St, Pawtucket, RI 02862, Tel: 401-726-  
 0700, TWX: 710-384-0150, FAX: 401-723-1420; Empl:  
 1300; Sls. Mgr.: Gabe Stephen

**AMERICAN LASER SYSTEMS, INC.**, P.O. Box 6944,  
 Santa Barbara, CA 93160, Tel: 805-967-0423, FAX: 805-  
 683-4382; FSC No.: 5850; Empl: 4

**AMERICAN MAGNETICS CORPORATION**, Group 4,  
 740 Watsoncenter Rd, Carson, CA 90745, Tel: 213-775-  
 8651, TWX: 910-345-6258; Empl: 300; Sls. Mgr.: Jane  
 Magee, OEM Sls. Mgr.

**AMERICAN MAGNETICS**, P.O. Box 49, Carterville, IL  
 62918, Tel: 618-985-4838, FAX: 618-985-4106; Empl: 120

**AMERICAN MAGNETICS**, P.O. Box 2509, Oak Ridge, TN  
 37831-2509, Tel: 615-482-1056, TELEX: 557-592, FAX:  
 615-482-5472; Empl: 35; Sls. Mgr.: Scott T. Smith

**AMERICAN METAL WASH**, 360 Euclid Ave, Canonsburg,  
 PA 15317, Tel: 412-746-4203, FAX: 412-746-5738; Empl:  
 15; Sls. Mgr.: Steven M. Nourie

**AMERICAN MICROSEMICONDUCTOR, INC.**, 133  
 Kings Rd, Madison, NJ 07940, Tel: 201-377-9566, FAX:  
 201-377-3078; Empl: 15; Sls. Mgr.: W. M. Foley; Dist. Mgr.:  
 D. B. Wilson

**AMERICAN MICROSYSTEMS, INC.**, Nikko Kyodo,  
 Ltd., 2300 Bucksin Road, Pocatello, ID 83201, Tel: 208-  
 233-4690, FAX: 208-234-6795; Empl: 1700; Sls. Mgr.:  
 Harold Blomquist; Dist. Mgr.: Harold Blomquist

**AMERICAN MICROWAVE TECHNOLOGY, INC.**,  
 3080 Enterprise Street, Suite A, Brea, CA 92621, Tel: 714-  
 993-0802, FAX: 714-993-1619; Empl: 34; Sls. Mgr.: Lowell  
 A. Beezley

**AMERICAN MONARCH**, 2801-37th Ave., N.E.,  
 Minneapolis, MN 55421, Tel: 612-788-9161, FAX: 612-  
 788-2057; FSC No.: 11146; Empl: 120; Sls. Mgr.: Kathleen  
 Varga

**AMERICAN NEURALOGIX, INC.**, 411 Central Pk. Drive,  
 Sanford, FL 32771, Tel: 407-322-5608, FAX: 407-322-  
 5609; Empl: 14; Sls. Mgr.: Richard T. English; Dist. Mgr.:  
 Richard T. English



**FAX: 716-652-4814**

**AMERICAN PRECISION IND., DELEVAN/SMD  
 DIVISIONS**, 270 Quaker Rd., E. Aurora, NY 14052, Tel:  
 716-652-3600; FSC No.: 5950; Empl: 250; Sls. Mgr.: Denis  
 C. Kohlhaas **A•1186-1189**

*Local Sales Offices & Reps*

CA West Lake Vlg., First Rep of Southern Calif.  
 805-373-0887  
 CO Parker, TMA .... 303-841-3435  
 FL Orlando, Comp. Design Mktg. .... 407-240-3903  
 IN Ft. Wayne, Johnson Grp., Inc. .... 219-471-7100  
 IA Cedar Rapids, C. Horn & Assocs. .... 319-393-8703  
 KS Parker, S.W. Assocs. .... 913-898-6552  
 MD Lutherville, J.A. Dougherty Sls. Co. .... 301-321-7890  
 MA Sterling, Compatible Comps. Inc. .... 508-422-3327  
 MN Mendota Hgts., G-II Sls. .... 612-454-3086  
 NJ Morristown, T.A.I. .... 609-778-5353  
 NJ Ridgewood, Ballou Inc. .... 201-444-6990  
 NY Mendon, Tech-Mark .... 716-624-2314  
 NC Charlotte, JWL .... 704-541-5750  
 OH Troy, S-Tek .... 513-339-5974  
 TX Irving, Kite Elctm. Sls. .... 214-986-0321  
 Can Dorval, Que., J.G. Weiss Co. .... 514-685-6644

*Local Distributors*

CA Irvine, ITT Multicomponents .... 714-727-4001  
 CO Littleton, Indelco .... 303-795-3431  
 FL Ft. Lauderdale, Brothers Elctms. of FL  
 800-342-6700  
 MA Sterling, Compatible Comps. Inc. .... 508-422-7641  
 NH Nashua, Brevan Elctms. .... 603-889-7230  
 NJ E. Brunswick, Brothers Elctms., Inc. .... 908-238-2200  
 NY Plainville, ACI Elctms. Corp. .... 516-293-6630  
 SC Darlington, Aero, Inc. .... 803-395-6575  
 TX Ft. Worth, Patco .... 817-429-8596  
 Can Willowdale, Ont, Electrosonic .... 416-494-1555

**AMERICAN RADIONIC CO. INC.**, 32 Hargrove Grade,  
 Palm Coast, FL 32137, Tel: 904-445-6000, FAX: 904-445-  
 6871; Empl: 200



**American  
 Relays, Inc.**

**FAX: 310-944-0590**

**AMERICAN RELAYS, INC.**, 10306 Norwalk Blvd., Santa  
 Fe Springs, CA 90670, Tel: 310-944-0447; FSC No.:  
 1HY41; Empl: 45; Sls. Mgr.: Richard Lenning

**B•1407-1411**



## Local Sales Offices &amp; Reps

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| AL | Madison, Benchmark Technical Sales  | 205-464-0033 |
| CA | Irvine, Yale Elctm. Assocs.         | 714-551-4004 |
| CT | Guilford, Data Mark, Inc.           | 203-453-0575 |
| FL | St Petersburg, Bolton Assocs.       | 813-864-2294 |
| GA | Norcross, Benchmark Technical Sales | 404-446-1711 |
| IA | Cedar Rapids, Dy-Tronix, Inc.       | 319-377-8275 |
| KS | Leawood, Dy-Tronix, Inc.            | 319-339-6333 |
| MO | Bridgeton, Dy-Tronix, Inc.          | 314-291-4777 |
| NY | Jericho, J-Square Mktg, Inc.        | 516-935-3200 |
| NC | Raleigh, Benchmark Tech. Sls., Inc. | 919-850-0633 |
| OH | Cleveland, Components, Inc.         | 216-243-9200 |
| OH | Dayton, Components, Inc.            | 513-372-7411 |

## Local Distributors

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| AZ | Phoenix, Keystone Electro Sls.   | 602-995-3005 |
| FL | Fl. Lauderdale, Brothers Elctms. | 305-561-6700 |
| MN | Minneapolis, The Bergquist Co.   | 612-835-2322 |
| NJ | East Brunswick, Brothers Elctms. | 201-238-2200 |

AMERICAN RESEARCH & ENGINEERING, 1500 Executive Dr., Elgin, IL 60123, Tel: 708-888-7245, FAX: 708-888-7094; Dist. Mgr.: Nancy Crenshaw



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OAKLAND, CA 94606



FAX: 408-945-6357

AMERICAN SKYNET ELECTRONIC CO., 1474  
Gladding Ct., Milpitas, CA 95035, Tel: 408-945-6355; Empl.:  
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## Local Sales Offices &amp; Reps

CA Santa Ana, Amtek Elctm. Co. 714-751-6181

AMERICAN SWITCH CORP., See Mors Components, Inc.

AMERICAN TECHNICAL CERAMICS  
CORPORATION, 1 Norden La., Huntington Sta., NY  
11746-2102, Tel: 516-547-5700, FAX: 516-547-5748; FSC  
No.: 29990; 11272-868-73; Empl.: 497; Sls. Mgr.: Ralph  
Wood, Global Sls. Mgr.

AMERICAN TIME PRODS. DIV., See Frequency  
Control Prods., Inc.

AMERICAN TRANS-COIL CORPORATION, 124-06  
101 Ave., P.O. Box 357, Richmond Hill, NY 11419-1410, Tel:  
718-441-5207, FAX: 718-441-4930; FSC No.: 18212;  
Empl.: 45; Sls. Mgr.: Walter T. Clancy

AMERICAN ULTRAVIOLET, 562 Central Avenue, Murray  
Hill, NJ 07974, Tel: 908-665-2211, TELEX: 13-9266, FAX:  
908-665-9523; Empl.: 26; Sls. Mgr.: Patrick M. Higgins;  
Dist. Mgr.: Patrick M. Higgins

AMERICAN WIRE & ELECTRONICS, 3198K Airport  
Loop Drive, Costa Mesa, CA 92626, Tel: 714-957-5738,  
FAX: 714-957-1614; Empl.: 5; Sls. Mgr.: Greg Corzine;  
Dist. Mgr.: Ray Forbes



FAX: 714-831-8642

AMERICAN ZETTLER, 75 Columbia, Aliso Viejo, CA  
92656, Tel: 714-831-5000; Empl.: 200; Sls. Mgr.: Fred  
Harmon B-1412-1415

## Local Sales Offices &amp; Reps

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| AL  | Madison, Benchmark Tech. Sls.                  | 205-464-0033 |
| AZ  | Scottsdale, Luscombe Engrg. Co.                | 602-949-9333 |
| CA  | Canyon Country, Interconn                      | 805-298-3199 |
| CA  | Newbury Park, Interconn                        | 805-499-4024 |
| CA  | San Diego, Cetinske Sls. Co.                   | 619-487-3335 |
| CA  | San Jose, Arnold Tech. Sls., Inc.              | 408-954-0400 |
| CA  | Trabuco Canyon, Interconn                      | 714-589-4655 |
| CO  | Longmont, Luscombe Engrg. Co.                  | 303-772-3342 |
| CT  | Madison, Focus Elctm. Sls., Inc.               | 203-245-4314 |
| IA  | Cedar Rapids, J.R. Sls. Engrg. Inc.            | 319-393-2232 |
| FL  | Melbourne, Synergistic Technlgs., Inc.         | 407-242-9661 |
| FL  | Odessa, Synergistic Technlgs., Inc.            | 813-920-5814 |
| GA  | Norcross, Benchmark Tech. Sls.                 | 404-446-1711 |
| IL  | Arlington Hgts., KMA Sls. Co.                  | 708-398-5300 |
| IN  | Carmel, Berndt Assocs.                         | 317-844-0114 |
| KS  | Overland Pk., AME Sls.                         | 913-492-3971 |
| MD  | Gaithersburg, Naudain Assocs. So. Inc.         | 301-258-5040 |
| MA  | Taunton, Focus Elctm. Sls., Inc.               | 508-824-3840 |
| MI  | Brighton, AP Assocs., Inc.                     | 313-229-6550 |
| MN  | Minneapolis, R.W. Marshall Co.                 | 612-929-0457 |
| MO  | St. Charles, AME Sls.                          | 314-928-2599 |
| NJ  | Edison, R. E. Breuer Co., Inc.                 | 908-561-6161 |
| NJ  | Marlton, Naudain Assocs., Inc.                 | 609-983-5300 |
| NY  | Jericho, R. E. Breuer Co., Inc.                | 516-935-3330 |
| NY  | Rochester, Union Mktg. Grp.                    | 716-546-7820 |
| NC  | Raleigh, Benchmark Tech. Sls., Inc.            | 919-850-0633 |
| OH  | Cincinnati, Makin & Assocs.                    | 513-871-2424 |
| OH  | Dublin, Makin & Assocs.                        | 614-793-9545 |
| OH  | Solon, Makin & Assocs.                         | 216-248-7370 |
| OR  | Portland, Thorson Co. N.W.                     | 503-293-9001 |
| TX  | Irving, AID Elctms.                            | 214-790-4761 |
| UT  | Salt Lake City, Luscombe Engrg.                | 801-268-3434 |
| WA  | Bellevue, Thorson Co. N.W.                     | 206-455-9180 |
| WI  | Milwaukee, KMA Sls. Co.                        | 414-259-1771 |
| Can | Burlington, Ont., Alternate Source Comps. Ltd. | 416-335-6385 |
| Can | Port Coquitlam, B.C., Macom Agencies Ltd.      | 604-942-1292 |

## Local Distributors

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| AL  | Huntsville, Electro-Wise            | 205-721-0773                       |
| AZ  | Tempe, Acacia Elctms.               | 602-894-2874                       |
| AZ  | Tempe, Cypress Elctms.              | 602-966-2256                       |
| AZ  | Tempe, Time Elctms.                 | 602-967-2000                       |
| CA  | Agoura, Cypress Elctms.             | 818-597-9491                       |
| CA  | Agoura Hills, Time Elctms.          | 818-707-2890                       |
| CA  | Chatsworth, C.O. Supply Co.         | 818-998-5841                       |
| CA  | Chatsworth, Time Elctms.            | 818-998-7200                       |
| CA  | Costa Mesa, Cypress Elctms.         | 714-549-2424                       |
| CA  | Fremont, Acacia Elctms.             | 510-623-7500                       |
| CA  | Irvine, Acacia Elctms.              | 714-660-0834                       |
| CA  | Irvine, Kensington Elctms.          | 714-588-0575                       |
| CA  | Oakland, Master Distrs.             | 510-835-1500,<br>FAX: 510-835-0398 |
| CA  | San Diego, Acacia Elctms.           | 619-597-0577                       |
| CA  | San Diego, Cypress Elctms.          | 619-535-0011                       |
| CA  | San Diego, Time Elctms.             | 619-674-2800                       |
| CA  | San Jose, Spectra Elctms.           | 408-955-7800                       |
| CA  | Santa Clara, Components Ctr.        | 408-988-3751                       |
| CA  | Santa Clara, Cypress Elctms.        | 408-980-2500                       |
| CA  | Santa Monica, Master Distrs.        | 310-452-1229,<br>FAX: 310-399-8600 |
| CA  | Sunnyvale, Time Elctms.             | 408-734-9888                       |
| CA  | Tustin, Time Elctms.                | 714-669-0100                       |
| CA  | Woodland Hills, Time Elctms.        | 818-593-8400                       |
| CO  | Englewood, Cypress Elctms.          | 303-792-5829                       |
| CO  | Englewood, Time Elctms.             | 303-721-8882                       |
| CO  | Wheatridge, Acacia Elctms.          | 303-421-7004                       |
| CT  | Milford, Fleet Elctms., Inc.        | 203-877-2577                       |
| CT  | Southbury, Time Elctms.             | 203-271-3200                       |
| FL  | Boca Raton, Zelcon, Inc.            | 407-451-1600                       |
| FL  | Orlando, Time Elctms.               | 407-841-6565                       |
| GA  | Norcross, Time Elctms.              | 404-368-0969                       |
| IL  | Lisle, Comps., Inc.                 | 708-852-7707                       |
| IL  | Schaumburg, Time Elctms.            | 708-303-3000                       |
| IN  | Carmel, Altex Elctms.               | 317-848-1323                       |
| MD  | Columbia, Time Elctms.              | 301-964-3090                       |
| MD  | Jessup, Treeko Sls., Inc.           | 301-470-3300                       |
| MD  | Savage, Pyttrom Inds.               | 301-953-9650                       |
| MA  | Boston, Freedom Ind. Grp., Inc.     | 800-888-8005                       |
| MA  | Peabody, Time Elctms./New Eng.      | 508-532-6200                       |
| MN  | Eden Prairie, Cypress Elctms.       | 612-934-2104                       |
| MN  | Edina, Time Elctms.                 | 612-943-2433                       |
| MN  | New Brighton, Chris Elctms. Distrs. | 612-631-2647                       |
| MO  | Manchester, Time Elctms.            | 314-391-6444                       |
| MO  | St. Charles, Finnigan Elctms.       | 314-946-6201                       |
| NJ  | Marlton, Time Elctms.               | 609-596-6700                       |
| NJ  | Oakland, Relay Spec.                | 201-337-1000                       |
| NJ  | W. Berlin, General Comps., Inc.     | 609-768-6767                       |
| NJ  | Wayne, Time Elctms.                 | 201-785-8250                       |
| NY  | Farmingdale, Pride Elctms.          | 516-293-4020                       |
| NY  | Hempstead, Time Elctms.             | 516-273-0100                       |
| NC  | Oxford, Time Elctms.                | 919-693-5166                       |
| NC  | Raleigh, Resco/Raleigh              | 919-781-5700                       |
| NC  | Raleigh, Time Elctms.               | 919-847-9650                       |
| OH  | Columbus, Time Elctms.              | 614-794-3301                       |
| OR  | Beaverton, Acacia Sls.              | 503-646-3377                       |
| PA  | Montgomeryville, Pyttrom Inds.      | 215-643-2850                       |
| TX  | Dallas, Wallace Elctms.             | 214-340-0400                       |
| TX  | Irving, Cypress Elctms.             | 214-255-0065                       |
| TX  | Richardson, RSC Elctms.             | 214-644-3444                       |
| TX  | Richardson, Time Elctms.            | 214-644-4644                       |
| TX  | Tomball, Wofford Elctms.            | 713-351-2255                       |
| UT  | West Valley, Time Elctms.           | 801-973-8494                       |
| WA  | Bothell, Cypress Elctms.            | 206-483-1144                       |
| WA  | Kirkland, Time Elctms.              | 206-820-1525                       |
| WA  | Redmond, Acacia Elctms.             | 206-881-5566                       |
| WI  | Milwaukee, Progressive Image        | 414-321-4722                       |
| Can | Burnaby, Intek Elctms.              | 604-294-8100                       |
| Can | Calgary, B&E Indl. Elec.            | 403-243-7211                       |

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| Can | Ottawa, Rohde & Schwarz Canada | 613-592-8000 |

**AMPLIFONIX, INC.**, 2707 Black Lake Place, Philadelphia, PA 19154, Tel: 215-464-4000, FAX: 215-464-4001; FSC No: 60979; Empl: 75; Sls. Mgr.: Michael Sonstein; Dist. Mgr.: Michael Sonstein

**AMPROBE INSTRUMENT**, Core Industries, Inc., 630 Merrick Rd., Lynbrook, NY 11563, Tel: 516-593-5600, FAX: 516-593-5682; Empl: 200; Sls. Mgr.: Duncan Ladd, VP Sls

**AMPRO COMPUTERS, INC.**, 990 Almanor Ave., Sunnyvale, CA 94086, Tel: 408-522-2100, FAX: 408-720-1305; Empl: 51; Sls. Mgr.: Victor Maccharoli/Brian McConnell

**AMPTEC ELECTRONICS**, 12650 Sabre Springs Pky., Ste. 207, San Diego, CA 92128, Tel: 619-578-7816, FAX: 619-578-7816; Empl: 18

**AMPTK, INC.**, 6 De Angelo Dr., Bedford, MA 01730, Tel: 617-275-2242, FAX: 617-275-3470; Empl: 17

**AMPTRONIX, INC.**, P.O. Box 8146, Rowland Heights, CA 91748, Tel: 213-666-1564; Sls. Mgr.: Lou Lim; Dist. Mgr.: Ching Lim

**AMRAD & TRANSCON MFG. CO.**, Div. of D.J. Assocs., Inc., 8411 South Zero St., Fort Smith, AR 72903-7097, Tel: 501-452-3987, FAX: 501-452-7752; FSC No: 55943; Empl: 5; Sls. Mgr.: M. P. Beck; Dist. Mgr.: M. P. Beck

**A M SENSORS, INC.**, 26 Keewaydin Dr., Unit B, Salem, NH 03079-2839, Tel: 603-898-1543, FAX: 603-898-1638; Empl: 10; Sls. Mgr.: Rocco Ciesco

**AMSTAT INDUSTRIES, INC.**, 3012 N. Lake Terrace, Glenview, IL 60025, Tel: 708-998-6210, FAX: 708-998-6218

**AMUNEAL MANUFACTURING CORP.**, 4737 Darrah St., Philadelphia, PA 19124, Tel: 215-535-3000, FAX: 215-743-1715; FSC No: 23740; Empl: 55; Sls. Mgr.: Larry Maltin **C-1683**

**Local Sales Offices & Reps**

|      |                                               |                                 |
|------|-----------------------------------------------|---------------------------------|
| AZ   | Phoenix, Sheffer-Kahn Co.                     | 602-581-0884, FAX: 602-581-3522 |
| CA   | Banning, C.E.M., Inc.                         | 714-845-1216                    |
| CA   | Fremont, Edward Blake Assocs., Inc.           | 510-770-9058, FAX: 510-770-9698 |
| CA   | San Diego, C.E.M., Inc.                       | 619-583-8571, FAX: 619-583-2718 |
| CA   | Santa Ana, C.E.M., Inc.                       | 714-835-2702, FAX: 714-835-0851 |
| CT   | Meriden, MPS Elctms., Inc.                    | 203-235-1414                    |
| MA   | Norwood, MPS Elctms.                          | 617-769-8700, FAX: 617-769-7703 |
| NY   | Yonkers, Sonkin Assocs.                       | 914-968-8282, FAX: 914-968-9187 |
| OH   | Kettering, F.L. Ohmer & Assocs.               | 513-434-1454, FAX: 513-434-2067 |
| OR   | Tigard, Rep-West, Inc.                        | 503-639-0325, FAX: 503-684-9040 |
| TX   | Austin, Eatman Engrg.                         | 512-795-0920                    |
| TX   | Austin, Eatman Engrg. Co.                     | 512-795-0920, FAX: 512-795-0960 |
| TX   | Rockwell, Eatman Engrg.                       | 214-771-1903, FAX: 214-722-3501 |
| WA   | Seattle, Rep-West                             | 206-283-8351, FAX: 206-283-8699 |
| Intl | Israel, Ramat Hasharon, Star-Gal Engrg., Ltd. | 011-972-3-5490226               |
| Can  | Toronto, Ontario, Norgay Entrprs. Ltd.        | 416-234-8966, FAX: 416-234-8970 |

**ANACOM GEN. CORP.**, 1335 S. Claudina St., Anaheim, CA 92805-6235, Tel: 714-774-8080, FAX: 714-774-7388; Empl: 95; Sls. Mgr.: Sye Keene; Dist. Mgr.: Sye Keene

**ANADIX INC.**, 1080 Avenida Acaso, Camarillo, CA 93012, Tel: 805-987-9660, FAX: 805-388-0133; Empl: 15

**ANADYNE POWER SUPPLY DIVISION**, 14005 Stage Road, Santa Fe Springs, CA 90670-5216, Tel: 213-921-9364, FAX: 213-921-8163; Empl: 100

**ANAHEIM AUTOMATION**, 910 E. Orangefair La., Anaheim, CA 92801, Tel: 714-992-6990, FAX: 714-992-0471; Empl: 35



**ANALOG & DIGITAL PERIPHERALS, INC. (ADPI), P.O.**  
Box 499, Troy, OH 45373, Tel: 513-339-2241, FAX: 513-339-0070; FSC No.: 31-0949-745; Empl: 28; Sls. Mgr.: W. Rych Haynes; Dist. Mgr.: Lyle Ellicott

**ANALOG DEVICES, INC.**, One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106, Tel: 617-329-4700, TWX: 710-394-6577, ESYLNK: 62896514, FAX: 617-326-8703; FSC No.: 24355; Empl: 5200; Sls. Mgr.: Joe Reichbach; Dist. Mgr.: Ed Renola

**ANALOG EQUIPMENT CORPORATION**, 3780-9 Burns Rd, Palm Bch. Gardens, FL 33410, Tel: 407-622-3715; FSC No.: 67584; Sls. Mgr.: V. Ratner

**ANALOGIC CORP.**, 8 Centennial Dr., Peabody, MA 01960, Tel: 508-977-3000, FAX: 508-531-7356; Empl: 1200; Sls. Mgr.: Marlyn Culverhouse **D-1170**

**Local Sales Offices & Reps**  
CA San Diego, Analogic Corp. .... 619-484-7661  
OH Parma, Analogic Corp. .... 216-884-4420  
PA Chalfont, Analogic Corp. .... 215-997-1808

**ANALOGIC CORP., Data Conversion Prods. Grp.**, 360 Audubon Rd, Wakefield, MA 01880, Tel: 508-977-3000, FAX: 617-245-1274; Empl: 1200; Sls. Mgr.: D. Travers **D-1170**



**ANALOG  
MODULES INC.**

**FAX: 407-834-3806**

**ANALOG MODULES, INC.**, 126 Baywood Avenue, Longwood, FL 32750-3426, Tel: 407-339-4355; FSC No.: 61651; Empl: 48; Sls. Mgr.: W.C. Hudson, Exec. VP; Dist. Mgr.: Mark Roberts **B-1210; D-1005, 1573**

**Local Sales Offices & Reps**  
NJ Madison, DJ Assocs. .... 201-822-0002

**ANALOG SYSTEMS, P.O. Box 17389**, Tucson, AZ 85731-7389, Tel: 602-290-1818, FAX: 602-885-1189; Empl: 9; Sls. Mgr.: Sharon Raban; Dist. Mgr.: Sharon Raban

**ANALYTIC TECHNOLOGY CORP.**, 15233 N.E. 90th, Redmond, WA 98052, Tel: 206-883-2445, 800-428-2808, FAX: 206-882-2138; Empl: 10; Sls. Mgr.: Jim Dooley

**ANAREN MICROWAVE, INC.**, P.O. Box 178, 6635 Kirkville Rd, E. Syracuse, NY 13057, Tel: 315-432-8930, FAX: 315-432-9121; FSC No.: 31597; Empl: 300

**ANATECH ELECTRONICS, INC.**, 94 Jewell St, Garfield, NJ 07026, Tel: 201-772-4242, FAX: 201-772-4646; Empl: 10

**ANCO ELECTRONICS, INC.**, 9477 Archibald Avenue, Rancho Cucamonga, CA 91730, Tel: 1-800-545-ANCO, FAX: 714-989-9935

**ANCOT**, 115 Constitution Drive, Menlo Park, CA 94025, Tel: 415-322-5322, FAX: 415-322-0455; Empl: 10; Sls. Mgr.: Chris Lynch

**AND**, William J. Purdy Co., 770 Airport Blvd, Burlingame, CA 94010, Tel: 415-347-9916, TELEX: 677-1439, FAX: 415-340-1670; FSC No.: (PURDY UW); Empl: 32; Sls. Mgr.: Clarence Bruce

**ANDEEN-HAGERLING, INC.**, 31200 Bainbridge Rd, Cleveland, OH 44139-2231, Tel: 216-349-0370, TELEX: 4931432, FAX: 216-349-0359; Empl: 9; Sls. Mgr.: Eric Whitman



**FAX: 814-696-0403**

**ANDERSON ELECTRONICS, P.O. Box 89**, Hollidaysburg, PA 16648, Tel: 814-695-4428; Empl: 60; Sls. Mgr.: Mike Martin **A-1333**

**Local Sales Offices & Reps**  
CA Sunnyvale, Logan Sls. .... 408-732-6020  
GA Lawrenceville, B. T. Funderburk, Inc. .... 404-963-9495

**IL** South Elgin, R.K. Elctm. .... 708-695-8552  
**KS** Westwood, E.P.I. Inc. .... 913-432-1792  
**MA** Woburn, Microwave Comp. Mktg., Inc. .... 617-273-3106  
**MI** Southfield, R. C. Nordstrom & Co. .... 313-559-7373  
**MO** St. Louis, E.P.I. Inc. .... 314-962-1411  
**NC** Raleigh, B. T. Funderburk, Inc. .... 919-846-2373  
**OR** Beaverton, Harry Levinson Co. .... 503-690-1312  
**PA** Souderton, Intek, Inc. .... 215-723-0433  
**TX** Plano, GW Prods. .... 214-422-1746  
**WA** Seattle, Harry Levinson Co. .... 206-382-1300  
**Can** Hamilton, Ont., Cartwright Southall Assocs. .... 416-528-0294

**ANDERSON POWER PRODUCTS, Div. of High Voltage Engineering**, 145 Newton St, Boston, MA 02135, Tel: 617-787-5880, TELEX: 940453, FAX: 617-254-9217; Empl: 110; Sls. Mgr.: Tom Fielding



**FAX: 401-333-0287**

**ANDON ELCTRNS. CORP.**, 4 Court Dr, Lincoln, RI 02865, Tel: 401-333-0388; FSC No.: OE2T2; Empl: 55; Sls. Mgr.: Jack Galinev; Dist. Mgr.: Peter Gallotello, Mktg. Mgr. .... **C-1256-1259**

**Local Sales Offices & Reps**  
**AL** Huntsville, Dixie Tech. Mktg. .... 205-539-1405  
**AL** Huntsville, SACS .... 205-533-4229  
**CA** Los Angeles, TNT & Assocs. .... 714-830-6096  
**CA** San Jose, Integrated Tech. Sls. .... 408-727-3406  
**CO** Littleton, Con-Tek Mktg., Inc. .... 303-973-8490  
**CT** N. Bradford, Todino Engrg. Sls. .... 203-488-2896  
**FL** Boca Raton, SACS .... 407-391-1034  
**GA** Norcross, SAC .... 404-447-6154  
**IL** Arlington Heights, Greenslade Sls., Inc. .... 708-593-3450

**MD** Baltimore, Baguol/Grimm Assocs. .... 410-719-0770  
**MN** Minneapolis, D.A. Case Assocs., Inc. .... 612-831-6777  
**NJ** Venture Quest, Inc. .... 201-377-4922  
**NY** Fairport, L-Mar Assocs., Inc. .... 715-425-9100  
**NC** Raleigh, SACS .... 919-859-9970  
**OH** Dayton, Dirckson & Assoc. Inc. .... 513-294-3657  
**OH** Richfield, Geotronics Inc. .... 216-659-6100  
**OK** Tulsa, Advance Tech. Sls. .... 918-664-0482  
**OR** McMinnville, Electro-Design .... 503-472-0481  
**PA** Ft. Washington, SMC .... 215-628-3394  
**RI** Smithfield, Todino Sls. .... 401-232-5656  
**TX** Dallas, Advance Tech. Sls. .... 214-340-1300  
**Can** Concord, Ont., Votron Elctms., Inc. .... 416-699-9870

**Local Distributors**  
**CA** San Jose, Spectra Elctms. .... 408-452-1590  
**CA** Santa Clara, Trinity Elctms. .... 408-980-9011  
**MD** Gaithersburg, Axis Elctms., Inc. .... 301-840-9640  
**NY** Rochester, Masline Elctms. .... 716-546-5373  
**NY** Syracuse, Lead Elctms. .... 315-454-4544  
**OH** Columbus, Spectra Elctms. .... 614-265-2250  
**TX** Tomball, Wolford Elctms. .... 713-351-2255  
**Can** Woodbridge, Ont., Ryantronics Sls. & Importing .... 416-856-2992

**ANDOVER, INC.**, 310 North Earl Avenue, Lafayette, IN 47904, Tel: 317-447-1157, FAX: 317-447-1150; Empl: 120; Sls. Mgr.: Harry O. Minns

**ANDREW CORP.**, 10500 W. 153rd St, Orland Pk, IL 60462, Tel: 800-255-1479, TELEX: 25-3897, FAX: 708-349-5943; Sls. Mgr.: Henry Duvalsaint

**ANDREW CORPORATION**, 4301 Westbank Dr., Ste. A-100, Austin, TX 78746, Tel: 800-331-4144, 512-314-3000, FAX: 512-314-3193; Empl: 350; Sls. Mgr.: John Chvatal, Dir of Sls.

**ANDUFET DIGITAL CORP.**, 545 W. Allen Ave., San Dimas, CA 91773, Tel: 909-394-0171, FAX: 909-394-9931; Empl: 3

**ANGO ELECTRONICS CORP.**, 29 Ewing Ave., North Arlington, NJ 07031, Tel: 201-955-0800, FAX: 201-955-2332; Sls. Mgr.: John Ngo **C-1014**

**ANGSTROHM PRECISION, INC.**, Dale Electronics, 18400 Precision Place, Hagerstown, MD 21742, Tel: 301-739-8722, FAX: 301-797-6852; Empl: 500; Sls. Mgr.: Don Hutzell **A-1923**

**ANGUS ELECTRONICS CO.**, Box 24000, Indianapolis, IN 46224, Tel: 317-244-7611, TELEX: 027-419, FAX: 317-247-4749; FSC No.: 72264; Empl: 2000; Sls. Mgr.: Thomas W. Pilcher

**ANNULUS TECHNICAL INDUSTRIES, INC.**, P.O. Box 1390, 101 Nelson St, Port Dover, Ont., CAN NOA 1N0, Tel: 519-583-3440, FAX: 519-583-3460; Empl: 21; Sls. Mgr.: Don MacAdam

**ANORAD CORP.**, 110 Oser Ave., Hauppauge, NY 11788, Tel: 516-231-1995, FAX: 516-435-1612; Empl: 280; Sls. Mgr.: Amir Chitayat, VP Sls.

**ANRITSU WILTRON SALES CO.**, 685 Jarvis Dr., Morgan Hill, CA 95037-2809, Tel: 408-776-8300, FAX: 408-776-1744; Empl: 100; Sls. Mgr.: Bill Wiedemann

**ANSONICS, INC.**, P.O. Box 910, Halfway, OR 97834, Tel: 503-742-7475, FAX: 503-742-2991; Empl: 6

**ANTENNA RESEARCH ASSOCIATES**, 11317 Frederick Ave., Beltsville, MD 20705, Tel: 301-937-8888, FAX: 301-937-2796; FSC No.: 23360; Empl: 30; Sls. Mgr.: H.W. Rapalus

**ANTENNA SPECIALISTS, The Allen Group**, 30500 Bruce Industrial Pkwy., Cleveland, OH 44139, Tel: 216-349-8400, TELEX: 4332133 (AS INTL CLV), FAX: 216-349-8407; Empl: 1000; Dist. Mgr.: Patty Fritz, Natl. Distr. Sls. Mgr.

**ANTEX DIVISION**, 24 Tioga Way, P.O. Box 615, Marblehead, MA 01945, Tel: 617-631-7100, FAX: 617-631-8887; Sls. Mgr.: C. Loutrel; Dist. Mgr.: C. Loutrel

**ANTEX ELECTRONICS CORP.**, 16100 S. Figueroa St., Gardena, CA 90248-2617, Tel: 310-532-3092, FAX: 310-532-8509; Empl: 53; Sls. Mgr.: Richard Gross; Dist. Mgr.: Richard Gross

**ANTONA CORP.**, 1643 1/2 Westwood Blvd., Los Angeles, CA 90024-5603, Tel: 310-473-8995, FAX: 310-473-7112; Empl: 3; Sls. Mgr.: Katherine Capanna

**ANVIL CASES**, Subsidiary of Zero Corporation, 15650 Salt Lake Ave., City of Industry, CA 91745, Tel: 818-968-4100; FSC No.: 59288; Empl: 109; Sls. Mgr.: Whitt Adams

**AOFR, INC.**, 800 E. Campbell, Suite 108, Richardson, TX 75081, Tel: 214-644-1394, FAX: 214-480-9278; Sls. Mgr.: Dwain Lawhon

**AOT ELECTRONICS, INC.**, 4000 Mac Arthur Blvd, Newport Beach, CA 92660, Tel: 714-852-9999, FAX: 714-261-9999; Empl: 27; Sls. Mgr.: Jon Stevenson

**A. P. CIRCUIT**, 397 Linden St, Brooklyn, NY 11237, Tel: 718-456-2717, TELEX: 428759, FAX: 718-456-2717

**A.P.C.S. AMERICA**, 3286 Kentland Ct. SE, Grand Rapids, MI 49548, Tel: 616-247-1453; Empl: 13; Sls. Mgr.: Julie A. Corby

**A.P.E. CORPORATION**, 142 Peconic Ave., Medford, NY 11763, Tel: 516-654-1197, TWX: 510-228-2120, FAX: 516-289-4735; FSC No.: 57216; Empl: 25; Sls. Mgr.: Arthur Ayala



**FAX: 602-888-3329**

**APEX MICROTECHNOLOGY CORP.**, '5980 N. Shannon Rd, Tucson, AZ 85741, Tel: 602-690-8600, TELEX: 170631; FSC No.: 60024; Empl: 120; Sls. Mgr.: Greg L. Brennan **D-1006-1009, 2068-2069**

**Local Sales Offices & Reps**  
**AZ** Tucson, Apex Microtechnology .... 602-690-8602  
**CA** Los Altos, Kolm Mktg. .... 415-948-2635  
**CA** Manhattan Beach, Com-Star .... 310-318-9803  
**CA** Rancho Cucamonga, Com-Star .... 909-944-5744  
**CT** Lebanon, Signal Sls. Engrg. .... 203-889-4050  
**FL** Seminole, Q Rep .... 813-397-8431  
**IL** Palatine, Vine Sls., Inc. .... 708-934-5476  
**MD** Ellicott, Nelson Elctms. .... 410-747-7887  
**MA** Woburn, Signal Sls. Engrg. .... 617-938-7872  
**MN** Bloomington, Industrial Rep. .... 612-854-8027  
**NH** Newton, Signal Sls. Eng. .... 603-382-3669  
**NJ** Allendale, Eastec Assocs. .... 201-934-7135  
**WI** Appleton, Vine Sls., Inc. .... 414-731-9873

**Local Distributors**  
**AZ** Tucson, Apex .... 602-742-8600  
**Can** Kanata, J-Squared Technlgs. .... 613-592-9540



Can Point-Claire, J-Squared Technlgs. .... 514-694-8330  
Can Rexdale, J-Squared Technlgs. .... 416-674-0927

**A.P.M. HEXSEAL CORPORATION**, 44 Honeck St., Englewood, NJ 07631, Tel: 201-569-5700, TELEX: 13-3403, FAX: 201-569-4106; FSC No.: 97539; Empl: 29; Sls. Mgr: Riva Solins; Dist. Mgr: Riva Solins ..... **B-1669**

**Local Sales Offices & Reps**  
AL Huntsville, L & D Inc. .... 205-837-1469  
AZ Scottsdale, Advent Comp. Corp. .... 602-481-0044  
AR Hot Springs, ASI ..... 501-624-4608  
CA Belmont, Edward B. Hoin Assoc. .... 415-592-6401  
CA Chatsworth, Porter Co. .... 818-700-0808  
CO Englewood, Delltron Co. .... 303-741-2122  
CT Meriden, Gerber Sls. Corp. .... 203-630-3477  
FL Oviedo, Sunland Assocs. .... 407-365-9533  
GA Atlanta, L & D Inc. .... 404-395-7079  
IL Lombard, FF/Hill Gray ..... 708-832-4101  
KS Overland Park, Spectrum Sls. .... 913-648-6811  
MD Silver Spring, NKA Inc. .... 301-585-6141  
MA Burlington, Gerber Sls. .... 617-229-1150  
MI Troy, C.B. Jensen Co. .... 313-643-0506  
MN Bloomington, Mumco ..... 612-854-4161  
NJ Hackensack, CBA/METRO ..... 201-440-4114  
NY Syracuse, Rep Tech. .... 315-437-2845  
NC Raleigh, L & D Inc. .... 919-876-5301  
OH Powell, Val Skol Sls. .... 614-889-0174  
PA Paoli, Tyler Griffin ..... 215-647-1550  
WA Edmonds, Evergreen Mktg. Grp. .... 206-485-8063  
Can Ontario, Deskin Inc. .... 416-475-1412

**Local Distributors**  
CA Garden Grove, Richey Impact Elec. .... 714-895-0060  
CO Littleton, Indelco ..... 303-795-3431  
CT New London, Jan Elctms. .... 203-442-4386  
FL Miami, Elctm. Equip. .... 305-526-6000  
IL Chicago, Newark Elctms. .... 312-784-5100  
IN South Bend, Pei-Genesis ..... 219-287-2911  
KS Wichita, Midwest Fasteners ..... 316-267-3318  
MD Kensington, Marine Air Supp. .... 301-949-9560  
MA Hingham, Sager Elctrl. Sply. .... 617-749-6700  
MI Grand Rapids, S-F Elctms. .... 616-459-0216  
MN Minneapolis, Aero-Space Computer ..... 612-884-4725  
MO Maryland Heights, LCOMP, Inc. .... 314-291-6200  
NY Lynbrook, Peerless Radio ..... 516-593-2121  
OH Cincinnati, Hughes Peters ..... 513-351-2000  
PA Philadelphia, Sanson & Rowland ..... 215-329-9264  
WI Milwaukee, Indst. Elctms. .... 414-276-1212

**APOLLO DISPLAY TECHNOLOGIES, INC.**, 194-22 Morris Ave., Hillsville, NY 11742, Tel: 1-800-LCD-STOC, 516-654-1143, FAX: 516-654-1496; Sls. Mgr: Richard Eicher ..... **B-1019**

**APOLLO MAGNETICS CORP.**, 2720 W. Beverly Blvd., Los Angeles, CA 90057, Tel: 213-381-2500, TWX: 910-321-4348, FAX: 213-384-4067; Empl: 420; Sls. Mgr: Charles Williams

**APPLIED CONTROLS CO., INC.**, 1275 Bloomfield Ave., Fairfield, NJ 07004, Tel: 201-227-5454, Fax: 201-882-1422; FSC No.: 4A725; Empl: 20; Sls. Mgr: W. Merel

**APPLIED DATA SYSTEMS, INC.**, 409A East Preston St., Baltimore, MD 21202, Tel: 800-541-2003, 410-576-0335, FAX: 410-576-0338; Empl: 6; Sls. Mgr: Robert Kondner

**APPLIED DESIGN COMPANY**, 2010 E. Hennepin Ave., Minneapolis, MN 55413, Tel: 612-378-0094, FAX: 612-378-0733

**APPLIED DISPLAY & CONTROL**, 415 W. Golf Rd., Ste. 10, Arlington Heights, IL 60005, Tel: 708-228-9690, FAX: 708-228-9698 ..... **B-1020**

**APPLIED DISPLAY TECHNOLOGY, INC.**, 2150 Anchor Court, Newbury Park, CA 91320, Tel: 805-498-4984, FAX: 805-376-2011; FSC No.: OM3A8; Empl: 15; Sls. Mgr: John Becker

**APPLIED ELECTRO TECHNOLG., INTL.** See Scientific Technologies Inc.

**APPLIED ENGINEERING PRODUCTS**, P.O. Box 510, New Haven, CT 06513, Tel: 203-756-1669, FAX: 203-776-2813; FSC No.: 19505; Empl: 105; Sls. Mgr: Jeff Buccitti; Dist. Mgr: Jeff Buccitti

**APPLIED FIBEROPTICS, INC.**, East Main St., Southbridge, MA 01550, Tel: 508-765-9121, 800-225-7486, FAX: 508-764-3639; Empl: 35; Sls. Mgr: Charles P. Kintsky

**APPLIED INFORMATION SYSTEMS, INC.**, 100 Europa Dr., Ste. 555, Chapel Hill, NC 27514, Tel: 919-942-7801, 800-334-5510, FAX: 919-493-7563; Sls. Mgr: Dawn Edgerton

**APPLIED MAGNETICS**, 75 Robin Hill Rd., Goleta, CA 93117, Tel: 805-683-5353, FAX: 805-967-8227; FSC No.: 11935; Empl: 8,000; Sls. Mgr: Steven E. Beal

**APPLIED MICRO CIRCUITS CORP.**, 6195 Lusk Blvd., San Diego, CA 92121, Tel: 619-450-9333, FAX: 619-450-9885; FSC No.: 367 4112; Empl: 250; Sls. Mgr: Greg Bamhart; Dist. Mgr: Greg Bamhart, V.P. Worldwide Sls.

**APPLIED MICROSYSTEMS CORP.**, 5020 148th Ave NE, Redmond, WA 98052, Tel: 206-882-2000, TELEX: 185196, FAX: 206-883-3049; Empl: 200; Sls. Mgr: Joe Gomula

**APPLIED PLASTICS TECHNOLOGY**, 45 Broadcommon Rd., Bristol, RI 02809, Tel: 401-253-0200, FAX: 401-253-0474; FSC No.: 9330; Empl: 30; Sls. Mgr: John A. MacIntyre III



**FAX: 201-385-0702**

**APPLIED POWER CONVERSION, Technology Dynamics, Inc.**, 100 School St., Bergenfield, NJ 07621, Tel: 201-385-0500; Empl: 70 ..... **D-1574-1578, 2056-2057**

**Local Sales Offices & Reps**  
AL Huntsville, BCI ..... 205-539-4411, FAX: 205-539-4412  
AK Contact The Factory Direct  
CA Contact The Factory Direct  
CA San Diego, Cirolia Elect. Sls. .... 619-743-3015, FAX: 619-743-3804

CA Santa Clara, W.J. Elect. Sls. .... 408-982-9222, FAX: 408-982-9224

CO Contact The Factory Direct  
FL Clearwater, Tech-Rep Assoc. .... 813-872-9900, FAX: 813-573-9370

FL Ft. Lauderdale, Tech-Rep. Assoc. .... 305-791-2708, FAX: 813-573-9370

GA Lawrenceville, BCI ..... 404-962-6826, FAX: 404-962-6338  
HI Contact The Factory Direct  
ID Contact The Factory Direct  
IL Contact The Factory Direct  
IL Arlington Heights, Greenslade Sls. .... 708-593-3450, FAX: 708-593-3468

IN Contact The Factory Direct  
IA Contact The Factory Direct  
KS Contact The Factory Direct  
KY Contact The Factory Direct  
MD Columbia, Delta III Assoc. .... 410-730-4700, FAX: 410-730-0790

MA Topsfield, Whitehead Assoc. .... 508-887-8050, FAX: 508-887-5434

MI Contact The Factory Direct  
MN Minneapolis, Tec Team Sls. .... 612-854-6616, FAX: 612-854-8031

MO Contact The Factory Direct  
MT Contact The Factory Direct  
NE Contact The Factory Direct  
NV Contact The Factory Direct  
NJ Bergenfield, Technology Dynamics Inc. .... 201-385-0500, FAX: 201-385-0702

NM Albuquerque, IMEC ..... 505-275-0936, FAX: 505-294-1121

NY Elmont, Crane & Eger ..... 516-872-0800, FAX: 516-872-9074

NY Fayetteville, Tri-Tech Elctms. .... 315-446-2881, FAX: 315-446-3047

NC Contact The Factory Direct  
OH Chagrin, J.J. Bair & Co. .... 216-543-8617, FAX: 216-543-4406

OR Contact The Factory Direct  
PA Contact The Factory Direct  
SC Contact The Factory Direct  
SD Contact The Factory Direct  
TX Dallas, Tesco Elctm. Sls. .... 214-553-1200, FAX: 214-553-1299

UT Midvale, Christec ..... 801-566-3694, FAX: 801-506-6442

WA Contact The Factory Direct  
WV Contact The Factory Direct  
WI Wauwatosa, Greenslade Sls, Inc. .... 414-258-2727, FAX: 414-258-7725

WY Contact The Factory Direct

**APPLIED TEST SYSTEMS, INC.**, 348 New Castle Rd., Butler, PA 16001, Tel: 412-283-1212, TELEX: 86-6727 ATS, BUTLER, FAX: 412-283-6570; Empl: 80; Sls. Mgr: Dave A. Dineff

**APPROVED PURIFICATION CORP.**, 1088 R. Hope St., P.O. Box 4186, Stamford, CT 06907, Tel: 203-357-0141, FAX: 203-356-1697 ..... **B-1916**

**APROTEK**, 9323 W. Evans Cr Rd., Rogue River, OR 97537, Tel: 503-582-2120, FAX: 503-582-2149; Empl: 8; Sls. Mgr: K. Conley

**APSCO, INC.**, 5976 Heisley Road, Mentor, OH 44060, Tel: 216-352-8961, TELEX: 284580, FAX: 216-354-7306; Empl: 200; Sls. Mgr: Ian Davey-Turner

**APS DYNAMICS, INC.**, 5731 Palmer Way, Ste. A, Carlsbad, CA 92008, Tel: 619-438-4848, TELEX: 4995113 (SHAKE), FAX: 619-438-8845; Empl: 5

**APTEK TECHNOLOGIES, INC.**, DBA Aptek Microsystems, 700 N. W. 12th Ave., Deerfield Beach, FL 33442, Tel: 305-421-8450, FAX: 305-421-8044; FSC No.: 36741; Empl: 50; Sls. Mgr: Dwain Jenkins; Dist. Mgr: Dwain Jenkins

**A.P.W. CO., INC.**, 72 W. Main, Rockaway, NJ 07866, Tel: 201-627-0643, FAX: 201-627-6396; Empl: 14

**apx TECHNOLOGIES INC.**

**FAX: 516-433-1457**

**APX TECHNOLOGIES INC.**, 264 Duffy Ave., Hicksville, NY 11801, Tel: 516-433-1313; Empl: 300; Sls. Mgr: David Baum ..... **A-2266-2267, D-1580-1583**

**Local Sales Offices & Reps**  
CA Pasadena, Electro Mech. Inst. .... 818-795-7193  
CA Santa Clara, Sourcotronics ..... 408-988-8801  
CT Rocky Hill, Jones/Sudders ..... 203-257-3582  
FL Dunedin, John White Assoc. .... 813-733-5319  
MD Manchester, Imagitron Sls. Co. .... 410-374-5600  
MA Wellesley, Brownstone Assoc. .... 617-239-8204  
MI Wyomring, N. Coast Comps. .... 616-249-8910  
MN Plymouth, Highland Elctm. .... 612-557-7022  
NH Hudson, Bob Mirabella ..... 508-877-0884  
NM Albuquerque, Syntech ..... 505-266-7951  
NY Fulton, Jones/Sudders ..... 315-598-6942  
MO Independence, Hitec Central ..... 816-796-6684  
NY Lynbrook, P. Saffler Assoc. .... 516-593-7880  
WA Camas, Elctm. Mktg. Grp. .... 206-834-6548  
WA Redmond, Elctm. Mktg. Grp. .... 206-882-0962  
Can Concord, Ont, Astec Comps. Ltd. .... 416-669-4022

**AQUALARM**, Marine Safety Systems, Inc., 1151 D. Bay Blvd., Chula Vista, CA 91911, Tel: 619-575-4011, FAX: 619-575-4012; FSC No.: 2V373; Empl: 8; Sls. Mgr: John L. Hooper

**ARCHELON INC.**, 460 Forestlawn Rd., Waterloo, Ont., CAN N2K 2J6, Tel: 519-746-7925, FAX: 519-746-7925; Empl: 3; Sls. Mgr: Preston Gurd

**ARCO ELECTRONICS**, 9822 Independence Ave., Chatsworth, CA 91311, Tel: 818-882-8707, FAX: 818-882-6513; FSC No.: 84171; Empl: 10; Sls. Mgr: Randy Ryan

**ARCOLETRIC CORP.**, 9001 Canoga Ave., Canoga Park, CA 91304, Tel: 818-700-1933, FAX: 818-700-9541; Sls. Mgr: Carrie Donze; Dist. Mgr: Carrie Donze ..... **B-1132-1133, 1670-1672**

**Local Distributors**  
CA Hayward, Electro Comps. .... 510-783-5800  
FL Lakeland, Wesgarde ..... 813-644-7564  
CA Los Angeles, Electric Switches ..... 800-252-4640, 800-421-8855  
CA Tustin, Western Switches ..... 213-627-6126  
CA Van Nuys, Wesgarde Comp. .... 818-786-3724  
CT Hartford, Wesgarde Comp. .... 203-527-7705  
IL Carol Stream, Wesgarde Comp. .... 708-653-1460  
KS Overland Park, Wesgarde Comp. .... 913-262-2718  
MD W. Springfield, T. F. Cushing ..... 413-788-7341  
MI Benton Harbor, Benton Elec. Sply. .... 616-925-0060  
MI Grand Rapids, S-F Elctms. .... 616-459-0216  
MO St. Louis, Wesgarde Comp. .... 314-567-7776  
NH Nashua, Wesgarde Comp. .... 603-880-1971  
NJ Denville, Lashen Elctms. .... 201-627-3783  
NJ Mt. Laurel, Wesgarde Comp. .... 609-778-8190  
NY Woodside, Switches Unltd. .... 718-478-5000  
OH Westerville, Wesgarde Comp. .... 614-885-0319  
OR Eugene, Larsco ..... 503-484-7491  
SC Darlington, AERCO, Inc. .... 803-395-6575  
TX Dallas, Wesgarde Comp. .... 214-357-1768



ARC SYSTEMS, INC., 2090 Joshuas Path, Hauppauge, NY 11788-4764, Tel: 516-582-8020, FAX: 516-582-8038; FSC No.: 67245; Sls. Mgr.: Robert Miller

AREMCO PRODUCTS, INC., Box 429, Ossining, NY 10562, Tel: 914-762-0685, FAX: 914-762-1663; Empl: 30; Sls. Mgr.: Peter Schwartz

A.R.F. PRODS., P.O. Box 3128, Boulder, CO 80307-3128, Tel: 303-499-2946, FAX: 303-499-2946; FSC No.: 4G971; Empl: 3

ARGA CONTROLS, 35 E. Glenarm St., Pasadena, CA 91105, Tel: 213-682-3314, FAX: 818-799-9407; FSC No.: 50290; Empl: 25; Sls. Mgr.: Linda Galman

ARGOSSOUND, Argos Products Co., Inc., 600 S. Sycamore St., Genoa, IL 60135-1191, Tel: 800-357-5240, FAX: 815-784-5110; Empl: 25; Sls. Mgr.: Dick Neville; Dist. Mgr.: Ron Evers

ARGO TRANSDATA CORP., 1 Heritage Pk., Clinton, CT 06413-0554, Tel: 203-669-2233, FAX: 203-669-4316; Empl: 25

ARIEL CORPORATION, 433 River Rd., Highland Pk., NJ 08904, Tel: 908-249-2900, FAX: 908-249-2123; Sls. Mgr.: Bob Yarrow



**FAX: 908-996-3891**

ARIES ELECTRONICS, Box 130, Frenchtown, NJ 08825, Tel: 908-996-6841; FSC No.: 51167; Empl: 160; Sls. Mgr.: Frank Folmsbee ..... **A•1689-1691; B•1673; C•1260-1268**

#### Local Sales Offices & Reps

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| AL | Madison, Benchmark Tech. Sls. ....            | 205-464-0033 |
| AZ | Phoenix, C.T. Carlsberg Assocs. ....          | 602-468-0750 |
| CA | San Mateo, Larsen Assoc. ....                 | 415-358-9559 |
| CA | Westlake Vlg., Elkins & Assoc. ....           | 818-597-1075 |
| CO | Denver, West Inc. ....                        | 303-477-8180 |
| FL | Melbourne, The R-Rep Co. ....                 | 407-722-1900 |
| GA | Norcross, Benchmark Tech. Sls. ....           | 404-446-1711 |
| IL | Chicago, M. Gottlieb Assocs. ....             | 312-775-1151 |
| WI | Hartland, Selective Sls. ....                 | 414-367-1133 |
| IN | Indianapolis, Hi-Tek Sls. ....                | 317-887-2564 |
| MD | W. Friendship, Consolidated Techlgs. Co. .... | 301-442-5827 |
| MA | Harvard, Enterprise Tech. ....                | 508-772-6003 |
| MI | Novi, Innovative Sls. & Mktg. ....            | 313-344-8860 |
| MN | Bloomington, Horizon Technlgs. ....           | 612-884-6515 |
| MO | Florissant, Delltron Co., Inc. ....           | 314-839-0033 |
| MO | Kansas City, Delltron Co. ....                | 816-436-6445 |
| NJ | Ho-Ho-Kus, DJ Fisher Co. ....                 | 201-652-0080 |
| NM | Albuquerque, C.T. Carlsberg Assocs. ....      | 505-899-2155 |
| NY | Rochester, Harmon & Sullivan Assoc. Inc. .... | 716-647-6037 |
| NC | Raleigh, Benchmark Tech. Sls. ....            | 919-850-0633 |
| OH | Willoughby Hills, Versatron ....              | 216-944-0082 |
| OR | Hillsboro, Doran Sls. Assocs. ....            | 503-640-4500 |
| PA | Harrisburg, All-Tech Mktg. ....               | 717-540-1204 |
| PA | West Chester, All-Tech Mktg. ....             | 215-344-0134 |
| TX | Burleson, Bounty Elctms. ....                 | 817-447-9775 |
| WA | Redmond, Doran Sls. Assocs. ....              | 206-885-1885 |

#### Local Distributors

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|----|------------------------------------|--------------|
| AZ | Phoenix, Arizona Comps. ....       | 602-269-5655 |
| CA | El Segundo, Force Elctms. ....     | 213-772-1324 |
| CA | Gardena, Cal. Switch & Signal .... | 213-770-2330 |
| CO | Englewood, Indelco ....            | 303-694-9444 |
| FL | Fl. Lauderdale, KSM ....           | 305-971-5900 |
| FL | Palm Bay, CDI ....                 | 407-724-9910 |
| IL | Northbrook, Classic ....           | 312-272-9650 |
| IN | Indianapolis, Meunier ....         | 317-635-3511 |
| MD | Baltimore, Resco ....              | 410-529-0500 |
| MD | Beltsville, Resco Washington ....  | 301-937-9100 |
| MA | Middleboro, Glynn Elctms. ....     | 508-947-4262 |
| MA | Needham, Cronin Elctms. ....       | 617-449-5000 |
| MI | Southfield, Michigan Lectrols .... | 313-353-1350 |
| MN | Minneapolis, Bergquist Elect. .... | 612-835-2322 |
| NM | Albuquerque, Harrison ....         | 505-343-1011 |
| NY | Lynbrook, Peerless Radio ....      | 516-593-2121 |
| NY | Rochester, Simcoona Elctms. ....   | 716-328-3230 |
| NC | Cary, Powell Elctms. ....          | 919-487-1212 |
| OH | Willoughby, Gateway Megatech ....  | 216-953-0333 |
| PA | Philadelphia, Powell Elctms. ....  | 215-365-1900 |
| TX | Dallas, Wofford ....               | 214-320-0294 |
| TX | Richardson, Altair Co. ....        | 214-231-5155 |
| UT | Salt Lake City, Kimball ....       | 801-328-2075 |

WI Milwaukee, Progressive ..... 414-321-4722  
Can Toronto, SEMAD ..... 416-475-8500

ARI INDUSTRIES, INC., 381 Ari Court, Addison, IL 60101, Tel: 708-953-9100, 800-237-6725, FAX: 708-953-0590; FSC No.: 04849; Empl: 56; Sls. Mgr.: D. J. MacKenzie; Dist. Mgr.: D. J. MacKenzie

ARISTO COMPUTERS INC., 6700 SW 105th Avenue, Ste. 307, Beaverton, OR 97005, Tel: 503-626-6333, 800-327-4786, FAX: 503-626-6492; Sls. Mgr.: Linda Fish, Ntl. Sls. Coord.

ARISTO COMPUTERS INC., 6700 SW 105th Avenue, Ste. 307, Beaverton, OR 97005, Tel: 503-626-6333, 800-327-4786, FAX: 503-626-6492; Sls. Mgr.: Linda Fish (Natl. Sls. Coord.)

ARISTO GRID LAMP PRODS., 35 Lumber Road, Roslyn, NY 11576, Tel: 516-484-6141, FAX: 516-484-6992; Empl: 21

ARKAY ENGRAVERS, INC., 10-3 Drew Court, Ronkonkoma, NY 11779, Tel: 516-467-7795, FAX: 516-467-8310; FSC No.: 6Z099; Empl: 9; Sls. Mgr.: Kenneth Kaplan

ARK-LES CORP., P.O. BOX 14466, Raleigh, NC 27620, Tel: 919-231-2000, FAX: 919-231-9825; Empl: 350



ARMBAR INDUSTRIES INCORPORATED

**FAX: 908-679-3222**

ARMBAR INDUSTRIES, INC., 139 White Oak Lane, Old Bridge, NJ 08857, Tel: 908-679-3377; FSC No.: 2R610; Empl: 11; Sls. Mgr.: Stephen Gregg ..... **A•1015**

#### Local Sales Offices & Reps

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Huntsville, Elctm. Prods. ....       | 205-880-1156 |
| CA | Pleasanton, C.F.M.C. ....            | 510-417-0450 |
| MD | Rockville, C.E. Tech. Elctms. ....   | 301-983-2140 |
| MA | Lowell, Underwood Sls. ....          | 617-256-8191 |
| MO | Grandview, R. R. Burton Assocs. .... | 816-763-5385 |
| PA | Saegertown, Multi-Phase ....         | 814-763-3640 |

ARMEL ELECTRONICS, 1601 75th St., N. Bergen, NJ 07047, Tel: 201-869-4201, FAX: 201-869-4304; FSC No.: 91663; Empl: 55; Sls. Mgr.: V. A. Pasqualino

ARNOLD ENGINEERING COMPANY, Sub. SPS Technologies, 300 West Street, Marengo, IL 60152, Tel: 815-568-2000, FAX: 815-568-2228; Empl: 650; Sls. Mgr.: E. F. Migely, V.P. Mktg./Sls.



**FAX: 805-484-4113**

ARNOLD MAGNETICS, 4000 Via Pescador, Camarillo, CA 93012, Tel: 805-484-4221; FSC No.: 04879; Empl: 100; Sls. Mgr.: Glen Underwood ..... **D•1585-1591**

#### Local Sales Offices & Reps

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|----|---------------------------------------------|--------------|
| AL | Huntsville, Arnold Magnetics Corp. ....     | 800-421-8181 |
| AZ | Phoenix, Arnold Magnetics Corp. ....        | 800-421-8181 |
| CA | Los Angeles, Arnold Magnetics Corp. ....    | 805-484-4221 |
| CA | San Jose, Arnold Magnetics Corp. ....       | 800-421-8181 |
| CO | Denver, Arnold Magnetics Corp. ....         | 800-421-8181 |
| FL | Melbourne, Arnold Magnetics Corp. ....      | 800-421-8181 |
| GA | Atlanta, Arnold Magnetics Corp. ....        | 800-421-8181 |
| IL | Chicago, Arnold Magnetics Corp. ....        | 800-421-8181 |
| MD | Silver Springs, Arnold Magnetics Corp. .... | 800-421-8181 |
| MA | Wayland, Arnold Magnetics Corp. ....        | 800-421-8181 |
| MN | Minneapolis, Arnold Magnetics Corp. ....    | 800-421-8181 |
| MO | St. Louis, Arnold Magnetics Corp. ....      | 800-421-8181 |
| NY | Buffalo, Arnold Magnetics Corp. ....        | 800-421-8181 |
| NY | New Rochelle, Arnold Magnetics Corp. ....   | 800-421-8182 |
| OH | Cleveland, Arnold Magnetics Corp. ....      | 800-421-8181 |
| OH | Dayton, Arnold Magnetics Corp. ....         | 800-421-8181 |
| OK | Tulsa, Arnold Magnetics Corp. ....          | 800-421-8181 |
| OR | Portland, Arnold Magnetics Corp. ....       | 800-421-8181 |

PA Philadelphia, Arnold Magnetics Corp. .... 800-421-8181  
TX Dallas, Arnold Magnetics Corp. .... 800-421-8181  
TX Houston, Arnold Magnetics Corp. .... 800-421-8181  
WA Seattle, Arnold Magnetics Corp. .... 800-421-8181  
WI Milwaukee, Arnold Magnetics Corp. .... 800-421-8181  
Can Montreal, Que., Arnold Magnetics Corp. .... 800-421-8181



**FAX: 908-464-8513**

AROMAT CORP., Matsushita Electrical Works Ltd., 629 Central Avenue, New Providence, NJ 07974, Tel: 908-464-3550, TELEX: 4754170; Empl: 360; Sls. Mgr.: Bob Zegarski; Dist. Mgr.: Jeff Burger ..... **B•1418-1434, 1674**



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| AL                         | Huntsville, Beacon Elctms. Assoc.      | 205-881-5031 |
| AZ                         | Mesa, Sys. Sls. of Arizona, Inc.       | 602-464-9889 |
| CA                         | Garden Grove, Aromat Corp.             | 714-895-7707 |
| CA                         | Garden Grove, Elco                     | 714-891-4621 |
| CA                         | San Jose, Aromat Corp.                 | 408-433-0466 |
| CA                         | Santa Clara, Fahmer-Miller             | 408-727-9800 |
| CO                         | Englewood, Omega Ltd.                  | 303-762-1921 |
| CT                         | Plainville, Northeast Reps.            | 203-866-6030 |
| FL                         | Maitland, EIR, Inc.                    | 407-660-9600 |
| FL                         | Orlando, Aromat Corp.                  | 407-855-1075 |
| GA                         | Atlanta, Beacon Elctms. Assoc.         | 404-256-9640 |
| IL                         | Elk Grove Village, Aromat Corp.        | 708-593-8535 |
| IL                         | Elk Grove Village, Carlson Elctm. Sls. | 708-956-8240 |
| IN                         | Indianapolis, Precision Elctm. Comps.  | 317-842-3740 |
| IA                         | Cedar Rapids, Carlson Elctm. Sls.      | 319-378-1450 |
| IA                         | Davenport, Rush & West Assocs.         | 319-388-9494 |
| KS                         | Olathe, Rush & West Assocs.            | 913-764-2700 |
| MD                         | Manchester, Imagitron Sls.             | 410-374-5600 |
| MA                         | Hingham, Northeast Reps.               | 617-749-8700 |
| MI                         | Detroit, R. P. Urban & Assocs.         | 313-535-2355 |
| MI                         | Grand Rapids, R. P. Urban & Assocs.    | 616-245-0511 |
| MN                         | S. St. Paul, Northport Engrg.          | 612-457-8000 |
| MO                         | St. Louis, Rush & West Assocs.         | 314-965-3322 |
| NH                         | Mt. Vernon, Northeast Reps.            | 603-880-8199 |
| NJ                         | New Providence, Aromat Corp.           | 908-464-3550 |
| NJ                         | W. Caldwell, Mariniello Tech. Sls. Co. | 201-228-4418 |
| NM                         | Albuquerque, SSA Inc. of New Mexico    | 505-889-2901 |
| NY                         | Rochester, Ontec                       | 716-464-8636 |
| NC                         | Raleigh, Beacon Elctms. Assoc.         | 919-787-0330 |
| OH                         | Dublin, J. R. Thornberry Co.           | 614-792-5171 |
| OH                         | Allison Park, J. R. Thornberry Co.     | 216-248-4995 |
| PA                         | Solon, J. R. Thornberry Co.            | 412-492-1150 |
| TX                         | Austin, Component Technlg.             | 512-250-2450 |
| TX                         | Dallas, Component Technlg.             | 214-783-8831 |
| TX                         | Houston, Component Technlg.            | 713-961-1262 |
| TX                         | Richardson, Aromat Corp.               | 214-235-0415 |
| WA                         | Redmond, Sls. & Engrg.                 | 206-883-4999 |
| WA                         | Vancouver, Sls. & Engrg.               | 206-573-4161 |
| WI                         | Waukegan, Carlson Elctm. Sls.          | 414-476-2790 |
| Can                        | Mississauga, Ont., Aromat Canada, Inc. | 416-624-3777 |
| Can                        | Mississauga, Ont., Tech-Trek Ltd.      | 416-238-0366 |
| Can                        | Nepean, Ont., Tech-Trek, Ltd.          | 613-225-5161 |

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| Can | Richmond, B.C., Tech-Trek Ltd.    | 604-276-8735 |
| Can | St. Laurent, Que., Tech-Trek Ltd. | 514-337-7540 |

| Local Distributors |                                      |              |
|--------------------|--------------------------------------|--------------|
| AL                 | Huntsville, Pioneer Technlgs.        | 205-837-9300 |
| AZ                 | Tempe, Acacia/Deanco                 | 800-859-5859 |
| AZ                 | Tempe, Bell Inds.                    | 602-894-2874 |
| AR                 | Little Rock, Newark Elctms.          | 501-225-8130 |
| CA                 | Anaheim, Control Design Supp.        | 714-821-1516 |
| CA                 | Angoura Hills, Bell Inds.            | 818-706-1608 |
| CA                 | Chatsworth, Mil-Comm Dist.           | 213-998-3111 |
| CA                 | Cypress, Bell Inds.                  | 714-805-7801 |
| CA                 | Fremont, Acacia/Deanco               | 415-623-7500 |
| CA                 | Gardena, California Switch & Signal  | 310-538-9830 |
| CA                 | Ingleswood, Newark Elctms.           | 213-671-7066 |
| CA                 | Los Angeles, Master Dists.           | 310-399-8600 |
| CA                 | Oakland, Brill Elctms.               | 510-834-5888 |
| CA                 | Oakland, Master Dists.               | 510-835-1500 |
| CA                 | San Diego, Acacia/Deanco             | 619-565-4365 |
| CA                 | San Diego, Bell Inds.                | 619-268-1277 |
| CA                 | San Jose, Pioneer Technlgs.          | 408-954-9100 |
| CA                 | San Jose, Sierra West                | 408-435-7477 |
| CA                 | Santa Monica, Brill Elctms.          | 310-452-8002 |
| CA                 | Sunnyvale, Bell Inds.                | 408-734-8570 |
| CO                 | Denver, Bell Inds.                   | 303-691-9010 |
| CO                 | Denver, Newark Elctms.               | 303-757-3351 |
| CO                 | Englewood, Indelco                   | 303-694-9444 |
| CO                 | Lakewood, Acacia/Deanco              | 303-232-2882 |
| CO                 | Wheat Ridge, Acacia/Deanco           | 303-421-7004 |
| CT                 | Wallingford, Cronin Elctms.          | 203-265-3134 |
| CT                 | Wallingford, Sager                   | 203-265-4600 |
| CT                 | Yalesville, Glynn Elctms.            | 203-265-2498 |
| FL                 | Altamonte Springs, Bell Inds.        | 407-339-0078 |
| FL                 | Altamonte Springs, Pioneer Technlgs. | 407-834-9090 |

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|----|----------------------------------------|--------------|
| FL | Cleawater, Pioneer Technlgs.           | 813-536-0445 |
| FL | Deerfield Bch, Pioneer Technlgs.       | 305-428-8877 |
| FL | Orlando, Sager                         | 407-240-3114 |
| GA | Concord, Dixie Elctms.                 | 800-277-5916 |
| GA | Norcross, Bell Inds.                   | 404-662-0923 |
| GA | Norcross, Pioneer Technlgs.            | 404-448-1711 |
| GA | Norcross, RS Elctms.                   | 404-242-0520 |
| GA | Norcross, Sager Elctrol                | 404-446-0085 |
| IL | Bensenville, Gould Elctms.             | 708-660-7711 |
| IL | Elk Grove Vll, Bell Inds.              | 708-640-1910 |
| IN | Fl. Wayne, Bell Inds.                  | 219-423-3422 |
| IN | Indianapolis, Bell Inds.               | 317-875-8200 |
| IN | Indianapolis, Control Design Supp.     | 317-788-4614 |
| IN | Indianapolis, Newark Elctms.           | 317-259-0085 |
| IN | Indianapolis, RS Elctms.               | 317-253-9065 |
| MD | Gaithersburg, Pioneer Technlgs.        | 301-921-0660 |
| KS | Kansas City, L. Comp.                  | 816-241-0111 |
| LA | Metairie, Newark Elctms.               | 504-838-9771 |
| MA | Andover, Bell Industries               | 508-474-8880 |
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| MD | Columbia, Sager                        | 301-995-6580 |
| MA | Canton, Richey Impact Elect.           | 617-821-1500 |
| MA | Hingham, Sager Elctms. Supp. Co.       | 617-749-6700 |
| MA | Middleboro, Glynn Elctms.              | 508-947-4262 |
| MA | Needham, Cronin Elctms.                | 617-449-5000 |
| MA | Winchester, Bell Inds.                 | 617-729-5800 |
| MI | Ann Arbor, Bell Inds.                  | 313-971-9093 |
| MI | Flint, RS Elctms.                      | 313-742-5000 |
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| MN | Fridley, Voyager Elctms.               | 612-571-7766 |
| MN | Minneapolis, Control Design Supp. Inc. | 612-721-6555 |

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| MN | Minneapolis, Newark Elctms.         | 612-331-6350 |
| MN | St. Paul, Gopher Elctms.            | 612-490-4900 |
| MO | Maryland Heights, L. Comp.          | 314-426-3150 |
| MO | Maryland Heights, Olive Elctms.     | 314-997-7709 |
| MO | Maryland Hgts., L-Comp              | 314-291-6200 |
| NH | Salem, Sager                        | 603-898-1348 |
| NJ | Mountainside, Mars Elctms.          | 201-233-0044 |
| NJ | Oakland, Relay Specialties          | 201-337-1000 |
| NM | Albuquerque, Bell Inds.             | 505-292-2700 |
| NC | Durham, Pioneer Technlgs.           | 919-544-5400 |
| NY | Farmingdale, Bell Inds.             | 516-752-9303 |
| NY | Hauppauge, Sager                    | 516-348-1300 |
| NY | Lynbrook, Peerless Radio Corp.      | 516-583-2121 |
| NY | Rochester, Masline Elctms.          | 716-546-5373 |
| NY | Rochester, Simcona Elctms.          | 716-328-3230 |
| NC | Charlotte, Dixie Elctms.            | 704-377-5413 |
| NC | Charlotte, Elctms. Mktg. Corp.      | 704-394-6195 |
| NC | Charlotte, Pioneer Technlgs.        | 704-527-8188 |
| NC | Raleigh, Sager                      | 919-850-9550 |
| NC | Winston-Salem, Dixie Elctms.        | 919-724-5961 |
| OH | Columbus, Elctms. Mktg. Corp. (EMC) | 614-299-4161 |

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| OH | Dayton, Bell Inds.                          | 513-434-8231 |
| OH | Dayton, Bell Inds.                          | 513-435-8660 |
| OH | Highland Heights, Elctms. Mktg. Corp. (EMC) | 216-442-3441 |
| OH | Kettering, Elctms. Mktg. Corp. (EMC)        | 513-439-4711 |
| OH | Valley View, Newark Elctms.                 | 216-447-8860 |

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| OK  | Oklahoma City, Newark Elctms.        | 405-495-5000 |
| OK  | Tulsa, Newark Elctms.                | 918-832-7004 |
| OK  | Tulsa, Norvell Elctms.               | 918-254-8606 |
| OR  | Beaverton, Acacia/Deanco             | 503-646-3377 |
| OR  | Lake Oswego, Bell Inds.              | 503-635-6500 |
| OR  | Portland, P&R Inds.                  | 503-292-8682 |
| PA  | Horsham, Pioneer/Del. Vall.          | 215-674-4000 |
| PA  | McKean, Advacom                      | 814-476-7774 |
| PA  | Philadelphia, Sager                  | 215-464-4336 |
| PA  | Pittsburgh, Sager                    | 412-772-2233 |
| PA  | Wayne, Peak Elctms.                  | 215-293-9000 |
| SC  | Columbia, Dixie Elctms.              | 803-779-5332 |
| SC  | Greenville, Dixie Elctms.            | 803-297-1437 |
| TN  | Gray, Dixie Elctms.                  | 615-477-2131 |
| TN  | Oak Ridge, Dixie Elctms.             | 615-481-3393 |
| TX  | Austin, Newark Elctms.               | 512-338-0287 |
| TX  | Austin, Norvell Elctms.              | 512-837-5555 |
| TX  | Austin, Southwest Elctms.            | 512-837-8971 |
| TX  | Corpus Christie, Douglas Elctms.     | 512-883-5103 |
| TX  | Dallas, Computer Comps. Corp.        | 214-239-0271 |
| TX  | Dallas, Newark Elctms.               | 214-340-3585 |
| TX  | Dallas, Norvell Elctms.              | 214-233-0020 |
| TX  | Dallas, Southwest Elctms.            | 214-234-3050 |
| TX  | Garland, Newark Elctms.              | 214-494-5911 |
| TX  | Houston, Newark Elctms.              | 713-782-4800 |
| TX  | Houston, Newark Elctms.              | 713-827-0630 |
| TX  | Houston, Newark Elctms.              | 713-827-7040 |
| TX  | Houston, Norvell Elctms.             | 713-777-1666 |
| TX  | Irving, Newark Elctms.               | 214-256-6585 |
| TX  | Richardson, Bell Inds.               | 214-690-0466 |
| TX  | San Antonio, Newark Elctms.          | 512-349-2641 |
| TX  | Stafford, Southwest Elctms.          | 713-240-4000 |
| UT  | Midvale, Bell Inds.                  | 801-255-9611 |
| VA  | Roanoke, Mexitronics Corp.           | 703-342-4444 |
| WA  | Redmond, Bell Inds.                  | 206-885-9963 |
| WI  | Mequon, Taylor Elec.                 | 414-241-4321 |
| WI  | Waukesha, Bell Inds.                 | 414-547-8879 |
| Can | Calgary, Alberta, Zentronics         | 403-272-1021 |
| Can | Edmonton, Alberta, Deskin Sls. Corp. | 403-466-2106 |

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| Can | Markham, Ont., Deskin Sls. Corp.   | 416-496-2511 |
| Can | Mississauga, Ont., Zentronics      | 416-564-9600 |
| Can | Montreal, Que., Ferrotronics       | 514-341-3450 |
| Can | Nepean, Ont., Carsten Elctms.      | 613-726-9250 |
| Can | Nepean, Ont., Zentronics           | 613-226-8840 |
| Can | Richmond, B.C., Zentronics         | 604-273-5575 |
| Can | Scarborough, Ont., Carsten Elctms. | 416-495-7705 |
| Can | St. Laurent, Que., Carsten Elctms. | 514-334-8321 |
| Can | St. Laurent, Que., Zentronics      | 514-737-9700 |
| Can | Vancouver, B.C., Deskin Sls. Corp. | 604-324-8343 |

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Johnson

**ARRAY MICROSYSTEMS**, 1420 Quail Lake Loop,  
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Mgr.: Douglas Mitchell

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Sls. Mgr.: Jack Schrieffer

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07662, Tel: 201-843-6900, FAX: 201-843-3911; Empl:  
600; Sls. Mgr.: Robert Hand

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FAX: 815-626-8637; Empl: 1000; Sls. Mgr.: Paul  
Schnackenberg; Dist. Mgr.: Paul Schnackenberg

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FAX: 201-428-1426; Empl: 100

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| AL | Huntsville, R. O. Whitesell & Assocs.   | 205-883-5110 |
| AZ | Phoenix, Compass Mktg. & Sls., Inc.     | 602-996-0635 |
| AZ | Scottsdale, Compass Mktg. & Sls.        | 602-585-0025 |
| AZ | Tucson, Compass Mktg. & Sls., Inc.      | 602-293-1220 |
| CA | Chatsworth, WCV-Raltech, Inc.           | 818-700-0933 |
| CA | San Jose, Kottmeier Assocs.             | 408-371-8700 |
| CO | Wheatridge, Waugaman Assocs.            | 303-423-1020 |
| GA | Norcross, R. O. Whitesell & Assocs.     | 404-449-9190 |
| IL | Itasca, Janus, Inc.                     | 708-250-9650 |
| IN | Fl. Wayne, R. O. Whitesell & Assocs.    | 219-432-5591 |
| IN | Indianapolis, R. O. Whitesell & Assocs. |              |
|    |                                         | 317-359-9283 |
| IN | Kokomo, R. O. Whitesell & Assocs.       | 317-457-9127 |
| IA | Cedar Rapids, C. H. Horn & Assocs.      | 319-393-8703 |
| KY | Pewee Valley, R. O. Whitesell & Assocs. |              |
|    |                                         | 502-241-1441 |
| LA | Hammond, Design Mktg. & Assocs.         | 504-542-1115 |
| MD | Annapolis, EES, Inc.                    | 301-269-4234 |
| MI | Grand Blanc, R. O. Whitesell & Assocs.  |              |
|    |                                         | 313-695-0770 |
| MI | Grand Rapids, R. O. Whitesell & Assocs. |              |
|    |                                         | 616-942-5420 |
| MI | Southfield, R. O. Whitesell & Assocs.   | 313-559-5454 |
| MI | St. Joseph, R. O. Whitesell & Assocs.   |              |
|    |                                         | 616-983-7337 |
| MO | St. Louis, John G. Macke Co.            | 314-432-2830 |
| NH | Salem, Sls. Engrg. Co.                  | 603-893-5521 |
| NM | Albuquerque, Compass Mktg. & Sls., Inc. |              |
|    |                                         | 505-888-0800 |
| NY | Buffalo, Quality Comps.                 | 716-837-5430 |
| NY | Manlius, Quality Comps.                 | 315-682-8885 |
| NY | Scotch Plains, Mil Comp.                | 908-322-7898 |
| NJ | Marton, BGR Assocs.                     | 609-983-1020 |
| OH | Cincinnati, R. O. Whitesell & Assocs.   | 513-521-2290 |
| OH | Cleveland, R. O. Whitesell & Assocs.    | 216-447-9020 |
| OH | Columbus, R. O. Whitesell & Assocs.     |              |
|    |                                         | 614-888-9396 |
| OR | Dayton, R. O. Whitesell & Assocs.       | 513-298-9546 |
| OR | Beaverton, Elctm. Sources               | 503-627-0838 |
| PA | Pittsburgh, R. O. Whitesell & Assocs.   |              |
|    |                                         | 412-936-6161 |
| TN | Knoxville, R. O. Whitesell & Assocs.    | 615-694-9476 |
| TN | Nashville, R.O. Whitesell & Assoc.      | 615-352-4760 |
| TX | Austin, Design Mktg. & Assocs.          | 512-263-9151 |
| TX | Dallas, Design Mktg. & Assocs.          | 214-480-8151 |
| TX | Houston, Design Mktg. & Assocs.         | 713-550-3318 |
| UT | Salt Lake City, Waugaman Assocs.        | 801-261-0802 |
| VA | Middleton, EES, Inc.                    | 804-794-8939 |
| WA | Bellevue, Elctm. Sources                | 206-451-3500 |

#### Local Distributors

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| AL | Huntsville, Hall-Mark        | 205-837-8700      |
| AZ | Phoenix, Arizona Comps.      | 602-269-5655      |
| AZ | Phoenix, Hall-Mark           | 602-437-1200      |
| AZ | Tempe, Bell Inds.            | 602-966-7800      |
| AZ | Tucson, Hall-Mark            | 602-742-0515      |
| CA | Agoura Hills, Bell Inds.     | 818-879-9494      |
| CA | Chatsworth, Hall-Mark        | 818-713-4500      |
| CA | Chatsworth, Passive Comps.   | 818-700-8838      |
| CA | Chula Vista, Inter Elctms.   | 619-476-0577 (US) |
| CA | Cypress, Bell                | 805-499-6821      |
| CA | Irvine, Hall-Mark            | 714-727-6000      |
| CA | Rocklin, Bell Inds.          | 916-652-0414      |
| CA | Rocklin, Hall-Mark           | 916-624-9781      |
| CA | San Diego, Bell              | 619-268-1277      |
| CA | San Diego, Hall-Mark         | 619-268-1201      |
| CA | San Jose, Hall-Mark          | 408-432-4000      |
| CA | San Jose, Passive Comps.     | 408-441-1441      |
| CA | San Jose, Passive Technlg.   | 408-435-5566      |
| CA | Santa Fe Spg., Bell JIT/JDE  | 213-921-3611      |
| CA | Sunnyvale, Bell Inds.        | 408-734-8570      |
| CO | Denver, Bell Inds.           | 303-424-1985      |
| CO | Englewood, Hall-Mark         | 303-790-1662      |
| CT | Cheshire, Hall-Mark          | 203-271-2844      |
| CT | Wallingford, Bell Inds.      | 203-269-6801      |
| FL | Altamonte Spgs., Bell Inds.  | 407-339-0078      |
| FL | Casselberry, Hall-Mark       | 407-830-5855      |
| FL | Fl. Lauderdale, Bell Inds.   | 305-421-1997      |
| FL | Largo, Hall-Mark             | 813-541-7440      |
| FL | Melbourne, New Yorker Elect. | 407-727-0955      |
| FL | Pompano, Hall-Mark           | 305-971-9280      |
| FL | Pompano Bch., Peerless       | 305-973-4141      |
| FL | Tampa, Bell Inds.            | 813-541-4434      |
| GA | Duluth, Hall-Mark            | 404-623-4400      |

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|----|--------------------------------|--------------|
| GA | Norcross, Bell Inds.           | 404-662-0923 |
| IL | Elk Grove Vlg., Bell Inds.     | 708-640-1910 |
| IL | Urbana, Bell                   | 217-328-1077 |
| IL | Wood Dale, Hall-Mark           | 312-860-3800 |
| IN | Fl. Wayne, Bell                | 219-423-3422 |
| IN | Indianapolis, Bell             | 317-875-8200 |
| IN | Indianapolis, Bell Inds. JIT   | 317-876-3740 |
| IN | Indianapolis, Hall-Mark        | 317-872-8875 |
| IN | Indianapolis, PEI/Genesis      | 317-879-0700 |
| IN | South Bend, PEI/Genesis        | 219-287-2911 |
| KS | Lenexa, Hall-Mark              | 913-888-4747 |
| MD | Columbia, Hall-Mark            | 301-988-9800 |
| MD | Columbia, Peerless Radio Corp. | 301-997-1717 |
| MD | Jessup, Bell Inds.             | 301-953-2566 |
| MA | Andover, Bell Inds.            | 508-474-8880 |
| MA | Billerica, Hall-Mark           | 617-935-9777 |
| MA | Middleboro, Glynn Elctms.      | 800-225-8684 |
| MA | Middleboro, Glynn Elctms.      | 800-427-4262 |
| MI | Livonia, Hall-Mark             | 313-462-1205 |
| MN | Bloomington, Hall-Mark         | 612-941-2600 |
| MO | Earth City, Hall-Mark          | 314-291-5350 |
| NJ | Fairfield, Bell Inds.          | 201-227-6060 |
| NJ | Moorestown, Hall-Mark          | 609-235-1900 |
| NJ | Parsippany, Hall-Mark          | 201-515-3000 |
| NM | Albuquerque, Bell Inds.        | 505-292-2700 |
| NY | Fairport, Hall-Mark            | 716-425-3300 |
| NY | Lynbrook, Peerless Radio Corp. | 516-593-2121 |
| NY | Mamaroneck, New York Elctm.    | 914-698-7600 |
| NY | Penn Yann, Advacom Technlg.    | 315-536-2221 |
| NY | Ronkonkoma, Hall-Mark          | 516-737-0600 |
| NC | Charlotte, EMC                 | 704-394-6195 |
| NC | Raleigh, Hall-Mark             | 919-872-0712 |
| OH | Centerville, EMC               | 513-439-4711 |
| OH | Cleveland, EMC                 | 216-442-3441 |
| OH | Columbus, EMC                  | 614-299-4161 |
| OH | Columbus, Hall-Mark            | 614-888-3313 |
| OH | Dayton, Advacom Tech.          | 513-274-5900 |
| OH | Dayton, Bell Inds.             | 513-434-8231 |
| OH | Dayton, Bell Inds.             | 513-435-8660 |
| OH | Solon, Hall-Mark               | 216-349-4632 |
| OH | Worthington, Hall-Mark         | 614-888-3313 |
| OH | Worthington, Hall-Mark         | 800-767-0392 |
| OK | Tulsa, Hall-Mark               | 918-251-6110 |
| OR | Lake Oswego, Bell Inds.        | 503-635-6500 |
| PA | Bristol, Bell Inds.            | 215-788-5000 |
| PA | McKean, Advacom Tech.          | 814-476-7774 |
| PA | Philadelphia, Hall-Mark        | 215-355-7300 |
| PA | Philadelphia, PEI-Genesis      | 215-673-0400 |
| PA | Trevoise, Bell Inds.           | 215-953-2800 |
| TN | Jackson, Carlton-Bates         | 901-664-2714 |
| TN | Nashville, Carlton-Bates       | 615-885-3232 |
| TX | Austin, Hall-Mark              | 512-258-8848 |
| TX | Dallas, Hall-Mark              | 214-553-4300 |
| TX | Dallas, Hall-Mark (Corp.)      | 214-343-5000 |
| TX | Houston, Hall-Mark             | 713-781-6100 |
| TX | Richardson, Bell Inds.         | 214-690-0466 |
| UT | Salt Lake City, Bell Inds.     | 801-255-9611 |
| VT | Charlotte, Kelyer Elctms.      | 800-323-0460 |
| WA | Redmond, Priebe Elctms.        | 206-881-2363 |
| WA | Seattle, Bell Inds.            | 206-867-5410 |
| WA | Seattle, Hall-Mark             | 206-547-0415 |
| WI | New Berlin, Hall-Mark          | 414-797-7844 |
| WI | Waukesha, Bell                 | 414-547-8879 |

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| CA  | Santa Clara, Computer Modules      | 408-496-1881 |
| IA  | Cedar Rapids, Rep Assocs. Corp.    | 319-373-0152 |
| KY  | Prospect, Keibler & Assocs.        | 502-228-7283 |
| MD  | Towson, Arbtek Assocs. Inc.        | 410-825-0775 |
| MA  | Burlington, New England Tech. Sls. | 617-229-6387 |
| NJ  | Mahwah, North East Comps.          | 201-825-0233 |
| NJ  | Tinton Falls, McAdam Assocs.       | 908-870-8685 |
| NY  | E. Rochester, Empire Tech. Assoc.  | 716-381-8500 |
| NY  | Skaneateles, Empire Tech. Assoc.   | 315-685-5703 |
| Can | Ontario, B.C., Current Mktg. Inc.  | 416-426-3413 |

**ASC SYSTEMS**, Box 566, St. Clair Shores, MI 48080, Tel: 313-882-1133; Empl: 15; Sls. Mgr.: R. Martin; Dist. Mgr.: D. Leader

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**A.S.I. MICROSYSTEMS, INC.**, (Formerly Andrich Systems, Inc.), 1531 Smithtown Ave., Bohemia, NY 11716, Tel: 516-589-5656, FAX: 516-589-6094; Sls. Mgr.: Robert G. Andrews

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**ASPECT ELECTRONICS INC.**, 12740 Earhart Ave., Auburn, CA 95602, Tel: 916-887-1008, FAX: 916-887-1108; Empl: 42; Sls. Mgr.: Donald Roelands

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**ASSEMBLED ELECTRONIC ENCLOSURES**, 666-668 Tower Rd., Mundelein, IL 60060, Tel: 708-566-2030, FAX: 708-566-4712

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**ASSMANN ELECTRONICS, INC.**, Assmann Electronics GMBH, 1849 W. Drake Dr. Ste. 101, Tempe, AZ 85283, Tel: 602-897-7001, FAX: 602-897-7255; Empl: 22; Sls. Mgr.: Mitch Simpson

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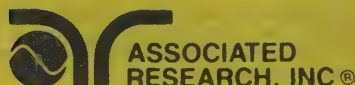
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**D-1226-1227**

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| CA Pleasanton, MMI                        | 510-846-0377 |
| CO Morrison, Energy Equip. Sls.           | 303-697-0662 |
| IN Noblesville, Loren Green Assocs. South | 317-776-9473 |
| NH Nashua, Intersell                      | 603-880-6500 |
| TX Richardson, J. Wisdom & Assocs., Inc.  | 214-470-9093 |
| VA Fairfax, Sci. Assocs., Inc.            | 703-385-0600 |

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**ASSURANCE TECHNOLOGIES, INC.**, 495 Wegner Dr., West Chicago, IL 60185, Tel: 708-231-4800, FAX: 708-231-8844; Empl: 25; Dist. Mgr.: Brian K. Bagan

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**D-1596-1597**

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| AL Huntsville, Murcota                   | 205-539-8476 |
| AZ Scottsdale, Power-Up Elctms.          | 602-955-1105 |
| CA Dana Point, Electro Venture           | 714-496-5225 |
| FL Palm Bch. Gdns., Graham Assocs., Inc. | 407-622-4049 |
| IL Arlington Heights, Berndt Assocs.     | 708-632-0900 |
| IN Carmel, Berndt Assocs.                | 317-844-0114 |
| KS Olathe, Tech. Sls. Assocs.            | 913-829-2800 |
| MD Hunt Valley, Eagle Sls. Corp.         | 301-666-3930 |
| MA Bellingham, OEM Mktg. & Sls.          | 508-528-4983 |
| MI Plymouth, EQS Sys.                    | 313-455-7920 |
| MN Minneapolis, Berndt Assocs.           | 612-546-2021 |
| MO St. Louis, Tech. Sls. Assocs.         | 314-521-2044 |
| NH Intersell                             | 603-880-6500 |
| NY Wantagh, Bytec                        | 516-781-7400 |
| NC Winston-Salem, Murcota                | 919-722-9445 |
| PA Montgomeryville, Eastern Sci. Mktg.   | 215-368-4570 |
| TX Richardson, Jim D. Gray & Assocs.     | 214-699-9976 |
| UT Ogden, Taylor Mktg.                   | 801-546-9570 |
| WI Brookfield, McMahon Sls., Inc.        | 414-782-3335 |

**Local Distributors**

|                                 |              |
|---------------------------------|--------------|
| MA Ashland, Intl. Power Sources | 508-881-7434 |
| OH Chesterland, EQS Sys.        | 216-729-2222 |



**FAX: 619-439-4243**

**ASTEC STANDARD POWER**, 401 Jones Rd., Oceanside, CA 92054, Tel: 619-757-1880; Empl: 600; Sls. Mgr.: Tom Szabo, Dir. of Sls.; Dist. Mgr.: Robert Clabome

**D-1598-1603, 2071-2073**

**Local Sales Offices & Reps**

|                                 |                   |
|---------------------------------|-------------------|
| AZ Tempe, Techni-Source Corp.   | 602-497-0711      |
|                                 | FAX: 602-497-1077 |
| CA Englewood, Omega Ltd.        | 303-762-1921      |
|                                 | FAX: 303-762-1928 |
| CA Los Gatos, Luscombe Engrg.   | 408-370-2020      |
|                                 | FAX: 408-374-8663 |
| CO Colorado Springs, Omega Ltd. | 719-598-6845      |
|                                 | FAX: 719-528-5729 |
| FL Ft. Lauderdale, QXI, Inc.    | 305-978-0120      |
|                                 | FAX: 305-977-4752 |
| FL St. Petersburg, QXI          | 813-894-4556      |
|                                 | FAX: 813-894-3989 |

|                                         |                   |
|-----------------------------------------|-------------------|
| IL Itasca, LTD Technlgs., Inc.          | 708-773-2900      |
|                                         | FAX: 708-773-3058 |
| IA Cedar Rapids, Delltron Co., Inc.     | 319-393-0075      |
|                                         | FAX: 319-393-0058 |
| MD Pasadena, Electronic Engrg. & Sls.   | 410-255-9686      |
|                                         | FAX: 410-255-9688 |
| MA Needham, Com-Sls., Inc.              | 617-444-8071      |
|                                         | FAX: 617-449-8047 |
| MN Edina, Ohms Technlg., Inc.           | 612-932-2920      |
|                                         | FAX: 612-932-2918 |
| MO Florissant, Delltron Co. Inc.        | 314-839-0033      |
|                                         | FAX: 314-839-4290 |
| MO Kansas City, Delltron Co., Inc.      | 816-436-6445      |
|                                         | FAX: 816-436-9982 |
| NJ Moorestown, T.A.I. Corp.             | 609-778-5353      |
|                                         | FAX: 609-778-7828 |
| NM Albuquerque, Techni-Source Corp.     | 505-268-4232      |
|                                         | FAX: 505-268-0451 |
| NY Clarence Ctr., Leonard D. Allen      | 716-634-5403      |
|                                         | FAX: 716-634-5404 |
| NY Melville, Parallax                   | 516-351-1000      |
|                                         | FAX: 516-351-1606 |
| NY Pittsford, Leonard D. Allen          | 716-377-3530      |
| NY Syracuse, Leonard D. Allen           | 315-437-8387      |
|                                         | FAX: 315-437-3710 |
| NC Raleigh, R.W. Mitscher Co., Inc.     | 919-848-0941      |
|                                         | FAX: 919-848-9156 |
| OH Englewood, Carter, McCormic & Peirce | 513-836-0951      |
|                                         | FAX: 513-836-2358 |
| OR Portland, ES/Chase Co., Inc.         | 503-292-8840      |
|                                         | FAX: 503-292-8827 |
| TX Austin, Milco Mktg., Inc.            | 512-343-1275      |
|                                         | FAX: 512-343-0980 |
| TX Missouri City, Milco Mktg., Inc.     | 713-261-7843      |
|                                         | FAX: 713-469-5156 |
| TX Plano, Milco Mktg., Inc.             | 214-578-8827      |
|                                         | FAX: 214-578-7026 |
| WA Kirkland, ES/Chase Co., Inc.         | 206-823-9535      |
|                                         | FAX: 206-821-7257 |
| WI Milwaukee, LTD Technlgs., Inc.       | 414-774-1000      |
|                                         | FAX: 414-774-0593 |
| Can Brampton, Ont., Cantec Reps.        | 416-791-5922      |
|                                         | FAX: 416-791-7940 |
| Can Ottawa, Ont., Cantec Reps.          | 613-725-3704      |
|                                         | FAX: 613-725-0490 |
| Can St. Eustache, Que., Cantec Reps.    | 514-623-5496      |
|                                         | FAX: 514-623-5482 |

**Local Distributors**

|                                |              |
|--------------------------------|--------------|
| AL Birmingham, Newark          | 205-979-7003 |
| AL Huntsville, Future          | 205-830-2322 |
| AL Huntsville, Newark          | 205-837-9091 |
| AL Huntsville, Repton          | 205-722-9500 |
| AL Mobile, Newark              | 205-471-6500 |
| AL Montgomery, Newark          | 205-270-8074 |
| AK Newark                      | 800-321-8984 |
| AZ Phoenix, Future             | 602-968-7140 |
| AZ Phoenix, Newark             | 602-742-9905 |
| AZ Tempe, RicheyCypress        | 602-966-8856 |
| AR Little Rock, Newark         | 501-225-8130 |
| CA Camarillo, Milgray          | 805-484-4055 |
| CA Chatsworth, Future          | 818-772-6240 |
| CA Citrus Hgts., Newark        | 916-721-1633 |
| CA Corona, Compumech           | 714-278-4761 |
| CA Dublin, Newark              | 415-572-8300 |
| CA Garden Grove, RicheyCypress | 714-895-0060 |
| CA Garden Grove, RicheyCypress | 714-898-8288 |
| CA Irvine, Future              | 714-250-4141 |
| CA Irvine, Milgray             | 714-753-1282 |
| CA Los Angeles, Newark         | 213-664-5252 |
| CA Los Angeles, Newark         | 818-242-1900 |
| CA Milpitas, Compumech         | 408-945-9100 |
| CA Orange, Newark              | 714-634-8224 |
| CA San Diego, Future           | 619-625-2800 |
| CA San Diego, Newark           | 619-453-8211 |
| CA San Diego, RicheyCypress    | 619-271-4511 |
| CA San Jose, Future            | 408-434-1122 |
| CA San Jose, Milgray           | 408-456-0900 |
| CA San Jose, Newark            | 408-559-6900 |
| CA San Jose, RicheyCypress     | 408-956-8010 |
| CA Sun Valley, RicheyCypress   | 818-768-0403 |
| CA Thousand Oaks, Compumech    | 805-492-6299 |
| CA Ventura, Newark             | 805-644-2265 |
| CO Colorado Springs, Newark    | 719-576-2644 |
| CO Denver, Newark              | 303-757-3351 |
| CO Englewood, RicheyCypress    | 303-792-5829 |
| CO Lakewood, Future            | 303-232-2008 |
| CT Bethel, Future              | 203-743-9594 |
| CT Bloomfield, Newark          | 203-243-1731 |
| CT E. Hartford, Newark         | 203-289-1416 |
| CT Meriden, Newark             | 203-630-2239 |
| CT Milford, Milgray            | 203-878-5538 |
| CT Newton, Target              | 203-426-4403 |
| CT Seymour, Target             | 203-888-1480 |
| FL Altamonte Springs, Future   | 407-767-8414 |
| FL Boca Raton, Newark          | 407-241-0605 |
| FL Bradenton, Newark           | 813-755-7910 |
| FL Clearwater, Newark          | 813-443-0661 |
| FL Ft. Lauderdale, Repton      | 305-735-1112 |

|                                    |              |
|------------------------------------|--------------|
| FL Ft. Meyers, Newark              | 813-275-6310 |
| FL Jacksonville, Newark            | 904-399-5041 |
| FL Lake Mary, Milgray              | 407-321-2555 |
| FL Largo, Future                   | 813-530-1222 |
| FL Melbourne, Newark               | 407-727-7308 |
| FL Miami, Newark                   | 305-593-2686 |
| FL Orlando, Newark                 | 407-896-8350 |
| FL Plantation, Newark              | 305-424-1566 |
| FL Tampa, Newark                   | 813-287-1578 |
| FL Tampa, Repton                   | 813-854-2000 |
| FL Tampa, Repton                   | 813-854-2351 |
| FL Tampa, Repton                   | 813-855-4650 |
| GA Atlanta, Newark                 | 404-448-9500 |
| GA Atlanta, Newark                 | 404-761-8902 |
| GA Atlanta, Newark                 | 404-951-2363 |
| GA Macon, Newark                   | 912-743-2446 |
| GA Norcross, Future                | 404-441-7676 |
| GA Norcross, Milgray               | 404-446-9777 |
| GA Norcross, Newark                | 404-448-1300 |
| GA Norcross, Repton                | 404-446-1300 |
| HI Aiea, Newark                    | 806-487-8951 |
| ID Boise, Newark                   | 208-342-4131 |
| IL Addison, Newark                 | 708-495-7740 |
| IL Arlington Hgts., Newark         | 708-392-9009 |
| IL Aurora, Newark                  | 708-820-2411 |
| IL Chicago, Hallmark               | 708-860-3800 |
| IL Chicago, Newark                 | 312-792-8233 |
| IL Chicago, Newark Elctms.         | 312-784-5100 |
| IL Decatur, Newark                 | 217-875-4111 |
| IL Glenview, Compumech             | 708-998-8264 |
| IL Hoffman Estates, Future         | 708-882-1255 |
| IL Libertyville, Newark            | 708-362-2248 |
| IL Palatine, Milgray               | 708-202-1900 |
| IL Palos Hills, Newark             | 708-430-0690 |
| IL Peoria, Newark                  | 309-693-3771 |
| IL Rockford, Newark                | 815-229-0225 |
| IL Schaumburg, Newark              | 708-310-8980 |
| IL Schaumburg, Newark              | 708-843-0700 |
| IL Schaumburg, Repton              | 708-882-1700 |
| IL Springfield, Newark             | 217-787-9972 |
| IN Evansville, Newark              | 812-423-2552 |
| IN Ft. Wayne, Newark               | 219-484-0766 |
| IN Indianapolis, Custom Svc. Elec. | 317-879-9119 |
| IN Indianapolis, Newark            | 317-884-0047 |
| IN Merrillville, Newark            | 219-738-2787 |
| IA Bettendorf, Newark              | 319-359-3711 |
| IA Cedar Rapids, Newark            | 319-393-3800 |
| IA Des Moines, Newark              | 515-278-0076 |
| KS Overland Park, Newark           | 913-677-0727 |
| KS Overland Pk., Milgray           | 913-236-8800 |
| KS Wichita, Newark                 | 316-267-8755 |
| KY Lexington, Newark               | 605-266-6446 |
| KY Louisville, Newark              | 502-423-0280 |
| LA Metairie, Newark                | 504-839-9771 |
| MD Beltsville, Newark              | 301-604-1700 |
| MD College Pk., Newark             | 301-982-9711 |
| MD Columbia, Future                | 410-290-0600 |
| MD Columbia, Milgray               | 410-995-6169 |
| MD Columbia, Newark                | 301-964-4482 |
| MD Hanover, Newark                 | 410-712-6922 |
| MD Timonium, Newark                | 410-560-2886 |
| MD Wheaton, Newark                 | 301-949-9665 |
| MA Bolton, Future                  | 508-779-3000 |
| MA Braintree, Target               | 617-848-9330 |
| MA Gardner, Compumech              | 508-630-2909 |
| MA Methuen, Newark                 | 508-683-0913 |
| MA Methuen, Newark                 | 508-688-1837 |
| MA W. Springfield, Newark          | 413-785-5851 |
| MA Walpole, Newark                 | 508-660-1071 |
| MA Walpole, RicheyCypress          | 508-668-8200 |
| MA Waltham, Newark                 | 617-894-8050 |
| MA Westwood, Target                | 617-329-2700 |
| MA Wilmington, Milgray             | 508-657-5900 |
| MA Woburn, Newark                  | 617-932-9040 |
| MA Woburn, Newark                  | 617-935-8350 |
| MA Worcester, Newark               | 508-757-4515 |
| MI Detroit, Newark                 | 313-967-0600 |
| MI Farmington Hills, Newark        | 313-737-5150 |
| MI Flint, Royaleite                | 313-238-4641 |
| MI Gaylord, Repton/K-Byte          | 517-732-6244 |
| MI Grand Rapids, Future            | 616-249-3200 |
| MI Grand Rapids, Newark            | 616-455-9190 |
| MI Livonia, Future                 | 313-261-5270 |
| MI Livonia, Repton                 | 313-525-2700 |
| MI Oak Park, Newark                | 313-967-0600 |
| MI Saginaw, Newark                 | 517-799-0480 |
| MI Traverse City, Newark           | 616-929-2313 |
| MI Troy, Newark                    | 313-880-9110 |
| MN Burnsville, Newark              | 612-890-0584 |
| MN Crystal Bay, Newark             | 612-535-4280 |
| MN Duluth, Newark                  | 218-727-4776 |
| MN Eden Prairie, Future            | 612-944-2200 |
| MN Eden Prairie, RicheyCypress     | 612-934-2104 |
| MN Minneapolis, Newark             | 612-331-6350 |
| MN Minnetonka, Repton              | 612-938-0000 |
| MN St. Paul, Newark                | 612-631-2683 |
| MN Vadnais Hgts., Repton           | 612-481-0756 |
| MS Jackson, Newark                 | 601-956-3834 |



|    |                              |              |
|----|------------------------------|--------------|
| MS | Tupelo, Newark               | 601-840-0305 |
| MO | Crestwood, Newark            | 314-821-7466 |
| MO | Independence, Newark         | 816-478-0581 |
| MO | Springfield, Newark          | 417-886-0092 |
| MO | St. Louis, Future            | 314-469-6805 |
| MO | St. Louis, Newark            | 314-296-2505 |
| MT | Helena, Newark               | 406-443-6192 |
| NE | Omaha, Newark                | 402-592-2423 |
| NV | Las Vegas, Newark            | 702-597-0330 |
| NV | Reno, Newark                 | 702-322-6090 |
| NH | Derry, Target                | 603-434-8440 |
| NH | Nashua, Newark               | 603-888-5790 |
| NH | Salem, Diamond               | 603-894-4420 |
| NH | Salem, Sager                 | 603-894-4420 |
| NJ | Bordentown, Newark           | 609-298-4450 |
| NJ | Clark, Newark                | 908-381-1343 |
| NJ | E. Brunswick, Newark         | 908-937-6600 |
| NJ | Fairfield, Newark            | 201-882-0300 |
| NJ | Marlton, Future              | 609-596-4080 |
| NJ | Marlton, Milgray             | 609-983-5010 |
| NJ | Parsippany, Future           | 201-299-0400 |
| NJ | Parsippany, Milgray          | 201-335-1766 |
| NJ | Pennsauken, Newark           | 609-663-9490 |
| NJ | Springfield, Newark          | 212-964-2556 |
| NJ | Union, Newark                | 908-851-2290 |
| NM | Albuquerque, Newark          | 505-828-1878 |
| NY | Binghamton, Newark           | 607-771-8795 |
| NY | Buffalo, Newark              | 716-862-9700 |
| NY | Comack, Newark               | 516-499-1216 |
| NY | Farmingdale, Milgray         | 516-391-3000 |
| NY | Farmingdale, Milgray         | 516-420-9800 |
| NY | Farmingdale, Milgray Elctms. | 516-420-9800 |
| NY | Fishkill, Newark             | 914-896-4190 |
| NY | Haugpaug, Future             | 516-234-4000 |
| NY | Latham, Newark               | 518-783-0083 |
| NY | Long Island, Sager Elctms.   | 516-348-1300 |
| NY | Pittsford, Milgray           | 716-381-9700 |
| NY | Pittsford, Newark            | 716-381-4244 |
| NY | Rochester, Future            | 716-272-1120 |
| NY | Syracuse, Future             | 315-451-2371 |
| NY | Syracuse, Newark             | 315-437-6611 |
| NC | Charlotte, Newark            | 704-535-5650 |
| NC | Concord, Future              | 704-455-9030 |
| NC | Greensboro, Newark           | 919-292-7240 |
| NC | Greensboro, Newark           | 919-294-2142 |
| NC | High Point, Newark           | 919-884-8881 |
| NC | Raleigh, Future              | 919-790-7111 |
| NC | Raleigh, Milgray             | 919-790-8094 |
| NC | Raleigh, Newark              | 919-781-7677 |
| NC | Raleigh, Repton              | 919-870-5189 |
| NC | Wilmington, Newark           | 919-791-9393 |
| OH | Akron, Newark                | 216-374-9987 |
| OH | Cincinnati, Hughes Peters    | 513-351-2000 |
| OH | Cincinnati, Hughes Peters    | 800-899-8228 |
| OH | Cincinnati, Newark           | 513-771-9700 |
| OH | Cincinnati, Newark           | 513-772-8181 |
| OH | Cleveland, Milgray           | 216-447-1520 |
| OH | Cleveland, Newark            | 216-391-9330 |
| OH | Columbus, Hughes Peters      | 614-294-5351 |
| OH | Columbus, Newark             | 614-431-0809 |
| OH | Columbus, Newark             | 614-481-8141 |
| OH | Dayton, Newark               | 513-294-8980 |
| OH | Mayfield Hgts, Future        | 216-449-6996 |
| OH | Parma Hgts, Newark           | 216-886-0505 |
| OH | Solon, Repton                | 216-349-1415 |
| OH | Toledo, Newark               | 419-886-0404 |
| OH | Valley View, Newark          | 216-447-8860 |
| OH | Warrensville, Newark         | 216-587-1700 |
| OH | Worthington, Repton          | 614-436-6675 |
| OH | Youngstown, Newark           | 216-793-6134 |
| OH | Zanesville, Newark           | 614-454-6704 |
| OK | Oklahoma City, Newark        | 405-495-5000 |
| OK | Tulsa, Newark                | 918-252-5070 |
| OR | Beaverton, Future            | 503-645-9454 |
| OR | Portland, Newark             | 503-257-0741 |
| PA | Allentown, Newark            | 609-434-7171 |
| PA | Freeport, Newark             | 412-295-4400 |
| PA | King of Prussia, Newark      | 215-265-0933 |
| PA | Malvern, Newark              | 215-296-5522 |
| PA | Philadelphia, Newark         | 215-245-7300 |
| PA | Pittsburgh, Newark           | 412-367-2790 |
| PA | Pittsburgh, Newark           | 412-788-4790 |
| PA | Pittsburgh, Newark           | 412-823-5150 |
| SC | Columbia, Newark             | 803-798-0198 |
| SC | Greenville, Newark           | 803-288-9610 |
| SC | N. Charleston, Newark        | 803-764-3091 |
| TN | Brentwood, Newark            | 615-371-1341 |
| TN | Chattanooga, Newark          | 615-899-0056 |
| TN | Jackson, Newark              | 901-664-6076 |
| TN | Knoxville, Newark            | 615-588-6493 |
| TN | Memphis, Newark              | 901-365-8060 |
| TN | Austin, Future               | 512-502-0991 |
| TN | Austin, Newark               | 512-338-0287 |
| TX | Dallas, Hall-Mark Elctms.    | 214-553-4300 |
| TX | Dallas, Milgray              | 214-248-1603 |
| TX | El Paso, Newark              | 915-778-5322 |
| TX | Ft. Worth, Newark            | 817-589-1295 |
| TX | Houston, Future              | 713-556-8696 |

|     |                             |              |
|-----|-----------------------------|--------------|
| TX  | Houston, Newark             | 713-270-4800 |
| TX  | Irving, RicheyCypress       | 214-255-0065 |
| TX  | Richardson, Future          | 214-437-2473 |
| TX  | Stafford, Milgray           | 713-240-5360 |
| UT  | Murray, Milgray             | 801-261-2999 |
| UT  | Salt Lake City, Future      | 801-972-8489 |
| UT  | Salt Lake City, Newark      | 801-261-5660 |
| VT  | Burlington, Newark          | 802-282-5671 |
| VT  | Burlington, Newark          | 802-860-1856 |
| VA  | Arlington, Newark           | 703-522-7552 |
| VA  | Chantilly, Newark           | 703-471-7447 |
| VA  | Richmond, Newark            | 802-282-5671 |
| VA  | Roanoke, Newark             | 703-345-7001 |
| VA  | Virginia Bch., Newark       | 804-499-0719 |
| WA  | Bellvue, Newark             | 206-641-9800 |
| WA  | Bothell, Future             | 206-489-3400 |
| WA  | Seattle, RicheyCypress      | 206-575-1910 |
| WA  | Spokane, Newark             | 509-327-1935 |
| WV  | Dunbar, Newark              | 304-768-6872 |
| WI  | Brookfield, Newark          | 414-783-6566 |
| WI  | Green Bay, Newark           | 414-494-1400 |
| WI  | Madison, Newark             | 608-221-4738 |
| WI  | Milwaukee, Newark           | 414-453-9100 |
| WI  | Waukesha, Future            | 414-786-1884 |
| Can | Calgary, Alb., Future       | 403-250-5550 |
| Can | Edmonton, Alb., Future      | 403-438-2858 |
| Can | Laval, Que., Newark         | 514-681-6476 |
| Can | London, Ont., Newark        | 519-685-4280 |
| Can | Markham, Ont., Carsten      | 416-477-7705 |
| Can | Mississauga, Ont., Future   | 416-612-9200 |
| Can | Mississauga, Ont., Milgray  | 416-678-0958 |
| Can | Mississauga, Ont., Newark   | 416-670-2888 |
| Can | Mississauga, Ont., Newark   | 416-670-7799 |
| Can | Montreal, Que., Newark      | 514-738-4488 |
| Can | Nepean, Ont., Carsten       | 613-564-0622 |
| Can | Ottawa, Ont., Future        | 613-820-8313 |
| Can | Pointe Claire, Que., Future | 514-426-5900 |
| Can | Pointe Claire, Que., Future | 514-694-7710 |
| Can | Quebec, que., Future        | 418-877-6666 |
| Can | St. Laurent, Que., Carsten  | 514-334-8321 |
| Can | Vancouver, BC, Future       | 604-294-1166 |
| Can | Westminster, BC, Newark     | 604-520-5721 |
| Can | Winnipeg, Man., Future      | 204-786-7711 |

**ASTER, a Porta Systems Company**, 86 South Street, Hopkinton, MA 01748, Tel: 508-435-0101; Sls. Mgr: Lou Maiolo

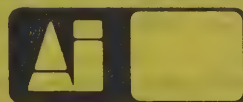
**ASTRO DYNAMICS, INC.**, 2 Gill St., Woburn, MA 01801, Tel: 617-935-4944, FAX: 617-935-4982; Empl: 50; Sls. Mgr: Leo Donahue

**ASTRO-GEO-MARINE, INC.**, 2186 Knoll Dr. B, Ventura, CA 93003, Tel: 805-654-8300, FAX: 805-654-8314; FSC No.: 51473; Empl: 12

**ASTRO INSTRUMENT CORP.**, 450 Goolsby Blvd., Deerfield, FL 33442-3019, Tel: 305-698-6000, FAX: 305-698-6011; FSC No.: 51761; Sls. Mgr.: Peter J. Sinatra, Jr.

**ASTRO INTERNATIONAL CORP.**, 100 Park Ave., League City, TX 77573, Tel: 713-332-2484, FAX: 713-554-6795; Empl: 50; Sls. Mgr: Curt Nicholls

**ASTROMEQ, INC.**, 2950 Arrowhead Dr., Carson City, NV 89706, Tel: 702-883-9226, FAX: 702-883-9228; Empl: 40; Sls. Mgr: Ken Irvin



**FAX: 401-822-2430**

**ASTRO-MED, INC.**, 600 East Greenwich Avenue, W. Warwick, RI 02893, Tel: 401-828-4000, TWX: 710-382-6409; FSC No.: 6625; Empl: 225; Sls. Mgr: Everett V. Pizzuti D-1410-1412

**ASTROSYSTEMS, INC.**, 6 Nevada Dr., Lake Success, NY 11042, Tel: 516-328-1600, FAX: 516-328-1658; Sls. Mgr: Howard Lazarus; Dist. Mgr: Roy Hartmann, Sls. Mgr. D-2244-2249

**ASTRO TOOL CORP.**, 21615 Southwest Tualatin Valley Hwy., Beaverton, OR 97006, Tel: 503-642-9853, FAX: 503-591-7766

**A-SYSTEMS INC.**, 1500 Avon St. Ext'd., Charlottesville, VA 22902, Tel: 804-295-7200, FAX: 804-295-7201; Empl: 45; Sls. Mgr: F. M. Atrip



**FAX: 214-456-4002**

**AT&T CAPITAL CORPORATION**, 1830 West Airfield Dr., DFW Airport, TX 75261-9260, Tel: 800-874-7123, Empl: 220 D-1228-1233



**FAX: 215-778-4106**

**AT&T MICROELECTRONICS**, 555 Union Blvd., 500404000, Allentown, PA 18103, Tel: 1-800-372-2447, In Can: 1-800-553-2448 A-1334-1335, 2268-2271; D-1604-1607

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AZ | Phoenix, AT&T Microelectronics      | 602-844-6529 |
| CA | Cypress, AT&T Microelectronics      | 714-220-6223 |
| CA | Santa Clara, AT&T Microelectronics  | 408-980-3700 |
| CO | Denver, AT&T Microelectronics       | 303-290-3708 |
| GA | Norcross, AT&T Microelectronics     | 404-446-4700 |
| IL | Itasca, AT&T Microelectronics       | 708-290-3335 |
| MA | Framingham, AT&T Microelectronics   | 508-626-2161 |
| MN | Bloomington, AT&T Microelectronics  | 612-885-4300 |
| NY | Poughkeepsie, AT&T Microelectronics | 914-485-7744 |
| NC | Raleigh, AT&T Microelectronics      | 919-881-8023 |
| OR | Portland, AT&T Microelectronics     | 503-244-3883 |
| PA | Allentown, AT&T Microelectronics    | 215-770-3343 |
| TX | Irving, AT&T Microelectronics       | 214-869-2040 |

#### Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| AL | Huntsville, Arrow/Schweber      | 205-837-6955 |
| AZ | Tempe, Anthem                   | 602-966-6600 |
| AZ | Tempe, Arrow/Schweber           | 602-431-0030 |
| CA | Calabasas, Arrow/Schweber       | 818-880-9686 |
| CA | Chatsworth, Anthem              | 818-775-1333 |
| CA | Irvine, Anthem                  | 714-768-4444 |
| CA | Rocklin, Anthem                 | 916-624-9744 |
| CA | San Diego, Anthem               | 619-453-9005 |
| CA | San Diego, Arrow/Schweber       | 619-565-4800 |
| CA | San Jose, Anthem                | 408-452-2219 |
| CA | San Jose, Arrow/Schweber        | 408-441-9700 |
| CA | San Jose, Capstone              | 408-453-9804 |
| CA | San Jose, Merit                 | 408-434-0800 |
| CA | Tustin, Arrow/Schweber          | 714-587-0404 |
| CA | Tustin, Capstone                | 714-730-0349 |
| CO | Aurora, Capstone                | 303-375-1300 |
| CO | Englewood, Anthem               | 303-790-4500 |
| CO | Englewood, Arrow/Schweber       | 303-799-0258 |
| CT | Wallingford, Arrow/Schweber     | 203-265-7741 |
| CT | Waterbury, Anthem               | 203-575-1575 |
| FL | Deerfield Beach, Arrow/Schweber | 305-429-8200 |
| FL | Lake Mary, Arrow/Schweber       | 407-333-9300 |
| GA | Duluth, Arrow/Schweber          | 404-497-1300 |
| IL | Itasca, Arrow/Schweber          | 708-250-0500 |
| IL | Itasca, Capstone                | 708-250-0300 |
| IL | Schaumburg, Anthem              | 708-884-0200 |
| IN | Indianapolis, Arrow/Schweber    | 317-299-2071 |
| IA | Cedar Rapids, Arrow/Schweber    | 319-395-7230 |
| KS | Lenexa, Arrow/Schweber          | 913-541-9542 |
| MD | Columbia, Anthem                | 301-995-6640 |
| MD | Columbia, Arrow/Schweber        | 301-596-7800 |
| MA | Wilmington, Anthem              | 508-657-5170 |
| MA | Wilmington, Arrow/Schweber      | 508-658-0900 |
| MA | Wilmington, Capstone            | 508-657-5874 |
| MI | Livonia, Arrow/Schweber         | 313-462-2290 |
| MN | Eden Prairie, Anthem            | 612-944-5454 |
| MN | Eden Prairie, Arrow/Schweber    | 612-941-5280 |
| NJ | Holmdel, Arrow/Schweber         | 908-949-4700 |
| NJ | Marlton, Arrow/Schweber         | 609-596-8000 |
| NJ | Marlton, Capstone               | 609-596-7500 |
| NJ | Pine Brook, Anthem              | 201-227-7960 |
| NJ | Pine Brook, Arrow/Schweber      | 201-227-7889 |
| NY | Comack, Anthem                  | 516-493-6600 |
| NY | Haugpaug, Arrow/Schweber        | 516-231-1000 |
| NY | Melville, Arrow/Schweber        | 516-391-1300 |
| NY | Rochester, Arrow/Schweber       | 716-427-0300 |
| NC | Raleigh, Arrow/Schweber         | 919-876-3132 |
| NC | Raleigh, Capstone               | 919-954-0600 |
| OH | Centerville, Arrow/Schweber     | 513-435-5563 |
| OH | Solon, Arrow/Schweber           | 216-248-3990 |
| OK | Tulsa, Arrow/Schweber           | 918-252-7537 |
| OR | Beaverton, Anthem               | 503-643-1114 |



OR Beaverton, Arrow/Schweber ..... 503-629-8090  
 PA Horsham, Anthem ..... 215-443-5150  
 PA Pittsburgh, Arrow/Schweber ..... 412-963-6807  
 TX Austin, Arrow/Schweber ..... 512-835-4180  
 TX Carrollton, Arrow/Schweber ..... 214-380-6464  
 TX Carrollton, Capstone ..... 214-380-9049  
 TX Houston, Arrow/Schweber ..... 713-530-4700  
 TX Richardson, Anthem ..... 214-238-7100  
 UT Salt Lake City, Anthem ..... 801-973-8555  
 UT Salt Lake City, Arrow/Schweber ..... 801-973-6913  
 WA Bellevue, Almac ..... 206-643-9992  
 WI Brookfield, Arrow/Schweber ..... 414-792-0150  
 Can Dorval, Que., Arrow/Schweber ..... 514-421-7411  
 Can Mississauga, Ont., Capstone ..... 416-670-2010  
 Can Nepean, Ont., Arrow/Schweber ..... 416-670-7769

AT&T NETWORK SYSTEMS, NETWORK CABLE  
 SYS. DIV., 111 Madison Ave., Morristown, NJ 07962, Tel:  
 1-800-344-0223, Ext. 1027

ATC-FROST MAGNETICS INC., 1130-Eighth Line,  
 Oakville, Ont., Canada L6H 2P4, Tel: 416-844-6681, FAX:  
 416-844-6895; Empl: 180; Sls. Mgr: C.M. Webb

ATC POWER SYSTEMS, INC., 45 Depot St., Merrimack,  
 NH 03054, Tel: 603-429-0391, FAX: 603-429-0795; FSC  
 No.: 61814; Empl: 40; Sls. Mgr: Robert L. Grant, Jr. Sls.  
 Mgr.

ATEC, INC., 8219 Kempwood Dr., Houston, TX 77055, Tel:  
 713-468-7971, FAX: 713-468-6585; FSC No.: 09552;  
 Empl: 70; Sls. Mgr: RL Rainwater

ATE SUPER TECHS, 4031 NE 17 Terr., Pompano Beach,  
 FL 33064, Tel: 800-780-6343, 305-941-6343, 305-973-  
 0996, FAX: 305-941-9413; Sls. Mgr: Desmond James

ATHENA CONTROLS, INC., 5145 Campus Dr.,  
 Whitmarsh Ind. Campus, Plymouth Meeting, PA 19462,  
 Tel: 215-828-2490, FAX: 215-828-7084; Empl: 70; Sls.  
 Mgr: Douglas Crowell

ATI (AHAM TOR INC.), 999 Company, P.O. Box 9019,  
 Temecula, CA 92390-0739, Tel: 714-676-4151, FAX: 714-  
 676-3031

ATI TECHNOLOGIES INC., 3761 Victoria Park Ave.,  
 Scarborough, Ont., Canada M1W 3S2, Tel: 416-756-0718,  
 FAX: 416-756-0720; Empl: 430; Sls. Mgr: Jon Turner,  
 VP-OEM Sls.

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ATKINS TECHNICAL INC., 3401 S.W. 40th Blvd.,  
 Gainesville, FL 32608, Tel: 904-378-5555, FAX: 904-335-  
 6736; Empl: 45; Sls. Mgr: Robert M. Atkins; Dist. Mgr:  
 Kenneth A. Robinson

ATLANTA SIGNAL PROCESSORS, INC., 770 Spring  
 Street N.W., Atlanta, GA 30308, Tel: 404-892-7265, FAX:  
 404-892-2512; Empl: 20; Sls. Mgr: William E. Jouris

ATLANTIC MAGNETICS, INC., 1441 S.W. 30th Ave.,  
 Pompano Beach, FL 33069, Tel: 305-979-7920, FAX: 305-  
 978-3788; Empl: 37; Sls. Mgr: Edward Cammarata; Dist.  
 Mgr: Scott Thompson

ATLANTIC OPTICAL MOULDING, Ellis St., P.O. Box 309,  
 Webster, MA 01570, Tel: 508-943-1746; Empl: 6

ATLANTIC SCIENTIFIC CORPORATION, 4300  
 Fortune Pl. Ste. A, W. Melbourne, FL 32904, Tel: 1-800-  
 544-4737, FAX: 407-727-0736; Empl: 50; Sls. Mgr: Bill  
 Purcell, V.P.

ATLAS ENERGY SYSTEMS, INC., 713 W. Duarte Rd.,  
 Bldg. G299, Arcadia, CA 91007, Tel: 818-575-0755, FAX:  
 818-575-0665; Empl: 30; Sls. Mgr: James LoGudice; Dist.  
 Mgr: James LoGudice

ATLAS ENGINEERING CORP., 10 Cheney St.,  
 Dorchester, MA 02121, Tel: 617-445-7100, FAX: 617-445-  
 4942; FSC No.: 07001; Empl: 75; Sls. Mgr: Levi Fears

ATLAS/SOUNDOLIER, COMMERCIAL SOUND DIV.,  
 Atapco Security & Communications Group, 1859  
 Interloch Dr., Fenton, MO 63026, Tel: 314-349-3110, FAX:  
 314-349-1251; Sls. Mgr: Bud Waters, Natl. Sls. Mgr.

ATLAS/SOUNDOLIER, INDUSTRIAL CABINET DIV.,  
 Atapco Security & Communications Grp., 1859  
 Interloch Dr., Fenton, MO 63026, Tel: 314-349-3110, FAX:  
 314-349-1251; Sls. Mgr: Gary Shamel, Indl. Cabinet Div./  
 Sls. Mgr.

ATLEE INC., 10 Bayfield Dr., North Andover, MA 01845, Tel:  
 508-681-1003, TELEX: 928252, FAX: 508-686-2934; FSC  
 No.: 99378; Empl: 20; Sls. Mgr: Tom Fiocco; Dist. Mgr:  
 Tom Fiocco **C•1015, 1671**

Local Sales Offices & Reps  
 MA Sharon, Cummings Assocs. .... 617-784-5600  
 PA Paoli, Stitzer Assocs. .... 215-644-5500  
 TX Arlington, Rem-Air Corp. .... 214-234-1069

Local Distributors  
 CA Anaheim, Bisco Inds. .... 714-635-0380  
 CA San Jose, Bisco Inds. .... 408-946-8980  
 IL Franklin Pk., Bisco Inds. .... 312-451-1230  
 MA Marlboro, Hardware Specialties .... 617-481-8622  
 MA N. Andover, Atlee, Direct .... 508-681-1003  
 MA Winchester, Webb .... 617-729-5800  
 MA Woburn, Bisco Inds. .... 617-938-8590  
 MN Minneapolis, Aerospace Computer .... 612-884-4725  
 NJ Paramus, N.Y. Fastener .... 201-265-8770  
 NY Long Island City, Hardware Specialty .... 212-361-9393  
 NY Plainview, G & B Fasteners .... 516-694-0990

ATMEL CORPORATION, 2125 O'Neil Drive, San Jose, CA  
 95131, Tel: 408-441-0311, FAX: 408-436-4200; Empl:  
 875; Dist. Mgr: Dave Walton

ATOMERGIC CHEMETALS CORP., 222 Sherwood Ave.,  
 Farmingdale, NY 11735-1718, Tel: 516-694-9000, TWX:  
 6852289, FAX: 516-694-9177; Empl: 30; Sls. Mgr: A.  
 Pensiero

ATV RESEARCH, INC., 1301 Broadway, Dakota City, NE  
 68731, Tel: 402-987-3771; Sls. Mgr: Mel Shadbolt

THE AUBURN MANUFACTURING COMPANY, 29  
 Stack Street/P.O. Box 251, Middletown, CT 06457-0251,  
 Tel: 203-346-6677, FAX: 203-346-1334; Empl: 45; Sls.  
 Mgr: Gary L. Mittelman, VP

AUDIO PRECISION, INC., PO Box 2209, Beaverton, OR  
 97075-3070, Tel: 503-627-0832, TELEX: 283957 AUDIO  
 UR, FAX: 503-641-8906; Empl: 33; Sls. Mgr: Thomas  
 Mintner

AUDIOSEARS, South St., Stamford, NY 12167, Tel: 607-  
 652-7305, 800-533-7863, FAX: 607-652-3653; FSC No.:  
 97101; Empl: 120; Sls. Mgr: Fred Rosscoe

AUDIOTRONICS CORP., 7428 Bellaire Ave., N.  
 Hollywood, CA 91605, Tel: 818-765-2645, TELEX: 69-  
 1241; Empl: 14; Sls. Mgr: Gordon Anderson

AUDRE, INC., 10915 Technology Place, San Diego, CA  
 92127, Tel: 619-451-2260, FAX: 619-451-0267; Empl: 50

AUGAT ALCOSWITCH, Augat Inc., 452 John Dietsch  
 Blvd., Attleboro Falls, MA 02763, Tel: 508-699-9800, FAX:  
 508-699-6717; FSC No.: 95148; Empl: 150; Sls. Mgr:  
 Gillis Mellen

AUGAT, INC., Interconnection Products Group, 33  
 Perry Ave., P.O. Box 779, Attleboro, MA 02703, Tel: 508-  
 222-2202, TWX: 710-391-0644, FAX: 508-222-0693; Sls.  
 Mgr: Gillis Mellen; Dist. Mgr: Dick Thorpe

AUGAT/RDI, 525 Randy Rd., Carol Stream, IL 60188, Tel:  
 708-682-4100, FAX: 708-682-4562; FSC No.: 53337;  
 Empl: 85; Sls. Mgr: Jim Steranko, Prod. Mgr.; Dist. Mgr:  
 Jim Steranko, Prod. Mgr.



**FAX: 612-493-1911**

**AULT, INCORPORATED**, 7300 Boone Ave. N.  
 Minneapolis, MN 55428, Tel: 612-493-1900; Empl: 300;  
 Sls. Mgr: Greg Harris **D•1608-1609**

Local Sales Offices & Reps  
 AL Huntsville, L & D, Inc. .... 205-837-1469  
 CA Santa Clara, Magna Sls. .... 408-727-8753  
 CT Wallingford, Marathon Sls., LTD ..... 203-663-2734  
 FL Deerfield Bch., Sls. Engrg. Concepts Inc. .... 305-426-4601  
 GA Atlanta, L & D, Inc. .... 404-395-7079  
 IL Itasca, MSI ..... 708-285-1000  
 IA Des Moines, Spectrum Sls. .... 913-648-6811  
 MA Framingham, Marathon Sls., LTD ..... 508-875-3566  
 MI Plymouth, Jay Mktg. Assocs. .... 313-459-1200  
 MN Minneapolis, Cahill, Schmitz & Cahill ..... 612-646-7217  
 MO St. Louis, Beams Co. .... 314-434-8448  
 NJ Fairfield, T.A.M. .... 201-575-4130  
 NC Raleigh, L & D, Inc. .... 919-876-5301  
 OH Beachwood, Elctm. Salesmasters, Inc. .... 216-831-9555  
 OR Portland, Jas. J. Backer Co. .... 503-627-0775  
 PA Philadelphia, All-Tech Mktg. .... 717-540-1204  
 TX Austin, R. F. Kimball Co. .... 512-443-5284  
 TX Richardson, R. F. Kimball Co. .... 214-231-3447  
 WA Seattle, Jas. J. Backer Co. .... 206-285-1300  
 Can Toronto, Deskin Sls. .... 416-475-1412

Local Distributors  
 CA Huntington Bch., House of Batteries .. 800-432-3385  
 Can Markham, Deskin Sls. .... 416-475-1412  
 CA Santa Clara, Cypress Elctms. .... 408-980-2500  
 CA Van Nuys, Natl. Electro Sls. Corp. .... 800-423-2864  
 MA Wilmington, North Star Elctms. .... 508-657-5155  
 NJ Clifton, Vantage Comps. .... 201-777-4100  
 OH Cincinnati, Hughes Peters .... 513-351-2000  
 OH Columbus, Promark/EMC .... 614-299-4161  
 TX Fort Worth, Allied Elctms. .... 800-433-5700  
 UT Salt Lake City, Std. Supp. Co. .... 801-453-3371  
 WA Seattle, Radar Elec. .... 206-282-2511

AURIC CORP., 470 Frelinghuysen Ave., Newark, NJ 07114,  
 Tel: 201-242-4100, FAX: 201-242-5796; Empl: 60; Sls.  
 Mgr: Michael Aleksinas

AUSTRIA MIKRO SYSTEME INTERNATIONAL  
 Schloss Premstaetten, Unterpremstaetten, Austria A-8141,  
 Tel: (03136) 500, TELEX: 312547 AMS A, FAX:  
 (03136)52501,53650; Empl: 600; Sls. Mgr: Mr. Wilfried  
 Beie

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**FAX: 805-522-8777**

**AUTEC POWER SYSTEMS**, 69 Moreland Rd., Simi  
 Valley, CA 93065, Tel: 805-522-0888; Empl: 100; Sls.  
 Mgr: Bill Glynn; Dist. Mgr: Jeanne Hirsch

**D•1610-1615**  
 Local Sales Offices & Reps  
 CA Bonsall, Power Specialists .... 619-726-4799  
 CA Los Alamitos, Power Specialists .... 310-594-9418  
 CA Mountain View, Straube Assocs., Inc. .... 415-969-6060  
 CA Simi Valley, Power Specialists .... 805-581-4785



OH Dayton, The Lyons Corp. .... 513-278-0714  
 OH Richfield, The Lyons Corp. .... 216-659-9224  
 OH Westerville, The Lyons Corp. .... 614-895-1447  
 OR Beaverton, Blair-Hirsch Co. .... 503-641-1875  
 WA Lynnwood, Blair-Hirsch Co. .... 206-774-8151  
 Can Kanata, Ont, CMT Renmark, Inc. .... 613-591-9555  
 Can Mississauga, Ont, CMT Renmark, Inc. .... 416-612-0900

Can Pointe Claire, Que, CMT Renmark, Inc. .... 514-694-6088

## Local Distributors

CA Corona, Compumech Elctms. .... 714-278-4761  
 CA Milpitas, Compumech Elctms. .... 408-945-9100  
 CA Thousand Oaks, Compumech Elctms. .... 805-495-6299  
 IL Glenview, Compumech Elctms. .... 708-998-8264  
 MA Gardner, Compumech Elctms. .... 508-630-2909

**AUTOMATED PRODUCTION CONCEPTS**, 63 Hillside Terrace, Wayne, NJ 07470, Tel: 201-831-8300, FAX: 201-633-7755; Empl: 4

**AUTOMATIC COIL CORP.**, 3545 N.W. 71st Street, Miami, FL 33147, Tel: 305-696-6660, FAX: 305-696-0626; FSC No.: 03765; Empl: 245; Sls. Mgr: Joseph Keith, VP, Sls. Mgr.

**AUTOMATIC SWITCH CO.**, 50-60 Hanover Road, Florham Park, NJ 07932, Tel: 1-201-966-2000, TELEX: 136422, FAX: 1-201-966-2628; Empl: 1,200; Sls. Mgr: Wayne Bouchard

**AUTOMATIC TIMING AND CONTROLS**, Sycon Corp., 959 Cheney Ave, Marion, OH 43302, Tel: 614-387-8827; Empl: 300; Sls. Mgr: J.M. Tometta

**AUTOMATION COMPONENT TECHNOLOGY**, 41305 Albrae At, Fremont, CA 94538, Tel: 510-226-0900, 510-490-3587 (Sales), FAX: 510-226-0769; Empl: 28; Sls. Mgr: George Holman, Sls. Mgr.

**AUTOMATION DISPLAYS INC.**, 3533 N. White Ave., Eau Claire, WI 54703, Tel: 715-834-9595, FAX: 715-834-9596; Empl: 21

**AUTOMATION ELCTRNS, R.J.A. Inds., Inc.**, 9640 Topanga Cyn Pl, Chatsworth, CA 91311, Tel: 818-998-5124, FAX: 818-998-6654; Empl: 25; Sls. Mgr: Robert J. Aiani

**AUTOMATION PRODS, INC.**, 3030 Max Roy, Houston, TX 77008, Tel: 713-869-0361, TELEX: 775-959, FAX: 713-869-7332

**AUTOMATIX INC.**, 755 Middlesex Turnpike, Billerica, MA 01821, Tel: 508-667-7900, FAX: 508-663-5482; Empl: 65; Sls. Mgr: Peter Mayek, Dir. of Sls.

**AUTOMATION, INC.**, 683 Airport Blvd, Ann Arbor, MI 48108, Tel: 313-662-7771, FAX: 313-662-3707; Empl: 25; Sls. Mgr: David E. Drenning ..... **B-1240**

## Local Sales Offices &amp; Reps

CA Valencia, Blair Randle & Assoc. .... 805-259-3326  
 CA Watsonville, Techrep North ..... 408-761-2244  
 CT Newtown, Sturdy Corp. .... 203-426-4403  
 CT Seymour, Sturdy Corp. .... 203-888-1480  
 IL St. Charles, Arrowhead Automation ... 708-584-0058  
 MA Braintree, Sturdy Corp. .... 617-848-9330  
 MA Westwood, Sturdy Corp. .... 617-326-8300  
 MN Little Canada, Assured Sls. .... 612-482-1309  
 NH Derry, Sturdy Corp. .... 603-434-8440  
 NY Sidney, Charles Co. .... 607-563-8064  
 OR Portland, D.A. Sullivan Co. .... 503-292-2448

**AUTOROLL MACHINE CORPORATION**, 11 River St, Middleton, MA 01949, Tel: 508-777-2160, TELEX: 940250, FAX: 508-777-9453; Empl: 120

**AUTOSPLICE, INC.**, 10121 Barnes Canyon Rd, San Diego, CA 92121, Tel: 619-535-0077, FAX: 619-535-0130; Empl: 197; Sls. Mgr: Ken Krone

**AUTOSWAGE PRODUCTS**, 726 River Rd, Shelton, CT 06484, Tel: 203-929-1401, FAX: 203-929-6187; Sls. Mgr: Arthur DiFabbio

**AUTRONICS CORP.**, 325 E. Live Oak Ave, Arcadia, CA 91006, Tel: 818-445-5470, FAX: 818-446-0014; FSC No.: 03972; Empl: 100; Sls. Mgr: Annabelle Cloud, Contracts Mgr.; Dist. Mgr: Gary Noyes

**AVA ELECTRONICS CORPORATION**, P.O. Box 184, 4000 Bridge St, Drexel Hill, PA 19026, Tel: 215-284-2500, FAX: 215-259-8379; Empl: 100

**AVA INSTRUMENTATION, INC.**, 8010 Highway 9, Ben Lomond, CA 95005, Tel: 408-336-2281, FAX: 408-336-5049; FSC No.: 61933; Empl: 4; Sls. Mgr: Allan Hughes

**AVANTEK, INC.**, A Subsidiary of Hewlett-Packard, 3175 Bowers Ave, Santa Clara, CA 95054, Tel: 408-727-0700, FAX: 408-970-6070; Empl: 7600

**AVANTI CIRCUITS, INC.**, 17650 N. 25th Ave, Phoenix, AZ 85023, Tel: 1-800-234-1556, FAX: 1-602-375-1909; Empl: 65; Sls. Mgr: Steve Tappan

**AVASEM CORPORATION**, 1271 Parkmoor Ave, San Jose, CA 95126, Tel: 408-297-1201, FAX: 408-925-9460; Empl: 42; Sls. Mgr: Richard Konrad

**AVELEM, La Billardiere**, Gargilesse, France 36190, Tel: 33-54478672, FAX: 33-54477799; Empl: 12

**AVEL TRANSFORMERS INC.**, 47 South End Plaza, New Milford, CT 06776, Tel: 203-355-4711, FAX: 203-354-8597; Empl: 225; Sls. Mgr: Melanie B. Roman ..... **A-2272-2275; D-1616**

**AVENS SIGNAL EQUIPMENT**, 85-08 Queens Blvd, Elmhurst, NY 11373, Tel: 718-335-1886, FAX: 718-429-5785; Empl: 15; Sls. Mgr: Peter Eng .... **A-1620-1622**

**AVERY DENNISON**, 1 Clarks Hill, Framingham, MA 01701, Tel: 508-879-0511, FAX: 508-879-5009; Empl: 8000; Sls. Mgr: George Curtis

**AVEX ELECTRONICS**, 1683 Winchester Rd, P.O. Box 1026, Bensalem, PA 19020, Tel: 215-638-1515, 800-345-1295, FAX: 215-638-9108; FSC No.: 58414; Sls. Mgr: Dona Logan; Dist. Mgr: Michael S. Batley VP/GM ..... **D-1424-1425**

## Local Sales Offices &amp; Reps

CO Denver, Tessco ..... 303-778-1119  
 IL Cary, Bob Burns Assoc. .... 708-516-3322  
 IN Carmel, New Era ..... 317-844-4530  
 NM Albuquerque, Gent. Mktg. .... 505-892-3426  
 PA Philadelphia, Allpower Tech. .... 215-289-6025  
 TX Rowlett, Campion Sls. .... 800-877-7623

**AVIBANK MANUFACTURING, INC.**, 210 S. Victory Blvd, P.O. Box 391, Burbank, CA 91503-0391, Tel: 818-843-4330, TWX: 910-498-2215; FSC No.: 84256; Empl: 485; Sls. Mgr: D. Ladin



FAX: 908-382-4996

**AVIONIC INSTRUMENTS, REA International Inc.**, 1414 Randolph Ave, Avenel, NJ 07001, Tel: 908-388-3500; FSC No.: 10933 (FSCM); Empl: 150; Sls. Mgr: Bryce Wiedeman; Dist. Mgr: Mike Barnaba ..... **D-2232-2239**

## Local Distributors

NJ Avenel, REA Intl Ltd. .... 908-382-7100

**AVO BIDDLE INSTRUMENTS**, 510 Township Line Rd, Blue Bell, PA 19422, Tel: 215-646-9200, TELEX: 685 1045 JGBCO, FAX: 215-643-2670; Empl: 285

**AVO INTERNATIONAL**, TBG, 4651 S. Westmoreland, Dallas, TX 75237, Tel: 214-333-3201, TELEX: 163548 MULAM DL, FAX: 214-333-3533; Empl: 350; Sls. Mgr: Hermann Michaeli



FAX: 613-226-2802

**AVTECH ELECTROSYSTEMS LTD.**, P.O. Box 5120, Stn. F, Ottawa, Ontario, Canada K2C 3H4, Tel: 613-226-5772; Empl: 8 ..... **D-1234**

## Local Sales Offices &amp; Reps

MA Westford, ICS Assocs, Inc. .... 508-692-3545  
 NM Albuquerque, Tech. Mktg. Specialists ..... 505-291-1363  
 NY Ogdensburg, Avtech Electrosystems Ltd. .... 315-472-5270

Can Ottawa, Ont, Avtech Electrosystems Ltd. .... 613-226-5772

**AVTEL/UNITRON**, 10925 Miller Rd, Dallas, TX 75238, Tel: 214-340-8600, TELEX: 882511, FAX: 214-341-2099; FSC No.: 6130; Empl: 75; Sls. Mgr: Fred Cullum ..... **D-2241-2243**

## Local Sales Offices &amp; Reps

CA Sunland, JVC Assocs. (Jim Crevier) ... 818-352-7348  
 NC Charlotte, Bruster Lawing & Assocs. .... 803-831-1205  
 VA Midlothian, Bruster Lawing & Assocs. .... 804-794-3879



FAX: 803-626-2442

**AVX CORPORATION, A Kyocera Group Company**, 801 17th Ave. South, Myrtle Beach, SC 29577, Tel: 803-448-9411, TWX: 810-661-2252; Dist. Mgr: Mike Craven ..... **A-1024-1028, 1336-1337, 1866-1867**

## Local Sales Offices &amp; Reps

AL Huntsville, Beacon Elctms. .... 205-881-5031  
 AZ Phoenix, Interstate Mktg. .... 602-263-8044/8241  
 CA Mountain View, Peninsula Tech Sls. .... 415-965-3636  
 CA San Diego, Interstate Mktg. .... 619-693-3220  
 CA San Jose, Quadrep Inc. .... 408-432-3300  
 CA Woodland Hills, Interstate Mktg. Assocs. .... 818-883-7606  
 CO Englewood, Thorson Rocky Mt. Inc. .... 303-773-6300  
 CT Wallingford, J.E. Boeing ..... 203-265-1318  
 FL Belleair Bch, Beacon Elctms. .... 813-593-2267  
 FL Casselbury, Dyne-A-Mark ..... 407-831-2822  
 FL Ft. Lauderdale, Dyne-A-Mark ..... 305-771-6508  
 GA Atlanta, Beacon Elctms. .... 404-256-9640  
 IL Chicago, M. Gottlieb Assocs. .... 312-775-1151  
 IL Itasca, Janus, Inc. .... 708-250-9650  
 IN Ft. Wayne, F.J. Campisano Co. .... 219-486-6443  
 IN Indianapolis, Frank J. Campisano .... 317-577-0319  
 IN Kokomo, M. Gottlieb Assocs. .... 317-455-0444  
 IA Cedar Rapids, R.F. Welch ..... 319-362-6824  
 KS Overland Park, Beneke & McCaul ..... 816-765-2998  
 MA Chelmsford, J.E. Boeing Co. .... 508-256-5800  
 MI Flint, M. Gottlieb Assocs. .... 313-732-3922  
 MI Southfield, M. Gottlieb Assocs. .... 313-358-4151  
 MN Minneapolis, Comstrand Inc. .... 612-574-9480  
 NJ Cherry Hill, Trinkle Sls. .... 609-795-4200  
 NY Ithaca, Bob Dean, Inc. .... 607-257-1111  
 NY Ronkonkoma, Comtronic Assocs. .... 516-737-2400  
 NY Wappingers Falls, Bob Dean, Inc. .... 914-297-6406  
 NC Greensboro, Beacon Elctms. .... 919-674-0348  
 NC Raleigh, Beacon Elctms. .... 919-787-0330  
 OH Beaverton, Western Tech Sls. .... 503-644-8860  
 OH Cincinnati, F.J. Campisano Co. .... 513-574-7111  
 OH Columbus, Frank J. Campisano .... 614-538-1176  
 OH Mentor, Frank J. Campisano .... 216-975-9300  
 OK Tulsa, Ammon & Rizos ..... 918-749-6116  
 PA Coraopolis, F.J. Campisano Co. .... 412-264-5151  
 PA Leechburg, Frank J. Campisano .... 412-845-2577  
 SC Greenville, Beacon Elctms. .... 803-297-7830  
 TX Austin, Ammon & Rizos Co. .... 512-454-5131  
 TX El Paso, Ammon & Rizos ..... 915-534-7533  
 TX Houston, Ammon & Rizos Co. .... 713-781-6240  
 TX Richardson, Ammon & Rizos Co. .... 214-644-5591  
 UT Salt Lake City, Thorson Rocky Mt. Inc. .... 801-942-1683





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|-----|------------------------------|--------------|
| WA  | Bellevue, Western Tech Sls.  | 206-641-3900 |
| WA  | Spokane, Western Tech. Sls.  | 509-922-7600 |
| WI  | Delafield, Janus, Inc.       | 414-646-5420 |
| PR  | Rio Piedras, J.E. Boeing     | 809-753-9805 |
| Can | Calgary, Alb., Tech-Trek     | 403-241-1719 |
| Can | Kanata, Ont., Tech-Trek      | 613-599-8787 |
| Can | Mississauga, Ont., Tech-Trek | 416-238-0366 |
| Can | Richmond, BC, Tech-Trek      | 604-276-8735 |
| Can | St. Laurent, Que., Tech-Trek | 514-337-7540 |

**Local Distributors**

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AL | Huntsville, Future Elctns. Corp.        | 205-830-2322 |
| AL | Huntsville, Hallmark Elctns.            | 205-830-2565 |
| AL | Huntsville, Marshall Inds.              | 205-881-9235 |
| AZ | Phoenix, Arizona Comps.                 | 602-699-5655 |
| AZ | Phoenix, Future Elctns. Corp.           | 602-968-7140 |
| AZ | Phoenix, Hallmark Elctns.               | 602-437-1200 |
| AZ | Phoenix, Marshall Inds.                 | 602-496-0290 |
| AZ | Phoenix, Wyle Elctns.                   | 602-437-2088 |
| AZ | Scottsdale, Kent Elctns.                | 602-998-0399 |
| AZ | Scottsdale, Spirit Elctns.              | 602-998-1533 |
| AZ | Tucson, Hallmark Elctns.                | 602-742-0515 |
| CA | Calabasas, Kent Elctns.                 | 818-876-1800 |
| CA | Calabasas, Marshall Inds.               | 818-878-7000 |
| CA | Calabasas, Wyle Elctns.                 | 818-890-9000 |
| CA | Canamilo, Milgray Elctns.               | 800-635-7812 |
| CA | Chatsworth, Future Elctns. Corp.        | 818-772-6240 |
| CA | Chatsworth, Hallmark Elctns.            | 818-773-4500 |
| CA | Costa Mesa, Eric Elctns.                | 714-751-1185 |
| CA | El Monte, Marshall Inds.                | 818-307-6000 |
| CA | Irvine, Capstone Elctns.                | 714-587-0638 |
| CA | Irvine, Future Elctns. Corp.            | 714-250-4141 |
| CA | Irvine, Hallmark Elctns.                | 714-727-6000 |
| CA | Irvine, Integrated Elctns. Corp.        | 714-753-0127 |
| CA | Irvine, Marshall Inds.                  | 714-458-5301 |
| CA | Irvine, Milgray Elctns.                 | 800-468-9277 |
| CA | Irvine, Wyle Elctns.                    | 714-863-9953 |
| CA | Milpitas, California Capacitor          | 408-262-6000 |
| CA | Milpitas, Kent Elctns.                  | 408-262-5300 |
| CA | Milpitas, Marshall Inds.                | 408-942-4600 |
| CA | Milpitas, Projections Unltd.            | 408-942-1717 |
| CA | Rancho Cordova, Marshall Inds.          | 916-635-9700 |
| CA | Rancho Cordova, Wyle Elctns.            | 916-638-5282 |
| CA | Rocklin, Hallmark Elctns.               | 916-624-9781 |
| CA | Sacramento, Integrated Elctns. Corp.    | 916-633-6030 |
| CA | San Diego, Future Elctns. Corp.         | 619-625-2800 |
| CA | San Diego, Hallmark Elctns.             | 619-268-1201 |
| CA | San Diego, Kent Elctns.                 | 619-653-7133 |
| CA | San Diego, Marshall Inds.               | 619-627-4140 |
| CA | San Diego, Neumann Elctns.              | 619-695-3005 |
| CA | San Diego, Wyle Elctns.                 | 619-565-9171 |
| CA | San Jose, Capstone Elctns.              | 408-453-9804 |
| CA | San Jose, Eric Elctns.                  | 408-432-1111 |
| CA | San Jose, Future Elctns. Corp.          | 408-434-1122 |
| CA | San Jose, Hallmark Elctns.              | 408-432-4000 |
| CA | San Jose, Jaco Elctns.                  | 408-432-9290 |
| CA | San Jose, Milgray Elctns.               | 408-456-0900 |
| CA | San Jose, Passive Technlg.              | 408-435-5566 |
| CA | Santa Clara, Wyle Elctns.               | 408-727-2500 |
| CA | Torance, Kent Elctns.                   | 310-320-2700 |
| CA | Tustin, Jaco Elctns.                    | 714-258-9003 |
| CA | Tustin, Projections Unltd.              | 714-544-2700 |
| CO | Yorba Linda, Corona                     | 714-283-8185 |
| CO | Aurora, Capstone Elctns.                | 303-375-2613 |
| CO | Denver, Integrated Elctns. Corp.        | 303-292-6121 |
| CO | Denver, Integrated Elctns. Corp.        | 303-292-9594 |
| CO | Englewood, Hallmark Elctns.             | 303-790-1662 |
| CO | Englewood, Kent Elctns.                 | 303-792-9100 |
| CO | Thornton, Marshall Inds.                | 303-451-8383 |
| CO | Thornton, Wyle Elctns.                  | 303-457-9953 |
| CT | Berlin, Kent Elctns.                    | 203-829-2100 |
| CT | Bethel, Future Elctns. Corp.            | 203-743-9594 |
| CT | Cheshire, Hallmark Elctns.              | 203-272-1704 |
| CT | Milford, Milgray Elctns.                | 800-922-6911 |
| CT | Wallingford, Cronin Elctns.             | 203-265-3134 |
| CT | Wallingford, GRS Elctns.                | 203-265-2077 |
| CT | Wallingford, Marshall Inds.             | 203-265-3822 |
| FL | Altamonte Springs, Future Elctns. Corp. | 407-767-8414 |
| FL | Altamonte Springs, Marshall Inds.       | 407-767-8585 |
| FL | Boca Raton, Jaco Elctns.                | 407-241-7943 |
| FL | Boca Raton, NRC Elctns.                 | 407-241-8600 |
| FL | Ft. Lauderdale, Hallmark Elctns.        | 305-484-4740 |
| FL | Ft. Lauderdale, Marshall Inds.          | 407-767-8585 |
| FL | Lake Mary, Milgray Elctns.              | 800-367-0780 |
| FL | Largo, Future Elctns. Corp.             | 813-530-1222 |
| FL | Largo, Hallmark Elctns.                 | 813-544-4394 |
| FL | Largo, Kent Elctns.                     | 813-545-0057 |
| FL | Melbourne, Dove Elctns.                 | 407-242-6916 |
| FL | Melbourne, GRS Elctns.                  | 407-768-6966 |
| FL | St. Petersburg, Marshall Inds.          | 813-573-1399 |
| GA | Duluth, Hallmark Elctns.                | 404-476-8206 |
| GA | Norcross, Future Elctns. Corp.          | 404-441-7676 |
| GA | Norcross, Marshall Inds.                | 404-923-5750 |
| GA | Norcross, Milgray Elctns.               | 800-241-5523 |
| IL | Elk Grove Vlg., Kent Elctns.            | 708-364-1300 |
| IL | Gurnee, NEP Elctns.                     | 708-662-0185 |

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|-----|-------------------------------------------|--------------|
| IL  | Hoffman Estates, Future Elctns. Corp.     | 708-882-1255 |
| IL  | Hoffman Estates, Integrated Elctns. Corp. | 708-843-2040 |
| IL  | Itasca, Capstone Elctns.                  | 708-250-0300 |
| IL  | Lisle, Components, Inc.                   | 708-852-7707 |
| IL  | Palatine, Milgray Elctns.                 | 800-322-6271 |
| IL  | Schaumburg, Marshall Inds.                | 708-490-0155 |
| IL  | Wood Dale, Hallmark Elctns.               | 703-860-0239 |
| IL  | Wood Dale, NEP Elctns.                    | 708-595-8500 |
| IN  | Indianapolis, Hallmark Elctns.            | 317-876-7165 |
| IN  | Indianapolis, Marshall Inds.              | 317-297-0483 |
| IA  | Cedar Rapids, Kent Elctns.                | 319-373-0525 |
| KS  | Lenexa, Hallmark Elctns.                  | 913-888-0523 |
| KS  | Lenexa, Marshall Inds.                    | 913-291-4650 |
| KS  | Overland Park, Milgray Elctns.            | 800-255-6576 |
| MD  | Baltimore, Resco Baltimore                | 301-931-8200 |
| MD  | Beltsville, Resco Baltimore               | 301-937-9100 |
| MD  | Columbia, Future Elctns. Corp.            | 410-290-0600 |
| MD  | Columbia, GRS Elctns.                     | 410-995-6744 |
| MD  | Columbia, Hallmark Elctns.                | 410-381-2036 |
| MD  | Columbia, Jaco Elctns.                    | 410-995-6620 |
| MD  | Columbia, Kent Elctns.                    | 410-720-6200 |
| MD  | Columbia, Milgray Elctns.                 | 800-638-6658 |
| MD  | Gaithersburg, M.S. Elctns.                | 301-921-0200 |
| MD  | Silver Spring, Marshall Inds.             | 301-622-1118 |
| MA  | Billerica, Hallmark Elctns.               | 508-667-0902 |
| MA  | Bolton, Future Elctns. Corp.              | 508-779-3000 |
| MA  | Burlington, Wyle Elctns.                  | 617-272-7300 |
| MA  | Chelmsford, Kent Elctns.                  | 508-250-9666 |
| MA  | Needham, Cronin Elctns.                   | 617-449-5000 |
| MA  | Springfield, C&D Elctns.                  | 413-781-1776 |
| MA  | Tewksbury, Jaco Elctns.                   | 508-640-0010 |
| MA  | Wilmington, Capstone Elctns.              | 508-657-5874 |
| MA  | Wilmington, Marshall Inds.                | 508-658-0810 |
| MA  | Wilmington, Milgray Elctns.               | 800-648-3595 |
| MI  | Farmington hills, Key Elctns.             | 313-489-5455 |
| MI  | Livonia, Future Elctns. Corp.             | 313-261-5270 |
| MI  | Livonia, Marshall Inds.                   | 313-525-5850 |
| MI  | Plymouth, Hallmark Elctns.                | 313-416-5811 |
| MN  | Bloomington, Hallmark Elctns.             | 612-881-9461 |
| MN  | Eden Prairie, Future Elctns. Corp.        | 612-944-2200 |
| MN  | Plymouth, Marshall Inds.                  | 612-559-2211 |
| MN  | St. Paul, Kent Elctns.                    | 612-642-2828 |
| MO  | Bridgeton, Marshall Inds.                 | 314-291-4650 |
| MO  | Earth City, Hallmark Elctns.              | 313-888-0523 |
| MO  | St. Louis, Future Elctns. Corp.           | 314-469-6805 |
| NH  | Manchester, Cronin Elctns.                | 603-624-0105 |
| NJ  | Camden, GRS Elctns.                       | 609-964-8560 |
| NJ  | Denville, Kent Elctns.                    | 201-625-5500 |
| NJ  | Fairfield, Dove Elctns.                   | 908-738-0321 |
| NJ  | Edison, Marshall Inds.                    | 201-882-0320 |
| NJ  | Fairfield, Tri-Start Elctns.              | 201-227-3500 |
| NJ  | Marlton, Capstone Elctns.                 | 609-596-7500 |
| NJ  | Marlton, Future Elctns. Corp.             | 609-596-4080 |
| NJ  | Marlton, Milgray Elctns.                  | 800-257-7111 |
| NJ  | Moorestown, Hallmark Elctns.              | 609-235-1900 |
| NJ  | Mt. Laurel, Marshall Inds.                | 609-234-9100 |
| NJ  | Parsippany, Future Elctns. Corp.          | 201-299-0400 |
| NJ  | Parsippany, Hallmark Elctns.              | 201-515-4475 |
| NJ  | Parsippany, Milgray Elctns.               | 800-622-0291 |
| NJ  | Teterboro, EAC Corp.                      | 201-288-4477 |
| NM  | Albuquerque, Hallmark Elctns.             | 505-344-2454 |
| NY  | E. Rochester, Rome Elctns.                | 716-248-0160 |
| NY  | E. Setauket, Dove Elctns.                 | 516-689-7733 |
| NY  | Endicott, Marshall Inds.                  | 607-785-2345 |
| NY  | Fairport, Hallmark Elctns.                | 716-425-7195 |
| NY  | Farmingdale, Milgray Elctns.              | 800-622-0291 |
| NY  | Fayetteville, Tri-Start Elctns.           | 315-637-1312 |
| NY  | Hauppauge, Future Elctns. Corp.           | 516-234-4000 |
| NY  | Hauppauge, Jaco Elctns.                   | 516-273-5500 |
| NY  | Hauppauge, Marshall Inds.                 | 516-273-2695 |
| NY  | Hauppauge, Vargas Elctns.                 | 516-273-1111 |
| NY  | Penn Yan, Advacom, Inc.                   | 315-536-2221 |
| NY  | Pittsford, Milgray Elctns.                | 716-381-9700 |
| NY  | Rochester, Future Elctns. Corp.           | 716-272-1120 |
| NY  | Rochester, Marshall Inds.                 | 716-235-7620 |
| NY  | Rome, Rome Elctns.                        | 800-366-7663 |
| NY  | Ronkonkoma, Hallmark Elctns.              | 516-737-0838 |
| NY  | Ronkonkoma, Tri-Start Elctns.             | 516-737-2200 |
| NY  | Williamsville, Rome Elctns.               | 800-366-0118 |
| NC  | Concord, Future Elctns. Corp.             | 704-455-9030 |
| NC  | Pleasant Garden, Tri-Start Elctns.        | 919-674-5515 |
| NC  | Raleigh, Capstone Elctns.                 | 919-954-0600 |
| NC  | Raleigh, Future Elctns. Corp.             | 919-790-7111 |
| NC  | Raleigh, Hallmark Elctns.                 | 919-878-8729 |
| NC  | Raleigh, Jaco Elctns.                     | 919-876-7767 |
| NC  | Raleigh, Marshall Inds.                   | 919-878-9882 |
| NC  | Raleigh, Milgray Elctns.                  | 800-562-3118 |
| OH  | Cleveland, Milgray Elctns.                | 800-321-0008 |
| OH  | Dayton, Advacom, Inc.                     | 513-274-5900 |
| OH  | Dayton, Marshall Inds.                    | 513-898-4480 |
| OH  | Mayfield Heights, Future Elctns. Corp.    | 216-449-6996 |
| OH  | Middleburg, Advacom, Inc.                 | 216-826-3300 |
| OH  | Solon, Hallmark Elctns.                   | 216-248-4803 |
| OH  | Solon, Marshall Inds.                     | 216-248-1788 |
| OH  | Worthington, Hallmark Elctns.             | 614-888-0767 |
| OK  | Tulsa, Hallmark Elctns.                   | 918-254-6207 |
| OR  | Beaverton, integrated Elctns. Corp.       | 503-641-1690 |
| OR  | Beaverton, Almac/Cap Elctns.              | 503-629-8090 |
| OR  | Beaverton, Future Elctns. Corp.           | 503-645-9454 |
| OR  | Beaverton, Kent Elctns.                   | 503-626-8300 |
| OR  | Beaverton, Marshall Inds.                 | 503-644-5050 |
| OR  | Beaverton, Wyle Elctns.                   | 503-643-7900 |
| PA  | Export, Advacom, Inc.                     | 412-325-7551 |
| PA  | McKean, Advacom, Inc.                     | 814-476-7774 |
| PA  | Warrington, Tri-Start Elctns.             | 215-343-8384 |
| TX  | Austin, Hallmark Elctns.                  | 512-258-3777 |
| TX  | Austin, Jaco Elctns.                      | 512-835-0220 |
| TX  | Austin, Kent Elctns.                      | 512-834-1900 |
| TX  | Austin, Marshall Inds.                    | 512-837-1991 |
| TX  | Austin, Wyle Elctns.                      | 512-345-8853 |
| TX  | Carrollton, Capstone Elctns.              | 800-388-CAPS |
| TX  | Dallas, Hallmark Elctns.                  | 214-553-4295 |
| TX  | Dallas, Milgray Elctns.                   | 800-637-7227 |
| TX  | Houston, Future Elctns. Corp.             | 713-556-8696 |
| TX  | Houston, Hallmark Elctns.                 | 713-781-6100 |
| TX  | Houston, Jaco Elctns.                     | 713-780-7770 |
| TX  | Houston, Marshall Inds.                   | 713-467-1666 |
| TX  | Houston, Wyle Elctns.                     | 713-879-9953 |
| TX  | Richardson, Future Elctns. Corp.          | 214-437-2437 |
| TX  | Richardson, Jaco Elctns.                  | 214-234-5565 |
| TX  | Richardson, Kent Elctns.                  | 214-669-2600 |
| TX  | Richardson, Marshall Inds.                | 214-705-0600 |
| TX  | Richardson, Wyle Elctns.                  | 214-235-9953 |
| TX  | Stafford, Milgray Elctns.                 | 800-952-1849 |
| UT  | Murray, Milgray Elctns.                   | 800-537-9739 |
| UT  | Salt Lake City, Future Elctns. Corp.      | 801-972-8489 |
| UT  | Salt Lake City, Hallmark Elctns.          | 801-269-0416 |
| UT  | Salt Lake City, Marshall Inds.            | 801-973-2288 |
| UT  | W. Valley City, Integrated Elctns. Corp.  | 801-977-9750 |
| UT  | W. Valley City, Wyle Elctns.              | 801-974-9953 |
| VA  | Vienna, Dove Elctns.                      | 703-893-1821 |
| WA  | Bellevue, Almac/Cap Elctns.               | 206-643-9992 |
| WA  | Bellevue, Integrated Elctns. Corp.        | 206-455-2727 |
| WA  | Bothell, Future Elctns. Corp.             | 206-489-3400 |
| WA  | Bothell, Marshall Inds.                   | 206-486-5747 |
| WA  | Everett, Hallmark Elctns.                 | 206-290-5324 |
| WA  | Redmond, Kent Elctns.                     | 206-883-7200 |
| WA  | Redmond, Wyle Elctns.                     | 206-881-1150 |
| WI  | New Berlin, Hallmark Elctns.              | 414-797-9259 |
| WI  | New Berlin, NEP Elctns.                   | 414-785-9100 |
| WI  | Waukesha, Future Elctns. Corp.            | 414-786-1884 |
| WI  | Waukesha, GRS Elctns.                     | 414-544-3193 |
| WI  | Waukesha, Marshall Inds.                  | 414-797-8400 |
| PR  | Canovanas, Milgray Elctns.                | 809-876-8200 |
| Can | Brampton, Ont., Marshall Inds.            | 416-458-8046 |
| Can | Calgary, Alb., Future Elctns. Inc.        | 403-250-5550 |
| Can | Edmonton, Alb., Future Elctns. Corp.      | 403-438-2858 |
| Can | Mississauga, Ont., Capstone Elctns.       | 416-670-2010 |
| Can | Mississauga, Ont., Future Elctns. Corp.   | 416-612-9200 |
| Can | Mississauga, Ont., Milgray Elctns.        | 416-678-0958 |
| Can | Ottawa, Ont., Future Elctns. Inc.         | 613-820-8313 |
| Can | Pointe Claire, Que., Future Elctns. Corp. | 514-694-7710 |
| Can | Pointe Claire, Que., Marshall Inds.       | 514-694-8142 |
| Can | Pointe Claire, Que., Milgray Elctns.      | 514-426-5836 |
| Can | Quebec, Que., Future Elctns. Inc.         | 418-877-6666 |
| Can | Vancouver, BC, Future Elctns. Inc.        | 604-294-1166 |
| Can | Winnipeg, Man., Future Elctns. Inc.       | 204-786-7711 |
| KS  | Overland Park, Kent Elctns.               | 913-338-4300 |
| MD  | Baltimore, Micro-Comp                     | 301-644-5700 |
| CA  | Westlake Vlg., Jaco/Disl                  | 805-495-9998 |
| VA  | Lynchburg, Micro-Comp                     | 804-239-2626 |

**AVX FILTERS CORP.**, 11144 Penrose St, Sun Valley, CA 91352, Tel: 818-767-6770, TWX: 910-498-4998; FSC No.: 59942; Empl: 160; Sls. Mgr.: Terry Cantine, Prod. Mktg. Mgr.

**AXEL ELECTRONICS, INC.**, Subsidiary of FPBSM Industries Inc., 19060 Dominguez Hills Dr, Rancho Dominguez, CA 90220, Tel: 718-291-3900, FAX: 718-526-0248; FSC No.: 13058; Empl: 160; Sls. Mgr.: H. Mordkoff

**NORMAN N. AXELROD ASSOCS.:ELECTRO-OPTICAL, LASER, & MACHINE VISION DIV.**, 445 East 86th Street, New York, NY 10028, Tel: 212-228-0900

**AXIAL MAGNETICS, Tencal Inc.**, 450 W. Los Angeles Ave., Simi Valley, CA 93065, Tel: 805-527-0900, FAX: 805-527-4968; Sls. Mgr.: K. G. Kroll

**AXIOHM, INC.**, 1775 Hwy. 8, Ste. 107, New Brighton, MN 55112, Tel: 612-638-9856, FAX: 612-638-0758; Empl: 130; Sls. Mgr.: Kieth Jentoff. **D-1078-1081**

**AYA-INSTRUMENTS, INC.**, 5001 Baum Blvd., Pittsburgh, PA 15213, Tel: 412-622-5500, FAX: 412-681-3773; Sls. Mgr.: A. Anouchi



**AYDIN CORP.**, 700 Dresher Rd., Horsham, PA 19044, Tel: 215-657-7510, TELEX: 685-1211, FAX: 215-657-3830; Empl: 1400; *Sls. Mgr.*: John Politis

**AYDIN CORPORATION (WEST)**, 30 Great Oaks Boulevard, San Jose, CA 95119-1371, Tel: 408-629-1100, TWX: 910-373-1238, FAX: 408-224-4625; FSC No.: ZV23-1686808; *Sls. Mgr.*: George Whitehill; *Dist. Mgr.*: Clarence Ruckriegel

**AYDIN VECTOR DIV.**, Aydin Corp., Box 328, Newtown, PA 18940-0328, Tel: 215-968-4271, FAX: 215-968-3214; FSC No.: 13923; Empl: 300

**AZCO CORP.**, 385 Falmouth Ave., Elmwood Park, NJ 07407, Tel: 201-791-1428, FAX: 201-791-8420; Empl: 15

**AZ-COM**, 12 Rose Lane, Ste. 104, Orinda, CA 94563-2206, Tel: 510-254-5400, FAX: 510-254-5400; FSC No.: 68-0283683; Empl: 5; *Sls. Mgr.*: A. Hadas ..... D-1235

**AZIMUTH ELECTRONICS, INC.**, 2605 So. El Camino Real, San Clemente, CA 92672, Tel: 714-492-6481, FAX: 714-492-0744; *Sls. Mgr.*: Kenneth C. Johnsen

**A/Z-TECH, INC. R&D LAB.**, Indiana Institute of Technol., 1600 East Washington Blvd., Fort Wayne, IN 46803, Tel: 219-422-5561, FAX: 219-422-7696; Empl: 25



**FAX: 602-844-9625**

**AZTEC INDUSTRIES, INC.**, 333 S. Nina Drive, Mesa, AZ 85210, Tel: 602-833-3131, 800-729-3132; Empl: 40; *Sls. Mgr.*: Dan Harper ..... B-1821

*Local Sales Offices & Reps*  
**AL** Huntsville, Cartwright & Bean, Inc. .... 205-830-1540, FAX: 205-830-1542

**FL** Dearfield Beach, Cartwright & Bean, Inc. .... 305-429-3400, FAX: 305-429-3402  
**FL** Orlando, Cartwright & Bean, Inc. .... 407-889-9100, FAX: 407-889-2168

**GA** Atlanta, Cartwright & Bean, Inc. .... 404-368-0160, FAX: 404-368-0125

**KS** Shawnee Mission, Marc E. Nelson Assoc. .... 913-268-9099  
**MS** Jackson, Cartwright & Bean, Inc. .... 601-981-1170, FAX: 601-981-1171

**NE** Omaha, Label Concepts ..... 402-496-3997, FAX: 402-496-3855  
**NE** Omaha, Label Concepts ..... 402-592-5080, FAX: 402-592-5088

**NC** Charlotte, Cartwright & Bean, Inc. .... 704-536-0303, FAX: 704-536-0313  
**NC** Raleigh, Cartwright & Bean, Inc. .... 919-876-4130, FAX: 919-876-4132

**TN** Knoxville, Cartwright & Bean, Inc. .... 615-693-7450  
**TX** Dallas, Kay Todd Assocs. .... 214-458-8833, FAX: 214-458-8837

**BABCOCK, INC.**, 1717 West Collins Ave., Orange, CA 92667, Tel: 714-633-3700, FAX: 714-538-9740; FSC No.: 56623; Empl: 165; *Sls. Mgr.*: Bosie White; *Dist. Mgr.*: Bosie White ..... B-1021

*Local Distributors*  
**CA** Santa Ana, Norstan Elctms. .... 714-667-7826



**FAX: 714-490-1368**

**BABCOCK DISPLAY PRODUCTS, INC., A Subsidiary of Babcock, Inc.**, 1051 S. East St., Anaheim, CA 92805, Tel: 714-491-5100; Empl: 150 ..... B-1021

*Local Sales Offices & Reps*  
**AZ** Tempe, ETS ..... 602-921-7122  
**CA** Cupertino, Costar Inc. .... 408-446-9339  
**CO** Denver, AKI Entprs. .... 303-756-0700  
**CT** Wallingford, Alpha Omega Sls. Corp. .... 203-949-0388  
**FL** N. Palm Beach, Universal Mktg. & Sls. .... 407-842-1440  
**GA** Norcross, Elctms. Sls. Inc. (ESI) .... 404-448-6554

**IL** Berkeley, ESA Tech. Mktg. .... 708-544-0120  
**IA** Des Moines, The Beams Co. .... 515-255-1148  
**KS** Lenexa, The Beams Co. .... 913-541-9197  
**MD** Baltimore, Eastern Comps. Sls. .... 410-788-7050  
**MA** North Reading, Alpha Omega Sls. Corp. .... 508-664-1118

**MI** Farmington Hills, Rathsburg Assoc. Inc. .... 313-489-1500  
**MN** Minneapolis, Holmgren Assocs. .... 612-574-9983  
**MO** St. Louis, The Beams Co. .... 314-434-8448  
**NJ** Glen Rock, WD Sls. Inc. .... 201-447-8821  
**NM** Rio Rancho, Elctm. Tech. Sls. Inc. (ETS) .... 602-921-7122

**NY** Eastchester, WD Sls. Inc. .... 914-779-8738  
**NY** N. Syracuse, Entec Grp., Inc. .... 315-458-7936  
**NC** Cary, Elctm. Sls. Inc. (ESI) .... 919-467-8486  
**OH** Columbus, Rathsburg Assoc. Inc. .... 614-457-2242  
**OR** Hillsboro, Temco Northwest .... 503-465-4030  
**PA** Norristown, Eastern Comps. Sls. .... 215-270-9530  
**TX** Richardson, Pro-Comp Sls. Co. .... 214-669-1500  
**WA** Bothell, Temco Northwest .... 206-481-6150  
**Can** Mississauga, Ont., bbd Elctms. .... 416-821-7800

**BACHI, INC.**, 1201 Ardmore, Itasca, IL 60143, Tel: 708-773-5600, FAX: 708-773-5621; Empl: 95

**BACON INDUSTRIES, INC.**, 192 Pleasant St., Watertown, MA 02172-2399, Tel: 617-926-2550, TWX: 710-327-6518, FAX: 617-926-2022; FSC No.: 99098; Empl: 25; *Sls. Mgr.*: R. S. Cass

**BAKER CO., INC.**, Drawer E - Sanford Airport, Sanford, ME 04073, Tel: 1-800-992-2537; Empl: 150

**BAKNOR INDUSTRIES INC.**, 2209 Dunwin Drive, Mississauga, Ont., Canada L5L 1X1, Tel: 416-828-2400, FAX: 416-828-5500; Empl: 25; *Sls. Mgr.*: M. E. Sawicki

**BALDOR ELECTRIC COMPANY, P.O. Box 2400, Fort Smith, AR 72902, Tel: 501-646-4711, FAX: 501-648-5792; Empl: 2900; Sls. Mgr.: John McFarland V.P. Sls.**

**BALLANTINE LABORATORIES**, 9 Saddle Rd., Cedar Knolls, NJ 07927, Tel: 201-984-1900, FAX: 201-984-1479; FSC No.: 50423; Empl: 30

**BALLARD TECHNOLOGY**, 1216 NW 75th Street, Seattle, WA 98117, Tel: 206-782-8704, 1-800-829-1553, FAX: 206-782-8174; Empl: 7; *Sls. Mgr.*: Kevin S. Christian

**BALLCO ATLANTA, Conceptual Enterprises Intl. Ltd.**, P.O. Box 1078, Snellville, GA 30278-1078, Tel: 404-979-5900, FAX: 404-979-5900; Empl: 49; *Sls. Mgr.*: W. Kann

**BALL CORP., EFRAIM DIVISION**, 3 Parker, Irvine, CA 92718-1605, Tel: 714-770-5000, TELEX: 68-5635, FAX: 714-770-2463; Empl: 225 ..... A-1339

*Local Sales Offices & Reps*  
**CA** Dana Point, Geil Mktg. .... 714-489-7644  
**CA** Los Altos, Kolm Mktg. Assoc. .... 415-948-2635  
**CO** Parker, W. Howard Assoc. .... 303-841-5755  
**FL** Melbourne, Bass Assocs. .... 407-259-1866  
**GA** Norcross, Beacon Microwave .... 404-449-8464  
**IN** Fort Wayne, TX Sls. Indiana .... 219-489-4447  
**MD** Baltimore, Stemler Assoc. Inc. .... 410-944-8262  
**MA** Natick, Wayland Engrg. Sls. .... 617-655-6080  
**NM** Albuquerque, Mayo, Inc. .... 505-299-4002  
**NY** Huntington, CDB Entprs. .... 516-692-5200  
**TX** Dallas, Beacon Microwave .... 214-437-1505  
**CA** Huntington Bch., Scientific Dvcs.-West .... 714-840-3501  
**VA** Lynchburg, Incandescent Tech. .... 804-846-7391  
**WA** Bellevue, Syntek .... 206-462-7700

**BALL CORPORATION**, Industrial Systems Division, 3400 Gilchrist Rd., Mogadore, OH 44260, Tel: 216-784-4456, TELEX: 98-6327-PVI-AKR, FAX: 216-784-9854; Empl: 130; *Sls. Mgr.*: George Gugliotta

**BALL SCREWS & ACTUATORS CO.**, 3616 Snell Ave., San Jose, CA 95136-1305, Tel: 408-629-1132, FAX: 408-629-2620; Empl: 63; *Sls. Mgr.*: Steve Trumbauer

**BALSTON**, 260 Neck Rd., Box 8223, Haverhill, MA 01835-0723, Tel: 508-374-7400, FAX: 508-374-7070; Empl: 200; *Sls. Mgr.*: Scott Feenan

**BAMBECK SYSTEMS INC.**, 1921 E. Carnegie Ave., Santa Ana, CA 92705, Tel: 714-250-3100, 800 334-3101, FAX: 714-757-1610; Empl: 25; *Sls. Mgr.*: Robert Bambeck

**B & B MOTOR & CONTROL CORP.**, B & B Long Island City, 1967 State Hwy 27 Ste. 32, Edison, NJ 08817, Tel: 908-819-7070, 908-572-0500, FAX: 908-819-7010; Empl: 90; *Sls. Mgr.*: Thomas Miceli

**BAND-IT - IDEX, INC.**, 4799 Dahlia Street, Denver, CO 80216, Tel: 303-320-4555, TELEX: 45-0009, FAX: 303-333-6549; *Sls. Mgr.*: Terry L. Joles; *Dist. Mgr.*: Ron Isherwood

**B & K PRECISION**, Maxtec International Corp. 6470 W. Cortland, Chicago, IL 60635, Tel: 312-889-1448, FAX: 312-794-9740; FSC No.: 08098, 18110, 48560, 30678; Empl: 200; *Sls. Mgr.*: Richard Polak

**BANNER ENGINEERING CORP.**, 9714 - 10th Ave. N., Minneapolis, MN 55441, Tel: 612-544-3164, FAX: 612-544-3631; *Sls. Mgr.*: Floyd Schneider

**BARADINE PRODUCTS LTD.**, P.O. Box 86757, North Vancouver, B.C., Canada V7L 4L3, Tel: 604-989-9853, FAX: 604-988-9899; Empl: 3; *Sls. Mgr.*: Garry J. Anderson; *Dist. Mgr.*: Garry J. Anderson

**BARANTI GROUP INC.**, 2650 John St., Unit 22, Markham, Ont., Can L3R 2W6, Tel: 416-479-0148, FAX: 416-479-0149; *Sls. Mgr.*: Barry Papoff



**FAX: 815-877-8844**

**BARBER-COLMAN CO., Indl. Instrs. Div.**, P.O. Box 2940, 1354 Clifford Ave., Loves Park, IL 61132-2940, Tel: 815-637-3000, TELEX: 4330175 BC11; Empl: 300; *Sls. Mgr.*: David Boxall ..... B-1241

*Local Sales Offices & Reps*  
**AZ** Tucson, Kachina Controls ..... 602-886-4984  
**AK** Anchorage, Control Contractors ..... 907-561-3044  
**CA** Anaheim, Instrument Lab. .... 714-236-7900  
**CA** San Jose, Instr. Lab. .... 408-434-0160  
**CA** Santa Clara, Johnson Assocs. .... 408-984-4626  
**CO** Denver, Tessco .... 303-778-1119  
**FL** Clearwater, J. J. Galleher Co. .... 813-461-7706  
**GA** Norcross, McGoff Pyrotech, Inc. .... 404-840-9811  
**GA** Roswell, Cascade Controls .... 404-664-9000  
**HI** Rockford, Barber-Colman .... 815-637-3000  
**IL** Arlington Hgts., Carlin Automation .... 708-981-0800  
**IL** Rock Island, Carlin Automation .... 309-788-1275  
**IN** Noblesville, Triangle Sls. .... 317-773-5480  
**KS** Goddard, Parker & Foster .... 316-794-2686  
**LA** Baton Rouge, Hahn/Enstocco, Inc. .... 504-926-9310  
**MI** Allendale, Applied Instr. Co. .... 616-895-9600  
**MI** Farmington, Applied Instrs. .... 313-476-9060  
**MN** Minneapolis, Temp-Tec .... 612-784-3306  
**MO** St. Louis, Temtron .... 314-968-5242  
**NV** Las Vegas, Kachina Controls .... 702-791-5666  
**NJ** Hackensack, AP Tech. Sls. .... 201-487-6222  
**NM** Albuquerque, Kachina Controls .... 505-260-1741  
**NY** Victor, Sanwal Technlgs. .... 716-924-1950  
**NC** Matthews, Carotek, Inc. .... 704-847-4406  
**OH** Cincinnati, Heat Equip. & Technlgs. .... 513-591-3000  
**PA** Frazer, Weiss Instrs. Inc. .... 215-647-4650  
**PA** Pittsburgh, Weiss Instr. Inc. .... 412-344-1500  
**RI** Providence, N.E.T.S. .... 401-454-2777  
**TN** Memphis, Industrial Process Controls .... 901-795-4200  
**TX** Fort Worth, ASKCO Instr. Corp. .... 817-568-0003  
**TX** Houston, ASKCO Instr. Co. .... 713-645-9898  
**WA** Redmond, Sales & Engrg. Assocs. .... 206-883-4999  
**WA** Vancouver, Sls. & Engrg. Assocs. .... 206-573-5161  
**WI** Appleton, Pyro-Matic .... 414-739-4247  
**WI** Wauwatosa, Pyro-Matic .... 414-453-1171

**BARBER COLMAN CO. (A SIEBE CO.), Motor Division**, P.O. Box 7040, Rockford, IL 61125-7040, Tel: 815-397-7400, FAX: 815-398-3885; Empl: 350; *Sls. Mgr.*: Jeff Wagner; *Dist. Mgr.*: John Locamp ..... B-1241

*Local Sales Offices & Reps*  
**AR** Van Buren, Hightower Ind. Sls. .... 501-471-8116  
**CA** Corona Del Mar, Motion Control of So. CA. .... 714-675-0211  
**CA** Mission Viejo, PJS Assocs. .... 714-472-0856  
**CA** San Jose, O'Donnell Assoc. North .... 408-456-2856  
**CO** Denver, Motion Technl. .... 303-757-3003  
**IL** Hinsdale, Patton Sls. Co. .... 708-325-2170  
**IA** Cedar Rapids, Lorenz Sls. Inc. .... 319-377-4666  
**MI** Grand Rapids, Russell Sls. .... 616-956-9111  
**MN** Minneapolis, Josco Melius, Inc. .... 612-861-3343  
**MO** Bridgeton, Dy-Tronix, Inc. .... 314-291-4777  
**NH** Salem, Sales Engrg. .... 603-893-5521  
**NJ** W. Caldwell, Grimm-Siegel Assoc. .... 201-575-9300  
**PA** Huntingdon Valley, Ed Leiby & Assocs. .... 215-659-8938  
**PA** Pittsford, Franklin Sls. .... 716-248-8251



WI Brookfield, Heartland Tech. Mktg. .... 414-792-0920  
 Can Vancouver, B.C., Madison Indl. Equip., Ltd. ....  
 604-872-8155

**Local Distributors**

CA Anaheim, Minarik Elec. Co. .... 714-994-2251  
 AZ Phoenix, Minarik Elec. Co. .... 602-233-3000  
 CA Fresno, Minarik Elec. Co. .... 209-255-8087  
 CA Glendale, Minarik Elec. Co. .... 818-507-6500  
 CA Ontario, Minarik Elec. Co. .... 714-391-0064  
 CA San Diego, Minarik Elec. Co. .... 619-560-6632  
 CA Santa Clara, Minarik Elec. Co. .... 408-272-0500  
 MI Troy, B & B Motor & Control Corp. .... 313-583-7450  
 FL Winter Springs, B & B Motor & Control Corp. ....  
 407-696-4511  
 CO Commerce City, Minarik Elec. Co. .... 303-289-5800  
 NJ Edison, B & B Motor & Control Corp. .... 201-572-0500  
 IL Elk Grove Vlg., GenL Controls .... 708-595-2152  
 NY Long Island City, B & B Motor & Control Corp. ....  
 718-784-1313  
 IL Schaumburg, Minarik Elec. Co. .... 708-885-9337  
 IN Indianapolis, B & B Motor & Control Corp. ....  
 317-248-0396  
 MD Silver Spring, B & B Motor & Control Corp. ....  
 301-685-5834  
 MA Somerville, Electro-Sls. Co., Inc. .... 617-666-0500  
 MN Eagan, N.W. Power Prods. Inc. .... 612-452-6467  
 NJ Edison, B & B Motor & Control Corp. .... 908-572-0500  
 NY Rochester, B & B Motor & Control Corp. ....  
 716-424-7040  
 NC Greensboro, B & B Motor & Control Corp. ....  
 919-379-8966  
 OR Portland, Minarik Elec. Co. .... 503-253-3402  
 OH Cincinnati, Cincinnati Belting & Transmission Co. ....  
 513-621-9050  
 OH Dayton, Cincinnati Belting & Transmission Co. ....  
 513-223-0653  
 TX Houston, Minarik Elec. Co. .... 713-748-0808  
 TX Irving, Minarik Elec. Co. .... 214-402-8188  
 TX San Antonio, Minarik Elec. Co. .... 512-822-7097  
 SC Taylors, B & B Motor & Control Corp. ....  
 803-268-5702  
 WA Redmond, Minarik Elec. Co. .... 206-885-0832

BARCO CHROMATICS, 2558 Mountain Ind. Blvd, Tucker,  
 GA 30084, Tel: 404-493-7000, FAX: 404-493-1314; FSC  
 No.: FSCM 59992; Empl: 103; Sls. Mgr.: James Spencer

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BARKSDALE CONTROLS DIV., Imo Industries Inc.,  
 3211 Fruitland Ave., P.O. Box 58843, Los Angeles, CA  
 90058, Tel: 213-589-6181; Empl: 234; Sls. Mgr.: J.  
 Douglas Holland

BARNES ENGINEERING, West Coast Sls. & Mktg.,  
 3601 W. Macarthur Blvd., 904, Santa Ana, CA 92704, Tel:  
 714-533-7530, FAX: 714-533-4755; FSC No.: 53823, SIC  
 3400; Empl: 47; Sls. Mgr.: Gordon Mackenzie

BARNES ENGINEERING DIV., EDO Corporation, 88  
 Long Hill Cross Rds., Shelton, CT 06484, Tel: 203-926-  
 1777, TELEX: 6819115, FAX: 203-926-9285; Empl: 250;  
 Sls. Mgr.: M. L. Marusic

BARNES ENGINEERING COMPANY, 2715 Delta Pl.,  
 Colorado Springs, CO 80910, Tel: 719-390-6500, FAX:  
 719-390-6700; Empl: 57

BARR ASSOCIATES, INC., 2 Lyberty Way, Westford, MA  
 01866, Tel: 508-692-7513, FAX: 508-692-7443; FSC No.:  
 65807; Empl: 95

BARRINGTON PLASTICS, 3838 Church Road, Mt. Laurel,  
 NJ 08054, Tel: 609-235-5151, FAX: 609-778-9032; Empl:  
 120; Sls. Mgr.: Gary Brown

BARSOM INC., See IR Scientific

BARTH ELECTRONICS, INC., 1300 Wyoming St.,  
 Boulder City, NV 89005, Tel: 702-293-1576, FAX: 702-293-  
 7024; Empl: 9; Sls. Mgr.: Sue Smith

BARTLETT INSTRUMENT CO., 14th & Ave. 'M', P.O. Box  
 445, Ft. Madison, IA 52627, Tel: 319-372-8366; Empl: 10;  
 Sls. Mgr.: David P. Bartlett

BAS BLEU INDL CO., LTD., Rm. 815, No. 110, Han-Kow  
 ST., Sec. 1, Taipei, Taiwan 10008, Tel: (02)331-6519,  
 TELEX: 23015 HJIC, FAX: 886-2-381-6812; Empl: 20; Sls.  
 Mgr.: Athena W.R. Lo, VP

BASIC ELECTRONICS, INC., 11762 Western Ave. "Q",  
 Stanton, CA 90680, Tel: 714-530-2400; Empl: 50; Sls.  
 Mgr.: Tom Jones; Dist. Mgr.: Tom Jones

BASIC MEASURING INSTRUMENTS, 335 Lakeside Dr.,  
 Foster City, CA 94404, Tel: 415-570-5355, TWX: 910-374-  
 3059, FAX: 415-574-2176; Empl: 90; Sls. Mgr.: Craig  
 Waterman

BASICON, INC., 14273 NW Science Park Drive, Portland,  
 OR 97229, Tel: 503-626-1012, FAX: 503-643-4686

BASISTA/NIEC, 3401 Brecksville Rd 110, Richfield, OH  
 44286, Tel: 216-659-9287, FAX: 216-659-3580; Empl:  
 (NIEC-Japan) 1200 230M Sales



**Basler Electric**

Electronic Product Group

**FAX: 618-654-2351**

**BASLER ELEC., Electronic Product Group, Rte.**  
 143, Highland, IL 62249, Tel: 618-654-2341, 800-645-  
 2074; Empl: 1401; Sls. Mgr.: Dennis Faires .... **D-1617**

**Local Sales Offices & Reps**

AL Huntsville, Electro-Mech Sls. Engrg. Co. ....  
 205-880-0592  
 AZ Tempe, Trembly Assoc., Inc. .... 602-431-9417  
 CA Newport Beach, S.P.A. Inc. .... 714-863-1193  
 CA Santa Clara, Sourcecontrols, Inc. .... 408-988-8801  
 CA Torrance, Printed Circuit Board Specialists ....  
 213-320-3022  
 CO Golden, Trembly Assocs., Inc. .... 303-421-8900  
 FL Clearwater, Sunland Assoc. .... 813-536-2955  
 FL Lauderdale, Sunland Assoc. .... 305-748-1303  
 FL Oviedo, Sunland Assocs. .... 407-365-9533  
 GA Norcross, Electro Mech Sls. Engrg. Co. ....  
 404-447-6478  
 IL Chicago, G. McI. Cole Co. .... 708-827-6040  
 IA Cedar Rapids, Thomas L. Dowell & Assoc., Inc. ....  
 313-393-7920  
 KS Overland Park, Thomas L. Dowell & Assocs., Inc. ....  
 913-722-4242  
 MD Baltimore, C.W. Bass & Assocs. .... 410-744-4611  
 MA Braintree, R. F. Duffy Assocs. .... 617-848-3550  
 MA Monson, R. F. Duffy Assocs. .... 413-267-9884  
 MA Whitinsville, Power Factor & Assocs. .... 508-234-6415  
 MN Apple Valley, Arkco Sls. .... 612-432-6593  
 MN St. Paul, Arkco Sls. .... 612-777-7454

MO St. Louis, Thomas L. Dowell & Assoc., Inc. ....  
 314-849-4234  
 NJ Scotch Plains, Mil-Corn Sls. Assocs. .... 908-322-7898  
 NM Albuquerque, Trembly Assoc., Inc. .... 505-266-8616  
 NY Smithtown, T & K Sls. .... 516-724-3456  
 NC Raleigh, Electro Mech Sls. Engrg. Co. ....  
 919-790-9300  
 OH Hillsboro, J. P. Woods & Assocs. .... 513-393-9582  
 OH Maineville, J. P. Woods & Assocs. .... 513-677-2120  
 PA Pittsburgh, Gormley Farrington .... 412-795-8010  
 TX Dallas, Weisler & Assoc., Inc. .... 214-437-2386  
 TX Houston, Weisler & Assoc., Inc. .... 713-467-1847  
 UT N. Salt Lake City, Trembly Assocs. .... 801-295-4703  
 VA Ashland, Glascock & Assoc. .... 804-798-2125  
 WA Redmond, Elctm. Mktg. Grp. .... 206-882-0962  
 WA Vancouver, Elctm. Mktg. Grp. .... 206-944-0761  
 PR Rio Piedras, Klamco Elctms. .... 809-748-5214

**BASLER ELECTRICS, Magnetics Product Grp., Rt**  
 143, Box 269, Highland, IL 62249, Tel: 618-654-2341, FAX:  
 618-654-2351; Empl: 1500; Sls. Mgr.: Don Ginther  
**D-1617**



**FAX: 617-361-1835**

**BATTERY ENGINEERING, INC., 1636 Hyde Park Ave.,**  
 Hyde Park, MA 02136, Tel: 617-361-7555; FSC No.: 60289;  
 Empl: 50; Sls. Mgr.: R. Fay .... **D-1426**



**BATTERY SPECIALTIES**

**FAX: 714-755-0889**

**BATTERY SPECIALTIES, 3530 Cadillac Ave., Costa**  
 Mesa, CA 92626, Tel: 714-755-0888, 1-800-352-3706 (Toll  
 free in CA); Empl: 30; Sls. Mgr.: Guy K. Hudson; Dist. Mgr.:  
 Guy K. Hudson .... **D-1429**

**BAXTER-INDUSTRIAL DIVISION, 27200 N. Tourney**  
 Rd., Valencia, CA 91355, Tel: 805-253-7466, FAX: 805-  
 253-7634; Empl: 50; Sls. Mgr.: Jeff Blair

**BAY COMPONENTS, INC., 418 3rd St., Annapolis, MD**  
 21403, Tel: 410-268-0122, FAX: 410-268-7909; Empl: 1;  
 Sls. Mgr.: Barbara Bunting

**BAYLEY INSTRUMENT COMPANY, Box 357,**  
 Kenwood, CA 95452, Tel: 707-833-6014

**BAYSTAT, 3575 Haven Ave., Menlo Park, CA 94025, Tel:**  
 415-364-3205, FAX: 415-363-8079; Empl: 100; Sls. Mgr.:  
 James V. Travis

**BAY TECHNICAL ASSOCIATES, INC., 200 N. 2nd St.,**  
 Bay St. Louis, MS 39520, Tel: 800-523-2702, 601-467-  
 8231, FAX: 601-467-4551; FSC No.: 64-0588860; Empl:  
 100; Sls. Mgr.: Jackie La Fontaine

**B C SYSTEMS, INC., 200 Terminal Road, Setauket, NY**  
 11733, Tel: 516-751-9370, FAX: 516-751-9378; Empl: 50;  
 Sls. Mgr.: Joseph Small

**BEAD INDUSTRIES, 110 Mountain Grove St., P.O. Box K,**  
 Dept. 100, Bridgeport, CT 06605-0571, Tel: 203-334-4124,  
 FAX: 203-367-9957; Empl: 175; Sls. Mgr.: Keith Lebo

**BEA ELECTRO-OPTICS, INC., 640 Pearson, Ste. 200,**  
 Des Plaines, IL 60016, Tel: 708-298-1420, FAX: 708-298-  
 1423; Sls. Mgr.: George E. Magerl; Dist. Mgr.: Vic Halkyn

**BEARING INSPECTION, 10041 Shoemaker Ave., Santa**  
 Fe Springs, CA 90670, Tel: 310-944-6251, FAX: 310-946-  
 9670; Empl: 43



**Beau Products**  
 DIVISION OF VERNITRON CORPORATION

**FAX: 603-524-1627**

**BEAU INTERCONNECT SYSTEMS, Vernitron**  
 Corp., Box 10, Laconia, NH 03247, Tel: 603-524-5102;  
 FSC No.: 13150; Empl: 150; Sls. Mgr.: Wayne Eshelman;  
 Dist. Mgr.: Larry Murphy .... **C-1269-1273**



## Local Sales Offices &amp; Reps

|    |                                                           |              |
|----|-----------------------------------------------------------|--------------|
| AZ | Huntsville, Electro-Mech. Sys. Engrg. ....                | 205-880-0592 |
| AL | Phoenix, Sheffer-Kahn ..... 602-581-0884                  |              |
| CA | Garden Grove, Elco Elect. Inc. .... 714-891-4621          |              |
| CA | Norcross, Electro-Mech. Sys. Engrg. .... 404-447-6478     |              |
| IL | Lisle, W-G Controls ..... 708-963-5954                    |              |
| IN | Carmel, Green-Wissler Sys., Inc. .... 317-843-5785        |              |
| IA | Cedar Rapids, KKB and Co. .... 319-373-1730               |              |
| MO | Bloomington, PSI ..... 612-944-8545                       |              |
| MO | St. Louis, KKB & Co. .... 314-647-2400                    |              |
| NH | Amherst, D.A. Crowley & Assoc. .... 603-673-7050          |              |
| NJ | Lawrenceville, DVS Co. .... 609-896-1112                  |              |
| NJ | W. Caldwell, Grimm Siegel & Assoc. .... 201-575-9330      |              |
| NY | Syracuse, Pitrronics, Inc. .... 315-455-7346              |              |
| NC | Raleigh, Electro-Mech. Sys. Engrg. .... 919-790-9300      |              |
| OH | Beechwood, Electronic Salesmasters Inc. .... 216-831-9555 |              |

|     |                                                                  |  |
|-----|------------------------------------------------------------------|--|
| OR  | Beaverton, Pacific Mktg. Specialist, .... 503-641-9373           |  |
| TX  | Living, Comtech Sys. Inc. .... 214-751-1181                      |  |
| WA  | Redmond, Pacific Mktg. Specialists, .... 206-882-3144            |  |
| Can | Oakville, Ont., Haltronics, Ltd. .... 416-844-2121               |  |
| Can | West Vancouver, BC, Leister Blake Enptrs. Ltd. .... 604-926-6127 |  |

BEAU TECH, 98 Elm Street, Portland, ME 04101, Tel: 207-775-6139, TELEX: 950-027 Attn Beau, FAX: 207-775-7710; Empl: 6; Sls. Mgr.: Barbara Pike, Credit Mgr.; Dist. Mgr.: Barbara Pike

BEAVER LABS, P. O. Box 202, Kingston, MA 02364, Tel: 617-585-5666; Empl: 5

BEC INC./CERTIFIED CALIBRATION LABS, 945 Horsham Rd., Horsham, PA 19044, Tel: 800-523-3808, FAX: 215-675-0966, 800-523-3808; Empl: 8; Sls. Mgr.: David Hines

BECKMAN INDUSTRIAL CORP., Affiliate of Emerson Electric Co., 4200 Bonita Pl., Fullerton, CA 92635, Tel: 714-447-2300, TELEX: 7607569, FAX: 714-447-2400; Empl: 1900; Sls. Mgr.: Ron Sullivan, Sls. & Mktg. V.P. A-1868, 2056-2057

## Local Sales Offices &amp; Reps

|     |                                                               |  |
|-----|---------------------------------------------------------------|--|
| AZ  | Huntsville, Elctm. Sys., Inc. .... 205-533-1735               |  |
| AL  | Scottsdale, Thom Luke Sls. .... 602-451-5400                  |  |
| CA  | Escondido, Clint Bradley Sls. .... 619-743-0138               |  |
| CA  | Newport Beach, Jones & McGeoy Sls. .... 714-724-8080          |  |
| CA  | Santa Clara, Criterion Sls. .... 408-988-6300                 |  |
| CO  | Littleton, Simpson Assocs. .... 303-794-8381                  |  |
| CT  | Cheshire, Datatrack Engrg., Inc. .... 203-271-1311            |  |
| FL  | St. Petersburg, QXI, Inc. .... 813-894-4556                   |  |
| GA  | Norcross, Elctm. Sys., Inc. .... 404-448-6554                 |  |
| ID  | Boise, Emerging Technlg. Sls., Inc. .... 208-378-4680         |  |
| IL  | Elk Grove Village, Carlson Elctm. Sys. Co. .... 708-956-8240  |  |
| IN  | Indianapolis, Precision Elec. Comp. .... 317-842-3740         |  |
| IA  | Cedar Rapids, Carlson Elctms. .... 319-378-1450               |  |
| KS  | Overland Park, Electri-Rep., Inc. .... 913-649-2168           |  |
| MD  | Columbia, Robert Elctm. Sys. .... 301-995-1900                |  |
| MA  | Farmingham, Gallagher Assoc. .... 508-626-2346                |  |
| MI  | Brighton, A.P. Assoc. .... 313-229-6550                       |  |
| MN  | Minneapolis, Comstrand, Inc. .... 612-574-9480                |  |
| MO  | St. Louis, Electri-Rep. .... 314-993-4421                     |  |
| NJ  | Fairfield, Tech. Applications & Mktg., Inc. .... 201-575-4130 |  |
| NY  | Manlius, LamTec Sys. Corp. .... 315-682-4780                  |  |
| NC  | Cary, Electronic Sys., Inc. .... 919-467-8486                 |  |
| OH  | Centerville, Omega Sys., Inc. .... 513-434-5507               |  |
| OH  | Cleveland, Omega Sls., Inc. .... 216-360-9400                 |  |
| OR  | Portland, Venture Elctms., Inc. .... 503-624-0617             |  |
| PA  | Trevoze, Omega Sls. .... 215-244-4000                         |  |
| TX  | Austin, Norcom, Inc. .... 512-451-2757                        |  |
| TX  | Dallas, Norcom, Inc. .... 214-386-4888                        |  |
| TX  | Houston, Norcom, Inc. .... 713-778-0392                       |  |
| UT  | Midvale, Simpson Assoc. .... 801-566-3691                     |  |
| WA  | Bellevue, Venture Elctms., Inc. .... 206-454-4594             |  |
| WI  | Milwaukee, Carlson Elctm. Sys. Co. .... 414-476-2790          |  |
| Can | Kanata, Ont., Electro Source, Inc. .... 613-592-3214          |  |
| Can | Pointe Claire, Que., Electro Source, Inc. .... 514-630-7486   |  |
| Can | Rexdale, Ont., Electro Source, Inc. .... 416-675-4490         |  |
| Can | Richmond, B.C., Blakewood Elctm. Sys., Inc. .... 604-444-3344 |  |

BECK SYSTEMS INC., Beck Technology, 2354 Ave. C North, Saskatoon, SK, CAN S7L 5X5, Tel: 306-975-1080, FAX: 306-975-3993; Empl: 7; Sls. Mgr.: Shane Simpson

BEEDE ELECTRICAL INSTRUMENT CO., INC., 175 South Main St., Penacook, NH 03033, Tel: 603-753-6362, FAX: 603-753-6201; FSC No: 06555; Empl: 350; Sls. Mgr.: Jeffrey L. Schindler, Dist. Mgr.: Diane Aldrich D-1339

## Local Sales Offices &amp; Reps

|    |                                                         |  |
|----|---------------------------------------------------------|--|
| AL | Huntsville, 20th Century Mktg. .... 205-772-9999        |  |
| CA | Carlsbad, FLW, Inc. .... 619-434-5251                   |  |
| CA | Costa Mesa, F. L. W., Inc. .... 714-751-7512            |  |
| CA | Fremont, FLW, Inc. .... 510-651-6511                    |  |
| CA | Oxnard, FLW, Inc. .... 805-984-0167                     |  |
| CA | Norcross, 20th Century Mktg. .... 404-446-1999          |  |
| IL | Des Plaines, Saffro & Assocs. .... 708-299-7680         |  |
| IN | Carmel, Frank Kahsar Sls. .... 317-844-9353             |  |
| MD | Mt. Airy, Strayton Assocs., Inc. .... 301-831-7007      |  |
| MA | Canton, N.E.S. Elctm. Rep. Co. .... 617-828-4835        |  |
| MI | Muskegon, Frank Kahsar Sls. .... 616-798-4451           |  |
| MI | Sterling Hgts., Frank Kahsar Sls. .... 313-795-3530     |  |
| MO | Independence, Gribble Sls. Engrg. Co. .... 816-796-4333 |  |

|     |                                                         |  |
|-----|---------------------------------------------------------|--|
| NJ  | Kenilworth, Shortess-Rawson & Assocs. .... 908-276-2525 |  |
| NY  | Buffalo, NRM Mktg. .... 716-634-4300                    |  |
| NY  | Skaneateles, NRM Mktg. Grp. .... 315-685-8991           |  |
| NY  | Spencerport, NRM Mktg. Grp. .... 716-352-9166           |  |
| NC  | Raleigh, 20th Century Mktg. .... 919-790-9383           |  |
| OH  | Cincinnati, Frank Kahsar Sls. .... 513-598-1484         |  |
| OH  | Columbus, Frank Kahsar Sls. .... 614-252-4009           |  |
| OH  | Elyria, Frank Kahsar Sls. .... 216-365-5219             |  |
| OH  | Palma, Frank Kahsar Sls. .... 216-845-0103              |  |
| PA  | Kulpsville, The James Dell Co. .... 215-584-4925        |  |
| PA  | Pittsburg, Frank Kahsar Sls. .... 412-734-8797          |  |
| TX  | Dallas, Southwest Elctm. Industries .... 214-690-9881   |  |
| TX  | Vidor, Southwest Elec. Ind. .... 409-786-1028           |  |
| Can | Brampton, Ont., Mod-Tronics, Ltd. .... 416-457-6322     |  |

## Local Distributors

|     |                                                         |  |
|-----|---------------------------------------------------------|--|
| CA  | El Cajon, Meter Craft .... 619-258-8990                 |  |
| CA  | Hayward, Dynametron .... 510-786-9459                   |  |
| CA  | Los Angeles, EIL .... 213-685-7020                      |  |
| CA  | Sunnyvale, EIL .... 408-744-0271                        |  |
| CO  | Aurora, R & R Instrmn. .... 303-364-8325                |  |
| CO  | Denver, EIL .... 303-534-4160                           |  |
| CO  | Denver, Process Meas. .... 303-937-7226                 |  |
| CT  | Middletown, E.I.L. Instrs. .... 203-346-6646            |  |
| FL  | Edgewater, Southern Instrs. .... 904-427-3963           |  |
| FL  | Hialeah, Kimball Elec. .... 305-822-5792                |  |
| FL  | Palm Bay, EIL .... 407-725-8300                         |  |
| IL  | Bridge View, EIL .... 708-430-2292                      |  |
| IL  | Countryside, Inotek/Pacific Indicator .... 708-352-3500 |  |
| IL  | Franklin Park, Alca, Inc. .... 708-451-6644             |  |
| KS  | Overland Pk., Brooks Elctms. .... 913-648-3131          |  |
| KY  | Louisville, E.I.L. Instrs. .... 502-454-3420            |  |
| MD  | Hunt Valley, E.I.L. Instrs. .... 410-584-7400           |  |
| MA  | Burlington, E.I.L. Instrs. .... 617-272-9450            |  |
| MA  | Waltham, Calibron .... 617-894-6440                     |  |
| MI  | Ferdale, Ram Meter, Inc. .... 313-398-6767              |  |
| NJ  | Pennsauken, EIL .... 609-488-0474                       |  |
| NJ  | Pompton Lakes, Instrument Masters .... 201-839-2876     |  |
| NY  | Clarence, EIL .... 716-634-8500                         |  |
| NY  | Mastic Beach, Alternate Solution .... 516-399-7701      |  |
| NC  | Charlotte, E.I.L. Instrs. .... 704-376-2237             |  |
| OH  | Cleveland, Weschler Instr. .... 216-238-2550            |  |
| OH  | Dayton, EIL .... 513-435-2134                           |  |
| OH  | Madison, Madison Elec. .... 216-428-6464                |  |
| OH  | Middlefield, Bentrionix .... 216-632-0606               |  |
| PA  | Pittsburgh, EIL Instrs. .... 412-823-2255               |  |
| TN  | Knoxville, Brownell Elec. .... 615-966-3441             |  |
| TX  | Beaumont, Straughn Elec. .... 409-838-4563              |  |
| TX  | Dallas, Dallas Meter Tek .... 214-349-6044              |  |
| TX  | Dallas, E.I.L. Instrs. .... 214-357-0297                |  |
| TX  | Houston, American Analog .... 713-941-7265              |  |
| TX  | Houston, E.I.L. Instrs. .... 713-271-3100               |  |
| VA  | Norfolk, EIL .... 804-855-9553                          |  |
| VA  | Richmond, Meter Metrics .... 804-275-1431               |  |
| WA  | Redmond, E.I.L. Instrs. .... 206-882-3222               |  |
| WI  | Milwaukee, E.M. Instrs. .... 414-272-7799               |  |
| Can | Ontario, Modtronics .... 416-457-6322                   |  |
| Can | Quebec, Brunelle .... 819-563-9096                      |  |
| Can | Toronto, EIL .... 416-624-6660                          |  |

## BEHLMAN

An Astrosystems Company

FAX: 516-328-1658

BEHLMAN ELECTRONICS INC., 6 Nevada Dr., Lake Success, NY 11042, Tel: 516-328-1600 D-2244-2249

## Local Sales Offices &amp; Reps

|    |                                                        |  |
|----|--------------------------------------------------------|--|
| AZ | Tempe, Trembly Assocs., Inc. .... 602-431-9417         |  |
| CA | Chatsworth (Southern), Technlg. West .... 818-700-6426 |  |
| CA | San Francisco (Northern), RDX Corp. .... 510-568-5606  |  |
| CA | Ventura, Behlman Elctms. .... 805-642-0660             |  |
| CO | Golden, Trembly Assocs., Inc. .... 303-279-3019        |  |
| IL | Wheeling, Ed Joyner & Co. .... 708-520-1200            |  |
| KS | Overland Park, Markline Technlg. .... 913-681-8880     |  |

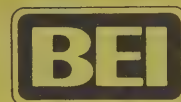
|    |                                                            |  |
|----|------------------------------------------------------------|--|
| MD | Hampstead, Tech. Instr. Sls. .... 301-239-4452             |  |
| MI | St. Claire Shores, Agren-Asher Co. .... 313-773-2220       |  |
| MN | Eden Prairie, Professional Mktg. .... 612-934-5939         |  |
| MO | Lake St. Louis, Markline Technlg. .... 314-625-6222        |  |
| NH | Nashua, Interseel .... 603-880-6500                        |  |
| NM | Albuquerque, Trembly Assocs., Inc. .... 505-266-8616       |  |
| NY | Lake Success, Behlman Elctms. .... 516-328-1600            |  |
| OK | Tulsa, Acudata Inc. .... 918-743-1875                      |  |
| PA | Lansdale (Eastern), Tech. Inst. Sls. .... 215-361-7850     |  |
| PA | Pittsburgh (Western), Instrmn. Sys. .... 412-823-7005      |  |
| TX | Houston, Acudata Inc. .... 713-580-2451                    |  |
| UT | N. Salt Lake City, Trembly Assocs., Inc. .... 801-295-4703 |  |
| WA | Seattle, Datacom Assocs. .... 206-285-2525                 |  |

BEHLMAN ELECTRONICS, INC., Astrosystems, 2021 Sperry Ave., No. 18, Ventura, CA 93003, Tel: 805-642-0660, FAX: 805-642-0790; FSC No: 53636

D-2244-2249

## Local Sales Offices &amp; Reps

|     |                                                               |  |
|-----|---------------------------------------------------------------|--|
| AL  | Huntsville, Reynolds Assocs. .... 205-539-1485                |  |
| AZ  | Tempe, Trembly Assocs. Inc. .... 602-431-9417                 |  |
| CA  | Chatsworth, Technlg. West .... 818-700-6426                   |  |
| CA  | San Francisco, RDX Corp. .... 510-568-5606                    |  |
| CA  | Ventura, Behlman .... 805-642-0660                            |  |
| CO  | Golden, Trembly Assocs. Inc. .... 303-279-3019                |  |
| FL  | Melbourne, Reynolds & Assocs. .... 407-259-7000               |  |
| GA  | Duluth, Reynolds Assocs. .... 404-476-4992                    |  |
| IL  | Wheeling, Ed Joyner & Co. .... 708-520-1200                   |  |
| KS  | Overland Park, Markline Technlg. .... 913-681-8880            |  |
| MD  | Hampstead, Tech. Inst. Sls. .... 301-239-4452                 |  |
| MN  | Eden Prairie, Professional Mktg. Svcs. Inc. .... 612-934-5939 |  |
| NH  | Nashua, Interseel .... 603-880-6500                           |  |
| NM  | Albuquerque, Trembly Assocs. Inc. .... 505-266-8616           |  |
| NY  | Fayetteville, Martin P. Andrews .... 315-637-5291             |  |
| OK  | Tulsa, Acudata Inc. .... 918-743-1875                         |  |
| PA  | Lansdale, Tech. Inst. Sls. .... 215-361-7850                  |  |
| PA  | Pittsburgh, Instrmn. Sys. Inc. .... 412-823-7005              |  |
| TX  | Houston, Acudata Inc. .... 713-580-2451                       |  |
| TX  | Plano, Acudata, Inc. .... 214-424-3567                        |  |
| UT  | N. Salt Lake City, Trembly Assocs. Inc. .... 801-295-4703     |  |
| WA  | Seattle, Datacom Assocs. .... 206-285-2525                    |  |
| Can | Mississauga, Ont., Altus Technologies .... 416-670-0783       |  |



FAX: 619-931-1212

BEI MOTION SYSTEMS COMPANY, Corporate Off., 2111 Palomar Airport Rd., Ste. 250, Carlsbad, CA 92009, Tel: 619-931-1500; Empl: 25 B-1917

## Local Sales Offices &amp; Reps

|     |                                                     |  |
|-----|-----------------------------------------------------|--|
| CA  | Garden Grove, BEI Motion Sys. Co. .... 714-534-5830 |  |
| CA  | San Rafael, BEI Motion Sys. Co. .... 415-492-2840   |  |
| CO  | Westminster, BEI Motion Sys. Co. .... 303-426-1566  |  |
| GA  | Snellville, BEI Motions Sys. Co. .... 404-978-6301  |  |
| IL  | Rockford, BEI Motion Sys. Co. .... 815-968-9528     |  |
| MA  | Norwell, BEI Motion Sys. Co. .... 617-878-9820      |  |
| MI  | Plymouth, BEI Motion Sys. Co. .... 313-451-0359     |  |
| NJ  | Montmorn, BEI Motion Sys. Co. .... 201-984-5600     |  |
| OH  | Cincinnati, BEI Motion Sys. Co. .... 513-232-4545   |  |
| PA  | Lancaster, BEI Motion Sys. Co. .... 717-299-6243    |  |
| TX  | Cleburne, BEI Motion Sys. Co. .... 817-556-2211     |  |
| WA  | Bellevue, Thorsen Co. Northwest .... 206-455-9180   |  |
| Can | Willowdale, Willer Engrg. Ltd. .... 416-499-4421    |  |

BEI MOTION SYSTEMS COMPANY, Chatsworth Encoder Div., 9223 Deering Avenue, Chatsworth, CA 91311, Tel: 818-341-6161, FAX: 818-882-4553; Empl: 120; Sls. Mgr.: Robert Kemp B-1917

Refer to BEI Motion Sys. Co., Corporate Off., Carlsbad, CA for sales office information.

BEI MOTION SYSTEMS COMPANY, Computer Products Div., 1755 B La Costa Meadows Dr., San Marcos, CA 92069, Tel: 619-471-2600, FAX: 619-471-2675; Empl: 30; Sls. Mgr.: Hank Robinson, Sls. Mgr. B-1917

Refer to BEI Motion Sys. Co., Corporate Off., Carlsbad, CA for sales off. info.

BEI MOTION SYSTEMS COMPANY, DIGITAL PRODS. DIV., See BEI Motion Systems Company, Prec. Sys. & Space Div.

BEI MOTION SYSTEMS COMPANY, Industrial Encoder Div., 7230 Hollister Ave., Goleta, CA 93117, Tel: 805-968-0782, FAX: 805-968-3154; Empl: 60; Sls. Mgr.: Glenn Avolio B-1917



Refer to BEI Motion Sys. Co., Corporate Off., Carlsbad, CA for sales office information.

**BEI MOTION SYSTEMS COMPANY, ITEK**  
ENCODER DIV., See BEI Motion Systems Company, Prec. Sys. & Space Div.

**BEI MOTION SYSTEMS COMPANY, Kimco**  
**Magnetics Div.**, 150 Vallecitos de Oro, San Marcos, CA 92069, Tel: 619-744-5671, FAX: 619-744-8815; Empl: 60; Sls. Mgr.: Mike Lopez **B-1917**

Refer to BEI Motion Systems Co., Corporate Off., Carlsbad, CA for sales office info.

**BEI MOTION SYSTEMS COMPANY, Precision**  
**Systems & Space Division**, 178 A Street, Needham Hgts., MA 02194, Tel: 617-455-1414, FAX: 617-455-6514; Sls. Mgr.: Marvin Kansky **B-1917**

Refer to BEI Motion Systems Co., Corporate Off., Carlsbad, CA for sales office info.

**BEI MOTION SYSTEMS COMPANY, Precision**  
**Systems & Space Division**, P.O. Box 3838, Little Rock, AR 72203, Tel: 501-851-4000, FAX: 501-851-5476; Empl: 80; Sls. Mgr.: Marvin Kansky, Sls. Mgr. **B-1917**

Refer to BEI Motion Sys. Co., Corporate Off., Carlsbad, CA for sales office information.

**BELDEN WIRE AND CABLE COOPER INDS.**, See Cooper Industries/ Belden Div.



**FAX: 201-432-9542**

**BEL FUSE**, 198 Van Vorst St., Jersey City, NJ 07302, Tel: 201-432-0463; Empl: 225; Sls. Mgr.: A. Sutta; Dist. Mgr.: Dennis Ackerman

**A-1512, 1515-1523, 1692, 2276-2293; B-1340, 1344-1349; D-2074-2075**

**Local Sales Offices & Reps**

|     |                                 |              |
|-----|---------------------------------|--------------|
| AL  | Huntsville, INTEREP             | 205-881-1096 |
| AZ  | Phoenix, U.S. Sls.              | 602-451-1155 |
| CA  | Los Angeles, C & N Assocs.      | 805-254-5844 |
| CA  | San Jose, Meridian Tech Sls.    | 408-262-5474 |
| CO  | Boulder, Talisman Assoc.        | 303-444-7300 |
| FL  | Sanford, D Assocs.              | 407-321-9594 |
| GA  | Atlanta, Beacon Elctns.         | 404-256-9640 |
| IL  | Chicago, LTD Tech.              | 708-773-2900 |
| IN  | Indianapolis, Insul Reps        | 317-469-1994 |
| MN  | St. Paul, Rockmore Sls.         | 612-941-1390 |
| MO  | Bridgeton, Dy-Tronix            | 314-291-4777 |
| NJ  | East Brunswick, Winch Sls.      | 908-613-1515 |
| NM  | Albuquerque, Syntech            | 602-264-7971 |
| NY  | Rochester, Tri-Tech             | 716-385-6500 |
| NC  | Raleigh, Beacon Elctns.         | 919-787-0330 |
| OH  | Columbus, A. Baier Co.          | 614-764-1144 |
| PA  | Hatboro, AQS Electro            | 215-674-3562 |
| TN  | Knoxville, Insul-Reps           | 615-691-7586 |
| TX  | Dallas, Oeler & Menelaides      | 214-361-8876 |
| UT  | Salt Lake City, Western Mktg.   | 801-268-9768 |
| WI  | Milwaukee, LTD Tech.            | 414-774-1006 |
| Can | Toronto, Cantronics             | 416-297-8668 |
| GA  | Atlanta, Beacon Elect           | 404-256-9640 |
| IN  | Indianapolis, Insul. Reps, Inc. | 317-251-1994 |

|     |                                   |              |
|-----|-----------------------------------|--------------|
| KS  | Leawood, Dy-Tronix                | 913-339-6333 |
| MN  | St. Paul, Rockmore Sls.           | 612-941-1390 |
| NY  | Rochester, Tri-Tech Elec.         | 716-385-6500 |
| NJ  | New Brunswick, Winch Sls. Assocs. | 201-613-1515 |
| NC  | Raleigh, Beacon Elect.            | 919-787-0330 |
| OH  | Cleveland, Arthur Baier Co.       | 216-461-6161 |
| PA  | Hatboro, AQS                      | 215-674-3562 |
| TN  | Knoxville, Insul-Reps, Inc.       | 615-691-7586 |
| PR  | Hato Rey, Max Anderson Co., Inc.  | 809-751-2026 |
| Can | Scarboro, Ont., Cantronics, Ltd.  | 416-297-8668 |

**Delay Lines**

|     |                                  |              |
|-----|----------------------------------|--------------|
| FL  | Longwood, D-Assocs., Inc.        | 407-830-8976 |
| IL  | Chicago, LTD                     | 708-773-2900 |
| GA  | Atlanta, Beacon Elect.           | 404-256-9640 |
| KS  | Leawood, Dy-Tronix               | 913-339-6333 |
| MN  | S. St. Paul, Northport Engrg.    | 612-457-8000 |
| IN  | Indianapolis, Insul. Reps, Inc.  | 317-251-1994 |
| NJ  | E. Brunswick, Winch Sls. Assoc.  | 201-613-1515 |
| MO  | St. Louis, Dy-Tronix             | 314-291-4777 |
| OH  | Cleveland, Arthur Baier Co.      | 216-461-6161 |
| NY  | E. Rochester, Tri-Tech Elec.     | 716-385-6500 |
| PA  | Hatboro, AQS                     | 215-674-3562 |
| NC  | Raleigh, Beacon Elect.           | 919-787-0330 |
| TX  | Austin, Oeler & Menelaides       | 512-453-0275 |
| TX  | Dallas, Oeler & Menelaides       | 214-361-8876 |
| TN  | Knoxville, Insul. Reps.          | 615-691-7586 |
| PR  | Hato Rey, M. Anderson Co., Inc.  | 809-751-2020 |
| Can | Scarboro, Ont., Cantronics, Ltd. | 416-297-8668 |

**Local Distributors**

|    |                                        |              |
|----|----------------------------------------|--------------|
| CT | Wallingford, Sager                     | 203-265-4600 |
| FL | Boca Raton, D & R                      | 407-977-8751 |
| FL | Orlando, Sager                         | 407-240-3114 |
| MD | Columbia, Sager                        | 301-995-4900 |
| MA | Hingham, Sager                         | 617-749-6700 |
| NH | Salem, Sager                           | 603-898-1348 |
| NJ | Sager                                  | 201-585-0029 |
| NY | Hempstead, Sager                       | 516-348-1300 |
| NC | Raleigh, Sager                         | 919-850-9550 |
| PA | Bristol, Aim Elctns.                   | 215-785-3500 |
| PA | Philadelphia, Sager                    | 215-464-4336 |
| AL | Huntsville, CDI                        | 205-883-7501 |
| CA | El Segundo, Force Elctns.              | 213-772-1324 |
| CA | Hayward, Kea Elctns.                   | 415-887-2900 |
| CA | San Diego, Sigma Elctns.               | 619-565-2000 |
| CA | San Jose, Force Elctns.                | 408-943-1324 |
| CT | Wallingford, Sager                     | 203-265-4600 |
| FL | Fl. Lauderdale, CDI                    | 305-971-4950 |
| FL | Orlando, Sager                         | 407-240-3114 |
| GA | Norcross, CDI                          | 404-441-3320 |
| MD | Columbia, Sager                        | 301-995-4900 |
| MA | Hingham, Sager                         | 617-749-6700 |
| MA | Marlboro, Hardware Specialty           | 617-481-8622 |
| MN | New Brighton, Chris Elctns.            | 612-631-2647 |
| NH | Hudson, Bell Inds.                     | 603-882-1133 |
| NH | Salem, Sager                           | 603-898-1348 |
| NJ | Sager                                  | 201-585-0029 |
| NY | Bohemia, Key Comps.                    | 516-567-7500 |
| NY | Hempstead, Sager                       | 516-348-1300 |
| NC | Raleigh, CDI                           | 919-787-7311 |
| NC | Raleigh, Sager                         | 919-850-9550 |
| OR | Beaverton, Comp. Resources             | 503-641-8488 |
| PA | Cornwall Hgts., Reliance Merchandising | 215-638-8200 |
| PA | Philadelphia, Sager                    | 215-464-4336 |
| VA | Falls Church, CDI                      | 703-241-8227 |

**BEL HYBRIDS & MAGNETICS, Bel Fuse Inc.**, 5362 W. 78TH St., Indianapolis, IN 46268, Tel: 317-876-0044, FAX: 317-876-0092; Empl: 23; Sls. Mgr.: Warren Mitch **A-1692**

**Local Sales Offices & Reps**

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Huntsville, Interop              | 205-881-1096 |
| CA | Milpitas, Meridian               | 408-262-5474 |
| FL | Longwood, D-Assocs.              | 407-830-8976 |
| IL | Itasca, LTD Technlgs.            | 708-773-2900 |
| IN | Indianapolis, Insul-Reps, Inc.   | 317-251-1994 |
| IA | Cedar Rapids, Dy-Tronix          | 319-377-8275 |
| KS | Wichita, Dy-Tronix Inc.          | 316-838-0884 |
| MN | Eden Prairie, Rockmore           | 612-941-1390 |
| MO | Raytown, Dy-Tronix               | 913-229-6333 |
| MO | St. Louis, Dy-Tronix             | 314-291-4777 |
| NY | Hempstead, CCI                   | 516-273-5050 |
| NC | Raleigh, Beacon Elctns.          | 919-787-0330 |
| OH | Cleveland, Arthur H. Baier, Inc. | 216-461-6161 |
| PA | Hatboro, AQS Electro             | 215-674-3562 |
| TN | Knoxville, Insul-Reps            | 615-691-7586 |
| TX | Austin, Oeler & Menelaides, Inc. | 512-453-0275 |
| VA | Charlottesville, DVS             | 804-973-0303 |
| WI | Milwaukee, LTD Technlgs.         | 414-774-1000 |

**BELL, FLOYD, INC.**, 897 Higgs Ave., Columbus, OH 43212, Tel: 614-294-4000, FAX: 614-291-0823; FSC No.: 56493; Sls. Mgr.: Tom Shain **D-1026-1027**

**Local Sales Offices & Reps**

|    |                                     |              |
|----|-------------------------------------|--------------|
| IL | Mt. Prospect, Robert Adams Sls. Co. | 312-297-8733 |
| MD | Columbia, Tyler Griffin Co.         | 301-995-1215 |
| PA | Paoli, Tyler Griffin Co.            | 215-647-1550 |

# F.W. BELL

**FAX: 407-677-5765**

**BELL, F. W., INC.**, 6120 Hanging Moss Rd., Orlando, FL 32807, Tel: 407-678-6900; FSC No.: 18479; Empl: 70; Sls. Mgr.: Stephen L. Dakel; Dist. Mgr.: Stephen L. Dakel **B-1918; D-1152-1153, 1236-1237**

**Local Sales Offices & Reps**

|     |                                   |              |
|-----|-----------------------------------|--------------|
| AL  | Birmingham, Southrep              | 205-304-8225 |
| AZ  | Tempe, Trembly Assoc.             | 602-431-9417 |
| CA  | Arcadia, Southwest Instr.         | 818-574-0049 |
| CA  | Milpitas, Maxim Electronic Sls.   | 408-946-6001 |
| CO  | Denver, Trembly Assoc.            | 303-279-3019 |
| FL  | Winter Springs, T Squared Mktg.   | 407-699-8992 |
| GA  | Newman, South Rep                 | 404-304-8225 |
| IL  | Palatine, Golbeck Milota Assoc.   | 708-705-0602 |
| MD  | Hampstead, Technical Instr. Sls.  | 301-239-4452 |
| MA  | Ashland, Sullivan Tech. Sls.      | 508-881-2215 |
| NJ  | Ridgewood, Ballou, Inc.           | 201-444-6990 |
| NM  | Albuquerque, Trembly Assoc.       | 505-266-8616 |
| NC  | Raleigh, Eastern Elctns.          | 919-876-7591 |
| OH  | Beachwood, Electronic Salesmaster | 216-831-9555 |
| OR  | Beaverton, NW Test & Measurement  | 503-645-9000 |
| PA  | Lansdale, Technical Instr. Sls.   | 215-361-7850 |
| WA  | Bellevue, NW Test & Measurement   | 206-881-8857 |
| WI  | Madison, Golbeck Milota Assoc.    | 608-222-7037 |
| Can | Dorval, Que., Weiss Co.           | 514-685-6644 |

**Local Distributors**

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AZ  | Tempe, Trembly Assoc.               | 602-431-9417 |
| ID  | Boise, Radar Elec. Co. Inc.         | 208-336-2227 |
| CA  | Inwindale, Shafer Eng.              | 818-960-5402 |
| CA  | Milpitas, Maxim Electronic Sls.     | 408-946-6001 |
| CA  | Norco, Empire Instr.                | 714-279-6364 |
| CA  | Pomona, Inspection Tech.            | 714-626-2600 |
| CA  | San Marcos, Mitchell Instr.         | 619-744-2690 |
| FL  | Orlando, Brownell Electro           | 407-843-6776 |
| OR  | Portland, Radar Elec. Co.           | 503-232-3404 |
| GA  | Atlanta, P & R Instrs.              | 404-391-9117 |
| GA  | Forest Park, Brownell Electro       | 404-362-9009 |
| GA  | Marietta, Peach State Instr.        | 404-424-0047 |
| IL  | Crystal Lake, Right Distributors    | 815-459-0645 |
| KY  | Louisville, United Utility Supp.    | 502-451-2430 |
| MD  | Baltimore, Davis Instr.             | 410-358-9900 |
| MD  | Hunt Valley, E.L.L. Instrs.         | 410-584-7400 |
| MA  | N. Andover, Contact East            | 508-682-9844 |
| MA  | Sharon, Adcoeur                     | 617-784-8123 |
| MO  | St. Louis, Indsl. Srv. Lab.         | 314-423-3121 |
| NY  | Rochester, Transcat                 | 800-828-1470 |
| NY  | Whitestone, Power Electro Supply    | 718-767-1447 |
| OH  | Cleveland, Meter Master             | 216-351-1234 |
| OH  | Dayton, Electro Sls. Assoc.         | 513-428-5551 |
| TX  | Dallas, Seaton Elctns.              | 214-980-9860 |
| PA  | McKeesport, Barno Radio Co.         | 412-751-5966 |
| PA  | Reading, Barbey Elctns.             | 215-376-7581 |
| SC  | Charleston, Cameron Barkley Co.     | 803-745-2837 |
| TN  | Chattanooga, Edwin Bohr             | 615-877-8207 |
| TN  | Chattanooga, Edwin Bohr Elctns.     | 615-877-8207 |
| TX  | Mesquite, Inspection Prods.         | 214-686-4275 |
| VA  | Richmond, Fidus                     | 804-275-2302 |
| WA  | Seattle, Radar Elec. Co.            | 206-282-2511 |
| Can | Mississauga, Ont., BCS Elctns. Ltd. | 416-602-8550 |
| Can | Montreal, Que., Pro Jean            | 514-273-8331 |

# J.W. MILLER

**FAX: 310-515-1962**

**BELL INDS., J. W. Miller Div.**, 306 E. Alondra Blvd. P.O. Box 2859, Gardena, CA 90247-1059, Tel: 310-515-1720; FSC No.: 76493; Empl: 30; Sls. Mgr.: Jeff Johnson **A-1190-1195**

**Local Sales Offices & Reps**

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AZ | Mesa, Fetty/Schoenduve, Inc.            | 602-844-8289 |
| CA | J.W. Miller                             | 310-515-1720 |
| CA | Los Gatos, Shur Sls.                    | 408-399-7487 |
| CO | Denver, West, Inc.                      | 303-477-8180 |
| FL | Winter Park, HHP Assocs., Inc.          | 407-740-0320 |
| GA | Buckhead, MFRS. Sls. & Mktg. Svcs.      | 404-342-3503 |
| IL | Skokie, Specialized Mktg.               | 708-674-1111 |
| IN | Carmel, Current Elctm. Mktg., Inc.      | 317-844-1770 |
| MD | Sykesville, DJC Elctm. Sls., Inc.       | 410-795-7020 |
| MA | Burlington, Conti-Younger Assocs., Inc. | 617-273-1582 |





|     |                                       |              |
|-----|---------------------------------------|--------------|
| MI  | E. Detroit, Jack M. Thorpe Co.        | 313-779-6363 |
| MN  | Eden Prairie, Electro Mark, Inc.      | 612-944-5850 |
| MS  | Hattiesburg, Mfgs. Sls. & Mktg. Svcs. | 601-264-4755 |
| MO  | St. Louis, Lowell/Kangas Assocs.      | 314-821-4050 |
| NJ  | Englewood, Epstein & Siebel Assoc.    | 201-569-7600 |
| NY  | Marcellus, J.G. Welch Sales           | 315-673-1009 |
| NY  | Rochester, J.G. Welch Sales           | 716-244-1100 |
| NY  | Yonkers, Robum Agencies, Inc.         | 914-968-1016 |
| NC  | Raleigh, South Tech Sls.              | 919-571-1313 |
| OH  | St. Mary's, Thomas Shelby & Co., Inc. | 419-394-3377 |
| OR  | Portland, Caruso-Camelleri Assoc.     | 503-246-5439 |
| TN  | Memphis, MFRS. Sls. & Mktg. Svcs.     | 901-767-0801 |
| TX  | Ft. Worth, Chet Wells & Co.           | 817-284-0261 |
| WA  | Bellevue, Caruso-Camelleri Assoc.     | 206-455-8211 |
| EXP | N.Y., Yonkers, Robum Agencies, Inc.   | 914-968-1016 |
| CA  | Calgary, Alberta, Cana Rep Grp., Inc. | 403-255-0294 |
| CA  | Montreal, Que., Cana-Rep. Grp., Inc.  | 514-276-4477 |
| Can | Surrey, B.C., Cana Rep Grp., Inc.     | 604-599-1232 |

## Local Distributors

|     |                                       |              |
|-----|---------------------------------------|--------------|
| CA  | Santa Clara, Cypress Elctms.          | 408-980-2500 |
| FL  | Ft. Lauderdale, Brothers Elctms.      | 305-561-6700 |
| IL  | Chicago, Newark Elctms.               | 708-784-5100 |
| IN  | Indianapolis, Custom Svc. Elctm.      |              |
| MN  | Thief River Falls, Digi-Key Corp.     | 218-681-6674 |
| NJ  | E. Brunswick, Brothers Elctms.        | 908-238-2200 |
| WI  | Milwaukee, Marsh Elctms.              | 414-475-6000 |
| Can | Willowdale, Ont., Electro Sonic, Inc. | 416-494-1666 |

**BELLOFRAM CORPORATION**, State Route 2, Box 305, Newell, WV 26050, Tel: 304-387-1200, 1-800-733-2356, FAX: 304-387-1212; Empl: 300; Sls. Mgr.: David Lewis; Dist. Mgr.: David Lewis

**BELMONT INSTRUMENT CORP.**, Pinehurst Pk., 8 Cook St., Billerica, MA 01821, Tel: 508-663-0212, FAX: 508-663-0214

**BELTING INDUSTRIES CO., INC.**, 20 Bright Ave., Kenilworth, NJ 07033, Tel: 908-272-8591, TELEX: 229854, FAX: 908-272-3825; Empl: 125; Sls. Mgr.: Joseph Abramczyk

**BEMCO**, 2255 Union Place, Simi Valley, CA 93065, Tel: 805-583-4970, FAX: 805-583-5033; Empl: 43; Sls. Mgr.: Glenn Elliott

**BENCHMARQ MICROELECTRONICS, INC.**, 2611 Westgrove 109, Carrollton, TX 75006, Tel: 214-407-0611, FAX: 214-407-9845; Empl: 120; Sls. Mgr.: Jim Vernon

**BENDIX CONNECTOR OPERATIONS**, See Amphenol, Bendix Connector Ops.

**BENDIX CORP., MOTOR COMPS. DIV.**, See Facet Entprs.

**BENJAMIN INTERNATIONAL, INC.**, 3677 23rd Ave. South, Lake Worth, FL 33461, Tel: 407-533-0064, FAX: 407-547-2844

**BENTLY NEVADA CORP.**, P.O. Box 157, Minden, NV 89423, Tel: 800-227-5514, 702-782-3611, TELEX: 354437, FAX: 702-782-9253; FSC No.: 1561105

**BERG ELECTRONICS**

**FAX: 302-892-1274,5**

**BERG ELECTRONICS**, 150 Corporate Center Dr., Ste. 201, Camp Hill, PA 17011, Tel: 800-237-2374; Dist. Mgr.: Phil Raudeisky, Dir. Natl. Distibn.

## Local Sales Offices &amp; Reps

|    |                         |              |
|----|-------------------------|--------------|
| PA | Camp Hill, Berg Elctms. | 800-237-2374 |
|----|-------------------------|--------------|

## Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| AL | Huntsville, Hammond Elctms.     | 205-830-4764 |
| AZ | Phoenix, Aerospace Computer SW  | 602-582-2779 |
| AZ | Phoenix, Bell Ind.              | 602-966-7800 |
| AZ | Phoenix, Force Elctms.          | 602-437-1060 |
| AZ | Tempe, Deanco/Acacia Div.       | 602-894-2874 |
| AZ | Tempe, TTI                      | 602-431-1191 |
| CA | El Segundo, Force Elctms.       | 213-772-1324 |
| CA | Fremont, Deanco/Acacia Div.     | 510-623-7500 |
| CA | Hawthorne, Bell Inds.           | 213-757-8381 |
| CA | Irvine, Deanco/Acacia Div.      | 714-660-0834 |
| CA | Los Angeles, TTI                | 818-891-8885 |
| CA | Los Angeles, Bell Ind.          | 310-826-2355 |
| CA | Orange County, Bell Inds.       | 714-895-7801 |
| CA | Orange County, Capstone Elctms. | 714-730-0349 |

|    |                                           |              |
|----|-------------------------------------------|--------------|
| CA | Orange County, TTI                        | 714-641-9393 |
| CA | Sacramento, Bell Ind.                     | 916-652-0414 |
| CA | San Carlos, LoDan West                    | 415-592-4600 |
| CA | San Diego, Bell Ind.                      | 619-268-1277 |
| CA | San Diego, Deanco/Acacia Div.             | 619-597-0575 |
| CA | San Diego, Force Elctms.                  | 619-569-9661 |
| CA | San Diego, TTI                            | 619-748-2025 |
| CA | San Jose, Compass Comps.                  | 408-432-7575 |
| CA | San Jose, TTI                             | 408-946-5577 |
| CA | Santa Clara, Force Elctms.                | 408-748-1324 |
| CA | Santa Fe Springs, Bell/Cable & Components | 213-921-3611 |
| CA | Santa Fe Springs, Bell/Corp. Warehouse    |              |

|    |                                        |              |
|----|----------------------------------------|--------------|
| CA | Santa Fe Springs, Bell/Just-In-Time    | 213-921-3611 |
| CA | Sunnyvale, Bell Inds.                  | 408-734-8570 |
| CA | Ventura, Bell Inds.                    | 818-879-9494 |
| CO | Denver, Bell Inds.                     | 303-424-1985 |
| CO | Denver, Capstone Elctms.               | 303-375-1300 |
| CO | Denver, TTI                            | 303-429-6806 |
| CO | Lakewood, Deanco/Acacia Div.           | 303-375-1300 |
| CT | Danbury, Bell Inds.                    | 203-269-6801 |
| CT | Wallingford, Sager Elctms.             | 203-265-4600 |
| CT | Wallingford, TTI                       | 203-284-7474 |
| CT | Yalesville, Deanco/Schaal Div.         | 203-265-4600 |
| DC | Washington, Resco/Washington           | 301-937-9100 |
| FL | Ft. Lauderdale, Hammond Elctms.        | 305-973-7103 |
| FL | Largo, LoDan Elctms.                   | 813-538-2600 |
| FL | Orlando, Bell Inds.                    | 407-339-0078 |
| FL | Orlando, Deanco Inc.                   | 407-671-5100 |
| FL | Orlando, Hammond Elctms.               | 407-849-6060 |
| FL | Orlando, Sager Elctms.                 | 407-354-1130 |
| FL | Orlando, TTI                           | 407-859-1000 |
| GA | Atlanta, Bell Inds.                    | 404-446-7167 |
| GA | Atlanta, Deanco Inc.                   | 404-429-0126 |
| GA | Norcross, Hammond Elctms.              | 800-241-5437 |
| GA | Norcross, TTI                          | 404-662-0911 |
| IL | Addison, Bedford Elctms. Inc.          | 708-691-1100 |
| IL | Chicago, Bell Inds.                    | 708-640-1910 |
| IL | Chicago, Capstone Elctms.              | 708-250-0300 |
| IL | Chicago, LoDan Elctms.                 | 708-398-5311 |
| IL | Chicago, Newark Elctms.                | 312-784-5100 |
| IL | Chicago, TTI                           | 708-884-6500 |
| IL | Chicago, Waldom Elec.                  | 312-585-1212 |
| IL | Wheaton, Deanco/Mega Div.              | 708-665-6214 |
| IN | Fort Wayne, Bell Inds.                 | 219-423-3422 |
| IN | Indianapolis, Bell Inds.               | 317-875-8200 |
| IN | Indianapolis, Bell/Just-In-Time        | 317-876-3740 |
| IN | Indianapolis, Meunier Elctm. Supply    | 317-635-3511 |
| MD | Baltimore, Bell Inds.                  | 410-290-5100 |
| MD | Baltimore, Resco/Baltimore             | 410-931-8200 |
| MD | Baltimore, Sager Elctms.               | 301-995-4900 |
| MD | Columbia, TTI                          | 410-995-1331 |
| MD | Gaithersburg, Deanco, Inc.             | 301-948-5448 |
| MA | Boston, Bell Inds.                     | 508-474-8880 |
| MA | Boston, Capstone Elctms.               | 800-388-2277 |
| MA | Burlington, Deanco/Schaal Div.         | 617-272-7940 |
| MA | Hingham, Sager Elctms.                 | 617-749-6700 |
| MA | Tewksbury, TTI                         | 508-851-2000 |
| MN | Minneapolis, Aero-Space Computer Supp. |              |

|              |  |
|--------------|--|
| 612-884-4725 |  |
| 612-933-8555 |  |
| 603-898-1348 |  |
| 201-227-6060 |  |
| 201-575-7960 |  |
| 609-234-6400 |  |
| 505-292-2700 |  |
| 516-348-1300 |  |
| 607-257-4444 |  |
| 516-467-8200 |  |
| 516-737-2000 |  |
| 919-275-6391 |  |
| 919-954-0600 |  |
| 919-851-2065 |  |
| 919-850-9550 |  |
| 216-762-8818 |  |
| 614-882-6762 |  |
| 513-435-8660 |  |
| 513-898-8330 |  |
| 216-328-9755 |  |
| 918-628-1916 |  |
| 503-646-3377 |  |
| 503-629-8090 |  |
| 503-641-8488 |  |
| 503-635-6500 |  |
| 503-684-3707 |  |
| 215-788-5000 |  |
| 412-772-2233 |  |
| 215-953-2899 |  |
| 609-596-7500 |  |
| 215-464-4336 |  |
| 215-990-9183 |  |
| 803-233-4121 |  |
| 512-343-2900 |  |
| 214-690-0466 |  |
| 214-380-9049 |  |
| 214-247-9955 |  |

|      |                                        |              |
|------|----------------------------------------|--------------|
| TX   | Dallas, Norvell Elctms.                | 214-233-0020 |
| TX   | Fort Worth, Allied                     | 817-595-3500 |
| TX   | Fort Worth, TTI                        | 817-595-3100 |
| TX   | Ft. Worth, TTI, Inc.                   | 817-740-9000 |
| TX   | Ft. Worth, TTI, Inc. (Connector Div.)  | 817-834-2202 |
| TX   | Houston, Force Elctms.                 | 713-561-8644 |
| TX   | Houston, Norvell Elctms.               | 713-462-1666 |
| UT   | Salt Lake City, Bell Inds.             | 801-255-9611 |
| VA   | Charlottesville, Virginia Elctm. Comp. |              |
|      |                                        | 804-296-4184 |
| WA   | Bellevue, Almac/Arrow                  | 206-643-9992 |
| WA   | Kent, Components Resources             | 206-454-8666 |
| WA   | Redmond, Deanco/Acacia Div.            | 206-881-5566 |
| WA   | Redmond, TTI                           | 206-882-0291 |
| WI   | Milwaukee, Bell Inds.                  | 414-547-8879 |
| Intl | Ft. Worth, TX, TTI, Inc.               | 817-847-6666 |
| Can  | Ottawa, Wackid Radio                   | 613-728-1821 |

**BERG, W. M., INC.**, 499 Ocean Ave., East Rockaway, NY 11518, Tel: 516-599-5010, TELEX: 9103506176, FAX: 516-599-3274; Empl: 150; Sls. Mgr.: Carol McDevitt

**THE BERGQUIST COMPANY**

**FAX: 612-835-4156**

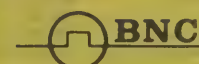
**THE BERGQUIST CO.**, 5300 Edina Ind'l, Minneapolis, MN 55439, Tel: 800-347-4572; FSC No.: 55285; Empl: 275; Sls. Mgr.: Bob Savage; Dist. Mgr.: Duane Dungey  
B-1822-1823; C-1654-1657, 1710-1711

## Local Sales Offices &amp; Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| CA | Canyon Country, Bergquist Co.    | 805-252-9930 |
| CA | San Mateo, Larson Assoc.         | 415-358-9559 |
| CO | Westminster, Glenmar, Inc.       | 303-423-1572 |
| DE | Newark, Bergquist Co.            | 302-738-5080 |
| GA | Atlanta, Bergquist Co.           | 404-816-7113 |
| MI | Minneapolis, Bergquist           | 612-835-2322 |
| MA | Brookline, Hammar Assocs.        | 617-232-6687 |
| MN | Eden Prairie, Hanna-Lind         | 612-942-8554 |
| NY | No. Syracuse, Leonard D. Allen   | 315-458-7470 |
| OH | Cleveland, Staff Co.             | 216-331-5100 |
| OR | Tigard, Elctm. Comp. Sls.        | 503-245-2342 |
| TX | Lewisville, Bergquist            | 214-317-1502 |
| WA | Merced Island, Elctm. Comp. Sls. | 206-232-9301 |

## Local Distributors

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Huntsville, Component Dist. Inc.      | 205-883-7501 |
| CA | Fountain Valley, Components Center    |              |
|    |                                       | 213-582-0667 |
| CA | Mtn. View, Energy Sls                 | 415-969-0800 |
| CO | Aurora, JET Elctms.                   | 303-364-1000 |
| FL | Ft. Lauderdale, Components Dist. Inc. |              |
|    |                                       | 305-973-6915 |
| GA | Norcross, Components Dist. Inc.       | 404-441-3320 |
| IL | Chicago, NEP Elctms.                  | 312-625-8400 |
| NC | Raleigh, Components Dist. Inc.        | 919-834-9465 |
| TX | Dallas, Components Dist. Inc.         | 214-694-0373 |
| WA | Redwood, Murphy Elctms.               | 206-881-1234 |



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**BERKELEY NUCLEONICS CORP.**, 1121 Regatta Sq., Richmond, CA 94804, Tel: 510-234-1100; Empl: 30; Sls. Mgr.: E. J. Buchs  
D-1239



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**BERKELEY PROCESS CONTROL, INC.**, 1001 West Cutting Blvd., Richmond, CA 94804, Tel: 510-236-3333, FAX: 510-236-1186; Empl: 50; Sls. Mgr.: Ken Shane; Dist. Mgr.: Ken Shane

**BERKSHIRE TRANSFORMER CORP.**, 3 Segar Mtn. Rd., P.O. Box 129, Kent, CT 06757, Tel: 203-927-3541, FAX: 203-927-4583; FSC No.: 89870; Empl: 45; Sls. Mgr.: George Kraemer

**BERK-TEK INC.**, 132 White Oak Road, New Holland, PA 17557-9722, Tel: 717-354-6200, FAX: 717-354-7944; FSC No.: 19449; Empl: 350; Sls. Mgr.: John Osborn, Sls. Mgr.: Dist. Mgr.: Allan Schoonover, V.P. Dist. Sls.

**BERMAR CORP.**, P.O. Box 12844, Research Triangle Park, NC 27709, Tel: 919-489-4316, FAX: 919-419-1394; Sls. Mgr.: M. Conland

**BERTAN**  
THE HIGH VOLTAGE PEOPLE

FAX: 516-935-1766

**BERTAN HIGH VOLTAGE**, 121 New South Rd., Hicksville, NY 11801, Tel: 516-433-3110; FSC No.: 6130; Empl: 140; Sls. Mgr.: Paul Oranges ..... **D-1618-1623**

#### Local Sales Offices & Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| AL | Huntsville, Currie, Peak, Frazier      | 205-536-1506 |
| AZ | Phoenix, Thor Engrg.                   | 602-437-1463 |
| CA | Encino, King-Way Assoc.                | 818-788-4124 |
| CA | Los Altos, Cain-White & Co.            | 415-948-6533 |
| CO | Boulder, H. Bass Assocs.               | 303-530-7509 |
| CT | Farmington, Ray Perron & Co., Inc.     | 203-673-4825 |
| GA | Norcross, Currie, Peak, Frazier        | 404-449-7662 |
| IL | Arlington Hgts., Coombs Assocs.        | 312-439-9810 |
| KS | Lenexa, Midtec Assoc.                  | 913-541-0505 |
| MD | Randallstown, Beacon North             | 703-591-1300 |
| MA | Needham, Ray Perron & Co., Inc.        | 617-449-6162 |
| MI | Detroit, Geotronics, Inc.              | 216-659-6100 |
| MN | Minneapolis, Electronic Instrs.        | 612-374-5628 |
| MO | St. Louis, Midtec Assoc.               | 314-275-8666 |
| NM | Albuquerque, Thorson/Desert States Co. | 505-293-8555 |
| NY | Elmont, Crane & Egert Corp.            | 516-872-0800 |
| NY | Hicksville, Bertan Assocs., Inc.       | 516-433-3110 |
| NY | Liverpool, Northern Tech. Sls. Co.     | 315-451-1091 |
| OH | Cleveland, Geotronics                  | 216-659-6100 |
| PA | Audubon, Holmes Assocs.                | 215-666-0636 |
| TX | Dallas, Automated Motion Control       | 214-340-4192 |
| UT | Bountiful, H. Bass Assoc.              | 801-295-7100 |
| VA | Fairfax, Beacon North                  | 703-591-1300 |
| WA | Bellevue, Cain-White & Co., Inc.       | 206-462-2118 |
| WI | Milwaukee, Coombs Assocs.              | 414-351-6123 |

**BERTSCH U.S.**

FAX: 619-727-4436

**BERTSCH U.S.**, 1280 Liberty Way, Vista, CA 92083, Tel: 619-727-7420; FSC No.: 619-727-4436; Sls. Mgr.: B. Linko ..... **B-1242-1243**

**BEST POWER TECHNOLOGY, INC.**, P.O. Box 280, Necedah, WI 54646, Tel: 608-565-7200, 800-356-5794, TELEX: 701934, FAX: 608-565-2221; Empl: 6000; Sls. Mgr.: Donald Soe

**BEST TECHNOLOGY**

FAX: 206-382-0186

**BEST TECHNOLOGY INC.**, 400 Boren Ave. North, Seattle, WA 98109, Tel: 206-382-1300; Empl: 8 ..... **B-1863**

#### Local Sales Offices & Reps

CA Mountain View, Straube Assocs. .... 415-969-6060  
CO Westminster, Straube Assocs. .... 303-426-0890

**BETA AUTOMATION, INC.**, 3541 Old Conejo Rd., Newbury Park, CA 91320, Tel: 805-499-5785, FAX: 805-499-9071; Empl: 8

**BETA PHASE**, 1200 Chrysler Dr., Menlo Park, CA 94025, Tel: 415-494-8410, FAX: 415-853-8228

**BETA REVIEW, INC.**, PO Box 38, Millwood, VA 22646, Tel: 703-837-1436, FAX: 703-837-3063; Empl: 2; Sls. Mgr.: Norman M. Fine



FAX: 508-842-0748

**BETATHERM CORP.**, 910 Turnpike Rd. (Rte. 9), Shrewsbury, MA 01545, Tel: 508-842-0516; Empl: 80 ..... **B-1864-1869**

**BETA TRANSFORMER TECH. CORP.**, ILC Data Device Corp., 40 Orville Drive, Bohmia, NY 11716, Tel: 516-244-7393, FAX: 516-244-8893; FSC No.: 64948; Empl: 80; Sls. Mgr.: Carol Sauer, V.P.

**BEY ELECTRIC, INC.**, 362 Main St., Box 548, Lincoln Park, NJ 07035, Tel: 201-694-5000, FAX: 201-694-7975; Sls. Mgr.: Fred DeMauro, Gen. Mgr. .... **A-2295**

**BG ELECTRONICS, EPC Corp.**, 519 South 5th Avenue, Mt. Vernon, NY 10550-4430, Tel: 914-664-5591, FAX: 914-664-4729; FSC No.: 33791; Empl: 6; Sls. Mgr.: Don Edwards

**B-G INSTRUMENTS, INC.**, Route 1, Box 258, Mead, WA 99021, Tel: 206-567-5000, FAX: 509-238-4920; Sls. Mgr.: John Baum ..... **D-1083**

#### Local Sales Offices & Reps

WA Spokane, B-G Instrs., Inc. .... 509-238-4757

**B. G. LABORATORIES, INC.**, 75 Travis Ave., Binghamton, NY 13904, Tel: 607-722-2376, FAX: 607-722-4204; FSC No.: 26522; Empl: 70

**BH ELECTRONICS, INC.**, 12219 Wood Lk. Dr., Burnsville, MN 55337, Tel: 612-894-9590, FAX: 612-894-9380; FSC No.: 08450; Empl: 300; Sls. Mgr.: Fred LaMarche ..... **A-1196-1197, 2296-2297**

#### Local Sales Offices & Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Fountain Hills, Halbar Assocs.    | 602-837-2464 |
| CA | San Mateo, Halbar North, Inc.     | 415-349-4700 |
| CA | San Nuys, Halbar Assocs.          | 818-906-3941 |
| CO | Denver, Electro Comp. Sys.        | 303-762-9576 |
| IL | Wheaton, EMTronics                | 708-665-6222 |
| MA | Norwood, Tom Maguire Assocs.      | 617-551-0500 |
| MI | Southfield, Chapman Tech. Assocs. | 313-352-1645 |
| MN | Osseo, Gaffney Sls. Co.           | 612-425-5484 |
| NJ | Montville, Astrum Sls.            | 201-263-8438 |
| NC | Raleigh, Tingen Tech. Sls.        | 919-970-6670 |
| OH | Worthington, R J Mktg.            | 614-888-7638 |
| TX | Dallas, Precision Sls.            | 214-701-9031 |
| WA | Redmond, Halbar PNW, Inc.         | 206-882-0990 |
| WI | Thiensville, TFL Assoc.           | 414-242-6800 |

**BIBCO, INC.**, 326 East Main, Benton Harbor, MI 49022, Tel: 616-925-8445, 800-851-5701, FAX: 616-925-3081; Empl: 150; Sls. Mgr.: Phil Wilcox

**BICC-VERO ELECTRONICS, INC.**, 1000 Sherman Ave., Hamden, CT 06514, Tel: 203-288-8001, 1-800-242-2863, TWX: 510-227-8890, FAX: 203-287-0062; Empl: 50; Sls. Mgr.: Richard Milne

**BICRON ELECTRONICS**, 50 Barlow Street, Canaan, CT 06018, Tel: 203-824-5125, FAX: 203-824-1137; FSC No.: 10617; Empl: 120; Sls. Mgr.: Frank Pierzga ..... **A-2299-2301; B-1627, 1919**

#### Local Sales Offices & Reps

|    |                               |              |
|----|-------------------------------|--------------|
| AL | Madison, Southern Elec. Rep.  | 205-461-8925 |
| CA | San Clemente, ATA Assocs.     | 714-661-9700 |
| CO | Denver, Omega, Ltd.           | 303-762-1921 |
| NH | Bow, George T. Mollieur       | 603-228-0557 |
| NY | Pittsford, W.A. Franklin Sls. | 716-248-8251 |
| PA | Pittsburgh, S.K.A. Co.        | 203-582-5897 |
| UT | Salt Lake City, Omega, Ltd.   | 303-762-1921 |
| WI | Milwaukee, KMA Sls. Co.       | 414-259-1771 |

**BIKOR, Microsemi Corporation**, 1504 W. 228th St., Torrance, CA 90501, Tel: 213-539-6320, FAX: 213-539-0296; FSC No.: 58996; Empl: 70; Sls. Mgr.: James Rorke

**BINDICATOR, P.O.** Box 61009, 1915 Dove St., Port Huron, MI 48061-0009, Tel: 313-987-2700, TWX: 810-231-5261  
**BINICATOR P THY, FAX:** Empl: 60; Sls. Mgr.: Rick Secord; Dist. Mgr.: Rick Ayers

**BIOMATION INSTRUMENTS**, 335 Perth St., PO Box 156, Almonte, Ont., Canada K0A1A0, Tel: 613-256-2821, FAX: 613-256-5872; FSC No.: OAG53; Empl: 3; Sls. Mgr.: Andy Guest

**BIOMATION**, 19050 Pruneridge Ave., Cupertino, CA 95014-0718, Tel: 408-988-6800, FAX: 408-988-1647; Sls. Mgr.: John Adam; Dist. Mgr.: Walt Klees

**BIOMEDICAL TECHNOLOGY**, Triangle Biomedical Sciences, Inc., 2604G Carver St., Durham, NC 27705, Tel: 919-471-2237, FAX: 919-477-5883; Empl: 8

**BIOISOFT, Acropolis Computers Ltd.**, P.O. Box 10938, Ferguson, MO 63135, Tel: 314-524-8029, FAX: 314-524-8129

**BIRD ELECTRONIC CORP.**, 30303 Aurora Rd., Cleveland, OH 44139-2794, Tel: 216-248-1200, TELEX: 706898 Bird Elec. UD, FAX: 216-248-5426; FSC No.: 70998; Empl: 267; Sls. Mgr.: William Yochum, VP of Sls. & Mktg.; Dist. Mgr.: Greg Johns, Sls. Mgr.

**BIRTCHEER CORP.**, See EG & G Birtcher

**BISHOP ELECTRONICS CORP.**, 3729 San Gabriel River Pkwy., Pico Rivera, CA 90660, Tel: 310-695-0446, 310-692-9391, FAX: 310-692-4008

**BIT 3 COMPUTER CORPORATION**, 8120 Penn Avenue S., Minneapolis, MN 55431-1393, Tel: 612-881-6955, FAX: 612-881-9674; FSC No.: 7Y590; Sls. Mgr.: Merle Lonnon

**Bivar**

FAX: 714-951-3974

**BIVAR, INC.**, 4 Thomas, Irvine, CA 92718, Tel: 714-951-8808, TELEX: 852348; FSC No.: 32559; Empl: 20; Sls. Mgr.: Thomas Silber; Dist. Mgr.: Thomas Silber ..... **C-1537**

#### Local Sales Offices & Reps

|     |                                    |              |
|-----|------------------------------------|--------------|
| AZ  | Phoenix, Jarko Assocs.             | 602-596-8533 |
| AZ  | Tempe, Jarko Assocs.               | 602-596-8533 |
| CA  | Chatsworth, Alatec                 | 818-727-7800 |
| CA  | Cupertino, Prism Tech. Sls.        | 408-366-6766 |
| CO  | Englewood, Delltron Co.            | 303-741-2122 |
| GA  | Norcross, Electro-Mech Sls.        | 205-447-6478 |
| IL  | Downers Grove, Richmar Elec. Corp. | 708-968-0118 |
| IN  | Indianapolis, Richmar Elec. Corp.  | 317-577-9950 |
| IA  | Iowa City, Richmar Elctms.         | 319-354-8894 |
| MN  | Minneapolis, Holmgren Assocs.      | 612-574-9983 |
| MA  | Norwood, The Macinnis Co.          | 617-762-8090 |
| NY  | Fairport, Sennetec Sls.            | 716-425-3954 |
| NC  | Raleigh, Electro-Mech Sls.         | 919-790-9300 |
| OH  | Cleveland, Marlow Assocs.          | 216-831-8232 |
| NY  | Glen Cove, Dyno Rep, Inc.          | 516-676-1598 |
| OR  | Beaverton, Eclipse Mktg. Grp.      | 503-642-1661 |
| PA  | West Chester, All-Tech Mktg.       | 215-344-0134 |
| TX  | Plano, Richmar Elec. Corp.         | 214-424-8388 |
| WA  | Redmond, Eclipse Mktg. Grp.        | 206-885-6991 |
| WI  | Butler, Richmar Elec. Corp.        | 414-781-1730 |
| Can | Markham, Ont., Avtronics, LTD.     | 416-475-2024 |

#### Local Distributors

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Huntsville, All American              | 206-837-1555 |
| AL | Huntsville, Century Fasteners         | 205-883-5344 |
| AZ | Phoenix, Aero-Space SW.               | 602-582-2779 |
| AZ | Phoenix, EKO Sales                    | 602-437-4646 |
| AZ | Tucson, PSN Distn., Inc.              | 602-623-9800 |
| AR | Little Rock, Carlton Bates Co.        | 501-562-9100 |
| CA | Chatsworth, Jacan Fasteners           | 818-700-2901 |
| CA | Fountain Valley, Components Ctr.      | 714-979-0433 |
| CA | Fremont, Alatec                       | 415-657-7701 |
| CA | Fremont, Vic/Tai Sls.                 | 415-651-6420 |
| CA | Manhattan Beach, Prime Electro Prods. | 213-379-3642 |
| CA | Milpitas, MS inserts                  | 408-946-6565 |
| CA | Mission Hills, Coast Air Inc.         | 818-898-2288 |
| CA | Mission Viejo, Opto Plus, Inc.        | 714-380-8654 |
| CA | Monrovia, Erik-A-Elctm. Distb.        | 818-574-1020 |



|                                              |              |                            |              |                                                                                                                                     |             |
|----------------------------------------------|--------------|----------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------|
| CA North Hollywood, Elctm. Hardware Ltd.     | 818-982-6100 | FL Palm Harbor, Kinetic    | 813-934-3768 | BLILEY ELECTRIC CO., 2545 W. Grandview Blvd., Erie, PA 16506, Tel: 814-838-3571, FAX: 814-833-2712; FSC No.: 71034;3098; Empl.: 140 | A*1340-1345 |
| CA Oxnard, R. C. Dudek                       | 805-988-4882 | GA Duluth, Giesting        | 404-476-0025 |                                                                                                                                     |             |
| CA San Diego, Western Fasteners              | 619-292-5111 | ID Meridian, Comp Sls.     | 208-888-3554 |                                                                                                                                     |             |
| CA Santa Jose, R. C. Dudek                   | 408-321-9011 | IL Elk Grove Vt, Oasis     | 708-640-1850 |                                                                                                                                     |             |
| CA Santa Ana, BDS Elctms.                    | 714-662-1050 | IN Carmel, Giesting        | 317-844-5222 |                                                                                                                                     |             |
| CA Santa Clara, Components Ctr.              | 408-988-3751 | IA Cedar Rapids, Oasis     | 319-377-8738 |                                                                                                                                     |             |
| CA Torrance, MS Inserts                      | 213-539-1530 | KY Versailles, Giesting    | 606-873-2330 |                                                                                                                                     |             |
| CO Littleton, Indelco                        | 303-795-3431 | MD Baltimore, Tai          | 410-732-5353 |                                                                                                                                     |             |
| CO Wheatridge, Colorado Elctm. Hdw.          | 303-431-4334 | MA Salem, Diamond Ltd.     | 508-744-2050 |                                                                                                                                     |             |
| CT Milford, Plastic & Metal Comps. Co.       | 203-877-2723 | MA Westborough, Anchor     | 508-898-2724 |                                                                                                                                     |             |
| CT Wallingford, Midstate Elctms.             | 203-265-9900 | MI Coloma, Giesting        | 616-468-4200 |                                                                                                                                     |             |
| FL Apopka, Tropic Fasteners                  | 407-880-4777 | MI Comstock Pk, Giesting   | 616-784-9437 |                                                                                                                                     |             |
| FL Delray Beach, Fastbolt Corp.              | 407-272-3100 | MI Livonia, Giesting       | 313-478-8106 |                                                                                                                                     |             |
| FL Largo, Elctm. Precepts of FL              | 813-544-3636 | MN Burnsville, 2M Sls.     | 612-890-7774 |                                                                                                                                     |             |
| FL Pompano Bch., Peerless Radio              | 305-973-4141 | NJ Moorestown, Tai         | 609-778-5353 |                                                                                                                                     |             |
| FL Winter Park, Servtronics                  | 407-677-8191 | NY N. Syracuse, Entec Grp. | 315-458-7936 |                                                                                                                                     |             |
| GA Norcross, Atlanta Hardware Specialty      | 404-449-3000 | OH Cincinnati, Giesting    | 513-385-1105 |                                                                                                                                     |             |
| GA Peachtree City, Engineered Comps.         | 404-487-7600 | OH Cleveland, Giesting     | 216-261-9705 |                                                                                                                                     |             |
| IL Chicago, EMF                              | 312-889-8323 | OH Columbus, Giesting      | 614-459-4800 |                                                                                                                                     |             |
| IL Downers Grove, S.W. Anderson Co.          | 708-964-2600 | OR Tigard, Vantage         | 503-620-3280 |                                                                                                                                     |             |
| IL Elmhurst, Millex Sls.                     | 708-941-7100 | PA Pittsburgh, Giesting    | 412-828-3553 |                                                                                                                                     |             |
| IL Lisle, Comps. Inc.                        | 312-852-7707 | TX Austin, Mrep            | 512-250-0820 |                                                                                                                                     |             |
| IN Carmel, Altex Elctms.                     | 317-848-1323 | TX Dallas, Mrep            | 214-484-5711 |                                                                                                                                     |             |
| IN Indianapolis, MAR Elctms.                 | 317-633-6699 | UT Midvale, Comp Sls.      | 801-561-5099 |                                                                                                                                     |             |
| MD Beltsville, Petrick Sls.                  | 301-937-4960 | VA Charlottesville, Tai    | 804-971-7840 |                                                                                                                                     |             |
| MD Gaithersburg, Capital Fasteners           | 301-948-9310 | WA Bellevue, Vantage       | 206-455-3460 |                                                                                                                                     |             |
| MA Ashland, Quality Comps.                   | 508-881-6504 | WI Brookfield, Oasis       | 414-782-6660 |                                                                                                                                     |             |
| MA Billerica, MS Inserts                     | 508-670-5600 | Can Kanata, Indigo         | 613-591-1053 |                                                                                                                                     |             |
| MA Marlborough, Hardware Spec. Co.           | 508-481-8622 | Can Mississauga, Indigo    | 416-670-0284 |                                                                                                                                     |             |
| MA Waltham, Electronic Fasteners             | 617-890-7780 | Can Quebec, Indigo         | 514-696-6104 |                                                                                                                                     |             |
| MA Winchester, Webb Distrib.                 | 617-729-5800 |                            |              |                                                                                                                                     |             |
| MI Livonia, Tri-West Prods.                  | 313-422-7900 |                            |              |                                                                                                                                     |             |
| MN Bloomington, Aero-Space Computer Supp.    | 612-884-4725 |                            |              |                                                                                                                                     |             |
| MN Eden Prairie, S.W. Anderson Co.           | 612-934-2700 |                            |              |                                                                                                                                     |             |
| MN Hibbing, Minn-Tech Elctms.                | 218-267-5228 |                            |              |                                                                                                                                     |             |
| MN New Brighton, Chris Elctms.               | 612-631-2847 |                            |              |                                                                                                                                     |             |
| MO St. Peters, Heartland Elctms.             | 314-928-6010 |                            |              |                                                                                                                                     |             |
| NJ Manchester, Crown Comps.                  | 603-626-1717 |                            |              |                                                                                                                                     |             |
| NJ So. Hackensack, Fastbolt Corp.            | 201-440-9100 |                            |              |                                                                                                                                     |             |
| NY Bohemia, Key Comps.                       | 516-567-7500 |                            |              |                                                                                                                                     |             |
| NY Buffalo, Summit Dist.                     | 716-887-2800 |                            |              |                                                                                                                                     |             |
| NY Elmhurst, Century Fasteners               | 718-446-5900 |                            |              |                                                                                                                                     |             |
| NY Holtsville, Tower Fastener Co.            | 516-289-8800 |                            |              |                                                                                                                                     |             |
| NY Long Island City, Hardware Specialty Co.  | 718-361-9393 |                            |              |                                                                                                                                     |             |
| NY Mt. Vernon, All American                  | 914-699-2224 |                            |              |                                                                                                                                     |             |
| NY Rochester, Masline Elctms.                | 716-546-5373 |                            |              |                                                                                                                                     |             |
| NC Raleigh, Century Elctm. Comps.            | 919-782-2116 |                            |              |                                                                                                                                     |             |
| NC Raleigh, Century Fasteners                | 919-787-1800 |                            |              |                                                                                                                                     |             |
| OH Cincinnati, Hughes-Peters                 | 513-351-2000 |                            |              |                                                                                                                                     |             |
| OH Columbus, Hughes-Peters                   | 614-294-5351 |                            |              |                                                                                                                                     |             |
| OH Englewood, ADS                            | 513-836-8636 |                            |              |                                                                                                                                     |             |
| OH Solon, Repco                              | 216-248-8900 |                            |              |                                                                                                                                     |             |
| OR Beaverton, Component Resources            | 503-641-8488 |                            |              |                                                                                                                                     |             |
| OR Beaverton, Murphy Elctms.                 | 503-642-2001 |                            |              |                                                                                                                                     |             |
| PA Harrisburg, Ad-Tech Elctms.               | 717-561-9905 |                            |              |                                                                                                                                     |             |
| PA Huntingdon Valley, Plastic & Metal Prods. | 215-322-2000 |                            |              |                                                                                                                                     |             |
| PA Norristown, Century Elctms.               | 215-631-5400 |                            |              |                                                                                                                                     |             |
| PA Philadelphia, Shap Elctms.                | 215-969-3300 |                            |              |                                                                                                                                     |             |
| SC West Columbia, Century Fasteners          | 803-791-1800 |                            |              |                                                                                                                                     |             |
| TX Dallas, Global Fasteners                  | 214-340-6068 |                            |              |                                                                                                                                     |             |
| TX Richardson, RSC Elctms.                   | 214-644-3444 |                            |              |                                                                                                                                     |             |
| WA Redmond, Murphy Elctms.                   | 206-881-1234 |                            |              |                                                                                                                                     |             |
| WA Seattle, Component Resources              | 206-454-8666 |                            |              |                                                                                                                                     |             |
| WA Seattle, Radar Elec. Co. Inc.             | 206-282-2511 |                            |              |                                                                                                                                     |             |
| EXP CA/Bakersfield, Gray-Weatherhead Equip.  | 805-397-4281 |                            |              |                                                                                                                                     |             |
| Can Mississauga, Ont., Gould Fasteners       | 416-677-8253 |                            |              |                                                                                                                                     |             |
| Can Ontario, Rush Elctms. Ltd.               | 416-677-7280 |                            |              |                                                                                                                                     |             |
| Can Richmond Hill, Ont., Irwin Indl.         | 416-889-9100 |                            |              |                                                                                                                                     |             |
| Can Scarborough, Ont., Carsten Elctms.       | 416-495-9999 |                            |              |                                                                                                                                     |             |
| Can St. Laurent, Quebec, Carsten Elctms.     | 514-334-8321 |                            |              |                                                                                                                                     |             |
| Can Ste-Foy, Que., Crobel L.T.E.             | 418-687-1171 |                            |              |                                                                                                                                     |             |
| Can Surry, British Columbia, Memco           | 604-590-1553 |                            |              |                                                                                                                                     |             |

**BIW CABLE SYSTEMS, INC.**, 22 Joseph E. Warner Blvd., N. Dighton, MA 02764, Tel: 508-520-1200, FAX: 508-541-8951; Empl.: 230; Sls. Mgr.: S. Adams

**BKC SEMICONDUCTORS INCORPORATED.**, 6 Lake Street, Lawrence, MA 01841, Tel: 508-681-0392, FAX: 508-681-9135; FSC No.: 68691; Empl.: 110; Sls. Mgr.: Elizabeth J. Pucci; Dist. Mgr.: Patricia Sullivan

#### Local Sales Offices & Reps

|                                      |              |
|--------------------------------------|--------------|
| AL Huntsville, Giesting              | 205-830-4554 |
| AZ Scottsdale, BKC Western Sls. Off. | 602-951-8010 |
| CA Chatsworth, Wes-K Raltech         | 818-700-0933 |
| CA San Jose, Loroco Sls.             | 408-436-8770 |
| CO Englewood, Comp Sls.              | 303-779-8060 |
| FL Altamonte Spr., Kinetic           | 407-339-3855 |
| FL Deerfield Bch., Kinetic           | 305-480-6040 |

#### Local Distributors

|                                   |              |
|-----------------------------------|--------------|
| AL Huntsville, Nu Horizons        | 205-722-9330 |
| CA Agoura Hills, Zeus             | 818-889-3838 |
| CA Costa Mesa, Hamilton/Avnet     | 714-641-4199 |
| CA San Diego, Zeus                | 619-277-9681 |
| CA San Jose, All American         | 408-943-1200 |
| CA San Jose, Zeus                 | 408-629-4789 |
| CA Sunnyvale, Hamilton/Avnet      | 408-743-3300 |
| CA Torrance, All American         | 310-320-0240 |
| CA Walnut, ACI                    | 714-594-1731 |
| CA Woodland Hills, Hamilton/Avnet | 818-594-0404 |
| CA Yorba Linda, Zeus              | 714-921-9000 |
| CT Killingworth, ACI              | 203-663-3311 |
| CT Monroe, Nu Horizons            | 203-265-0162 |
| FL Lauderdale, Nu Horizons        | 305-735-2555 |
| FL Miami, All American            | 305-621-8282 |
| FL Oviedo, Zeus                   | 407-365-3000 |
| FL Sunrise, All American          | 305-572-7999 |
| FL Winter Park, Hamilton/Avnet    | 407-657-3303 |
| GA Norcross, Nu Horizons          | 404-416-8666 |
| IL Bensenville, Hamilton/Avnet    | 708-860-7780 |
| MD Columbia, Nu Horizons          | 410-995-6330 |
| MD Columbia, Zeus                 | 301-997-1118 |
| MA Peabody, Hamilton/Avnet        | 617-532-3701 |
| MA Wakefield, All American        | 617-246-2300 |
| MA Wakefield, Nu Horizons         | 617-246-4442 |
| MA Wakefield, Zeus                | 617-246-8200 |
| MA Woburn, ACI                    | 617-935-7230 |
| MN Eden Prairie, All American     | 612-944-2151 |
| NJ Cherry Hill, Hamilton/Avnet    | 609-424-0110 |
| NJ Mt. Laurel, Nu Horizons        | 609-231-0900 |
| NJ Pine Brook, Nu Horizons        | 201-882-8300 |
| NJ Totowa, ACI                    | 201-812-0507 |
| NY Amityville, Nu Horizons        | 516-226-6000 |
| NY Plainville, ACI                | 516-293-6630 |
| NY Port Chester, Zeus             | 914-937-7400 |
| NY Rochester, Nu Horizons         | 716-292-0777 |
| NY Ronkonkoma, All American       | 516-981-3935 |
| NY Ronkonkoma, Zeus               | 516-737-4500 |
| OH Dayton, Hamilton/Avnet         | 513-439-6730 |
| OH Dayton, Zeus                   | 513-293-6162 |
| TX Addison, Hamilton/Avnet        | 214-308-8140 |
| TX Richardson, All American       | 214-231-5300 |
| TX Richardson, Zeus               | 214-783-7010 |
| Can Ontario, Hamilton/Avnet       | 416-564-6060 |

**BKL**, 421 Feheley Dr., King of Prussia, PA 19406, Tel: 215-277-2910, FAX: 215-277-2956; Empl.: 40

**BLACKHAWK NETWORKS CORP.**, 14 N. Parker Dr., P.O. Box 919, Janesville, WI 53545, Tel: 608-752-8701, FAX: 608-752-8701; FSC No.: 12724; Empl.: 10; Sls. Mgr.: D. Adee

**BLACKHOLE TECHNOLOGY**, 225 East St., Winchester, MA 01890, Tel: 617-721-7690, FAX: 617-721-7260; Empl.: 5; Sls. Mgr.: John W. McDonough, Jr.

**BLATEK, INC.**, 2820 E. College Ave., Ste. F, State College, PA 16801, Tel: 814-231-2085, 814-231-2086, FAX: 814-231-2087; Empl.: 20

**BLH ELECTRONICS, INC.**, 73 Shawmut Road, Canton, MA 02021-9111, Tel: 617-821-2000, FAX: 617-828-1451; FSC No.: 03089; Empl.: 170; Sls. Mgr.: Ron Burke

**BLU M, A GENERAL SIGNAL COMPANY**, 2218 W. 138th St., Blue Island, IL 60406, Tel: 708-385-9000, FAX: 708-331-2515; Empl.: 300; Sls. Mgr.: Gary Carlin

**BODINE ELECTRIC COMPANY**, 2500 W. Bradley Pl., Chicago, IL 60618, Tel: 312-478-3515, FAX: 312-478-3232; Sls. Mgr.: James C. Stormont

**BOGEN COMMUNICATIONS, INC. MPD PRODS.**, See Memory Protection Devices, Inc.

**BOGEN COMMUNICATIONS, INC.**, Sound Prods., 50 Spring St., P.O. Box 575, Ramsey, NJ 07446, Tel: 201-934-8500, FAX: 201-934-9832; Sls. Mgr.: David A. Chambers; Dist. Mgr.: Christopher Wilderster

**BOKER'S, INC.**, 3104 Snelling Ave., Minneapolis, MN 55406-1937, Tel: 612-729-9365, FAX: 612-729-8910; FSC No.: 85446; Empl.: 110; Sls. Mgr.: Andy Tscholl

**BOMAR CRYSTAL COMPANY**, 201 Blackford Ave., Middlesex, NJ 08846, Tel: 908-356-7787, 800-526-3935, FAX: 1-908-356-7362; Empl.: 40; Sls. Mgr.: Beth Shapiro, OEM Sls. Mgr.

**BOMER**, 3104 Snelling Ave., Minneapolis, MN 55406-1937, Tel: 612-729-9365, FAX: 612-729-8910; FSC No.: 85446; Empl.: 110; Sls. Mgr.: Andy Tscholl

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**BOSCH**
**FAX: 708-865-5301**

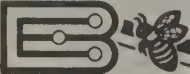
**BOSCH, ROBERT, CORP.** 2800 S. 25th Ave.,  
Broadview, IL 60153, Tel: 708-865-5301; Sls. Mgr.:  
Dieter Bloocks; Dist. Mgr.: Dave Robson ..... **B-1435**

**Local Sales Offices & Reps**

|    |                             |              |
|----|-----------------------------|--------------|
| CA | Montrose, Luscombe Engrg.   | 818-249-9000 |
| IL | Lemont, Trend-Tronics, Inc. | 708-972-1166 |
| IA | Davenport, QIPS             | 319-388-0189 |
| MN | Minneapolis, H.M.R., Inc.   | 612-888-2122 |
| OH | Richfield, Geotronics Inc.  | 216-659-6100 |
| PA | Norristown, Brandon Assocs. | 215-278-0500 |
| TX | The Colony, Juliana Co.     | 214-625-1075 |

**Local Distributors**

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Huntsville, World Dists.         | 205-539-0441 |
| CA | Carson, Accele Elctms.           | 213-637-3533 |
| CA | Cerritos, David Levy Co.         | 800-421-3536 |
| CA | N. Hollywood, Mobile Sound       | 213-668-1699 |
| CA | Santa Monica, Distr. Specialties | 213-452-3445 |



**BRILL  
ELECTRONICS**  
(510) 834-5888  
810 E. 10th St., Oakland, CA 94608



**BOURNS**  
(310) 452-8002  
1225 Olympic Bl., Santa Monica CA 90404

**CAL SWITCH**

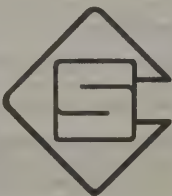
CALIFORNIA SWITCH AND SIGNAL INC.

**THE  
SOURCE  
FOR**



Ultra-Miniature  
Switches

|       |          |
|-------|----------|
| [310] | 538-9830 |
| [213] | 770-2330 |
| [714] | 525-6606 |
| [415] | 621-7386 |
| [408] | 279-8848 |
| [510] | 452-1009 |
| [916] | 448-6370 |
| [209] | 441-1725 |



**(800) CAL-SWCH**

|    |                                   |              |
|----|-----------------------------------|--------------|
| FL | Naranja, LES, Dists.              | 305-248-6701 |
| GA | Norcross, Whitehead Elctms.       | 404-923-6667 |
| IL | Lemont, Trend-Tronics, Inc.       | 708-972-1166 |
| IL | N. Chicago, Sound Quest/Delta     | 708-473-1200 |
| IL | Waukegan, Vanco                   | 708-689-0210 |
| MI | Livonia, Delta Supp. Co.          | 313-525-5858 |
| MI | Troy, Terminal Supp. Co.          | 313-362-0790 |
| MN | Minneapolis, Control Design Supp. | 612-721-1628 |
| MO | St. Louis, Wes Garde Comp.        | 314-567-7776 |
| NY | Elmsford, Kin-Tronics, Inc.       | 914-968-7736 |
| PA | Norristown, Brandon Assocs.       | 215-278-0500 |
| TX | The Colony, The Juliana Co.       | 214-625-1075 |

**BOSCHERT, INC., See Computer Products, Inc.**

**BOSTON GEAR, IMO Industries Inc.** 14 Hayward St.,  
Quincy, MA 02171, Tel: 617-328-3300, 1-800-225-5280,  
FAX: 617-479-6238; Empl: 402

**BOURNS, INC., Electronic Components Sls.** 1200  
Columbia Ave., Riverside, CA 92507-2114, Tel: 909-781-  
5500, 801-750-7200, FAX: 909-781-5273; Empl: 4000;  
Sls. Mgr.: Dennis Lause; Dist. Mgr.: Patricia Moorman  
.. **A-1869-1874, 2052, 2058-2067; B-1656, 1675-1680,  
1920-1923**

**Local Sales Offices & Reps**

|     |                                            |              |
|-----|--------------------------------------------|--------------|
| AL  | Huntsville, CSR Elctms.                    | 205-533-2444 |
| AZ  | Scottsdale, Summit Sls.                    | 602-998-4850 |
| CA  | Auburn, QuadRep Inc.                       | 916-269-2701 |
| CA  | Irvine, QuadRep Southern                   | 714-727-4222 |
| CA  | San Diego, QuadRep Southern                | 619-755-1188 |
| CA  | San Jose, QuadRep Inc.                     | 408-432-3300 |
| CO  | Parker, Parker Webster Co.                 | 303-841-4888 |
| CT  | Wallingford, John E. Boeing Co., Inc.      | 203-265-1318 |
| FL  | Casselberry, Dyne-A-Mark                   | 407-831-2822 |
| FL  | Palm Bay, Dyne-A-Mark                      | 407-725-7470 |
| GA  | Atlanta, CSR Elctms.                       | 404-396-3720 |
| ID  | Meridian, Intermountain Tech. Mktg. Inc.   | 208-888-6071 |
| IL  | Elk Grove Village, Oasis Sls. Corp.        | 708-640-1850 |
| IN  | Carmel, Technig. Mktg. Corp.               | 317-844-8462 |
| IN  | Fl. Wayne, Technig. Mktg. Corp.            | 219-432-5553 |
| IN  | Kokomo, Technig. Mktg. Corp.               | 317-459-5152 |
| IA  | Cedar Rapids, Rep Assocs. Corp.            | 319-373-0152 |
| KY  | Louisville, Technig. Mktg. Corp.           | 502-245-7411 |
| MD  | Baltimore, Micro-Comp, Inc.                | 410-644-5700 |
| MA  | Chelmsford, John E. Boeing Co., Inc.       | 508-256-5800 |
| MI  | Farmington Hills, Rathburg Assocs., Inc.   | 313-489-1500 |
| MI  | Troy, Epsco, Inc.                          | 313-528-0983 |
| MN  | Edina, Mel Foster Tech. Sls. Inc.          | 612-941-9790 |
| MO  | Bridgeton, Centech, Inc.                   | 314-291-4230 |
| MO  | Raytown, Centech, Inc.                     | 616-358-8100 |
| NJ  | Moorestown, Thomas Assocs., Inc.           | 609-778-5353 |
| NY  | Hicksville, J-Square Mktg. Inc.            | 516-935-3200 |
| NY  | Ithaca, Bob Dean, Inc.                     | 607-257-1111 |
| NY  | Wappingers Falls, Bob Dean, Inc.           | 914-297-6406 |
| NC  | Indian Trail, CSR Elctms.                  | 704-882-3995 |
| NC  | Raleigh, CSR Elctms.                       | 919-878-9200 |
| OH  | Centerville, Bear Mktg. Inc.               | 513-436-2061 |
| OH  | Richfield, Bear Mktg. Inc.                 | 216-659-3131 |
| OK  | Tulsa, Ammon & Rizos                       | 918-749-6116 |
| OR  | Beaverton, J.J. Backer Co.                 | 503-627-0775 |
| PA  | Allison Park, Bear Mktg. Inc.              | 412-492-1150 |
| TN  | Knoxville, CSR Elctms.                     | 615-637-0293 |
| TX  | Austin, Ammon & Rizos Co.                  | 512-454-5131 |
| TX  | Houston, Ammon & Rizos Co.                 | 713-781-6240 |
| TX  | Richardson, Ammon & Rizos Co.              | 214-644-5591 |
| UT  | Murray, Parker Webster Co.                 | 801-266-9939 |
| VA  | Lynchburg, Micro-Comp, Inc.                | 804-239-2626 |
| WA  | Seattle, J.J. Backer Co.                   | 206-285-1300 |
| WI  | Brookfield, Oasis Sls. Corp.               | 414-782-6660 |
| PR  | Rio Piedras, P.C. Elctms., Inc.            | 809-753-9805 |
| Can | Burnaby, B.C., Davetek Mktg. Inc.          | 604-430-3680 |
| Can | Dorval, Quebec, John G. Weiss Co., Ltd.    | 514-685-6644 |
| Can | Mississauga, Ont., John G. Weiss Co., Ltd. | 416-673-0011 |
| Can | Nepean, Ont., John G. Weiss Co., Ltd.      | 613-225-1810 |

|    |                                           |              |
|----|-------------------------------------------|--------------|
|    | Troy, Epsco, Inc.                         | 313-489-1500 |
|    |                                           | 313-528-0983 |
| IN | Edina, Mel Foster Tech. Sls. Inc.         | 612-941-9790 |
| IO | Bridgeton, Centech, Inc.                  | 314-291-4230 |
|    | Raytown, Centech, Inc.                    | 316-358-8100 |
| J  | Moorestown, Thomas Assocs., Inc.          | 609-778-5200 |
| Y  | Hicksville, J-Square Mktg. Inc.           | 516-935-3200 |
| Y  | Ithaca, Bob Dean, Inc.                    | 607-257-1111 |
|    | Wappingers Falls, Bob Dean, Inc.          | 914-297-6406 |
| C  | Indian Trail, CSR Elctms.                 | 704-882-3999 |
| C  | Raleigh, CSR Elctms.                      | 919-878-9200 |
| H  | Centerville, Bear Mktg. Inc.              | 513-436-2061 |
| K  | Richfield, Bear Mktg. Inc.                | 216-659-3131 |
| R  | Tulsa, Ammon & Rizos                      | 918-749-6116 |
|    | Beaverton, J.J. Backer Co.                | 503-627-0775 |
|    | Allison Park, Bear Mktg. Inc.             | 412-492-1150 |
| X  | Knoxville, CSR Elctms.                    | 615-637-0293 |
| X  | Austin, Ammon & Rizos Co.                 | 512-454-5131 |
| X  | Houston, Ammon & Rizos Co.                | 713-781-6240 |
| T  | Richardson, Ammon & Rizos Co.             | 214-644-5591 |
| A  | Murray, Parker Webster Co.                | 801-266-9939 |
| IA | Lynchburg, Micro-Corp, Inc.               | 804-239-2626 |
|    | Seattle, J. J. Backer Co.                 | 206-285-1300 |
| R  | Brookfield, Oasis Sls. Corp.              | 414-782-6660 |
| RI | Piedras, P.C. Elctms., Inc.               | 809-753-9805 |
| an | Burnaby, B.C., Davetek Mktg. Inc.         | 604-430-3680 |
|    | Dorval, Quebec, John G. Weiss Co., Ltd.   | 514-685-6644 |
| an | Mississauga, Ont, John G. Weiss Co., Ltd. | 416-673-0011 |
| an | Nepean, Ont, John G. Weiss Co., Ltd.      | 416-225-1818 |

**Local Distributors**

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Los Angeles, Bell Inds.             | 213-826-6778 |
| CA | Culver City, Hamilton/Avnet         | 213-558-2071 |
| CA | El Monte, Marshall Ind.             | 818-307-6186 |
| CA | Gardena, California Switch & Signal | 310-538-9830 |
| CA | Oakland, Brill Elctms.              | 510-834-5888 |
| CA | Riverside, Elctm. Supp. Corp.       | 909-683-7300 |
| CA | San Diego, Time/Harper              | 619-674-2800 |
| CA | Santa Ana, Teknopak                 | 714-558-8840 |
| FL | Orlando, Hammond Elctms.            | 407-849-6060 |
| IL | Chicago, Newark Elctms.             | 312-784-5100 |
| IL | Palatine, Ohm Elctms.               | 312-359-5500 |
| MD | White Marsh, Radio Elec. Svc. Co.   | 410-931-8200 |
| MA | Norwood, Gerber Elctms.             | 617-769-6000 |
| MI | Livonia, RS Elctms.                 | 313-525-1155 |
| MN | Thief River Falls, Digi-Key Corp.   | 218-681-6674 |
| NJ | Camden, General Radio Supply        | 609-964-8560 |
| NJ | Teterboro, EAC Corp.                | 201-288-4477 |

|     |                                    |              |
|-----|------------------------------------|--------------|
| NY  | Rome, Rome Elctms.                 | 315-337-5400 |
| NY  | Binghamton, Pioneer Std.           | 607-722-9300 |
| NY  | Buffalo, Summit Dists. Inc.        | 716-887-2800 |
| NY  | Ronkonkoma, Mast Dists.            | 516-471-4422 |
| NY  | Woodbury, Seymour Elctms.          | 516-496-7474 |
| OH  | Cleveland, Pioneer Std.            | 216-587-3600 |
| PA  | McKean, Advacom, Inc.              | 814-476-7774 |
| TX  | Dallas, Hall-Mark Elctms.          | 214-343-5000 |
| TX  | Fort Worth, Allied Elctms.         | 817-595-3500 |
| TX  | Fort Worth, TTI, Inc.              | 817-429-4600 |
| TX  | Stafford, Harrison Equip. Co.      | 713-879-2600 |
| WA  | Bellevue, Almac Elctms.            | 206-643-9992 |
| WI  | Milwaukee, Marsh Elctms.           | 414-475-6000 |
| Can | Concord, Ont., TTI Multicomponents | 416-736-1144 |
| Can | Willowdale, Ont., Electro Sonic    | 416-494-1666 |

**BOURNS INSTRUMENTS INC.** 1200 Columbia,  
Riverside, CA 92507, Tel: 714-781-5148, FAX: 714-781-  
5178; FSC No.: 80294; Empl: 220; Sls. Mgr.: Al Lara

**BOWMAR/ALI, See Weschler Instruments, Hughes Corp.**

**BOWMAR INSTRUMENT CORP., Aerospace Div.** 8000 Bluffton Rd., FL Wayne, IN 46809, Tel: 219-747-3121,  
FAX: 219-747-9601; FSC No.: 99479; Empl: 170; Sls.  
Mgr.: Gary McClintick, V.P. Mktg.

**BRADFORD ELECTRONICS, INC., See Dale Electronics, Columbus Div.**

**BRADY USA, INC., Indl. Prods. Div., P.O. Box 2131,**  
Milwaukee, WI 53201, Tel: 1-800-537-8791, TELEX: 26-  
677, TWX: 910-262-3151, FAX: 1-800-292-2229; Sls.  
Mgr.: Brian P. Connolly; Dist. Mgr.: Brian P. Connolly

**BRADY, W.H., CO. NAMEPLATE DIV., See Brady, W.H. Co., Elctm. Prods. Div.**

**BRADY, W. H., CO., Xymox Div.** 8225 W. Parkland Ct.,  
P.O. Box 571, Milwaukee, WI 53201, Tel: 414-355-8300,  
TELEX: 26-677, TWX: 910-262-3151, FAX: 414-354-0453;  
FSC No.: 85480; Sls. Mgr.: R.F. Faustich

**BRAILS FORD & CO., INC.** 670 Milton Rd., Rye, NY 10580,  
Tel: 914-967-1820, FAX: 914-967-1836; Empl: 25

**BRAND DIELECTRICS, INC.** Route 203, N. Windham, CT  
06256, Tel: 203-423-6321, FAX: 203-423-4406; Empl: 5;  
Sls. Mgr.: Philip Harvey

**BRAND-REX COMPANY, BICC Cables Corporation,**  
1600 W. Main St., Willimantic, CT 06226-1128, Tel: 203-  
456-8000, TELEX: 99-4444, TWX: 710-440-2248, FAX:  
203-423-8128; FSC No.: 71124; Empl: 800

**BRANDT ELECTRONICS, INC.** 815 E. Middlefield Road,  
Mountain View, CA 94043, Tel: 415-967-4944, FAX: 415-  
967-9105; FSC No.: 57837; Empl: 30; Sls. Mgr.: Fred  
Kutner

**BRANDYWINE ABRASIVES** 501 South Main St., Spring  
City, PA 19475, Tel: 215-948-7028, FAX: 215-948-8151;  
Empl: 10

**BRANMAG, INC.** 908 Niagara Falls Blvd., N. Tonawanda,  
NY 14120, Tel: 716-693-5994, FAX: 716-693-5848; FSC  
No.: 9V968; Empl: 6; Sls. Mgr.: B. Veljkovic

**BRAXTON MFG.** Echo Lake Rd. N., P.O. Box 429,  
Watertown, CT 06795, Tel: 203-274-6781, FAX: 203-274-  
9195; Empl: 115; Sls. Mgr.: Richard Rosa

**BREEZE-ILLINOIS, See Transtechnology Electronics**

**BRENTEK INTERNATIONAL, INC.** 150 W. Beaver St.,  
York, PA 17406, Tel: 717-755-8000, FAX: 717-840-0988;  
Sls. Mgr.: Roberta Breneman

**BREN-TRONICS, INC.** 10 Brayton Ct., Commack, NY  
11725, Tel: 516-499-5155, TELEX: 22-1213 TTCUR, FAX:  
516-499-5504; FSC No.: 51828; Empl: 75; Sls. Mgr.: Don  
Fagon

**BRILL ELECTRONICS** P.O. Box 25905, Los Angeles, CA  
90025, Tel: 310-452-8002, FAX: 310-392-9585; Sls. Mgr.:  
Sam Nizam; Dist. Mgr.: Kelly Garcia  
..... **B-1390, 1454, 1591, 1692, 1874, 1934; C-1648,  
1724, 1752; D-1258**

**BRIM ELECTRONICS** P.O. Box 336 E, Fair Lawn, NJ  
07410, Tel: 201-796-2886, FAX: 201-778-2792; FSC No.:  
57834 ..... **C-1712-1721**

**Local Sales Offices & Reps**

|                |                         |              |
|----------------|-------------------------|--------------|
| AZ             | Phoenix, Mactronix      | 602-951-3437 |
| MA             | Stow, GH Assocs.        | 508-897-3534 |
| TN             | Industrial Elctms, Inc. | 615-573-7135 |
| EXP NY, N.Y.C. | Roburn Agencies         | 914-968-1016 |



## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Dothan, Carmichael Whls. Supp.      | 205-793-7066 |
| CA | Canoga Park, Tim-Co. Sls.           | 818-992-5040 |
| CA | San Diego, Shanks & Wright          | 619-239-0176 |
| CT | Manchester, IMS                     | 203-649-4415 |
| CT | Waterbury, Century Elec.            | 203-755-0405 |
| FL | Lake Mary, Electronic Fasteners     | 305-321-4000 |
| KS | Topeka, Acme Radio Supp. Co.        | 913-235-1363 |
| LA | New Orleans, Radio Parts            | 504-581-5959 |
| MA | Billerica, Eastern Video Sys.       | 617-667-0009 |
| MA | Lexington, Wholesale Elect. Supp.   | 617-862-3590 |
| MA | Springfield, Electro-Term           | 413-734-6469 |
| MA | Waltham, Linear Elect.              | 617-894-7300 |
| NH | Dover, American Radio Corp.         | 603-742-6800 |
| NJ | Hackensack, Milcor                  | 201-489-1313 |
| NY | LIC, H.L. Dalis                     | 212-361-1100 |
| NY | N.Y.C., Center Indl.                | 718-458-6363 |
| OK | Oklahoma City, Huhzicker Bros. Inc. | 405-275-2121 |
| OK | Tulsa, Radio, Inc.                  | 918-587-9123 |
| RI | Newport, J & S Electr. Distb.       | 401-847-2977 |
| TN | Knoxville, Indl. Elctns. Inc.       | 615-573-7135 |
| TX | Denison, Denison Elctms.            | 214-465-0341 |
| TX | Texarkana, McCulloch Elctms.        | 214-792-6923 |
| VT | Cavendish, C S Svc. & Supp. Co.     | 802-226-7582 |
| VA | Norfolk, Todd Elec.                 | 804-855-3111 |
| WA | Seattle, Amateur Radio Supp.        | 206-767-3222 |
| MN | Minneapolis, Boerger & Assoc.       | 612-636-4339 |

**BRINKMAN INSTRUMENTS, INC.**, One Cantiague Road, P.O. Box 1019, Westbury, NY 11590-0207, Tel: 516-334-7500, TELEX: WUI 6852174, FAX: 516-334-7506

**BRISTOL BABCOCK INC.**, 1100 Buckingham St., Watertown, CT 06795, Tel: 203-575-3000, 800-395-5497, TELEX: 962417, FAX: 203-754-1477; FSC No.: 08664; Empl: 500; Sls. Mgr.: Fred Merrill

**BROOKS ELECTRONICS**, 4001 N. American St., Philadelphia, PA 19140, Tel: 215-228-4433, FAX: 215-227-7687; Empl: 100; Sls. Mgr.: Gary J. Brooks; Dist. Mgr.: Gary J. Brooks

**BROOKS INSTRUMENT DIV.**, Emerson Elec. Co., 407 W. Vine St., Hatfield, PA 19440, Tel: 215-362-3500, TELEX: 4975082, FAX: 215-362-3745; Empl: 500; Sls. Mgr.: Harry Lund

**BROOKS POWER SYSTEMS**, 1400 Adams Rd. Unit E, Bensalem, PA 19020, Tel: 215-244-0264, 1-800-523-1551, FAX: 215-244-0160; Empl: 90; Sls. Mgr.: Grace Rogers

**BROOKTREE CORPORATION**, 9950 Barnes Canyon Road, San Diego, CA 92121, Tel: 619-535-3494, TELEX: 383596, FAX: 619-597-0673

**BROWN APPLIED TECHNOLOGY INC.**, 31 Progress Ave., Scarborough, ONT, Canada M1P 4S6, Tel: 416-298-0560, FAX: 416-298-0806; Empl: 135; Sls. Mgr.: Sam Lagis; Dist. Mgr.: Nick Markoff

## Local Sales Offices &amp; Reps

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AZ | Glendale, Sunbird Inds., Inc.             | 602-439-0134 |
| CA | Los Angeles, Brown Applied Technlg. Intl. | 310-541-4751 |
| CA | Santa Clara, Brown Applied Technlg. Intl. | 408-727-8551 |
| CO | Monument, Sunbird Inds., Inc.             | 719-481-2900 |
| IL | Inverness, Heartland Tech.                | 708-358-6622 |
| MA | Bellingham, OEM Mktg. & Sls.              | 508-528-4983 |
| NH | Salem, OEM Mktg. Sls.                     | 603-893-0009 |
| OR | Portland, Power Resources                 | 503-452-1859 |

**B.R.T.B. INC.**, 80 Citizen CRT 7, Markham, Ont, Canada L6G 1A7, Tel: 416-475-8903, FAX: 416-475-0157; Empl: 12

**BRUEL & KJAER INSTRS. INC.**, 2364 Park Central Blvd., Decatur, GA 30035, Tel: 404-981-6225, FAX: 404-981-8370; Empl: 80

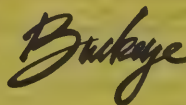
**BRUSH INDUSTRIES INC.**, 3rd & Reagan Sts., P.O. Box 638, Sunbury, PA 17801-0638, Tel: 717-286-5811, 800-233-0362, FAX: 717-286-2649; FSC No.: 19418; Empl: 100

**BT & D TECHNOLOGIES**, 500 N. Walnut St., Kennett Square, PA 19348, Tel: 215-444-6888, 800-545-4306, FAX: 215-444-6888; Empl: 350; Sls. Mgr.: Paul V. O'Donnell

**BTC ELECTRONIC COMPONENTS**, 139 White Oak Lane, Old Bridge, NJ 08857, Tel: 908-679-9300, FAX: 908-679-9311; FSC No.: 63365; Empl: 50; Sls. Mgr.: Jim Messina

**BTU INTERNATIONAL, INC.:BTU SYSTEMS DIVISION**, 23 Esquire Rd., N. Billerica, MA 01862, Tel: 508-667-4111, TELEX: 94-7489, FAX: 508-667-9068; Empl: 300; Sls. Mgr.: James Griffin

**BUBBL-TEC**, 6805 Sierra Ct., Dublin, CA 94568, Tel: 510-829-8705, FAX: 510-829-9796; Empl: 19; Sls. Mgr.: Bob Nelson



FAX: 614-445-8224

**BUCKEY STAMPING CO.**, 555 Marion Rd., Columbus, OH 43207, Tel: 614-445-8433; Empl: 85; Sls. Mgr.: Jim Wilcox C-1016

## Local Sales Offices &amp; Reps

|    |                                      |                                |
|----|--------------------------------------|--------------------------------|
| AZ | Phoenix, Moss Mktg.                  | 602-433-9349, FAX:602-249-4767 |
| CA | San Diego, Vale Elctms. Assocs.      | 619-693-0113                   |
| CA | Santa Clara, Engrg. Assocs.          | 408-988-5001, FAX:408-727-1860 |
| CO | Aurora, Moss Mktg.                   | 303-340-8535, FAX:303-341-7930 |
| FL | Indian Rock Bch., PAR Assocs., Inc.  | 813-596-8841, FAX:813-595-8523 |
| GA | Atlanta, Par Assoc.                  | 404-391-9117, FAX:404-395-6346 |
| IL | Long Grove, Robert Adams Sls.        | 708-634-3384, FAX:708-634-3585 |
| KS | Lenexa, Midtec Assoc.                | 913-541-0505, FAX:913-541-1729 |
| MD | Columbia, Tyler Griffin Co.          | 301-995-1215, FAX:301-995-0344 |
| MA | Belmont, Elctn. Comps. & Svc.        | 617-484-8680, FAX:617-484-8693 |
| MI | Beachwood, Elctn. Sls. Masters, Inc. | 216-831-9555, FAX:216-831-8647 |
| MN | Minneapolis, A. J. Warner Co.        | 612-823-8272                   |
| MO | St. Louis, Midtec Assocs., Inc.      | 314-275-8666, FAX:314-275-8859 |
| NJ | Ocean, P. Sattler Assocs.            | 908-922-3014, FAX:908-922-8198 |
| NM | Albuquerque, Moss Mktg.              | 505-292-7505, FAX:602-249-4767 |
| NY | Fulton, P. Sattler Assocs.           | 315-592-7184, FAX:315-592-4152 |
| NY | Lynbrook, P. Sattler Assoc.          | 516-593-7880, FAX:516-593-7637 |
| NC | Charlotte, PAR Assocs., Inc.         | 704-535-9858, FAX:704-535-5347 |
| OH | Columbus, McFadden Sls.              | 614-761-3177, FAX:614-761-2487 |
| OR | Hillsboro, Doran Sls. Assocs., Inc.  | 503-640-4500, FAX:503-640-4555 |
| PA | Paoli, T. Griffin Co.                | 215-647-1550, FAX:215-640-4652 |
| TX | Dallas, REM Comps.                   | 214-234-1069, FAX:214-234-1082 |
| UT | Salt Lake City, Moss Mktg.           | 801-363-5875, FAX:801-328-8236 |
| WA | Bothel, Doran Sls. Assocs., Inc.     | 206-488-1200, FAX:206-488-1217 |

## Local Distributors

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|----|-------------------------------------|--------------------------------|
| AZ | Phoenix, Dalis Elctns.              | 602-275-2626, FAX:602-275-0578 |
| CA | Los Angeles, Elect. Switches        | 213-664-1141, FAX:213-660-5130 |
| CO | Littleton, Display Plus             | 303-730-7333, FAX:303-795-8298 |
| GA | Marietta, Peach State Instrs.       | 404-971-5050                   |
| ID | Boise, Radar Elec.                  | 208-336-2227, FAX:208-336-2322 |
| MA | Waltham, Linear Elctms.             | 617-894-7300                   |
| MI | Ann Arbor, Wedemeyer Elctms.        | 313-665-8611, FAX:313-665-5896 |
| NJ | Dover, Electrospec                  | 201-361-6300, FAX:201-361-7868 |
| NM | Albuquerque, Bestech                | 505-298-0034, FAX:505-296-3422 |
| NY | Hauptpauge, Broadline Elctn. Dist.  | 516-231-4100                   |
| NC | Charlotte, Lakeland Engrg. & Equip. | 704-597-0044, FAX:704-597-7957 |
| OR | Portland, Radar Elec.               | 503-232-3404                   |
| TX | El Paso, Ideal Indl. Elctm.         | 915-779-6647                   |
| WA | Richland, Radar Elec.               | 509-943-8336, FAX:509-943-6790 |
| WA | Seattle, Radar Elec.                | 206-282-2511, FAX:206-282-1598 |
| WA | Spokane, Radar Elec.                | 509-747-3053, FAX:509-456-8069 |

**BUD INDUSTRIES, INC.**, 4605 E. 35th St., Willoughby, OH 44094-0431, Tel: 216-946-3200, FAX: 216-951-4015; FSC No.: 71218; Empl: 200; Sls. Mgr.: Bill DeRoche; Dist. Mgr.: Bill DeRoche

**BUEHLER PRODUCTS, INC.**, P. O. Box 33400, Raleigh, NC 27636, Tel: 919-469-8522, TWX: 510-924-2474; Empl: 400; Sls. Mgr.: D. Frank Slightom

**BUGGIE H. H.**, See Caton Connector Corp.



FAX: 516-249-6066

**BULBTRONICS, INC.**, 45 Banfi Plaza, Farmingdale, NY 11735, Tel: 516-249-2272, 1-800-654-8542; FSC No.: 6240; Empl: 55; Sls. Mgr.: Linda Darmstadt; Dist. Mgr.: Elaine Gray B-1135

## Local Sales Offices &amp; Reps

CA Hollywood, Bulbtronics, Inc.(Western Region)  
800-245-BULB,213-461-6262

**BULOVA WATCH CO.**, See Frequency Control Prods., Inc., American Time Prods. Div.

**BUMPER SPECIALTIES, INC.**, 14 King St., P.O. Box 45, Mt. Holly, NJ 08060, Tel: 609-261-8100, 800-541-2500, FAX: 609-261-7300; Sls. Mgr.: Charles T. Holliday

**BUNTING MAGNETICS CO.**, 500 So. Spencer Rd., Newton, KS 67114, Tel: 316-284-2020, 800-835-2526, FAX: 316-283-4975; Empl: 120; Sls. Mgr.: Robert J. Bunting

**BURBANK SHEET METAL WORKS INC.**, 156 W. Verdugo Ave., Burbank, CA 91502, Tel: 818-846-0316, FAX: 818-846-0359; Empl: 12

**BURGESS-SAIA, INC.**, 1335 Barclay Blvd., Buffalo Grove, IL 60089, Tel: 708-215-9600, FAX: 708-215-9606; FSC No.: 6U850; Empl: 13; Sls. Mgr.: Richard Maxwell; Dist. Mgr.: Richard Maxwell B-1244-1245, 1681-1683

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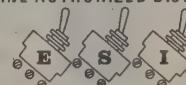
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| AL                         | Huntsville, Hughes Assocs.            | 205-533-9108 |
| AZ                         | Fountain Hills, Halbar Assocs.        | 602-837-2464 |
| CA                         | Milpitas, Maxim Elctm. Sls.           | 408-946-6001 |
| CA                         | Mountain View, Westech Sls.           | 415-961-1422 |
| CA                         | Tustin, Sierra Pacific Engrg.         | 714-731-3411 |
| CA                         | Van Nuys, Halbar                      | 818-906-3941 |
| CO                         | Littleton, Harthun Assoc.             | 303-795-5545 |
| FL                         | Ft. Lauderdale, Synergistic Technlgs. | 305-791-8255 |
| FL                         | Melbourne, Synergistic Technlgs.      | 407-242-9661 |
| FL                         | Odessa, Synergistic Technlgs.         | 813-920-5814 |
| FL                         | Orlando, Motion Prods. Inc.           | 407-381-8480 |
| FL                         | Orlando, Motion Prods., Inc.          | 407-381-8480 |
| FL                         | Palm Harbor, Synergistic Technlgs.    | 813-785-7238 |
| FL                         | Pompano Bch, Motion Prods. Inc.       | 305-783-9003 |
| GA                         | Norcross, Hughes Assocs.              | 404-662-1587 |
| IL                         | Adelison, Vikeland Sls.               | 708-832-8425 |
| IL                         | Glen Ellyn, Lincoln Hodges Inc.       | 708-469-6750 |
| KS                         | Overland Pk, Singer Indtl Sls.        | 913-381-3684 |
| KS                         | Overland Pk, Singer Indtl Sls.        | 913-897-2008 |
| KS                         | Shawnee Mission, Mertens Co.          | 913-432-9323 |
| MD                         | Glenmont, Hodgins Assocs.             | 301-592-7047 |
| MA                         | Braintree, R.F. Duffy Assocs.         | 617-848-3550 |
| MA                         | Monson, R.F. Duffy Assoc. Inc.        | 413-267-9884 |
| MI                         | Royal Oak, Elctrl. Sys. Co.           | 313-542-1747 |
| MN                         | St. Paul, Kencotronics                | 612-645-7717 |
| MN                         | St. Paul, Vikeland Sls. Inc.          | 612-645-4647 |
| MO                         | St. Louis, Mertens Co.                | 314-993-6600 |
| NH                         | Manchester, Peak Sls.                 | 603-625-2250 |
| NJ                         | Hackensack, A.P. Tech. GCF Inc.       | 201-877-6222 |
| NJ                         | Sussex, Carbone Assocs.               | 201-875-1882 |
| NY                         | E. Syracuse, Applications Specialists | 315-437-2814 |
| NY                         | Rochester, Application Specialists    | 716-586-6226 |
| OH                         | Cincinnati, Anderson-Bolds, Inc.      | 513-528-5680 |
| OH                         | Cleveland, Anderson-Bolds, Inc.       | 216-360-9800 |
| OH                         | Dayton, Electrical Sys. Co.           | 513-434-9822 |
| OH                         | Orville, Electrical Sys. Co.          | 216-682-5520 |
| OH                         | Worthington, Anderson-Bolds Inc.      | 614-885-9393 |
| OR                         | Hillsboro, Doran Sls. Assocs.         | 503-640-4500 |
| OR                         | Tigard, Halbar-RTS                    | 503-624-5741 |
| PA                         | Philadelphia, Kenneth B. Erdman, Co.  | 215-233-0172 |
| PA                         | Wayne, Hodgins Assocs.                | 215-688-9056 |
| TN                         | Knoxville, Hughes Assocs.             | 615-558-0283 |
| WA                         | Bothell, Doran Sls. Assocs.           | 206-488-1200 |
| WA                         | Redmond, Halbar-RTS                   | 206-882-0990 |
| WI                         | St. Francis, Vikeland Sls.            | 414-744-7253 |
| Can                        | Ottawa, Ont., Graham Dewar Assoc.     | 613-744-8463 |
| Can                        | Pickering, Ont., Graham Dewar Assoc.  | 416-839-9955 |
| Can                        | Scarborough, Ont., Burgess Switch Co. | 416-299-0852 |

| Local Distributors |                                      |              |
|--------------------|--------------------------------------|--------------|
| AL                 | Muscle Shoals, Jones Elctms, Inc.    | 205-383-1241 |
| CA                 | Anaheim, Control Design Supp.        | 714-821-1516 |
| CA                 | Fresno, Control Elec.                | 209-268-4411 |
| CA                 | Long Beach, Elctrl. Power & Controls | 213-498-6699 |
| CA                 | Redwood City, HdB Elec.              | 415-368-1388 |
| FL                 | Boca Raton, Zelcon Inc.              | 407-451-1600 |
| FL                 | Miami, B & R Elctms. Supp. Inc.      | 305-255-4510 |
| FL                 | W. Palm Bch, Atlantic Elec. Inc.     | 407-686-8553 |
| IL                 | Chicago, Leeds Electro Comp.         | 312-625-3800 |
| IL                 | Harvey, George Elctms.               | 708-331-1983 |
| MA                 | Fall River, Broadway Elec. Sls.      | 508-637-3339 |
| MA                 | Holyoke, Falchetti & Clark Elec.     | 413-532-9402 |
| MA                 | Medford, Empire Elec.                | 617-395-5000 |
| NJ                 | Rockaway, NASCO                      | 201-625-7777 |
| MI                 | Grand Rapids, S & F Elctms. Supp.    | 616-459-0216 |
| MI                 | St. Clair Shores, Spermo             | 313-771-2700 |
| NE                 | Lincoln, Scott Elec. Supp.           | 402-466-8221 |
| NH                 | Bedford, Cohen Machinery Co. Inc.    | 603-624-4324 |



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| NJ | South Hackensack, NASSOR               | 201-641-3737 |
| NY | Bronx, Equiptex Ind. Prod.             | 212-324-1190 |
| NY | Roosevelt, Automated Equip. Co.        | 516-538-7417 |
| NY | Woodside, Switches Unlimited           | 718-478-5000 |
| NC | Durham, Triangle Elec. Motor           | 919-596-1333 |
| NC | Gastonia, JMT Elctms. & Control        | 704-867-4401 |
| OH | Cincinnati, Richards Elec. Supp.       | 513-242-8800 |
| PA | Bristol, Aim Elctms.                   | 215-785-3500 |
| PA | Harrisburg, Cumberland Elctms.         | 717-232-5999 |
| PA | Lansdale, County Elec.                 | 215-368-1960 |
| RI | Providence, J & H Elec. Co., Inc.      | 401-421-7840 |
| SC | Greenville, Sawyer Elctms. Corp.       | 803-235-0438 |
| TX | San Antonio, Sherman Elec. Supp. Inc.  | 512-224-1004 |
| VA | Charlottesville, Virginia Elect. Comp. | 804-296-4184 |
| WI | Milwaukee, Midwestern Elec. Co.        | 414-463-1500 |
| WI | Racine, Badger Elect. Parts            | 414-637-1256 |

**BURLEIGH INSTRUMENTS**, Burleigh Park, P.O. Box E, Fishers, NY 14453-0755, Tel: 716-924-9355, TELEX: 978379, FAX: 716-924-9072; Empl: 65; Sls. Mgr.: Dr. Brian Samoriski

**BURLING INSTRUMENTS, INC.**, P.O. Box 298, Chatham, NJ 07928-0298, Tel: 201-635-9481, FAX: 201-635-9530; Empl: 20; Sls. Mgr.: Michael Wetterer

| Local Sales Offices & Reps |                                          |              |
|----------------------------|------------------------------------------|--------------|
| CA                         | Costa Mesa, Robinson Tech. Assoc.        | 714-557-1622 |
| CA                         | Mountain View, Claypool Controls Co.     | 415-968-7488 |
| CT                         | Stratford, M. A. Selmon Co.              | 203-377-3525 |
| FL                         | FL Lauderdale, Panamtech, Inc.           | 305-587-3769 |
| IL                         | Lisle, WG Controls                       | 708-963-5954 |
| MI                         | Dearborn Hgts, CVA                       | 313-274-4959 |
| NC                         | Kernersville, Heritage Elctrl. Sls.      | 919-996-4374 |
| OH                         | Medina, Rockford Controls Ohio, Inc.     | 216-725-3705 |
| OK                         | Tulsa, Ernie Graves Co.                  | 918-584-4707 |
| PA                         | Edgemont, White/Whiddett Co.             | 215-353-6343 |
| TN                         | Chattanooga, Eclipse Thermal Sys.        | 615-266-4831 |
| Can                        | Concord, Ont., Baker Instrs. Ltd.        | 416-738-4780 |
| Can                        | Vancouver, B.C., John Sherman Agcs. Ltd. | 604-254-9622 |

**BURNDY CORPORATION**, An FCI Company, 51 Richards Ave., Norwalk, CT 06856, Tel: 203-838-4444, FAX: 203-852-6227; Empl: 3500; Sls. Mgr.: Frank Zavattaro

**BURR-BROWN CORP.**, P.O. Box 11400, Tucson, AZ 85734, Tel: 602-746-1111, TELEX: 66-6491, TWX: 910-1111, FAX: 609-741-3895; Empl: 1500; Sls. Mgr.: M.Dickey/B.Filiault **D-2077-2081**

| Local Sales Offices & Reps |                                     |              |
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| AL                         | Huntsville, Rep Inc.                | 205-881-9270 |
| CA                         | Agoura Hills, Burr-Brown Corp.      | 818-991-8544 |
| CA                         | Los Angeles, Burr-Brown Corp.       | 818-991-8544 |
|                            |                                     | 805-496-7581 |
| CA                         | Santa Ana, Burr-Brown Corp.         | 714-835-0712 |
| CA                         | Santa Clara, I2, Inc.               | 408-988-3400 |
| CO                         | Denver, Burr-Brown Corp.            | 303-452-3545 |
| GA                         | Atlanta, Rep Inc.                   | 404-938-4358 |
| IL                         | Arlington Hgts., Burr-Brown Corp.   | 708-437-2877 |
| IA                         | Cedar Rapids, Rep Assoc. Corp.      | 319-373-0152 |
| MD                         | Rockville, Marktron Inc.            | 301-251-8990 |
| MA                         | N. Billerica, Burr-Brown Corp.      | 508-670-9800 |
| MI                         | Farmington, Burr-Brown Corp.        | 313-474-6533 |
| MN                         | Bloomington, Electronic Sls. Agency | 612-884-8291 |
| MO                         | Bridgeton, BC Elctm Sls., Inc.      | 314-739-6683 |
| NM                         | Albuquerque, Morrison & Fern, Inc.  | 505-271-8433 |
| NY                         | Buffalo, Advanced Comp. Corp.       | 716-832-6791 |
| NY                         | Endicott, Advanced Comps. Corp.     | 607-785-3191 |
| NY                         | Syracuse, Advanced Comps. Corp.     | 315-699-2671 |
| NY                         | Yonkers, Burr-Brown Corp.           | 914-964-5252 |
| NC                         | Winston-Salem, Murcota Corp.        | 919-722-9445 |
| OH                         | Aurora, Meta Tech. Sls. Inc.        | 216-562-8772 |
| OH                         | Cincinnati, Burr-Brown Corp.        | 513-891-4711 |
| OH                         | Cleveland, K-T/Depco Mktg.          | 216-442-6200 |
| PA                         | Pittsburgh, K-T/Depco Mktg.         | 412-367-1011 |
| PA                         | Spring House, QED Elctms.           | 215-643-9200 |
| TN                         | Jefferson City, Rep Inc.            | 615-475-4105 |
| TX                         | Dallas, Burr-Brown Corp.            | 214-783-4555 |
| TX                         | Houston, Acudata Inc.               | 713-580-2451 |
| TX                         | Houston, Burr-Brown Corp.           | 713-988-6546 |
| TX                         | Plano, Acudata Inc.                 | 214-424-3567 |
| UT                         | Salt Lake City, Aspen Sls., Inc.    | 801-467-2401 |
| WA                         | Kent, Burr-Brown Corp.              | 206-859-9220 |

**BURR-BROWN/INTELLIGENT INSTRUMENTATION**, See Intelligent Instrumentation/Burr-Brown

**BURR-BROWN/POWER CONVERTIBLES**, See Power Convertibles, a Burr-Brown Company

**BURTON ELECTRICAL ENGINEERING**, Wyle Laboratories, 111 Maryland Street, El Segundo, CA 90245, Tel: 310-322-0615, TELEX: 858485, TWX: 910-348-6699, FAX: 213-322-4520; FSC No.: 81861; Empl: 55; Sls. Mgr.: Bill Owen

**BUSSCO INC.**, 119 Standard St., El Segundo, CA 90245, Tel: 310-322-6580, FAX: 310-322-8130; FSC No.: 29593; Empl: 43

**BUSSMANN DIVISION**, Cooper Industries, P.O. Box 14460, St. Louis, MO 63178, Tel: 314-394-2877, TELEX: 44 841; FSC No.: Multiple; Empl: 3000; Sls. Mgr.: Scott Robinson; Dist. Mgr.: Scott Robinson

**BYTE CRAFT LIMITED**, 421 King St. N., Waterloo, Ont., CAN N2J 4E4, Tel: 519-888-6911, FAX: 519-746-6751; Empl: 5; Sls. Mgr.: Karen McMurray

**BYTEK CORP.**, Instrument Systems Div., 543 NW 77th St., Boca Raton, FL 33487-1323, Tel: 407-994-3520, TELEX: 4998369 BYTEK, FAX: 407-994-3615; Empl: 45; Sls. Mgr.: Madeline Selwitz

**BYTEX CORP.**, 4 Technology Dr., Westborough, MA 01581, Tel: 508-366-8000, FAX: 508-366-0244; Empl: 273; Sls. Mgr.: Stephen Nesbit, VP Sls.; Dist. Mgr.: Robert Welch, VP Indirect Channels

**CABLE & COMPUTER TECHNOLOGY INC.**, 1555 S. Sinclair St., Anaheim, CA 92806, Tel: 714-937-1341, FAX: 714-937-1225; Empl: 65

**CABLEC CONTINENTAL CABLES CO.**, BICC Cables Corp., 2555 Kingston Rd., York, PA 17402-9950, Tel: 717-757-6600, FAX: 717-755-4717; Empl: 750; Sls. Mgr.: John Turcich, Sls. V.P.; Dist. Mgr.: Dennis Myers

**CABLEFORM INC.**, Zion Cross Roads, Troy, VA 22974, Tel: 804-589-8224, TELEX: 822434, FAX: 804-589-3803; Sls. Mgr.: Richard L. Shannon **A-1875**

**CABLESCAN, INC.**, Subsidiary of Eubanks Engrg. Co., 145 E. Emerson Ave., Orange, CA 92665, Tel: 714-998-1961, FAX: 714-921-2493; Sls. Mgr.: Richard Heintz

**CABLESTAR, INCORPORATED**, 310 S. Franklin St., Glasgow, KY 42141, Tel: 800-338-8223, FAX: 502-651-2973; Empl: 25; Sls. Mgr.: Larry Hollon

**CABLE SYSTEMS, INC.**, The HVT Group, 210 Broadway, Everett, MA 02149, Tel: 617-389-7080, FAX: 617-389-4758; FSC No.: 33426; Empl: 70; Sls. Mgr.: James R. Collmer

**CABLETEST INTERNATIONAL INC.**, 400 Alden Rd., Markham, Ont., Canada L3R 4C1, Tel: 416-475-2607, 800-667-2518, FAX: 416-475-2609; Empl: 50 **D-1240-1241**

**Local Sales Offices & Reps**  
NJ Toms River, Heyco Stamped Prods. 908-286-4336  
PA Downingtown, Cabletest Intl. Inc. 215-873-9753

**CABLETEST PRODUCTS CO.**, P.O. Box 494, Malden, MA 02148, Tel: 617-665-2932; Empl: 28; Sls. Mgr.: H. E. Holley; Dist. Mgr.: H. E. Holley

**CABLETRON SYSTEMS, INC.**, 35 Industrial Way, Rochester, NH 03867, Tel: 603-332-9400, FAX: 603-332-4616; Empl: 1500; Sls. Mgr.: Jack Branowski

**CABLE USA, INC.**, 2584 So. Horseshoe Dr., Naples, FL 33942-3560, Tel: 813-643-6400, FAX: 813-643-4230; FSC No.: 67050; Empl: 55; Sls. Mgr.: Joe Giordano



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**CABTRON SYSTEMS, INC.**, 200 N. Anets Dr., Northbrook, IL 60062, Tel: 708-498-6090; Empl: 45; Sls. Mgr.: Bob Dalton **C-1017**

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| GA                         | Liburn, Philip Matthews Corp. | 404-381-1662 |
| IN                         | Indianapolis, Liberty Sls.    | 317-888-8396 |
| KS                         | Wichita, Buckman & Assocs.    | 316-267-2052 |
| MN                         | St. Paul, Countryman Assocs.  | 612-645-9151 |



MO St. Charles, Buckman & Assocs. .... 314-947-4727  
NC Kings, Phillip Matthews Corp. .... 919-983-9790,

**CADDELL-BURNS MFG.**, 258 E. 2nd St., Mineola, NY  
11501-3508, Tel: 516-746-2310, FAX: 516-742-2416; FSC  
No.: 04213; Empl: 30 ..... **A•1198-1212**

**CADDELL COIL CORP.**, P.O. Box 1232, South St.,  
Middletown Springs, VT 05757, Tel: 802-235-2019, FAX:  
802-235-2019; Empl: 6; Sls. Mgr.: James Caddell  
..... **A•1213**

*Local Sales Offices & Reps*

FL Vero Bch, R.B. Caddell ..... 305-562-4496

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**CADDOCK ELECTRONICS, INC.**, 1717 Chicago Ave.,  
Riverside, CA 92507, Tel: 909-788-1700, TWX: 910-332-  
6108; FSC No.: 19647; Empl: 300 ..... **A•1876-1903**

*Local Sales Offices & Reps*

OH Cleveland, Arthur H. Baier Co. .... 216-292-7500  
OH Dayton, Arthur H. Baier Co. .... 513-233-0087  
OR Beaverton, Elctn. Sources ..... 503-627-0838  
WA Bellevue, Elctn. Sources ..... 206-451-3500

*Local Distributors*

TX Houston, Lenert Co. .... 713-225-1465

**CAD ENGRG. & ASSEMBLY INC.**, 8663 Tyler Blvd.,  
Mentor, OH 44060, Tel: 216-255-7744, FAX: 216-255-  
5900; Empl: 28

**CADILLAC PLASTIC & CHEM. CO. DIV. OF M.A.  
HANNA**, P.O. Box 7035, Troy, MI 48007-7035, Tel: 313-  
583-1200, TWX: 810-232-1886, FAX: 313-583-4715;  
Empl: 1000

**CAD UTILITY CO.**, 21115 Devonshire St., Ste.318,  
Chatsworth, CA 91311, Tel: 805-527-8630, FAX: 805-526-  
5093; Empl: 6; Sls. Mgr.: Stan Chambers

**CAIGA LABORATORIES**, 16744 West Bernardo Dr.,  
Rancho Bernardo, CA 92127-1904, Tel: 619-451-1799,  
FAX: 619-451-2799; Empl: 15; Sls. Mgr.: Mark Lohkemper;  
Dist. Mgr.: Laurie Skultety

**CAL-AV LABS, INC.**, 515B Westchester Drive, Campbell,  
CA 95008, Tel: 408-369-1000, FAX: 408-371-0672; Empl:  
5

**CAL-CHIP ELECTRONICS**, 69 Steam Whistle Dr., Ivyland,  
PA 18974, Tel: 215-953-9770

**CAL CRYSTAL LAB., INC.**, 1142 N. Gilbert, Anaheim, CA  
92801, Tel: 714-991-1580, 800-333-9825, FAX: 714-491-  
9825; Empl: 30; Sls. Mgr.: Audrey Zarrow; Dist. Mgr.:  
Audrey Zarrow

**CALEX MFG. CO., INC.**, 2401 Stanwell Drive, Concord,  
CA 94520, Tel: 510-687-4411, FAX: 510-687-3333; FSC  
No.: 29988; Empl: 75; Sls. Mgr.: Linda Heame  
..... **D•1624, 2083-2089**

*Local Distributors*

OH Richfield, Alpha Distr. .... 216-659-7100

**CALIBRON INSTRUMENTS**, Burton-Rogers Co., 220  
Grove St., Waltham, MA 02154, Tel: 617-894-6440, FAX:  
617-893-8393; Empl: 10; Dist. Mgr.: W. Burton

**CALIFORNIA AUTOMATION INC.**, 11815 Sorrento  
Valley Rd., San Diego, CA 92121, Tel: 619-452-1341

**CALIFORNIA AVIONICS LABS.**, See Cal-Av, Inc.

**CALIFORNIA EASTERN LABS, INC.**, 4590 Patrick Henry  
Dr., Santa Clara, CA 95056-0964, Tel: 408-988-3500,  
TELEX: 346393, TWX: 171197; Empl: 118

**California  
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**FAX: 619-279-8139**

**CALIFORNIA INSTRUMENTS CORP.**, 9025 Balboa  
Ave., San Diego, CA 92123-1509, Tel: 619-279-8620, 800-  
4AC-POWER; FSC No.: 16067; Empl: 70; Sls. Mgr.: D.R.  
Chilcoat, G.R. Holland, G. Gartman ..... **D•2250-2252**

*Local Sales Offices & Reps*

AZ Mesa, SDW Mountain States Reps ... 602-839-6626  
CA Los Alamitos, Tritek Solutions ..... 714-236-1190  
CA Santa Clara, Tritek Solutions ..... 408-554-0455  
CO Louisville, SDW Mountain States Reps  
..... 303-665-8089  
FL Clearwater, Beacon Microwave & Inst.  
..... 813-796-2378  
GA Norcross, Beacon Microwave & Inst. .... 404-449-8464  
IL Arlington Hts., Berndt Assoc. .... 708-632-0900  
IN Carmel, Berndt Assoc. .... 317-844-0114  
KS Lenexa, Midtec Assocs. Inc. .... 913-541-0505  
MD Mt. Airy, Electronic Resources, Inc. .... 301-865-3771  
MN Minneapolis, Berndt Assoc. .... 612-546-2021  
MO St. Louis, Midtec Assocs., Inc. .... 314-275-8666  
NJ Ridgefield Park, Sci. Dvcs., Inc. .... 201-440-3430  
NM Albuquerque, SDW Mountain States Reps  
..... 505-883-3668

NY Rochester, Tae-Rep, Inc. .... 512-388-9961  
NY Whitney Pt., Tae-Rep, Inc. .... 607-692-3705  
OH Cincinnati, Dietrich & Assocs., Inc. .... 513-984-8924  
OH Cleveland, Dietrich & Assocs., Inc. .... 216-642-7965  
OR Beaverton, Northwest Test & Meas. .... 503-645-9000  
PA Horsham, Sci. Dvcs., Inc. .... 215-956-0700  
PA Pittsburgh, Dietrich & Assocs., Inc. .... 412-892-2992  
PA West Chester, Electronic Resources, Inc.  
..... 215-431-0198

RI Narragansett, PAT Assocs. .... 401-783-9598  
TX Austin, Sci. Dvcs. SW ..... 512-338-9961  
TX Richardson, Sci. Dvcs. SW ..... 214-231-8106  
VA Harrisonburg, Electronic Resources, Inc.  
..... 703-289-5571

WA Bellevue, N.W. Test & Measurement ... 206-881-8857  
WI Milwaukee, Berndt Assocs., Inc. .... 414-545-8400  
Can Downsview, Ont., Testforce Sys., Inc. .... 416-398-1375  
Can N. Vancouver, B.C., Jerome & Francis Co., Ltd.  
..... 604-986-1286

Can St. Laurent, Que., TestForce Sys., Inc.  
..... 514-856-0970

**CALIFORNIA MICRO DEVICES, INC.**, 215 Topaz Street,  
Milpitas, CA 95035, Tel: 408-263-3214, FAX: 408-263-  
7846; FSC No.: 56427; Empl: 180; Sls. Mgr.: Ted Beloin;  
Dist. Mgr.: Ashok Chakala

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AL Athens, WLA & Assocs. .... 205-233-7893  
AZ Chandler, Techni-Source Corp. .... 602-497-0711  
CA Santa Clara, Pinnacle Sls. .... 408-249-7400  
CO Monument, Pinnacle Sls. .... 719-488-9097  
FL Boca Raton, Tech. Sls. Specs. .... 407-391-3718  
GA Lawrenceville, WLA & Assocs. .... 404-339-9443  
IL Rolling Meadows, Eagle Tech. Sls. .... 708-991-0700  
IN Indianapolis, CC Electro Sls. .... 317-921-5000  
IN Minneapolis, Intl. Elec. .... 612-571-0000  
MD Columbia, Delta III ..... 410-730-4700  
MI Hudson, Compak, Inc. .... 508-568-0331  
MI Detroit, CC Electro Sls. .... 313-455-0000  
NM Albuquerque, Techni-Source Corp. .... 505-268-4232  
NY Hicksville, J-Square Mktg. .... 516-935-3200  
NC Raleigh, WLA & Assocs. .... 919-231-9939  
OH Cleveland, CC Electro Sls. .... 216-228-4338  
OR Beaverton, Elctn. Sources ..... 503-627-0838  
PA Ft. Washington, SMC Inc. .... 215-628-3394  
TX Dallas, Innovative Tech. Sls. .... 214-699-3485  
UT Salt Lake City, Pinnacle Sls. .... 801-264-8366  
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AL Huntsville, DHR Mktg., Inc. .... 205-536-9775  
AZ Phoenix, Howe & Howe Sls. .... 602-264-7971  
CA Oceanside, Noo Rep. Tech. Sls. .... 619-941-0558  
CA San Gabriel, Calmark Corp. .... 818-287-0451  
CA Sunnyvale, Calmark Corp. .... 408-737-0123  
CO Boulder, Comp. Prods. Sls. .... 303-530-2800  
FL Oviedo, Sunland Assocs. .... 407-365-9533  
GA Duluth, DHR Mktg., Inc. .... 404-564-0529  
IL Woodbridge, Gofen Assoc. .... 708-985-5100  
IA Blue Grass, Rothkopf & Assoc. .... 319-381-4396  
KS Olathe, Rothkopf & Assoc. .... 913-829-8897  
MD Towson, Dalbrook Corp. .... 410-296-3165  
MN Norwood, Tom Maguire Assoc. .... 617-551-0500  
MI Brighton, W.R. Hummon ..... 313-486-5333  
MN St. Paul, Innovate Sls. .... 612-225-9772

MO St. Louis, Rothkopf & Assoc. .... 314-961-4485  
NY E. Syracuse, Fountain, Young & Co. .... 515-437-7733  
NY Plainville, Neptune Elect. .... 316-349-1600  
NC Raleigh, DHR Mktg., Inc. .... 919-829-1970  
OH Miamisburg, Electronics Comps., Inc. .... 513-866-3340  
OR Beaverton, Unicomp, Inc. .... 503-643-1645  
PA Lansdale, Dalbrook Corp. .... 215-362-8033  
SC Greenville, DHR Mktg., Inc. .... 803-235-3594  
TN Nashville, DHR Mktg., Inc. .... 615-331-2745  
TX Richardson, Zonk Assocs. .... 214-238-7651  
VA Fredericksburg, Dalbrook Corp. .... 703-786-0335  
WA Snohomish, Unicomp, Inc. .... 206-568-0511  
EXP Ireland/Cappoquin, Calmark Ireland, Ltd.  
..... 353-58-54205  
EXP San Gabriel, CA, Calmark Corp. .... 818-287-0451  
PR Santruce, SISCO ..... 809-726-3137  
Can Islington, Ont., Pipe-Thompson Ltd. .... 416-236-2355

*Local Distributors*

CA Fremont, Connex Elctns. .... 510-656-7722  
CA San Jose, Rose Elctns. .... 408-263-9700  
CO Denver, Solder Tec. .... 303-623-5000  
IL Elk Grove, Martec Assocs. .... 708-956-8090  
MD Beltsville, Petricko, Inc. .... 301-937-4960  
MA Haverhill, Webb Distrib. .... 508-374-0100  
MN Minneapolis, Aero-Space Computer Supp.  
..... 612-884-4725  
NJ Nutley, Nationwide Circuit Prod. .... 201-667-1333  
NM Albuquerque, Betatron ..... 505-821-1122  
NY Elmsford, Multimetrics Co. .... 914-347-3667  
OH Miamisburg, E.C.I. Distrs. .... 513-866-3340  
TX Richardson, Zec Sls. .... 214-669-0895  
UT Salt Lake City, Standard Supply ..... 801-486-3371  
Can Mississauga, Ont., Rush Elex. Ltd. .... 416-677-7280

**CAL-POWER CORP.**, Standard Magnetic Corp., 7231  
Garden Grove Blvd., Ste. C, Garden Grove, CA 92641, Tel:  
714-379-5672, FAX: 714-379-5673; FSC No.: 94660;  
Empl: 15

**CAL-SCOPE**, Exceltron Inc., 473-707 Macara Ave.,  
Sunnyvale, CA 94086, Tel: 408-730-4573, 1-800-828-  
3547, FAX: 408-730-9537; Empl: 4; Sls. Mgr.: Michi A.  
Kawaguchi

**CAL-TEK ENGINEERING**, 36 Riverside Drive, Kingston,  
MA 02364, Tel: 617-585-5666; Empl: 5

**CAMBRIDGE AEROFLO, INC.**, 900 Mt. Laurel Circle,  
Shirley, MA 01464, Tel: 508-425-2346, TELEX: 948503,  
FAX: 508-425-2338; Empl: 25; Sls. Mgr.: George Lawton

**CAMBRIDGE ELECTRONICS LABORATORIES**, 20  
Chester St., Somerville, MA 02144, Tel: 617-629-2805,  
TELEX: 948580 RACE

**CAMBRIDGE TECHNOLOGY, INC.**, 23 Elm Street,  
Watertown, MA 02172, Tel: 617-923-1181, FAX: 617-924-  
8378; Empl: 33; Sls. Mgr.: Jack Kelley

**C.A.M. GRAPHICS CO., INC.**, 15 Ranick Dr. W., Amityville,  
NY 11701, Tel: 516-842-3400, FAX: 516-842-1005; FSC  
No.: 63203; Empl: 50; Sls. Mgr.: Karen Henderson

**CANADIAN THERMOSTATS & CONTROL DEVICES  
LTD.**, 8415 Mountain Sights, Montreal, PQ, Canada  
H4P2B8, Tel: 514-739-3274, TELEX: 05-825619, FAX:  
514-739-2902; Empl: 30; Sls. Mgr.: Richard W. Murk

**C & C JETRONIC, INC.**, 6 Waterbury Ct., Allentown, NJ  
08501, Tel: 609-259-8855, FAX: 609-259-9347; Empl: 30;  
Sls. Mgr.: C. Jerry Chiang ..... **A•2302; C•1274**

**C&D CHARTER POWER SYSTEMS**, 3043 Walton Rd.,  
P.O. Box 239, Plymouth Meeting, PA 19462, Tel: 215-828-  
9000, TELEX: 685 1059 CD BAT UW, FAX: 215-834-7306;  
Empl: 1500; Dist. Mgr.: Paul McLaughlin

**C & K COMPONENTS, INC.**, 2035 Hwy. 70 East,  
Clayton, NC 27520, Tel: 919-553-3131, ESYLNK:  
62951859, FAX: 919-553-4758; Empl: 150  
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| AL  | Huntsville, DHR Mktg, Inc.          | 205-536-9775 |
| AZ  | Phoenix, Reptronix, Ltd.            | 602-230-2630 |
| CA  | Auburn, Ewing-Foley, Inc.           | 916-885-6591 |
| CA  | Los Altos, Ewing-Foley, Inc.        | 415-941-4525 |
| CA  | Montrose, Luscombe Eng.             | 818-249-9000 |
| CA  | San Diego, Luscombe Eng.            | 619-689-0018 |
| CO  | Boulder, Front Range Mktg.          | 303-443-4780 |
| CT  | Hartford, D.A. Crowley & Assoc.     | 203-727-9007 |
| FL  | Altamonte Springs, DHR Mktg, Inc.   | 407-331-1199 |
| FL  | Lauderhill, DHR Mktg, Inc.          | 305-742-7555 |
| FL  | Tampa, DHR Mktg, Inc.               | 813-987-2950 |
| GA  | Duluth, DHR Mktg, Inc.              | 407-331-1199 |
| IL  | Elk Grove Vlg., Control Sls.        | 708-595-2110 |
| IA  | Cedar Rapids, Rep Assoc. Corp.      | 319-373-0152 |
| KY  | Louisville, Bromberg & Assoc.       | 502-456-1498 |
| MN  | Eden Prairie, Electro Mark          | 612-944-5850 |
| MS  | Pascagoula, DHR Mktg, Inc.          | 601-769-1122 |
| MO  | Bridgeport, Cen Tech, Inc.          | 314-291-4230 |
| MO  | Raytown, Cen Tech, Inc.             | 816-358-8100 |
| NH  | Amherst, D.A. Crowley & Assoc.      | 603-673-7050 |
| NM  | Albuquerque, Reptronix              | 505-292-1718 |
| NY  | Port Washington, Ashtec, Inc.       | 516-767-0336 |
| NY  | Syracuse, L.D. Allen, Inc.          | 315-437-8387 |
| NC  | Raleigh, DHR Mktg, Inc.             | 919-829-1970 |
| NC  | Statesville, DHR Mktg, Inc.         | 704-872-0242 |
| OR  | Beaverton, J.J. Backer Co.          | 503-627-0168 |
| PA  | Wayne, Quality Comps.               | 215-687-3553 |
| SC  | Greenville, DHR Mktg, Inc.          | 803-235-3594 |
| TN  | Knoxville, DHR Mktg, Inc.           | 615-690-0870 |
| TN  | Nashville, DHR Mktg, Inc.           | 615-331-2745 |
| TX  | Austin, R. F. Kimball Co., Inc.     | 512-443-5284 |
| TX  | Richardson, R. F. Kimball Co., Inc. | 214-231-3447 |
| UT  | Murray, Front Range Mktg.           | 801-288-2500 |
| WA  | Seattle, J.J. Backer Co.            | 206-285-1300 |
| WI  | Brookfield, Control Sls.            | 414-797-9500 |
| Can | Calgary, Alb., Tech-Trek, Ltd.      | 403-241-1719 |
| Can | Mississauga, Ont., Tech-Trek, Ltd.  | 416-238-0366 |
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| Can | Richmond, B.C., Tech-Trek, Ltd.     | 604-276-8735 |
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CANDELA LASER CORPORATION, 530 Boston Post  
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CrowbyCANFIELD CONNECTOR, Canfield Industries, 8433  
South Ave., Bldg. 1, Suite 4, Youngstown, OH 44514, Tel:  
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21012 Lassen St., Chatsworth, CA 91311, Tel: 818-718-  
6300, TELEX: 182341, TWX: 510-6013-836, FAX: 818-  
718-6312; Empl: 75; Sls. Mgr.: Paul Stennes; Dist. Mgr.:  
Sy Beck**Canon****FAX: 516-328-4609**CANON U.S.A., Electr. Comps. Div., One Canon  
Plaza, Lake Success, NY 11042, Tel: 516-488-6700; Empl:  
500; Sls. Mgr.: Ron Travis B-1924-1925

## Local Sales Offices &amp; Reps

CA Santa Clara, Canon USA, Comps. Div.  
408-982-5200, FAX: 408-986-1325CANYON ELCTRNS., INC., 2001 W. North Lane,  
Phoenix, AZ 85021, Tel: 602-944-4421, FAX: 602-943-  
0739; Sls. Mgr.: George J. Miltak B-1022CAPACITEC, INC., P.O. Box 819, 87 Fitchburg Rd., Ayer, MA  
01432, Tel: 508-772-6033, FAX: 508-772-6036; Empl: 9;  
Sls. Mgr.: Robert L. Foster

CAPACITOR SPECIALIST, See CSI Capacitors

CAPACITOR TECHNOLOGY PRODUCTS, INC., 5015  
Speedway Dr., Ft. Wayne, IN 46825, Tel: 219-484-9054,  
FAX: 219-484-8275; Sls. Mgr.: Kevin KurtzCAPCON, INC., 147 West 25th Street, New York, NY 10001,  
Tel: 212-243-6275, FAX: 212-645-0185; Sls. Mgr.: Ed  
Reeves; Dist. Mgr.: B. CameronCAPEWELL COMPONENTS, 46 Nooks Hill Rd.,  
Cromwell, CT 06416, Tel: 203-635-4045, FAX: 203-635-  
3631; Empl: 55; Sls. Mgr.: Chris HaelsenCAPINTEC INSTRUMENTS, 6 Arrow Rd., Ramsey, NJ  
07446, Tel: 201-825-9500, TELEX: 642375, FAX: 201-825-  
1336; FSC No.: 6666;6685; Empl: 150; Sls. Mgr.: Eric  
Weis; Dist. Mgr.: Robert KanzlerCAPITAL EQUIPMENT CORPORATION, 76 Blanchard  
Rd., Burlington, MA 01803, Tel: 617-273-1818, FAX: 617-  
273-9057; FSC No.: 3825; Sls. Mgr.: Richard P. Santos**CAPITOL  
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203-744-3300; FSC No.: 01548; Empl: 30 B-1687

## Local Sales Offices &amp; Reps

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| CA | Los Altos, Frauman Assoc.           | 415-941-0660 |
| CA | San Diego, Tauber & Assoc.          | 619-274-7247 |
| GA | Marietta, B-C Electr. Sls. Inc.     | 404-565-2088 |
| IL | Barrington, Richard Fisk Mktg, Inc. | 312-381-0653 |
| NY | Marcellus, Mullahy Sls, Inc.        | 315-685-6280 |
| OH | Dayton, Lessis Assoc.               | 513-294-1551 |
| PA | Southampton, Campbell Assoc.        | 215-322-6630 |

THE CARBORUNDUM COMPANY, Electric  
Products, P. O. Box 156, Niagara Falls, NY 14302, Tel:  
716-278-2521, FAX: 716-278-6270; Empl: 2000; Sls.  
Mgr.: G.G. Innocenti A-1904-1905CARCO ELECTRONICS, 195 Constitution Drive, Menlo  
Pk., CA 94025-1106, Tel: 415-321-8174, TELEX: 348482,  
FAX: 415-321-1890; FSC No.: 21875; Empl: 85; Sls. Mgr.:  
Ben F. SmithCARDINAL CONTROL CO., 110 Kensington Rd.,  
Kensington, CT 06037, Tel: 203-828-6379; Sls. Mgr.: LEP.  
Beatman; Dist. Mgr.: LEP. BeatmanCARDINAL PRODS., INC., 2840 Croddy Way, Santa Ana,  
CA 92704, Tel: 714-546-1224, FAX: 714-546-1254; Empl:  
20; Sls. Mgr.: Sandy JoynerCARDION ELCTRNS., See ISC Cardion Electronics,  
Inc.CARDION, INC., A Siemens Company, 100 Sunnyside  
Blvd., Woodbury, NY 11797-2925, Tel: 516-921-7300,  
TELEX: 221683 CARD, FAX: 516-921-7330; FSC No.:  
12909; Empl: 350; Sls. Mgr.: A.C. HecklerCARDON CORP., 222 Berkeley St., Boston, MA 02116, Tel:  
617-267-1760, FAX: 617-267-4621; Empl: 10CAREY ELECTRONICS ENGINEERING CO., 1880  
Clifton Ave., Springfield, OH 45505, Tel: 513-323-6300;  
Empl: 10-25CARIBBEAN ASSEMBLIES, INC., 404 State Rd. 434,  
Wintersprings, FL 32708, Tel: 407-327-0602, FAX: 407-  
327-0602; Empl: 200CARISTRAP INTERNATIONAL, INC., 1760 Fortin Blvd.,  
Chomedey, Laval, Quebec, Canada H7S1N8, Tel: 1-800-  
361-9466, TELEX: 05-24463; FSC No.:  
05-24463; 514-663-1520; Empl: 50; Sls. Mgr.: Audrey  
Karass; Dist. Mgr.: Audrey KarassCARITRONICS INC., PO Box 821 Dept. E89M, West  
Caldwell, NJ 07007, Tel: 201-575-8916; Empl: 30; Sls.  
Mgr.: Richard NelsonCARLINGSWITCH, INC., 60 Johnson Avenue, Plainville,  
CT 06062-1177, Tel: 203-793-9281, 1-800-243-8556,  
FAX: 203-793-9231; Empl: 1200; Sls. Mgr.: Alex  
Jamieson, Natl. Sls. Mgr.; Dist. Mgr.: Chris Dostaler  
B-1350-1351, 1688-1691Call toll free 1-800-243-8556 for locations of  
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## Local Sales Offices &amp; Reps

|    |                                 |              |
|----|---------------------------------|--------------|
| AZ | Scottsdale, Advent Comp. Corp.  | 602-481-0044 |
| CA | Tustin, Schoenbachler-Dobson    | 714-544-1888 |
| CO | Denver, Advent Comp. Corp.      | 303-455-1985 |
| CT | Plainville, Carlingswitch, Inc. | 203-793-9281 |
| FL | Tampa, Florida Comp. Sls. Inc.  | 813-873-3622 |
| IN | Indianapolis, D-M Assoc.        | 317-842-4424 |
| KS | Shawnee, Mertens Co.            | 913-432-9323 |



|    |                                            |              |
|----|--------------------------------------------|--------------|
| MD | Gaithersburg, Naudain Assocs. ....         | 301-258-5040 |
| MA | Hopkinton, Berkshire Elctms. ....          | 508-435-9356 |
| MN | Crystal, Technical Comp. ....              | 612-561-5556 |
| MM | Farmington Hills, R.C. Merchant .....      | 313-476-4600 |
| MO | Clayton, Mertens Co. ....                  | 314-993-6600 |
| NH | Nashua, Berkshire Elctms. ....             | 603-888-1668 |
| NJ | Burlington, VDE Elctms. ....               | 609-387-9331 |
| NJ | Eatonstown, Pacent Engrg. ....             | 908-264-2202 |
| NY | Great Neck, Pacent Engrg. ....             | 516-482-4678 |
| NY | Rochester, Application Specialists .....   | 716-586-6226 |
| NC | Siler City, Crossroads Elctms. Assoc. .... | 919-742-2372 |

|                           |                                       |                    |
|---------------------------|---------------------------------------|--------------------|
| <i>Local Distributors</i> |                                       |                    |
| AL                        | Montgomery, Southern Controls .....   | 205-277-5030       |
| AZ                        | Tempe, L-Comp, Inc. ....              | 602-730-1633       |
| AR                        | Little Rock, Carlton Bates .....      | 501-562-9100       |
| CA                        | Anaheim, Control Design Supp. ....    | 714-821-1516       |
| CA                        | Chatsworth, POCO Sls. ....            | 818-700-8727       |
| CA                        | Cupertino, Cal Switch .....           | 408-279-8848       |
| CA                        | Gardena, Cal Switch .....             | 213-770-2330       |
| CA                        | Hayward, Electro Comps. ....          | 415-783-5800       |
| CA                        | Los Angeles, Electric Switches .....  | 213-660-1310       |
| CA                        | San Carlos, Campbell & George .....   | 415-594-1994       |
| CA                        | San Diego, Cal Switch .....           | 619-231-6740       |
| CA                        | San Diego, Control Design .....       | 619-457-9822       |
| CA                        | Van Nuys, Wes-Garde Comps. ....       | 818-786-3724       |
| CT                        | Hartford, Wes-Garde Comps. ....       | 203-527-7705       |
| CT                        | Wallington, Sager Elec. Supp. ....    | 203-265-4600       |
| FL                        | Lakeland, Wes-Garde Comps. ....       | 813-644-7564       |
| FL                        | Orlando, Sager Elec. Supp. ....       | 407-240-3114       |
| ID                        | Boise, Radar Elec. ....               | 208-336-2227       |
| IL                        | Carol Stream, Wes-Garde Comps. ....   | 708-653-1460       |
| IL                        | Chicago, Leeds-Electro Comp. ....     | 312-625-3800       |
| IL                        | Chicago, Newark Elctms. ....          | 800-367-3573       |
| IL                        | Wheeling, Hawk Elctms. ....           | 708-459-4030       |
| IN                        | Indianapolis, Mar Elctms. ....        | 317-633-6699       |
| IA                        | Davenport, Industrial Eng. Supp. .... | 319-323-9721       |
| KS                        | Overland Park, Wes-Garde Comps. ....  | 913-266-2718       |
| LA                        | Shreveport, Carlton Bates Co. ....    | 318-636-9975       |
| MD                        | Columbia, Sager Elec. Supp. ....      | 410-995-4900       |
| MD                        | Jessup, Treeco Sls, Inc. ....         | 1-800-638-0582     |
| MA                        | Hingham, Sager Elec. Supp. ....       | 617-749-6700       |
| MI                        | St. Clair Shores, Spemco ....         | 313-771-2700       |
| MI                        | Minneapolis, Bergquist Co. ....       | 612-835-2322       |
| MI                        | Minneapolis, Stark Elctms. ....       | 612-332-1325       |
| IL                        | Lincolnshire, Grainger ....           | 708-913-8333       |
| MO                        | St. Louis, Wes-Garde Comp. ....       | 314-567-7776       |
| NH                        | Mt. Laurel, Wes Garde Comps. ....     | 609-778-8190       |
| NH                        | Nashua, Wes-Garde Comp. ....          | 603-880-1971       |
| NH                        | Salem, Sager Elec. Supp. ....         | 603-898-1348       |
| NJ                        | Oakland, Relay Specialties .....      | 201-337-1000       |
| NY                        | Hempstead, Sager Elec. Supp. ....     | 516-348-1300       |
| NY                        | Rochester, Simcona Elctms. Corp. .... | 716-328-3230       |
| NY                        | Woodside, Switches Unltd. ....        | 718-478-5000       |
| NC                        | Raleigh, Sager Elec. Supp. ....       | 919-850-9550       |
| OH                        | Cincinnati, Schuster .....            | 513-489-1400       |
| OH                        | Twinsburg, Schuster .....             | 216-425-8134       |
| OH                        | Westerville, Wes-Garde Comps. ....    | 614-885-0319       |
| OK                        | Oklahoma City, Carlton Bates Co. .... | 405-681-4446       |
| OK                        | Tulsa, Carlton Bates Co. ....         | 918-250-1626       |
| OR                        | Portland, Radar Elec. Co. ....        | 503-232-3404       |
| OR                        | Wilsonville, Wes-Garde Comps. ....    | 503-682-1333       |
| PA                        | Mars, Sager Elec. Supp. ....          | 412-772-2233       |
| PA                        | McKean, Advacom, Inc. ....            | 814-476-7774       |
| PA                        | Philadelphia, Sager Elec. ....        | 215-464-4336       |
| SC                        | Columbia, Dixie Elctms. ....          | 803-779-5332       |
| TX                        | Dallas, Wes-Garde Comps. ....         | 214-357-1768       |
| TX                        | Ft. Worth, Allied Elctms. ....        | 817-595-3500       |
| WA                        | Bothell, Cypress Elctms. ....         | 206-483-1144       |
| WA                        | Seattle, Radar Elec. ....             | 206-282-2511       |
| WA                        | Spokane, Radar Elec. ....             | 509-747-3053       |
| WI                        | Cedarburg, A.A. Elec. ....            | 414-377-8000       |
| WI                        | Waukesha, Hawk Elctms. ....           | 414-547-4457       |
| Int'l                     | Argentina, Reycom Electronica .....   | 011-54-1-11-1722   |
| Int'l                     | Brazil, Hitech Electronica .....      | 011-55-11-531-9355 |
| Int'l                     | Mexico City, Mexico, IMEX .....       | 011-525-676-9220   |
| Can                       | Toronto, Deskin Sls. ....             | 800-268-9832       |

CARLON, A Div. of Lamson & Sessions, 25701 Science Park Drive, Cleveland, OH 44122, Tel: 216-831-4000, TELEX: 98-5300 BCWD, FAX: 216-831-3208; Empl: 120

CAROL CABLE CO., 4 Tessenner Drive, Highland Heights, KY 41076, Tel: 606-572-8303, 606-572-8000, FAX: 800-547-8249; FSC No: 53909; Sls. Mgr.: Charles Brischler

CAROLINA STEEL & WIRE, P.O. Box 829, Lexington, SC 29073-0829, Tel: 803-359-5501, TELEX: 573355, FAX: 803-359-1201; FSC No: 72954; Empl: 115; Sls. Mgr.: John T. Floyd

CARPENTER TECHNOLOGY CORP., P.O. Box 14662, Reading, PA 19612, Tel: 215-208-2000, TELEX: 836-432; Empl: 3,600; Sls. Mgr.: R.C. Hazen

CARROLL TOUCH, INC., AMP, Inc., P.O. Box 1309, Round Rock, TX 78680, Tel: 512-244-3500, FAX: 512-244-7040; Empl: 65; Sls. Mgr.: Bob Dehm

CARSON MANUFACTURING CO., INC., 5451 N. Rural St., P. O. Box 20464, Indianapolis, IN 46220, Tel: 317-257-3191, FAX: 317-254-2667; Empl: 85

CARTER MANUFACTURING CORPORATION, 237 Sugar Road, Bolton, MA 01740, Tel: 508-779-5501, FAX: 508-779-6166; FSC No: 03929; Empl: 30; Sls. Mgr.: Leo T. Nichols, VP Sls.

CARTER MOTOR, 400 Stagecoach Trail, Warren, IL 61087-0647, Tel: 815-745-2100, FAX: 815-745-2135; Sls. Mgr.: John W. Smith III

CASCOR, INC., RJB Industries, Inc., 529 Commercial Blvd., Naples, FL 33942, Tel: 813-643-6616, FAX: 813-643-3792; Empl: 10; Sls. Mgr.: Barry J. Noll; Dist. Mgr.: Barry J. Noll

CASEMAKER, Stebco Industries, Inc., 1020 West 40th Street, Chicago, IL 60609, Tel: 312-254-1221, FAX: 312-254-4030; FSC No: 36-2405334; Empl: 25

CASIO LCD SALES, Kanematsu USA Inc., 543 W. Algonquin Rd., Arlington Hgts., IL 60005, Tel: 708-981-5692, FAX: 708-981-6764; Sls. Mgr.: David Ross; Dist. Mgr.: David Ross

CASSO-SOLAR CORP., P.O. Box 163, 230 U.S. Route 202, Pomona, NY 10970, Tel: 914-354-2500, TELEX: 475-4099, FAX: 914-362-1856; Empl: 50; Sls. Mgr.: R. Majka

CASTALL INC., Weymouth Ind. Pk., E. Weymouth, MA 02189, Tel: 617-337-6075, FAX: 617-337-2820; FSC No: 04-2459700; Empl: 32; Sls. Mgr.: Charles Howland; Dist. Mgr.: Joseph Mc Donough

|                                       |                             |              |
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| <i>Local Sales Offices &amp; Reps</i> |                             |              |
| CA                                    | Auburn, Castall .....       | 916-889-8802 |
| MN                                    | Circle Pines, Castall ..... | 612-786-7028 |
| PA                                    | Emmaus, Castall .....       | 215-965-2911 |
| TX                                    | Spring, Castall .....       | 713-320-2445 |

CATALYST RESEARCH, Mine Safety Appliances Co., Inc., 3706 Crondall La., Owings Mills, MD 21117, Tel: 410-356-2400, TELEX: 87768, FAX: 410-581-0346; FSC No: 00681; Empl: 275; Sls. Mgr.: Mark Dilliplaine; Dist. Mgr.: Edward S. Hatch, Jr.



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C-1538-1539, 1722-1723

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|---------------------------|------------------------------------------------------|--------------|
| <i>Local Distributors</i> |                                                      |              |
| CA                        | Anaheim, Cal-Fasteners Inc. ....                     | 714-779-1744 |
| CA                        | Garden Grove, H.W. Eckhardt Corp. ....               | 714-891-4431 |
| CA                        | Sunnyvale, Olander Co. ....                          | 408-735-1850 |
| CO                        | Palisade, Jay-Max Sls. ....                          | 303-464-5880 |
| FL                        | Longwood, Merit Fasteners Corp. ....                 | 407-331-4815 |
| GA                        | Conyers, Gateway Indl. Supp. ....                    | 412-745-7900 |
| GA                        | Norcross, Georgia Indl. Fasteners .....              | 404-448-6375 |
| IL                        | Alsip, M & E Comps. ....                             | 708-396-0700 |
| IL                        | Crystal Lake, Sub-Sem Inc. ....                      | 815-459-4139 |
| IN                        | Fl. Wayne, Wayne Fasteners Inc. ....                 | 219-484-0393 |
| MD                        | Baltimore, Whitney Distrs., Inc. ....                | 301-944-8080 |
| MI                        | Kentwood, Select Fasteners Fast, Inc. ....           | 616-698-1000 |
| MN                        | Minneapolis, Patton Indl. Prods., Inc. ....          | 612-944-9120 |
| MS                        | Jackson, Sunbelt Bolt & Screw Co., Inc. ....         | 601-354-4215 |
| OH                        | Solon, Fasteners Tool & Supp. ....                   | 216-248-2710 |
| OH                        | West Chester, BGR Inc. ....                          | 513-771-9811 |
| OR                        | Beaverton, Oregon Connector Co. ....                 | 503-628-1600 |
| PA                        | Huntingdon Valley, Plastic & Metal Prods. Corp. .... | 215-322-2000 |
| TN                        | Knoxville, Knoxville Bolt & Screw .....              | 615-573-1991 |
| TN                        | Nashville, Capitol City Bolt & Screw, Inc. ....      | 615-254-8707 |
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CATEL TELECOMMUNICATIONS, 4050 Technology Pl., Fremont, CA 94537, Tel: 510-659-8988, FAX: 510-651-8437; FSC No: 55788; Empl: 40; Sls. Mgr.: See Reg. Sls. Mgrs.

CATON CONNECTOR CORP., Jones River Indl. Pk, 20 Wapping Rd., Kingston, MA 02364, Tel: 617-585-4315, FAX: 617-585-2973; FSC No: 52196; Empl: 22; Sls. Mgr.: D. Galambos **C-1275-1277, 1725**

All of California and Western States call Baribeault Assocs. at 707-429-6095. All New England States call DC Assocs. at 617-585-5085.

Local Sales Offices & Reps  
FL Indian Harbor Bch, Bill Toy Assoc. .... 407-773-5805  
NJ Teaneck, DC Assocs. .... 201-692-7924

CAT WIRE AND CABLE CORP., 1139 NW 72nd St., Miami, FL 33150, Tel: 305-836-3600, FAX: 305-835-0974; Empl: 12; Sls. Mgr.: Hilda Manten

# CITIZEN

**FAX: 310-828-0846**

CBM AMERICA CORP., 2020 Santa Monica Blvd. Ste. 410, Santa Monica, CA 90404, Tel: 310-828-8245, TELEX: 182508; Empl: 20; Dist. Mgr.: Robin Pierce **D-1084-1085**

Local Distributors  
CA Los Angeles, MFI .... 310-447-6633  
CA Los Angeles, Peripheral Resources .... 310-552-3888  
CA Sunnyvale, Omniprint .... 408-745-6400  
FL Boca Raton, Metropolitan Sls. .... 800-257-6418  
IN Indianapolis, Metropolitan Sls. .... 800-262-9994  
NY Hewlett, Metropolitan Sls. .... 516-599-7900  
TX Dallas, Ormini-Pro Elctms. .... 214-713-9000  
TX Dallas, R Squared Elctms. .... 214-406-1117  
TX Houston, R Squared .... 713-820-3210  
Can Concord, CBC .... 416-660-1616  
Can Ottawa, Prime Peripherals .... 613-723-3111  
Can Ottawa, Ont, Prime Peripherals .... 613-782-2430  
Can St. Laurent, Que, Prime Peripherals .... 514-956-7553  
Can Toronto, TLS .... 416-479-1911

C-COR ELCTRNS, INC., 60 Decibel Rd., State College, PA 16801, Tel: 814-238-2461, 800-233-2267, FAX: 814-238-4065; FSC No: 12775; Empl: 535; Sls. Mgr.: J. Hastings-CATV/S-Day-Mktg.; Dist. Mgr.: Ed Kopakowski

CCW INDUSTRIES INC., 7 Trowbridge Drive, Bethel, CT 06801, Tel: 203-744-6715, FAX: 203-778-6478; Empl: 16; Sls. Mgr.: Nadeem I. Mirza

CDRL DATA, INC., 21642 North 9th Ave., Suite 103, Phoenix, AZ 85027-2823, Tel: 602-582-8844, FAX: 602-582-2199; FSC No: 50606; Empl: 25; Sls. Mgr.: Michael Dale

CEC, 330 W. Taft Ave., Orange, CA 92665, Tel: 714-637-2970, FAX: 714-637-8654; Empl: 58

# CEC

**FAX: 516-582-4922**

CEC ELECTRONICS CORP., 1324 Motor Pkwy., Hauppauge, NY 11788, Tel: 516-582-4422; FSC No: 57973; Empl: 100; Sls. Mgr.: John Carroll

CEC INSTRUMENTS, Imo Industries Inc., 955 Overland Ct., San Dimas, CA 91773, Tel: 909-394-4410, TELEX: 200445 RCA, FAX: 909-394-4400; Empl: 200; Sls. Mgr.: Jim Eakins

CELCO, 70 Constantine Dr., Mahwah, NJ 07430, Tel: 201-327-1123, FAX: 201-327-7047; FSC No: 05954; Empl: 25; Sls. Mgr.: Art Weirgen, Engrg. Sls. Mgr.

CELESCO TRANSDUCER PRODS., INC., 7800 Deering Ave., Canoga Pk., CA 91309-7964, Tel: 818-884-6860, FAX: 818-340-1175; Sls. Mgr.: Jim Bishop

CELESTION INDUSTRIES, INC., 89 Doug Brown Way, Holliston, MA 01746, Tel: 508-429-6706, FAX: 508-429-2426; Sls. Mgr.: Brian Coviello; Dist. Mgr.: Bill Fox



**FAX: 215-363-8719**

CELL-CON, INC., 305 Commerce Dr., Exton, PA 19341, Tel: 215-363-8552; Empl: 14; Sls. Mgr.: Gene Kiley Jr. **D-1431-1433**

Local Sales Offices & Reps  
CT Essex, Winslow Elec. Co. .... 203-767-8229

Local Distributors  
PA Bensalem, Scott's Emergency Lighting .... 215-639-1777

CENTECH CORPORATION, 200 W. 88th St., Minneapolis, MN 55420, Tel: 612-881-8245, TWX: 431-0015-L8M, FAX: 612-881-4137

CENTENT CO., 3879 S. Main St., Santa Ana, CA 92707, Tel: 714-979-6491; Empl: 14; Sls. Mgr.: A. Freimanis

CENTRALAB, See Philips

CENTRAL DATA CORP., 1602 Newton Dr., Champaign, IL 61821, Tel: 217-359-8010, FAX: 217-359-6904; Empl: 50; Sls. Mgr.: Earl D. Jacobsen; Dist. Mgr.: Avon Morgan

CENTRAL DECAL CO., INC., 6843 W. 60th Place, Chicago, IL 60638, Tel: 312-586-2012; Empl: 110; Sls. Mgr.: Robert Kaplan

CENTRAL SEMICONDUCTOR CORP., 145 Adams Ave., Hauppauge, NY 11788, Tel: 516-435-1110, FAX: 516-435-1824; Empl: 50



**FAX: 805-499-7770**

CENTRONIC, INC., THE MORGAN CRUCIBLE COMPANY PLC, 2088 Anchor Ct., Dept. E, Newbury Park, CA 91320-1702, Tel: 805-499-5902; FSC No: 63334; Empl: 30; Sls. Mgr.: George Pankau, CEO; Dist. Mgr.: Yuval Tamari, Natl. Sls. Mgr. **B-1312-1315**

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CA Newbury Pk., Centronic, Inc., E-O Comps. Div. .... 805-499-5902

Local Distributors  
IL Des Plaines, BEA Electro-Optics .... 708-298-1420

CENTURION INTERNATIONAL, INC., 3425 N. 44 St., Lincoln, NE 68504, Tel: 800-228-4563, FAX: 800-848-3825; Empl: 400; Sls. Mgr.: Steven C. Bowles; Dist. Mgr.: Bob Bonebright

C.E. PRECISION ASSEMBLIES, INC., 101 S. McKerny Ave., Chandler, AZ 85226, Tel: 602-940-0740, FAX: 602-961-4754; FSC No: 67810; Empl: 24; Sls. Mgr.: Henry Richards

CERAMASEAL, Box 260, New Lebanon, NY 12125, Tel: 518-794-7800, TELEX: 14-5442, FAX: 518-794-8080; FSC No: 07601; Empl: 78; Sls. Mgr.: Renee A. Nichols **C-1279**

Local Sales Offices & Reps  
AZ Phoenix, J. F. Hurlbut Co. .... 602-952-2079  
CA Mission Viejo, Avtec .... 714-855-2800  
CA San Jose, Exous .... 408-249-3526  
CO Golden, J. F. Hurlbut Co. .... 303-279-7796  
IL Des Plaines, Byron Ellis Assoc., Inc. .... 708-298-7626  
KS Lenexa, Midtec Assocs. .... 913-541-0505  
MD Baltimore, Wafer, Spindler & Assoc. .... 410-744-1133  
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PA Willow Grove, Tech. Sls. Assoc. .... 215-784-0170

TX Dallas, THT Sls. .... 214-783-1501  
WA Seattle, J.J. Assocs. .... 206-246-6619

CERAMAWIRE, Box 1084, Cranford, NJ 07016, Tel: 908-276-1170; Empl: 4; Sls. Mgr.: Edward Hamilton

CERAMIC DEVICES INC., 8145 Ronson Rd., San Diego, CA 92111, Tel: 619-560-7575, FAX: 619-560-4906; FSC No: 66230; Empl: 40; Sls. Mgr.: Dick Guerena

CERAMIC MAGNETICS, INC., 16 Law Dr., Fairfield, NJ 07004, Tel: 201-227-4222, FAX: 201-227-6735; Empl: 90

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CET TECHNOLOGY, 26 Winslow Farm Road, Hudson, NH 03051, Tel: 603-883-5912, FAX: 603-882-8348; Empl: 125

CGRS MICROTECH, P.O. Box 102L, Langhorne, PA 19047, Tel: 215-757-0284; Empl: 5; Sls. Mgr.: J. Swope; Dist. Mgr.: J. Swope

CHACE PRECISION METALS, INC., 1704 Barnes St., Reidsville, NC 27320, Tel: 919-342-2381, TELEX: 574493, FAX: 919-342-4012; Empl: 200; Sls. Mgr.: Pat J. Urban

CHA INDUSTRIES, 4201 Business Center Dr., Fremont, CA 94538, Tel: 510-683-8554, FAX: 510-683-3848; Sls. Mgr.: John Levin

CHALCO ENGRG. CORP., Chalco Industries, Inc., 15126 S. Broadway, Gardena, CA 90248-1898, Tel: 213-321-0121, 213-323-5525, FAX: 213-323-0405; Empl: 95; Sls. Mgr.: Steven Kierman, Dir. Sls.



**FAX: 708-451-7585**

CHAMPION TECHNOLOGIES, INC., 2553 N. Edgington, Franklin Park, IL 60131, Tel: 708-451-1000; Empl: 140 **A-1347**

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AZ Scottsdale, Integrated Sys. & Dvc. Sls. .... 602-951-1172  
CA Orange, Prism Assocs. .... 714-283-8744  
CA San Jose, Kottmeier Assocs. .... 408-371-8700  
FL Orlando, Comp. Design Mkt. .... 407-240-3903  
CA Atlanta, L & D, Inc. .... 404-395-7079  
IL Glen Ellyn, Lincoln Hodges .... 708-469-6750  
MD Columbia, Third Wave Solutions .... 301-290-5990  
MA Natick, Wayland Engrg. Sls. .... 508-655-6080  
MN Bloomington, Horizon .... 612-884-6515  
CO Littleton, Contec Mktg. Inc. .... 303-973-8490  
NY Great Neck, Trionic Assoc. .... 516-466-2300  
PA Norristown, Rivco January Inc. .... 215-631-1414  
TX Dallas, Sunbelt Comps. .... 214-248-8000  
Can Brampton, Ont., Cantec Reps. Inc. .... 416-791-5922  
WA Redmond, Electronic Mktg. Grp. .... 206-882-0962  
IL Franklin Pk., Champion Technlgs. .... 708-451-1000

Local Distributors  
CA Manhattan Bch, Prime Electro .... 310-379-3642  
CA Reseda, Jan Dvcs. .... 818-708-1100  
CA San Jose, Passive Technlgs. .... 408-435-5566  
IL Palatine, OHM Elctms. .... 708-359-5500  
NY Bayshore, Brookdale Elctms. .... 516-242-8033

CHAMPLAIN CABLE CORP., Huber & Suhner(USA)Corp., 12 Hercules Dr., Colchester, VT 05446, Tel: 802-655-2121, FAX: 802-655-2025; FSC No: 05973; Empl: 3000; Sls. Mgr.: M.Brennan; Dist. Mgr.: J. Brooks

CHANDLER PRODUCTS, 1491 Chardon Rd., Cleveland, OH 44117, Tel: 216-481-4400; Sls. Mgr.: Nick Andos

CHANNEL INDUSTRIES, 839 Ward Dr., Santa Barbara, CA 93111, Tel: 805-967-0171, TELEX: 658416, FAX: 805-683-3420; Empl: 75

CHAPMAN CORP., P.O. Box 10700, 125 Presumpscot St., Portland, ME 04104, Tel: 207-773-4726, FAX: 207-775-1369; Empl: 42; Sls. Mgr.: John Goodwin; Dist. Mgr.: Barry Godowsky

CHASSIS-TRAK, See General Devices



**CHATHAM CONTROLS**, 33 River Rd., Chatham, NJ  
07928, Tel: 201-635-8892, FAX: 201-635-6345; FSC No.:  
04814; Empl: 11

**CHATSWORTH DATA CORPORATION**, 20710  
Lassen St., Chatsworth, CA 91311, Tel: 818-341-9200;  
Empl: 80; Sls. Mgr.: Hank Boehm ..... D-1243

**CHAUVIN ARNOUX**, Chauvin Arnoux-France, 15  
Faraday Dr., Dover, NH 03820, Tel: 603-749-6434, FAX:  
603-742-2346

**CHEMTRONICS INC.**, 681 Old Willets Path, Hauppauge,  
NY 11788, Tel: 516-582-3322, 800-645-5244, TELEX:  
968567, FAX: 516-582-3046; FSC No.: 21267; Empl: 112;  
Sls. Mgr.: Louis Friedman; Dist. Mgr.: Scott Friedman



**FAX: 714-838-4742**

**CHEROKEE INTERNATIONAL, INC., Core**  
Industries, 2841 Dow Avenue, Tustin, CA 92680-7211,  
Tel: 714-544-6665, TWX: 510-101-0493; Empl: 425; Sls.  
Mgr.: Dennis Pouliot ..... D-1625-1629

**Local Sales Offices & Reps**

|    |                                          |              |
|----|------------------------------------------|--------------|
| FL | Del Ray Beach, Phelps Assoc.             | 407-276-7591 |
| GA | Atlanta, Naylor Assoc.                   | 404-373-5036 |
| AZ | Phoenix, Chaparral Elctms.               | 602-996-5909 |
| IL | Downers Grove, Richmar Elctms.           | 708-968-0118 |
| IL | Prairie VI, Crosslink Elctms.            | 913-649-7100 |
| IN | Indianapolis, Richmar Elctms. Corp.      | 317-846-6383 |
| KS | Prairie Village, Crosslink Elctms.       | 913-649-7100 |
| MN | Minneapolis, Robt. W. Marshall Co., Inc. | 612-929-0457 |
| NH | Amherst, Bennetron                       | 603-880-7008 |
| NJ | Englewood, Sprung/Nussbaum               | 201-569-5666 |
| NJ | Lawrenceville, DVS Co.                   | 609-896-1112 |
| NC | Resch Triangle Pk., Naylor Assocs., Inc. | 919-544-6630 |
| OH | Richfield, Geotronics                    | 216-659-6100 |
| OH | Twotwood, Geotronics, Inc.               | 216-659-6100 |
| OR | Beaverton, R-Tron                        | 503-645-4323 |
| CA | Allison Pk., Geotronics, Inc.            | 412-487-1770 |
| TX | Dallas, Richmar Elctms.                  | 214-424-8388 |
| VA | Charlottesville, DVS Co.                 | 804-973-0303 |
| WA | Redmond, R-Tron                          | 206-557-0851 |



**FAX: 708-360-3566**

**CHERRY ELECTRICAL PRODUCTS, Cherry**  
Corporation, 3600 Sunset Avenue, Waukegan, IL  
60087, Tel: 708-662-9200; Empl: 1,000; Dist. Mgr.:  
George Di Martino ..... B-1023, 1693-1698, 1824

**Local Sales Offices & Reps**

|    |                                                    |              |
|----|----------------------------------------------------|--------------|
| AZ | Phoenix, O'Donnell Assocs. S.W.                    | 602-944-9542 |
| AR | Little Rock, Carlton-Bates                         | 501-562-9100 |
| CA | Culver City, Combined Svcs.                        | 213-558-2859 |
| CA | San Diego, O'Donnell Assocs., Inc.                 | 619-578-1645 |
| CA | San Jose, O'Donnell Assocs. N., Inc.               | 408-456-2950 |
| CA | Torrance, O'Donnell Assocs., Inc.                  | 310-781-2255 |
| CT | Branford, Coakley, Boyd & Abbott, Inc.             | 203-481-2218 |
| FL | Orlando, So. Atlantic Comp. Sls.                   | 407-857-3650 |
| GA | Norcross, So. Atlantic Comp. Sls.                  | 404-447-6154 |
| IL | Schaumburg, Martan, Inc.                           | 708-303-5660 |
| IL | Waukegan, Cherry Elctrl Prods.                     | 708-662-9200 |
| IN | FT Wayne, Menze Sls., Inc.                         | 219-747-5616 |
| IA | Cedar Rapids, Dy-Tronix, Inc.                      | 319-377-8275 |
| KS | Wichita, Dy-Tronix, Inc.                           | 316-838-0884 |
| MA | Frammingham, Coakley, Boyd & Abbott, Inc.          | 508-802-0800 |
| MI | Farmington Hills, Cherry Elctrl Prods., Automotive | 313-477-4477 |
| MI | Kentwood, Miltimore Sls., Inc.                     | 616-554-9292 |
| MI | Novi, Miltimore Sls., Inc.                         | 313-349-0260 |
| MI | St. Paul, Cahill, Schmitz & Cahill                 | 612-646-7217 |
| MO | Brigetton, Dy-Tronix, Inc.                         | 314-291-4777 |
| NJ | Pitman, Colrud Corp.                               | 609-589-5866 |
| NJ | W. Caldwell, Grimm, Siegel Assocs., Inc.           | 201-575-9300 |
| NM | Albuquerque, O'Donnell Assocs., S.W.               | 505-889-4522 |

|     |                                            |              |
|-----|--------------------------------------------|--------------|
| NY  | Pittsford, Elcom Sls., Inc.                | 716-385-1400 |
| NY  | Skaneateles, Elcom Sls., Inc.              | 315-685-8967 |
| NC  | Raleigh, So. Atlantic Comp. Sls.           | 919-859-9970 |
| OK  | Catoosa, Comptech Sls., Inc.               | 918-266-1966 |
| OR  | Portland, Venture Elctms.                  | 503-624-0617 |
| TX  | Austin, Comptech Sls., Inc.                | 512-343-0300 |
| TX  | Houston, Comptech Sls., Inc.               | 713-492-0005 |
| TX  | Irving, Comptech Sls., Inc.                | 214-751-1181 |
| VA  | Chantilly, Colrud Corp.                    | 703-904-0240 |
| WA  | Bellevue, Venture Elctms.                  | 206-454-4594 |
| Can | Calgary, Alberta, r.n. Longman Sls., Inc.  | 403-295-6324 |
| Can | Kirkland, Que., r.n. Longman Sls., Inc.    | 514-694-3911 |
| Can | Mississauga, Ont., r.n. Longman Sls., Inc. | 416-670-8100 |
| Can | Neapean, Ont., r.n. Longman Sls., Inc.     | 613-564-0100 |

**Local Distributors**

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Birmingham, Ack Radio Supp. Co.     | 205-322-0588 |
| AL | Huntsville, Powell Elctms.          | 205-837-5300 |
| AL | Huntsville, Time Elctms.            | 205-721-1134 |
| CA | Inglewood, Newark Elctms.           | 213-671-7377 |
| CA | San Jose, Powell Elctms.            | 408-943-9020 |
| AZ | Tempe, L Comp, Inc.                 | 800-325-1393 |
| AZ | Tempe, Time Elctms.                 | 602-967-2000 |
| AR | Little Rock, Carlton-Bates          | 501-562-9100 |
| CA | Agoura Hills, Time Elctms.          | 818-707-2890 |
| CA | Chatsworth, Time Elctms.            | 818-998-7200 |
| CA | Gardena, Cal Switch                 | 310-770-2330 |
| CA | Los Angeles, Elec. Switches         | 213-660-1310 |
| CA | Oakland, Brill Elctms.              | 510-834-5888 |
| CA | Sacramento, Integrated Elec.        | 916-363-6030 |
| CA | San Diego, Time Elctms.             | 619-674-2800 |
| CA | Sunnyvale, Target Elctms.           | 408-733-0384 |
| CA | Sunnyvale, Time Elctms.             | 408-734-9888 |
| CA | Torrance, Time Elctms.              | 213-320-0880 |
| CA | Tustin, Time Elctms.                | 714-669-0100 |
| CT | Wallington, Cronin Elctms.          | 203-265-3134 |
| CT | Wallington, Sager Elctms.           | 203-265-4600 |
| CA | Yorba Linda, Target Elctms.         | 714-692-1630 |
| CO | Arvada, Denver Beta Wintronics      | 303-431-7161 |
| CO | Colorado Springs, Avnet/Ampex Store | 719-637-0055 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| CO | Denver, Integrated Elec.            | 303-292-6121 |
| CO | Denver, Newark Elctms.              | 303-757-8531 |
| CO | Englewood, Time Elctms.             | 303-721-8882 |
| CT | Hartford, Wes-Garde Comps. Grp.     | 203-527-7705 |
| CT | Wallington, G.R.S. Midan Elec. Inc. | 203-265-2077 |
| FL | FT. Lauderdale, KSM Elctms.         | 305-971-5900 |
| FL | FT. Lauderdale, Powell Elctms.      | 305-484-8377 |
| FL | FT. Lauderdale, Repton Elctms.      | 305-979-8227 |
| FL | FT. Lauderdale, Time Elctms.        | 305-484-1778 |
| FL | Lakeland, Wes-Garde Comps. Grp.     | 813-644-7564 |
| FL | Orlando, Sager Elctms.              | 407-354-1130 |
| FL | Orlando, Time Elctms.               | 407-841-6565 |
| FL | Tampa, Repton Elctms.               | 813-855-4656 |
| GA | Atlanta, Ack Radio Supp. Co.        | 404-351-6340 |
| GA | Atlanta, Electro Air Corp.          | 404-351-3545 |
| GA | Norcross, Sager Elctms.             | 404-446-0085 |
| GA | Norcross, Time Elctms.              | 404-368-0969 |
| IL | Champaign, Klaus Radio, Inc.        | 217-356-1896 |
| IL | Chicago, Newark Elctms.             | 312-784-5100 |
| IL | Palatine, OHM Elctms., Inc.         | 708-359-5500 |
| IL | Schaumburg, Time Elctms.            | 708-303-3000 |
| IL | Wheeling, Hawk Elctms.              | 708-459-4030 |
| IN | Indianapolis, Bell Inds./Graham     | 317-875-8200 |
| IN | Indianapolis, PEI Genesis Elec.     | 317-329-0700 |
| IN | South Bend, PEI Genesis Elec.       | 219-287-2911 |
| IA | Cedar Rapids, Advent Elec., Inc.    | 319-363-0221 |
| GA | Norcross, Repton Elctms.            | 404-446-1300 |
| MD | Annapolis Jct., Powell Elctms.      | 301-953-3435 |
| MD | Columbia, Sager Elctms. Inc.        | 301-995-4900 |
| MD | Columbia, Time Elctms.              | 301-964-3090 |
| MD | Savage, Pytronics Inds., Inc.       | 301-792-0780 |
| MA | Hingham, Sager Elctms.              | 617-749-6700 |
| MA | Needham, Cronin Elctms., Inc.       | 617-449-5000 |
| MA | Peabody, Time Elctms.               | 508-532-6200 |
| MI | Livonia, Repton Elect. Inc.         | 313-525-2700 |
| MI | Oak Park, Newark Elctms.            | 313-967-0600 |
| MN | Edina, Time Elctms.                 | 612-943-2433 |
| MN | Minneapolis, Newark Elctms.         | 612-331-6350 |
| MN | Minneapolis, Stark Elctms.          | 612-332-1325 |
| MN | Minnetonka, Repton Elctms.          | 612-938-0000 |
| MO | Kansas City, L Comp, Inc.           | 816-241-0111 |
| MO | Manchester, Time Elctms.            | 314-391-6444 |
| MO | Maryland Hgts., L Comp, Inc.        | 314-291-6200 |
| MO | St. Louis, Wes-Garde Comps. Grp.    | 314-567-7776 |
| NH | Salem, Sager Elctms.                | 603-898-1348 |
| NJ | Little Falls, Powell Elctms., Inc.  | 201-890-0101 |
| NJ | Marlton, Time Elctms.               | 609-596-6700 |
| NJ | Oakland, Relay Specs.               | 800-526-5376 |
| NJ | Wayne, Time Elctms.                 | 201-785-8250 |
| NY | Buffalo, Summit Dists.              | 716-887-2800 |
| NY | Hauppauge, Sager Elctms.            | 516-348-1300 |
| NY | Hauppauge, Time Elctms.             | 516-273-0100 |
| NY | Hauppauge, Time Elctms.             | 516-434-3344 |
| NY | Rochester, Masline Elctms.          | 716-546-5373 |

|     |                                        |              |
|-----|----------------------------------------|--------------|
| NY  | Rochester, Summit Dists.               | 716-334-8110 |
| NY  | Syracuse, Time Elctms.                 | 315-432-0355 |
| NC  | Cary, Powell Elctms.                   | 919-467-1212 |
| NC  | Oxford, Time Elctms.                   | 919-693-5166 |
| NC  | Raleigh, Sager Elctms.                 | 919-850-9550 |
| NC  | Raleigh, Time Elctms.                  | 919-847-9650 |
| NC  | Winston-Salem, Kirkman Elect.          | 919-722-9131 |
| OH  | Akron, Aesco Elctms. Comps.            | 216-762-8818 |
| OH  | Cincinnati, Hughes-Peters, Inc.        | 513-351-2000 |
| OH  | Columbus, Hughes-Peters, Inc.          | 614-294-5351 |
| OH  | Columbus, Time Elctms.                 | 614-794-3301 |
| OH  | Dayton, Bell Inds.                     | 513-435-5922 |
| OH  | Dayton, Stotts Friedman                | 513-298-5555 |
| OH  | Valley View, Newark Elctms.            | 216-447-8860 |
| OK  | Tulsa, Radio, Inc.                     | 918-587-9123 |
| OR  | Beaverton, Integrated Elec.            | 503-641-1690 |
| OR  | Portland, Radar Elec.                  | 503-232-3404 |
| OR  | Portland, Tek-Elec.                    | 503-246-5451 |
| OR  | Portland, Time Elctms.                 | 503-626-2979 |
| PA  | Mars, Sager Elctms.                    | 412-772-2233 |
| PA  | Montgomeryville, Pytronics Inds., Inc. | 215-643-2850 |
| PA  | Philadelphia, Powell Elctms.           | 215-365-1900 |
| PA  | Philadelphia, PEI Genesis Elect.       | 800-523-0727 |
|     |                                        | 800-222-1772 |
| PA  | Philadelphia, Sager Elctms.            | 215-464-4336 |
| TX  | Austin, Time Elctms.                   | 512-346-7346 |
| TX  | Dallas, Wes-Garde Comps.               | 214-357-1768 |
| TX  | FT. Worth, Allied Elctms., Inc.        | 817-595-6477 |
| TX  | FT. Worth, Carlton-Bates               | 817-293-5558 |
| TX  | Garland, Newark Elctms.                | 214-487-8144 |
| TX  | Houston, Carlton-Bates                 | 713-956-2244 |
| TX  | Houston, Newark Elctms.                | 713-270-4800 |
| TX  | Richardson, Time Elctms.               | 214-644-4644 |
| TX  | Stafford, Southwest Elec. Inc.         | 713-240-4000 |
| UT  | Salt Lake City, Stand. Supp. Co.       | 801-486-3371 |
| UT  | W. Valley City, Integrated Elctms.     | 801-977-9750 |
| UT  | W. Valley City, Time Elctms.           | 801-973-8494 |
| WA  | Bellevue, Integrated Elctms., Inc.     | 206-455-2727 |
| WA  | Kirkland, Time Elctms.                 | 206-820-1525 |
| WA  | Seattle, Radar Elctms.                 | 206-282-2511 |
| WI  | Milwaukee, Marsh Elctms., Inc.         | 414-475-6000 |
| WI  | Waukesha, Hawk Elctms.                 | 414-547-4457 |
| Can | Burnaby, B.C., ITT/Rae Ind. Elect.     | 604-291-8866 |
| Can | Calgary, Alberta, ITT/Rae Ind. Elect.  | 403-273-2780 |
| Can | Concord, Ont., ITT/RAE Ind. Elect.     | 416-798-4884 |
| Can | Don Mills, Ont., Saynor Varah, Inc.    | 416-445-0723 |
| Can | London, Ont., Saynor Varah Inc.        | 519-649-1414 |

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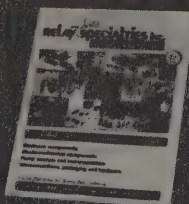
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TELEX: WUI 6817157; FSC No.: WUI  
6817157; 401-885-5786; Empl: 400; Sls. Mgr.: Matr Flynn

CHESSSELL EUROTHERM, EUROTHERM, INTL., 1  
Pheasant Run, Newtown, PA 18940, Tel: 215-968-0660,  
FAX: 215-968-0662; Empl: 82; Sls. Mgr.: Howard Sherer;  
Dist. Mgr.: Howard Sherer

CHESTEC CORPORATION, 21 Yennick Ave., Port  
Washington, NY 11050, Tel: 516-883-1700, FAX: 516-883-  
7155; Empl: 3; Sls. Mgr.: J.P. Schindler

CHESTERFIELD PRODUCTS, INC., Microwave  
Filter Co., Inc., 6743 Kinne St, East Syracuse, NY  
13057, Tel: 800-666-9655, 315-463-2309, FAX: 315-463-  
1467; Sls. Mgr.: Marian Frail ..... A-1655

## Local Sales Offices &amp; Reps

CA Carlsbad, MTM Intl, Inc. .... 619-729-6338  
IL Chicago, Tech. Sls. .... 312-237-7210  
MD Baltimore, Advanced Tech. Sls. .... 301-323-3140  
MA Framingham, Bengal Assocs. .... 617-877-2639  
MA Randolph, Bengal Assocs. .... 617-961-4120  
NJ Elmwood Park L & M Assoc, Inc. .... 201-797-0441  
NY Syracuse, Microwave Filter Co, Inc. .... 315-437-3953

CHICAGO BLOWER CORP., 1675 Glen Ellyn Rd,  
Glendale Heights, IL 60139, Tel: 708-858-2600, ESYLNK:  
62912209, FAX: 708-858-7172; Empl: 250; Sls. Mgr.: R.W.  
Wessel

CHICAGO CONDENSER CORP., 2900 West Chicago  
Ave., Chicago, IL 60622, Tel: 312-227-7070, FAX: 312-227-  
6646; FSC No.: 5910; Sls. Mgr.: Joan Looi ..... A-1029

CHICAGO LASER SYSTEMS, INC., 1798 Sherwin, Des  
Plaines, IL 60018, Tel: 708-827-9620, TELEX:  
650512351MCI UW, FAX: 708-827-9710; Sls. Mgr.:  
Bernard Alpinier, V.P.

CHICAGO LOCK CO., 4311 W. Belmont Ave., Chicago, IL  
60641, Tel: 312-282-7177, TELEX: ITT 4994023, FAX:  
312-282-8199; Empl: 300; Sls. Mgr.: William R. Shinn

CHIPS AND TECHNOLOGIES, INCORPORATED,  
3050 Zanker Road, San Jose, CA 95134, Tel: 408-434-  
0600, TWX: 272929 CHIPS UR

CHIU TECHNICAL CORP., 252 Indian Head Rd, Kings  
Park, NY 11754, Tel: 516-544-0606, FAX: 516-544-0809;  
FSC No.: 38-32, 38-41; Empl: 25; Sls. Mgr.: Frank A.  
Denny, V.P. Mktg.

CHLORIDE ELECTRO NETWORKS, Chloride Power  
Electronics, Inc., 1 Technology Place, Caledonia, NY  
14423, Tel: 716-538-4421, FAX: 716-538-6345; Empl:  
350; Sls. Mgr.: Gary Balfour

CHLORIDE EL PASO, Chloride Power Elctms, 9-B  
Founders Blvd., El Paso, TX 79906, Tel: 915-592-9985,  
FAX: 915-595-1664; FSC No.: 08715; Empl: 1000; Sls.  
Mgr.: Robin Lee

CHLORIDE POWER ELECTRONICS, One Technology  
Place, Caledonia, NY 14423, Tel: 716-538-4421, FAX: 716-  
538-6345; FSC No.: 3698; Empl: 300; Sls. Mgr.: Steve  
Olson

CHOMERICS, INC.: W.R. GRACE & CO., 77 Dragon  
Ct, Woburn, MA 01888, Tel: 617-935-4850, FAX: 617-933-  
4318; Empl: 650; Sls. Mgr.: William Lionetta; Dist. Mgr.:  
William Flanders ..... C-1659-1661

## Local Sales Offices &amp; Reps

AZ Mesa, Chomerics .... 602-964-0771  
CA Carson, Chomerics .... 310-518-6921  
CT Trumbull, Chomerics .... 203-452-0253  
FL Longwood, Chomerics .... 407-876-5800  
GA Kennesaw, Chomerics .... 404-928-4243  
IL Chicago, Chomerics .... 708-458-0649  
MA Woburn, Chomerics .... 617-935-4850  
NY Bohemia, Chomerics .... 516-567-6186  
NC Greensboro, Chomerics .... 919-674-3144  
OH Beavercreek, Chomerics .... 513-427-0002  
TX Dallas, Chomerics .... 214-960-7236  
WA Seattle, Chomerics .... 206-624-3763  
Can Trenton, Ont., Chomerics .... 613-965-6161

## Local Distributors

AZ Phoenix, Cupps Indl. Supp. .... 602-869-0600  
CA Santa Clara, K.R. Anderson, Co. .... 408-727-2959  
CO Denver, R.S.I. .... 303-373-1812  
CT Bloomfield, E.I.S. .... 203-243-9440

FL Orlando, E.I.S. .... 407-855-7100  
GA Atlanta, United Seal & Rubber .... 404-454-9912  
IL Hillside, E.I.S. .... 708-547-5400  
MD Baltimore, Soso Corp. .... 301-574-7555  
MA N. Andover, Mktg. East .... 508-689-9565  
MI Mt. Clemens, E.I.S. .... 313-791-8510  
MN Mounds View, Indl. Gasket .... 612-785-2266  
MO Kansas City, E.I.S. .... 816-471-5966  
NJ Branchburg, Robert McKeown .... 201-218-9000  
NY Lancaster, Sealing Dvcs. .... 714-684-7600  
OH Chargin Falls, Electrolock .... 216-543-6626  
OR Portland, E.I.S. .... 503-227-3601  
PA Essington, Tri-Corn, Inc. .... 215-521-3080  
SC Greenville, Electrolock .... 803-297-9830  
TN Memphis, E.I.S. .... 901-947-4176  
TX Dallas, Oriental Gasket .... 214-956-9100  
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VA Bluefield, E.I.S. .... 703-322-5424  
WA Tukwilla, E.I.S. .... 206-241-1010  
WI Mequon, Fabrico .... 414-241-5300  
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06509, Tel: 203-777-3631, FAX: 203-787-1725; Empl:  
116; Sls. Mgr.: James Drisoll, Natl. Sls. Mgr.; Dist. Mgr.:  
James Drisoll, Natl. Sls. Mgr.

CHRISTIANA INDUSTRIES CORP., 6500 North Clark,  
Chicago, IL 60626-4094, Tel: 312-465-6330, FAX: 312-  
465-6271; Empl: 250; Sls. Mgr.: Mitchell J. Waters; Dist.  
Mgr.: Mitchell J. Waters

CHRISTIE ELECTRIC CORP., 18120 S. Broadway,  
Gardena, CA 90248, Tel: 310-715-1402, FAX: 310-618-  
8368; FSC No.: 02294; Empl: 35; Sls. Mgr.: Scott Marvel

CHROMALOX INSTRS. & CONTROLS, 1382 Heil-  
Quaker Blvd, La Vergne, TN 37086-3536, Tel: 615-793-  
3900, TELEX: 55-5129, FAX: 615-793-3563; Empl: 110;  
Sls. Mgr.: John Guthrie

CHRONO-LOG CORP., 2 W. Park Rd, Havertown, PA  
19083, Tel: 800-247-6665, FAX: 215-853-3972; Empl: 20;  
Sls. Mgr.: Kathy Jacobs ..... D-1151

CHURCHILL CORP., 344 Franklin St, Box G, Melrose, MA  
02176, Tel: 617-665-4700, FAX: 617-662-5291; FSC No.:  
94867; Empl: 30; Sls. Mgr.: W. Schermerhorn

CIC COMPONENTS INDS. CO., LTD., 4FL No. 5 Lane  
130, Min-Chung Rd, Hsin Tien City, Taiwan R.O.C., Tel:  
886-2-9174302, TELEX: 35261 MEISCO, FAX: 886-2-  
9124480; Empl: 30; Sls. Mgr.: James Huang

CICOIL CORP., 24960 Ave. Tibbitts, Valencia, CA 91355-  
3428, Tel: 805-295-1295, FAX: 805-295-0813; Empl: 75;  
Sls. Mgr.: James Alderson

CIDTEC (CID TECHNOLOGIES INC.), 101 Commerce  
Blvd, Liverpool, NY 13088, Tel: 315-451-9410, FAX: 315-  
451-9421

CIMCO WIRE & CABLE, INC., See Specialty Cable  
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CINCH CONNECTOR DIVISION, Labinal  
Components & Systems Inc., 1501 Morse Ave, Elk  
Grove Village, IL 60007, Tel: 708-981-6000, FAX: 708-981-  
1718; Sls. Mgr.: Bill Kysiak; Dist. Mgr.: Wes Walker

CINCH CYLINDRICAL DIVISION, Labinal Comps. &  
Systems, Inc., 8821 Science Center Dr, Minneapolis, MN  
55428, Tel: 612-537-1010, FAX: 612-537-9614; Sls. Mgr.:  
Jim Simmons; Dist. Mgr.: Scott Campbell

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Dr., Milford, OH 45150, Tel: 513-831-6800, FAX: 513-831-  
4866; Empl: 110; Sls. Mgr.: Brian Doherty

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Cincinnati, OH 45241, Tel: 513-772-8810, TELEX: 214390  
SUBZERO CIN, FAX: 513-772-9119; Empl: 117; Sls. Mgr.:  
Harold Zeilman

CIPHER DATA PRODUCTS, INC., an Archive Co.,  
10101 Old Grove Rd, San Diego, CA 92131, Tel: 619-578-  
9100, FAX: 619-693-4435; Empl: 1500; Sls. Mgr.: Wes  
Bankston, VP Sls.

CIPRICO INC., 2800 Campus Drive, Plymouth, MN 55441,  
Tel: 612-551-4000, FAX: 612-551-4002; Empl: 79; Sls.  
Mgr.: Stu Reile

CIRCUM INC., 505 W. Main St, Bensenville, IL 60106, Tel:  
708-595-4460, FAX: 708-595-4615; Empl: 38; Sls. Mgr.: R.  
Alan Rosenberg




**FAX: 714-855-4298**

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| CA | Irvine, Circuit Assembly                 | 714-855-7887 |
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| CO | Englewood, ELCOM Inc.                    | 303-792-3330 |
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| FL | FL Lauderdale, Tech-Rep Assoc., Inc.     |              |
| FL | Merritt Island, Tech-Rep Assoc., Inc.    | 305-791-2708 |
| GA | Atlanta, L & D, Inc.                     | 404-453-3313 |
| GA | Atlanta, L & D, Inc.                     | 404-395-7079 |
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| IN | Carmel, Frank E. Kahsar Sls.             | 317-844-9353 |
| MD | Baltimore, Eastern Comp. Sls.            | 410-788-7050 |
| MA | Canton, The TMR Grp.                     | 617-828-1848 |
| MI | Muskegon, Frank E. Kahsar Sls.           | 616-798-4451 |
| MI | Sterling Hts., Frank E. Kahsar Sls.      | 313-795-3530 |
| MN | Osseo, Gaffney Sls., Inc.                | 612-425-5484 |
| MO | Grandview, Harris Hanson Co.             | 816-763-6200 |
| MO | St. Louis, Harris Hanson Co.             | 314-432-3611 |
| NJ | Berkeley Hgts., Cambridge Allen & Assoc. | 201-464-0203 |
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| NY | Rochester, Apex Assocs., Inc.            | 716-272-7040 |
| NC | Raleigh, L & D, Inc.                     | 919-876-5301 |
| NC | Wilmington, L & D, Inc.                  | 919-256-8110 |
| OH | Cincinnati, Frank E. Kahsar Sls.         | 513-922-3133 |
| OH | Columbus, Frank E. Kahsar Sls.           | 614-252-4009 |
| OH | Elyria, Frank E. Kahsar Sls.             | 216-365-5219 |
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| AL | Huntsville, Powell Elctms.       | 205-837-5300 |
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| AZ | Phoenix, Tri Tek                 | 602-371-0860 |
| AZ | Tucson, Newark Elctms.           | 602-881-9001 |
| AR | Little Rock, Newark Elctms.      | 501-225-8130 |
| CA | Chatsworth, Passive Comps.       | 818-700-8838 |
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| CA | Irvine, Powell Elctms.           | 714-263-9363 |
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| CA | Milpitas, Newark Elctms.         | 408-262-0121 |
| CA | Orange, Newark Elctms.           | 714-634-8224 |
| CA | San Diego, Neumann Elctms.       | 619-695-3005 |
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| CA | San Jose, Rose Elctms.           | 408-263-9700 |
| CA | Santa Ana, B D S Elctms.         | 714-662-1050 |
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| CO | Colorado Springs, Newark Elctms. | 719-576-2644 |
| CO | Denver, C.S.I.D.                 | 303-292-9594 |
| CO | Denver, Comp. Distributors       | 303-770-6214 |
| CO | Denver, Newark Elctms.           | 303-757-3351 |
| CO | Littleton, Indelco               | 303-795-3431 |
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| FL | Pompano Bch., Electronic Equip.  | 305-960-1200 |
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| IA | Des Moines, Newark Elctms.            | 515-222-0700 |
| IA | Eldridge, Klaus Radio                 | 319-285-8484 |
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| MD | Hanover, Newark Elctms.               | 410-712-6922 |
| MD | Rockville, All American               | 301-251-1205 |
| MA | Boston, All American                  | 617-246-2300 |
| MA | Middleboro, Glynn Elctms.             | 508-947-4262 |
| MA | Norwood, Gerber Elctms.               | 617-769-6000 |
| MA | W. Springfield, Newark Elctms.        | 413-785-5851 |
| MA | Westboro, In Stock Prods.             | 508-870-5750 |
| MA | Westborough, Powell Elctms.           | 508-366-6100 |
| MA | Woburn, Newark Elctms.                | 617-935-8350 |
| MI | Ann Arbor, Wedemeyer Elctm. Supp. Co. | 313-665-8611 |
| MI | Grand Rapids, Newark Elctms.          | 616-455-9190 |
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| MI | Oak Park, Newark Elctms.              | 313-465-3131 |
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| MN | Minneapolis, Newark Elctms.           | 612-331-6350 |
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| NY | Redcreek, Advacom                     | 315-754-8796 |
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| NC | Cary, Powell Elctms.                  | 919-467-1212 |
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| OK | Tulsa, Newark Elctms.                 | 918-252-5070 |
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| OR | Portland, Newark Elctms.              | 503-257-0741 |
| PA | Bensalem, Newark Elctms.              | 215-245-7300 |
| PA | Croydon, G.W. Elctms.                 | 215-788-1005 |
| PA | Export, Advacom                       | 412-325-7551 |
| PA | McKean, Advacom                       | 814-476-7774 |
| PA | Philadelphia, Powell Elctms.          | 215-365-1900 |
| PA | Pittsburgh, Newark Elctms.            | 412-788-4790 |
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| SC | N. Charleston, Newark Elctms.         | 803-764-3091 |
| TN | Brentwood, Newark Elctms.             | 615-371-1341 |
| TN | Memphis, Newark Elctms.               | 901-365-8060 |
| TX | Allen, Prime Dists.                   | 214-231-0170 |
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| TX | Dallas, Component Dists.              | 214-644-0373 |

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| TX  | Garland, Newark Elctms.             | 214-494-5911 |
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| Can | London, Ont., Newark Elctms.        | 519-685-4280 |
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| Can | Mississauga, Ont., Newark Elctms.   | 416-670-7799 |
| Can | Mont Royal, Newark Elctms.          | 514-738-4406 |
| Can | Nepean, Ont., Carsten Elctms.       | 613-831-1620 |
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|     |                                     | 604-520-5721 |
| Can | St. Laurent, PQ, Carsten Elctms.    | 514-334-8321 |

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**CIRCUIT WORKS**, 85 W. Sylvania Ave., Neptune City, NJ 07753, Tel: 908-774-1811; Empl: 1

**CIR-Q-TEL**, Trilithic, 9202 E. 33rd, Indianapolis, IN 46236, Tel: 800-344-2412; FSC No: 23042; Empl: 17; Sls. Mgr: Dave Distler

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**CIRRUS LOGIC, INC.**, 3100 West Warren Ave., Fremont, CA 94538, Tel: 510-623-8300, TELEX: 171918, FAX: 510-226-2180; Empl: 900; Sls. Mgr: William Caparelli; Dist. Mgr: Frank Reynolds

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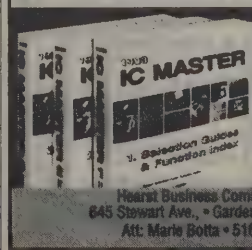
**FAX: 714-757-4423**

**C.ITOH TECHNOLOGY, INC.**, Electronic Comp. Div., 2515 Mc Cabe Way, Irvine, CA 92713-9657, Tel: 800-347-2484 ext. 4529; Empl: 28; Sls. Mgr: Hassan Sajadi; Dist. Mgr: Hassan Sajadi **B#1027**

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| CA                         | San Diego, Gary Chilcote Assocs.         | 619-728-7678 |
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| FL                         | Deerfield Beach, Sls. Engrg. Concepts    | 305-426-4601 |
| GA                         | Liburn, El Tech Inc.                     | 404-584-1236 |
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| IN                         | Indianapolis, Schank Elctrm. Mktg.       | 317-842-6204 |
| IA                         | Cedar Rapids, Delltron Co., Inc.         | 319-393-0075 |
| KY                         | Fl. Wright, El Tech Inc.                 | 606-331-3495 |
| MD                         | Baltimore, Advanced Tech Sls., Inc.      | 410-323-3140 |
| MA                         | Tewksbury, Procomp Assoc.                | 508-858-0100 |
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| MI                         | Holland, Schank Elctrm. Mktg.            | 616-393-8924 |
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| MO                         | Florissant, Delltron Co., Inc.           | 314-839-0033 |
| MO                         | Kansas City, Delltron Co., Inc.          | 816-436-6445 |
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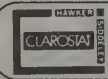
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| Can | Mississauga, Ont., John G. Weiss Co. Ltd. | 416-673-0011 |
| Can | Nepean, John G. Weiss Ltd.                | 613-225-1810 |
| Can | Vancouver, John G. Weiss Ltd.             | 604-873-1112 |
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**CLAROSTAT SENSORS AND CONTROLS GROUP, BYR, PLC**, 1600 West Plano Parkway, Plano, TX 75075, Tel: 214-422-1844, 1-800-872-0044; FSC No: 12697; Empl: 650; Sls. Mgr.: Walt Korzon; Dist. Mgr.: Paul Kottom  
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| CA                         | Irvine, Gravley & Assocs., Inc.          | 714-852-9994                   |
| CA                         | San Jose, O'Donnell Assoc. North, Inc.   | 408-456-2950                   |
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| FL                         | Winter Park, HHP Assocs., Inc.           | 407-740-0320                   |
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| IL                         | Rolling Meadows, Sumer, Inc.             | 708-991-8500                   |
| IN                         | Indianapolis, Needler Sls.               | 317-255-8056                   |
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| MA                         | Norwell, Norris & Assocs.                | 617-659-7988                   |
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| NJ                         | Cherry Hill, Trinkle Sls., Inc.          | 609-795-4200                   |
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| NC                         | Raleigh, South-Tech. Sls.                | 919-571-1313                   |
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| TX                         | Houston, Prosales                        | 713-444-6191                   |
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| MD Columbia, TTI, Inc. ....              | 410-995-1331,<br>FAX:410-964-8305 | NY Wappingers Falls, Newark Elctms. .... | 914-298-2810,<br>FAX:914-298-2823 | TX Houston, TTI, Inc. ....                    | 713-879-5800,<br>FAX:713-879-5656 |
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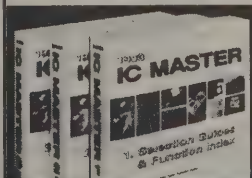
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 3666; Sls. Mgr.: Michael S. Lynn

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 Reymos

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 60053, Tel: 708-470-9600

**COMLINEAR CORP.**, 4800 Wheaton Drive, Fort Collins,  
 CO 80525, Tel: 303-226-0500, FAX: 303-226-0564; FSC  
 No.: 62839; Empl: 160; Sls. Mgr.: John Perzow; Dist. Mgr.:  
 John Perzow

**COMM CON CONNECTORS INC.**, 1848 Evergreen St.,  
 Duarte, CA 91010, Tel: 818-301-4200, FAX: 818-301-4212;  
 Empl: 13; Sls. Mgr.: Robert Farnum; Dist. Mgr.: James Orr  
 ..... **C-1289**

## Local Sales Offices &amp; Reps

AL Huntsville, Effective Mktg. Force ..... 205-233-2947  
 AZ Scottsdale, Spectrum Mktg. .... 602-890-9000  
 AZ Tempe, Elctm. Tech. Sls. .... 602-921-7122  
 CA Montrose, Signal Entrs. .... 818-957-0640  
 CA Napa, Stewart/Fullerton Assoc. .... 707-258-1160  
 CO Denver, Spectrum Mktg. .... 303-480-9991  
 CT New Fairfield, Sales Engrg. .... 203-746-6905  
 GA Atlanta, Effective Mktg. Force .... 404-948-0233  
 IL Rockford, Rockford Controls .... 708-960-2447  
 NH Salem, Sales Engrg. .... 603-893-5521  
 NC Raleigh, Effective Mktg. Force .... 919-867-6221  
 OR Portland, J.J. Backer Co. .... 206-285-1300  
 PA Souderton, Intek Inc. .... 215-723-0433  
 TX Plano, Aticus .... 214-964-0663  
 Can Markham, Matrix Technig. Ltd. .... 416-477-4442

## Local Distributors

AZ Phoenix, Be-Switched ..... 602-275-4805  
 CA Gardena, Cal Switch ..... 213-538-9830  
 CA Riverside, Elctm. Supp. .... 714-781-0453  
 CA Sunnyvale, PSC Elctms. .... 408-737-1333  
 CT Danbury, Heiland Elctms. .... 203-797-8600  
 CA Norcross, Century Elctms. .... 404-449-3424  
 IL Chicago, Leeds Electro Comps. .... 312-625-3800  
 MA Marlborough, NOW Elctms. .... 508-460-0187  
 MA Wilmington, Heiland Elctms. .... 508-657-4870  
 MN Plymouth, Leeds Electro Comps. .... 612-557-1277  
 NC Raleigh, Century Elctms. .... 919-782-2116  
 OK Tulsa, Radio Inc. .... 918-587-9123  
 PA Norristown, Century Elctms. .... 215-631-5400  
 WA Lynwood, Oman & Assocs. .... 206-256-4085  
 WA Vancouver, Interconnect Sls. .... 206-256-4085  
 WI Milwaukee, Progressive Image .... 414-321-4722

**COMMODORE SEMICONDUCTOR GROUP**, 950  
 Rittenhouse Road, Norristown, PA 19403, Tel: 215-666-  
 7950, FAX: 215-647-0791

**COMMONWEALTH SPRAGUE CAPACITOR, INC.**, 11  
 Brown St., N. Adams, MA 01247, Tel: 413-664-4556, FAX:  
 413-663-9132

**COMM/SCOPE, INC.**, Network Cable Div., P.O. Box  
 879, Claremont, NC 28610, Tel: 704-324-2200, 800-982-  
 1708, TELEX: 802-166, FAX: 704-459-5099; Sls. Mgr.: Nita  
 Hunsucker

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 [714] 525-6606  
 [415] 621-7386  
 [408] 279-8848  
 [510] 452-1009  
 [916] 448-6370  
 [209] 441-1725



(800) CAL-SWCH





**FAX: 312-637-8564**

**COMMUNICATION COIL INC.**, 2839 N. Narragansett Ave., Chicago, IL 60634, Tel: 312-637-1333; FSC No.: 81815; Empl: 75; Sls. Mgr.: E. Goldman  
A-1224, 1623, 2305

*Local Sales Offices & Reps*

|    |                                  |              |
|----|----------------------------------|--------------|
| AZ | Peoria, SEM of Arizona           | 602-486-1191 |
| CO | Denver, Lindberg & Co.           | 303-758-9033 |
| FL | Melbourne, M.E.T. Assocs.        | 407-255-3733 |
| IL | Chicago, CCI                     | 312-637-1333 |
| IL | Northbrook, H. Benjamin Assocs.  | 708-272-2900 |
| IN | Fl. Wayne, Corrao-Marsh & Assoc. | 219-482-2725 |
| IA | Cedar Rapids, Wes-Tech Assoc.    | 319-393-9790 |
| MA | Brookline, TPG Inc.              | 617-731-0858 |
| OH | Dayton, Ashbacher & Assocs.      | 513-252-7785 |
| UT | Salt Lake City, Lindberg & Co.   | 801-277-2643 |

**COMMUNICATION DEVICES, INC.**, 1-130 McLevin Ave., Scarborough, Ont., CAN M1B3R6, Tel: 416-292-4463, TELEX: 065-25428, FAX: 416-292-4295; Empl: 70

**COMMUNICATIONS & ENERGY CORP.**, 7395 Taft Park Dr., E. Syracuse, NY 13057, Tel: 315-452-0709, FAX: 315-452-0732; Empl: 16; Sls. Mgr.: Emily Bostick; Dist. Mgr.: Emily Bostick  
A-1625

For All U.S. Call: Communications & Energy Corp., 315-452-0709; FAX: 315-452-0732

**COMMUNICATIONS INSTRUMENTS, INC.**, P.O. Box 520, Hwy. 74 East, Fairview, NC 28730, Tel: 704-628-1711, FAX: 704-628-1439; FSC No.: 58614; Empl: 385; Sls. Mgr.: R. McClinton; Dist. Mgr.: K. Jackson  
B-1438-1448, 1628-1629

*Local Sales Offices & Reps*

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AL  | Huntsville, South Tech. Sls.             | 205-880-8200 |
| AZ  | Phoenix, Westrep                         | 602-820-9962 |
| CA  | Santa Clara, Ross Mktg.                  | 408-988-8111 |
| CO  | Denver, Con-Tek Mktg.                    | 303-973-8490 |
| CT  | Torrington, Phoenix Sls.                 | 203-496-7709 |
| FL  | Oviedo, Conley & Assocs.                 | 407-365-3283 |
| IL  | Arlington Hts., MB Sls.                  | 708-392-9499 |
| IN  | Kokomo, Schilling Assocs.                | 317-455-2708 |
| IA  | Cedar Rapids, C. H. Horn & Assocs.       | 319-393-8703 |
| KS  | Wichita, Baka                            | 316-682-2166 |
| MA  | Needham, Component Technlg. Inc.         | 617-449-8490 |
| MI  | Grosse Pointe Park, Greiner Assocs. Inc. | 313-499-0188 |
| MN  | North Mankato, El Sls.                   | 507-345-5786 |
| NY  | Babylon, ASTROREP                        | 516-422-2500 |
| NY  | Syracuse, M. M. Hare Co.                 | 315-457-6859 |
| NC  | Raleigh, Godwin Assocs.                  | 919-878-8000 |
| OH  | Vandalia, Stegman Blaine                 | 513-890-7975 |
| PA  | Philadelphia, Tech. Sls. Assoc.          | 215-784-0170 |
| TX  | Dallas, Electra Reps                     | 214-248-3852 |
| WA  | Seattle, Eclipse Mktg.                   | 206-885-6991 |
| Can | Don Mills, Ont., RD Assocs.              | 416-441-9667 |

*Local Distributors*

|    |                              |              |
|----|------------------------------|--------------|
| AZ | Tempe, Time Elctms.          | 602-967-2000 |
| CA | Chatsworth, Time Elctms.     | 818-998-7200 |
| CA | San Diego, Time Elctms.      | 619-578-2500 |
| CA | Santa Ana, Norstan Elctms.   | 213-924-7651 |
| CA | Santa Monica, Master Elctms. | 213-452-1259 |

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PHOENIX, AZ 85034

**(510) 835-1500**  
1026 6th. AVENUE  
OAKLAND, CA 94606

|    |                               |              |
|----|-------------------------------|--------------|
| CA | Sunnyvale, Time Elctms.       | 408-734-9888 |
| CA | Tustin, Time Elctms.          | 714-669-0100 |
| CO | Englewood, Time Elctms.       | 303-721-8882 |
| CT | Enfield, Gemcap               | 203-745-3410 |
| FL | Orlando, T & T Prods., Inc.   | 407-857-2282 |
| FL | Orlando, Time Elctms.         | 407-841-6565 |
| FL | Pompano Beach, Peerless Radio | 305-973-4141 |
| GA | Norcross, Time Elctms.        | 404-448-4448 |
| IL | Chicago, Newark Elctms.       | 312-784-5100 |
| IL | Schaumburg, Time Elctms.      | 708-303-3000 |
| KS | Wichita, Airtechnics          | 316-267-2849 |
| MD | Columbia, Peerless Radio      | 301-997-1717 |
| MD | Columbia, Time Elctms.        | 301-964-3090 |
| MD | Jessup, Treko                 | 301-792-0112 |
| MA | Peabody, Time Elctms.         | 508-532-9900 |
| MO | Manchester, Time              | 314-391-6444 |
| MO | Maryland Heights, L Comp.     | 314-291-6200 |
| NJ | Marlton, Time Elctms.         | 609-596-6700 |
| NJ | Oakland, Relay Specialties    | 201-337-1000 |
| NY | Centereach, Gemcap Comps.     | 516-331-0069 |
| NY | Hauapeugue, Time Elctms.      | 516-273-0100 |
| NY | Lynbrook, Peerless Radio      | 516-593-2121 |
| TX | Richardson, Time Elctms.      | 214-644-4644 |
| WA | Kirkland, Time Elctms.        | 206-820-1525 |

**COMMUNICATION SOLUTIONS, INC.**, 7014 Golden Ring Rd., Baltimore, MD 21237, Tel: 410-574-4557, FAX: 410-574-4559; FSC No.: OPXL4; Empl: 8

**COMMUNICATIONS SYS. TECHNOLOGY, INC.**, 2018 Rhodes Street, Hermosa Beach, CA 90254, Tel: 213-374-3849; Empl: 4; Sls. Mgr.: AL Perry



**FAX: 516-585-3534**

**COMPAC**, 1320-13 Lincoln Ave., Holbrook, NY 11741, Tel: 516-585-3400; FSC No.: 62099; Empl: 35; Sls. Mgr.: Peter C. Rao  
C-1020

*Local Sales Offices & Reps*

|    |                             |              |
|----|-----------------------------|--------------|
| AL | Huntsville, EMA Inc.        | 205-837-7363 |
| CA | Campbell, Senah             | 408-374-1031 |
| CA | Westlake Village, CAL-Rep.  | 818-991-1940 |
| GA | Atlanta, EMA Inc.           | 404-448-1215 |
| MA | Haverhill, L-K Assoc.       | 617-373-1313 |
| MO | St. Louis, Abrams & Assocs. | 314-569-0447 |
| NC | Raleigh, EMA Inc.           | 919-847-8800 |
| SC | Greenville, EMA Inc.        | 803-233-4637 |
| TX | Dallas, Talo Products       | 214-644-6010 |
| VA | Fairfax, Schibley Assocs.   | 703-591-3008 |

**COMPACT POWER COMPANY**, 17282 Orange Drive, Yorba Linda, CA 92686, Tel: 714-996-5826; Sls. Mgr.: Charles Lindberg  
D-2256

**COMPAR, D.G.W. Electronics Corporation**, 85 Spy Ct., Markham, Ontario, Canada L3R 4Z4, Tel: 416-475-8500, FAX: 416-475-4158; Empl: 36; Sls. Mgr.: Rick Lewis

**COMPAS**, 100 Chimney Point Dr., Ogdensburg, NY 13669, Tel: 315-393-3573, FAX: 315-393-7638; Empl: 350; Sls. Mgr.: James L. Clare

**COMPENSATED DEVICES INCORPORATED**, 166 Tremont Street, Melrose, MA 02176, Tel: 617-665-1071, FAX: 617-665-7379; FSC No.: 55801; Empl: 65; Sls. Mgr.: Tom Briand

**COMPEX CORP.**, Taunton Professional Park, 238 Taunton Blvd., Medford, NJ 08055, Tel: 609-596-9388, FAX: 609-596-3482; Empl: 24

**COMPIX, INC.**, 15824 SW Upper Boones Ferry Rd., Lake Oswego, OR 97035-4066, Tel: 503-639-8496; Empl: 14; Sls. Mgr.: James G. Walcutt-VP Sls. Mktg.

**COMPONENT GENERAL, INC.**, 2445 Success Dr., Odessa, FL 33556, Tel: 813-376-6655, FAX: 813-372-9096; FSC No.: 61732; Empl: 30; Sls. Mgr.: Thomas Flindio

*Local Sales Offices & Reps*

|    |                                 |              |
|----|---------------------------------|--------------|
| CA | Los Angeles, L & M Engrg. South | 310-417-3044 |
| CA | Mountain View, Bridge Mktg.     | 415-965-8045 |
| MD | Florissant, Central Tech. Sls.  | 314-831-4069 |
| NH | Merrimack, DBM Tech. Sls. Inc.  | 603-424-5700 |
| NY | Buffalo, Upstate Engrg. Sls.    | 716-632-0011 |
| NY | Rochester, Upstate Engrg. Sls.  | 716-225-2383 |
| NY | Rye Brook, Tekmar Sls.          | 914-632-7464 |

|     |                             |              |
|-----|-----------------------------|--------------|
| TX  | Dallas, Rep-Tec, Inc.       | 214-956-8700 |
| EXP | Odessa, FL, Comp. Gen. Inc. | 813-376-6655 |

**COMPONENT MFG. SVC., INC.**, 1 Component Park, W. Bridgewater, MA 02379, Tel: 508-580-0111, FAX: 508-559-9893; Empl: 600; Sls. Mgr.: Wayne Douglas; Dist. Mgr.: Wayne Douglas

**COMPONENT RESEARCH CO. INC.**, 1655-26 St., Santa Monica, CA 90404, Tel: 310-829-3615, FAX: 310-829-9584; FSC No.: 12517/Multiple; Empl: 230; Sls. Mgr.: Sylvia Kellerman  
A-1030-1057

*Local Sales Offices & Reps*

|    |                             |              |
|----|-----------------------------|--------------|
| SC | Greenville, Walter Lamphier | 803-232-4687 |
|----|-----------------------------|--------------|

**COMPONENTS CORP.**, 6 Kinsey Pl., Danville, NJ 07834, Tel: 201-627-0290, FAX: 201-361-5801; FSC No.: 26364; Empl: 20; Sls. Mgr.: Fred Bielenberg

**COMPONENTS ELECTRONICS CORP.**, 629A Lowther Rd., Lewisberry, PA 17339, Tel: 717-938-4151, FAX: 717-938-5910; Empl: 45; Sls. Mgr.: J.Galli; Dist. Mgr.: J.Galli

**COMPONENT SPECIALTIES CORP.**, 9143 E. La Rosa Dr., Temple City, CA 91780, Tel: 213-283-0015, FAX: 818-287-7189; FSC No.: 28984; Empl: 45; Sls. Mgr.: D.R. Heins

**COMPTUS INC.**, 342 Lyndeboro Rd., New Boston, NH 03070, Tel: 603-487-5512, FAX: 603-487-5513; Empl: 5; Sls. Mgr.: Leander Nichols; Dist. Mgr.: Leander Nichols

**COMPUCART**, Versa Tec, P.O. Box 2095, Tampa, FL 33601-2095, Tel: 800-237-9024, 813-251-2431; Empl: 25

**COMPUCRAFT FABRICATORS INC.**, 669 Mary St., Warminster, PA 18974, Tel: 215-443-7107, FAX: 215-443-7195; FSC No.: 76977; Empl: 18; Sls. Mgr.: Stephen Dalton

**COMPUMOTOR DIVISION**, Parker Hannifin Corp., 5500 Business Park Dr., Rohnert Park, CA 94928, Tel: 707-584-7558, FAX: 707-584-8015; Empl: 150; Sls. Mgr.: A. Statz; Dist. Mgr.: A. Statz

**COMPUTER AVIONICS**, See CAC Microcircuits, Inc.

**COMPUTER COMPONENTS, INC.**, P.O. Box 1378, 18-B Kripes Rd., East Granby, CT 06026, Tel: 203-653-9909, FAX: 203-653-9901; FSC No.: 12965; Empl: 25

**COMPUTER CONVERSIONS CORP.**, 6 Dunton Ct., E. Northport, NY 11731, Tel: 516-261-3300, FAX: 516-261-3308; FSC No.: 51086; Empl: 100; Sls. Mgr.: S. J. Renard  
D-1172-1175

*Local Sales Offices & Reps*

|     |                                  |              |
|-----|----------------------------------|--------------|
| MA  | Brookline, Technology Prod. Grp. | 617-731-0858 |
| MI  | Newport, Industrial Sensors Inc. | 313-383-8300 |
| NY  | Moravia, Electrotech Sys.        | 315-497-1598 |
| NC  | Charlotte, Motion Technology     | 704-525-9855 |
| OH  | Cincinnati, Pilco                | 513-271-0630 |
| PA  | Pittsburgh, Russell F. Clark Co. | 412-242-9500 |
| TX  | Bedford, Automated Dynamics      | 817-267-5716 |
| UT  | Salt Lake City, Protronix        | 804-265-9105 |
| Can | Downsview, Electromate Ind. Sls. | 416-665-0221 |

**COMPUTER DEVICES**, 34 Linell Cir., Nutting Lake, MA 01865, Tel: 508-663-4980, FAX: 508-667-8561; Empl: 13; Sls. Mgr.: Sandra R. Clark

**COMPUTER DOCTORS**, 9204-B Baltimore Blvd., College Park, MD 20740, Tel: 1-800-RAM-STAR, 301-474-3095, FAX: 301-474-0805

**COMPUTER DYNAMICS SALES**, 107 S. Main St., Greer, SC 29650, Tel: 803-877-8700, FAX: 803-879-2030

**COMPUTER INSTRUMENTS CORP.**, 1000 Shames Drive, Westbury, NY 11590, Tel: 516-876-8400, FAX: 516-876-9153; Empl: 40

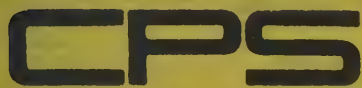
**COMPUTER INSTRUMENTS DIV.**, 1000 Shames Drive, Westbury, NY 11590, Tel: 516-876-8400, FAX: 516-876-9153; Empl: 42; Sls. Mgr.: Brian Peskin

**COMPUTER KEYBOARD SYSTEMS**, 1640 Fifth Street, Sta. 224, Santa Monica, CA 90401, Tel: 310-395-4639, FAX: 310-393-6040; Empl: 25; Sls. Mgr.: Trevor Bray; Dist. Mgr.: Trevor Bray

**COMPUTER PERIPHERALS INC.**, 667 Rancho Congo Blvd., Newbury Pk., CA 91320, Tel: 805-499-5751, 800-854-7600, TELEX: 759299CPI, FAX: 805-498-8848; Empl: 100; Sls. Mgr.: Davius Antia; Dist. Mgr.: Mike Krunic



COMPUTER POWER INC., 124 W. Main St., High Bridge, NJ 08829, Tel: 908-638-8000, 800-526-5088, FAX: 908-638-4931; FSC No.: 3643; Empl: 170; Sls. Mgr.: Leslie P. Listwa; Dist. Mgr.: Todd Smith



FAX: 503-684-8164

COMPUTER POWER SUPPLIES (CPS), 15800 Upper Boones Ferry Rd., #150, Lake Oswego, OR 97035, Tel: 503-684-8026; Sls. Mgr.: Clifford Gaw

COMPUTER PRODUCTS, INC., Process Automation, 2900 Gateway Dr., Pompano Beach, FL 33069, Tel: 305-974-5500, FAX: 305-979-7371; Empl: 150; Sls. Mgr.: Jack Sloan, VP Sls.



FAX: 617-464-6612

COMPUTER PRODUCTS/POWER CONVERSION AMERICA, 7 Elkins Street, So. Boston, MA 02127, Tel: 800-733-9288, 617-464-6600; FSC No.: 62125; Empl: 1050; Dist. Mgr.: Jim O'Sullivan, VP Distrib. & Sls. D-1486, 1631-1635, 2048, 2090-2095

#### Local Sales Offices & Reps

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AZ  | Phoenix, C.T. Carlberg               | 602-488-0750 |
| CA  | Encinitas, Jones & McGeoy Sls.       | 619-753-6784 |
| CA  | San Diego, Jones & McGeoy Sls.       | 714-756-6269 |
| CA  | Santa Ana, Jones & McGeoy Sls.       | 714-547-6466 |
| CA  | Santa Clara, Criterion Sls.          | 408-988-6300 |
| CO  | Aurora, Electrodyne                  | 303-695-8903 |
| FL  | Altamonte Springs, Electra Mark      | 407-830-0844 |
| FL  | Plantation, Electra Mark             | 305-452-2872 |
| FL  | Tampa, Electramark                   | 813-962-1882 |
| GA  | Norcross, Mountain Electro Mktg.     | 404-448-5594 |
| IL  | Itasca, Janus, Inc.                  | 708-250-9650 |
| IN  | Indianapolis, Leslie M. Devoe Co.    | 317-842-3245 |
| IA  | Cedar Rapids, Dy-Tronix, Inc.        | 319-377-8275 |
| KS  | Leawood, Dy-Tronix, Inc.             | 913-339-6333 |
| KS  | Wichita, Dy-Tronix, Inc.             | 316-838-0884 |
| MD  | Columbia, Third Wave Solutions, Inc. | 410-290-5990 |
| MA  | N. Reading, Alpha-Omega Sls.         | 508-664-1118 |
| MA  | Norfolk, Reading, Alpha Omega Sls.   | 508-664-1118 |
| MN  | Edina, Mel Foster                    | 612-944-3456 |
| MO  | Bridgeton, Dy-Tronix, Inc.           | 314-291-4777 |
| NJ  | Cherry Hill, Tritek                  | 609-667-0200 |
| NM  | Albuquerque, C.T. Carlberg           | 505-899-2155 |
| NY  | Rochester, Empire Tech               | 719-381-8500 |
| NY  | Rockville Centre, S-J Assocs.        | 516-536-4242 |
| NY  | Skaneateles, Empire Tech             | 315-685-5703 |
| NC  | Raleigh, Zucker Assocs., Inc.        | 919-782-8433 |
| OH  | Cleveland, Elctm. Salesmasters       | 216-831-9555 |
| OK  | Tulsa, Ammon & Rizos                 | 918-749-6116 |
| OR  | Beaverton, Micro Sls., Inc.          | 503-645-2841 |
| TX  | Austin, Ammon & Rizos                | 512-454-5131 |
| TX  | Houston, Ammon & Rizos               | 713-781-6240 |
| TX  | Richardson, Ammon & Rizos            | 214-644-5591 |
| UT  | Salt Lake City, Electrodyne, Inc.    | 801-264-8050 |
| WA  | Bellevue, Micro Sls., Inc.           | 206-451-0568 |
| WI  | Delafield, Janus, Inc.               | 414-646-5420 |
| Can | Montreal, Electro Source             | 514-630-7486 |
| Can | Ottawa, Ont., Electro Source         | 613-592-3214 |
| Can | Toronto, Electro Source              | 416-675-4490 |

#### Local Distributors

|    |                                   |              |
|----|-----------------------------------|--------------|
| AL | Huntsville, Marshall Inds.        | 205-881-9235 |
| AZ | Phoenix, Marshall Inds.           | 602-496-0290 |
| CA | Calabasas, Marshall Inds.         | 818-878-7000 |
| CA | El Monte, Marshall Inds.          | 818-307-6000 |
| CA | Irvine, Capstone                  | 714-587-0638 |
| CA | Irvine, Marshall Inds.            | 714-458-5380 |
| CA | Irvine, Milgray                   | 800-466-9277 |
| CA | Milpitas, Marshall Inds.          | 408-943-4600 |
| CA | N. Hollywood, B. J. Wolfe Entprs. | 213-877-5518 |
| CA | Sacramento, Marshall Inds.        | 916-635-9700 |
| CA | San Diego, Marshall Inds.         | 619-578-9600 |
| CA | San Jose, B.J. Wolfe Entprs.      | 408-371-3443 |
| CA | San Jose, Capstone Elctms.        | 408-453-9804 |
| CO | Denver, Capstone Elctms.          | 303-451-8383 |
| CO | Denver, Marshall Inds.            | 303-451-8383 |
| CT | Wallingford, Marshall Inds.       | 203-265-3822 |
| FL | Altamonte Springs, Marshall Inds. | 407-767-8585 |

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| FL  | St. Petersburg, Marshall Inds.          | 813-573-1399 |
| GA  | Atlanta, Marshall Inds.                 | 404-923-5750 |
| GA  | Atlanta, Milgray                        | 800-241-5523 |
| IL  | Chicago, Capstone Elctms.               | 708-250-0300 |
| IL  | Chicago, Marshall Inds.                 | 708-490-0155 |
| IL  | Chicago, Milgray                        | 800-322-6271 |
| IN  | Indianapolis, Marshall Inds.            | 317-297-0483 |
| KS  | Kansas City, Marshall Inds.             | 913-492-3121 |
| KS  | Kansas City, Milgray                    | 800-255-6576 |
| MD  | Columbia, Capstone                      | 609-596-7500 |
| MD  | Columbia, Milgray                       | 800-638-6656 |
| MD  | Silver Springs, Marshall Inds.          | 301-622-1118 |
| MD  | Spencerville, United States Elctms.     | 301-384-3300 |
| MD  | Spencerville, US Elctms.                | 301-384-3300 |
| MA  | Wilmington, Capstone Elctms.            | 508-657-5874 |
| MA  | Wilmington, Marshall Inds.              | 508-658-0810 |
| MA  | Winchester, Webb Distrib.               | 617-729-6839 |
| MI  | Detroit, LWC Distrib.                   | 313-464-7700 |
| MI  | Detroit, Marshall Inds.                 | 313-525-5850 |
| MN  | Minneapolis, Capstone                   | 612-250-0300 |
| MN  | Minneapolis, Marshall Inds.             | 612-559-2211 |
| MO  | St. Louis, Marshall Inds.               | 314-291-4650 |
| NJ  | Fairfield, Marshall Inds.               | 201-882-0320 |
| NJ  | Marlton, Capstone Elctms.               | 609-596-7500 |
| NJ  | Marlton, Milgray                        | 800-257-7111 |
| NJ  | Mt. Laurel, Marshall Inds.              | 609-234-9100 |
| NJ  | Parsippany, Milgray                     | 800-622-0291 |
| NY  | Farmingdale, Milgray                    | 800-645-4729 |
| NY  | Rochester, Marshall Inds.               | 716-235-7620 |
| NY  | Syracuse, Marshall Inds.                | 607-785-2345 |
| NC  | Raleigh, Capstone Elctms.               | 919-954-0600 |
| NC  | Raleigh, Century Elctms.                | 919-596-2220 |
| NC  | Raleigh, Marshall Inds.                 | 919-878-9882 |
| OH  | Cleveland, Electronic Mktg. Corp. (EMC) | 800-366-3625 |
| OH  | Cleveland, Marshall Inds.               | 216-248-1788 |
| OH  | Columbus, Elct. Mktg. (EMC)             | 800-366-3621 |
| OH  | Dayton, Marshall Inds.                  | 513-898-4480 |
| OH  | Westerville, Marshall Inds.             | 614-891-7581 |
| OK  | Tulsa, Norvell Elctms.                  | 918-254-8606 |
| OR  | Beaverton, Almac Elctms.                | 503-629-8090 |
| OR  | Beaverton, Marshall Inds.               | 503-644-5050 |
| PA  | Philadelphia, Century Elctm. Comps.     | 215-631-5400 |
| PA  | Pittsburgh, Marshall Inds.              | 412-788-0441 |
| TX  | Austin, Marshall Inds.                  | 512-837-1991 |
| TX  | Austin, Norvell Elctms.                 | 512-343-2900 |
| TX  | Carrollton, Capstone Elctms.            | 214-380-9049 |
| TX  | Dallas, Marshall Inds.                  | 214-233-5200 |
| TX  | Dallas, Norvell Elctms.                 | 214-233-0020 |
| TX  | Houston, Marshall Inds.                 | 713-467-1666 |
| TX  | Houston, Milgray                        | 800-962-1849 |
| TX  | Houston, Norvell Elctms.                | 713-777-1666 |
| UT  | Salt Lake City, Marshall Inds.          | 801-485-1551 |
| UT  | Salt Lake City, Milgray                 | 800-537-9739 |
| WA  | Seattle, Almac Elctms.                  | 206-643-9992 |
| WA  | Seattle, Marshall Inds.                 | 206-486-5747 |
| WA  | Spokane, Almac Elctms.                  | 509-924-9500 |
| WI  | Milwaukee, Marshall Inds.               | 414-797-8400 |
| Can | Brampton, Ont., Marshall Inds.          | 416-458-8046 |
| Can | Calgary, Alb. Zentrionics               | 403-295-8838 |
| Can | Mississauga, Ont., Capstone Elctms.     | 416-670-2010 |
| Can | Mississauga, Ont., Zentrionics          | 416-451-9600 |
| Can | Montreal, Que. Zentrionics              | 514-737-9700 |
| Can | Nepean, Ont., Zentrionics               | 613-226-8840 |
| Can | Pontiac, Que. Mar, Marshall Inds.       | 514-694-8142 |
| Can | Richmond, B.C., Zentrionics             | 604-273-5575 |

|              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
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| 800-366-3625 | 216-248-1788 | 800-366-3621 | 513-898-4480 | 614-891-7581 | 918-254-8606 | 503-629-8090 | 503-644-5050 | 215-631-5400 | 412-788-0441 | 512-837-1991 | 512-343-2900 | 214-380-9049 | 214-233-5200 | 214-233-0020 | 713-467-1666 | 800-962-1849 | 713-777-1666 | 801-485-1551 | 800-537-9739 | 206-643-9992 | 206-486-5747 | 509-924-9500 | 414-797-8400 | 416-458-8046 | 403-295-8838 | 416-670-2010 | 416-451-9600 | 514-737-9700 | 613-226-8840 | 514-694-8142 | 604-273-5575 |
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|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|----------------------------|-------------------------------|------------------------------|------------------------------|---------------------------|--------------------|--------------------------|---------------------------|---------------------------------|-------------------------|-------------------------|
| COMPUTER PRODUCTS/POWER CONVERSION, See Power Conversion America, Computer Prods. Inc. | COMPUTER SYSTEM PRODUCTS, 14305 21st Ave. N., Minneapolis, MN 55447, Tel: 612-476-6866, 800-422-2537, FAX: 612-476-6966; Empl: 90; Sls. Mgr.: Mick Maher; Dist. Mgr.: Mick Maher | COMPUTER SYSTEMS TECHNICAL SUPPORT, 4015 E. Leaverton Ct., Anaheim, CA 92807, Tel: 714-632-1300, FAX: 714-632-1937; FSC No.: 9J740; Empl: 13; Sls. Mgr.: Reuven Arad | COMPUTERWARE, INC., 8480-I Tyco Rd., Vienna, VA 22182-2266, Tel: 703-821-8200, FAX: 703-821-1746; Empl: 18; Sls. Mgr.: John Dargo | COMPUTERWISE, 302 N. Winchester, Olathe, KS 66062, Tel: 913-829-0600, FAX: 913-829-0810; Empl: 27; Sls. Mgr.: William W. Brown; Dist. Mgr.: William W. Brown | COMPUTRON DISPLAY SYSTEMS, Excel Corporation, 835 Bonnie Lane, Elk Grove Village, IL 60007, Tel: 708-952-8800, FAX: 708-952-0232; Empl: 100; Sls. Mgr.: W. Miller | CO Littleton, Romulus | FL Margate, EPM Corp. | IL Palatine, Technlg. Sls. | MI Troy, C.B. Jensen & Assoc. | NJ Hasbrouk Hgts., Comp-Tech | NJ Hasbrouk Hgts., Tory Sls. | NJ Toms River, Xcel Corp. | NY Rochester, Apex | OH Cleveland, Xcel Corp. | OR Beaverton, J.J. Backer | PA Philadelphia, Powell Elctms. | TX Richardson, Pro-Comp | WA Seattle, J.J. Backer |
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COMPUTER PRODUCTS/POWER CONVERSION, See Power Conversion America, Computer Prods. Inc.

COMPUTER SYSTEM PRODUCTS, 14305 21st Ave. N., Minneapolis, MN 55447, Tel: 612-476-6866, 800-422-2537, FAX: 612-476-6966; Empl: 90; Sls. Mgr.: Mick Maher; Dist. Mgr.: Mick Maher

COMPUTER SYSTEMS TECHNICAL SUPPORT, 4015 E. Leaverton Ct., Anaheim, CA 92807, Tel: 714-632-1300, FAX: 714-632-1937; FSC No.: 9J740; Empl: 13; Sls. Mgr.: Reuven Arad

COMPUTERWARE, INC., 8480-I Tyco Rd., Vienna, VA 22182-2266, Tel: 703-821-8200, FAX: 703-821-1746; Empl: 18; Sls. Mgr.: John Dargo

COMPUTERWISE, 302 N. Winchester, Olathe, KS 66062, Tel: 913-829-0600, FAX: 913-829-0810; Empl: 27; Sls. Mgr.: William W. Brown; Dist. Mgr.: William W. Brown

COMPUTRON DISPLAY SYSTEMS, Excel Corporation, 835 Bonnie Lane, Elk Grove Village, IL 60007, Tel: 708-952-8800, FAX: 708-952-0232; Empl: 100; Sls. Mgr.: W. Miller

|                            |                     |              |
|----------------------------|---------------------|--------------|
| Local Sales Offices & Reps | 909-391-4321        | 619-578-0900 |
| CA                         | Ontario, Xcel Corp. |              |
| CA                         | San Diego, El-Com   |              |

|    |                              |              |
|----|------------------------------|--------------|
| CO | Littleton, Romulus           | 303-770-4888 |
| FL | Margate, EPM Corp.           | 305-977-0331 |
| IL | Palatine, Technlg. Sls.      | 708-991-6600 |
| MI | Troy, C.B. Jensen & Assoc.   | 313-643-0506 |
| NJ | Hasbrouk Hgts., Comp-Tech    | 201-288-7400 |
| NJ | Hasbrouk Hgts., Tory Sls.    | 201-288-5656 |
| NJ | Toms River, Xcel Corp.       | 908-830-7525 |
| NY | Rochester, Apex              | 716-272-7040 |
| OH | Cleveland, Xcel Corp.        | 216-239-4998 |
| OR | Beaverton, J.J. Backer       | 503-627-0775 |
| PA | Philadelphia, Powell Elctms. | 215-365-1900 |
| TX | Richardson, Pro-Comp         | 214-669-1500 |
| WA | Seattle, J.J. Backer         | 206-285-1300 |

#### Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Comp. Distrib.          | 205-883-7501 |
| AL | Huntsville, Powell Elctms.          | 205-539-2731 |
| AZ | Tempe, Powell Elctms.               | 602-967-7538 |
| AR | Little Rock, Comp. Distrib.         | 501-227-4678 |
| CA | Cerritos, El-Com                    | 213-404-2961 |
| CA | Fullerton, Pyramid                  | 714-773-0781 |
| CA | San Jose, Powell Elctms.            | 408-943-0561 |
| CA | Santa Clara, Pyramid Elec.          | 408-727-9810 |
| CT | Hamden, Impact Elctms.              | 203-281-1331 |
| FL | Ft. Lauderdale, Comp. Distrib.      | 305-971-4950 |
| FL | Ft. Lauderdale, Powell Elctms./Fla. | 305-972-4300 |
| GA | Norcross, Comp. Distrib.            | 404-441-3320 |
| MD | Columbia, Powell Elctms.            | 301-621-4070 |
| MA | Canton, Impact Sls. Co.             | 617-821-1500 |
| MA | W.borough, Powell Elctms.           | 617-336-6100 |
| MI | St. Clair Shores, Specialties Mktg. | 313-771-2700 |
| NC | Cary, Powell Elctms.                | 919-467-1212 |
| NC | Raleigh, Comp. Distrib.             | 919-834-9465 |

COMSPEC DIGITAL PRODUCTS INC., 2313 W. Sam Houston Pkwy N.S. 141, Houston, TX 77043, Tel: 713-461-4487, FAX: 713-461-8846; Empl: 3; Sls. Mgr.: T. A. Paine; Dist. Mgr.: T. A. Paine

COMSTRON A DIV. OF AEROFLEX, 35 S. Service Road, Plainview, NY 11803, Tel: 516-752-2351, TWX: 310-497-3525, FAX: 516-694-6771; Empl: 120; Sls. Mgr.: William J. Meditz

COMTECH MICROWAVE CORP., Comtech Telecommunications Corp., 105 Baylis Rd., Melville, NY 11747, Tel: 516-777-8900, FAX: 516-777-8877; FSC No.: 31196; Sls. Mgr.: B. Diers

COM-2, INC., 1556 Woodland Dr., Saline, MI 48176, Tel: 313-429-9027, FAX: 313-429-1902; Empl: 70; Sls. Mgr.: Robert Green

COMUS INTERNATIONAL, 263 Hillside Ave., Nutley, NJ 07110, Tel: 201-667-6200, 1-800-35-COMUS, FAX: 201-667-6837; Sls. Mgr.: Gene Moran

Local Sales Offices & Reps MA Sharon, Adcour 617-784-8123

Local Distributors MA Sharon, Adcour 617-784-8123, FAX: 617-784-5563

CONAP, INC., 1405 Buffalo St., Olean, NY 14760, Tel: 716-372-9650, FAX: 716-372-1594; Empl: 135

CONAX BUFFALO CORPORATION, 2300 Walden Ave., Buffalo, NY 14225, Tel: 716-684-4500, FAX: 716-684-7433; FSC No.: 03688; Empl: 190; Sls. Mgr.: R.C. Paluch

CONCORD ELECTRONICS CORPORATION, 30 Great Jones St., New York, NY 10012, Tel: 1-212-777-6571, TWX: 710-581-4930, FAX: 1-212-995-0161; FSC No.: MFR 18310; Empl: 225; Sls. Mgr.: Josie Wheaton

Local Distributors

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Huntsville, Century Fasteners        | 205-883-5344 |
| AZ | Tucson, PSN Distrib.                 | 602-623-9800 |
| AR | Little Rock, Carlton-Bates           | 501-562-9100 |
| CA | Mission Hills, Coast Air             | 818-898-2288 |
| CA | San Jose, Bisco                      | 408-996-8420 |
| CO | Denver, CSID/Integrated              | 303-292-5538 |
| CT | Danbury, Heiland                     | 208-797-8600 |
| DE | New Castle, Electronics Exchange     | 302-322-5401 |
| FL | Sanford, Electronic Fasteners        | 407-321-4000 |
| GA | Norcross, Atlanta Hardware Specialty | 404-449-3000 |

|    |                                  |              |
|----|----------------------------------|--------------|
| HI | AIEA, Newark Elctms.             | 808-487-8951 |
| ID | Coeurd'Alene, A-I Consolidated   | 208-765-3280 |
| IL | Franklin Park, Bisco             | 312-451-1230 |
| IN | Indianapolis, Mar Elctms.        | 317-633-6699 |
| IA | Cedar Rapids, Dee Elctms.        | 319-365-7551 |
| KS | Wichita, RSC Elec.               | 216-267-5213 |
| KY | Bowling Green, Crescent Elctms.  | 502-842-2444 |
| LA | New Orleans, Radio Pts.          | 504-581-5959 |
| MD | Gaithersburg, MS Elctms.         | 301-921-0200 |
| MA | Billerica, MS Inserts            | 508-670-5600 |
| MI | Farmington Hills, Advent Elctms. | 313-477-1650 |



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|-----|------------------------------------|--------------|
| MIN | New Brighton, Chris Elctms.        | 612-631-2647 |
| MS  | Jackson, Newark Elctms.            | 601-956-3834 |
| MO  | St. Charles, Finnegan Elctms.      | 314-946-6201 |
| NE  | Omaha, Omaha Elctms.               | 402-341-3440 |
| NV  | Reno, Richco                       | 702-323-4939 |
| NH  | Nashua, Brevan                     | 603-889-7230 |
| NJ  | Kenilworth, Federated Purchasers   | 201-272-0505 |
| NM  | Albuquerque, Electronic Pts.       | 505-293-6161 |
| NY  | Bohemia, Car-Lac                   | 516-567-4200 |
| NC  | Raleigh, Century Elec. Comp.       | 919-782-2116 |
| OH  | Dayton, Stotts-Friedman            | 513-298-5555 |
| OK  | Tulsa, Altair                      | 918-252-5781 |
| OR  | Beaverton, Comp. Resources         | 503-641-8488 |
| PA  | Philadelphia, PEI Genesis          | 215-673-0400 |
| PI  | Pawtucket, Major Edwards           | 401-725-7400 |
| SC  | Charleston, Wholesale Indl. Elec.  | 803-577-6388 |
| TN  | Knoxville, Industrial Elect        | 615-573-7135 |
| TX  | Richardson, Aero Glen              | 214-234-0984 |
| UT  | Salt Lake City, Kimball Elctms.    | 801-328-2075 |
| VT  | Colchester, Hooker Elctms.         | 802-864-0885 |
| VA  | Springfield, Southern Fasteners    | 703-922-8048 |
| WA  | Redmond, Olander                   | 206-881-3448 |
| WI  | Beckley, State Elec.               | 304-256-2219 |
| WV  | Grafton, Lakeview Elec.            | 414-377-8250 |
| EXP | Taipei, Taiwan, Gold-Tek Elec. Co. | 20-717-2302  |
| Can | Mississauga, Ont., Rush Elctms.    | 416-677-7280 |

## Condenser Products

**FAX: 904-799-0221**

**CONDENSER PRODUCTS CORP.**, 2131 Broad St.,  
Brooksville, FL 34609, Tel: 904-796-3561; FSC No. 16727;  
Empl: 22; Sls. Mgr: Terry Baker **A-1058-1060**

*Local Sales Offices & Reps*

TX Lewisville, Elctm. Prod. Reps. 214-436-4772



**FAX: 805-487-8911**

**CONDOR D.C. POWER SUPPLIES, INC.**, 2311  
Statham Pkwy., Oxnard, CA 93033, Tel: 805-486-4565;  
Empl: 250; Sls. Mgr: Michael F. Kirkowski, Exec. VP Mktg.;  
Dist. Mgr: Mary Shaw **D-1636-1645**

*Local Sales Offices & Reps*

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Adams Elctms.           | 205-882-2988 |
| AZ | Phoenix, Howe & Howe                | 602-264-7971 |
| CA | San Dimas, AF Sls.                  | 909-599-4412 |
| CA | Sunnyvale, Trinity Technlg.         | 408-733-9000 |
| CO | Denver, AKI Enrtpr.                 | 303-388-4488 |
| CT | Madison, Focus Elctms. Sls.         | 203-245-4314 |
| FL | Altamonte Springs, Semtronic Assoc. |              |

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|-----|-----------------------------------|--------------|
| GA  | Lilburn, Adams Elctms.            | 407-831-8233 |
| IL  | Elk Grove Vlg., Tristar           | 404-925-9115 |
| IN  | Carmel, Current Elctms. Mktg.     | 317-844-1770 |
| IA  | Cedar Rapids, Lorenz Sls., Inc.   | 319-377-4666 |
| KS  | Overland Park, Lorenz Sls., Inc.  | 913-469-1312 |
| MD  | Columbia, Delta III Assocs.       | 410-730-7400 |
| MA  | Taunton, Focus Elctms. Sls., Inc. | 508-824-3840 |
| MI  | Plymouth, Jay Mktg.               | 313-459-1200 |
| MN  | Minneapolis, ECS                  | 612-933-2594 |
| MO  | St. Louis, Lorenz Sls. Inc.       | 314-997-4558 |
| NJ  | Marlton, BGR Assocs.              | 609-983-1020 |
| NY  | Pittsford, C W Beach Co.          | 716-586-3200 |
| NY  | Yonkers, Sonkin Assocs.           | 914-968-8282 |
| OH  | Dayton, Thompson & Assocs.        | 513-435-7733 |
| OR  | Beaverton, Eclipse Mktg. Grp.     | 503-642-1661 |
| TX  | Austin, M Rep                     | 512-205-0828 |
| TX  | Dallas, M Rep                     | 214-484-5711 |
| WA  | Redmond, Eclipse Mktg. Grp.       | 206-885-6991 |
| Can | Mississauga, GMA, Inc.            | 416-671-6111 |

*Local Distributors*

|    |                             |              |
|----|-----------------------------|--------------|
| AL | Huntsville, Allied Elctms.  | 205-721-3500 |
| AL | Huntsville, Future Elctms.  | 205-830-2322 |
| AL | Huntsville, Hammond Elctms. | 205-830-4764 |
| AZ | Phoenix, Aerospace S.W.     | 602-582-2779 |
| AZ | Phoenix, Allied Elctms.     | 602-437-9080 |
| AZ | Phoenix, Future Elctms.     | 602-968-7140 |
| AZ | Scottsdale, Kent Elctms.    | 602-998-0399 |
| AZ | Tempe, Cypress Elctms.      | 602-966-2256 |
| AZ | Tucson, SWS Elctms.         | 602-628-1613 |
| CA | Camarillo, Milgray          | 805-484-4055 |
| CA | Chatsworth, Allied Elctms.  | 818-882-6981 |

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|----|-----------------------------------|--------------|
| CA | Chatsworth, Future                | 818-772-6240 |
| CA | Costa Mesa, Cypress Elctms.       | 714-549-2424 |
| CA | Costa Mesa, FLW                   | 714-751-7512 |
| CA | Fremont, Allied Elctms.           | 510-505-0220 |
| CA | Fremont, FLW                      | 415-651-6511 |
| CA | Invine, Milgray                   | 714-753-1282 |
| CA | Milpitas, Kent Elctms.            | 408-262-5300 |
| CA | San Diego, Allied Elctms.         | 619-279-2550 |
| CA | San Diego, Cypress Elctms.        | 619-535-0011 |
| CA | San Diego, Future                 | 619-625-2800 |
| CA | San Diego, Kent Elctms.           | 619-453-7133 |
| CA | San Jose, Future Elctms.          | 408-434-1122 |
| CA | San Jose, Milgray                 | 408-456-0900 |
| CA | Santa Ana, Foresight              | 714-833-2134 |
| CA | Santa Clara, Cypress Elctms.      | 408-980-2500 |
| CA | Santa Clara, Foresight            | 408-980-9700 |
| CA | Torrance, Kent Elctms.            | 310-320-2700 |
| CO | Broomfield, Future Elctms.        | 303-421-0123 |
| CO | Englewood, Allied Elc.            | 303-790-1664 |
| CO | Englewood, Cypress                | 303-792-5829 |
| CO | Englewood, Kent Elctms.           | 303-782-0670 |
| CT | Berlin, Kent Elctms.              | 203-829-2100 |
| CT | Bethel, Future Elctms.            | 203-743-9594 |
| CT | Cheshire, Allied Elctms.          | 203-272-7730 |
| CT | Milford, Milgray                  | 203-878-5538 |
| FL | Altamonte Springs, Future         | 407-767-8414 |
| FL | Casselberry, Allied               | 800-433-5700 |
| FL | Deerfield Beach, Vantage Comp.    | 305-729-1001 |
| FL | Fl. Lauderdale, Hammond Elctms.   | 305-973-7103 |
| FL | Lake Mary, Milgray                | 800-367-0780 |
| FL | Largo, Future                     | 813-530-1222 |
| FL | Largo, Kent Elctms.               | 813-545-0057 |
| FL | Orlando, Hammond Elctms.          | 407-841-1010 |
| GA | Duluth, Allied Elctms.            | 800-433-5700 |
| GA | Norcross, Future Elctms.          | 404-441-7676 |
| GA | Norcross, Hammond Elctms.         | 404-449-1996 |
| GA | Norcross, Milgray                 | 404-446-9777 |
| IL | Chicago, Dalec Distrs.            | 312-283-0300 |
| IL | Elk Grove, Kent Elctms.           | 708-364-1300 |
| IL | Hoffman Estate, Future Elctms.    | 708-882-1255 |
| IL | Palatine, Milgray                 | 708-202-1900 |
| IL | Schaumburg, Bortech Sls.          | 708-882-7640 |
| IL | Wood Dale, Allied Elctms.         | 800-433-5700 |
| IN | Indianapolis, Allied Elctms.      | 800-433-5700 |
| IA | Cedar Rapids, Kent Elctms.        | 319-373-0525 |
| IA | Des Moines, Allied Elctms.        | 800-433-5700 |
| KS | Lenexa, Allied Elctms.            | 800-433-5700 |
| KS | Overland Park, Kent Elctms.       | 913-338-4300 |
| KS | Overland Pk, Milgray              | 913-236-8800 |
| KS | Shawnee Mssn, Aerospace Comp.     | 913-432-8508 |
| KY | Louisville, Allied Elctms.        | 800-433-5700 |
| LA | Metairie, Allied Elctms.          | 800-433-5700 |
| MD | Columbia, Allied Elctms.          | 800-433-5700 |
| MD | Columbia, Future Elctms.          | 301-290-0600 |
| MD | Columbia, Kent Elctms.            | 301-720-6200 |
| MD | Columbia, Milgray                 | 301-621-8169 |
| MD | Columbia, Vantage                 | 410-720-5100 |
| MD | Gaithersburg, MS Elctms.          | 301-921-0200 |
| MA | Andover, Vantage Comp             | 508-687-3900 |
| MA | Billerica, Allied Elctms.         | 800-433-5700 |
| MA | Billerica, Mayor Elctms.          | 617-229-2255 |
| MA | Boston, Future Elctms.            | 508-779-3000 |
| MA | Chelmsford, Kent Elctms.          | 508-250-9666 |
| MA | Wilmington, Milgray               | 508-657-5900 |
| MI | Ann Arbor, McNaughton-McKay       | 313-995-9515 |
| MI | Livonia, Future Elctms.           | 313-261-5270 |
| MI | Madison Heights, McNaughton-McKay |              |

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|----|------------------------------------|--------------|
| MI |                                    | 313-399-7500 |
| MI | Plymouth, Allied Elctms.           | 800-433-5700 |
| MN | Bloomington, Allied Elctms.        | 800-433-5700 |
| MN | Eden Prairie, Cypress              | 612-934-2104 |
| MN | Eden Prairie, Future Elctms.       | 612-944-2200 |
| MN | Edina, Bortech Sls.                | 612-835-9005 |
| MN | Minneapolis, Aerospace Comp. Prod. |              |
| MN |                                    | 612-884-4725 |
| MN | St. Paul, Kent Elctms.             | 612-642-2828 |
| MO | Earth City, Allied                 | 800-433-5700 |
| MO | Hazelwood, Kent Elctms.            | 314-895-1515 |
| NE | Omaha, Allied Elctms.              | 800-433-5700 |
| NH | Nashua, Allied Elctms.             | 800-433-5700 |
| NJ | Clijfton, Vantage Comp.            | 201-777-4100 |
| NJ | Marlton, Future Elctms.            | 609-596-4080 |
| NJ | Marlton, Milgray                   | 609-983-5010 |
| NJ | Parsippany, Allied Elctms.         | 800-433-5700 |
| NJ | Parsippany, Milgray                | 201-335-1766 |
| NY | All Cities, Allied Elctms.         | 800-433-5700 |
| NY | Farmingdale, Milgray               | 516-391-3000 |
| NY | Hauppauge, Future Elctms.          | 516-234-4000 |
| NY | Liverpool, Future Elctms.          | 315-451-2371 |
| NY | Mt. Sinai, Kent Elctms.            | 516-447-2000 |
| NY | Pittsford, Milgray                 | 716-381-9700 |
| NY | Rochester, Future Elctms.          | 716-272-1120 |
| NY | Smithtown, Vantage Comp.           | 516-543-2000 |
| NY | Yonkers, Kintronics                | 914-347-2530 |
| NC | Concord, Future Elctms.            | 704-455-9030 |
| NC | Greensboro, Hammond Elctms.        | 919-275-6391 |
| NC | Raleigh, Allied                    | 800-433-5700 |
| NC | Raleigh, Century Elctms. Comp.     | 919-596-2220 |

|     |                                     |              |
|-----|-------------------------------------|--------------|
| NC  | Raleigh, Future Elctms.             | 919-790-7111 |
| NC  | Raleigh, Milgray                    | 919-790-8094 |
| OH  | All Cities, Allied Elec             | 800-433-5700 |
| OH  | Cleveland, Milgray                  | 216-447-1520 |
| OH  | Mayfield Hts., Future Elec          | 216-449-8996 |
| OK  | Tulsa, Allied Elctms.               | 800-433-5700 |
| OK  | Tulsa, Norvell Elec.                | 918-628-1916 |
| OR  | Beaverton, EOFF                     | 503-645-9454 |
| OR  | Beaverton, Kent Elctms.             | 503-626-8300 |
| OR  | Bend, EOFF                          | 503-388-1544 |
| OR  | Eugene, EOFF                        | 503-342-1277 |
| OR  | Salem, Eoff                         | 503-363-9251 |
| PA  | All Cities, Allied Elctms.          | 800-433-5700 |
| PA  | Norristown, Century Elctms. Comp.   | 215-631-5400 |
| RI  | Pawtucket, Major Edwards            | 401-725-7400 |
| SC  | Greenville, Allied Elctms.          | 800-433-5700 |
| TN  | Memphis, Allied Elctms.             | 800-433-5700 |
| TX  | All Cities, Allied Elctms.          | 800-433-5700 |
| TX  | Austin, Kent Elctms.                | 512-834-1900 |
| TX  | Austin, Norvell Elctms.             | 214-233-0020 |
| TX  | Dallas, Milgray                     | 214-248-1603 |
| TX  | Dallas, Norvell Elctms.             | 214-233-0020 |
| TX  | Houston, Future Elctms.             | 713-556-8696 |
| TX  | Houston, Kent Elctms.               | 713-780-7770 |
| TX  | Houston, Norvell Elctms.            | 713-462-1666 |
| TX  | Irvine, Cypress Elctms.             | 214-255-0065 |
| TX  | Richardson, Future Elctms.          | 214-437-2437 |
| TX  | Richardson, Kent Elctms.            | 214-669-2600 |
| TX  | Stafford, Milgray                   | 713-240-5360 |
| UT  | Salt Lake City, Allied Elctms.      | 800-433-5700 |
| UT  | Salt Lake City, Milgray             | 801-261-2999 |
| VA  | All Cities, Allied Elctms.          | 800-433-5700 |
| WA  | Bothell, Cypress Elctms.            | 206-483-1144 |
| WA  | Redmond, Future Elctms.             | 206-881-8199 |
| WA  | Redmond, Kent Elctms.               | 206-883-7200 |
| WA  | Seattle, Allied                     | 800-433-5700 |
| WA  | Vancouver, Eoff                     | 206-694-7504 |
| WI  | New Berlin, Allied Elctms.          | 414-796-1280 |
| WI  | Waukesha, Future Elctms.            | 414-786-1884 |
| Can | Calgary, Alb., Future Elctms.       | 403-250-5550 |
| Can | Edmonton, Alb., Future Elctms.      | 403-438-2858 |
| Can | Mississauga, Ont., Future Elctms.   | 416-612-9200 |
| Can | Mississauga, Ont., Milgray          | 416-678-0955 |
| Can | Montreal, Que., Elctm. Wholesale    | 514-769-8851 |
| Can | Ottawa, Ont., Elctm. Wholesale      | 613-746-4413 |
| Can | Ottawa, Ont., Future Elctms.        | 613-820-8313 |
| Can | Pl. Claire, Que., Ferrotronic Comp. | 514-426-0300 |
| Can | Pl. Claire, Que., Future Elctms.    | 514-694-7710 |
| Can | Pl. Claire, Que., Milgray           | 514-426-5900 |
| Can | Quebec, Que., Future Elctms.        | 418-877-6666 |
| Can | Toronto, Ont., Duncan Inst. Ltd.    | 416-742-4448 |
| Can | Vancouver, B.C., Future Elctms.     | 604-294-1166 |
| Can | Winnipeg, Man., Future Elctms.      | 204-786-7711 |

**CONDOR PACIFIC INDS., INC.**, 8053 Deering Ave.,  
Canoga Park, CA 91304, Tel: 818-347-8331, TELEX: 65-  
1442, FAX: 818-713-0162; FSC No.: 24321; Empl: 110

**CONDOR SYSTEMS, INC.**, 2133 Samaritan Dr., San Jose,  
CA 95124, Tel: 408-371-9580, FAX: 408-371-9589; FSC  
No.: 62065; Empl: 318; Sls. Mgr: Dave Klingler

**CONDUCTIVE RUBBER TECHNOLOGY, INC.**, 22125  
17th Ave. S.E. Ste. 117, Bothell, WA 98021, Tel: 206-486-  
8559, FAX: 206-487-0945; Empl: 30; Sls. Mgr: K. Grant

**CONDUCTIVE SYSTEM, INC.**, R.D. No. 1, Box 1040, Rte.  
5 South, Amsterdam, NY 12010, Tel: 518-843-5740, FAX:  
518-843-5829; Empl: 25; Sls. Mgr: Walter G. Bruce

**CONDUCTUS, INC.**, 969 W. Maude Ave., Sunnyvale, CA  
94086, Tel: 408-737-6700, FAX: 408-737-6699; Empl: 40

**CONFORMING MATRIX**, Box 5126, Pt. Pl. Sta., Toledo,  
OH 43611, Tel: 419-729-3777, FAX: 419-729-3779; Empl:  
35

**CONKLIN INSTRUMENT CORP.**, West Rd., P.O. Box  
650, Pleasant Valley, NY 12569, Tel: 914-635-2136, FAX:  
914-635-2510; Empl: 120; Sls. Mgr: Steve A. Muise, VP  
Sls.

**CONNECT-AIR INTERNATIONAL, INC.**, 50 37th St.  
NE, Auburn, WA 98002, Tel: 206-939-4880, FAX: 206-  
939-4882; Empl: 50; Sls. Mgr: Ron Jones

**CONNECTICUT HARD RUBBER CO.**, See CHR Inds.

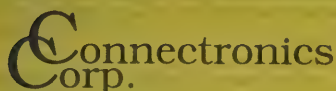
**CONNECTICUT MICROWAVE CORP.**, 10 B Trackside  
Business Park, Cheshire, CT 06410, Tel: 203-250-9678,  
FAX: 203-250-9688; FSC No.: 50974; Empl: 15; Sls. Mgr:  
Joseph W. Raines

**CONNECTOR ACCESSORIES, INC.**, See Mueller  
Elec. Co.



**CONNECTOR CORP.**, 6025 N. Keystone Ave., Chicago, IL 60646, Tel: 312-539-3108, TWX: 910-221-6059, FAX: 312-539-3825; Sls. Mgr.: Michael Gits ..... **C-1292**

**CONNECTOR INDUSTRIES OF AMERICA DIV.**, Microdot Mfg., 10340 Julian Dr., Cincinnati, OH 45215, Tel: 513-772-3680; FSC No.: 32076; Empl: 60; Sls. Mgr.: Bob Cain



**FAX: 419-537-0007**

**CONNECTRONICS CORP.**, 2745 Avondale Ave., Toledo, OH 43607, Tel: 419-537-0020; FSC No.: 0LE36; Empl: 15; Sls. Mgr.: Bruce A. Begitschke ..... **C-1293**

| Local Sales Offices & Reps             |              |
|----------------------------------------|--------------|
| AZ Tucson, Blackhart Assocs.           | 602-579-0399 |
| CA Morgan Hill, Power Connection, Inc. | 408-779-8888 |
| CO Silt, Blackhart Assocs.             | 303-876-5605 |
| GA Atlanta, Electro Technlg. Prods.    | 404-262-1522 |
| MA Lexington, Prof. Inc.               | 617-863-1598 |
| MN Stillwater, Jesc. Elctm. Reps       | 612-436-1950 |
| NJ Summit, Intl. Cable Corp.           | 908-273-4470 |
| NY Victor, Kirby Mktg.                 | 716-248-8750 |
| OH Toledo, Connectronics               | 419-537-0020 |



**FAX: 708-851-5040**

**CONNOR-WINFIELD CORP.**, 1865 Selmarten Rd., Aurora, IL 60505-1335, Tel: 708-851-4722; FSC No.: 5955; Empl: 45; Sls. Mgr.: Tom Grabowski ..... **A-1350-1355**

| Local Sales Offices & Reps              |              |
|-----------------------------------------|--------------|
| AL Huntsville, Macro Mktg.              | 205-883-9630 |
| AZ Scottsdale, Spectrum Mktg. Assoc.    | 602-890-9000 |
| CA Campbell, Shur Sls.                  | 408-374-5577 |
| CA San Diego, A.T.A. Assoc.             | 619-792-6079 |
| CA Westlake Village, First Rep          | 805-373-0887 |
| CO Denver, Spectrum Mktg. Assoc.        | 303-480-9991 |
| CT Cheshire, Scientific Comps.          | 203-272-2963 |
| FL Boca Raton, APM Assoc.               | 407-395-7308 |
| FL Tampa, APM Assoc.                    | 813-886-2457 |
| FL Winter Park, APM Assoc.              | 407-678-2777 |
| ID Boise, Q.R. Crown                    | 208-344-9588 |
| IN Ft. Wayne, R.O. Whitesell            | 219-489-0588 |
| IN Indianapolis, R.O. Whitesell         | 317-876-9000 |
| IN Kokomo, R.O. Whitesell               | 317-457-9127 |
| KY Versailles, R.O. Whitesell           | 606-873-1182 |
| MD Kensington, Koebert Assocs.          | 301-493-8924 |
| MA Lexington, Kanan Technlgs.           | 617-861-7300 |
| MI Grand Blanc, R.O. Whitesell          | 313-695-0770 |
| MI Grand Rapids, R.O. Whitesell         | 616-942-5420 |
| MI Southfield, R.O. Whitesell           | 313-352-5454 |
| MI St. Joseph, R.O. Whitesell           | 616-983-7337 |
| NC Charlotte, Quantum Mktg.             | 704-523-8822 |
| NC Raleigh, Quantum Mktg.               | 919-846-5728 |
| OH Cincinnati, R.O. Whitesell           | 513-528-5644 |
| OH Cleveland, R.O. Whitesell            | 216-447-9020 |
| OH Columbus, R. O. Whitesell            | 614-888-9396 |
| OH Dayton, R.O. Whitesell               | 513-298-9546 |
| OR Portland, Q.R. Crown                 | 503-620-8320 |
| PA Glenside, Koebert Assocs.            | 215-887-2310 |
| PA Pittsburgh, R.O. Whitesell           | 412-963-6161 |
| TX Austin, Synergistic Sls.             | 512-346-2122 |
| TX Houston, Synergistic Sls.            | 713-937-1990 |
| TX Richardson, Synergistic Sls.         | 214-644-3500 |
| WA Bellevue, Q.R. Crown                 | 206-453-5100 |
| WI Mequon, Artmor Ltd.                  | 414-242-4127 |
| WI Ononowoc, Artmor Ltd.                | 414-367-8789 |
| Can Kanata, Ont., J-Squared Tech., Inc. | 613-592-9540 |

| Local Distributors        |              |
|---------------------------|--------------|
| PA Glenside, Mark Elctms. | 215-887-2317 |

**CONRAC DISPLAY PRODUCTS, INC.**, 1724 S. Mountain Ave., Duarte, CA 91010, Tel: 818-303-0095, TELEX: 67-0437, TWX: 910-584-5913, FAX: 818-303-5484; Empl: 96; Sls. Mgr.: G.L. Ives, Dir. Mktg. & Sls.



**FAX: 708-455-8979**

**CONSOLIDATED ELECTRONIC WIRE & CABLE**, 11044 King St., Franklin Park, IL 60131-1412, Tel: 708-455-8830; FSC No.: 3612; Empl: 97; Sls. Mgr.: Karl Rankin; Dist. Mgr.: Steve Boynton ... **C-1294-1298, 1726-1739**

| Local Sales Offices & Reps               |              |
|------------------------------------------|--------------|
| AL Huntsville, New Age Elctms.           | 205-895-9400 |
| AZ Phoenix, Mercury Engrg. Sls.          | 602-265-0344 |
| AR N. Little Rock, Leo Baker Co.         | 501-834-2537 |
| CA Irvine, Vale Elctms. Assoc.           | 714-551-4004 |
| CA San Diego, Vale Elctms. Assocs.       | 619-487-7025 |
| CA San Jose, Westron Assoc.              | 408-264-4070 |
| CO Denver, Diversified Mktg. Grp.        | 303-231-6039 |
| CT Consolidated Elctm. Wire              | 708-455-8830 |
| FL Winter Park, Technlg. Mktg. Assoc.    | 407-671-2245 |
| GA Newman, New Age Elctms.               | 404-476-0079 |
| IL Mt. Prospect, The Dombrow Co.         | 708-253-3326 |
| IN Carmel, Frank Kahsar Sls.             | 317-844-9353 |
| IA Cedar Rapids, R.W. Kunz               | 319-396-5386 |
| IA Des Moines, Jerry Bunch Elec. Sls.    | 515-287-7057 |
| KS Prairie Village, R.W. Kunz            | 913-648-3535 |
| MI Sterling Heights, Frank Kahsar Sls.   | 313-795-3530 |
| MN Minneapolis, Tecteam Sls., Inc.       | 612-854-6616 |
| MO St. Louis, R.W. Kunz                  | 314-966-4977 |
| NY Mendon, Tech-Mark, Inc.               | 716-624-3840 |
| NY Woodside, Greater Metro Sls.          | 718-424-1911 |
| NC Raleigh, Vantage Mktg.                | 919-870-7123 |
| OH Cincinnati, Frank Kahsar Sls., Inc.   | 513-598-1484 |
| OH Columbus, Frank Kahsar Sls.           | 614-252-4009 |
| OH Elyria, Frank Kahsar Sls.             | 216-365-5219 |
| OH Mentor, Frank Kahsar Sls.             | 216-257-1166 |
| PA Horsham, Jacobsen Assoc.              | 215-674-2937 |
| PA Wexford, Frank Kahsar Sls.            | 412-935-8561 |
| SC Walhalla, Overton Assoc.              | 803-638-7101 |
| TN New Tazewell, Overton Assoc.          | 615-626-6009 |
| TX Plano, B&R Elctm. Sls. Corp.          | 214-985-0028 |
| VA Mechanicsville, R.B. Marsland Assocs. | 804-746-5770 |
| WA Redmond, Sls. & Engrg. Assoc.         | 206-883-4999 |
| WI Mequon, E.A. Dickinson                | 414-241-9140 |
| Can Con. Elctm. Wire & Cable             | 800-621-4278 |

**CONTACT, INC.**, Rte. 27 Box 2230, Edgcomb, ME 04556, Tel: 207-882-6116, FAX: 207-882-6122; FSC No.: M07015; Empl: 11; Sls. Mgr.: R.Reid; Dist. Mgr.: R.Reid

**CONTACT EAST**, 335 Willow St. S., N. Andover, MA 01845, Tel: 508-682-2000, FAX: 508-688-7829; Sls. Mgr.: Richard Sullivan

**CONTAQ TECHNOLOGIES CORP.**, 15 Main St., Bristol, VT 05443, Tel: 802-453-3332, FAX: 802-453-4250; FSC No.: 6680

**CONTEC MICROELECTRONICS USA**, 2188 Bering Drive, San Jose, CA 95131, Tel: 408-434-6767, 1-800-888-8884, FAX: 408-434-6884; Empl: 50; Sls. Mgr.: Nayan Pradhan

**CONTINENTAL DEVICE INDIA LIMITED**, C-120 Naraina Industrial Area, New Delhi, India 110028, Tel: 536150-53 (4 lines), TELEX: 031-76209, TWX: 031-76230; FSC No.: LJ; Empl: 1100; Sls. Mgr.: P. Gulati, Gen. Mgr. & VP Mfg.

**CONTINENTAL ELECTRONICS CORPORATION**, P.O. Box 270879, Dallas, TX 75227, Tel: 214-381-7161, TELEX: 73-398, FAX: 214-381-4949; FSC No.: 52151; Empl: 270

**CONTINENTAL MICROWAVE TECHNOLOGY INC.**, 7 Alexander Place, Glen Cove, NY 11542, Tel: 516-759-5600, FAX: 516-759-5603; Sls. Mgr.: Robert Hermann, Gen. Mgr. .... **A-1357**

| Local Sales Offices & Reps                 |              |
|--------------------------------------------|--------------|
| CA Palo Alto, Microwave Mktg. Assoc.       | 415-326-4143 |
| CA Westlake VI, Westtech Microwave, Inc.   |              |
| FL Melbourne Beach, EDSI Sls.              | 805-373-0033 |
| MD Laurel, CSDS, Inc.                      | 407-952-1240 |
| NY Melville, R.F. Elctm. Sls.              | 301-953-7884 |
| MA Wayland, High Tech Sls.                 | 516-420-8890 |
| TX Richardson, SW Microwave Elctms. Corp.  | 508-653-3838 |
| Can Montreal, Que., Solid State Engrg. Co. | 214-669-1195 |
|                                            | 514-481-3313 |

**CONTINENTAL RESOURCES**, Computer & Peripherals Div., 175 Middlesex Tpke., Bedford, MA 01730-1469, Tel: 617-275-0850, 800-937-4688, FAX: 617-275-5653; Empl: 250; Sls. Mgr.: Mark Berling

**CONTINENTAL RESOURCES, INC.**, Test Instruments Div., 175 Middlesex Tpke., Bedford, MA 01730, Tel: 617-275-0850, 800-937-4688, FAX: 617-275-2046; Empl: 250

**CONTROL CABLE, INC.**, 7261 Ambassador Rd., Baltimore, MD 21244, Tel: 410-298-4411, FAX: 410-265-1646; FSC No.: 510124759; Empl: 90; Sls. Mgr.: Bill Cook; Dist. Mgr.: Bill Cook

**CONTROL COMPONENTS & SYSTEMS, INC.**, 557 Long Road, Pittsburgh, PA 15235, Tel: 412-371-1111, FAX: 412-371-1112

**CONTROL CONCEPTS CORP.**, Liebert Corp., P.O. Box 1380, Binghamton, NY 13902-1380, Tel: 607-724-2484, FAX: 607-722-8713; Empl: 85; Sls. Mgr.: Pat Gillette, VP Sls.; Dist. Mgr.: Jim Harrison

**CONTROL ELECTRONICS**, Neurotech Corp., 139 Florida St., Farmingdale, NY 11735, Tel: 516-694-0125, FAX: 516-694-0133; FSC No.: 95924; Empl: 25; Sls. Mgr.: Harold Goldstein; Dist. Mgr.: Sandy Walthers

**CONTROL ENGRG., INC.**, 190 Doty Circle, West Springfield, MA 01089, Tel: 413-781-1330, FAX: 413-732-3367; Empl: 7; Sls. Mgr.: Mark Kimball

**CONTROL LASER CORP.**, 7503 Chancellor Dr., Orlando, FL 32809, Tel: 407-438-2500, TELEX: 514215; Empl: 70; Sls. Mgr.: Steven Graham, Sls. Mgr.

**CONTROLLED ENVIRONMENT EQUIPMENT CORP.**, 29 Sanford Dr., Gorham, ME 04038, Tel: 207-854-9126, TELEX: 62903721, FAX: 207-854-4357; FSC No.: 25254; Empl: 10; Sls. Mgr.: M. F. Peck



**FAX: 313-528-0411**

**CONTROLLED POWER CO.**, 1955 Stephenson Hwy., Troy, MI 48083, Tel: 313-528-3700, 1-800-521-4792, TWX: 810-2323401; Empl: 160; Sls. Mgr.: Timothy Tazzia; Dist. Mgr.: Ken Krause ..... **D-2253-2255**

| Local Sales Offices & Reps                 |                |
|--------------------------------------------|----------------|
| AL Controlled Power Co.                    | 1-800-521-4792 |
| AK Anchorage, Alaska Computer Environment  | 907-248-7168   |
| AZ Phoenix, Controlled Power Co.           | 1-800-521-4792 |
| CA Foster City, Controlled Power Co.       | 1-800-521-4792 |
| CO Denver, Computer Facility Components    | 303-778-8488   |
| DC Quality Power Sys. (GSA)                | 1-800-521-4792 |
| FL Orlando, KO Power                       | 1-800-229-4250 |
| GA Atlanta, Gallagher Electric             | 1-800-521-4792 |
| IL Controlled Power Co.                    | 1-800-521-4792 |
| IN Indianapolis, C.M. Buck                 | 317-293-5704   |
| KS Shawnee Mission, Maxima Elec. Sls.      | 913-722-1591   |
| KY Corydon, C.M. Buck                      | 812-738-4373   |
| LA Metairie, Rapco Assocs.                 | 1-800-521-4792 |
| MD Baltimore, Controlled Power Co.         | 1-800-521-4792 |
| MI Troy, Controlled Power Co.              | 1-800-521-4792 |
| MN Minnetonka, Automated Process Sys.      | 612-935-4766   |
| MO St. Louis, Controlled Power Co.         | 1-800-521-4792 |
| NE Omaha, Computer Protection              | 402-571-2322   |
| NH Bedford, Innovative Technologies, Inc.  | 603-624-4163   |
| NJ Nutley, Controlled Power Co.            | 1-800-521-4792 |
| NM Albuquerque, D.E.S.I.                   | 505-292-1022   |
| NY Bay Shore, Controlled Power Co.         | 1-800-521-4792 |
| NY Buffalo, Controlled Power Co.           | 1-800-521-4792 |
| NC Charlotte, Glen & Larson Co.            | 704-847-7418   |
| OH Westerville, Power Com Systems          | 614-890-1124   |
| OK Oklahoma City, Controlled Power Co.     | 1-800-521-4792 |
| OK Tulsa, Controlled Power Co.             | 1-800-521-4792 |
| OR Portland, NRG                           | 503-242-2506   |
| PA Philadelphia, Controlled Power Co.      | 1-800-521-4792 |
| PA Pittsburgh, Controlled Power Co.        | 1-800-521-4792 |
| SC Charleston, Glenn & Larson Co.          | 803-763-8640   |
| TN Memphis, Total Environmental Sys.       | 901-743-7154   |
| TN Memphis/Nashville, Controlled Power Co. | 1-800-521-4792 |



|     |                                             |                |
|-----|---------------------------------------------|----------------|
| TX  | Dallas, Controlled Power Co. ....           | 1-800-521-4792 |
| TX  | El Paso, Controlled Power Co. ....          | 1-800-521-4792 |
| TX  | Houston, Controlled Power Co. ....          | 1-800-521-4792 |
| UT  | Salt Lake City, Controlled Power Co. ....   |                |
| VA  | Sterling, Quality Power Sys. (GSA) ....     | 1-800-521-4792 |
| WA  | Seattle, Tech Source ....                   | 206-292-1656   |
| WI  | Wisconsin Rapids, Controlled Power Co. .... | 1-800-521-4792 |
| EXP | Various Offices, Controlled Power Co. ....  | 1-800-521-4792 |
| PR  | San Juan, RFF ....                          | 809-755-5679   |
| Can | Various Offices, Controlled Power Co. ....  | 1-800-521-4792 |

CONTROL LOGIC, See Hancock Electronics Corp.

CONTROL MODULE, 380 Enfield St, Enfield, CT 06082;  
Tel: 203-745-2433, TELEX: 643167, FAX: 203-741-6064;  
Empl: 160; Sls. Mgr: James W. Bianco

CONTROL PRODUCTS, INC., 280 Ridgedale Ave., E.  
Hanover, NJ 07936, Tel: 201-887-9400, FAX: 201-887-  
5083; FSC No: 81901; Empl: 62; Sls. Mgr: H.M. Stuhler;  
Dist. Mgr: H.M. Stuhler

CONTROL RESOURCES INC., 325 Ayer, Harvard, MA  
01451, Tel: 508-772-4043, FAX: 508-772-4142; Empl: 10;  
Sls. Mgr: James Quirk ..... **C-1575**



**FAX: 818-709-8546**

CONTROL SCIENCES, INC., 9509 Vassar Ave.,  
Chatsworth, CA 91311, Tel: 818-709-5510; FSC No.:  
53317; Empl: 20; Sls. Mgr: Rhod Zimmerman  
..... **D-1176-1181**

|                                       |                                    |              |
|---------------------------------------|------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                    |              |
| CA                                    | Luguna Niguel, Aktron Sls. ....    | 714-496-5057 |
| FL                                    | Oldsmar, Suncoast Elctm. Sls. .... | 813-787-9221 |

**CAL SWITCH**

CALIFORNIA SWITCH AND SIGNAL INC.

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FOR**

**COOPER**

**Belden**

|       |          |
|-------|----------|
| [310] | 538-9830 |
| [213] | 770-2330 |
| [714] | 525-6606 |
| [415] | 621-7386 |
| [408] | 279-8848 |
| [510] | 452-1009 |
| [916] | 448-6370 |
| [209] | 441-1725 |



**(800) CAL-SWCH**



**FAX: 608-429-9241**

**CONVERTER CONCEPTS, INC.**, 100 Industrial Pkwy.,  
Pardeeville, WI 53954, Tel: 608-429-3000; Empl: 125  
..... **D-1646-1647**

*Local Sales Offices & Reps*

|     |                                          |              |
|-----|------------------------------------------|--------------|
| CA  | San Jose, Vernexx & Assocs. ....         | 408-972-9072 |
| FL  | Clearwater, Dan-Tech Sls. ....           | 813-441-2609 |
| FL  | Davie, Dan-Tech Sls. ....                | 305-581-2884 |
| MD  | Kensington, Koeber Assoc. ....           | 301-439-8924 |
| MA  | Arlington, Interstate Sls. Assocs. ....  | 617-646-3914 |
| MA  | Chelmsford, Interstate Sls. Assocs. .... | 508-256-2287 |
| NY  | Rochester, KJM Garner ....               | 716-385-2103 |
| NY  | Smithtown, Koeber Assoc. ....            | 516-979-6683 |
| PA  | Glenside, Koeber Assoc. ....             | 215-887-2310 |
| RI  | Warren, Interstate Sls. Assocs. ....     | 401-245-8364 |
| TX  | Houston, Scientific Sls. Co. ....        | 713-645-6218 |
| TX  | Richardson, Scientific Sls. Co. ....     | 214-231-6541 |
| VA  | Alexandria, Koeber Assoc. ....           | 703-461-3655 |
| Can | Rexdale, Valtre Mktg. ....               | 416-851-0335 |
| Can | Vancouver, BC, Davetek Mktg. ....        | 604-430-3680 |

*Local Distributors*

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AL  | Huntsville, Comp. Dists., Inc. ....      | 205-851-7800 |
| CA  | Santa Anna, Foresight Elctms. ....       | 714-833-2134 |
| CA  | Santa Clara, Foresight ....              | 408-980-9700 |
| CO  | Englewood, Comp. Dists., Inc. ....       | 303-770-6214 |
| FL  | Clearwater, Comp. Dists., Inc. ....      | 813-796-0466 |
| FL  | Palm Bay, Comp. Dists., Inc. ....        | 407-724-9910 |
| GA  | Norcross, Comp. Dists., Inc. ....        | 404-441-3320 |
| IL  | Roselle, Foresight Elctms. ....          | 708-980-9890 |
| PA  | Glenside, Mark Elctms. ....              | 215-887-2317 |
| TX  | Dallas, Comp. Dists., Inc. ....          | 214-644-0373 |
| Can | Markham, Ont., Wm. Saynor & Assocs. .... |              |
|     |                                          | 416-415-1044 |
| Can | Rexdale, Valtre Mktg. ....               | 416-798-2555 |

**CONVERTER POWER, INC.**, Locust Rd, Ipswich, MA  
01938, Tel: 508-356-2558, FAX: 508-356-5729; Sls. Mgr:  
Barry Essig

**COOKE VACUUM PRODS., INC.**, 13 Merritt St., S.  
Norwalk, CT 06854, Tel: 203-853-9500, FAX: 203-838-  
9553; Empl: 45; Sls. Mgr: Louis W. Genuario

**THE COOL-AMP CONDUCTO-LUBE CO.**, 15834  
Upper Boones Ferry Rd, Lake Oswego, OR 97035, Tel:  
503-624-6426, FAX: 503-624-6436; FSC No.: 31628;  
Empl: 7; Sls. Mgr: Marian Bomber

**COOL CORPORATION**, 14170 23rd Ave. N, Minneapolis,  
MN 55447, Tel: 1-612-559-3117, FAX: 1-612-559-9679;  
Empl: 5; Sls. Mgr: Will Mielenz

**COONER WIRE CO.**, 9265 Owensmouth Ave, Chatsworth,  
CA 91311, Tel: 818-882-8311, FAX: 818-709-8281; Sls.  
Mgr: Steven W. Smith

**COOPER INDUSTRIES/BELDEN DIV.**, P.O. Box 1980,  
Richmond, IN 47375, Tel: 317-983-5200, 800-BELDEN-1,  
TWX: 810-345-1393, FAX: 317-983-5294; Empl: 3500;  
Sls. Mgr: Dan Trotta, Mgr. OEM Sls.; Dist. Mgr: Rick  
Schneidewind, Mgr. Dist. Sls.

**COOPER TOOLS**, PO Box 30100, Raleigh, NC 27622, Tel:  
919-781-7200, FAX: 919-783-2067

**COORS CERAMICS CO.**, Electronics, 17750 W. 32nd  
Ave., Golden, CO 80401, Tel: 303-277-4591, FAX: 303-  
277-4779; Empl: 1700

**COORS ELECTRONIC PACKAGE CO.**, 511  
Manufacturers Rd, Chattanooga, TN 37405, Tel: 615-755-  
5452, FAX: 615-755-5438; Empl: 200; Sls. Mgr: Jim F.  
Wade

**COPAL (USA), INC.**, 2341 205th St, Ste 102, Torrance, CA  
90501, Tel: 310-618-0225, FAX: 310-618-9984; Sls. Mgr:  
Hugh Namekawa

**CORBY INDUSTRIES, INC.**, 1501 E. Pennsylvania St,  
Allentown, PA 18103, Tel: 215-433-1412, FAX: 215-435-  
1963; Empl: 31; Sls. Mgr: Sharon Cain; Dist. Mgr: Sharon  
Cain

|    |                                         |              |
|----|-----------------------------------------|--------------|
| IN | Ft. Wayne, Naunas Sls. Co. ....         | 219-432-4792 |
| MD | Annapolis, Homersmith, Inc. ....        | 410-269-6493 |
| MA | Salem, Forbes Engrg. ....               | 508-744-1693 |
| MN | St. Paul, Northstar Motion & Control .. | 612-770-5311 |
| NJ | Williamstown, Homersmith, Inc. ....     | 609-567-7464 |
| NC | Jamestown, Homersmith, Inc. ....        | 919-883-3999 |
| PA | Springfield, Homersmith Inc. ....       | 215-543-2434 |
| TX | Richardson, Beacon Microwave ....       | 214-437-1505 |
| TX | Roundrock, Beacon Microwave ....        | 512-244-6675 |
| VA | Shawsville, Homersmith Inc. ....        | 703-268-9720 |
| WI | Cedarburg, Hi-Tech Dvcs. Corp. ....     | 414-375-9595 |

**CONTROLS UNLIMITED, INC.**, 4823 North Ridge Rd,  
Perry, OH 44081, Tel: 216-259-2500, FAX: 216-259-5015;  
Empl: 45; Sls. Mgr: Paul Adams



**FAX: Fax 718-361-6386**

**CONTROL TECHNOLOGY CO., INC.**, 41-16 29th St.,  
Long Island City, NY 11101, Tel: 718-361-2133; FSC No.:  
14545; Empl: 35; Sls. Mgr: H. Cooper ... **D-2314-2315**

*Local Sales Offices & Reps*

Can Montreal, Que., Control Tech. Elctms. CTC Canada  
..... 514-733-3279, FAX: 514-733-2132

**CONTROL TECHNOLOGY, INC.**, 7608 N. Hudson,  
Oklahoma City, OK 73116, Tel: 405-840-3163, FAX: 405-  
848-0489; Sls. Mgr: Charles Weddington; Dist. Mgr:  
Charles Weddington

**CONTROLTEK, INC.**, 14201 NW Science Park Dr.,  
Portland, OR 97229, Tel: 503-641-0876, FAX: 503-641-  
7349; Empl: 16; Sls. Mgr: Kevin Caswell



**FAX: 508-559-9288**

**CONVERSION DEVICES, INC.**, 15 Jonathan Drive,  
Brookton, MA 02401, Tel: 508-559-0880; Empl: 70; Sls.  
Mgr: Wayne Carlson ..... **D-2096-2097**

*Local Sales Offices & Reps*

|     |                                                  |              |
|-----|--------------------------------------------------|--------------|
| AL  | Huntsville, South Tech. Sls. ....                | 205-880-8200 |
| AZ  | Phoenix, Howe & Howe, Sls. ....                  | 602-264-7971 |
| CA  | Camarillo, The Tricamo Co. ....                  | 805-388-0039 |
| CA  | Mountain View, L.S. Engrg. ....                  | 415-967-5880 |
| CA  | San Diego, The Tricamo Co. ....                  | 619-689-1000 |
| CO  | Englewood, Odyssey 1 ....                        | 303-773-8176 |
| CT  | Fairfield, Bossaco ....                          | 203-255-2326 |
| FL  | Melbourne, Saber Assocs., Inc. ....              | 407-724-0920 |
| FL  | Oviedo, Conley & Assocs. ....                    | 407-365-3283 |
| GA  | Lilburn, South Tech. Sls. ....                   | 404-381-2088 |
| IL  | Elmhurst, Sector Engrg. Sls. ....                | 708-530-7850 |
| IN  | Indianapolis, Sector Engrg. Sls. ....            | 317-253-9221 |
| IA  | Cedar Rapids, M.I.N.K. Assocs. ....              | 319-393-0373 |
| KS  | Overland Park, M.I.N.K. Assocs. ....             | 919-341-8309 |
| MD  | Ellicott City, VPI ....                          | 410-461-2525 |
| MA  | Brookton, Conversion Dvcs., Inc. ....            | 508-559-0880 |
| MA  | Scituate, NEAR ....                              | 617-545-6327 |
| MI  | Livonia, Electro Sls. Assocs. ....               | 313-421-7500 |
| MN  | Minneapolis, Sector Engrg. Sls. ....             | 612-378-2123 |
| MO  | Bridgeton, M.I.N.K. Assocs. ....                 | 315-291-5454 |
| NJ  | Paramus, Eltech Sls., Inc. ....                  | 201-967-1309 |
| NM  | Albuquerque, H.E.R. Elctms. ....                 | 505-265-8609 |
| NY  | Liverpool, R & D Assocs. ....                    | 315-457-0100 |
| NC  | Raleigh, South Tech. Sls. ....                   | 919-571-1313 |
| OH  | Dayton, Electro Sls. Assocs. ....                | 513-426-5551 |
| OK  | Broken Arrow, D. J. Sls. ....                    | 918-258-1445 |
| OR  | Lake Oswego, SPS Elctms. ....                    | 503-697-7768 |
| PA  | Pittsburgh, Electro Sls. Assocs. ....            | 412-322-9000 |
| PA  | Plymouth Meeting, CMS Sls. & Mktg. ..            | 215-834-6840 |
| TX  | Austin, D.J. Sls. ....                           | 212-258-3002 |
| TX  | Dallas, D.J. Sls. ....                           | 214-783-8876 |
| UT  | Salt Lake City, Odyssey 1 ....                   | 801-485-4728 |
| WA  | Mountlake Ter., SPS Elctms. ....                 | 206-323-4140 |
| WI  | Milwaukee, Sector Engrg. Sls. ....               | 414-352-8280 |
| Can | Mississauga, Ont., Andy Baumen-Assocs. Ltd. .... | 416-828-2600 |





FAX: 708-680-8169

**CORCOM, INC.**, 1600 Winchester Rd., Libertyville, IL 60048, Tel: 708-680-7400; FSC No.: 05245; Empl: 800; Sls. Mgr.: Ken Bons ..... **A•1586-1587; B•1352; C•1300-1302**

## Local Sales Offices &amp; Reps

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AL  | Huntsville, R. O. Whitesell Assocs. | 205-883-5110 |
| AZ  | Tempe, Westrep                      | 602-820-9932 |
| CA  | Montrose, Luscombe                  | 818-249-9000 |
| CA  | Mountain View, Straube Assocs.      | 415-969-6060 |
| CA  | San Diego, Westrep                  | 619-566-6580 |
| CO  | Westminster, Straube Assocs.        | 303-426-0890 |
| CT  | Madison, Conti-Younger Assocs.      | 203-245-1136 |
| FL  | Altamonte Springs, Semtronic Assoc. |              |
|     |                                     | 407-831-8233 |
| GA  | Norcross, Robert O. Whitesell       | 404-449-9190 |
| ID  | Boise, Jas J. Backer Co.            | 208-343-9831 |
| IL  | Itasca, Beta Technlg. Sls. Inc.     | 708-250-9586 |
| IN  | Ft. Wayne, Robert O. Whitesell      | 219-432-5591 |
| IN  | Indianapolis, Robert O. Whitesell   | 317-876-9000 |
| IN  | Kokomo, Robert O. Whitesell         | 317-457-9127 |
| KS  | Overland Park, Spectrum Sls.        | 913-648-6811 |
| KY  | Versailles, Robert O. Whitesell     | 606-873-1182 |
| MD  | Columbia, Third Wave Solutions      | 301-290-5990 |
| MA  | Burlington, Conti-Younger Assocs.   | 617-273-1582 |
| MI  | Grand Rapids, Robert O. Whitesell   | 616-942-5420 |
| MI  | Southfield, Robert O. Whitesell     | 313-352-5454 |
| MI  | St. Joseph, Robert O. Whitesell     | 616-983-7337 |
| MN  | Edina, Mel Foster Co.               | 612-941-9790 |
| MO  | Florissant, Spectrum Sls.           | 314-921-1313 |
| NJ  | Englewood, MOS Mktg.                | 201-569-2071 |
| NM  | Albuquerque, Rontek, Inc.           | 505-299-4124 |
| NY  | Great Neck, MOS Mktg.               | 516-487-3966 |
| NY  | Skaneateles, Empire Tech Sls.       | 315-685-5703 |
| NC  | Raleigh, Zucker Assoc.              | 919-782-8433 |
| OH  | Cincinnati, Robert O. Whitesell     | 513-521-2290 |
| OH  | Cleveland, Robert O. Whitesell      | 216-447-9020 |
| OH  | Columbus, Robert O. Whitesell       | 614-888-9396 |
| OH  | Dayton, Robert O. Whitesell         | 513-298-9546 |
| OR  | Beaverton, Jas. J. Backer Co.       | 503-627-0775 |
| PA  | Pittsburgh, Robert O. Whitesell     | 412-963-6161 |
| PA  | Trevose, Professional Svc. Assoc.   | 215-245-0513 |
| TN  | Knoxville, Robert O. Whitesell      | 615-694-9476 |
| TX  | Plano, K & H Sls.                   | 214-423-6520 |
| UT  | Salt Lake City, Straube Assocs.     | 801-263-2640 |
| WA  | Seattle, Jas. J. Backer Co.         | 206-285-1300 |
| WI  | Milwaukee, Beta Technlg. Sls. Inc.  | 414-543-6609 |
| Can | Ontario, R.N. Longman               | 416-670-8100 |

**CORECO, INC.**, 6969 Trans-Canada Hwy., Ste. 113, St. Laurent, Que., Canada H4T 1V8, Tel: 800-361-4914, 514-333-1301, FAX: 514-333-1388; Empl: 32

**CORLUND ELECTRONICS CORP.**, 2330 Teller Rd., Newbury Park, CA 91320, Tel: 805-499-6877, FAX: 805-499-4072; Empl: 100; Sls. Mgr.: Bruce MacDonald



FAX: 508-996-3830

**CORNELL-DUBILIER ELCTRNS. (INTL. SLS., DISTBN. WAREHOUSE)**, 1605 E. Rodney French Blvd., New Bedford, MA 02744, MA 02741, Tel: 508-996-8564, TELEX: 929 419; Empl: 5000; Sls. Mgr.: Anthony M. Cavuto, VP Sls. .... **A•1062-1065; B•1450**

## Local Sales Offices &amp; Reps

|    |                                             |              |
|----|---------------------------------------------|--------------|
| CA | San Diego, CK Assocs.                       | 619-279-0420 |
| CA | Valencia, C & N Assocs.                     | 805-254-5844 |
| CO | Littleton, Megatronix                       | 303-730-6262 |
| CT | Brantford, Coakley, Boyd & Abbott           | 203-481-2218 |
| FL | St. Petersburg, QXI Inc.                    | 813-894-4556 |
| KS | Overland Park, Electri-Rep                  | 913-649-2168 |
| MD | Gaithersburg, Naudain Assoc. Southern, Inc. | 301-258-5040 |
| MA | Framingham, Coakley, Boyd & Abbott          |              |
|    |                                             | 508-820-0800 |
| MI | Madison Heights, Pine Sales, Inc.           | 313-589-0350 |
| MN | Eden Prairie, PWC Incorporated              | 612-934-1409 |
| MO | St. Louis, Electra-Rep                      | 314-993-4421 |
| NJ | Leonia, Peter E. Schmitt Co., Inc.          | 201-944-2806 |
| OH | Richfield, The Lyons Corp.                  | 216-659-9224 |

|     |                                          |              |
|-----|------------------------------------------|--------------|
| OR  | Beaverton, Elctn. Sources, Inc.          | 503-620-0441 |
| TN  | Chattanooga, Indl. Mktg. & Sls. Inc.     | 615-894-2219 |
| TX  | Richardson, Comp. Partners, Inc.         | 214-644-1288 |
| UT  | Salt Lake City, Charles Fields & Assocs. |              |
|     |                                          | 801-531-6177 |
| WI  | Waukesha, Eagle Tech. Sls.               | 414-896-0633 |
| PR  | San Juan, P.R., E.T.S. Inc.              | 809-798-1300 |
| Can | Mississauga, Ont., Source Elctms.        | 416-676-0830 |

## Local Distributors

|    |                                      |              |
|----|--------------------------------------|--------------|
| AZ | Phoenix, Arizona Comps.              | 602-269-5655 |
| CA | Los Angeles, Bell Inds.              | 213-826-6778 |
| CA | Milpitas, California Capacitor       | 408-262-6000 |
| CA | Sunnyvale, Capcos Sls.               | 408-734-3020 |
| CA | Tustin, Projections Unlimited        | 714-544-2700 |
| CO | Aurora, Capstone Elctms.             | 303-375-1300 |
| CO | Denver, Integrated Elctms. Corp.     | 303-292-5537 |
| FL | Boca Raton, NRC Elctms.              | 407-241-8600 |
| IL | Chicago, Newark Elctms.              | 312-784-5100 |
| IL | Chicago, Waldom Elctms.              | 312-585-1212 |
| IL | Palatine, OHM Elctms.                | 708-359-5500 |
| MA | Newton, The Greene-Shaw Co.          | 617-969-8900 |
| MN | St. Paul, Kent/Shelley-Ragon ELctms. |              |
|    |                                      | 612-642-2828 |
| NY | Hempstead, JACO Elctms.              | 516-273-5500 |
| NY | Mamaroneck, New Yorker Elctms.       | 914-698-7600 |
| NY | Port Chester, Zeus Comps.            | 914-937-7400 |
| NY | Rome, Rome Elctms.                   | 315-337-5400 |
| OH | Cleveland, Pioneer-Standard          | 216-587-3600 |
| PA | No. Versailles, CMD Elctms.          | 412-678-6020 |
| TX | Dallas, Hallmark Elctms.             | 214-553-4300 |
| TX | Fort Worth, TTI, Inc.                | 817-740-9000 |
| WI | Milwaukee, Marsh Elctms.             | 414-475-6000 |

**CORNELL-DUBILIER ELCTRNS. (CORPORATE HEADQUARTERS)**, 1700 Route 23 North, Wayne, NJ 07470, Tel: 201-694-8600; Empl: 5000; Sls. Mgr.: A. Cavuto ..... **A•1062-1065**

## Local Sales Offices &amp; Reps

|     |                                             |              |
|-----|---------------------------------------------|--------------|
| AZ  | Tempe, Elctn. Dev. Sls.                     | 602-438-1547 |
| CA  | Los Altos, Ewing-Foley, Inc.                | 415-941-4525 |
| CA  | San Diego, CK Assocs.                       | 619-279-0420 |
| CA  | Valencia, C & N Assocs.                     | 805-254-5844 |
| CO  | Littleton, Megatronix                       | 303-730-6262 |
| CT  | Brantford, Coakley, Boyd & Abbott           | 203-481-2218 |
| FL  | St. Petersburg, QXI, Inc.                   | 813-894-4556 |
| IN  | Indianapolis, M & L Elctn. Sls.             | 317-359-4742 |
| KS  | Overland Park, Electri-Rep.                 | 913-649-2168 |
| MD  | Gaithersburg, Naudain Assoc. Southern, Inc. | 301-258-5040 |
| MA  | Framingham, Coakley, Boyd & Abbott          |              |
|     |                                             | 508-820-0800 |
| MI  | Madison Hgts, Pine Sls, Inc.                | 313-589-0350 |
| MN  | Eden Prairie, PWC Inc.                      | 612-934-1409 |
| MO  | St. Louis, Electri-Rep                      | 314-993-4421 |
| NJ  | Leonia, Peter E. Schmitt Co., Inc.          | 201-944-2806 |
| NY  | Syracuse, L.D. Allen                        | 315-437-8387 |
| OH  | Richfield, The Lyons Corp.                  | 216-659-9224 |
| OR  | Tigard, Earl & Brown Co., Inc.              | 503-639-2100 |
| PA  | Erdenheim, Omni Sls.                        | 215-233-4600 |
| TN  | Chattanooga, Indl. Mktg. & Sls. Inc.        | 615-894-2219 |
| TX  | Richardson, Comps. Partners, Inc.           | 214-644-1288 |
| UT  | Salt Lake City, Charles Fields & Assocs.    |              |
|     |                                             | 801-531-6177 |
| WA  | Redmond, Earl & Brown Co., Inc.             | 206-885-5064 |
| WI  | Waukesha, Eagle Tech. Sls.                  | 414-896-0633 |
| PR  | San Juan, E.T.S. Inc.                       | 809-798-1300 |
| Can | Mississauga, Ont., Source Elctms.           | 416-676-0830 |
| Can | N. Vancouver, B.C., Arwin Tech. Sls.        | 604-980-4557 |

## Local Distributors

|    |                                  |              |
|----|----------------------------------|--------------|
| AZ | Phoenix, Arizona Comp. Co.       | 602-269-5655 |
| CA | Los Angeles, Bell Inds.          | 213-826-6778 |
| CA | Milpitas, California Capacitor   | 408-262-6000 |
| CA | Sunnyvale, Capcos Sls.           | 408-734-3020 |
| CA | Tustin, Projection Unlimited     | 714-544-2700 |
| CO | Aurora, Capstone Elctms.         | 303-375-1300 |
| CO | Denver, Integrated Elctms. Corp. | 303-292-5537 |
| FL | Boca Raton, NRC Elctms.          | 407-241-8600 |
| IL | Chicago, Newark Elctms.          | 312-784-5100 |
| IL | Chicago, Waldom Elctms.          | 312-585-1212 |
| IL | Palatine, OHM Elctms.            | 708-359-5500 |
| MA | Newton, Greene-Shaw, Co.         | 617-969-8900 |
| MN | St. Paul, Kent/Shelley-Ragon     | 612-642-2828 |
| NY | Hempstead, JACO Elctms, Inc.     | 516-273-5500 |
| NY | Mamaroneck, New Yorker Elctms.   | 914-698-7600 |
| NY | Port Chester, Zeus Comps.        | 914-937-7400 |
| NY | Rome, Rome Elctms.               | 315-337-5400 |
| OH | Cleveland, Pioneer-Standard      | 216-587-3600 |
| PA | N. Versailles, CMD Elctms.       | 412-678-6020 |
| TX | Dallas, Hallmark Electronics     | 214-553-4300 |
| TX | Ft. Worth, TTI, Inc.             | 817-740-9000 |
| WI | Milwaukee, Marsh Elctms.         | 414-475-6000 |

**CORNELL MANUFACTURING**, An Elgin Co., 25 Ramland Road, Orangeburg, NY 10962, Tel: 914-365-0400, FAX: 914-359-6809; Empl: 50; Sls. Mgr.: Lou Schnur, Dist. Mgr.: Lou Schnur

**CORNING INCORPORATED**, Advanced Materials Business, Main Plant, MP 21-3, Corning, NY 14831, Tel: 607-974-7920, TELEX: 932498, FAX: 607-974-7618; Sls. Mgr.: Paul Marx; Dist. Mgr.: Brian Gray

**CORNING INCORPORATED**, Opto-Electronics Group, MP-RO-03, Corning, NY 14831, Tel: 1-800-525-2524, FAX: 607-974-7522; Empl: 26,000

**CORONA MAGNETICS, INC.**, 201 Corporate Terrace, Corona, CA 91719, Tel: 909-735-7558, FAX: 909-735-6753; Empl: 60; Sls. Mgr.: Uwe Paasch

**CORTEC, INC.**, 15672 Chemical La., Huntington Bch., CA 92649, Tel: 714-897-2529, FAX: 714-897-2170; Empl: 35

**COTRON INC.**, 1 Aegean Dr., Methuen, MA 01844, Tel: 508-975-5445, FAX: 508-975-0357; Empl: 75; Sls. Mgr.: Philip P. Bodoni

**COSEL U.S.A. Inc.**

FAX: 408-980-9757

**COSEL U.S.A. INC., (Formerly U.S. Elco Inc.)**, 2930 Scott Blvd., Santa Clara, CA 95054, Tel: 408-980-5144; Sls. Mgr.: Bob Kitamura ..... **D•1648-1650, 2098**

## Local Distributors

|    |                         |                            |
|----|-------------------------|----------------------------|
| CA | Santa Clara, Foresight  | 408-980-9700, 714-833-2134 |
| CO | Englewood, CDI          | 303-770-6214               |
| FL | Ft. Lauderdale, CDI     | 1-800-558-2351             |
| GA | Duluth, Stelmack Power  | 404-441-7927               |
| GA | Norcross, Applied Power | 1-800-445-8316             |
| IL | Schaumburg, Mar Lyn     | 708-924-9111               |
| IA | W. Des Moines, Allied   | 1-800-433-5700             |
| KS | Lenexa, Allied          | 1-800-433-5700             |
| LA | Metairie, Allied        | 1-800-433-5700             |
| MA | Lowell, Total Power     | 508-453-7272               |
| MI | Brighton, Applied Power | 1-800-624-5496             |
| MI | Holland, Indl. Control  | 800-878-6722               |
| MN | Bloomington, Allied     | 1-800-433-5700             |

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| MIN | Fridley, Voyager     | 612-571-7766   |
| MIN | Minneapolis, Tortec  | 612-866-3662   |
| MO  | Earth City, Allied   | 1-800-433-5700 |
| NE  | Omaha, Allied        | 1-800-433-5700 |
| NJ  | Lodi, TRC            | 201-779-8282   |
| OH  | Cincinnati, Schuster | 513-489-1400   |
| PA  | McKean, Advacom      | 814-476-7774   |
| TX  | Dallas, Allied       | 1-800-433-5700 |
| UT  | Salt Lake City, CDI  | 801-261-5244   |

COSMO CORPORATION, 3239 W. 14th St, Cleveland, OH 44109, Tel: 216-861-5594, FAX: 216-861-0416; Empl: 350; Sls. Mgr: B. Gordon

COSMOS PLASTIC CO., 3239 W. 14th St, Cleveland, OH 44109, Tel: 216-861-5594

**COTO WABASH, A Kearney National Company.**  
55 DuPont Drive, Providence, RI 02907, Tel: 401-943-2686, FAX: 401-942-0920; Empl: 300; Sls. Mgr: J. Lynch(East); Dist. Mgr: Chris Cardin ..... **B-1451-1453**

*Local Sales Offices & Reps*

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Owens Cross Rds., cmrCross Assocs.    | 205-883-5991 |
| AZ | Phoenix, Spectrum Mktg. Assocs., Inc. | 602-890-9000 |

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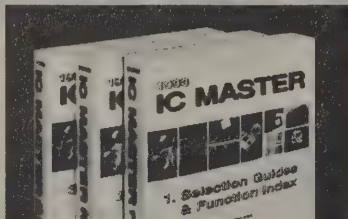
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| CA | Newport Bch, Forbes Pacific Inc.        | 714-722-6174 |
| CA | Saratoga, Testco Inc.                   | 408-253-1900 |
| CO | Denver, Spectrum Sls.                   | 303-480-9991 |
| FL | Orlando, Standard Mktg.                 | 407-856-4140 |
| FL | Sunrise, Standard Mktg.                 | 305-749-5557 |
| FL | Tampa, Standard Mktg.                   | 813-933-5833 |
| IL | Arlington Hgts, M.J. Petersen & Assocs. | 708-577-8200 |

|    |                                       |              |
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| IN | Fl. Wayne, M/S Sls. & Assocs.         | 219-436-3023 |
| IN | Greenwood, M/S Sls. & Assocs.         | 317-881-0110 |
| IA | Cedar Rapids, Midwest Tech. Sls. Inc. | 319-393-5115 |

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| KS  | Goddard, Midwest Tech. Sls. Inc.        | 316-794-8565 |
| KS  | Lenexa, Midwest Tech. Sls. Inc.         | 913-888-5100 |
| MD  | Columbia, Delta III Assoc., Inc.        | 301-730-4700 |
| MA  | Andover, Crawford Assocs.               | 508-470-2122 |
| MN  | Roseville, TLC                          | 612-483-2226 |
| MO  | Earth City, Midwest Tech. Sls. Inc.     | 314-298-8787 |
| NY  | Clifton Pk, Net Sls.                    | 518-371-6864 |
| NY  | Cortland, Net Sls.                      | 607-756-6592 |
| NY  | Great Neck, MOS Mktg. Assocs.           | 516-487-3966 |
| NY  | Victor, Net Sls.                        | 716-924-1844 |
| NC  | Charlotte, Godwin Assocs.               | 704-549-8500 |
| NC  | Raleigh, Godwin & Assoc.                | 919-878-8000 |
| OR  | Oregon City, Halbar Pacific             | 503-656-3714 |
| PA  | Trevoise, Omega Elctrm. Sls.            | 215-244-4000 |
| TX  | Plano, Richmar Elctrm.                  | 214-242-8388 |
| TX  | Round Rock, Richmar Elctrm.             | 512-255-2551 |
| UT  | Ogden, Spectrum Mktg. Assocs. Inc.      | 801-972-8552 |
| WA  | Redmond, Halbar Pacific                 | 206-882-0990 |
| Can | Pickering, Ont., Current Mktg.          | 416-428-3413 |
| Can | Pointe Claire, Que., A. R. Gray Assocs. | 514-694-6378 |

*Local Distributors*

|    |                                             |              |
|----|---------------------------------------------|--------------|
| AL | Huntsville, Resistacap, Inc.                | 205-883-4270 |
| AR | Little Rock, Carlton Bates Co.              | 501-562-9100 |
| CA | Santa Monica, Master Distrib.               | 213-452-1229 |
| CA | Saratoga, Testco Inc.                       | 408-253-1900 |
| CA | Sunnyvale, Spirox                           | 408-739-3334 |
| CO | Denver, Spectrum Distribn.                  | 303-480-9991 |
| FL | W. Melbourne, Astro Mktg.                   | 407-727-8817 |
| IL | Bedsville, Voyager Elect. Corp.             | 708-860-1300 |
| IL | Chicago, Leeds Elctrm.                      | 312-625-3800 |
| IL | Chicago, Newark Elctrm.                     | 312-784-5100 |
| IL | Elk Grove Village, Nu-Way Elect. Dist. Inc. | 708-437-7120 |
| MA | Methuen, Aved Elect. Inc.                   | 508-688-3800 |
| MN | Fridley, Voyager Elect. Corp.               | 612-571-7766 |
| NJ | Oakland, Relay Specialties                  | 201-337-1000 |
| NY | Rochester, Masline Elect., Inc.             | 716-546-5373 |
| PA | Philadelphia, SHAP Elect. Co.               | 215-969-3300 |
| TX | Fl. Worth, Allied Elec.                     | 817-595-3500 |
| TX | Austin, Altair Co.                          | 512-837-4970 |
| TX | Austin, Carlton Bates Co.                   | 512-837-9098 |
| TX | Houston, Altair Co.                         | 713-462-3029 |
| TX | Richardson, Altair Co.                      | 214-231-5166 |

COTRONICS, 3379 Shore Pkwy, Brooklyn, NY 11235, Tel: 718-646-7996, FAX: 718-646-3028; Empl: 15; Sls. Mgr: Alan Marks

COUTANT LAMBDA LTD., Kingsley Ave., Ilfracombe, Devon, England EX34 8ES, Tel: (0271) 863781, FAX: 0271 864894; Empl: 330; Sls. Mgr: Nigel Davies; Dist. Mgr: Nigel Davies

COVID, INC., 1725 W. 17th St, Tempe, AZ 85281, Tel: 602-966-2221, FAX: 602-966-6728; Empl: 40; Sls. Mgr: Suzanne Jones

COVOX, INC., 675 Conger St Eugene, OR 97402, Tel: 503-342-1271, FAX: 503-342-1283; Empl: 30; Sls. Mgr: Kevin Corson; Dist. Mgr: Donna Corson

CPS, 15800 Upper Boones Ferry Rd., #150, Lake Oswego, OR 97035, Tel: 503-684-8026, FAX: 503-684-8164; FSC No.: 31640; Empl: 30; Sls. Mgr: Clifford Gaw

CP TECHNOLOGY, INC., 21143 Christensen Drive, Cupertino, CA 95014, Tel: 408-996-8069, FAX: 408-986-8278; Empl: 6

CRAFT DATA, INC., 27022 Cordero Lane, Mission Viejo, CA 92691, Tel: 714-582-8284, FAX: 714-248-2390; Empl: 4

CRAIG SYSTEMS CORP., Eastern Technologies, Ltd., 10 Industrial Way, Amesbury, MA 01913-4848, Tel: 508-388-5662, TWX: 710-347-0590, FAX: 508-388-0845; FSC No.: 81902; Empl: 150; Sls. Mgr: Roger Chouinard

GRAMCO INC., 80 Sinnott Rd, Scarborough, Ont., Can M1L 4M7, Tel: 416-757-2876, FAX: 416-757-5530; Empl: 40; Sls. Mgr: Leo Logiaccio



**Cramer**

**FAX: 414-377-4028**

**CRAMER COIL & TRANSFORMER CO., INC.**, 401 Progress Dr., Saukville, WI 53080, Tel: 414-268-2150, 414-375-5700; Empl: 118; Sls. Mgr: William G. Pickart ..... **A-2306-2308**

*Local Sales Offices & Reps*

|     |                                                |              |
|-----|------------------------------------------------|--------------|
| IL  | Chicago, Cramer Coil & Transformer Co., Inc.   | 312-907-0184 |
| IN  | Indianapolis, Precision Elctrm. Comps.         | 317-842-3740 |
| MI  | Madison Hgts, D.E.M. Sls.                      | 313-583-1500 |
| MN  | Minnetonka, Hanna Lind Ltd.                    | 612-931-1242 |
| MO  | St. Charles, Buckman & Assocs.                 | 314-947-4727 |
| NC  | Kemersville, Wallace Elctrm. Sls.              | 800-334-3518 |
| OH  | Centerville, Mid-Star Technlgs.                | 513-439-5700 |
| WI  | Saukville, Cramer Coil & Transformer Co., Inc. | 414-375-5700 |
| Can | Neapean, Ont., Ellam Assocs.                   | 613-727-3892 |

CRAMER CO., 139 Mill Rock Road East, Old Saybrook, CT 06475-1261, Tel: 800-247-6784, FAX: 203-388-9831; Empl: 210; Dist. Mgr: E. Latourette

CRANE ELECTRONICS, INC., 4700 Smith Rd., Cincinnati, OH 45212, Tel: 800-676-7644, FAX: 513-631-5700; FSC No.: OAK25; Empl: 25

CREARE INC., Etna Rd, P.O. Box 71, Hanover, NH 03755, Tel: 603-643-3800, FAX: 603-643-4657; FSC No.: 8A287; Empl: 100

CREATIVE AUTOMATION CO., 11641 Pendleton St., Sun Valley, CA 91352, Tel: 818-767-6220, FAX: 818-767-0123; Empl: 25; Sls. Mgr: Royal Bush



**FAX: 416-299-8398**

**CRITERION INSTRS., LTD.**, 30 Progress Ave., Scarborough, Ont., CAN M1P4W8, Tel: 416-299-6666; Empl: 16 ..... **D-1248-1249, 1651**

*Local Sales Offices & Reps*

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|-----|-------------------------------|--------------|
| IL  | Chicago, Rock Sls. Inc.       | 708-351-9903 |
| MI  | Troy, Satullo Assocs. Inc.    | 313-585-4811 |
| NC  | Selma, Shalltronix Corp.      | 919-965-6346 |
| OH  | Cleveland, ABITEC Inc.        | 216-531-9122 |
| TX  | Lewisville, E.P.R.            | 214-436-4772 |
| WI  | Rock Sls. Inc.                | 708-351-9903 |
| Can | Calgary, AL, Landel Controls  | 403-254-8900 |
| Can | Montreal, Que., Projean Inst. | 514-273-8331 |
| Can | Richmond, B.C., John McMillan | 604-273-1747 |
| Can | Saskatchewan, Landel Controls | 306-522-3399 |

CRL COMPONENTS, INC., Roxboro Group, Highway 20 West, Fort Dodge, IA 50501, Tel: 515-573-1300, FAX: 515-573-1342; FSC No.: 71590; Empl: 500; Dist. Mgr: Jim Wood

CR MAGNETICS, INC. (FORMERLY CURRENT RING CO., INC.), 308 Axminster Dr., Fenton, MO 63026, Tel: 314-343-8518, FAX: 314-343-5119; Empl: 5 ..... **A-2309; B-1455, 1927**

*Local Sales Offices & Reps*

|    |                            |              |
|----|----------------------------|--------------|
| MO | Fenton, CR Magnetics, Inc. | 314-343-8518 |
|----|----------------------------|--------------|

CROMPTON MODUTEC, 920 Candia Rd, Manchester, NH 03109, Tel: 603-669-5121, 800-METERS-1, FAX: 603-622-2690, 603-641-2620; FSC No.: 53498; Empl: 450

CROSS ELECTRONICS, 100 Commonwealth Dr., Warendale, PA 15086, Tel: 412-776-1591, FAX: 412-776-1596; Empl: 35; Sls. Mgr: L. R. Craig



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**FAX: 201-941-4919**

**CROSSPOINT, Div. of Info-Lite Corp.**, 422 Cliff St., Fairview, NJ 07022, Tel: 201-941-4455; Empl: 13; Sls. Mgr: Joseph M. Cartelli ..... **B-1701**





FAX: 214-250-3865

**CROUZET CORPORATION**, 3237 Commander Dr.,  
Carrollton, TX 75006-2506, Tel: 214-250-1647, 1-800-677-  
5311; Empl: 80; Sls. Mgr.: Jack Wolbrink  
.. B-1246-1247, 1456-1457, 1702-1703; C-1576-1577

## Local Sales Offices &amp; Reps

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|----|--------------------------------|--------------|
| AZ | Scottsdale, Jeff Miller        | 602-948-0751 |
| CA | San Ramon, C. F. M. Sls.       | 510-735-3601 |
| CT | Westbrook, John Brewer         | 203-399-7311 |
| FL | New Port Richey, Kirk Sls.     | 813-846-8558 |
| GA | Atlanta, Levine Electronics    | 404-565-1556 |
| IL | Schaumburg, Eric Pfister       | 708-885-5696 |
| IA | W. Des Moines, HDI Ltd.        | 515-225-3777 |
| MA | Burlington, Anacon Sls. Assoc. | 617-272-9080 |
| MN | St. Paul, Johnson Co.          | 612-429-2544 |
| MS | Jackson, Doby Assocs.          | 501-981-1138 |
| NY | Fairport, Tac Sls.             | 716-223-7610 |
| NY | Nyack, S & Y Assocs.           | 914-358-9484 |
| OH | Centerville, Omega Sls.        | 513-434-5507 |
| OH | Gahanna, Jack Matthews         | 614-476-6441 |
| OR | Portland, Control Dvcs. NW     | 503-659-3216 |
| PA | Valley Forge, Providence Mktg. | 215-935-3300 |
| TX | Dallas, John Hill              | 214-250-1647 |
| WA | Bellevue, Control Dvcs. NW     | 206-451-8552 |

## Local Distributors

|    |                                  |              |
|----|----------------------------------|--------------|
| AZ | Phoenix, Southwestern Automation | 602-276-7022 |
| AR | Little Rock, Carlton Bates Co.   | 501-562-9100 |
| CA | Santa Monica, Master Dists.      | 310-452-1229 |
| FL | Orlando, Louis Pryor             | 407-295-3762 |
| GA | Tucker, CID, Inc.                | 404-491-3143 |
| IL | Wheeling, Hawk Elctms.           | 708-459-4030 |
| IN | Indianapolis, PEI Genesis        | 317-879-0700 |
| MA | Norwell, Controls Plus           | 617-871-0078 |
| MN | Minneapolis, Lakeland Engrg.     | 612-544-0321 |
| MN | St. Paul, Powermotion            | 612-645-0781 |
| MO | St. Louis, Control Design Supp.  | 314-426-3150 |
| NJ | Oakland, Relay Specialties       | 201-337-1000 |
| NY | Buffalo, Genessee Indl. Elec.    | 716-873-9661 |
| NC | Gastonia, J.M.T. Elctm. Supp.    | 704-867-4401 |
| OH | Cincinnati, Aetna Elec.          | 513-871-8338 |
| OR | Milwaukee, 04 Controls           | 503-659-7891 |
| PA | Willow Grove, C.A. Briggs Co.    | 215-784-9250 |
| SC | Columbia, Resource Elctms.       | 803-779-5332 |
| TX | Ft. Worth, Swico.                | 817-281-1811 |
| TX | Nacogdoches, Elliott Elec.       | 409-569-7941 |
| WA | Kenit Motors & Controls Corp.    | 206-872-8010 |
| WI | Waukesha, Powermotion            | 414-523-0600 |

**CROVEN CRYSTALS**, 500 Beech St., Whitby, ON,  
Canada L1N 5S5, Tel: 416-668-3324, FAX: 416-668-5003;  
FSC No.: 00809; Empl: 150; Sls. Mgr.: R. McCormick  
.. A-1412-1417

## Local Sales Offices &amp; Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | San Mateo, Melvin Sls.              | 415-349-7445 |
| CO | Grand Junction, Krebill Comp. Sls.  | 303-243-8220 |
| FL | Oviedo, Conley & Assocs.            | 407-365-3283 |
| MD | Towson, Dickson Sls. Co.            | 410-823-0923 |
| MA | Norwood, Naton Assocs.              | 617-762-3224 |
| MN | Minneapolis, Dunlop Consultants     | 612-559-9693 |
| NY | New Rochelle, Ascor Elctms.         | 914-235-8838 |
| OR | Tigard, Eltech Inc.                 | 503-684-3458 |
| PA | Ft. Washington, Beta Sls.           | 215-643-6650 |
| TX | Richardson, R. F. Kimball Co., Inc. | 214-231-3447 |
| VA | Charlottesville, PDQ Sls.           | 804-979-7085 |
| WA | Bellevue, Eltech, Inc.              | 206-643-4330 |

**CROZIER METRLOGY LABS. INC.**, 529 N. Wolf Rd.,  
Wheeling, IL 60090, Tel: 708-520-9085, FAX: 708-520-  
9150; Empl: 5; Sls. Mgr.: Richard D. Crozier

**CRYDOM**  
COMPANY

FAX: 310-865-3318

**CRYDOM COMPANY**, 6015 Obispo Ave., Long Beach,  
CA 90805, Tel: 310-865-3536, TWX: 910-250-5756; Empl:  
365; Sls. Mgr.: James L. Jensen; Dist. Mgr.: James L.  
Jensen .. A-2136-2142; B-1464-1472

## Local Sales Offices &amp; Reps

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|----|--------------------------------|--------------|
| CA | Pleasanton, Sierra Sls. Engrg. | 510-484-2250 |
| MA | Duxbury, Crydom Co.            | 617-837-9722 |
| NJ | Red Bank, Crydom Co.           | 908-576-1576 |

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TX Carrollton, Seaton Corp. .... 214-980-9860  
WA Redmond, Components West ..... 206-885-5880  
Can Port Coquitlam, BC, Macom Agencies  
..... 604-942-1292

**CRYOMAGNETICS, INC.**, 1006 Alvin Weinberg Dr., Oak  
Ridge, TN 37830, Tel: 615-482-9551, FAX: 615-483-1253;  
Sls. Mgr.: D. Michael Coffey

**CRYSTAL COMPONENTS USA**, P.O. Box 1410, Crystall  
Lake, IL 60039-1410, Tel: 815-477-2052, FAX: 815-477-  
2052; Empl: 5; Sls. Mgr.: Robert Kemp

**CRYSTAL ENGINEERING CORP.**, 1119 Los Olivos, Los  
Osos, CA 93402, Tel: 805-528-2155, 800-444-1850, FAX:  
805-528-3113; Empl: 10; Sls. Mgr.: Wayne Hamari; Dist.  
Mgr.: Wayne Hamari

**CRYSTAL SEMICONDUCTOR CORP.**, 4210 S.  
Industrial Dr., Austin, TX 78744, Tel: 512-445-7222, FAX:  
512-445-7581

**CRYSTALOID ELECTRONICS**, 5282 Hudson Dr.,  
Hudson, OH 44236, Tel: 216-655-2429, FAX: 216-655-  
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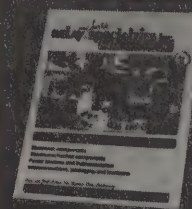
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FAX: 817-732-2019; Sls. Mgr.: Gregg Hubbard

D-1434

*Local Sales Offices & Reps*

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|----|---------------------------------------|--------------|
| AL | Huntsville, Electro Mech              | 205-880-0592 |
| CA | Arcadia, Van Golt & Assocs.           | 818-445-9728 |
| FL | Margate, EPM Corp.                    | 305-977-0331 |
| FL | Melbourne, EPM Corp.                  | 407-255-3733 |
| FL | Orlando, EPM Corp.                    | 407-425-6149 |
| GA | Norcross, Electro Mech                | 404-447-6478 |
| IL | Palatine, Technlg. Sls., Inc.         | 708-991-6600 |
| IA | Cedar Rapids, Lowell-Kangas & Assoc.  | 319-362-9290 |
| KS | Shawnee, Lowell-Kangas & Assoc.       | 913-631-3515 |
| MA | Seekonk, Rudolph Mktg. Assocs.        | 508-399-6270 |
| MO | St. Louis, Lowell-Kangas & Assoc.     | 314-821-4050 |
| NY | Franklin Sq. Cooper-Simon & Co., Inc. | 516-489-0404 |
| NC | Raleigh, Electro Mech                 | 919-790-9300 |
| OH | Dayton, North Central Mktg.           | 513-845-3575 |
| OH | Lexington, North Central Mktg.        | 419-884-9804 |
| OH | Lyndhurst, North Central Mktg.        | 216-442-2717 |
| TX | Dallas, Exel Technlg., Inc.           | 214-239-3935 |
| WI | Milwaukee, Technlg. Sls., Inc.        | 414-964-5015 |

*Local Distributors*

|    |                                        |              |
|----|----------------------------------------|--------------|
| FL | Largo, D & D Battery                   | 813-587-9900 |
| FL | Tampa, Micro Precision                 | 813-854-2061 |
| GA | Doraville, Lighting Plastic Suppliers  | 404-448-9373 |
| IL | Barrington, Alexander Tech. Sls., Inc. | 708-381-7222 |
| MA | Methuen, Generation Elctms., Inc.      | 508-683-1177 |
| TX | San Antonio, Altex Elctms.             | 512-655-8882 |
| TX | Spring, Jabro Southwest                | 713-367-9393 |

**CSD INDUSTRIES, INC., dba C Enterprises**310-110  
Via Vera Cruz, San Marcos, CA 92069, Tel: 619-744-8182,  
800-334-3815, FAX: 619-744-1659; Empl: 28; Dist. Mgr.:  
Steve Yamasaki**C-S ELECTRONIC SALES, INC.**259 E. Walnut St.,  
Frankfort, IN 46041, Tel: 317-659-1874, FAX: 317-659-  
4185; Empl: 4**FAX: 619-743-5094****CSI CAPACITORS, CSI Technologies**810  
Rancheros Dr., San Marcos, CA 92069-3009, Tel: 619-747-  
4000, TELEX: 697832; FSC No.: 10026; Empl.: 25

A-1066

*Local Sales Offices & Reps*

|     |                                    |              |
|-----|------------------------------------|--------------|
| AL  | Huntsville, Comp. Mktg. Svc.       | 205-881-6699 |
| AZ  | Paradise Valley, Techrep Arizona   | 602-991-6646 |
| CA  | San Jose, Comtech Mktg.            | 408-249-3330 |
| FL  | Longwood, SAM Rep., Inc.           | 407-869-9565 |
| IL  | Des Plaines, ESC Assocs.           | 312-298-5310 |
| MD  | Middletown, ST/Woolard             | 301-371-4500 |
| MA  | Canton, New England Elctm. Sls.    | 617-828-4835 |
| NM  | Albuquerque, Cleveland Entrps.     | 505-265-7893 |
| NY  | Cazenovia, S. T. Woolard           | 315-655-8145 |
| OH  | Dayton, K. W. Elctm. Sls.          | 513-890-2150 |
| OR  | Beaverton, Components West         | 503-642-9110 |
| PA  | Pittsburgh, KW Elctm. Sls.         | 412-366-9396 |
| SC  | Six Mile, S.T. Woolard             | 803-868-4226 |
| TX  | Carrollton, Seaton Corp.           | 214-980-9860 |
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| Can | Port Coquitlam, BC, Macom Agencies | 604-942-1292 |

CSTS, 4015 E. Leaverton Ct., Anaheim, CA 92807-1610, Tel:  
714-632-1300, FAX: 714-632-1937; Empl: 14**C-TEK INC.**4 Railroad Ave., Wakefield, MA 01880, Tel: 617-  
246-1720, FAX: 617-246-2905; Empl: 15**CTI ELECTRONICS**110 Old South Ave., Stratford, CT  
06497, Tel: 203-386-9779, FAX: 203-378-4986

D-1086

*Local Sales Offices & Reps*

|     |                                           |               |
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| CT  | Stratford, CTI Elctms.                    | 203-386-9779  |
| EXP | Ede, Netherlands, Inductive Controls Sys. | 31-8380-76111 |

**FAX: 219-294-5718****CTS CORPORATION**, 905 West Blvd. North, Elkhart, IN  
46514, Tel: 219-293-7511; Empl: 4350  
A-1358-1377, 1908-1909; B-1704; D-1028, 1705*Local Sales Offices & Reps*

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| AL | Huntsville, R.O. Whitesell & Associates       | 205-883-5110, FAX: 205-882-9626 |
| AZ | Phoenix, Compass Mktg. & Sls., Inc.           | 602-996-0635, FAX: 602-996-0586 |
| AR | Hot Springs Vlg., Southern States Mktg., Inc. | 501-922-0807, FAX: 501-922-0807 |
| CA | Auburn, Ewing-Foley, Inc.                     | 916-885-6591, FAX: 916-885-6594 |
| CA | Calabasas, Centaur Corp.                      | 818-591-1855, FAX: 818-591-7479 |
| CA | Irvine, Centaur Corp.                         | 714-261-2123, FAX: 714-261-2905 |
| CA | Los Altos, Ewing-Foley, Inc.                  | 415-941-4525, FAX: 415-941-5109 |
| CA | San Diego, Centaur Corp.                      | 619-278-4950, FAX: 619-278-0649 |
| CA | South Pasadena, CTS Corp.                     | 213-682-1137, FAX: 818-441-3058 |
| CO | Denver, ELCOM, Inc.                           | 303-337-2300, FAX: 303-745-0462 |
| CT | Brookfield, CTS Corp.                         | 203-740-9755, FAX: 203-740-9747 |
| CT | Hamden, CompRep Assocs., Inc.                 | 203-932-4403, FAX: 203-932-4551 |
| CT | Stamford, Unesco/Genex, Inc.                  | 203-322-9308, FAX: 203-329-8924 |

FL Boca Raton, R.O. Whitesell &amp; Assocs.

407-393-6139, FAX: 407-393-6072

FL Longwood, R.O. Whitesell &amp; Assocs.

407-682-6662, FAX: 407-682-7038

FL Palm Harbor, R.O. Whitesell &amp; Assocs.

813-787-0888, FAX: 813-787-0987

GA Norcross, R.O. Whitesell &amp; Associates

404-449-9190, FAX: 404-449-9197

IL Northbrook, Dolin Sls. Co., Inc.

708-498-6770, FAX: 708-498-4885

IN Huntington, Elctm. Reps., Inc.

219-356-3513, FAX: 219-356-0337

IN Indianapolis, Elctm. Reps., Inc.

317-894-1414, FAX: 317-894-1216

IN Kokomo, R.O. Whitesell &amp; Assocs.

317-457-9127, FAX: 317-456-1234

IA Cedar Rapids, Seltet Sls. Corp.

319-364-7660, FAX: 319-364-7906

KS Olathe, Advanced Tech. Sls., Inc.

913-782-8702, FAX: 913-782-8641

MD Lutherville, DGR, Inc.

301-583-1360, FAX: 301-825-5579

MA Waltham, Unesco/Genex, Inc.

617-890-1535, FAX: 617-890-7931

MA Westwood, CompRep Assocs., Inc.

617-329-3454, FAX: 617-329-6395

MI Farmington Hills, J. L. Montgomery Assocs., Inc.

313-489-0099, FAX: 313-489-0189

MN Minneapolis, Robert W. Marshall Co., Inc.

612-929-0457, FAX: 612-929-8307

MN Minneapolis, S &amp; R Comp. Sls., Inc.

612-559-3090, FAX: 612-559-3153

MO Bridgeton, Advanced Tech. Sls., Inc.

314-291-5003, FAX: 314-291-7958

NM Albuquerque, Compass Mktg. &amp; Sls., Inc.

505-344-9990, FAX: 505-345-4848

NY E. Syracuse, Nycorn, Inc.

315-437-8343, FAX: 315-437-1208

NY Rockville Centre, S-J Assocs., Inc.

516-536-4242, FAX: 516-536-9638

NC Raleigh, Zucker Assocs., Inc.

919-782-8433, FAX: 919-782-8476

OH Dayton, Baehr, Greenleaf &amp; Assocs., Inc.

513-439-0724, FAX: 513-439-0387

OH Westlake, Baehr, Greenleaf &amp; Assocs., Inc.

216-892-1770, FAX: 216-892-1771

OR Tigard, Vantage Corp.

503-620-3280, FAX: 503-684-0676

PA Trevoze, P.S.A. Inc.

215-245-0513, FAX: 215-245-4817

PA Warrendale, Baehr, Greenleaf &amp; Assocs.

412-934-3088, FAX: 412-934-3990

TN Knoxville, R.O. Whitesell &amp; Associates

615-694-9476, FAX: 615-691-9693

TX Austin, Southern States Mktg., Inc.

512-835-5822, FAX: 512-835-1404

TX Houston, Southern States Mktg., Inc.

713-789-2426, FAX: 713-789-3202

TX Irving, CTS Corp.

214-444-2570, FAX: 214-401-4091

TX Richardson, Southern States Mktg., Inc.

214-238-7500, FAX: 214-231-7662

UT Murray, ELCOM, Inc.

801-262-2400, FAX: 801-262-2583

WA Bellevue, Vantage Corp.

206-455-3460, FAX: 206-455-9419

WI Glendale, Dolin Sls. Co., Inc.

414-482-1111, FAX: 414-351-4142

PRI Caguas, CompRep Assocs., Inc.

809-746-6550, FAX: 809-746-4800

Can Calgary, Alb., r.n.Longman Sls., Inc.

403-228-8719, FAX: 403-295-6324

Can Kirkland, Que., r.n.Longman Sls., Inc.

514-694-3911, FAX: 514-695-4414

Can Mississauga, Ont., r.n.Longman Sls., Inc.

416-670-8100, FAX: 416-670-1384

Can Nepean, Ont., r.n.Longman Sls., Inc.

613-564-0100, FAX: 613-596-9019

Value Added Distributors; Primarily Switch Products

*Local Distributors*

|    |                                         |                                 |
|----|-----------------------------------------|---------------------------------|
| AL | Huntsville, Hall-Mark Elctms.           | 205-837-8700, FAX: 205-830-2565 |
| AL | Huntsville, Marshall Inds.              | 205-881-9235, FAX: 205-881-1490 |
| AZ | Phoenix, Hall-Mark Elctms.              | 602-437-1200, FAX: 602-437-2348 |
| AZ | Phoenix, Marshall Inds.                 | 602-496-0290, FAX: 602-893-9029 |
| AZ | Tempe, Bell Inds.                       | 602-966-3600, FAX: 602-967-6584 |
| CA | Agoura Hills, Bell Inds.                | 818-879-9494, FAX: 818-991-7606 |
| CA | Calabasas, Marshall Inds.               | 818-879-7000, FAX: 818-880-6846 |
| CA | Chatsworth, Hall-Mark Elctms.           | 818-773-4500, FAX: 818-773-4555 |
| CA | Cypress, Bell Inds.                     | 714-895-7801, FAX: 714-891-4570 |
| CA | Irvine, Capstone Elctms.                | 714-283-8185, FAX: 714-283-8191 |
| CA | Irvine, Hall-Mark Elctms.               | 714-727-6000, FAX: 714-727-6066 |
| CA | Irvine, Integrated Elctms.              | 714-753-0127, FAX: 714-753-0881 |
| CA | Irvine, Marshall Inds.                  | 714-660-0951, FAX: 714-581-5255 |
| CA | Milpitas, Marshall Inds.                | 408-942-4600, FAX: 408-262-1224 |
| CA | Rancho Cordova, Marshall Inds.          | 916-635-9700, FAX: 916-635-6044 |
| CA | Rocklin, Bell Inds.                     | 916-652-0418, FAX: 916-652-0403 |
| CA | Rocklin, Hall-Mark Elctms.              | 916-624-9781, FAX: 916-961-0922 |
| CA | Sacramento, Integrated Elctms.          | 916-363-6030, FAX: 916-362-6926 |
| CA | San Diego, Bell Inds.                   | 619-268-1277, FAX: 619-492-9826 |
| CA | San Diego, Hall-Mark Elctms.            | 619-268-1201, FAX: 619-268-0209 |
| CA | San Diego, Marshall Inds.               | 619-627-4158, FAX: 619-627-4163 |
| CA | San Jose, Capstone Elctms.              | 408-453-9804, FAX: 408-453-9819 |
| CA | San Jose, Hall-Mark Elctms.             | 408-432-4000, FAX: 408-432-4044 |
| CA | San Jose, Rose Elctms.                  | 408-943-0200, FAX: 408-943-0360 |
| CA | Sunnyvale, Bell Inds.                   | 408-734-8570, FAX: 408-734-8875 |
| CA | Sunnyvale, PSC Elctms.                  | 408-737-1333, FAX: 408-737-0502 |
| CA | Yorba Linda, Corona Elctms.             | 714-283-8185, FAX: 714-283-8191 |
| CO | Denver, Bell Inds.                      | 303-691-2460, FAX: 303-691-9036 |
| CO | Denver, Integrated Elctms.              | 303-292-6121, FAX: 303-297-2053 |
| CO | Englewood, Hall-Mark Elctms.            | 303-790-1662, FAX: 303-790-4991 |
| CO | Littleton, Indelco Elctms.              | 303-795-3431, FAX: 303-795-8298 |
| CO | Thornton, Marshall Inds.                | 303-451-8444, FAX: 303-457-2899 |
| CT | Cheshire, Hall-Mark Elctms.             | 203-271-2844, FAX: 203-269-1704 |
| CT | Wallingford, Bell Inds.                 | 203-269-6801, FAX: 203-269-6527 |
| CT | Wallingford, Greene-Shaw Elctms.        | 203-265-3333, FAX: 203-265-3583 |
| CT | Wallingford, Marshall Inds.             | 203-265-3822, FAX: 203-284-9285 |
| FL | Altamonte Springs, Bell Inds.           | 407-339-0078, FAX: 407-339-0139 |
| FL | Altamonte Springs, Marshall Inds.       | 800-226-4486, FAX: 407-767-8676 |
| FL | Altamonte Springs, Vantage Comps.       | 407-682-1199, FAX: 407-682-1286 |
| FL | Deerfield, Vantage Comps.               | 305-429-1001, FAX: 305-481-3586 |
| FL | Ft. Lauderdale, Component Assocs., Inc. | 305-733-4100, FAX: 305-733-0384 |
| FL | Ft. Lauderdale, Marshall Inds.          | 305-977-4880, FAX: 305-977-4887 |



FL Largo, Hall-Mark Elctms. .... 813-541-7440,  
FAX:813-544-4394

FL Pompano Bch, Hall-Mark Elctms. .... 305-971-9280,  
FAX:305-971-9339

FL St Petersburg, Marshall Inds. .... 813-573-1399,  
FAX:813-573-0069

FL Woodale, Hall-Mark Elctms. .... 708-860-3800,  
FAX:708-860-0239

GA Duluth, Hall-Mark Elctms. .... 404-623-4400,  
FAX:404-476-8806

GA Norcross, Bell Inds. .... 800-525-6666,  
FAX:407-339-0139

GA Norcross, Marshall Inds. .... 404-923-5750,  
FAX:404-923-2743

IL Bensenville, Voyager Elctms. Corp. .... 708-860-1300,  
FAX:708-860-1573

IL Elk Grove Vlg, Bell Inds. .... 708-640-1910,  
FAX:708-640-0474

IL Hoffman Estates, Integrated Elctms. .... 312-843-2040,  
FAX:312-843-2320

IL Itasca, Capstone Elctms. .... 708-250-0300,  
FAX:708-250-0183

IL Schaumburg, Marshall Inds. .... 312-490-0155,  
FAX:312-490-0569

IN Indianapolis, Bell Inds. .... 317-875-8200,  
FAX:317-875-8219

IN Indianapolis, Hall-Mark Elctms. .... 317-872-8875,  
FAX:317-872-7165

IN Indianapolis, Marshall Inds. .... 317-297-0483,  
FAX:317-297-2787

KS Lenexa, Hall-Mark Elctms. .... 913-888-4747,  
FAX:913-888-0523

KS Lenexa, Marshall Inds. .... 913-492-3121,  
FAX:913-492-6205

MD Burtonville, United States Elctms, Inc. .... 301-384-3300,FAX:301-384-1537

MD Columbia, Hall-Mark Elctms. .... 410-290-5100,  
FAX:410-290-8006

MD Columbia, Hall-Mark Elctms. .... 410-988-9800,  
FAX:410-381-2036

MD Columbia, Vantage Comps, Inc. .... 410-720-5100,  
FAX:410-381-2172

MD Silver Springs, Marshall Inds. .... 301-622-1118,  
FAX:301-622-0451

MA Andover, Bell Inds. .... 508-474-8880,  
FAX:508-474-8902

MA Andover, Vantage Comps. .... 508-687-3900,  
FAX:508-687-4116

MA Billerica, Hall-Mark Elctms. .... 508-667-0902,  
FAX:508-667-4129

MA Newton, Green-Shaw Elctms. .... 617-969-8900,  
FAX:617-969-4712

MA Tewksbury, Armor Elctms. .... 508-640-1499,  
FAX:508-640-1570

MA Wilmington, Capstone Elctms. .... 508-657-5874,  
FAX:508-988-9282

MA Wilmington, Marshall Inds. .... 508-658-0810,  
FAX:508-658-7608

MI Livonia, Marshall Inds. .... 313-525-5850,  
FAX:313-525-5855

MI Plymouth, Hall-Mark Elctms. .... 313-416-5800,  
FAX:313-416-5811

MN Bell Inds. (Nationwide) .... 800-289-2355

MN Capstone Elctms. (Nationwide) .... 800-388-2277

MN Bloomington, Hall-Mark Elctms. .... 612-881-2600,  
FAX:612-881-9461

MN Fridley, Voyager Elctms. Corp. .... 612-571-7766,  
FAX:612-571-9519

MN Plymouth, Marshall Inds. .... 612-559-2211,  
FAX:612-559-8321

MN Thief River Falls, Digi-Key Corp. (Nationwide) .... 800-344-4539

MO Bridgeton, Marshall Inds. .... 314-291-4650,  
FAX:314-291-5391

MO Earth City, Hall-Mark Elctms. .... 314-291-5350,  
FAX:314-291-0362

NJ Clifton, Vantage Comps, Inc. .... 201-777-4100,  
FAX:201-777-6194

NJ Fairfield, Bell Inds. .... 201-227-6060,  
FAX:201-227-2626

NJ Fairfield, Marshall Inds. .... 201-882-0320,  
FAX:201-882-0095

NJ Marlton, Capstone Elctms. .... 609-569-7500,  
FAX:609-988-1684

NJ Moorestown, Hall-Mark Elctms. .... 609-235-1900,  
FAX:609-235-3381

NJ Mt. Laurel, Marshall Inds. .... 609-234-9100,  
FAX:609-778-1819

NJ Parsippany, Hall-Mark Elctms. .... 201-515-3000,  
FAX:201-515-4475

NM Albuquerque, Bell Inds. .... 505-292-2700,  
FAX:505-275-2819

NY Buffalo, Summit Dists. .... 716-887-2800,  
FAX:716-887-2866

NY Endicott, Marshall Inds. .... 607-785-2345,  
FAX:607-785-5546

NY Fairport, Hall-Mark Elctms. .... 716-425-3300,  
FAX:716-425-7195

NY Rochester, Marshall Inds. .... 716-235-7620,  
FAX:716-235-0052

NY Ronkonkoma, Hall-Mark Elctms. .... 516-737-0600,  
FAX:516-737-0838

NY Smithtown, Vantage Comps, Inc. .... 516-543-2000,  
FAX:516-543-2030

NC Raleigh, Capstone Elctms. .... 919-954-0600,  
FAX:919-954-9445

NC Raleigh, Hall-Mark Elctms. .... 919-872-0712,  
FAX:919-878-8729

NC Raleigh, Marshall Inds. .... 919-878-9882,  
FAX:919-872-2431

OH Columbus, Hall-Mark Elctms. .... 614-888-3313,  
FAX:614-888-0767

OH Dayton, Bell Inds. .... 513-434-8231,  
FAX:513-434-8103

OH Dayton, Bell Inds. .... 513-435-5922,  
FAX:513-435-3122

OH Dayton, Marshall Inds. .... 513-898-4480,  
FAX:513-898-9363

OH Solon, Hall-Mark Elctms. .... 216-498-1100,  
FAX:216-248-4801

OH Solon, Marshall Inds. .... 216-248-1788,  
FAX:216-248-2312

OK Tulsa, Hall-Mark Elctms. .... 918-254-6110

OR Beaverton, ALMAC/Arrow .... 503-629-8090,  
FAX:503-645-0611

OR Beaverton, Bell Inds. .... 800-525-6666,  
FAX:503-520-1948

OR Beaverton, Integrated Elctms. .... 503-641-1690,  
FAX:503-646-3737

OR Beaverton, Marshall Inds. .... 503-644-5050,  
FAX:503-646-8256

PA Philadelphia, PEI/Genesis .... 215-673-0400,  
FAX:215-553-8022

416-624-5572

**CTS CORP., AUTOMOTIVE PRODUCTS**, 1142 W. Beardsley Ave, Elkhart, IN 46514, Tel: 219-295-3575, FAX: 219-295-3580 ..... **B-1705**

**CTS CORP., CONNECTOR PRODUCTS**, 9210 Science Center Dr, New Hope, MN 55428, Tel: 612-533-3533, FAX: 612-533-3037; FSC No.: 16512; Empl: 300; Sls. Mgr.: Steve Otto

**CTS CORP., ELECTROCOMPONENTS**, 1142 W. Beardsley Ave, Elkhart, IN 46514, Tel: 219-295-3575, FAX: 219-295-3580; Empl: 110 ..... **B-1704-1705; D-1028**

Refer to CTS Corp, Elkhart, IN, for sales offices and representative listing.

**CTS CORP., FREQUENCY CONTROLS**, 400 Reimann Ave, Sandwich, IL 60548, Tel: 815-786-8411, TWX: 910-642-0860, FAX: 815-786-9743; Empl: 450 ..... **A-1358-1377**

Refer to CTS Corp, Elkhart, IN, for sales offices & representative listings.

**CTS CORP, Microelectronics**, 1201 Cumberland Ave, W. Lafayette, IN 47906, Tel: 317-463-2565, TWX: 810-342-1882, FAX: 317-497-5399; Empl: 505; Sls. Mgr.: Dick Kramer

**CTS CORP., RESISTOR NETWORKS**, 406 Parr Rd, Berne, IN 46711, Tel: 219-589-3111, FAX: 219-589-3243; Empl: 650; Sls. Mgr.: Jim Kolkowski; Dist. Mgr.: Cliff Stults ..... **A-1908-1909**

**CTS OF CANADA, LTD.**, 80 Thomas St, Streetsville, Ontario, Can. L5M 1Y9, Tel: 416-826-1141, FAX: 416-858-9058; Empl: 220

**CUBIT, Div. of Proteus Industries, Inc.**, 340 Pioneer Way, Mountain View, CA 94041, Tel: 415-962-8237, FAX: 415-965-9355; FSC No.: 62443; Empl: 37; Sls. Mgr.: Jon Heiner

**CUESTA SYSTEMS CORPORATION**, 3440 Roberto Ct, San Luis Obispo, CA 93401, Tel: 805-541-4160, 800-332-3440, TELEX: 4949381 CUESTA, FAX: 805-546-0834; Sls. Mgr.: Dee Kruger

**CUI STACK INC.**, 9640 S.W. Sunshine Ct, Beaverton, OR 97005, Tel: 503-643-4899, FAX: 503-643-6129; Empl: 11; Sls. Mgr.: Jim Seiler; Dist. Mgr.: T. Dougan/W. Glessner ..... **B-1248, 1706; C-1303; D-1029, 1653**

## Local Sales Offices &amp; Reps

AL Huntsville, Advanced Comps. Mktg. .... 205-881-5493

CA Franktown, MRC, Inc. .... 303-660-8750

CO Topsfield, Liberty Electro Mktg. .... 508-887-6655

MN Eden Prairie, Electro Mark, Inc. .... 612-944-5850

NJ Flanders, Guido Assocs. .... 201-347-4643

NJ Moorestown, Tai Corp. .... 609-778-5353

NC Raleigh, B.T. Funderburk .... 919-846-2373

OH Lexington, North Central Mktg. .... 419-884-9804

TX Richardson, J.D. Gram & Assoc. .... 214-699-9976

## Local Distributors

CA Canoga Park, RAG Elctms. .... 818-998-6500

CA Milpitas, R & D Elctm. Parts .... 408-262-7144

MN Thief River Falls, Digi-Key Corp. .... 218-681-6674

NJ Newfoundland, Hosica Labs. .... 201-697-6111

NY Great Neck, The Instr. Mart. .... 516-487-7430

OR Beaverton, Norvac Elctms. .... 503-644-1052

**CUNO, INC.**, Process Filtration Products, 400 Research Pkwy, Meriden, CT 06450, Tel: 203-237-5541; Empl: 700; Sls. Mgr.: Alan Ponchick

**CURRENT COMPONENTS, INC.**, 8600 Myersville Rd, Middleton, MD 21769, Tel: 301-473-5333, FAX: 301-371-7353; Sls. Mgr.: John Hackler

**CURRENT TECHNOLOGY, INC.**, 101 W. Buckingham Rd, Richardson, TX 75081-4802, Tel: 214-238-5300, FAX: 214-238-0911; Sls. Mgr.: Steve Larson, VP Sls. & Mktg.

**CURTIS INDUSTRIES**, PO Box 343925, Milwaukee, WI 53234-3925, Tel: 414-649-4200, FAX: 414-649-4279; FSC No.: 73631; Empl: 110; Sls. Mgr.: Al Hungsberg; Dist. Mgr.: Al Hungsberg

# CURTIS

## FAX: 914-666-2188

**CURTIS INSTRUMENTS, INC.**, 200 Kisco Ave, Mt. Kisco, NY 10549, Tel: 914-666-2971, TWX: 710-571-2163; FSC No.: 18530; Empl: 400; Sls. Mgr.: Michael Miller ..... **D-1158**

## Local Sales Offices &amp; Reps

AL Huntsville, L & D Inc. .... 205-837-1469

AZ Phoenix, TecRep Mktg. .... 602-991-6646

CA Santa Clara, NorCal RepCo .... 408-988-1643

CA Seal Beach, Texel Engrg. .... 310-596-9411

CO Golden, J.F. Hurlbut Co. .... 303-279-7796

FL Longwood, NSL Assocs. .... 407-629-5226

GA Atlanta, L & D, Inc. .... 404-395-7079

IL Chicago, Bierhaus Sls. .... 312-751-8088

KS Overland Park, Acom Elctms. .... 913-649-6402

MD Baltimore, Advanced Tech. Sls. .... 410-323-3140

MA Brookline, Harman Assocs. .... 617-232-6687

MA E. Longmeadow, Harman Assoc. .... 413-733-1425

MI Ann Arbor, T.E. Murphy Co. .... 313-995-4082

MN Edina, S.J. Collins & Assoc. .... 612-933-7661

MO St. Louis, Acom Elctms. .... 314-421-1751

NH Hudson, Harman Assoc. .... 603-882-0025

NY Manhasset, WinCor Elctm. Sls. Corp. .... 516-627-9474

NY Manlius, Smith Tech. Sls. .... 315-682-1777

NC Raleigh, L & D Inc. .... 919-876-5301

OH Arcanum, T.E. Murphy Co. .... 513-692-8713

OH Piqua, T.E. Murphy Co. .... 513-778-0247

OR Portland, Evergreen Mktg. .... 503-598-7667

PA Newtown Square, W. Reeves Assocs. .... 215-356-7500

TX Carrollton, Lektron .... 214-416-4585

WA Edmonds, Evergreen Mktg. .... 206-485-8063

WI Milwaukee, Bierhaus Sls. .... 414-963-0318

Can Mississauga, Patlon Aircraft .... 416-624-5572

**CUSTOM BOBBIN WINDINGS, A & K Corporation**, P.O. Box 2369, Zanesville, OH 43702-2369, Tel: 614-452-6973, FAX: 614-452-4156; Empl: 16

**CUSTOM CABLE CORP.**, 242 Butler St, Westbury, NY 11590, Tel: 516-334-3600, TELEX: 269301, FAX: 516-334-3989; Empl: 20; Sls. Mgr.: J. Michelman; Dist. Mgr.: D. Pollack

**CUSTOM COILS INC.**, P.O. Box 348, Alcester, SD 57001-0348, Tel: 605-934-2460, FAX: 605-934-2440; FSC No.: 34808; Empl: 75; Sls. Mgr.: Randy Larson ..... **A-2311**

## Local Sales Offices &amp; Reps

CA Irvine, CalRep, Inc. .... 714-509-7707

CA Santa Clara, Rodgers Assocs. .... 408-984-8110

CO Arvada, Krebill Comp. Sls. .... 303-940-7420

CO Grand Junction, Krebill Comp. Sls. .... 303-243-8220

IN Indianapolis, T.P.S. Assocs. .... 317-841-3046

IA Cedar Rapids, Lorenz Sls., Inc. .... 319-377-4666

KS Kansas City, Lorenz Sales, Inc. .... 913-469-1312

MI Wichita, Lorenz Sls., Inc. .... 316-721-0500

KI Holland, T.P.S. Assocs. .... 616-399-4665

MN Edina, M F I .... 612-832-9017



MO St. Louis, Lorenz Sls, Inc. .... 314-997-4558  
NE Lincoln, Lorenz Sls, Inc. .... 402-475-4660

**CUSTOM COMPUTER CABLE, INC.**, 7171 Shady Oak Rd., Eden Prairie, MN 55344, Tel: 612-941-5651, 1-800-343-5553, FAX: 612-941-2865; Empl: 40; Sls. Mgr.: Sam McDonald

**CUSTOM CONNECTOR**, 1738 E. 30th St., Cleveland, OH 44114, Tel: 216-241-1679, FAX: 216-241-1734; Empl: 24; Sls. Mgr.: Larry Weider

**CUSTOM CONTROL SENSORS, INC.**, 21111 Plummer Street, Chatsworth, CA 91313-2516, Tel: 818-341-4610, FAX: 818-709-0426; Empl: 350; Sls. Mgr.: Larry Lewis

**CUSTOM ELECTRONICS**, Browne St., Oneonta, NY 13820, Tel: 607-432-3880, FAX: 607-432-3913; FSC No.: 23280; Empl: 90; Sls. Mgr.: D. Hathaway

**CUSTOM LINEAR INC.**, 617-E. Arques Ave., Sunnyvale, CA 94086-3832, Tel: 408-749-9933, FAX: 408-736-4720; Empl: 15; Sls. Mgr.: Earl Wentworth

**CUSTOM LOGIC, P.O. Box 3940**, Crestline, CA 92325, Tel: 909-338-4059, FAX: 909-338-4450

**CUSTOM MICRO SYSTEMS, INC.**, P. O. Box 9472, Livonia, MI 48151, Tel: 313-559-5397



**FAX: 516-467-5066**

**CUSTOM POWER SYSTEMS**, 33 Comac Loop, Ronkonkoma, NY 11779-9998, Tel: 516-467-5328; Empl: 30 **D=2082**

*Local Sales Offices & Reps*  
CA Agoura Hills, Powerdyne ..... 818-991-0632  
CA San Jose, NES ..... 408-293-2600  
FL Oviedo, Lighthouse Mktg. .... 407-366-0073  
MD Hunt Valley, Eagle Sls. Corp. .... 301-666-3930  
MA Whitinsville, Power Factor & Assoc. .... 508-234-6415  
NJ Clementon, Systech Assocs. .... 609-784-8300  
NY Smithtown, J.L. Sls. .... 516-864-1701  
TX Dallas, Eatman Engrg. .... 214-771-1903

**CUSTOM SCI. INSTRS.**, Atlas Electric Devices Co., 13 Wing Dr., Cedar Knolls, NJ 07927, Tel: 201-538-8500, FAX: 201-984-6793; Empl: 35; Sls. Mgr.: Henry Plekarski

**CUSTOM SERVO MOTORS**, P.O. Box 443, New Ulm, MN 56073, Tel: 507-354-1616, FAX: 507-354-1611; Sls. Mgr.: Pat McLaughlin, Blake Benson

**CUT CRAFT, INC.**, 1501 Northpark Drive, Ft. Worth, TX 76102, Tel: 817-332-6151, FAX: 817-332-3304; Empl: 90; Sls. Mgr.: Fred A. Antonini **C=1662, 1684**

**CUTLER-HAMMER, INC.**, SHALLCROSS RESISTOR PRODS., See RCL Shallcross, Inc.

**THE CUTTING EDGE**, Controls Unlimited Inc., 4823 North Ridge Rd., Perry, OH 44081, Tel: 1-800-962-2376, FAX: 216-259-5015; Empl: 4; Sls. Mgr.: Paul Adams

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PHOENIX, AZ 85034

**(510) 835-1500**  
1025 6th. AVENUE  
OAKLAND, CA 94606

**CVC PRODUCTS, INC.**, 525 Lee Rd., P.O. Box 1886, Rochester, NY 14603, Tel: 716-458-2550, TELEX: 265240, TWX: 4947142, FAX: 716-458-0424; Empl: 105; Sls. Mgr.: Christopher J. Mann

**CVDS INC.**, 6900 Trans Canada Hwy., Pte. Claire, Que., Canada H9R 1C2, Tel: 514-694-9320, FAX: 514-694-0786; Empl: 100; Sls. Mgr.: Gerry Sullivan, VP Sls. & Mktg.



**FAX: 215-355-1088**

**CW INDUSTRIES**, 130 James Way, Southampton, PA 18966, Tel: 215-355-7080; FSC No.: 79727; Empl: 450; Sls. Mgr.: John C. Neilson, VP Sls. & Mktg.; Dist. Mgr.: John C. Neilson, VP Sls. & Mktg. **B=1707; C=1304**

*Local Sales Offices & Reps*  
AL Madison, Lamons Sls. .... 205-461-7871  
AZ Phoenix, Mercury Eng. Sls. .... 602-265-0344  
AR Little Rock, Erickson Sls. .... 501-455-0618  
CA Garden Grove, ELSCO Elctms. .... 714-891-4621  
CA Napa, Stewart-Fullerton .... 707-258-1160  
CO Englewood, Purdy Co. Assoc. .... 303-790-2211  
CT Guilford, Tynik, Inc. .... 203-453-1613  
FL Oviedo, Conley & Assocs. .... 407-365-3283  
FL Tampa, Standard Mktg. .... 813-933-5833  
GA Norcross, Lamons Sls. .... 404-242-2610  
IL Des Plaines, G. McI. Cole Co. .... 708-827-6040  
IN Greenfield, France Entprs. .... 317-462-6098  
IN Greenwood, Liberty Sls. .... 317-888-8396  
MD Columbia, Delta III Assocs. .... 301-730-4700  
MD Taunton, Focus Elctm. Sls. .... 508-824-3840  
MI Holland, Mackinaw Sls, Inc. .... 616-399-4665  
MN Minneapolis, Robt. Marshall Co. .... 612-929-0457  
MO Kansas City, Ruffolo & Assocs. .... 816-471-5701  
NJ Middletown, Elctm. Mktg. Assoc. .... 908-615-9484  
NC Raleigh, Godwin Assocs. .... 919-878-8000  
OH Akron, Augnat Assocs. .... 216-666-2819  
OR Tigard, Eltech Inc. .... 503-684-3458  
PA Hatboro, A Q S ..... 215-674-3562  
TN Greeneville, Lamons Sls. Co. .... 615-639-8711  
TX Dallas, Erickson Sls. Inc. .... 214-739-5833  
WA Bellevue, Ettech ..... 206-643-4330  
Can Etobicoke, True North Tech. Ltd. .... 416-744-2233  
Can Mississauga, Ont., True North Tech. Ltd. .... 416-677-9788

*Local Distributors*  
CA Canoga Park, Acort Inds., Inc. .... 818-700-2991  
CA Fountain Valley, Components Ctr. .... 714-979-0437  
CA Los Angeles, Elec. Switches .... 213-660-1310  
CA Santa Ana, BDS Elctms., Inc. .... 714-662-1050  
CA Santa Ana, El-Com/Cabletek .... 714-432-6630  
CA Santa Clara, Components Ctr. .... 408-988-3751  
CA Sunnyvale, Bell Inds. .... 408-745-0400  
CO Arvada, Denver Wintronics .... 303-431-7161  
DE Wilmington, Wholesale Elctms., Inc. .... 302-652-3222  
FL Stuart, Microwave Comps., Inc. .... 407-286-4455  
IL Crystal Lake, Sub-Sem Inc. .... 815-459-4139  
IL Wheeling, Hawk Elctms., Inc. .... 708-459-4030  
IN Indianapolis, Bell Inds. .... 317-875-8202  
MD Beltsville, Patrick Sls, Inc. .... 301-937-4960  
MD Gaithersburg, Axis Elctms. .... 301-840-9640  
MA Newton, Greene-Shaw Co. .... 617-969-8900  
MA Norwood, Emlet Elctms. .... 617-769-9500  
MI St. Clair Shores, Spemco .... 313-771-2700  
MN New Brighton, Chris Elctms. .... 612-631-2647  
MN Thief River Falls, Digi-Key Corp. .... 800-346-5144  
NJ Roselle, Llectron Inds. .... 201-245-5858  
NJ Union, Llectron Inds. .... 908-687-2626  
NY Amherst, Standard Elctms. .... 716-691-3801  
NY Bohemia, Car-Lac Elctms. .... 800-645-1192  
NY Farmingdale, Pride Elctms. .... 516-293-4020  
NC Winston-Salem, Kirkman Elctms. .... 919-722-9131  
OH Englewood, Argent Inds., Inc. .... 513-836-8633  
PA Bristol, AIM Elctms. .... 215-785-3500  
PA Levittown, AIM Elctms. .... 215-946-3900

**CYBERPAK CO.**, 1413 Sherman Rd., Unit 110, Romeoville, IL 60441, Tel: 708-972-0707, FAX: 708-972-0713; Empl: 5; Sls. Mgr.: R. Weinbrenner

**CYBER SYS., INC.**, 2031 E. Cerritos Ave., Anaheim, CA 92806, Tel: 714-502-6950, FAX: 714-563-7527; Empl: 15

**CYBORTRONICS INC.**, 17 Hammond, Ste. 409, Irvine, CA 92718, Tel: 714-855-2814, FAX: 714-855-0278; Sls. Mgr.: Eric Luebbsen

**CYBRID INCORPORATED**, 10 Woodcrest Drive, Woodcliff Lake, NJ 07675, Tel: 201-307-0426, FAX: 201-391-7112; Empl: 9

**CYCLO-TRONICS, INC.**, 1345 N. Old Rand Rd., Wauconda, IL 60084, Tel: 708-526-0800, FAX: 708-526-0803; Empl: 10

**THE CYLIX CORPORATION**, 2637 Townsgate Rd., Ste. 200, Westlake, CA 91361, Tel: 805-379-3155, FAX: 805-379-4551; FSC No.: 59; Empl: 15; Sls. Mgr.: Peter Norman; Dist. Mgr.: Peter Norman

**CYPRESS MAGNETICS, INC.**, 8753 Industrial Lane, Rancho Cucamonga, CA 91730, Tel: 909-987-3570, FAX: 909-980-2009; FSC No.: 59791; Empl: 15; Sls. Mgr.: Robert C. Greenwood

**CYPRESS SEMICONDUCTOR CORP.**, 3901 North First Street, San Jose, CA 95134, Tel: 408-943-2600, TELEX: 821032 CYPRESS SNJ UD, TWX: 910-997-0753, FAX: 408-943-2741



**FAX: 716-381-0475**

**CYTEC CORP.**, 2555 Baird Road, Penfield, NY 14526, Tel: 716-381-4740, 800-346-3117; Empl: 20; Sls. Mgr.: Harry Turner **D=1250**

**DABURN ELECTRONICS & CABLE CORP.**, 225 Pegasus Ave., Northvale, NJ 07647, Tel: 201-768-5400, FAX: 201-768-9642; FSC No.: 25706 **C=1740-1746**

*Local Sales Offices & Reps*  
AZ Chandler, Harco ..... 602-838-7186  
CA Mountain View, Bridge Mktg. .... 415-965-8045  
CA Newport Beach, SPA Elctms. .... 714-853-1193  
CO Denver, Mountain Reps ..... 303-333-7745  
FL Tampa, SRT Mktg. .... 813-884-4805  
IN Carmel, STB & Assocs. .... 317-844-9227  
MD Bel Air, Freedman Malta Assocs. .... 301-879-3848  
MA No. Scituate, W. A. Hendrickson ..... 617-545-0652  
MN Minneapolis, R. K. Sls. .... 612-571-1001  
NY E. Syracuse, Liberty Elec. .... 315-437-8100  
NY Plainville, Robt. Smith Assocs. .... 516-681-3155  
NC Concord, Muncy Sls. Assocs. .... 800-762-1271  
PA King of Prussia, Freedman-Malta ..... 215-337-9211  
PA Pittsburgh, Catalyst Sls. .... 412-826-3434  
WA Edmonds, ACDC ..... 206-745-5445  
WI Menomonee Falls, Voss-Dent Assocs. .... 414-781-0555  
EXP Rehovot, Israel, M.G.R. .... 972-8411719  
Can Markham, Ont., Avotronics Ltd. .... 416-475-2024

*Local Distributors*  
CA Milpitas, Zack Elctms. .... 408-942-5432  
CA San Carlos, Logan Elctms. .... 415-594-0700  
CA San Diego, Shanks & Wright ..... 619-239-0176  
CT Danbury, Pilgram ..... 203-792-7271  
CT West Hartford, Signal Ctr. .... 203-233-8551  
FL Altamonte, Royce ..... 305-869-4700  
FL Miami, Small Parts ..... 305-751-0856  
GA Atlanta, ACK Radio Supp. .... 404-351-6340  
IA Marion, Brennenman & Assoc. .... 319-377-6394  
LA Harahan, Elctm. Parts & Supp. .... 504-734-0641  
MD Gaithersburg, M S Elctms. .... 301-921-0200  
MA Carlisle, Davis Assoc. .... 617-434-6121  
MA Needham, YDI Electronics .... 617-449-1005  
MA Woburn, Pacer ..... 617-935-8330  
MN New Brighton, Chris ..... 612-631-2647  
NJ Bayville, Berkley Indl. .... 908-341-9366  
NJ Cranford, GSI Elctms. .... 908-272-6400  
NJ Kenilworth, Federated Purchaser .... 908-272-0505  
NY Albany, E. E. Taylor ..... 518-438-7811  
NY Buffalo, Summit Elctms. .... 716-887-2800  
NY Hauppauge, Broadline ..... 516-231-4100  
NY Rochester, Simcona ..... 716-328-3230  
PA Philadelphia, AC Radio ..... 215-462-9379  
RI Westerly, Ocean State EL ..... 401-596-3080  
WA Seattle, Westlake Elctms. .... 206-622-6600  
Can Markham, Ont., Arma ..... 416-475-2024

**DADEN ASSOCIATES**, 1001 Calle Amanecer, San Clemente, CA 92673, Tel: 714-366-1522, FAX: 714-366-9600; FSC No.: 57032; Empl: 49; Sls. Mgr.: Mark Foulmer

**DAGE-MTI**, 701-N. Roeske Ave., Michigan City, IN 46360, Tel: 219-872-5514, FAX: 219-872-5559; Empl: 51; Sls. Mgr.: Paul Thomas

**DAGE PRECISION INDUSTRIES, INC.**, 46701 Fremont Blvd., Fremont, CA 94538, Tel: 510-683-3930, FAX: 510-683-3935; Empl: 7; Sls. Mgr.: Bonnie Nichols



**DAICO INDUSTRIES, INC.**, 2453 East Del Amo Blvd., Rancho Dominguez, CA 90220, Tel: 310-631-1143, FAX: 310-631-8078; FSC No.: 28983; Empl: 130; *Sls. Mgr.*: Kevin Townsend; *Dist. Mgr.*: Diane Felando

**DAIDO PRECISION ENGINEERED PRODUCTS/**, Sumtak Electronics, 615 Pierce St., Somerset, NJ 08875, Tel: 908-805-1900, FAX: 908-805-0122; *Sls. Mgr.*: Phillip Giannini, Nat. *Sls. Mgr.*

**DAITRON, INC.**, 7150 S.W. Hampton, Suite 130, Tigard, OR 97223, Tel: 503-620-2879, TELEX: 910-240-4863, FAX: 503-620-2942; Empl: 13; *Sls. Mgr.*: Harry Iino; *Dist. Mgr.*: Karen Sempert

**DALE ELECTRONICS, INC., Columbus Div.**, 1122 23rd Street, Columbus, NE 68601-3647, Tel: 402-563-6506, FAX: 402-563-6418; FSC No.: 91637; Empl: 2800; *Sls. Mgr.*: Greg Mefford; *Dist. Mgr.*: Jon Trabert  
..... **A** 1225-1233, 1379-1381, 1910-1931, 2072-2077, 2312-2313; **B** 1024-1026, 1870-1871; **C** 1306-1308

**DALE ELECTRONICS, INC., Norfolk Div.**, 2300 Riverside Blvd., Norfolk, NE 68701-2242, Tel: 402-371-0080; FSC No.: 91637; Empl: 1200; *Sls. Mgr.*: Mike Burns; *Dist. Mgr.*: Jon Trabert ..... **A** 1910-1915, 1917-1924

**DALE ELECTRONICS, INC., Tempe Div.**, 1155 W. 23rd St., Tempe, AZ 85282-1883, Tel: 602-967-7874; FSC No.: 22929; Empl: 139; *Sls. Mgr.*: Mike Brown; *Dist. Mgr.*: Jon Trabert ..... **A** 1379-1381, 2072-2077

**DALE ELECTRONICS, INC., Yankton Div.**, E Hwy. 50, Box 180, Yankton, SD 57078-0180, Tel: 605-665-9301; FSC No.: 09969; Empl: 400; *Sls. Mgr.*: Mike Husman; *Dist. Mgr.*: Jon Trabert  
..... **A** 1225-1230, 1232-1233, 2312-2313; **C** 1306-1308

**DALE WESTERN THERMISTOR DIVISION**, See Dale Norfolk Division

**DALLAS SEMICONDUCTOR**, 4401 South Beltwood Pkwy., Dallas, TX 75244, Tel: 214-450-0400, FAX: 214-450-0470; Empl: 700; *Sls. Mgr.*: Jack Mattis  
..... **A** 1525-1527

#### Local Sales Offices & Reps

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AL  | Huntsville, Glen White & Assocs.        | 205-882-6751 |
| AZ  | Scottsdale, Haas & Assocs.              | 602-488-3662 |
| CA  | San Diego, Harvey King, Inc.            | 619-695-9300 |
| CA  | Santa Clara, Phase II                   | 408-980-0414 |
| CA  | Thousand Oaks, S.C. Cubed               | 805-461-4675 |
| CA  | Tustin, S.C. Cubed                      | 714-731-9206 |
| CO  | Wheat Ridge, Waugaman Assoc.            | 303-423-1020 |
| CT  | Wallingford, Technology Sls. Inc.       | 203-269-8853 |
| FL  | Altamonte Springs, Semitronic Assoc.    |              |
| FL  | Clearwater, Semitronic Assoc.           | 407-831-8233 |
| FL  | Ft. Lauderdale, Semitronic Assoc., Inc. | 813-461-4675 |
| GA  | Norcross, Glen White & Assocs.          | 305-731-2484 |
| IL  | Rolling Meadows, Sumer, Inc.            | 404-441-1447 |
| IN  | Indianapolis, Elctrm. Sls. & Eng.       | 708-991-8500 |
| IA  | Cedar Rapids, Cahill, Schmitz & Howe    | 317-849-4260 |
| KS  | Overland Park, Gibb Technlg. Sls.       | 319-377-8219 |
| MA  | Woburn, Mill-Bern Assocs.               | 913-451-6785 |
| MI  | Livonia, Geisting & Assocs.             | 617-932-3311 |
| MN  | St. Paul, Cahill, Schmitz & Cahill      | 313-478-8106 |
| MO  | Chesterfield, Gibb Technlg. Sls.        | 612-646-7217 |
| NJ  | Mt. Laurel, S-J Assocs.                 | 314-530-0495 |
| NY  | Fairport, Technlg. Sls.                 | 609-866-1234 |
| NY  | Rockville Centre, S-J Assocs.           | 716-223-7500 |
| NC  | Huntersville, Glen & White Assoc.       | 516-536-4242 |
| NC  | Raleigh, H & A Sls.                     | 704-875-3777 |
| OH  | Cincinnati, Geisting & Assocs.          | 919-848-1931 |
| OH  | Cleveland, Geisting & Assoc.            | 513-385-1105 |
| OH  | Columbus, Geisting & Assoc.             | 216-261-9705 |
| OK  | Tulsa, West Assocs.                     | 614-459-4800 |
| OK  | Tulsa, West Assocs.                     | 918-665-3465 |
| OK  | Tulsa, West Assocs.                     | 918-665-3465 |
| OR  | Beaverton, Western Tech. Sls.           | 503-644-8860 |
| PA  | Pittsburgh, Geisting & Assoc.           | 412-828-3553 |
| TN  | Gray, Glen White & Assoc.               | 615-477-8850 |
| TX  | Austin, West Assoc.                     | 512-343-1199 |
| TX  | Houston, West Assocs.                   | 713-621-5983 |
| TX  | Richardson, West Assoc.                 | 214-680-2800 |
| UT  | Salt Lake City, Waugaman Assocs.        | 801-261-0802 |
| VA  | Falls Church, S-J Chesapeake            | 703-533-2233 |
| WA  | Bellevue, Western Tech. Sls.            | 206-641-3900 |
| WA  | Spokane, Western Tech. Sls.             | 509-922-7600 |
| WI  | Brookfield, Sumer, Inc.                 | 414-784-6641 |
| EXP | Hato Rey, PR, Semitronic Assoc.         | 809-766-0700 |
| Can | Burnaby, B.C., Davetek Mktg.            | 604-430-3680 |
| Can | Ottawa, Dynasty                         | 613-596-9800 |
| Can | Pointe Claire, Dynasty                  | 514-695-7353 |

#### Local Distributors

|    |                               |              |
|----|-------------------------------|--------------|
| AL | Huntsville, Hall-Mark Elctrm. | 205-837-8700 |
| AZ | Phoenix, Hall-Mark Elctrm.    | 602-437-1200 |

|     |                                              |              |
|-----|----------------------------------------------|--------------|
| CA  | Irvine, Insight Elctrm.                      | 714-727-2111 |
| CO  | Wheat Ridge, Added Value Elect. Dist.        |              |
| CT  | Wallingford, Sterling Elctrm.                | 303-422-1701 |
| FL  | Lake Mary, Milgray-Elctrm.                   | 203-265-9535 |
| GA  | Duluth, Hall-Mark Elctrm.                    | 407-321-2555 |
| GA  | Duluth, Hall-Mark Elctrm.                    | 404-623-4400 |
| IL  | Palatine, Milgray Elctrm.                    | 708-202-1900 |
| KS  | Lenexa, Hall-Mark Elctrm.                    | 913-888-4747 |
| MA  | Wilmington, Milgray Elctrm.                  | 508-657-5900 |
| MI  | Livonia, Hall-Mark Elctrm.                   | 313-462-1205 |
| MI  | Westland, Sterling Elctrm.                   | 612-831-2666 |
| NJ  | Marlton, Milgray Elctrm.                     | 609-983-5010 |
| NY  | Farmingdale, Milgray Elctrm.                 | 516-391-3000 |
| NC  | Raleigh, Hall-Mark Elctrm.                   | 919-872-0712 |
| OH  | Solon, Hall-Mark Elctrm.                     | 216-349-4632 |
| OK  | Tulsa, Sterling Elctrm.                      | 918-663-2410 |
| OR  | Beaverton, Anthem Elctrm.                    | 503-643-1114 |
| TX  | Richardson, Anthem Elctrm.                   | 214-238-7100 |
| UT  | Salt Lake City, Anthem Elctrm.               | 801-973-8555 |
| VA  | Richmond, Sterling Elctrm.                   | 804-226-2190 |
| WA  | Bellevue, Almac Elctrm.                      | 206-643-9992 |
| Can | Ville St. Laurent, Que., ITT Multicomponents |              |
|     |                                              | 514-335-7697 |

**DALSA INC.**, 605 McMurray Road, Waterloo, Ont., Canada N2V 2E9, Tel: 519-886-6000, FAX: 519-886-8023; *Sls. Mgr.*: Ralph Beier

**DAMAC PRODUCTS, INC.**, 10410-1 Pioneer Blvd., Santa Fe Springs, CA 90670, Tel: 714-946-0881, FAX: 310-946-2631; Empl: 30; *Sls. Mgr.*: Melodie Eberhart

**DANAHER CONTROLS**, 1675 N. Delany Rd., Gurnee, IL 60031-1282, Tel: 708-662-2666; Empl: 300; *Sls. Mgr.*: R. Lowry; *Dist. Mgr.*: S. Rosenthal

**DANCER COMMUNICATIONS, INC.**, 649 South Ave., Bldg. 8, Secane, PA 19018, Tel: 215-543-8066, FAX: 215-543-2151; *Sls. Mgr.*: Joanne Gilligan

## D & B POWER, INC.

**FAX: 516-586-5952**

**D & B POWER, INC.**, 204 N. Fehr Way, Bayshore, NY 11706, Tel: 516-586-5955; FSC No.: 54337; Empl: 25; *Sls. Mgr.*: Dan Hall ..... **D** 1654-1655

#### Local Sales Offices & Reps

CA Pasadena, Electro Mecha. Instrs. .... 818-795-7193

**D & L ELECTRONICS**, Box 1236 540 Valley View Rd., Langhorne, PA 19047, Tel: 800-942-3631, FAX: 215-757-7391

**D & P MFG. INC.**, 32 Hamilton St., Chalfont, PA 18914, Tel: 215-997-1200, FAX: 215-997-2380; Empl: 7; *Sls. Mgr.*: Eugene Rane



**FAX: 407-855-6884**

**DANIELS MANUFACTURING CORP.**, 526 Thorpe Rd., Orlando, FL 32824, Tel: 407-855-6161, TELEX: 564321; FSC No.: 11851; Empl: 180; *Sls. Mgr.*: Gary Moore; *Dist. Mgr.*: Don Malinovsky ..... **C** 1700

#### Local Sales Offices & Reps

CA El Toro, DMC Western Reg. .... 407-855-6161

**DAN-L INC.**, 229 Laurel Rd., E. Northport, NY 11731, Tel: 516-757-8000; FSC No.: 28327; Empl: 22

**DANMAR INDS.**, 11952 Challenger Court, Moorpark, CA 93021, Tel: 1-805-529-3788, FAX: 805-529-3837; FSC No.: 31690; Empl: 10; *Sls. Mgr.*: Mukund Patel

**DANTEL**, 2991 N. Argyle Ave., Fresno, CA 93727, Tel: 209-292-1111, TELEX: 35-5457, FAX: 209-292-9355; FSC No.: 56960; Empl: 205; *Sls. Mgr.*: Bob Long

**DANTRONICS, INC.**, 3175 Hafner Ct., St. Paul, MN 55126, Tel: 612-484-2108; Empl: 22

**DA/PRO RUBBER, INC.**, 601 N. Poplar, Broken Arrow, OK 74012, Tel: 918-258-9386, FAX: 918-258-3286; Empl: 260; *Sls. Mgr.*: Walter F. Sanders; *Dist. Mgr.*: Walter F. Sanders

**DARE ELECTRONICS, INC.**, 3245 S. County Rd., 25A, Troy, OH 45373, Tel: 513-335-0031; FSC No.: 55901; Empl: 20; *Sls. Mgr.*: Paul J. Gilmore

**DARRAH ELECTRIC COMPANY**, 5914 Merrill Ave., Cleveland, OH 44102, Tel: 216-631-0912, FAX: 216-631-0440; Empl: 24; *Sls. Mgr.*: David J. Darrah; *Dist. Mgr.*: David J. Darrah

**DATA, INC.**, 7702 Emerald Ave., Box 2071, Ft. Collins, CO 80525, Tel: 303-493-1222; Empl: 3; *Sls. Mgr.*: Sharon Shilling; *Dist. Mgr.*: Sharon Shilling

**DATA CHECK CORPORATION**, 9918 Via Pasar, San Diego, CA 92126, Tel: 619-578-0101, FAX: 619-578-9215; FSC No.: 55792; Empl: 40; *Sls. Mgr.*: Bill Acosta

**DATACHRON INC.**, 1150 E. Stanford Court, Anaheim, CA 92805, Tel: 714-385-1705, FAX: 714-978-2514; FSC No.: 56259; Empl: 19; *Sls. Mgr.*: Clyde Davis

**DATACOM, INC.**, Box 278, Ft. Walton Beach, FL 32549, Tel: 904-244-6121, FAX: 904-244-6344; FSC No.: 32365; Empl: 50

**DATACON, INC.**, Interconnect Sub-Systems, 60 Blanchard Rd., Burlington, MA 01803, Tel: 617-273-5800, FAX: 617-273-4809; Empl: 170; *Dist. Mgr.*: Lonise M. Silva

**DATACUBE, INC.**, 300 Rosewood Drive, Danvers, MA 01923, Tel: 508-777-4200, FAX: 508-777-3117; Empl: 130; *Sls. Mgr.*: David Lerner



**FAX: 201-773-9672**

**DATA DELAY DEVICES**, 3 Mount Prospect Ave., Clifton, NJ 07013-1915, Tel: 201-773-2299 ..... **A** 1528-1544

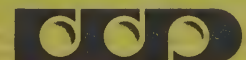
#### Local Sales Offices & Reps

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AL  | Huntsville, Hughes Assocs.               | 205-533-9108 |
| AZ  | Phoenix, Tech Sls., Inc.                 | 602-246-1614 |
| AR  | R-Squared                                | 713-820-3210 |
| CA  | Mountain View, Weseloh/Swanson & Assocs. |              |
|     |                                          | 415-961-0565 |
| CA  | Yorba Linda, Target Elctrm.              | 714-692-1630 |
| DE  | Jack McCoy Assocs.                       | 215-363-0350 |
| GA  | Norcross, Hughes Assocs., Inc.           | 404-662-1587 |
| IN  | Electro Mktg.                            | 513-890-8322 |
| KY  | Electro Mktg.                            | 513-890-8322 |
| LA  | R-Squared                                | 713-820-3210 |
| ME  | Dynamic Sls., Inc.                       | 617-272-5676 |
| MA  | Burlington, Dynamic Sls., Inc.           | 617-272-5676 |
| MI  | Livonia, Electro Mktg.                   | 313-421-7590 |
| MS  | Corinth, Hughes Assocs., Inc.            | 601-287-2915 |
| NH  | Dynamic Sls., Inc.                       | 617-272-5676 |
| NJ  | Medford, Jack McCoy Assocs.              | 609-953-0770 |
| NY  | Pittsford, James E. Zimmerman Sls.       |              |
|     |                                          | 716-381-3186 |
| NC  | Raleigh, Hughes Assocs., Inc.            | 919-467-7029 |
| OH  | Dayton, Electro Mktg.                    | 513-890-8322 |
| OK  | R-Squared                                | 713-820-3210 |
| PA  | Downingtown, Jack McCoy, Inc.            | 215-363-0350 |
| PA  | Pittsburgh, Electro Mktg.                | 412-492-0688 |
| RI  | Dynamic Sls., Inc.                       | 617-272-5676 |
| SC  | Hughes Assocs., Inc.                     | 919-467-7029 |
| TN  | Morristown, Hughes Assocs., Inc.         | 615-587-2433 |
| TX  | Houston, R-Squared                       | 713-820-3210 |
| VT  | Dynamic Sls., Inc.                       | 617-272-5676 |
| Can | Ont., Source Elctrm.                     | 416-676-0830 |

#### Local Distributors

|    |                           |              |
|----|---------------------------|--------------|
| CA | Sunnyvale, Target Elctrm. | 408-733-0384 |
| TX | Carrollton, Omni Pro      | 214-713-9000 |

**DATA DEVICE CORP.**, See ILC Data Device Corp.



**Data Display Products**

**FAX: 310-640-7639**

**DATA DISPLAY PRODUCTS**, 445 So. Douglas St., El Segundo, CA 90245-4630, Tel: 310-640-0442, 800-421-6815; FSC No.: 15513; Empl: 40; *Sls. Mgr.*: Anthony Toniolo; *Dist. Mgr.*: Anthony Toniolo ..... **B** 1136-1139



## Local Sales Offices &amp; Reps

|    |                                |              |
|----|--------------------------------|--------------|
| AL | Madison, Southern Elctm. Reps. | 205-461-8925 |
| CA | Arcadia, HMC                   | 818-447-0958 |
| CA | Cupertino, Codella Mktg.       | 408-248-3890 |
| CO | Broomfield, Summitwest Mktg.   | 303-460-9600 |
| IL | Lemont, Trend-Tronics          | 708-972-1166 |
| MA | Randolf, Hatch Assocs.         | 617-963-3306 |
| MN | Minneapolis, Amtek Mktg.       | 612-561-5371 |
| NJ | Flanders, K & F Engrg.         | 201-584-5235 |
| OR | Beaverton, WJ Sls.             | 503-626-3759 |
| PA | Allison Park, KW Elec. Sls.    | 412-492-0777 |
| PA | Wynnewood, Metz-Benham Assoc.  | 215-896-7300 |
| TX | Freeport, Marathon Assoc.      | 409-233-7026 |

## Local Distributors

|     |                                       |                                 |
|-----|---------------------------------------|---------------------------------|
| CA  | Arcadia, Parco                        | 818-447-0958, 800-423-4892      |
| CA  | Santa Clara, Bell Elctm. Supp.        | 408-727-2355                    |
| CO  | Denver, Howard Specialty              | 303-371-8553                    |
| IL  | Lemont, Trend-Tronics                 | 708-972-1166, 800-323-1697      |
| MD  | Burtonsville, U.S. Elctms.            | 301-384-3300                    |
| MD  | Kensington, Marine Air Supp.          | 301-949-9560                    |
| MA  | Methuen, Aved Elctms.                 | 508-688-3860                    |
| NJ  | E. Hanover, State Elctms.             | 201-887-2550                    |
| NJ  | Flanders, VKR Svcs.                   | 201-584-5393, 800-631-9362      |
| NJ  | Rockaway, Tonar Inds.                 | 201-586-9000, 800-654-6246      |
| NY  | Hauppauge, Vargas                     | 516-273-1111, 800-645-1492      |
| NC  | Charlotte, EMC                        | 704-394-6105                    |
| OH  | Cleveland, EMC                        | 216-442-3441                    |
| OH  | Columbus, EMC                         | 614-299-6141                    |
| OH  | Dayton, EMC                           | 513-439-4711                    |
| OH  | Englewood, Argent Inds.               | 513-836-8633                    |
| PA  | Philadelphia, Shap Elctms.            | 215-969-3300, 800-441-0375      |
| PA  | York, ECI                             | 717-846-5334                    |
| Can | Burnaby, B.C., Intek Elctms.          | 604-294-8100, FAX: 604-294-6335 |
| Can | Calgary, Alb., Cardinal Ind. Elctms.  | 403-259-6817, FAX: 403-259-8699 |
| Can | Edmonton, Alb., Cardinal Ind. Elctms. | 403-483-6266, FAX: 403-484-8926 |
| Can | Markham, Ont., Carsten Elctms.        | 416-477-9898, FAX: 416-477-7474 |
| Can | Pt. Claire, Que., Coda Elctms.        | 514-694-1335, FAX: 514-694-1337 |
| Can | Rexdale, Ont., Valtrie Mktg.          | 416-798-2555, FAX: 416-798-2560 |

**DATA ENGINEERING, INC.**, 2515 N. State Rd. 7 Ste. 207, Margate, FL 33063-3206, Tel: 305-971-0400; Sls. Mgr.: Mario M. Martinez

**DATA ENVIRONMENT, INC.**, Box 91511, Portland, OR 97291, Tel: 503-531-0765

**DATA INSTRUMENTS, INC.**, 100 Discovery Way, Acton, MA 01720, Tel: 800-332-3282, TELEX: 200081, FAX: 508-263-0630; Empl: 300; Sls. Mgr.: Ernest C. Luffy

**B-1928-1930**

## Local Sales Offices &amp; Reps

|     |                                        |              |
|-----|----------------------------------------|--------------|
| AL  | Fairhope, FLW Southeast                | 205-990-8989 |
| AL  | Huntsville, FLW Southeast, Inc.        | 205-536-6207 |
| AZ  | Phoenix, Trembley                      | 602-431-9417 |
| CA  | Laguna Hills, Elotek Sys., Inc.        | 714-830-4856 |
| CA  | Santa Clara, Johnson Assoc.            | 408-984-4626 |
| CO  | Highlands Ranch, Valcomp Elctms., Inc. | 303-791-0330 |
| FL  | Orlando, FLW Southeast, Inc.           | 407-894-9671 |
| GA  | Marietta, FLW Southeast, Inc.          | 404-424-1731 |
| IL  | Bridgeview, Finn & Conway, Inc.        | 708-599-0103 |
| IN  | Indianapolis, C.M. Buck & Assoc. Inc.  | 317-293-5074 |
| IA  | Cedar Rapids, Delltron Co.             | 319-393-0705 |
| MD  | Columbia, Delta III Assocs., Inc.      | 410-730-4700 |
| MA  | Acton, Data Instrs., Inc.              | 617-264-9550 |
| MI  | Rochester Hills, Geotronics, Inc.      | 313-373-4334 |
| MN  | Minnetonka, Finn & Conway Inc.         | 612-593-1273 |
| MO  | Kansas City, Delltron Co.              | 816-436-6445 |
| MO  | Manchester, Midwest Control Prods.     | 314-394-8040 |
| NM  | Albuquerque, Trembley Assocs.          | 505-266-8616 |
| NY  | Albany, Expert Indl. Sys., Inc.        | 518-869-3355 |
| NY  | N. Tonawanda, Expert Indl. Sys., Inc.  | 716-694-3933 |
| NY  | Rochester, Expert Indl. Sys., Inc.     | 716-323-1305 |
| NY  | Syracuse, Expert Indl. Sys., Inc.      | 315-455-2469 |
| NC  | Charlotte, Emco, Inc.                  | 704-372-8281 |
| OH  | Richfield, Geotronics, Inc.            | 216-659-6100 |
| OH  | Trotwood, Geotronics Inc.              | 513-854-5939 |
| OK  | Oklahoma City, Bauman Instr. Corp.     | 405-631-8080 |
| OK  | Tulsa, Bauman Instr. Corp.             | 918-492-8086 |
| PA  | Allison Park, Geotronics, Inc.         | 412-487-1770 |
| PA  | Richboro, Technical Dvcs. Inc.         | 215-953-1955 |
| TX  | Grand Prairie, Collinsystems, Corp.    | 214-647-3569 |
| TX  | Houston, Collinsystems, Corp.          | 713-644-9460 |
| WA  | Redmond, S.E.A. Sls.                   | 206-883-4999 |
| WA  | Vancouver, S.E.A. Sls.                 | 206-573-5161 |
| WI  | Brookfield, Finn & Conway Inc.         | 414-784-3300 |
| Can | Richmond, B.C., Maxwell Morton Assocs. | 604-273-1337 |

## Can Woodbridge, Ont., Technel Engrg. Inc.

416-851-4244

## Local Distributors

|     |                                        |              |
|-----|----------------------------------------|--------------|
| CA  | Glendale, A. Biederman, Inc.           | 818-246-8431 |
| CA  | Milpitas, A. Biederman, Inc.           | 408-435-0209 |
| CO  | Lafayette, Big Horn Instrmn.           | 303-665-4054 |
| CT  | Meriden, Meriden Cooper                | 203-237-8448 |
| GA  | Norcross, AA Elec. Inc.                | 404-449-8670 |
| IN  | Indianapolis, C & E Sls., Inc.         | 317-844-9799 |
| MA  | Billerica, Tanyx Meas. Inc.            | 508-671-0183 |
| MI  | Taylor, North Cen. Engrg., Inc.        | 313-942-0900 |
| MN  | Minneapolis, Process Measurement Co.   | 612-544-4035 |
| MN  | St. Paul, Power/mation                 | 612-645-0781 |
| MO  | St. Louis, ISL Corp.                   | 314-423-3141 |
| NJ  | Newark, Norman Bragar Co., Inc.        | 201-344-1100 |
| NY  | Amherst, KOM Lamb Inc.                 | 716-691-6400 |
| NC  | Charlotte, EMCO                        | 704-372-8281 |
| OH  | Cincinnati, C & E Sls. Inc.            | 513-241-1069 |
| OH  | Twinsburg, The Stanley M. Proctor Co.  | 216-425-7814 |
| OR  | Portland, Branom Instr.                | 503-283-2555 |
| PA  | Bensalem, Airline Hydraulics           | 215-638-4700 |
| TX  | Dallas, Butler and Land                | 214-343-8800 |
| TX  | Sugar Land, Alpha Process Sls.         | 713-240-4505 |
| UT  | Salt Lake City, Rust Automation Equip. | 801-486-9865 |
| WA  | Seattle, Branom Instr.                 | 206-762-6050 |
| WI  | Waukesha, Power/mation                 | 414-542-2868 |
| Can | Don Mills, Ont., Intertechnology, Inc. | 416-445-5500 |

**DATAK CORP., An LKG Company**, 2240 15th St., Rockford, IL 61104, Tel: 815-229-7773, 1-800-645-2262, FAX: 815-229-7785; Sls. Mgr.: Wayne Timpe •C-1677

## Local Sales Offices &amp; Reps

|     |                                                          |                                 |
|-----|----------------------------------------------------------|---------------------------------|
| AZ  | Alabaster, Rohr-Wanger-Roberts                           | 205-879-7361                    |
| AZ  | Mesa, Yocum Mktg.                                        | 602-834-3334                    |
| CA  | Gardena, Bidwell-Schwartz Assoc.                         | 213-770-0300                    |
| CA  | Irvine, English Damco Sls.                               | 714-753-1950                    |
| CA  | So. San Francisco, Carelli-Ema, Inc.                     | 415-873-2524                    |
| CT  | Lebanon, Adams McGregor Sales                            | 203-537-5737                    |
| FL  | Altamonte Springs, DHR Mktg.                             | 407-331-1199                    |
| FL  | Pompano Bch., DHR Mktg.                                  | 305-972-9157                    |
| GA  | Norcross, Rohr-Wanger-Roberts                            | 404-463-9349                    |
| IL  | Addison, Elctm. Specs.                                   | 708-250-9080                    |
| IA  | Cedar Rapids, Mink Assocs.                               | 319-393-0373                    |
| KS  | Overland Park, M.I.N.K. Associates                       | 913-341-8309                    |
| MD  | Silver Spring, Mid-Atlantic Sls.                         | 301-593-7749                    |
| MN  | Minneapolis, Kodo Assocs., Inc.                          | 612-881-1255                    |
| MO  | Bridgeport, M.I.N.K. Assocs.                             | 314-291-5454                    |
| OH  | Akron, Buckeye Mktg. Grp.                                | 216-836-7875                    |
| OR  | Portland, Jos. V. Belusko                                | 503-222-4279                    |
| PA  | Philadelphia, Instrmn. Specialties                       | 215-742-0898                    |
| PA  | Pittsburgh, Buckeye Mktg. Grp.                           | 412-655-1519                    |
| RI  | Coventry, Adams McGregor                                 | 401-726-1300                    |
| SC  | Rock Hill, Rohr-Wanger-Roberts                           | 803-324-5111                    |
| TX  | Rowlett, Campion Sls. Co., Inc.                          | 214-475-8313                    |
| VA  | Charlottesville, Mid Atlantic Sales                      | 804-973-8099                    |
| WI  | Waterford, Elctm. Specs.                                 | 414-662-2859                    |
| Can | Montreal, Cantronics Ltd./Cantronics Intl. Ltd.          | 514-848-7132                    |
| Can | Scarborough, Ont., Cantronics Ltd./Cantronics Intl. Ltd. | 416-297-8668, FAX: 416-297-0107 |

## Local Distributors

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Birmingham, ACK Radio Supply Co.     | 205-322-0588 |
| AZ | Phoenix, Dalis Elctms.               | 602-275-2885 |
| AZ | Phoenix, Tri-Tek, Inc.               | 602-371-0860 |
| AZ | Scottsdale, D.C. Elctms.             | 602-945-7736 |
| CA | Belmont, Jameco                      | 415-592-6718 |
| CA | Berkeley, AL Lasher's Elctms.        | 510-843-5915 |
| CA | Canoga Pk., Sandys Elctms.           | 818-346-8353 |
| CA | Concord, Pacific Valley Elctms.      | 510-682-4700 |
| CA | Costa Mesa, Marvac-Dow Elctms.       | 714-650-2001 |
| CA | Fremont, Easy Tech.                  | 510-770-2300 |
| CA | Fresno, Sparky Elctms.               | 209-227-2986 |
| CA | Fullerton, Orvac Elctms.             | 714-871-1020 |
| CA | Hollywood, Pacific Radio Exchg.      | 213-462-1393 |
| CA | Manhattan Bch., Fry's Elctms.        | 310-364-3789 |
| CA | Milpitas, Zack Elctms.               | 408-942-5432 |
| CA | Mountain View, Haltek Elctms.        | 415-969-0510 |
| CA | No. Hollywood, Sandy's Elctms.       | 818-983-2550 |
| CA | Redwood City, HDB Elctms.            | 415-368-1388 |
| CA | San Diego, Gateway Elctms.           | 619-279-6802 |
| CA | San Jose, Quemant Elctms.            | 408-998-5900 |
| CA | Sunnyvale, Fry's Elctms.             | 408-733-1770 |
| CA | Thousand Oaks, Pace Elctms.          | 805-497-7515 |
| CA | Van Nuys, All Elctms.                | 818-333-8009 |
| CO | Colorado Springs, Centennial Elctms. | 719-633-4666 |
| CT | Greenwich, Wise Comps.               | 203-531-4880 |
| DE | New Castle, Electronics Exch.        | 302-322-5401 |
| FL | Miami, Elctm. Equip.                 | 305-871-3500 |
| GA | Atlanta, ACK Radio Supply            | 404-351-6340 |
| GA | Macon, Fouraker Elctms.              | 912-746-4325 |
| GA | Norcross, Austin Elctms.             | 404-449-8697 |
| ID | Boise, Kimball Elctms.               | 208-232-2201 |
| IL | Berwyn, B-B & W, Inc.                | 312-749-1710 |

|    |                                        |              |
|----|----------------------------------------|--------------|
| IL | Mt. Prospect, Tri-State Elec.          | 312-255-0600 |
| IL | Niles, Joseph Elec.                    | 312-297-4200 |
| IL | Peoria, Klaus Radio                    | 309-691-4840 |
| IL | S. Holland, Union Elctms.              | 708-333-4100 |
| IN | Fl. Wayne, Warren Radio                | 219-426-5344 |
| IN | Indianapolis, Mounier Elctms.          | 317-635-3511 |
| KY | Louisville, Peerless Elec.             | 502-637-7674 |
| LA | Lafayette, Ralph's                     | 318-239-0105 |
| MD | Aberdeen, Harco Elctms.                | 301-838-7990 |
| MD | Beltsville, Mark Elctms.               | 301-595-5040 |
| MD | Gaithersburg, Capitol Radio Whlsrs.    | 301-881-2270 |
| MA | Lynn, Land Elctms. Supp.               | 617-592-2220 |
| MA | Needham, You-Do-It Elctms.             | 617-449-1005 |
| MA | Norwood, Gerber Elec.                  | 617-769-6900 |
| MI | Flint, Shand Elctms.                   | 313-743-8900 |
| MI | Livonia, Norwest Elctms.               | 313-261-4551 |
| MN | Minneapolis, AEI/Acme Elctm. Parts.    | 612-338-4754 |
| MO | Kansas City, Elctm. Supp.              | 816-931-0250 |
| MO | St. Louis, Gateway Elec.               | 314-427-6116 |
| MO | St. Louis, Van Sickle                  | 314-621-5000 |
| MT | Bozeman, Elctm. Svc. & Distr.          | 406-587-4466 |
| NE | Lincoln, Scott Elec. Supp.             | 402-466-8221 |
| NV | Las Vegas, Sandy's Elctms.             | 702-383-8353 |
| NJ | Reno, Elect. Distr. Co.                | 702-323-2766 |
| NJ | Denville, Lashen Elctms.               | 201-867-3783 |
| NJ | Greenbrook, Greenbrook Elctms.         | 201-968-3500 |
| NJ | Kenilworth, Federated Purchasers, Inc. | 201-272-0505 |
| NM | La Cruces, Elctm. Parts Co.            | 505-523-4578 |
| NY | Buffalo, Summit Distr.                 | 716-887-2800 |
| NY | Hauppauge, Broadline Elctms.           | 516-231-4100 |
| NY | Plainview, Kelvin Elctms.              | 516-349-7620 |
| NY | Rochester, Summit Elec.                | 716-334-8110 |
| NC | Greensboro, Guilford Elctms. Supp.     | 919-275-1385 |
| OH | Warren, REM Elctms. Supply             | 216-373-1300 |
| OK | Oklahoma City, Radio Supply            | 405-232-6127 |
| OR | Portland, Radar Elec.                  | 503-232-3404 |
| PA | Harrisburg, Cumberland Elctms.         | 717-233-5883 |
| PA | Braddock, Leff Elctms.                 | 412-351-5000 |
| PA | Philadelphia, A.C. Radio               | 215-462-9379 |
| PA | Reading, Barbey Elctms.                | 215-376-7451 |
| RI | Pawtucket, Jabour Electronic Supply    | 401-728-4600 |
| RI | Providence, W. Dandrea & Co.           | 401-861-2800 |
| RI | Westerly, Ocean State Elctms.          | 401-596-3080 |
| SC | Charleston, Wholesale Inds. Elctms.    | 803-722-2634 |
| TX | Memphis, W & W Distg.                  | 901-527-4627 |
| TX | Houston, Elctm. Parts Outlet           | 713-784-0140 |
| TX | Richardson, Off The Shelf Comps.       | 214-238-0808 |
| TX | Stafford, C.E.C. Elctm. Parts          | 713-498-5573 |
| UT | Salt Lake City, Kimball Elec.          | 801-328-2075 |
| UT | Salt Lake City, Standard Supp. Co.     | 801-486-3371 |
| VA | Annapole, Arcade Elctms.               | 703-256-4610 |
| VA | Norfolk, Priest Elctms.                | 804-855-0105 |
| WA | Richland, Radar Elec.                  | 509-943-8336 |
| WA | Seattle, Radar Elec. Co., Inc.         | 206-282-2511 |
| WA | Spokane, Radar Elec.                   | 509-747-3053 |
| WI | Waukegan, Indl. Elctms.                | 414-276-1212 |
| WI | Milwaukee, Electronics Inc.            | 715-845-4671 |
| NH | Newton, Adams-McGregor                 | 603-882-3669 |

**DATAKEY, INC.**, 407 W. Travelers Trail, Burnsville, MN 55337, Tel: 612-890-6850, FAX: 612-890-2726; FSC No.: 7025; Empl: 50; Sls. Mgr.: Jerry Cox

**DATALUX CORP.**, 155 Aviation Dr., Winchelsea, VA 22602, Tel: 703-662-1500, FAX: 703-662-1682; Empl: 25; Sls. Mgr.: R.H. Twyford

**DATA MEGA INC.**, Mega Data, 790 Maple Lane, Bensenville, IL 60106, Tel: 708-860-6501, FAX: 708-860-3672

**DATA POWER, See Beaver Labs**

**DATAPROBE**, 170 Coolidge Ave., Englewood, NJ 07631, Tel: 201-569-6464; Empl: 35; Sls. Mgr.: D. Weiss; Dist. Mgr.: S. Weiss

**DATAPRODUCTS CORPORATION**, 6200 Canoga Ave., Woodland Hills, CA 91367-2499, Tel: 818-888-4014, TELEX: 67-4734, FAX: 818-887-4789; Empl: 3500; Sls. Mgr.: Paul Depa; Dist. Mgr.: John Thorpe

**DATAPRODUCTS NEW ENGLAND, INC.**, 50 Barnes Park North, Wallingford, CT 06492, Tel: 203-265-7151, FAX: 203-265-7801; FSC No.: 96238; Empl: 200; Sls. Mgr.: Robert Griffith

**DATAQ INSTRUMENTS, INC.**, 150 Springside Dr., Ste. B220, Akron, OH 44333, Tel: 216-668-1444, TELEX: 6502817028, FAX: 216-666-5434

**DATARAM CORP.**, P. O. Box 7528, Princeton, NJ 08543-7528, Tel: 609-799-0071, 800-822-0071, TWX: 510-685-2542, FAX: 609-799-6734; Empl: 150; Sls. Mgr.: Carl Anderson, Sls. V.P.



## DATA RAY

FAX: 303-451-1143

**DATA RAY CORP.**, 12300 Pecos, Westminster, CO 80234, Tel: 1-800-266-5556, 303-451-1300; Empl: 100; Sls. Mgr.: A. Woodley **B-1026-1031**

Local Sales Offices & Reps  
CA Seal Bch, Texel 213-596-9411

**DATA SET CABLE CO., INC.**, 748 Danbury Rd., Ridgefield, CT 06877, Tel: 203-438-9684, 800-344-9684, FAX: 203-431-4657; Empl: 70; Sls. Mgr.: T. Busch

**DATA SPECIALTIES, INC.**, See Zebra Technologies Corp.

**DATA TECH, DIV. OF PENRIL CORP.**, See Moisture Register Products Div., Aqua Measure Instrument Co.

**DATA TECHNOLOGY, INC.**, 4 Gill St., Woburn, MA 01811, Tel: 617-935-8820, FAX: 617-935-9656; Empl: 55; Sls. Mgr.: L. Rizzo **B-1931**

Local Sales Offices & Reps  
AK El Dorado, Incl. Controls Assoc. 501-862-5978  
CA Anaheim, Direct Drives & Controls 714-993-3412  
CO Denver, Motion Tek 303-333-6050  
IL Geneva, The Fromm Co. 708-208-6100  
MI Troy, Kinetic Technlgs. 313-828-9700  
NJ Maywood, Concept 250 Inc. 201-488-7343  
NY Sidney, A.J.S. Controls 607-563-8978  
OH Cincinnati, G.R. Fehr Co., Inc. 513-772-5700  
PA Wexford, Intek Sys. 412-935-4717  
UT Salt Lake City, Motion Tek, Inc. 801-268-9815

Local Distributors  
NY Sidney, AJS Controls 607-563-8978

**DATATRAN CORP.**, 355 Yuma St., Denver, CO 80223, Tel: 303-778-0870, FAX: 303-778-0877; Empl: 17; Sls. Mgr.: Cindi L. Kemper, Dist. Mgr.: Cindi L. Kemper

**DATA TRANSLATION, INC.**, 100 Locke Dr., Marlboro, MA 01752, Tel: 508-481-3700, TELEX: 951646, FAX: 617-481-8620; FSC No.: 61867; Empl: 270; Sls. Mgr.: Pam Nelson; Dist. Mgr.: Lori Dustin



FAX: 909-928-7701

**DATATRONICS, INC.**, 28151 Highway 74, Romoland, CA 92585, Tel: 909-928-7700; FSC No.: 0F5M2 **A-2314**

For all states not listed, please contact factory in Romoland, CA 909-928-7700.

Local Sales Offices & Reps  
AL Huntsville, Bolton Assoc. 205-880-1164  
CA Riverside, Dalbeck-Vought, Inc. 909-243-1170  
CA San Jose, Fischer Assoc. 408-733-7350  
CO Denver, Megatronix 303-730-6262  
FL St. Petersburg, Bolton Assocs. 813-864-2294  
GA Dunwoody, Bolton Assoc. 404-671-9827  
IL Elgin, Selective Sls. 708-697-3757  
IL Park Ridge, Synmark Sls. Inc. 312-390-9696  
IN Ft. Wayne, Gen. II Mktg. Inc. 219-436-4485  
IA Cedar Rapids, Dy-Tronix 319-377-8275  
KS Dy-Tronix 913-339-6333  
KY Louisville, Gen. II Mktg. 502-491-5250  
MA Woburn, Radian Assocs. Inc. 617-933-7386  
MI Kalamazoo, Midwestern Sls. 616-372-6133  
MI Troy, C.B. Jensen & Assocs. 313-643-0506  
MN Minneapolis, Tech. Solutions 612-785-9303  
MO Bridgeton, Dy-Tronix 314-291-3861  
NJ Kenilworth, Ventronics, Inc. 908-272-9262  
OH Columbus, N. Central Mktg. 419-884-9804  
OR Lake Oswego, Abacus Sls. 503-777-8111  
SC Greenwood, Bolton Assoc. 803-223-4018  
TX Plano, Vielock Assoc. 214-881-1940  
UT Bountiful, Anderson Assoc. 801-292-8991  
WI East, Selective Sls. 414-367-1133  
Can Quebec, Compometics 514-331-9930

Local Distributors  
OH N. Central Mktg. 419-884-9804  
WI Selective Sls. 414-367-1133

**DATATRONIC SYSTEMS CORP.**, Computer Sciences Div., Bx 44128 EEM/NMR, Panorama City, CA 91412-0128, Tel: 818-988-5290; Empl: 150

**DATAWARE ELECTRONICS INC.**, 8227 44th Ave. West H, Mukilteo, WA 98275, Tel: 206-742-5000, FAX: 206-742-8900; Empl: 50-100; Sls. Mgr.: William Bovermann

**DATAWRAP, INC.**, 37 Water St., Wakefield, MA 01880, Tel: 617-246-5757, FAX: 617-246-5758; Empl: 16; Sls. Mgr.: Tony Lockwood

**DA-TECH CORP.**, 141 Railroad Drive, Ivyland, PA 18974, Tel: 215-322-9410, FAX: 215-322-9730; Empl: 110; Sls. Mgr.: Bradford W. Bentz



FAX: 508-339-6356

**DATTEL, INC.**, 11 Cabot Blvd., Mansfield, MA 02048-1194, Tel: 508-339-3000; Empl: 550; Sls. Mgr.: L. Jacobsen **D-1184-1185, 1340-1343, 2099-2103**

Local Sales Offices & Reps  
AL Huntsville, Hughes Assocs. Inc. 205-533-9108  
AZ Phoenix, Tech. Sls. 602-246-1614  
CA San Diego, Bectronics of San Diego 619-693-1111  
CA Santa Clara, W. J. Electrn. 408-982-9222  
CO Denver, Elcom, Inc. 303-337-2300  
CA La Mirada, Select Electrn. 213-921-5159  
FL Largo, Q-Rep 813-397-8431  
GA Norcross, Hughes Assocs. Inc. 404-662-1587  
IL Inverness, Carvel Engrg. & Sls. 708-934-9600  
IN Indianapolis, Wilson Tech. Sales 317-872-2513  
IA Cedar Rapids, Midtec Assocs. 319-395-0028  
KS Lenexa, Midtec Assocs. 913-541-0505  
MD Burtonsville, Chesapeake Technlg. Inc. 301-236-0530  
MI W. Bloomfield, Infinity, Inc. 313-932-1179  
MN Minneapolis, George Russell & Assocs. 612-854-1166  
MS Corinth, Hughes Assocs. Inc. 601-267-2915  
MO St. Louis, Midtec Assocs. 314-275-8666  
NJ Haddonfield, G. L. Williams Assocs. 609-428-6060  
NM Albuquerque, Delta Electrn. Sls. 505-271-3276  
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NY Elmont, Crane & Egert 516-872-0800  
NC Cary, Hughes Assocs., Inc. 919-467-7029  
TN Knoxville, Hughes Assocs. Inc. 615-558-0283  
TX Arlington, ION Assocs. 817-695-8000  
TX Austin, ION Assocs. 512-794-9006  
TX Houston, ION Assocs. 713-537-7717  
UT Murray, Elcom, Inc. 801-262-2400  
WA Bellevue, Advanced Power Comps. 206-747-9127  
WA Seattle, Advanced Power Comps. 206-527-7945  
WA Spokane, Advanced Power Comps. 206-928-7959  
WA Vancouver, Advanced Power Comps. 206-896-4239  
WI New Berlin, Carvel Engrg. & Sls. 414-784-7007  
Can Mississauga, Ont., Tracan Electrn. 416-625-7752  
Can Montreal, Que., Tracan Electrn. 514-955-8096  
Can Nepean, Ont., Tracan Electrn. 613-596-9760  
Can Vancouver, B.C., Advanced Power Comps. 604-436-0522

**DATRICON, Scientific Technologies, Inc.**, 31069 Genstar Rd., Hayward, CA 94544, Tel: 510-471-9717, FAX: 510-471-9752; Empl: 42

**DATRON SYSTEMS DIVISION**, 200 West Los Angeles Ave., Simi Valley, CA 93065-1650, Tel: 805-584-1717, TWX: 910-494-2787, FAX: 805-526-0885; FSC No.: 32255; Empl: 119; Sls. Mgr.: John Ricardi

**DATUM TIMING, Datum Inc.**, 1363 S. State College Blvd., Anaheim, CA 92806-5790, Tel: 714-533-6333, ESYLNK: 714-533-6345; FSC No.: 31160; Empl: 280; Sls. Mgr.: Charles Neumann **D-1116, 1186-1189**

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AL Huntsville, Southern Mktg. Assocs. Ltd. 205-534-6020  
AK Anchorage, Dryden Instrmn 907-344-4995  
CA Anaheim, Datum 714-533-6333  
CA Santa Clara, Ward/Davis Assocs. 408-245-3700  
CO Littleton, Vic Meyers Assocs. Inc. 303-730-7313  
CT Mt. Carmel, Scientific Dvcs. Connecticut 203-248-9361

FL Longwood, Southern Mktg. Assocs. Ltd. 407-682-7317  
FL Satellite, Southern Mktg. Assocs. Ltd. 407-777-3587  
GA Alpharetta, Southern Mktg. Assocs. Ltd. 404-664-9797  
IL Des Plaines, Marsland Assocs. 708-298-2620  
IN Brownsburg, Marsland Assocs. 317-852-8688  
IA Marion, Marsland 319-373-0566  
LA Metairie, Data Mktg. Assocs. 504-833-3655  
MD Columbia, Creative Mktg. Assocs. 301-880-4161  
MA Waltham, Scientific Devices-New England 617-890-2252  
MN Minneapolis, Marsland Assocs. 612-545-4481  
MO St. Louis, Marsland Assocs. 314-991-1399  
NJ Haddonfield, G. L. Williams Assocs. 609-428-6060  
NJ Union, Friedman Assocs., Inc. 908-964-6200  
NM Albuquerque, Vic Meyers Assocs. Inc. 505-884-6878  
NY Frankfort, Kapital Instr. Sls. 315-894-4245  
OH Dublin, Micro Sls. Corp. 614-792-9117  
TX Austin, Data Mktg. Assocs. 512-338-4701  
TX Dallas, Data Mktg. Assocs. 214-661-0300  
TX Houston, Data Mktg. Assocs. 713-579-2995  
TX San Antonio, Data Mktg. Assocs. 512-342-3031  
WA Seattle, Comptronics 206-784-9713  
WI New Berlin, Marsland Assocs. 414-786-6611

**DAVIDGE CORPORATION**, 94 Commerce Dr., Buellton, CA 93427, Tel: 805-688-9598, FAX: 805-688-3306; Empl: 6; Sls. Mgr.: Dean Davidge

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FAX: 410-358-0252

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**DAYTRONIC CORP.**, BTR Grp., 2589 Corporate Pl., Miamisburg, OH 45342, Tel: 513-866-3300, FAX: 513-866-3327; Empl: 125; Sls. Mgr.: Ronald J. Toke

**DAZIX, Intergraph**, One Madison Industrial Park, Huntsville, AL 35894, Tel: 1-800-239-4111, 205-730-2000, FAX: 205-730-8344

**DBA SYSTEMS, INC.**, P.O. Drawer 550, Melbourne, FL 32902-0550, Tel: 407-727-0660; Empl: 337



FAX: 913-782-5766

**DCI INC.**, 14812 W. 117th Street, Olathe, KS 66062, Tel: 913-782-5672; FSC No.: 58677; Empl: 40; Sls. Mgr.: Larry Shelton **B-1032; D-1344**

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CA Lomita, Techrep Comps. 310-539-9070  
CA San Diego, Techrep - San Diego 714-361-7727  
CO Colorado Springs, J. Smith & Assoc. 719-597-5343  
FL Sarasota, REP USA 813-923-2897  
GA Norcross, Cartwright & Bean, Inc. 404-368-0160  
IL Deerfield, Jebco Sls. Ltd. 708-945-2102  
IN Ft. Wayne, M/S Sls. & Assoc. 219-463-3023  
IA Cedar Rapids, Dy-Tronix 319-377-8275  
KS Wichita, Dy-Tronix 316-838-0884  
MA Pembroke, R.G. Assocs. Inc. 617-293-5233  
MS Jackson, Cartwright & Bean, Inc. 601-981-1170  
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MO Lowell, R.G. Assocs. Inc. 508-458-9802  
NY Pittsford, L-Tron 716-383-0050  
NC Charlotte, Cartwright & Bean, Inc. 704-536-0303



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 TN Knoxville, Cartwright & Bean, Inc. .... 615-693-7450  
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 TX Houston, Talon Tech. Sls. .... 713-999-8588  
 VA Alexandria, Dandelion-sk .... 703-722-4316  
 WA Seattle, Brett Assocs., Inc. .... 206-328-6900  
 WA Roy, Accu-Tec .... 206-843-9143

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 FL Sarasota, REP USA .... 813-923-2897  
 MO Raytown, Vertec Assocs., Inc. .... 816-737-0377  
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 MN Minneapolis, Instrmn. Resources .... 612-537-2434  
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NM Albuquerque, Jim Smith & Assocs., Inc. .... 505-345-6501  
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 RI Warwick, Ertronic, Inc. .... 401-732-3567  
 TX Dallas, Kay Todd Assocs. .... 214-458-8833  
 Can St. Laurent, Que, Componectics .... 514-331-9930

DCT INSTRUMENTS, 1165 Chambers Road, Columbus, OH 43212, Tel: 1-800-328-1028, FAX: 614-481-7701; Sls. Mgr: Joe Snell

DDI INC., 5 Dodge St., Ste. 310, Beverly, MA 01915-1703, Tel: 508-927-7976, FAX: 508-921-6388; Empl: 4; Sls. Mgr: Erik Valeur; Dist. Mgr: Erik Valeur

DDK ELECTRONICS, INC., 401 Bentley Street, Markham, Ont, Canada L3R 9T2, Tel: 416-470-1346, FAX: 416-470-1479; Empl: 25; Sls. Mgr: Bill Anderson

DEAK TECHNOLOGY, INC., See Elpaz Instruments, Inc.

DE ANZA MFG. SVCS. INC., 1271 Reamwood Ave., Sunnyvale, CA 94089, Tel: 408-734-2020, FAX: 408-734-2580; FSC No: 5935 & 5965; Empl: 100; Sls. Mgr: Michael A. Takahara

DEARBORN WIRE & CABLE, L.P., 250 W. Carpenter, Wheeling, IL 60090, Tel: 708-459-1000, 800-323-0198, FAX: 708-459-0170; FSC No: 28105; Empl: 135; Sls. Mgr: Ray Grabowski; Dist. Mgr: Scott Gauger

DE COURSEY ENGINEERING LABORATORY, 11828 W. Jefferson, Culver City, CA 90230, Tel: 1-310-397-9668; Empl: 7

DEGUSSA CORP., Temperature Sensing Products, 104 New Era Drive, So. Plainfield, NJ 07080, TELEX: 4754247, FAX: 908-757-8561; FSC No: 630673043; Sls. Mgr: Ron Fichter

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 CA Riverside, Elctm. Supply .... 714-683-7300  
 CA San Fernando, Aleph Intl. .... 818-365-9856  
 CA Santa Clara, The Wachtel Co. .... 408-982-0962  
 CO Denver, Hardware Specs. .... 303-371-8553  
 CT Milford, Plastic & Metal Comp. .... 203-877-2723  
 DE Wilmington, Wholesale Elctms. .... 302-652-3222  
 FL Tampa, Century Fastener .... 813-886-5770  
 GA Lawrenceville, Century Fastener .... 404-513-1620  
 GA Suwanee, Arden Fastener .... 404-945-3105  
 IL Addison, L-Comp .... 708-628-1400  
 IL Bensenville, Vertex Computer Cable .... 708-766-7979  
 IL Hillside, Zellerbach .... 708-448-8200  
 IN Bloomington, Stansifer Radio Co., Inc. .... 812-336-6339

IN Indianapolis, Wire Supplies, Inc. .... 317-786-4485  
 ME Bangor, ICC North .... 207-942-2600  
 MD Hanover, Vertex Computer Cable .... 301-796-5000  
 MA Marlborough, Hardware Specs. .... 508-481-8622  
 MA Woburn, Pacer Elctms. .... 617-935-8330  
 MI Muskegon, All Phase Elec. .... 616-733-3171  
 MN Fairbault, KGP Telecom. .... 507-334-2269  
 MN St. Paul, Arden Fasteners .... 612-483-6681  
 MO St. Louis, L-Comp .... 314-291-6200  
 NV Las Vegas, Kiesub .... 702-733-3888  
 NJ Kenilworth, Federated Purch. .... 201-272-0505  
 NJ Northvale, Glasgal Comm. .... 201-768-8082  
 NY Farmingdale, Vertex Computer Cable .... 516-293-9880

NY Holtsville, Tower Fastener Co. .... 516-289-8800  
 NY Long Island City, Hardware Specs. .... 718-361-9393  
 NY Rochester, Masline Elctms. .... 716-546-5373  
 NC Charlotte, Century Fastener .... 704-554-0444  
 NC Charlotte, Texas Intl. .... 704-588-0004  
 NC Raleigh, Century Fastener .... 919-787-1800  
 ND Fargo, Border Sls. .... 701-239-2379  
 OH Brookpark, Calvert Wire & Cable .... 216-433-7800  
 OH Dayton, Vertex Wire & Cable .... 513-223-5333  
 PA Philadelphia, PEI/Genesis .... 215-673-0400  
 SC W. Columbia, Century Fastener .... 803-791-1800  
 TN La Vergne, Arden Fastener .... 615-641-6661  
 TX Dallas, Texas Intl. .... 512-366-3648  
 TX Dallas, Wolford Elctms. .... 713-331-2255  
 VA Arlington, Arlington Elctms. .... 703-524-2412  
 VA Virginia Beach, Norfolk Wire & Elctms. .... 804-499-1100  
 WA Seattle, Radar Elctm. Co., Inc. .... 206-282-2511  
 WI New Berlin, Cable Comps., Inc. .... 414-785-1060  
 Can Toronto, Cords Canada Ltd. .... 416-787-1114

**DELBERT BLINN CO., INC.**, Box 2007, Pomona, CA 91769, Tel: 909-629-3900, FAX: 909-622-6218; Empl: 6



**FAX: 914-699-4005**

**DEL ELECTRONICS CORP.**, One Commerce Park, Valhalla, NY 10595, Tel: 914-686-3600; FSC No: 01378; Empl: 95 ..... **A-1157-1158, 1601, 1676, 2315, 2532; D-1656-1659**

**Local Sales Offices & Repts**  
 CA Alhambra (So. CA), James Gerry Co. ... 213-283-7694  
 CA Gilroy, Armstrong & Assocs. .... 408-848-3221  
 CT Redding, PCS .... 203-938-7013  
 MD Kensington, Koebeert Assoc. .... 301-493-8924  
 MA Whitinsville, Power Factor & Assoc. .... 508-234-6415  
 NM Albuquerque, Quality Technlg. .... 505-899-4565  
 PA Glenside, Koebeert Assoc. .... 215-887-2310

**DELEVAN DIV., American Precision Inds. Inc.**, 270 Quaker Rd., E. Aurora, NY 14052-0449, Tel: 716-652-3600, FAX: 716-652-4814; FSC No: 99800; Empl: 300; Sls. Mgr: Denis Kohlhaugen ..... **A-1186-1189**

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 AL Decatur, El Tech. .... 205-353-7899  
 AZ Phoenix, Toward Engrg. .... 602-955-3193  
 CA Chatsworth, First Rep. of S. CA .... 818-718-6155  
 CA Milpitas, Advanced Technlg. Sls. .... 408-946-4111  
 CO Parker, TMA .... 303-841-3435  
 FL Orlando, CDM .... 407-240-3903  
 GA Roswell, JWL Assoc. .... 404-518-8500  
 IL Downers Grove, Mornak Sls. .... 312-963-6400  
 IN Fort Wayne, Liberty Sls. .... 317-888-8396

IN New Albany, Liberty Sls. .... 317-888-8396  
 IA Cedar Rapids, C. Horn & Asst. .... 319-393-8703  
 KS Parker, S. W. Wollard .... 913-898-6552  
 MD Lutherville, D. A. Dougherty Sls. Co. .... 301-321-7890  
 MA Sterling, Compatible Comps. .... 508-422-3327  
 MN Mendota Hgts., G-II Sls. .... 612-454-3086  
 NJ Morristown, TAI .... 609-778-5353  
 NJ Ridgewood, Ballou .... 201-444-6990  
 NY Manhasset, Ballou, Inc. .... 516-627-1151  
 NY Union, Tech-Mark .... 716-624-3840  
 NY Mica, Tech-Mark .... 315-733-0575  
 NC Charlotte, JWL Assoc. .... 704-541-5750  
 OH Mason, S-Tek .... 513-998-5843  
 TX Irving, Kite Elctm. Sls. Co. .... 214-986-0321  
 Can Mississauga, J. G. Weiss Co. Ltd. .... 416-673-0011  
 Can Nepean, J. G. Weiss Co. Ltd. .... 613-825-0545  
 Can St. Laurent, J. G. Weiss Co. Ltd. .... 514-337-5022  
 Can Vancouver, J. G. Weiss Co. Ltd. .... 604-873-1112  
 Can Winnipeg, J. G. Weiss Co. Ltd. .... 204-783-4387

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 CA Garden Grove, National Elctms. .... 714-892-7749  
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 CA San Diego, Neumann .... 619-695-3005  
 CA Santa Clara, Trinity Elctms. .... 408-980-9014  
 CA Stanton, Inductive Comps. .... 716-828-3420  
 FL Ft. Lauderdale, Bros. Elec. of FL .... 800-342-6700  
 MD Savage, Pytronics Ind. .... 301-792-0708  
 MA Sterling, Compatible Comps. .... 617-422-6762  
 NJ E. Brunswick, Brothers Elctms. .... 201-238-2200  
 NJ Fairfield, Micros Comps. .... 201-227-8007  
 NY Buffalo, Car-Lac .... 516-567-4200  
 NY Buffalo, Summit Dists. .... 716-887-2800  
 NY Farmingdale, Milgray/New York .... 800-645-4729  
 NY Plainville, ACI Elctms. .... 516-293-6630  
 PA Norristown, Century Elctm. Comp. .... 215-631-5400  
 TX Fort Worth, Patco Supply .... 817-429-8596  
 Can Burnaby, B.C., R-A-E Indl. Elctms. Ltd. .... 604-291-8866

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**DELTA DESIGN**, 5775 Kearny Villa Rd., San Diego, CA 92123-1111, Tel: 619-292-5000, FAX: 619-277-7884; Empl: 227; Sls. Mgr: Bob Williams

**DELTA ELECTRONICS MFG. CORP.**, 416 Cabot St., Beverly, MA 01915, Tel: 508-927-1060, FAX: 508-922-6430; FSC No: 00795; Empl: 108; Sls. Mgr: James Gillen; Dist. Mgr: James Gillen

**DELTA M CORPORATION**, 525 Warehouse Rd., Oak Ridge, TN 37830, Tel: 615-483-1569, FAX: 615-483-1142; Empl: 12

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**DELTA PRODUCTS CORPROATION(EAST COAST OFFICE)**, 2000 Aerial Center Pkwy, Morrisville, NC 27560, Tel: 919-380-8883, FAX: 919-380-8383

**DELTA WIRE & CABLE CO.**, 2550 Commonwealth Ave., P.O. Box 833, North Chicago, IL 60064, Tel: 708-473-4990, FAX: 708-473-2425; Empl: 12; Sls. Mgr: Perry Stein

**DELTEC CO.**, 13065 Tom White Way, Unit G, Norwalk, CT 06850, Tel: 310-926-2304, FAX: 310-926-8536; Empl: 7; Sls. Mgr: Dennis Orman

**DELTEC ELCTRNS. CORP.**, 2727 Kurtz St., San Diego, CA 92110, Tel: 619-291-4211, 800-854-2658, TELEX: 910-335-1241, FAX: 619-296-8039; FSC No: 52297; Empl: 150; Sls. Mgr: Jeff Frank; Dist. Mgr: Rod Pullen

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**DELTONA TRANSFORMER CORP.**, 801 U.S. Hwy. 92, East, Deland, FL 32724, Tel: 904-736-7900, FAX: 904-736-0379; Empl: 140; Sls. Mgr: Michael L. Prelec

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| CA  | Santa Clara, Gagner-Toomey Assocs. | 408-244-2200 |
| CA  | Santa Clara, T&C Engrg.            | 805-254-8778 |
| CT  | Waterbury, Cannon Assocs., Inc.    | 203-597-0240 |
| FL  | Tampa, Florida Comp. Sls.          | 813-873-3622 |
| GA  | Roswell, JWL Assoc.                | 404-518-8500 |
| IL  | Eli Grove Village, Tristar Group   | 708-593-0200 |
| IN  | FL Wayne, Nationwide Comps.        | 219-423-9535 |
| MI  | St. Paul, Kencotronics, Inc.       | 612-645-7717 |
| MO  | Chesterfield, Weisler & Assocs.    | 314-377-0010 |
| NY  | Pt. Washington, Ashtech Inc.       | 516-767-0336 |
| NY  | Rochester, Omni Sls.               | 716-248-0340 |
| NC  | Charlotte, JWL Assocs.             | 704-541-5750 |
| OH  | Wilmington, Nationwide Comps.      | 216-946-3226 |
| PA  | Valley Forge, Providence Mktg.     | 215-935-3300 |
| FL  | Barrington, Cannon Assoc.          | 401-245-0850 |
| TX  | Houston, Weisler & Assocs.         | 713-467-1862 |
| Can | Pointe Claire, Nobel-Teck Inc.     | 514-695-7498 |

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| AZ | Tempe, Control Design                  | 602-828-7981 |
| AR | Little Rock, Carlton-Bates Co.         | 501-562-9100 |
| CA | Anaheim, Control Design                | 714-821-1516 |
| CA | Canoga Park, C & A Elctms.             | 818-340-6022 |
| CA | San Jose, Consolidated Parts           | 408-435-1200 |
| CA | Tustin, Western Switches               | 714-259-8144 |
| CA | Van Nuys, Wes-Garde Comps.             | 213-873-4802 |
| CO | Denver, Integrated Elctms.             | 303-292-6121 |
| CT | Waterbury, All-Phase Elec. Supply      | 203-755-0405 |
| FL | Altamonte Springs, Control Des.        | 407-788-3220 |
| FL | FL Lauderdale, SE Elctms.              | 305-563-4131 |
| FL | Lakeland, Wes-Garde Comps.             | 813-644-7564 |
| FL | Orlando, EMSCO                         | 407-849-6362 |
| GA | Stone Mountain, Control Des.           | 404-979-3500 |
| IL | Bensenville, Gould Elctms.             | 708-860-7711 |
| IN | Indianapolis, Control Design           | 317-788-4559 |
| IA | Davenport, Warren Radio                | 319-322-5301 |
| IA | Marion, Control Des.                   | 319-373-2923 |
| IA | West Des Moines, Ramco Co.             | 515-225-6933 |
| KS | Kansas City, Kornfield Thorp Elec.     | 913-621-7070 |
| KS | Wichita, Kriz-Davis Co.                | 316-267-4354 |
| KY | Louisville, Peerless Elctm. Equip.     | 502-637-7674 |
| MD | Aberdeen, Harco Elctms.                | 301-838-7990 |
| MA | Brighton, Interstate Elctms. Equip.    | 617-782-9000 |
| MA | Westborough, In Stock Prods.           | 508-870-5750 |
| MI | Jackson, Fulton Radio Supp.            | 517-784-6107 |
| MI | Madison Hgts., Galco Indl. Elctms.     | 313-542-9090 |
| MI | Minneapolis, Control Design            | 612-721-6555 |
| MO | St. Louis, Wes-Garde Comps.            | 314-567-7776 |
| NH | Keene, Trademeson Elctrl. Supp.        | 603-352-1205 |
| NJ | Oakland, Relay Specialties             | 201-337-1000 |
| NJ | Raritan, Masters Elctm.                | 201-725-3533 |
| NY | Hauppauge, Broadline Elctms.           | 516-231-4100 |
| NY | Rochester, Masline Elctms.             | 716-546-5373 |
| NY | Vestal, Wholesale Elec. Supp.          | 607-729-1526 |
| ND | Fargo, WESCO                           | 701-232-4446 |
| ND | Minot, J.L. Company                    | 801-852-4466 |
| OH | Akron, AESCO Elctms.                   | 216-762-8818 |
| OH | Wilmington, Gateway Megatech           | 216-953-0333 |
| OK | Ardmore, Ardmore Elec. Supp.           | 405-223-3571 |
| OK | Tulsa, Radio, Inc.                     | 918-587-9123 |
| OR | Portland, Dunn Elec.                   | 503-285-0214 |
| PA | Erie, Rem Elctms.                      | 814-453-5626 |
| PA | Malvern, Control Design                | 215-296-0150 |
| PA | Philadelphia, Lindley Elec.            | 215-329-7005 |
| TX | Dallas, Control Design                 | 214-358-1441 |
| TX | Lubbock, R & R Elec. Co.               | 806-765-7727 |
| TX | San Antonio, Blackburn Drives Controls | 512-349-2621 |
| UT | Salt Lake City, Kimball Elctms.        | 801-328-2075 |
| VA | Glen Allen, Hermitage Distrs.          | 804-550-3030 |
| VA | Staunton, Southern Elec.               | 703-886-6218 |
| WI | Manitowoc, Englewood Elec.             | 414-684-6653 |
| WI | Milwaukee, Marsh Elctms.               | 414-475-6000 |
| WI | New Berlin, Control Design             | 414-784-1015 |

**DELTRON, INC.**, 290 Wissahickon Ave., N. Wales, PA 19454-9990, Tel: 215-699-9261, FAX: 215-699-2310; Empl: 120

**DEL-TRON PRECISION**, 5 Trowbridge Drive, Bethel, CT 06801, Tel: 800-245-5013, FAX: 203-778-2721; Empl: 50; Sls. Mgr.: Emil Melvin

**DENNIS CHEMICAL**, 2700 Papin St., St. Louis, MO 63103, Tel: 314-771-1800, FAX: 314-771-8399; Empl: 70; Sls. Mgr.: Charles F. Seger III; Dist. Mgr.: Charles F. Seger III

**DENSEPAC MICROSYSTEMS, INC.**, 7321 Lincoln Way, Garden Grove, CA 92641-1428, Tel: 714-898-0007, 800-64-CHIPS, FAX: 714-897-1772; FSC No.: 66847; Empl: 50; Sls. Mgr.: Al Kile, VP Sls.

**DENSITRON CORPORATION**, Densitron International, 3425 W. Lomita Blvd., Torrance, CA 90505, Tel: 310-530-3530, TWX: 910-349-6200, FAX: 310-534-8419; FSC No.: 62483; Empl: 42; Sls. Mgr.: Richard Driscoll VP Sls./Mktg.; Dist. Mgr.: Richard Driscoll VP Sls./Mktg. **B-1033**

## Local Sales Offices &amp; Reps

|     |                                           |              |
|-----|-------------------------------------------|--------------|
| AZ  | Tempe, Techni-Source                      | 602-730-8093 |
| CA  | Irvine, Comp. Mktg. Assocs.               | 714-727-0688 |
| CA  | Milpitas, Telesis Sls.                    | 408-946-7300 |
| CO  | Englewood, Comp. Sls.                     | 303-779-8060 |
| CT  | W. Hartford, M-R Tech. Sls.               | 203-521-2101 |
| FL  | Margate, EPM Corp.                        | 305-977-0331 |
| GA  | Acworth, E.A.B., Inc.                     | 404-975-3660 |
| IL  | Northbrook, Howard Benjamin Assoc.        | 708-272-2900 |
| IN  | Ft. Wayne, R.L. Bontempo Assocs.          | 219-478-1057 |
| KS  | Overland Pk., Markline Technlgs.          | 913-681-8880 |
| MA  | Wellesley Hills, Sturdy Corp/Nova Assocs. | 617-235-2330 |
| MI  | Minneapolis, Electro-Serv                 | 612-338-3475 |
| MO  | St. Louis, Mitech Assocs.                 | 314-275-8666 |
| NY  | Rochester, Mullaly-Welch Sls.             | 716-244-1100 |
| NC  | Raleigh, C-Tech Sls.                      | 919-782-8100 |
| OH  | Centerville, Engrg. Mktg. Assocs.         | 513-433-2800 |
| TX  | Seagoville, Delta Comps.                  | 214-287-6333 |
| UT  | Salt Lake City, Wasatch/Prorep Mktg.      | 801-268-3434 |
| VA  | Sterling, Beacon-North                    | 703-478-2480 |
| WA  | Seattle, J. J. Assocs.                    | 206-246-6619 |
| Can | Mississauga, Ont., IntelaTech             | 416-629-0082 |

**DEPAC CORP.**, 201 Mill St., Rome, NY 13440, Tel: 315-339-1265; Empl: 3

**DERINGER MFG. CO.**, 1250 Townline Road, Mundelein, IL 60060, Tel: 708-566-4100, TWX: 910-685-4231; Sls. Mgr.: W. Johnston

**DESIGNATRONICS, INC.**, See Automatic Coil Corp., Sub. Designatronics, Inc.

**DESIGN AUTOMATION, INC.**, 809 Massachusetts Ave., Lexington, MA 02173-3992, Tel: 617-862-8998, FAX: 617-862-3769; FSC No.: 40417; Empl: 5

**DESIGN COMPONENTS, INC. (DCI)**, 1 Kenwood Circle, Franklin, MA 02038, Tel: 508-528-7300, 800-341-4811, FAX: 508-520-1424; Empl: 50

**DESIGN TECHNOLOGY**, 11489 Woodside Ave., Santee, CA 92071, Tel: 619-448-2888, FAX: 619-448-3044; FSC No.: 619-440-8048; Empl: 50; Sls. Mgr.: Jeff Jonas; Dist. Mgr.: Sherry Golden

**DESIGN WORKSHOP**, 4226 St. John's Blvd., Ste. 400, D.D.O., Que., Canada H9G 1X5, Tel: 514-696-4753, FAX: 514-696-5351; Empl: 5

**DESPATCH INDUSTRIES**, 63 St. Anthony Parkway, P.O. Box 1320, Minneapolis, MN 55418, Tel: 612-781-5363, FAX: 612-781-5353; Empl: 360; Sls. Mgr.: P. Olson

**DETRONICS CORPORATION**, 10660 E. Rush St., S. El Monte, CA 91733, Tel: 818-579-7130, TWX: 910-587-3436, FAX: 818-579-1936; FSC No.: 29867; Empl: 45

**DETROIT COIL CO.**, 2435 Hilton Rd., Ferndale, MI 48220, Tel: 313-398-5600, FAX: 313-398-0481; Empl: 120; Sls. Mgr.: T. Dougherty

**DETROIT TESTING LABORATORY, INC.**, 7111 E. Eleven Mile, P.O. Box 869, Warren, MI 48090-0869, Tel: 313-754-9000, FAX: 313-754-9045; FSC No.: 0739; Empl: 125

**DEUTSCH RELAYS, INC.**, 65 Daly Rd., East Northport, NY 11731, Tel: 516-499-6000, FAX: 516-499-6015; Empl: 463; Sls. Mgr.: Glen Telshow

**DEVAR, INC.**, 706 Bostwick Ave., Bridgeport, CT 06605, Tel: 203-368-6751, FAX: 203-368-3747; Empl: 80; Sls. Mgr.: T. W. Tomasko

**DEVELCO, INC.**, 175 Nortech Pkwy., San Jose, CA 95134-2306, Tel: 408-945-6500, TWX: 910-339-9295, FAX: 408-945-6504; Empl: 50; Sls. Mgr.: W. J. Baker

**DEVERE AND LAU COMPANY**, 1767 South Norfolk Lane, Anaheim, CA 92802, Tel: 310-457-7912, FAX: 714-772-1934; FSC No.: 7302-8902; Empl: 26; Sls. Mgr.: G. R. Bosworth

**DEXTER RESEARCH CTR., INC.**, 7300 Huron River Dr., Dexter, MI 48130, Tel: 313-426-3921, FAX: 313-426-5090; Empl: 35; Sls. Mgr.: Robert Toth Jr.

**DEXTER SCIENTIFIC**, 308 Benham St., Palatka, FL 32177, Tel: 904-328-2450; Empl: 1

**DE YOUNG MFG., INC.**, 12920 N.E. 125th Way, Kirkland, WA 98034, Tel: 206-823-4798, FAX: 206-821-8633; FSC No.: 54937; Empl: 70; Sls. Mgr.: Ted Johnson

**DGH CORPORATION**, P. O. Box 5638, Manchester, NH 03108, Tel: 603-622-0452, FAX: 603-622-0487; Empl: 10

**DGS PRO AUDIO**, P.O. Box 170426, Arlington, TX 76003, Tel: 800-292-2834, FAX: 817-473-7712; Sls. Mgr.: Drey Hayford; Dist. Mgr.: Mike Manzella

**DH PRINT, DIV. OF DH TECHNOLOGY**, 860 College View Dr., Riverton, WY 82501, Tel: 307-856-4821, FAX: 307-856-0412; Empl: 280; Sls. Mgr.: Roger Rayburn; Dist. Mgr.: Roger Rayburn

**DIAGOSTIC INSTRUMENT CORP.**, 4 Copeland Dr., Box J, Ayer, MA 01432, Tel: 508-772-4572, FAX: 508-772-5210; Empl: 70; Sls. Mgr.: James F. Hashem

**DIALIGHT CORPORATION**, 1913 Atlantic Ave., Manasquan, NJ 08736, Tel: 908-223-9400, FAX: 908-223-8788; FSC No.: 83330; Empl: 400; Sls. Mgr.: W. Moore; Dist. Mgr.: Gary Baker **B-1141-1147**

## Local Sales Offices &amp; Reps

|     |                                        |              |
|-----|----------------------------------------|--------------|
| AL  | Huntsville, Cartwright & Bean          | 205-830-1540 |
| AZ  | Phoenix, Sheffer-Kahn Co.              | 602-581-0884 |
| CA  | Garden Grove, ElSCO                    | 714-891-4621 |
| CA  | Pleasanton, Mouthrop Sls.              | 510-463-0450 |
| CA  | San Diego, Varigan San Diego           | 619-576-0100 |
| CO  | Boulder, Comp. Prods. Sls.             | 303-530-2800 |
| CT  | Wallington, John E. Boeing Co., Inc.   | 203-265-1318 |
| FL  | FL Lauderdale, Panamtech, Inc.         | 305-587-3769 |
| FL  | Oviedo, Panamtech Inc.                 | 407-679-5506 |
| GA  | Norcross, Cartwright & Bean            | 404-368-0160 |
| IL  | Chicago, Victory Sls.                  | 708-490-0300 |
| IN  | Huntington, Electronic Reps.           | 219-356-3513 |
| IN  | Indianapolis, Elctm. Reps.             | 317-894-1414 |
| IA  | Cedar Rapids, Lowell-Kangas & Assoc.   | 319-362-9290 |
| KS  | Shawnee, Lowell Kangas & Assocs.       | 913-631-3515 |
| KY  | Lexington, Electronic Reps.            | 606-277-0436 |
| LA  | Covington, Cartwright & Bean           | 504-892-1780 |
| MA  | Cheimsford, John E. Boeing Co., Inc.   | 508-256-5800 |
| MI  | Grand Rapids, Hilltronics, Inc.        | 616-364-0010 |
| MI  | Royal Oak, Hilltronics                 | 313-435-0920 |
| MN  | Edina, Mel Foster Tech. Sls.           | 612-941-9790 |
| MS  | Jackson, Cartwright & Bean             | 601-981-1170 |
| MO  | St. Louis, Lowell Kangas & Assocs.     | 314-821-4050 |
| NY  | Liverpool, Gen-Tech                    | 315-451-3480 |
| NY  | Melville, Parallax                     | 516-351-1000 |
| NY  | Penfield, Gen-Tech Elctms.             | 716-581-5159 |
| NC  | Charlotte, Cartwright & Bean           | 704-536-0303 |
| NC  | Raleigh, Cartwright & Bean             | 919-876-4130 |
| OH  | Dayton, Baehr, Greenleaf & Assocs.     | 513-439-0724 |
| OH  | Westlake, Baehr, Greenleaf & Assocs.   | 216-892-1770 |
| OR  | Tigard, Earl & Brown Assocs.           | 503-639-2100 |
| PA  | Broomall, L.D. Lowery                  | 215-356-5300 |
| PA  | Warrendale, Baehr, Greenleaf & Assocs. | 412-934-3088 |
| TN  | Germanatown, Cartwright & Bean         | 901-758-8113 |
| TN  | Knoxville, Cartwright & Bean           | 615-693-7450 |
| TX  | Austin, Tesco                          | 512-834-8374 |
| TX  | Dallas, Tesco                          | 214-553-1200 |
| TX  | Houston, Tesco, Inc.                   | 713-690-4909 |
| VA  | Earlysville, L.D. Lowery, Inc.         | 804-973-6672 |
| WA  | Redmond, Earl & Brown Assocs.          | 206-885-5064 |
| WI  | Brookfield, Victory Sls.               | 414-789-5770 |
| Can | Kirkland, P.Q. Longman Sls., Inc.      | 514-694-3911 |
| Can | Mississauga, Ont., Longman Sls., Inc.  | 416-670-8100 |
| Can | Nepean, Ontario, Longman Sls., Inc.    | 613-564-0100 |
| Can | Vancouver, B.C., Anwin Tech. Ltd.      | 604-980-4557 |

## Local Distributors

|    |                                   |              |
|----|-----------------------------------|--------------|
| AR | Little Rock, Carlton Bates        | 501-562-9100 |
| CA | Garden Grove, Richey Impact, Inc. | 714-895-0060 |
| CA | Gardena, California Switch        | 213-770-2330 |
| CA | Los Angeles, Bell Inds.           | 213-826-6778 |
| CO | Denver, CSID                      | 303-292-9594 |
| FL | Orlando, Hammond Elctms.          | 407-849-6060 |
| IL | Chicago, Newark Elctms.           | 312-784-5100 |
| IL | Palatine, Ohm Elctms.             | 708-359-5500 |
| LA | Lafayette, Ralph's of Lafayette   | 318-233-0105 |
| MD | Baltimore, Resco                  | 301-931-8200 |
| MA | Hingham, Sager Elctms.            | 617-749-6700 |
| MA | Norwood, Gerber Elctms.           | 617-769-6000 |
| MI | Livonia, Chelsea Ind./RS Elec.    | 313-525-1155 |
| MN | St. Paul, Gopher Elctms.          | 612-483-3322 |



|                                        |              |
|----------------------------------------|--------------|
| MO Maryland Hts., I. Comp.             | 314-291-6200 |
| NJ Kenilworth, Federated Purchaser     | 908-272-0505 |
| NY Buffalo, Summit Dists.              | 716-887-2800 |
| NY Lynbrook, Peerless Radio Corp.      | 516-593-2121 |
| NY Melville, Arrow Elctms.             | 516-391-1300 |
| OH Akron, Aesco Elctms., Inc.          | 216-762-8818 |
| OH Columbus, Hughes-Peters, Inc.       | 614-294-5351 |
| OH Dayton, Stotts Friedman             | 513-298-5555 |
| OH Warren, Rem Elctm. Supp.            | 216-373-1300 |
| PA Philadelphia, PEI/Genesis           | 215-673-0400 |
| PA Trevoise, Bell                      | 215-953-2800 |
| TX Dallas, Norvell Elec., Inc.         | 214-233-0020 |
| TX Houston, Harrison Equip. Co.        | 713-879-2600 |
| VA Charlottesville, Virginia Elctms.   | 804-296-4184 |
| WA Bellevue, Almac/Arrow               | 206-643-9992 |
| WI Milwaukee, Marsh Elctms.            | 414-475-6000 |
| Can Edmonton, Alb. Cardinal Ind. Elec. | 403-483-6266 |
| Can Willowdale, Ont., Electro Sonic    | 416-494-1666 |

**DIANACHART INC.**, 101 Round Hill Dr., Rockaway, NJ 07866, Tel: 201-625-2299, FAX: 201-625-2449; Empl: 10; Sls. Mgr.: B. McWilliams

**DI/AN CONTROLS, INC.**, 16 Jonathan Drive, Brockton, MA 02401, Tel: 508-599-8000, FAX: 508-599-8658; FSC No.: 06900; Empl: 25; Sls. Mgr.: John Sheehy

**DIELECTRIC COMMUNICATIONS, General Signal**, Tower Hill Rd., Raymond, ME 04071, Tel: 207-655-4555, 800-341-9678, TELEX: 710-229-6890, FAX: 207-655-4669; FSC No.: 08441; Empl: 220; Sls. Mgr.: Rolf Olsen

**DIELECTRIC LABS.**, Rte. 20 E., Cazenovia, NY 13035, Tel: 315-655-8710, TELEX: 882-691 Dielectric Labs., FAX: 315-655-8179; FSC No.: 55153; Empl: 100; Sls. Mgr.: Gunter Vorlop

**DIELECTRIC SCIENCES, INC., HVT Group**, 88 Turnpike Road, Chelmsford, MA 01824, Tel: 508-250-1507, FAX: 508-250-1699; FSC No.: 50509; Empl: 30; Sls. Mgr.: David J. Leary

**DIE-TECH INC.**, 295 Sipe Rd., RDI, York Haven, PA 17370, Tel: 717-938-6771, FAX: 717-938-6099

**DIETERICH STANDARD, A Dover Industries Company**, P.O. Box 9000, Boulder, CO 80301, Tel: 303-530-9600, FAX: 303-530-7064; Empl: 105; Sls. Mgr.: Robert Heiser; Dist. Mgr.: Robert Heiser

**DIETZ DESIGN, INC.**, 100 Electronics Pkwy., Belton, MO 64012, Tel: 816-331-4911, FAX: 816-331-4914; FSC No.: 93652; Empl: 40; Sls. Mgr.: L.M. Dietz

**DIGALOG SYSTEMS, INC.**, 3180 South 166th St., New Berlin, WI 53151, Tel: 414-797-8000, FAX: 414-797-8003; Empl: 35

**DIGI-DATA CORP.**, 8580 Dorsey Run Rd., Jessup, MD 20794, Tel: 301-498-0200, FAX: 301-498-0771; Empl: 40; Sls. Mgr.: Jim McLaughlin

**DIGI-KEY CORP.**, 701 Brooks Ave., South, Thief River Falls, MN 56701-0677, Tel: 218-681-6674, 1-800-344-4539, FAX: 218-681-3380

**DIGITAL DATA SYSTEMS, INC. (DDS)**, 1551 N.W. 65 Ave., Ft. Lauderdale, FL 33313, Tel: 305-792-3290, TWX: 910-997-4751 (Digital), ESYLNK: 62756087, FAX: 305-581-13; FSC No.: 65136; Empl: 20

**DIGITAL DESIGN ANALYSIS**, 150 El Camino Real, Ste. 200, Tustin, CA 92680, Tel: 714-573-8730, FAX: 714-573-8736; Empl: 6; Sls. Mgr.: Darlene Kindstrand; Dist. Mgr.: Darlene Kindstrand

**DIGITAL DYNAMICS, INC.**, 5274 Scotts Valley Dr., Scotts Valley, CA 95066, Tel: 408-438-4444; FSC No.: (S.L.C. Code - 3823); Empl: 15

**DIGITAL MOTOR, INC.**, 1075 N.W. Murray Rd., Ste. No. 255, Portland, OR 97229-5501, Tel: 503-629-9692, FAX: 503-690-9876; Empl: 6

**DIGITAL PRODUCTS, INC.**, 411 Waverly Oaks Rd., Waltham, MA 02154, Tel: 617-647-1234, 800-243-2333, TELEX: 312345, FAX: 617-924-7814; Empl: 100; Dist. Mgr.: Neil Peterson

**DIGITAL RADIO CORP.**, 601 S. Pacific Coast Hwy., Redondo Beach, CA 90277, Tel: 213-316-4114, FAX: 213-543-1256; Empl: 27; Sls. Mgr.: Arvin L. Perry

**DIGITEC**, 959 Cheney Ave., Marion, OH 43302, Tel: 614-387-3444, TELEX: 3775688; FSC No.: 16152; Empl: 45; Sls. Mgr.: Bruce Poplin

## DIGITRAN

A DIVISION OF XCEL CORPORATION

**FAX: 909-391-4558**

**DIGITRAN DIVISION, XCEL Corporation**, 4290 E. Brickell St., Ontario, CA 91761, Tel: 909-391-4321; FSC No.: 07126; Empl: 300; Sls. Mgr.: W. Miller; Dist. Mgr.: W. Miller B-1708, 1825

### Local Sales Offices & Reps

|                               |              |
|-------------------------------|--------------|
| CA Ontario, Xcel Corp.        | 909-391-4321 |
| CO Littleton, Romulus         | 303-770-4888 |
| FL Margate, EPM Corp.         | 305-977-0331 |
| IL Palatine, Technlg. Sls.    | 708-991-6600 |
| MI Troy, C.B. Jensen & Assoc. | 313-643-0506 |
| NJ Hasbrouck Hgts., Comp-Tech | 201-288-7400 |
| NY Rochester, Apex            | 716-272-7040 |
| OR Beaverton, J.J. Backer     | 503-627-0775 |
| TX Richardson, Pro-Comp       | 214-669-1500 |
| WA Seattle, J.J. Backer       | 206-285-1300 |

### Local Distributors

|                                        |                            |
|----------------------------------------|----------------------------|
| AL Huntsville, Comp. Dists.            | 205-883-7501               |
| AL Huntsville, Powell Elec.            | 205-539-2731               |
| AZ Tempe, Powell Elctms.               | 602-967-7538               |
| AR Little Rock, Comp. Dists.           | 501-227-6278               |
| CA Cerritos, El-Com                    | 213-404-2961               |
| CA Fullerton, Pyramid                  | 714-773-0781, 213-691-0561 |
| CA Riverside, Xcel Corp.               | 909-275-0257               |
| CA San Diego, El-Com                   | 619-578-0900               |
| CA San Jose, Powell Elctms.            | 408-943-8020               |
| CA Santa Clara, Pyramid Elec.          | 408-727-9810               |
| CT Hamden, Impact Elctms.              | 203-281-1331               |
| FL Ft. Lauderdale, Comp. Dists.        | 305-971-4950               |
| FL Ft. Lauderdale, Powell Electr./Fla. | 305-972-4300               |
| GA Norcross, Comp. Dists.              | 404-441-3320               |
| MD Columbia, Powell Electr.            | 301-621-4070               |
| MA Canton, Impact Sls. Co.             | 617-821-1500               |
| MA Westborough, Powell Elctms.         | 617-336-6100               |
| MI St. Clair Shores, Specialties Mfg.  | 313-771-2700               |
| NJ Hasbrouck Hgts., Tory Sls.          | 201-288-5656               |
| NJ Toms River, Xcel Corp.              | 908-830-7525               |
| NC Cary, Powell Elec.                  | 919-467-1212               |
| NC Raleigh, Comp. Dists.               | 919-834-9465               |
| OH Cleveland, Xcel Corp.               | 216-239-4998               |
| PA Philadelphia, Powell Electr.        | 215-365-1900               |

**DILL INSTRUMENTS INC.**, 436 W. Willard, Kalamazoo, MI 49005, Tel: 616-388-5708, FAX: 616-388-5704; Empl: 10; Sls. Mgr.: Terry Simpson; Dist. Mgr.: Robert Boyle

**DILLON, Weigh-Tronix, Inc.**, 1000 Armstrong Dr., Fairmont, MN 56031, Tel: 507-238-4461, TELEX: 756594, FAX: 507-238-4195; Empl: 500; Sls. Mgr.: Jim Rathier

**DILOG**, 2652 McGaw, Irvine, CA 92714, Tel: 714-476-0303, FAX: 714-476-0633; FSC No.: 33-0243085; Empl: 160; Sls. Mgr.: Dennis Edwards

**DILWOL WIRE & CABLE INC.**, 435 Enfield Rd., Burlington, Ont., Canada L7T 2X5, Tel: 416-681-2343, FAX: 416-681-8440; Sls. Mgr.: J. R. Mattie

**DIMCO-GRAY**, 8200 S. Suburban Rd., Dayton, OH 45458, Tel: 513-433-7600, FAX: 513-433-0520; Empl: 120; Sls. Mgr.: James L. Harl

**DIMENSIONS UNLIMITED, INC.**, 1800 Buertle Rd., St. Paul, MN 55110, Tel: 612-770-5630, FAX: 612-770-0847; Sls. Mgr.: David Flod

**DIODES INC.**, 9957 Canoga Ave., Chatsworth, CA 91311, Tel: 818-882-4920, 800-821-1178, FAX: 818-341-1736; FSC No.: 12060; Empl: 55; Sls. Mgr.: Marvin Zidel; Dist. Mgr.: Sue Reinish

**DIONICS**, 65 Rushmore St., Westbury, NY 11590, Tel: 516-997-7474, FAX: 516-997-7479; FSC No.: 50857; Empl: 25; Sls. Mgr.: Bernard L. Kravitz



**FAX: 201-941-4919**

**DIO-REY, Div. of Info-Lite Corp.**, 422 Cliff St., Fairview, NJ 07022, Tel: 201-941-4455; Empl: 13; Sls. Mgr.: Joseph M. Cartelli B-1036-1042

**DIOTEC ELECTRONICS CORP.**, 18020 Hobart Blvd., Ste. B, Gardena, CA 90248, Tel: 310-767-1052, FAX: 310-767-7958; FSC No.: 4800; Empl: 6; Sls. Mgr.: Joe S. Lin; Dist. Mgr.: Joe S. Lin

**DIRECT CONVERSION TECHNIQUE, INC.**, 3132 N. Lowell Ave., Chicago, IL 60641, Tel: 312-283-1690, FAX: 1-800-282-3852; Empl: 6; Sls. Mgr.: Thomas A. Ochal

**DIRECT SOUND CORPORATION**, The Park Square Bldg., 31 St. James Street, Ste. 901, Boston, MA 02116, Tel: 1-800-372-1616, FAX: 1-800-354-3317; Empl: 3; Sls. Mgr.: A. Takayama B-1709; C-1309

**DISC INSTRUMENTS, Honeywell**, 102 E. Baker St., Costa Mesa, CA 92626, Tel: 714-433-0343, TWX: 910-595-1987, FAX: 714-432-7567; Empl: 150

**DISPLAY DEVICES, INC.**, P.O. Box 230677, Encinitas, CA 92023, Tel: 619-753-0113; FSC No.: 26107

**DISPLAYS, INC.**, 31 Industrial Park Rd., Lewistown, PA 17044, Tel: 717-242-2541, FAX: 717-248-8680; Empl: 30; Sls. Mgr.: Kit Kennedy

**DISPLAYTECH, INC.**, 2200 Central Ave., Boulder, CO 80301, Tel: 303-449-8933, FAX: 303-449-8934; Empl: 24; Sls. Mgr.: Chris Sherman; Dist. Mgr.: Kelly J. Mannatt

**DISPLAY TECHNOLOGIES, INC.**, 1355 Holmes Rd., Elgin, IL 60123, Tel: 708-931-2100, 1-800-544-8823, FAX: 708-931-2120; Empl: 350; Sls. Mgr.: Robert Valentine; Dist. Mgr.: Timothy Knutsen

**DISTRIBUTED LOGIC CORP.**, See DILOG

**DISTRIBUTED PROCESSING TECHNOLOGY CORP.**, 140 Candace Dr., Maitland, FL 32751, Tel: 407-830-5522, FAX: 407-260-5366; Empl: 200; Sls. Mgr.: Jim Habuda; Dist. Mgr.: Tom Moch

**DISTRIBUTOR SPECIALISTS**, 1942 14th Street, Santa Monica, CA 90404-4606, Tel: 213-452-3445

**DIVELBISS CORP.**, 9776 Mt. Gilead Road, Fredericktown, OH 43019, Tel: 614-694-9015, FAX: 614-694-9035; Empl: 40; Sls. Mgr.: Terry Divelbiss; Dist. Mgr.: Tim Knaut

**DIVERSIFIED ELECTRONICS, INC.**, P.O. Box 1140, Evansville, IN 47706-1140, Tel: 812-426-2806, FAX: 812-425-8930; Empl: 55; Sls. Mgr.: John L. Smith

**DIVERSIFIED OPTICAL PRODUCTS, INC.**, 282 Main St., Salem, NH 03079, Tel: 603-898-1880, FAX: 603-898-3970; FSC No.: IHT10; Empl: 49; Sls. Mgr.: James A. Greene

**DIVERSIFIED SYSTEMS, INC.**, 6232 La Pas Trail, Indianapolis, IN 46268, Tel: 317-299-9547, FAX: 317-298-2055; FSC No.: 5693; 5999; R212; R498; R698; S901; S902; S903; S908; Empl: 1000; Sls. Mgr.: Paul Madden

**DIVERSIFIED TECHNLG.**, P.O. Box 748, Ridgeland, MS 39157, Tel: 601-856-4121, TELEX: 585326, FAX: 601-856-2888; Empl: 1000; Sls. Mgr.: Barrie McArthur; Dist. Mgr.: Barrie McArthur

**DIXSON, INC.**, 287 27 Rd., Grand Junction, CO 81503, Tel: 303-244-1241, FAX: 303-245-6267; Empl: 250; Sls. Mgr.: Ray Carlson

**DJ INSTRUMENTS, INC.**, 18 Republic Rd., N. Billerica, MA 01862, Tel: 508-667-5301, FAX: 508-667-6804; FSC No.: 57747; Empl: 25; Sls. Mgr.: David First

**D. L. CUSTOM**, 7250 Victoria Park Ave., Markham, Ont., Canada L3R 2M5, Tel: 416-475-0275; Sls. Mgr.: Les Hull, Jr.

**D. O. INDUSTRIES**, 200 Commerce Dr., Rochester, NY 14623, Tel: 716-359-4000, TELEX: 200802, FAX: 716-359-4999; Sls. Mgr.: Jeremy Goldstein

**DOLAN-JENNER INDS.**, Box 1020, Woburn, MA 01801, Tel: 617-935-7444, TELEX: 94-8161, FAX: 617-938-7219; Empl: 120; Sls. Mgr.: B.J. Dolan; Dist. Mgr.: Frank Tieman

**DOLPH, JOHN C., CO.**, New Rd., Monmouth Junction, NJ 08852, Tel: 908-329-2333, FAX: 908-329-1143; Sls. Mgr.: W. Rumpa

**DOMINO, INC.**, P.O. Box 9309, Fort Wayne, IN 46899, Tel: 219-456-5512; FSC No.: 9Y350; Empl: 19; Sls. Mgr.: Rick Smith



**D1 INTERNATIONAL, INC.**, 95 E. Main St., Huntington, NY 11743; Tel: 516-673-6866; FAX: 516-673-6893; Empl: 24; Sls. Mgr.: Bron Kutny

**DONTECH, INC.**, 700 Airport Industrial Blvd., Doylestown, PA 18901; Tel: 215-348-5010, TELEX: 685 1155 DONTK; FAX: 215-348-9959; FSC No.: 63009; Sls. Mgr.: Jeffrey S. Reid, Dir. Mktg. & Sls.; Dist. Mgr.: Leda Petrou, Sls.

**DORAN MANUFACTURING CO.**, 2834 Sidney Ave., Cincinnati, OH 45225; Tel: 513-681-5424, FAX: 513-681-5604; Empl: 60; Sls. Mgr.: Jeff Stegman

**DORMEYER INDUSTRIES, A.F. Dormeyer Mfg. Co. Inc.**, 6585 N. Avondale Ave., Chicago, IL 60631-1521; Tel: 312-775-3600, FAX: 312-775-6495; Empl: 150; Sls. Mgr.: R. Steinberg B-1632-1635

#### Local Sales Offices & Reps

CA Torrance, Universal Comps. .... 310-783-0220  
CT Guilford, Anchor Engrg. .... 203-458-7496  
IL Chicago, Dormeyer Inds. .... 312-775-3600  
IA Cedar Rapids, Dytronix .... 319-377-8275  
KS Wichita, Dytronix .... 316-838-0884  
MA Westborough, Anchor Engrg. .... 508-898-2724  
MO Bridgeton, Dytronix .... 314-291-4777  
NY Great Neck, Pacent Engrg. .... 516-482-4678  
OH Cleveland, KT/Depco .... 216-942-0051  
PA Glenshaw, Holiers Sls. Inc. .... 412-487-1246

#### Local Distributors

AL Birmingham, W.W. Grainger .... 205-942-6741  
AL Huntsville, Repton Elctms. .... 205-722-9500  
AZ Phoenix, Minarik Elec. .... 602-233-3000  
AR Little Rock, W.W. Grainger .... 501-568-7800  
CA Glendale, Minarik Elec. .... 818-507-6500  
CA Los Angeles, Master Distr. .... 800-421-8153  
CO Commerce City, Minarik Elec. .... 303-289-5800  
FL Ft. Lauderdale, Repton Elctms. .... 305-735-1112  
FL Tampa, Repton Elctms. .... 813-855-4656  
GA Norcross, Repton Elctms. .... 404-446-1300  
IL Chicago, Leeds Elctms. .... 312-625-3800  
IL Chicago, W.W. Grainger .... 312-486-9933  
IL Schaumburg, Repton Elctms. .... 708-882-1700  
IN Ft. Wayne, W.W. Grainger .... 219-484-9565  
IA Des Moines, W.W. Grainger .... 515-266-3460  
KY Louisville, W.W. Grainger .... 502-499-0001  
MA N. Billerica, Minarik Elec. .... 508-663-0740  
MA Sharon, Adcoir Inc. .... 617-784-8123  
MI Detroit, W.W. Grainger .... 313-873-1200  
MI Livonia, Repton Elctms. .... 313-525-2700  
MN Minnetonka, Repton Elctms. .... 612-938-0000  
MN Plymouth, Leeds Elctms. .... 612-557-1277  
MO Kansas City, W.W. Grainger .... 816-241-5600  
MO St. Louis, W.W. Grainger .... 314-231-5031  
NJ Newark, W.W. Grainger .... 201-648-0040  
NC Charlotte, W.W. Grainger .... 704-376-0785  
NC Raleigh, Repton Elctms. .... 919-870-5189  
OH Cleveland, W.W. Grainger .... 216-398-1880  
OH Solon, Repton Elctms. .... 216-349-1415  
PA Lansdale, Repton/Pyttronic .... 215-855-0925  
TX Irving, Minarik Elec. .... 214-402-8188  
WA Redmond, Minarik Elec. .... 206-885-0832  
WI Milwaukee, Elctm. Expeditors, Inc. .... 800-558-8547  
WI Milwaukee, Leeds Elctms. .... 414-789-6995  
Can W.W. Grainger .... 800-633-8487

**DOTRONIX**, 160 First St. SE, New Brighton, MN 55112; Tel: 612-633-1742, TWX: 910-563-3541, FAX: 612-633-7025; Empl: 200; Sls. Mgr.: D. Michael Hunter, Natl. Sls. Mgr.



**FAX: 612-942-3125**

**DOUGLAS CORP.**, 7180 Washington Ave. So., Eden Prairie, MN 55344-3512; Tel: 612-941-3847, 1-800-728-3189; Empl: 500 B-1826

**DOUGLAS ELECTRONICS, INC.**, 2777 Alvarado St., San Leandro, CA 94577; Tel: 510-483-8770, FAX: 510-483-6453; Empl: 15

**DOUGLAS INTERNATIONAL, INC.**, 312 West State Street, Geneva, IL 60134-0761; Tel: 708-232-7419, ESYLNK: 708-232-9394

# DOUGLAS RANDALL INC.

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**DOUGLAS RANDALL, P.O. Box 506, 100 Mechanic St., Bldg. 26, Pawcatuck, CT 06379; Tel: 203-599-2075; Empl: 50; Sls. Mgr.: Gil Yanishevsky A-2144-2145; B-1473-1478; D-1155-1157**

#### Local Sales Offices & Reps

AL Madison, R.W. Mitscher .... 205-464-0745  
CA Torrance, O'Donnell Assoc. .... 310-316-9445  
FL Lutz, R.W. Mitscher .... 813-948-2351  
FL Tequesta, R.W. Mitscher .... 407-575-4485  
GA Lawrenceville, R.W. Mitscher .... 404-923-3239  
IL Arlington Hgts., Thermek Inc. .... 708-577-6900  
MD Gaithersburg, Deltatronics .... 301-253-0615  
MI Ypsilanti, Allied Entprs. .... 313-434-7616  
MN Minneapolis, Automation, Inc. .... 612-571-3336  
MN Plymouth, R.C.O.M. .... 612-557-2801  
MO Bridgeton, HiTec Central .... 314-291-5920  
MO Independence, HiTec Central .... 816-796-6684  
NJ Mahwah, North East Comps .... 201-825-0233  
NY Penfield, Upstate Comps. .... 716-381-6070  
NC Raleigh, R.W. Mitscher .... 919-848-0941  
OH Cleveland, Allied Entprs. .... 216-779-0080  
OR Lake Oswego, SPS Elctms. .... 503-697-7768  
PA Blue bell, Deltatronics .... 215-641-9930  
TN Johnson City, R.W. Mitscher .... 615-929-7258  
TX Austin, Electra Reps .... 512-339-1163  
TX Dallas, Electra Reps .... 214-248-3852  
UT Bountiful, Advance Control .... 801-298-8585  
VA Alexandria, Deltatronics .... 703-971-1733  
WA Kirkland, SPS Elctms. .... 206-323-4140  
Can Mont. Que, Solid State Engrg. Co. .... 514-481-3313

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CA Chatsworth, Mill-Comm Dist. .... 818-998-3111  
CA S. San Francisco, Steven Engrg. .... 415-588-9200  
CT Wallingford, Control Design .... 203-269-9955  
FL Hollywood, MRO Elctm. Dists. .... 305-966-4847  
FL Orlando, Accurate Temperature Controls. .... 407-292-6800  
LA Jefferson, Butler & Land .... 504-734-8888  
MA Middleboro, Glynn Elctms. .... 508-947-4262  
MN Minneapolis, Automation, Inc. .... 612-571-3336  
MN Minneapolis, Control Design .... 612-721-1628  
NC Burlington, AC DC Elctms. .... 919-226-0496  
OH Richfield, Alpha Dists. .... 216-659-7100  
OK Tulsa, Butler & Land .... 918-665-7979  
PA Narberth, Power Modules .... 215-668-0664  
PA Norristown, Power Modules .... 215-292-8900  
PA Yeading, B-L Prods. .... 215-583-2800  
TX Dallas, Butler & Land .... 214-343-8800  
TX Ft. Worth, Butler & Land .... 817-838-9100  
TX Houston, Butler & Land .... 713-896-0808  
TX Tomball, Wolfford Elctms. .... 713-351-2255

**DOVA CONTROLS**, 4052 148th Ave. NE, Redmond, WA 98052-5165; Tel: 206-881-7414, FAX: 206-861-8080; Empl: 6; Sls. Mgr.: Phil Johnson



**FAX: 607-772-9274**

**DOVER ELECTRONICS MANUFACTURING**, Kirkwood Industrial Park, P.O. Box 5212, Binghamton, NY 13902-5212; Tel: 607-772-7563, TWX: 510-252-1990; Empl: 371; Sls. Mgr.: Robert P. Egan D-2310

#### Local Sales Offices & Reps

NY Binghamton, Dover Elctms. Mfg. .... 607-772-7563

**DOW CORNING CORP.**, Box 0994, Midland, MI 48686-0994; Tel: 517-496-4000, TELEX: 227450, TWX: 810-266-9006; Empl: 7,000



**FAX: 805-650-1734**

**DOW-KEY MICROWAVE CORPORATION**, 1667 Walter St., Ventura, CA 93003; Tel: 805-650-0260; FSC No.: 00471; Empl: 69; Sls. Mgr.: Jerry Satuloff; Dist. Mgr.: Jerry Satuloff B-1710

#### Local Sales Offices & Reps

AZ Scottsdale, Detomasi & Grupp, Inc. .... 602-947-3724  
CA Dow-Key .... 805-650-0260  
CA Mission Hills, Detomasi & Grupp Inc. .... 818-365-8285  
CA Mountain View, Peninsula Tech. Sls. .... 415-965-3636  
CA San Diego, Keller Simonsen Assocs. .... 619-453-5720  
CA Torrance, Detomasi & Grupp, Inc. .... 310-618-8898  
CO Parker, W. Howard Assoc. .... 303-841-5755  
CT Mount Carmel, Sci. Dvcs. Conn., Inc. .... 203-248-9361  
FL Indian Harbor Bch., South Eastern Comp. Sls. .... 407-773-3767  
GA Marietta, Gruber & Assocs. .... 404-993-6052  
IL Palatine, Wave Mktg. .... 708-934-8008  
IN Fort Wayne, Naunas Sls. Co. .... 219-432-4792  
KS Goddard, Midwest Tech. Sls. .... 316-794-8565  
KS Lenexa, Midwest Tech. Sls. .... 913-888-5100  
MD Columbia, Delta III Assocs. .... 410-730-4700  
MN Bloomington, Bill Dering & Assocs. .... 612-888-5000  
MO Earth City, Midwest Tech. Sls. .... 314-298-8787  
NJ Ridgefield Pk., Scientific Dvcs. .... 201-440-3430  
NY Rochester, Lamb Comps., Inc. .... 716-272-7720  
OH Miamisburg, Elctms. Comps. .... 513-866-3340  
TX Richardson, Beacon Microwave .... 214-437-1505  
TX Round Rock, Beacon Microwave .... 512-244-6675  
WA Kirkland, Anzak Corp. .... 206-822-1510  
Can Nepean, Ont., Dynasty Comps. .... 613-723-0671

#### Local Distributors

MD Beltsville, Allied Elctms. .... 800-433-5700  
MD Beltsville, Applied Specs. .... 301-595-5393

**DOWTY AVIONICS**, 300 E. Live Oak Ave., Arcadia, CA 91006; Tel: 818-445-5955, FAX: 818-447-0880; FSC No.: 10412; Empl: 164; Sls. Mgr.: Robert Taylor; Dist. Mgr.: Mgr. Business Dev.

**DOWTY CUSTOM ELCTRNS. INC.**, THERMOCONTROL DIV., See Nexus Custom Elctms, Thermocontrol Div.

**DRACON DIV.**, See Harris Corp., Dracon Div.

**DRANETZ TECHNOLOGIES, INC.**, 1000 New Durham Rd., P.O. Box 4019, Edison, NJ 08818-4019; Tel: 908-287-3680, TELEX: 499-708, TWX: 710-997-9553, FAX: 908-248-9240; FSC No.: 23207; Empl: 230; Sls. Mgr.: Chris Fensham

**DREEFS SWITCH, INC.**, 3782 Hawthorn Ct., Waukegan, IL 60087; Tel: 708-662-7667, 800-323-9605, FAX: 708-662-0906; Empl: 29; Sls. Mgr.: Ed Magiera; Dist. Mgr.: Ed Magiera

**DRESSER INSTRUMENT DIV., Dresser Industries**, 250 East Main St., Stratford, CT 06497; Tel: 203-378-8281, FAX: 203-385-0408; Empl: 1500; Sls. Mgr.: William Mahoney; Dist. Mgr.: Richard Gordon B-1933

#### Local Sales Offices & Reps

AL Mobile, Bell & Co. .... 205-432-5666  
AZ Mesa, Aztech Controls Corp. .... 602-966-4400  
CA San Francisco, Leighton Stone Corp. .... 415-285-3600  
CO Englewood, Applied Control Equip. .... 303-799-9300  
CT Newington, Reet Corp. .... 203-667-1584  
FL Tampa, Solares Florida Corp. .... 813-622-8822

#### Local Distributors

AL Mobile, Bell & Co. .... 205-432-5666  
AZ Mesa, Aztech Controls Corp. .... 602-966-4400  
CA San Francisco, Leighton Stone Corp. .... 415-285-3600  
CO Englewood, Applied Control Equip. .... 303-799-9300  
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| GA | Decatur, Solares S.E. Corp.       | 404-981-9282 |
| HI | Honolulu, Process Viv. & Control  | 808-834-7675 |
| IL | Peoria, Tecco, Inc.               | 309-692-2312 |
| IN | Indianapolis, Jay Instr.          | 317-639-6494 |
| KS | Wichita, Tulsa Gauge & Instr.     | 316-267-6088 |
| KY | Jeffersonton, Jay Instr.          | 502-491-0560 |
| MD | Millersville, Hi-Tech, Inc.       | 410-987-4000 |
| MI | Warren, Smith Instr. & Equip.     | 313-755-3110 |
| MI | Minneapolis, Power Sy & Engrg.    | 612-827-5743 |
| MO | St. Louis, O'Brien Equip.         | 314-781-6400 |
| NJ | Hohokus, Valley Tech. Sls.        | 201-670-8070 |
| NY | Orchard Park, David S. Reynolds   | 716-821-5921 |
| NC | Charlotte, Ind. Valve & Gauge     | 704-333-3786 |
| OH | Medina, Stress Anal Svcs          | 216-725-7733 |
| OK | Tulsa, Tulsa Gauge & Instr.       | 918-622-5061 |
| OR | Portland, Steam Sy. & Rubber      | 503-228-9625 |
| RI | Cranston, Intl. Supply            | 401-944-1600 |
| SC | Greer, Trask Instrum.             | 803-848-3993 |
| TN | Memphis, Centro, Inc.             | 901-357-1261 |
| TX | Dallas, Intek Corp.               | 214-243-8370 |
| VA | Middleton, Associated Tech., Inc. | 804-794-6094 |
| WA | Seattle, Steam Supp. & Rubber     | 206-622-4690 |
| WI | Mequon, Simone Engrg.             | 414-243-3600 |

**DRIDEK CORPORATION**, 2706 South Horseshoe Dr., Naples, FL 33942, Tel: 800-348-2398, FAX: 800-828-4248; Sls. Mgr.: Carol Smykowski

**DRIVECON CORPORATION**, 1840 Industrial Dr., Ste. 220, Libertyville, IL 60048, Tel: 708-918-1406, FAX: 708-918-7427; Empl: 8; Sls. Mgr.: Richard Parat; Dist. Mgr.: Richard Parat

**DRUMLIN, Micro/Sys, Inc.**, 3447 Ocean View Blvd., Glendale, CA 91208, Tel: 818-244-4600, FAX: 818-244-4246

**DSA, INC. DIRECT SOUND CORPORATION**, See Direct Sound Corporation

**DSP TECHNOLOGY**, 48500 Kato Rd., Fremont, CA 94538-7338, Tel: 510-657-7555, TELEX: 263608, FAX: 510-657-7576; Empl: 75; Sls. Mgr.: Robert LeBrun

**DUBBELDEE HARRIS DIAMOND CORP.:D. DRUKKER & ZN. N.V.**, 100 Stierli Ct., Mt. Arlington, NJ 07856, Tel: 201-770-1420, TELEX: RCA 236064, FAX: 201-770-1549; Sls. Mgr.: Keith Harris

**DUKANE CORP.**, Communications Sys. Div., 2900 Dukane Dr., St. Charles, IL 60174-9984, Tel: 708-584-2300, TELEX: 720426, FAX: 708-584-2792; FSC No.: 5830 Group 58; Empl: 650; Sls. Mgr.: Warren Anderson, VP of Sls.; Dist. Mgr.: Sam Boskovich, Distr. Devel. Mgr.

**DUMONT OSCILLOSCOPE, E & R Electronics, Inc.**, 323 New Road, Parsippany, NJ 07054, Tel: 201-575-8666, TELEX: 219236 DOL-HUR; FSC No.: 30669; Empl: 30; Sls. Mgr.: Edward Petrasak



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**DUNCAN ELECTRONICS**, 2865 Fairview Rd., Costa Mesa, CA 92626, Tel: 714-545-8261; FSC No.: 5905; Multiple; Empl: 110; Sls. Mgr.: J. Colligan; Dist. Mgr.: S. Huntley **A-2078-2079**

#### Local Sales Offices & Repts

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| AL | Huntsville, L. & D., Inc.           | 205-837-1469 |
| AZ | Tempe, Southwest E/M Engrg.         | 602-831-1795 |
| AR | El Dorado, Kemp Instruments, Inc.   | 501-862-5869 |
| CA | Irvine, English/Damco Sls.          | 714-753-1950 |
| CA | Santa Clara, Caltron Comps.         | 408-980-0181 |
| CT | Bloomfield, SIR/DSA                 | 203-243-9235 |
| FL | Boca Raton, R.O. Whitesell & Assoc. | 407-393-6139 |
| FL | Longwood, R.O. Whitesell & Assoc.   | 407-682-6662 |
|    |                                     | 813-787-0898 |
| GA | Atlanta, L. & D., Inc.              | 404-395-7079 |
| IL | Arlington Hgts., KMA Sales Co.      | 708-398-5300 |
| IN | Indianapolis, Mktg. Engrs., Inc.    | 317-872-5665 |
| KS | Shawnee Mission, Florence & Meyer   | 913-722-5210 |
| LA | Lafayette, Kemp Instruments, Inc.   | 318-269-9452 |
| MA | Westford, SIR/DSA                   | 508-692-2500 |
| MI | Walled Lake, Elcon O.E.M. Sls.      | 313-960-9680 |
| MN | New Brighton, The Mackubin Grp.     | 612-636-5533 |
| NY | Buffalo, Advanced Comps.            | 716-832-6791 |
| NY | Dix Hills, Sencor                   | 516-499-7748 |

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| NY | E. Syracuse, Advanced Comps.         | 315-437-6700 |
| NY | Endicott, Advanced Comps.            | 607-785-3191 |
| NC | Raleigh, L. & D., Inc.               | 919-876-5301 |
| OH | Dayton, Dolfuss-Root & Co.           | 513-433-6776 |
| OH | Westlake, Dolfuss-Root & Co.         | 216-899-9370 |
| OH | Worthington, Dolfuss-Root & Co.      | 614-885-4844 |
| OK | Tulsa, Kemp Instruments, Inc.        | 918-663-4501 |
| PA | Wynnewood, Metz-Jade Assoc., Inc.    | 215-896-7300 |
| TX | Addison, Kemp Instrs., Inc.          | 214-931-7100 |
| TX | Houston, Kemp Instruments, Inc.      | 713-466-1465 |
| TX | Marble Falls, Kemp Instruments, Inc. | 512-598-6115 |
| WA | Camas, Elctm. Mktg. Grp.             | 206-834-6548 |
| WA | Redmond, Elctm. Mktg. Grp.           | 206-882-0962 |
| WI | Milwaukee, KMA Sales Co.             | 414-259-1771 |

**DUPLICON, INC.**, 516 E. Second St., St. Boston, MA 02127, Tel: 617-269-5859, FAX: 617-269-5484; FSC No.: QASD8; Empl: 3; Sls. Mgr.: William A. Currier

**DUPONT CONNECTOR SYSTEMS**, See BERG Electronics

**DUPONT ELECTRO-OPTIC PRODUCTS**, Dupont Electronics, P.O. Box 13625, Research Triangle Park, NC 27709, Tel: 1-800-888-LANI, 919-481-5100, FAX: 919-481-0753; Empl: 65; Sls. Mgr.: Glenn R. Constable

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| CA | Newport Beach, Duracell Inc. | 714-720-8111 |
| CT | Danbury, Duracell Inc.       | 203-790-7541 |
| IL | Oak Brook, Duracell Inc.     | 708-954-2714 |

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| CA | Mtn. View, Energy Sales, Inc.                 | 415-969-0800, FAX: 415-961-2000 |
| CA | San Diego, Tauber Elctms. Inc.                | 619-274-7242, FAX: 619-274-2220 |
| IL | Downers Grove, Telecommunication Dvcs.        | 312-971-3460, FAX: 312-971-3903 |
| MA | Sharon, Adcour                                | 617-784-8123, FAX: 617-784-5565 |
| MN | St. Paul, DC Battery Products                 | 612-646-7478, FAX: 612-646-5018 |
| NY | Bohemia, Battery Assemblers, Inc.             | 516-567-8855, FAX: 516-567-8278 |
| NY | Commack, Bren-Tronics Inc.                    | 516-499-5155, FAX: 516-499-5504 |
| NY | Mt. Kisco, Multiplier Industries, Corp.       | 914-241-9510, FAX: 914-241-1103 |
| NC | Winston Salem, Progressive Technologies, Inc. | 919-761-1375, FAX: 919-748-0495 |
| TX | Stafford, Southwest Electronics Inc.          | 713-240-4000, FAX: 713-240-5672 |

**DURAKOOL**, See American Electronic Components

**DUREL CORPORATION**, Affiliate of 3M & Rogers Corp., 645 W. 24th St., Tempe, AZ 85282, Tel: 602-731-6200, FAX: 602-731-6210

**DURGIN & BROWNE**, See Tridyne Process Systems, DBI Inds.

**DURMITOR INC.**, Box 413, 23 Crossley Ct., King City, Ont., Canada L0G 1K0, Tel: 416-833-3148, FAX: 416-833-2112; FSC No.: IC560; Empl: 6

**DUTEC, INC.**, 4801 James McDivitt, P.O. Box 964, Jackson, MI 49204-0964, Tel: 800-248-1632, FAX: 517-750-4740; Sls. Mgr.: Bruce Reynolds, Gen. Mgr.

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| FL | Pompano Beach, Digital I/O Assocs.   | 305-785-1255 |
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| TX | Missouri City, Ron Stewart & Assocs. | 713-438-2565 |
| VA | Herndon, Instrulogic                 | 703-318-0000 |

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| CA  | Laguna Hills, Measurequip Inc.          | 714-831-8766 |
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| GA  | Dalton, Indl. Controls                  | 706-275-4400 |
| IL  | Chicago, Don Johns Engrg.               | 312-666-2210 |
| MA  | Harvard, Douglas Lee Assocs.            | 508-772-9887 |
| MI  | Burton, Fenton Sys., Inc.               | 313-742-3580 |
| NV  | Sparks, Applied Indl. Ctrls.            | 702-356-7401 |
| NM  | Albuquerque, Summit Elec.               | 505-884-4400 |
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| OH  | Chesterfield, EQS Sys.                  | 800-729-8084 |
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| UT  | Salt Lake City, Protronix Controls      | 800-464-2456 |
| WI  | Waukesha, Wisconsin Controls, Inc.      | 414-542-1588 |
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| Can | Scarborough, Ont., Multitest Elctms.    | 416-609-8396 |

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**DYMEC INC.**, 8 Lowell Ave., Winchester, MA 01890, Tel: 617-729-7870; Empl: 50

**DYNACAST INC.**, 1401 Front Street, Yorktown Heights, NY 10598, Tel: 914-962-6300, FAX: 914-245-7185; Empl: 150; Sls. Mgr.: David Simas

**DYNACIRCUITS MFG., CO.**, 11230 W. Addison, Franklin Park, IL 60131, Tel: 708-451-1700, FAX: 708-451-9266; Empl: 300; Sls. Mgr.: Dennis A. Dworzak

**DYNAE/CONTROLS, INC.**, P.O. Box 95, 551 Third Avenue, Canistota, SD 57012, Tel: 605-296-3487, TELEX: 753243 (OAKLEAFINC), FAX: 605-296-3231; Empl: 12; Sls. Mgr.: Sidney C. Oakleaf

**DYNAE/POWER & MAGNETICS, Division Of Oakleaf, Inc.**, P.O. Box 95, 551 Third Avenue, Canistota, SD 57012, Tel: 605-296-3462, TELEX: 753243 (OAKLEAFINC), FAX: 605-296-3231; FSC No.: 9Y852; Empl: 25; Sls. Mgr.: Sidney C. Oakleaf **A-2318-2321; D-1660-1664**

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**DYNAMIC AIR ENGRG., INC.**, 620 E. Dyer Rd., Santa Ana, CA 92705-5697, Tel: 714-544-1000, FAX: 714-545-9145; FSC No.: 4140-6105; Sls. Mgr.: Carl A. Grisier

**DYNAMIC POWER SYSTEMS**, 12 Sunhill Road, Nesconset, NY 11767, Tel: 516-361-6771, 1-800-422-0708, FAX: 516-361-6361; Empl: 5; Sls. Mgr.: Dorian Robins; Dist. Mgr.: Jim Nemece

**DYNAMICS**, Div. of Waugh Controls Corp., 9001 Fullbright Ave., Chatsworth, CA 91311, Tel: 818-998-8281, TELEX: 69-6171, FAX: 818-407-1320; Empl: 30; Sls. Mgr.: Tony Mastroianni

**DYNAMICS RESEARCH CORP., Encoder Division**, 60 Concord St., Wilmington, MA 01887-2193, Tel: 508-658-6100, FAX: 508-658-0522; Empl: 125; Sls. Mgr.: Joe Portada **B-1935**

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**DYNAPAR**, 1675 Delany Rd., Gurnee, IL 60031, Tel: 312-662-2666, TWX: 910-235-1865; Empl: 150

**DYNAPOWER CORPORATION**, Box 9210, S. Burlington, VT 05407, Tel: 802-860-7200, FAX: 802-864-3782; Empl: 100; Sls. Mgr.: John S. Hurst **D-1665-1667**



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**DYNAROLL CORPORATION**, 551 A Fifth St, San Fernando, CA 91340, Tel: 818-837-3456, FAX: 818-837-3466; *Sls. Mgr.*: Roy Wilson; *Dist. Mgr.*: Molly Kosmak

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**TX** Irving, Space Elctms. .... 214-251-3636  
**Can** Toronto, CEA Associated .... 416-231-9717

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**CA** Santa Clara, Quorum Tech. Sls. .... 408-980-0812  
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**KS** Overland Park, Spectrum Sls. .... 913-648-6811  
**MA** Westboro, Zaslow Sls. Co. .... 617-393-8150  
**MI** Livonia, Electro-Mktg. Grp., Inc. .... 313-421-7590  
**MN** Minneapolis, Ohlin Sls. Co. .... 612-929-6924  
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**OH** Dayton, Lyons Corp. .... 513-278-0714  
**OR** Beaverton, Pacific Mktg. Spec. .... 503-641-9373  
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**TX** Dallas, Wofford Elctms. .... 214-320-0294  
**TX** Houston, Wofford Elctms. .... 713-847-3583  
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**UT** Salt Lake City, Standard Supp. Co. .... 801-846-3371  
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**Can** New Westminster, B.C., Magnacharge Battery .... 604-525-0391  
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**EAGLE WICHITA**, P.O. Box 9446, Wichita, KS 67277, Tel: 316-942-5100 **A-1626-1632**

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**E & L INSTRUMENTS**, Interplex Electronics, Inc., 70 Fulton Terrace, New Haven, CT 06512, Tel: 800-368-0880, FAX: 203-468-0060; Empl: 40; *Sls. Mgr.*: Katina Boulais

**EAO SWITCH CORP.**, 198 Pepe's Farm Rd., P.O. Box 552 MO, Milford, CT 06460, Tel: 203-877-4577, TELEX: 96-4347, FAX: 203-877-3694; FSC No.: 61706; Empl: 19; *Sls. Mgr.*: George T. Bracci **B-1713**

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**WA** Bellevue, Luscombe Engrg. N.W. .... 206-223-1541  
**WI** Mequon, Badgerap .... 414-241-9200

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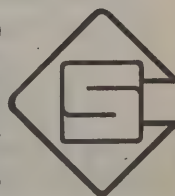
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| WI | Milwaukee, Marsh Elctms. Corp.         | 414-475-6000               |

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**EASI FILE**, 6 Wrigley St., Irvine, CA 92718, Tel: 714-855-4121, FAX: 714-380-0561; Empl: 10; *Sls. Mgr.*: Jean A. James

**EAST CONTROLS**, 6851 Church St., Hanover Park, IL 60103, Tel: 708-837-7709, TELEX: 708-837-6235; Empl: 1

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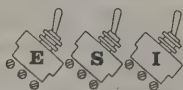
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| MN | Edina, Jay Borman Sls.           | 612-922-5525 |
| NH | Dover, Eastern Air Dvs.          | 603-742-3330 |
| NJ | Ridgefield, Ricat Assocs.        | 201-945-5250 |
| NY | Rochester, Elcom Sls.            | 716-385-1400 |
| NY | Syracuse, ELCOOM Sls.            | 315-685-8245 |
| NC | Charlotte, Jake Rudisill Assocs. | 704-377-6901 |
| OH | Cincinnati, KCH Co.              | 513-931-1686 |
| OR | Bellevue, Eltech Co.             | 206-643-4330 |
| PA | Paoli, ETC Sales                 | 215-296-3527 |
| TX | Dallas, D.J. Sls. Co.            | 214-783-8876 |
| TX | Richardson, D.J. Sls.            | 214-783-8876 |
| WI | Racine, KMG Sls., Inc.           | 414-639-9005 |

#### Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| CO | Waterbury, Hingham Bay Corp. | 800-758-1901 |
| MA | Hingham, Hingham Bay Corp.   | 617-740-1900 |

**EASTERN ELECTRONICS MFG. CORP.**, National Patent Dev. Corp., 180 Roberts St., East Hartford, CT 06108, Tel: 203-528-9821, FAX: 203-289-7639; FSC No.: 203-289-7639; Empl: 200; *Sls. Mgr.*: Wayne M. Baker

**EASTERN MARKING MACHINES**, 422 S Franklin St., Hempstead, NY 11550, Tel: 800-835-2393, FAX: 516-483-7071; Empl: 6; *Sls. Mgr.*: L. Sherman; *Dist. Mgr.*: L. Sherman

**EASTERN MICROWAVE**, 10 Lowell Ave., Winchester, MA 01890, Tel: 617-721-9800, FAX: 617-721-1661; FSC No.: 30616; Empl: 25; *Sls. Mgr.*: John DeManibro

**EASTMAN KODAK COMPANY**, Motion Analysis Systems Division, 11633 Sorrento Valley Road, San Diego, CA 92121-1097, Tel: 619-535-2908, FAX: 619-481-6254; *Sls. Mgr.*: Don Pike

**EAST PENN MANUFACTURING**, Lyon Station, PA 19536, Tel: 215-682-6361, FAX: 215-682-4781; Empl: 2000; *Sls. Mgr.*: Peter Grimes

**EASTPRINT, INC.**, 350 Willow St. South, N. Andover, MA 01845, Tel: 508-975-5255, FAX: 508-686-0117; Empl: 45; *Sls. Mgr.*: Robert Kenyon

**EATON CORP.**, CONTROL DISPLAYS, 3075 Advance Lane, P.O. Box 227, Colmar, PA 18915, Tel: 215-822-3383, FAX: 215-997-1232; FSC No.: 27878; Empl: 75; *Sls. Mgr.*: Charles Turner

**EATON CORP.**, Durant Products, 901 S. 12th St., Watertown, WI 53094, Tel: 414-261-4070, 800-289-3866, TWX: 910-260-3713, FAX: 414-261-9097; Empl: 350

**EATON CORPORATION**, Industrial Controls Division, 3122-14th Avenue, Kenosha, WI 53141, Tel: 414-656-4011, 800-356-5077, TELEX: 910-274-2356, FAX: 414-656-4370; Empl: Approx. 300

**EATON CORP.**, Aerospace & Commercial Controls, 4201 N. 27th St., Milwaukee, WI 53216, Tel: 414-449-7326, TELEX: 26-716, FAX: 414-449-6760; FSC No.: 81640; *Sls. Mgr.*: Bernard C. Hay

**EBERHARD MFG. CO.**, DIV., Eastern Co., 21944 Drake Rd., Strongsville, OH 44136, Tel: 216-238-9720, FAX: 216-572-2732; FSC No.: 19220; *Sls. Mgr.*: Edward Hongosh

**EBG, INC.**, 3705 Trindle Road, Camp Hill, PA 17011-4335, Tel: 717-737-9877, FAX: 717-737-9664; Empl: 3; *Sls. Mgr.*: Thomas W. Zimmerman, Jr.

**EBG-ELEKTRONISCHE BAUELEMENTE**, Gesellschaft m.b.H., 8082 Kirchbach 384, Austria, Tel: (43) 03116 2625, TELEX: 312540, FAX: 43/3116/27540; Empl: 63; *Sls. Mgr.*: Mag. G. Klausner

**EBM INDUSTRIES, INC.**, 110 Hyde Road, Farmington, CT 06034, Tel: 203-674-1515, FAX: 203-674-8536; FSC No.: 62292; *Sls. Mgr.*: Robert Sobolewski **C-1578-1579**

**EBY COMPANY**, 4300 H Street, Philadelphia, PA 19124, Tel: 215-537-4700, FAX: 215-537-4780; FSC No.: 72825; Empl: 75; *Sls. Mgr.*: Alan S. Olshansky

**EBY ELECTRO INC.**, 45 Ongley St., Rockville Centre, NY 11571-1100, Tel: 516-536-6000, FAX: 516-536-6826; FSC No.: FSC 5935; Empl: 50

**EBY ELECTRO INC.**, 45 Ongley St., Rockville Centre, NY 11571-1100, Tel: 516-536-6000, FAX: 516-536-6826; FSC No.: 5935; Empl: 50

**E-CAM TECHNOLOGY INC., E-Cam AG**, 14455 N. Hayden Rd., Ste. 208, Scottsdale, AZ 85260, Tel: 602-443-1949, 800-638-3226, FAX: 602-998-0809; *Sls. Mgr.*: Lenny Axford **C-1310**

**ECHO SPEECH CORP.**, 6420 Via Real, Carpinteria, CA 93013, Tel: 805-684-4593, FAX: 805-684-6628; *Dist. Mgr.*: Mark Pfeiffer

# ECLIPTEK CORPORATION

**FAX: 714-433-1234**

**ECLIPTEK CORPORATION**, 3545-B Cadillac Ave., Costa Mesa, CA 92626, Tel: 714-433-1200; FSC No.: 0GUG6; Empl: 70; *Sls. Mgr.*: Bob Bishop; *Dist. Mgr.*: Bob Bishop **A-1258, 1326, 1383-1387**

#### Local Distributors

|    |                            |              |
|----|----------------------------|--------------|
| AL | Huntsville, Eclipsek Corp. | 205-830-4228 |
| CA | San Jose, Eclipsek Corp.   | 408-441-6670 |
| NJ | Marlton, Eclipsek Corp.    | 609-596-8500 |

**ECLYPSE INTERNATIONAL CORP.**, 2042 S. Grove Ave., Ontario, CA 91761-9925, Tel: 909-947-8839, FAX: 909-947-9395; Empl: 12; *Sls. Mgr.*: Brian Lincoln; *Dist. Mgr.*: Brian Lincoln

**ECM MOTOR COMPANY**, 1099 Proctor Dr., Elkhorn, WI 53121, Tel: 414-723-6400, FAX: 414-723-7373; Empl: 500; *Sls. Mgr.*: Robert Forschler

**ECOSOFT, INC.**, 8295 Indy Court, Indianapolis, IN 46214, Tel: 317-271-5551, FAX: 317-271-5561; Empl: 2; *Sls. Mgr.*: Emma Alkire



**ECS COMPOSITES  
ECS POLYMERIC  
ECS METALLICS**

**FAX: 503-474-2479**

**ECS COMPOSITES**, 3560 Rogue River Hwy., Box 188, Grants Pass, OR 97526, Tel: 503-476-8871; FSC No.: 24995; Empl: 112; *Sls. Mgr.*: Jill K. Gleysteen **C-1021**

#### Local Sales Offices & Reps

|     |                                        |              |
|-----|----------------------------------------|--------------|
| AL  | Huntsville, EMA                        | 205-830-4030 |
| CA  | Garden Grove, Elctm. Pkg. Solutions    | 714-638-4455 |
| KS  | Lenexa, Midtec Assocs., Inc.           | 913-541-0505 |
| CA  | Mtn. View, Kim Buurma                  | 415-962-9027 |
| CO  | Englewood, Electronic Comp. Sys.       | 303-762-9576 |
| FL  | Altamonte Springs, EMA                 | 407-339-2333 |
| FL  | Winter Springs, Harold Scott           | 407-699-1888 |
| GA  | Roswell, EMA                           | 404-992-7240 |
| MD  | Baltimore, Burgin-Kreh Assocs.         | 301-265-8500 |
| MA  | Needham, Apex Assocs.                  | 617-444-8070 |
| NY  | New York City, Smith Engrg. Sls.       | 516-689-6514 |
| NC  | Raleigh, EMA                           | 919-846-6888 |
| OH  | Cleveland, Ashby Assocs., Inc.         | 216-461-0826 |
| OR  | Grants Pass, ECS Inc.                  | 503-476-8871 |
| TX  | Dallas, Advance Tech. Sls.             | 214-340-1300 |
| Can | Stittsville, Ont., Production Case Co. | 613-836-2248 |



**Ectron CORPORATION**

**FAX: 619-278-0372**

**ECTRON CORP.**, 8159 Engineer Rd., San Diego, CA 92111-1980, Tel: 619-278-0600, TWX: 910-335-1259; FSC No.: 24856; Empl: 50; *Sls. Mgr.*: W. W. Hanford **D-1010**

#### Local Sales Offices & Reps

|    |                              |              |
|----|------------------------------|--------------|
| AL | Huntsville, Saber Assocs.    | 800-327-0853 |
| AZ | Tempe, Aztec Entprs.         | 602-431-8401 |
| CA | Costa Mesa, FLW Inc.         | 714-751-7512 |
| CA | Fremont, FLW Inc.            | 510-651-6511 |
| CA | Oxnard, FLW Inc.             | 805-984-0167 |
| CO | Denver, Aztec Entprs.        | 303-779-5285 |
| FL | Melbourne, Saber Assocs.     | 407-724-0920 |
| GA | Norcross, Saber Assoc. Inc.  | 800-327-0853 |
| IL | Elmhurst, Sector Engrg. Sls. | 708-530-7850 |



|     |                                    |              |
|-----|------------------------------------|--------------|
| IN  | Indianapolis, Sector Engrg. Sls.   | 317-253-9221 |
| KS  | Independence, Ramsey Assocs.       | 816-373-3111 |
| MD  | Laurel, Elctrm. Mktg. Assoc.       | 301-792-9300 |
| MA  | Needham, Addeco Corp.              | 617-444-4754 |
| MI  | Troy, Satullo Assocs.              | 313-585-4811 |
| MN  | Minneapolis, Sector Eng. Sls. Inc. | 612-378-2123 |
| MO  | St. Louis, Ramsey Assocs.          | 314-532-9386 |
| NM  | Albuquerque, Westthal & Assocs.    | 505-268-1433 |
| NY  | Liverpool, Northern Tech Sls.      | 315-451-1090 |
| NY  | Plainview, Eastern-Metro Assoc.    | 516-931-1414 |
| NC  | Clayton, Saber Assocs.             | 800-327-0853 |
| OH  | Cleveland, Instrmn. Sys.           | 216-845-8800 |
| OH  | Dayton, Instrmn. Sys.              | 513-294-2838 |
| PA  | Pittsburgh, Instrmn. Sys.          | 412-823-7005 |
| TX  | Carrollton, Seaton Corp.           | 214-980-9860 |
| UT  | Ogden, Aztec Entprs.               | 801-621-1655 |
| WA  | Seattle, Datacom Assoc. Inc.       | 206-285-2525 |
| WI  | Milwaukee, Sector Eng. Sls. Inc.   | 414-352-8280 |
| Can | Toronto, Interotechnology, Inc.    | 416-445-5500 |



**FAX: 514-333-2881**

**EDAC INC.**, 5778 Thimess, St. Laurent, Que., CAN H4R 2K9, Tel: 514-333-7288, 1-800-565-2811; FSC No.: 31781; Empl: 80; *Sls. Mgr.*: Terry Thornton; *Dist. Mgr.*: Terry Thornton **C•1311-1313**

**Local Sales Offices & Reps**

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AZ  | Mesa, Hartland Sls.                   | 602-834-7042 |
| CA  | Napa, Stewart Fullerton Assocs.       | 707-258-1160 |
| CA  | Redondo Beach, Jerde & Assocs.        | 310-372-8637 |
| CA  | San Diego, Centinse Sls.              | 619-487-3335 |
| CO  | Littleton, Romulus Elctms.            | 303-770-4888 |
| CT  | Bloomfield, S.I.R. Assocs.            | 203-243-9343 |
| FL  | Lighthouse Point, Krutek & Assocs.    | 305-783-2501 |
| FL  | Maitland, Krutek & Assocs.            | 407-628-4837 |
| GA  | Norcross, F & J Squared               | 404-368-9191 |
| IL  | Lisle, W. G. Controls                 | 708-963-5954 |
| MD  | Gaithersburg, Naudain Assocs.         | 301-258-5040 |
| WA  | Westford, S.I.R. Assocs.              | 508-692-2500 |
| MI  | Livonia, Leading Edge Sls.            | 313-478-6700 |
| MN  | Minneapolis, George Russell & Assocs. | 612-854-1160 |
| NY  | Port Washington, Ashtec Inc.          | 516-767-0336 |
| OH  | Medina, J.C. Hofstetter               | 216-241-4880 |
| OR  | Beaverton, Quest Mktg. Inc.           | 503-641-7377 |
| PA  | Horsham, Jacobsen Assocs.             | 215-674-2937 |
| SC  | Tega Cay, F & J Squared               | 803-548-2133 |
| TX  | Dallas, Marketronics                  | 214-388-2237 |
| WA  | Renton, Quest Mktg.                   | 206-228-2660 |
| Can | Montreal, Shelly Newman               | 514-486-6984 |
| Can | North Vancouver, Arwin Technical Sls. | 604-980-4557 |
| Can | Scarborough, Edac Inc.                | 416-754-3322 |

**EDA INC.**, Div. of Connector, 637 S. Palm St. Ste. F, La Habra, CA 90631, Tel: 213-697-7151, FAX: 213-691-1509; Empl: 160; *Sls. Mgr.*: Roy Wang

**EDA INSTRUMENTS, INC.**, 4 Thorncroft Park Dr., Toronto, ON, Canada M4H1H1, Tel: 416-425-7800, TELEX: 06 23222 FEDAT, FAX: 416-425-8135; Empl: 100; *Sls. Mgr.*: Bill Laham

**EDAK INC.**, EDAK Ltd., 285 North Drive, Ste. H, Melbourne, FL 32934, Tel: 407-242-2953, 800-462-8478, FAX: 407-242-3430; FSC No.: 8145; Empl: 210; *Sls. Mgr.*: Max Reichlin; *Dist. Mgr.*: Jack Lenett

**EDAL INDUSTRIES**, 4 Short Beach Rd., East Haven, CT 06512, Tel: 203-467-2591, FAX: 203-469-5928; FSC No.: 06288; Empl: 75; *Sls. Mgr.*: Dino Vagnini; *Dist. Mgr.*: Dino Vagnini

**EDCLIFFE DIV.**, BEI Electronics Co., 13100 Telfair Avenue, Sylmar, CA 91342, Tel: 818-362-7151, FAX: 818-362-2487; FSC No.: 00153; Empl: 110; *Sls. Mgr.*: Cosmo L. Avellis

**EDITRON SYSTEMS INC.**, 1560 Teaneck Rd., Teaneck, NJ 07666, Tel: 201-837-0051, FAX: 201-837-0504; *Sls. Mgr.*: Joseph G. Benittou

**EDL INC.**, Rt. 5, Box 1398, Danville, VA 24540, Tel: 804-799-0807, 1-800-DIAL EDL, FAX: 804-799-0847; FSC No.: 27281; Empl: 35; *Sls. Mgr.*: Jean Moore

**EDO CORPORATION**, Acoustics Division, 2645 South 300 West, Salt Lake City, UT 84115, Tel: 801-486-2115, TELEX: 388-315, FAX: 801-484-3301; Empl: 300; *Sls. Mgr.*: Yvonne Bartholomew

**EDWARDS CO.**, Signaling Prods. Div., P.O. Box 1188, Farmington, CT 06034, Tel: 203-678-0410; Empl: 1000; *Sls. Mgr.*: Al Canevani; *Dist. Mgr.*: Al Canevani

**EDWARDS HIGH VACUUM INTERNATIONAL**, Div. of the BOC Group, 301 Ballardvale St., Wilmington, MA 01887, Tel: 508-658-5410, 800-848-9800, FAX: 508-658-7969; Empl: 5000; *Sls. Mgr.*: Diane Busch

**EEDO DIV., TRANSICO INC.**, 1601 E. Chestnut Ave., P.O. Box 659, Santa Ana, CA 92702-0659, Tel: 714-835-6000, FAX: 714-953-3747; FSC No.: 97525; Empl: 140; *Sls. Mgr.*: Greg Littler; *Dist. Mgr.*: Steve Hyter

**EEMCO**, Datron, Inc., 4585 Electronics Pl., Los Angeles, CA 90039, Tel: 818-247-7060, FAX: 818-244-6621; FSC No.: 72121; Empl: 200; *Sls. Mgr.*: Russell Johnson

**EEV INC.**, 4 Westchester Plaza, Elmsford, NY 10523, Tel: 914-592-6050, TELEX: 6818096, FAX: 914-682-8922; Empl: 36; *Sls. Mgr.*: Mike Kirk

**EFD INC.**, 977 Waterman Ave., E. Providence, RI 02914, Tel: 800-556-3484, 401-434-1680, FAX: 401-431-0237; Empl: 150

**EFFECTOR, INC.**, a subsidiary of ifm electronic, 805 Springdale Dr., Exton, PA 19341, Tel: 215-524-2000, 800-441-8246, FAX: 215-524-2010; Empl: 70; *Sls. Mgr.*: J. Kelly

**EFI ELECTRONICS CORP.**, 2415 South 2300 West, Salt Lake City, UT 84119, Tel: 801-977-9009, 800-877-1174, FAX: 801-977-0200; Empl: 130; *Sls. Mgr.*: Mark A. Norrie

**EFOS INC.**, 5716 Coopers Ave., Unit 1-5, Mississauga, Ont., Can L4Z 2E8, Tel: 416-568-4268, FAX: 416-568-4280; Empl: 25-50; *Sls. Mgr.*: Beverley Barber

**EFRATOM**, See Ball Corp., Efratom Div.

**EG&G, INC.**, Electronics Components Div., 35 Congress St., Salem, MA 01970, Tel: 508-745-3200, TELEX: 681-7405 EGGSA; FSC No.: 25506; Empl: 329; *Sls. Mgr.*: J. Murachver

**EG & G BIRTCHEER, EG & G, Inc.**, 4505 N. Arden Dr./P. O. Box 5268, El Monte, CA 91734-1268, Tel: 818-442-2572, FAX: 818-442-8127; FSC No.: 18915; Empl: 115; *Sls. Mgr.*: Bill Hayes; *Dist. Mgr.*: Bill Hayes **C•1022, 1135**

**Local Sales Offices & Reps**

|     |                                    |              |
|-----|------------------------------------|--------------|
| AZ  | Phoenix, Mercury Eng. Sls.         | 602-265-0344 |
| CA  | Huntington Beach, EG & G Rotron    | 714-848-7550 |
| CO  | Broomfield, Connors Co.            | 303-466-9628 |
| FL  | Winter Park, EG & G Rotron         | 407-671-5935 |
| IL  | Inverness, Heartland               | 708-358-6622 |
| IN  | Indianapolis, Heartland            | 317-845-5480 |
| MD  | Towson, Arbotek                    | 301-825-0775 |
| MA  | Chelmsford, EG & G Rotron          | 508-256-6061 |
| NJ  | Hackensack, Coakley, Boyd & Abbott | 201-440-4114 |
| NY  | Syracuse, Hotze & Murcon           | 315-455-8807 |
| OH  | Dayton, Electro Mktg. Grp.         | 513-890-8322 |
| OR  | Portland, Halbar/RTS               | 503-244-4123 |
| PA  | Lancaster, EG & G Rotron           | 717-392-8805 |
| TN  | Mil Spec Sls.                      | 615-360-7714 |
| WA  | Vashon, Halbar/RTS                 | 206-285-1363 |
| WI  | Brookfield, Heartland              | 414-789-6860 |
| Can | Bolton, Ontario, P.J. Heenan Ltd.  | 416-857-4948 |

**Local Distributors**

|     |                                            |                            |
|-----|--------------------------------------------|----------------------------|
| AZ  | Phoenix, Aero-Space Southwest Inc.         | 800-289-2779, 602-582-2779 |
| CA  | Manhattan Beach, Prime Electro Prods.      | 213-379-3642               |
| CO  | Aurora, Jet Elctms. Supp. Co., Inc.        | 303-364-1000               |
| CT  | S. Windsor, Car-Lac Elctms.                | 203-282-0631               |
| KS  | Shawnee Mission, Aero-Space Computer Supp. | 913-432-8508               |
| MA  | Milford, Car-Lac Elctms.                   | 508-478-7797               |
| MA  | Winchester, Webb Distr./Distrib.           | 617-729-5800               |
| MN  | Minneapolis, Aero-Space Computer Supp.     | 612-884-4725               |
| MN  | Minneapolis, Stark Elctms., Inc.           | 612-332-1325               |
| NY  | Bohemia, Car Lac Inds. Sls., Inc.          | 516-567-4200               |
| NY  | Buffalo, Summit Dists.                     | 716-887-2800               |
| NY  | Rochester, Summit Dists.                   | 716-334-8110               |
| OR  | Beaverton, Murphy Elctms.                  | 503-642-2001               |
| TX  | Ft. Worth, Industrial Elctms.              | 817-731-7321               |
| WA  | Redmond, Murphy Elctms.                    | 206-881-1234               |
| WI  | Mukwonago, Aero-Space Computer Supp.       | 414-547-8405               |
| Can | Mississauga, Ont., Rush Elctms.            | 416-677-7280               |

**EG&G ELECTRO-OPTICS, EG&G Optoelectronics, EG&G Inc.**, 35 Congress St., Salem, MA 01970, Tel: 508-745-3200, 1-800-950-3441, FAX: 508-745-0894; *Sls. Mgr.*: Jacques Murachver; *Dist. Mgr.*: Jacques Murachver

**EG & G FLOW TECHNOLOGY, INC.**, Box 52103, Phoenix, AZ 85072, Tel: 602-437-1315, TELEX: 187-163, FAX: 602-437-4459; Empl: 100; *Sls. Mgr.*: Ron Madison

**EG & G FREQUENCY PRODUCTS INC.**, EG & G Inc., 4914 Gray Rd., Cincinnati, OH 45232, Tel: 513-542-5555, FAX: 513-542-5146; FSC No.: 58997; Empl: 100; *Sls. Mgr.*: D. Hughes, *Sls. Engr.*

**EG&G GAMMA SCIENTIFIC**, Div. of EG&G Inc., 8581 Aero Drive, San Diego, CA 92123, Tel: 619-279-8034, TELEX: 697938, FAX: 619-576-9286; Empl: 30; *Sls. Mgr.*: Bill Oker

**EG&G GEOMETRICS**, Div. of EG&G Inc., 395 Java Dr., Sunnyvale, CA 94089, Tel: 408-734-4616, TELEX: 357-435, FAX: 408-745-6131; FSC No.: 34314; *Dist. Mgr.*: Doug Crice

**EG & G JUDSON**, 221 Commerce Dr., Montgomeryville, PA 18936, Tel: 215-368-6900, TELEX: 846120, ESYLNK: 62820476, FAX: 215-362-6107; Empl: 65; *Sls. Mgr.*: Andrew Allen

**EG&G OPTOELECTRONICS, EG&G Canada Ltd.**, 22001 Dumberry Road, Vaudreuil, Quebec, Canada J7V 8P7, Tel: 514-424-3300, TELEX: 05-823646, FAX: 514-424-3411

**EG&G OPTOELECTRONICS-RETICON**, 345 Potrero Ave., Sunnyvale, CA 94086-4197, Tel: 408-738-4266, FAX: 408-738-6979; Empl: 200

**EG & G POWER SYSTEMS, INC.**, 1330 E. Cypress St., Covina, CA 91724, Tel: 818-967-9521, FAX: 818-967-3151; Empl: 280; *Sls. Mgr.*: Dave Adams **D•1670-1671**

**Local Sales Offices & Reps**

|    |                             |              |
|----|-----------------------------|--------------|
| CA | Orange, RD & D Sls. Engrg.  | 714-771-6110 |
| CO | Littleton, Mercier & Assoc. | 303-770-0666 |
| FL | Deland, World Sls. Dev.     | 904-228-2727 |
| FL | Orlando, Truex Assocs.      | 407-859-2160 |

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| [408] | 279-8848 |
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| [916] | 448-6370 |
| [209] | 441-1725 |

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GA Marietta, Electro-Comp Sls. .... 404-992-2344  
 MA Dover, George Urban Assoc. .... 508-329-4068  
 NY Fayetteville, Tri-Tech Elctms., Inc. .... 315-446-2881  
 PA Glenside, Koeber Assoc. .... 215-887-2310

EG&G ROTRON, Industrial Division, North Street,  
 Saugerties, NY 12477, Tel: 914-246-3401, TELEX: 981511,  
 FAX: 914-246-3802; FSC No: 551496; Empl: 75; Sls.  
 Mgr: Jay Jarboe; Dist. Mgr: Jay Jarboe

EG & G VACTEC, 10900 Page Blvd., St. Louis, MO 63132,  
 Tel: 314-423-4900, TWX: 910-764-0811, FAX: 314-423-  
 3956; Empl: 250; Sls. Mgr: D. Hartley; Dist. Mgr: D.  
 Hartley



WAKEFIELD ENGINEERING

FAX: 617-246-0874

EG & G WAKEFIELD ENGINEERING, 60 Audubon  
 Rd., Wakefield, MA 01880, Tel: 617-245-5900; Empl: 250;  
 Sls. Mgr: Frank Casdia; Dist. Mgr: David Mendel  
**C-1580-1583**

Local Sales Offices & Reps

AL Huntsville, Over & Over, Inc. .... 205-837-7105  
 AZ Phoenix, Sanford Sls. Assoc. .... 602-957-3570  
 CA Huntington Bch., West Elctm. Sls. Team ..... 714-375-6500  
 CA Los Altos, Recht Assocs. .... 415-964-6321  
 CA San Diego, West Elctms. Sls. Team .... 619-233-0236  
 CO Denver, Donohue Sls. .... 303-455-1719  
 CT Stamford, Francis J. Bigda ..... 203-322-0240  
 FL Altamonte Springs, Over & Over, Inc. .... 407-332-1222  
 FL Brandon, Over & Over, Inc. .... 813-684-6486  
 FL Ft. Lauderdale, Over & Over Inc. .... 305-485-0115  
 GA Norcross, Over & Over, Inc. .... 404-449-6205  
 IL Rolling Meadows, Sumner, Inc. .... 708-991-8500  
 IA Cedar Rapids, C.H. Horn & Assoc. .... 319-393-8703  
 MI Farmington Hills, Luebbs Sls. Co. .... 313-489-8828  
 MN Bloomington, Prof. Sls. for Ind. .... 612-944-8545  
 MO Chesterfield, Weisler & Assocs., Inc. .... 314-537-0010  
 MO Kansas City, Weisler & Assocs. .... 816-421-1679  
 NY Commack, ERA, Inc. .... 516-543-0510  
 NY E. Rochester, Tri Tech Elctms. .... 716-385-6500  
 NY Fayetteville, Tri Tech Elctms. .... 315-446-2881  
 NY Fishkill, Tri Tech Elctms. .... 914-897-5611  
 NC Charlotte, Over & Over, Inc. .... 704-542-9111  
 NC Raleigh, Over & Over, Inc. .... 919-876-7338  
 OH Cincinnati, Luebbs Sls. Co. .... 513-530-0600  
 OH Dayton, Luebbs Sls. Co. .... 513-438-0490  
 OH Westlake, Luebbs Sls. Co. .... 216-899-0071  
 OR Tigard, Halbar-RTS Inc. .... 503-624-5741  
 PA Narbeth, Bresson Assocs. .... 215-664-6460  
 TX Austin, Milco Mktg. .... 512-835-5359  
 TX Houston, Milco Mktg. .... 713-469-5156  
 TX Plano, Milco Mktg. .... 214-578-1996  
 WA Redmond, Halbar-RTS Inc. .... 206-882-0990  
 WA Vashon, Halbar-RTS Inc. .... 206-463-2277  
 WI Brookfield, Sumner, Inc. .... 414-784-6641  
 Can Calgary, Alberta, Cana Rep Grp., Inc. .... 403-255-0294  
 Can Dartmouth, N.S., Cana Rep. Grp., Inc. .... 902-456-4400  
 Can Edmonton, Alb., Cana Rep. Grp., Inc. .... 403-487-5578  
 Can Markham, Ont., Cana Rep. Grp., Inc. .... 416-930-4621  
 Can Montreal, Que., Cana Rep. Grp., Inc. .... 514-276-4477  
 Can Oakville, Ont., Cana Rep. Grp., Inc. .... 416-338-3399  
 Can Ottawa Manotick, Ont., Cana Rep. Grp., Inc. .... 613-692-4682  
 Can Surrey, B.C., Cana Rep. Grp., Inc. .... 604-599-1232

Local Distributors

AL Birmingham, Newark ..... 205-979-7003  
 AZ Tempe, Bell ..... 602-966-7800  
 AZ Little Rock, Newark ..... 501-225-8130  
 CA Agora Hills, Bell ..... 818-879-9494  
 CA Belmont, Richardson ..... 415-592-9225  
 CA Canoga Park, Caltronics ..... 818-346-4936  
 CA Cypress, Bell ..... 714-895-7801  
 CA Foster City, Newark ..... 415-572-8300  
 CA Fountain Valley, Comps. Center ..... 714-979-0433  
 CA Los Angeles, Newark ..... 310-672-8548  
 CA Redwood City, Stotts Friedman ..... 415-368-3800  
 CA Rocklin, Bell ..... 916-652-0414  
 CA San Diego, Bell ..... 619-268-1277  
 CA San Jose, Quement ..... 408-998-5900  
 CA Santa Ana, Elcom ..... 714-432-6630  
 CA Santa Clara, Comps. Center ..... 408-988-3751  
 CA Santa Fe Spgs, Bell ..... 310-921-3611  
 CA Sunnyvale, Capsco Sls. .... 408-734-3020  
 CA Woodland Hills, Richardson ..... 818-347-5580  
 CO Denver, Newark ..... 303-757-3351  
 CT Bloomfield, Newark ..... 203-243-1731

CT Wallingford, Bell ..... 203-269-6801  
 FL Altamonte Springs, Bell ..... 407-339-0078  
 FL Ft. Lauderdale, Newark ..... 305-587-2372  
 FL Miami, Elctm. Equip. .... 305-526-6000  
 FL Orlando, Newark ..... 407-896-8350  
 FL Sanford, Alcom ..... 407-321-9225  
 FL Sanford, Elctm. Fasteners ..... 407-321-4000  
 FL Tampa, Repton ..... 813-854-2351  
 FL Winter Park, Richardson ..... 407-644-1453  
 GA Norcross, Newark ..... 404-448-1300  
 ID Boise, Newark ..... 208-342-4311  
 IL Bensenville, Gould ..... 708-860-7171  
 IL Chicago, Newark ..... 312-784-5100  
 IL Elk Grove Village, Bell ..... 708-640-1910  
 IL LaFox, Richardson ..... 708-208-2200  
 IL Morton Grove, Nedco ..... 708-967-0500  
 IN Carmel, Altex ..... 317-848-1323  
 IN Ft. Wayne, Bell ..... 219-423-3422  
 IN Indianapolis, Newark ..... 317-844-0047  
 IA Cedar Rapids, Dee Elctms. .... 319-365-7551  
 IA Cedar Rapids, Newark ..... 319-393-3800  
 KS Overland Park, Newark ..... 913-677-0727  
 KS Wichita, RSC ..... 316-267-5213  
 KY Louisville, Newark ..... 502-423-0280  
 LA Metairie, Newark ..... 504-838-9771  
 LA Shreveport, Indl. Elctm. Supp. .... 318-222-9459  
 MD Beltsville, Newark ..... 301-604-1700  
 MD Columbia, Bell ..... 410-290-5100  
 MD Gaithersburg, Capitol Radio ..... 301-840-5700  
 MA Andover, Bell ..... 508-474-8880  
 MA Ashland, Quality Comps. .... 508-881-6504  
 MA Tewksbury, Jaco ..... 508-640-0010  
 MA Winchester, Webb Dist. Inc. .... 617-729-5800  
 MA Woburn, Newark ..... 617-935-8350  
 MI Ann Arbor, Wedemeyer ..... 313-665-8611  
 MI Flint, RS Elctms. .... 313-742-5000  
 MI Grand Rapids, Newark ..... 616-455-9190  
 MI Livonia, RS Elctms. .... 312-525-1155  
 MN St. Paul, Gopher ..... 612-490-4900  
 MS Jackson, Newark ..... 601-956-3834  
 MO Maryland Heights, RS Elctms. .... 314-997-7709  
 MO St. Louis, Newark ..... 314-298-2505  
 MT Helena, Newark ..... 406-443-6192  
 NE Omaha, Newark ..... 402-592-2423  
 NV Las Vegas, Newark ..... 702-796-5080  
 NH Nashua, Newark ..... 603-888-5790  
 NH Salem, Tech Mark ..... 603-893-8380  
 NJ Camden, G.R.S. .... 609-964-8560  
 NJ Mountainside, Route Elctms. .... 908-654-8293  
 NJ Pennsauken, Newark ..... 609-663-9480  
 NM Albuquerque, Bell ..... 505-292-2700  
 NY Bohemia, Car-Lac ..... 516-567-4200  
 NY Brooklyn, Richardson ..... 718-646-6300  
 NY Buffalo, Summit ..... 716-887-2800  
 NY Cheektowga, Newark ..... 716-862-9700  
 NY Farmingdale, Semispecialists ..... 516-293-2710  
 NY Hauppauge, Farmont Elctms. .... 516-231-3313  
 MI Madison Hgts., Galco ..... 313-542-9090  
 NY Monsey, Nobel Elctms. .... 914-352-0182  
 NY Penn Yan, Advacom Tech. .... 315-536-2221  
 NY Rochester, Summit ..... 716-334-8110  
 NY Valley Stream, Newark ..... 516-561-8400  
 NC Greensboro, Newark ..... 919-292-7240  
 NC Raleigh, Cameron & Barkley ..... 919-828-2311  
 NC Winston-Salem, Kirkman ..... 919-722-9131  
 OH Cincinnati, Hughes Peters ..... 513-351-2000  
 OH Cleveland, Cam Ohio ..... 216-461-4700  
 OH Columbus, Newark ..... 614-447-8282  
 OH Dayton, Stotts Friedman ..... 513-298-5555  
 OH Toledo, RS Elctms. .... 419-893-0721  
 OH Warren, REM Elctms. .... 216-373-1300  
 OK Altair ..... 918-252-5781  
 OK Oklahoma City, Newark ..... 405-495-5000  
 OR Beaverton, Component Resources ..... 503-641-8488  
 OR Portland, Newark ..... 503-257-0741  
 PA Allentown, Newark ..... 215-434-7171  
 PA Pittsburgh, Cam-RPC ..... 412-963-6202  
 PA Trevoise, Bell ..... 215-953-2800  
 RI Walpole, Newark ..... 401-943-3340  
 SC Columbia, Newark ..... 803-798-0198  
 TN Knoxville, Newark ..... 615-588-6493  
 TX Austin, Wofford ..... 512-339-1131  
 TX Dallas, Richardson ..... 214-239-3680  
 TX Garland, Newark ..... 214-494-5911  
 TX Houston, Altair ..... 713-462-3029  
 TX Richardson, Jaco/QC ..... 214-234-5565  
 TX Stafford, Harrison Equip. .... 713-879-2727  
 UT Midvale, Bell ..... 801-561-9691  
 UT Salt Lake City, Newark ..... 801-484-8611  
 VT South Burlington, Newark ..... 802-860-1856  
 VA Arlington, Newark ..... 703-522-7552  
 VA Charlottesville, Virginia Elec. .... 804-296-4184  
 WA Bellevue, Newark ..... 206-641-9800  
 WA Redmond, Bell ..... 206-867-5410  
 WA Walpole, Richey Impact Elctm. .... 508-668-8200  
 WV Dunbar, Newark ..... 304-768-6872  
 WI Milwaukee, Newark ..... 414-453-9100  
 WI Waukesha, Bell ..... 414-547-8879

Can Calgary, Zenronics ..... 403-295-8838  
 Can Montreal, Zenronics ..... 514-737-9700  
 Can Ottawa, Electrosonic ..... 613-728-8333  
 Can Quebec City, Zenronics ..... 418-654-1077  
 Can Toronto, Electrosonic ..... 416-494-1555  
 Can Vancouver, Electrosonic ..... 604-273-2911  
 Can Winnipeg, Electrosonic ..... 204-783-3105

EGIS CORPORATION, 655 Plum Tree Rd., Barrington  
 Hills, IL 60010, Tel: 708-639-1555, FAX: 708-639-8710;  
 Empl: 6

EH ELECTRONICS, INC., See Wavetek San Diego,  
 Inc.

EHRHORN TECHNOLOGICAL OPERS., INC., 4975,  
 North 30th St., Colorado Springs, Colorado 80919-4101,  
 Tel: 719-260-1191, FAX: 719-260-0395; FSC No: 1106;  
 Empl: 5; Sls. Mgr: Tim Coutts; Dist. Mgr: Tim Coutts

El & S, Prime Technology Inc., Twin Lakes Rd., P.O.  
 Box 185, North Branford, CT 06471, Tel: 203-481-5721,  
 TWX: 710-452-3092, FAX: 203-481-8937; FSC No: 14908;  
 Empl: 60; Sls. Mgr: J. L. Jamieson, Mktg. VP. .... **B-1482**

Local Sales Offices & Reps

AZ Phoenix, CPS Assocs. .... 602-589-0282  
 CA Canoga Pk., C & W Comps. Sls. .... 818-700-2684  
 CA Escondido, Cirolia Elctm. Sls. .... 619-743-3015  
 CA Hayward, Pacific Mktg. Inc. .... 415-887-1620  
 CA Newbury Pk., Interconn Tech. Mktg. .... 805-499-4024  
 CO Golden, J. F. Hurlbut Co. .... 303-279-7796  
 CT N. Branford, EIS ..... 203-481-5721  
 DC Washington, Am-Tech Assoc. .... 201-461-5599  
 FL Lakeland, Munday Sls. .... 813-858-5606, 818-858-7257  
 IL Arlington Hgts., Mertons Assoc. .... 314-993-6600  
 IL Arlington Hgts., MB Sls. .... 708-392-9499  
 MD Ellicott City, Am-Tech Assoc. .... 301-461-5599  
 MA Norwell, Norris Assocs. .... 617-659-7988  
 MA Shrewsbury, Advanced Comps. Grp. .... 508-845-0790  
 MO St. Louis, Mertens Co. .... 314-993-6600, 314-993-6630  
 MO St. Charles, Microtronics ..... 314-946-8500  
 NY Buffalo, Lynn Assocs., Inc. .... 716-631-0054  
 OH Cleveland, John O. Olsen Co. .... 216-838-0510  
 NY Hauppauge, Masin-Esco, Inc. .... 516-273-3500  
 PA Gibsonsia (West), John O. Olsen Co. .... 216-838-0510  
 PA Malvern (East), Stitzer Assocs. .... 215-664-5500, 215-664-5503

OH Westlake, Advanced Technol. Assocs. .... 216-835-5050, 216-835-3599  
 TX The Colony, Juliana Co. .... 214-625-1075  
 WA Seattle, Datacom Assoc. .... 206-285-2525  
 Can St. Laurent, PQ, Electronique Versatech ..... 514-335-3833

Local Distributors

AZ Phoenix, Keystone Electro Sls. .... 602-995-3005  
 CA San Jose, Spectra Elctms. .... 408-452-1590  
 CA Canoga Pk., Acort Inds. .... 818-700-2991  
 MD Columbia, DK Elctms. .... 301-995-1950  
 MA Billerica, A. W. Mayer Co. .... 508-229-2255  
 MA Newton, The Greene-Shaw Co. .... 617-969-8900  
 NJ Oakland, Relay Specialties ..... 201-337-1000



FAX: 401-738-7154

EICHHOFF ELECTRONICS, 205 Hallene Rd., Warwick,  
 RI 02886, Tel: 401-738-1440, 800-678-1040; Empl: 2,000;  
 Sls. Mgr: Randall Jones ..... **A-1588-1591, 2323**

Local Sales Offices & Reps

AZ Scottsdale, Jackson Mktg. .... 602-998-0831  
 CA Arcadia, Van Gott & Assoc. .... 818-445-9238  
 CA Mountainview, The Pentagon Co. .... 415-961-3610  
 CT W. Simsbury, Electrotechnika ..... 203-658-6762  
 FL W. Melbourne, Kennedy Assocs. .... 407-676-6875  
 IL Wheaton, CS Tech. Sls. .... 708-653-8126  
 IA Marion, MSB Assocs. .... 319-377-6261  
 KS Roeland Park, MSB Assocs. .... 913-432-2131  
 MD Annapolis, Rynone Assocs. .... 410-263-0794  
 MA Needham, Sturgeon Tech.Sls. .... 617-444-6603  
 MN Minneapolis, Electro-Serv Co. .... 612-338-3475  
 MO St. Charles, MSB Assocs. Inc. .... 314-946-5577  
 NJ Mt. Laurel, Paragon Sls. .... 609-778-1190  
 NY Fairport, Advanced Comps. .... 315-437-6700  
 NC New Hill, Tom Santel ..... 919-362-4091  
 OH Mansfield, Rich Tech Sls. .... 419-756-1953  
 OR Mission Hills, Pentagon Co. .... 818-894-0299



**E.I.L. INSTRUMENTS, INC.**, 10946A Golden West Drive, Hunt Valley, MD 21031-1320, Tel: 410-584-7400, FAX: 410-584-7561; Empl: 500; *Sls. Mgr.*: Keith D. Hadley

**EI MICROCIRCUITS, INC.**, 1651 Pohl Road, Mankato, MN 56001, Tel: 507-345-5786, FAX: 507-345-7559; Empl: 60; *Sls. Mgr.*: Perry Eimers

**EIP MICROWAVE, INC.**, 1589 Centre Pointe Dr., Milpitas, CA 95035, Tel: 408-945-1477, FAX: 408-945-0977; FSC No.: 34257; Empl: 65; *Sls. Mgr.*: Rick Bush

**EKTRON APPLIED IMAGING, INC.**, 23 Crosby Dr., Bedford, MA 01730, Tel: 617-271-1940, FAX: 617-271-1860; Empl: 175; *Sls. Mgr.*: Richard Rollins



**FAX: 408-778-2597**

**ELAN SYSTEMS, INC.**, 365 Woodview Ave., Ste. 700, Morgan Hill, CA 95037, Tel: 800-541-3526; *Sls. Mgr.*: Bill White **A•1696-1697; D•1087**

*Local Sales Offices & Reps*  
**CA** Morgan Hill, Elan Sys., Inc. .... 408-778-7267

**ELAN TECHNICAL CORP.**, 35 Kings Highway East, Fairfield, CT 06430, Tel: 203-335-2115, FAX: 203-335-2723

**ELANTEC, INC.**, 1996 Tarob Ct., Milpitas, CA 95035, Tel: 408-945-1323, 800-333-6314, FAX: 408-945-9305; FSC No.: 64762; Empl: 112; *Sls. Mgr.*: Ralph Granchelli; *Dist. Mgr.*: Nancy Serdyski

**ELASTOMERIC TECHNOLOGIES, INC.**, 2940 Tumplike Dr., Hattboro, PA 19040, Tel: 215-672-0787, 215-672-4741, TWX: 387-236, FAX: 215-672-4633; FSC No.: 64914; Empl: 43; *Sls. Mgr.*: John Seibert (West)/George Glatts (East) **C•1314**

*Local Sales Offices & Reps*  
**AL** Huntsville, Remco/Huntsville ..... 205-533-3763  
**AZ** Scottsdale, TC Elctm. Sls., Inc. .... 602-994-5153  
**CA** Orange, Libratonix ..... 714-871-1513  
**CA** San Jose, W I N ..... 408-559-8118  
**CO** Monument, Sunbird Inds. .... 719-481-2900  
**FL** Ft. Lauderdale, Synergistic Tech. Inc. .... 305-791-8255  
**FL** Melbourne, Synergistic Tech. Inc. .... 407-242-9661  
**FL** Odessa, Synergistic Tech. .... 813-920-5814  
**GA** Lilburn, Remco/Atlanta ..... 404-447-6937  
**IL** Des Plaines, Lincoln, Hodges ..... 708-297-3810  
**IN** Ft. Wayne, Outman Sls. .... 219-489-7699  
**KS** Wichita, Baka Corp. .... 316-682-8411  
**MD** Gaithersburg, Carwithen ..... 301-921-9545  
**MA** Needham, Comp. Technol., Inc. .... 617-449-8490  
**MI** Troy, C. B. Jensen & Assocs. .... 313-643-0506  
**MN** Bloomington, Northmark Assocs. .... 612-854-9299  
**MO** St. John, Baka Corp. .... 314-878-4224  
**NJ** Hasbrouck Hgts., Comp-Tech ..... 201-288-7400  
**NY** Pittsford, Franklin Sls. Corp. .... 716-248-8251  
**NC** Raleigh, C-Tech Sls. Co. .... 919-782-8100  
**OH** Cleveland, Arthur Baier Co. .... 216-461-6161  
**OR** Tigard, L. D. Elctms. .... 503-684-8221  
**PA** Hattboro, A.Q.S. Electro ..... 215-674-3562  
**PA** Pittsburg, Arthur Baier Co. .... 412-367-7799  
**TX** Dallas, M-Rep ..... 214-484-5711  
**TX** Houston, M-REP ..... 713-271-5635  
**UT** Ogden, Sunbird Inds., Inc. .... 801-479-7151  
**WA** Snohomish, L. D. Elctms. .... 206-568-0511  
**WA** Spokane, LD Elctms. .... 509-922-4883  
**WI** Janesville, Lincoln/Hodges ..... 608-754-4214

**ELCO CORP.**, Electronic Connector Div., Huntingdon Ind'l Park, Huntingdon, PA 16652, Tel: 814-643-0700, FAX: 814-643-0426; FSC No.: 91662; Empl: 300; *Sls. Mgr.*: C. Demars; *Dist. Mgr.*: M. Grove

**EL-COM CABLETEK**, 22612 Albare, Mission Viejo, CA 92691, Tel: 714-432-6630

**ELCOM INDUSTRIES, INC.**, 10268 Bach Blvd., St. Louis, MO 63132, Tel: 314-429-3100, FAX: 314-429-9706; Empl: 25; *Sls. Mgr.*: Thomas C. Noel

**ELCOM SYSTEMS, INC.**, 932 Clint Moore Rd., Boca Raton, FL 33487, Tel: 407-994-1774, FAX: 407-994-1770; FSC No.: 32424; Empl: 8; *Sls. Mgr.*: D. Pollachek

**ELCON INSTRUMENTS, INC.**, Whessoe, Plc, 137 Gibraltar Street, Annapolis, MD 21401, Tel: 410-280-6886, FAX: 410-263-5790; Empl: 10; *Sls. Mgr.*: Robert Siska

**ELCON PRODUCTS INTERNATIONAL COMPANY**, 42700 Lawrence Place, Fremont, CA 94538, Tel: 510-490-4200, FAX: 510-490-3740; FSC No.: 85901; Empl: 120; *Sls. Mgr.*: Tom Johnson, Dir. of Sls.

**ELDRE CORPORATION**, 1500 Jefferson Rd., Rochester, NY 14623, Tel: 716-427-7280, FAX: 716-272-0018; FSC No.: 19648; Empl: 220; *Sls. Mgr.*: James N. Fitzpatrick

*Local Sales Offices & Reps*  
**AL** Huntsville, Elctm. Mktg. Assoc. .... 205-880-8050  
**AZ** Scottsdale, Fred Board Assocs. .... 602-994-9388  
**CA** Carlsbad, Tarco/Prime Source ..... 619-434-1297  
**CA** Los Gatos, Norwest Elctms. .... 408-356-7670  
**CO** Wheat Ridge, Waugaman Assocs. .... 303-423-1020  
**FL** Tampa, APM Assocs. .... 813-886-2457  
**GA** Atlanta, Electronic Mktg. Assoc. .... 404-448-1215  
**IN** Indianapolis, Mohrfield Mktg. .... 317-546-6969  
**MD** Towson, Arbotek Assocs. .... 410-825-0775  
**MA** Brookline, Harman Assocs. .... 617-232-6687  
**MI** Farmington, J P Bergin Assoc. .... 313-471-7940  
**MO** St. Louis, Cadon Techn. Sls. .... 314-645-8670  
**NJ** Cherry Hill, Tritek Sls. .... 609-667-0200  
**NY** Rochester, ELDR Corp. .... 716-427-7280  
**NY** Yonkers, Sonkin Assocs. .... 914-968-8282  
**NC** Raleigh, Electronic Mktg. Assocs. .... 919-847-8800  
**NY** Syracuse, Leonard D. Allen, Inc. .... 315-437-8387  
**OH** Centerville, Omega Sls. .... 513-434-5507  
**Can** St. Laurent, Que, Componetics, Ltd. .... 514-331-9930  
**UT** Murray, Waugaman Assocs./Utah .... 801-261-0802  
**WA** Redmond, Electronic Mktg. Grp. .... 206-882-0962

**ELECSYS, INC., Div. of C & C Jetronic**, 370 Wall St., Princeton, NJ 08540, Tel: 609-259-8866, FAX: 609-259-9347; Empl: 3; *Sls. Mgr.*: Edward Hwung **A•1693**

**ELECTRA-SEMBLY**, Lancer Chemical, 80 Cutter St., Box 30, Warren, RI 02885, Tel: 401-245-5493

**ELECTRA-TEC, INC.**, Div. of Impert Industries, Inc., 567 West M-89, Otsego, MI 49078, Tel: 800-225-3532, 616-694-2058, FAX: 616-694-5880; FSC No.: 4J966; Empl: 20; *Sls. Mgr.*: William Robinson

**ELECTRICAL INDUSTRIES CORP.**, 691 Central Ave., Murray Hill, NJ 07974, Tel: 908-464-3200, FAX: 908-464-7619; FSC No.: 20093; Empl: 300; *Sls. Mgr.*: D.V. Wilson

**ELECTRICAL INSTRUMENT SERVICE**, 25 Dock St., Mt. Vernon, NY 10550, Tel: 914-699-9717, FAX: 914-699-9410; FSC No.: 32590; 16034A; Empl: 35 **D•1252**

*Local Sales Offices & Reps*  
**AZ** Scottsdale, Williams Assocs. .... 602-494-0790  
**CO** Commerce City, Williams Assocs. .... 303-289-5647  
**IL** Lincolnwood, Saffro & Assocs. .... 708-677-9722  
**LA** Metairie, Data Mktg. Assocs. .... 504-833-3655  
**MA** Lexington, Zieco ..... 617-861-8300  
**MI** Southfield, Comtel Instrs. Co. .... 313-358-2505  
**MN** Minneapolis, Hei-Lite Sls. .... 612-550-0506  
**NM** Albuquerque, Williams Assocs. .... 505-255-1638  
**NY** Mount Vernon, Elctrl. Instr. Svc. .... 914-699-9717  
**OH** Cleveland, Comtel Instrs. Co. .... 216-442-8080  
**OH** Columbus, Comtel Instrs. Co. .... 614-876-8305  
**OH** Dayton, Comtel Instrs. Co. .... 513-426-5310  
**OK** Tulsa, Data Mktg. Assocs. .... 918-494-2711  
**PA** Pittsburgh, Comtel Instrs. Co. .... 412-922-5720  
**TX** Austin, Data Mktg. Assocs. .... 512-338-4701  
**TX** Dallas, Data Mktg. Assocs. .... 214-661-0300  
**TX** Houston, Data Mktg. Assocs. .... 713-954-5020  
**TX** San Antonio, Data Mktg. Assocs. .... 512-342-3031  
**WI** Lake Mills, Saffro & Assocs. .... 1-800-327-0312  
**Can** Beaconsfield, Que, Mesurina Ltee/Ltd. .... 514-630-5990

**ELECTRICAL INSULATION SUPPLIERS, INC.**, 300 N. Mannheim Road, Hillside, IL 60162, Tel: 708-547-5400, FAX: 708-544-7297; Empl: 550; *Sls. Mgr.*: Mike Driscoll

**ELECTRICAL STANDARDS DIV.**, E.S.R.S., Inc., 7337 Greenbush, N. Hollywood, CA 91605, Tel: 818-765-4224, FAX: 818-765-2939; Empl: 6

**ELECTRIC DEVICE**, PO Box 337, Canfield, OH 44406, Tel: 216-533-1111, FAX: 216-533-2639

**ELECTRIC INDICATOR COMPANY INC.**, 272 Main Ave., Norwalk, CT 06851, Tel: 203-847-5861, FAX: 203-846-3933; FSC No.: 73693; Empl: 60

**ELECTRIC MOTOR ENGINEERING, INC.**, 23362 Madero, Suite C, Mission Viejo, CA 92691, Tel: 714-583-9802, FAX: 714-583-9785; Empl: 5; *Sls. Mgr.*: Frank Buday; *Dist. Mgr.*: Frank Buday

**ELECTRIC SWITCHES, INC.**, 2478 Fletcher Dr., Los Angeles, CA 90039, Tel: 213-660-1310, TWX: 910-321-2971; Empl: 42; *Sls. Mgr.*: Louis Lim **B•1724-1725**

**ELECTRIC TACHOMETER**, 68th & Upland Sts., Philadelphia, PA 19142, Tel: 215-726-7723, FAX: 215-724-3682; FSC No.: 20049; Empl: 50; *Sls. Mgr.*: F. M. Porter

**ELECTRIC TIME COMPANY, INC.**, P.O. Box 466, Medford, MA 02052, Tel: 508-359-4396, FAX: 508-359-4482; FSC No.: 6645; Empl: 10

**ELECTRO ASSEMBLIES CORP.**, 425 Huehl Rd., Bldg. 17, Northbrook, IL 60062-2319, Tel: 708-498-6520, FAX: 708-272-2915; FSC No.: 09250; Empl: 60; *Sls. Mgr.*: Greg Andrews



**FAX: 716-759-2562**

**ELECTROCHEM INDUSTRIES, Wilson Greatbatch Ltd.**, 10000 Wehrle, Clarence, NY 14031, Tel: 716-759-5428; FSC No.: 6U589; Empl: 500; *Dist. Mgr.*: Mark Amatuzzo **D•1447**

*Local Sales Offices & Reps*  
**NJ** Medford, Champion Elctm. Sls., Inc. .... 609-983-0932  
**OH** Beachwood, Elctm. Salesmasters Inc. .... 216-831-9555

*Local Distributors*  
**AZ** Scottsdale, Electro Mktg. .... 602-991-0110  
**CA** Costa Mesa, Battery Specialties ..... 714-755-0888  
**CA** San Diego, Tauber Elctms. .... 619-274-7242  
**CA** San Jose, Rose Elctms. .... 408-943-0200  
**CO** Englewood, AVT, Inc. .... 303-795-1958  
**MA** Sutton, Engrd. Assemblies Corp. .... 508-865-0722  
**FL** St. Petersburg, Engrd. Assemblies Corp. .... 813-328-1970  
**GA** Norcross, Engrd. Assemblies & Comps. Corp. .... 404-446-3135  
**MI** Ann Arbor, Wedemeyer Elctms. Supp. Co. .... 313-665-8611  
**NJ** Teterboro, Engrd. Assemblies Corp. .... 201-288-4477  
**NY** Penn Yan, Advacom Technl., Inc. .... 315-536-2221  
**NC** Raleigh, Engrd. Assemblies Corp. .... 919-790-9700  
**OR** Beaverton, Micro Power ..... 503-626-7086  
**PA** McKean, Advacom, Inc. .... 814-476-7774  
**TX** Houston, K Power Elctms. .... 713-783-2288  
**WA** Redmond, Priebe Elctms. .... 206-881-2363  
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**Can** Victoria, BC, Pacific Coast Elctms. Ltd. .... 604-385-5111

**ELECTROCOM INDUSTRIES**, 1105 N. Ironwood Dr., S. Bend, IN 46615, Tel: 219-232-2743; FSC No.: 27114; *Sls. Mgr.*: B. Jaffe

**ELECTROCUBE**, 1307 S. Myrtle Ave., Monrovia, CA 91016, Tel: 818-301-0122, FAX: 818-357-8099; FSC No.: 14752; Empl: 125; *Sls. Mgr.*: Harold Neubert **A•1067**

*Local Sales Offices & Reps*  
**AZ** Scottsdale, EDP & Assocs. .... 602-991-6119  
**CA** Mountain View, Westech Sls. .... 415-961-1422  
**CA** Newport Beach, Forbes Pacific Inc. .... 714-722-6174  
**FL** Orlando, Richmar Elctms. .... 407-352-3755  
**GA** Roswell, JWL Assocs. .... 404-518-8500  
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| MN | Minneapolis, Electro-Serv       | 612-338-3475 |
| MO | Raytown, Centech Sls.           | 816-358-8100 |
| NY | Great Neck, M. O. S. Assocs.    | 516-487-3966 |
| NY | Rochester, Gislason Sls.        | 716-328-7400 |
| NC | Charlotte, JWL Assocs.          | 704-541-5750 |
| OH | Dayton, K. W. Elctms.           | 513-890-2150 |
| PA | Allison Park, K. W. Elctms.     | 412-492-0777 |
| PA | Paoli, Tyler Griffin Co.        | 215-647-1550 |
| TX | Panor, Richmar Elctms.          | 214-424-8388 |
| WA | Kirkland, James Findlay Co.     | 206-822-1510 |
| WI | Butler, Richmar Elctms.         | 414-781-1730 |

## Local Distributors

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| AL | Huntsville, Resistacap, Inc.        | 205-883-4270 |
| AZ | Tempe, Acacia Sls, Inc.             | 602-894-2874 |
| CA | Chatsworth, Mil-Comm Dist.          | 818-998-3111 |
| CA | Fremont, Acacia Sls, Inc.           | 510-623-7500 |
| CA | Santa Ana, BDS Elctms.              | 714-662-1050 |
| CA | Tustin, Projections Unltd.          | 714-544-2700 |
| CO | Lakewood, Acacia Sls, Inc.          | 303-232-2882 |
| FL | Largo, Elctm. Precepts of FL        | 813-544-3636 |
| IL | Elk Grove Village, Nu-Way Elctms.   | 708-437-7120 |
| IL | Morton Grove, Nedco                 | 708-967-0500 |
| MD | Gaithersburg, MS Elctms.            | 301-921-0200 |
| MI | Madison Heights, Galco Ind. Elctms. | 313-542-9090 |
| NJ | Newark, Meltronics                  | 201-242-1686 |
| NY | Penn Yan, Advacom                   | 315-536-2221 |
| NY | Rochester, Masline Elctms.          | 716-546-5673 |
| OR | Englewood, ADS Electra              | 513-836-8336 |
| OH | Solon, Repco Elctms.                | 216-248-8900 |
| OK | Tulsa, Altair Co.                   | 918-252-5781 |
| OR | Beaverton, Acacia Sls, Inc.         | 503-646-3377 |
| PA | Lewittown, Aim Elctms.              | 215-946-3900 |
| PA | McKean, Advacom                     | 814-476-7774 |
| TX | Houston, Altair Co.                 | 713-462-3029 |
| TX | Richardson, Altair Co.              | 214-231-5166 |
| WA | Redmond, Acacia Sls, Inc.           | 206-881-5666 |

**ELECTRODATA, INC.**, 23020 Miles Rd., Bedford Heights, OH 44128, Tel: 216-663-3333, TWX: 810-427-2280, FAX: 216-663-0507; FSC No.: 34-1173465; Empl: 15; Sls. Mgr.: Anthony Cardone; Dist. Mgr.: Anthony Cardone

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## ELECTRODYNAMICS

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**ELECTRODYNAMICS, INC., A Talley Inds. Co.**, 1200 Hicks Rd., Rolling Meadows, IL 60008, Tel: 708-259-0740; FSC No.: 10236; Empl: 200; Sls. Mgr.: Frank Rafferty **D-1159**

## Local Sales Offices &amp; Reps

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|----|--------------------------------------------|--------------|
| CA | Alameda, Liaison, Inc.                     | 415-769-1991 |
| CA | Alhambra, James Gerry Co.                  | 213-283-7694 |
| CO | Denver, West High-Tech, JV                 | 303-477-8180 |
| CT | Old Saybrook, FJS Assocs.                  | 203-388-5374 |
| FL | Altamonte Spgs., Quantum Sls.              | 407-788-0550 |
| IA | Cedar Rapids, J.R. Sales Engr.             | 319-393-2232 |
| KS | Wichita, Magna Engr. Sls.                  | 316-744-0851 |
| MD | Severna Park, Delmarva Engr. Assocs., Ltd. | 301-647-8007 |
| MA | Burlington, FJS Assocs.                    | 617-273-5959 |
| MO | St. Louis, Magna Engr. Sls.                | 314-849-6590 |
| NJ | Basking Ridge, Churchill Assocs.           | 908-735-6626 |
| NY | Larchmont, Hingston Walsh Assocs., Inc.    | 914-834-5781 |
| OR | Tigard, EITech, Inc.                       | 503-684-3458 |
| PA | Norristown, Rivco January Inc.             | 215-631-1414 |
| TX | Dallas, Kruvand Assoc.                     | 214-437-3355 |
| UT | Centerville, West, Inc.                    | 801-292-8787 |
| WA | Bellevue, EITech, Inc.                     | 206-643-4330 |

**ELECTRO-DYNAMICS DEV. CO.**, 475 Mt. Hood Dr. S.W., Issaquah, WA 98027-4038, Tel: 206-392-2493; FSC No.: 9J838; Sls. Mgr.: W. A. Pommer

**ELECTRO-DYN ELECTRONICS**, 1201-19th St., Niagara Falls, NY 14301, Tel: 716-284-8747, FAX: 716-284-9112; Sls. Mgr.: Paul Grzeskowiak

**THE ELECTRODYNE COMPANY, INC.**, 4188 Taylor Rd., Batavia, OH 45013, Tel: 513-732-2822, TELEX: 241 463, FAX: 513-732-6953

**ELECTROFILM**, 25395 Rye Canyon Road, Valencia, CA 91355, Tel: 805-257-2242, FAX: 805-257-7738; FSC No.: 85932; Empl: 77; Sls. Mgr.: Richard W. Pearson

## ELECTRO-FILMS INCORPORATED



FAX: 401-738-4389

**ELECTRO-FILMS, INC.**, 111 Gilbane St., Warwick Central Indl. Pk., Warwick, RI 02886, Tel: 401-738-9150; FSC No.: 57252; Empl: 210; Sls. Mgr.: Jim Brush **A-1721, 1932-1934**

## Local Sales Offices &amp; Reps

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AL  | Huntsville, BCI, Inc.                 | 205-539-4411 |
| CA  | San Jose, NES Assocs.                 | 408-437-9300 |
| CA  | Santa Ana, Weatherman Assocs.         | 714-544-1304 |
| CA  | Sunnyvale, NES Assocs.                | 408-738-3259 |
| CO  | Ft. Collins, Rep Sls.                 | 303-226-1504 |
| FL  | Apopka, Micro Mktg., Inc.             | 407-889-2022 |
| GA  | Chamblee, BCI, Inc.                   | 404-455-0405 |
| IL  | Palatine, M & S Sls.                  | 708-934-1200 |
| IN  | Ft. Wayne, Corrao Marsh               | 219-482-2725 |
| IN  | Greenfield, Corrao Marsh, Inc.        | 317-462-4446 |
| MA  | Bedford, Vector Assocs.               | 617-271-0000 |
| MN  | Minneapolis, Ferrian Sls.             | 612-721-8915 |
| NM  | Albuquerque, Western High Tech. Mktg. | 505-884-2256 |
| NY  | Clifton Park, Empire Technlg., Inc.   | 518-371-2480 |
| NY  | Plainville, Robert Smith Assocs.      | 516-681-3155 |
| NC  | Lewisville, Component Circuits, Inc.  | 919-945-5678 |
| OH  | Cincinnati, Arthur Baier Co.          | 513-779-2395 |
| OH  | Cleveland, Arthur Baier Co.           | 216-461-6161 |
| OH  | Columbus, Arthur Baier Co.            | 614-764-1144 |
| OH  | Toledo, Arthur Baier Co.              | 513-276-4128 |
| OK  | Broken Arrow, Merlin Elctms.          | 918-251-2084 |
| OR  | Portland, Demarest Assocs., Inc.      | 503-645-4788 |
| PA  | Erdenheim, OMNI Sls.                  | 215-233-4600 |
| PA  | Pittsburg, Arthur Baier Co.           | 412-367-7799 |
| TX  | Ft. Worth, Merlin Elctms.             | 817-429-4420 |
| TX  | Missouri City, Jackson Arnold Assocs. | 713-261-0798 |
| VA  | Ashland, Glasscock Assocs.            | 804-798-2125 |
| WA  | Seattle, Demarest Assocs.             | 206-523-3210 |
| Can | Montreal, Que., Solid State Engr. Co. | 514-481-3313 |

**ELECTRO FORCE CORP.**, 727 Oakstone Way, Anaheim, CA 92806, Tel: 714-774-3666; Empl: 4

**ELECTROHOME LIMITED**, 809 Wellington St. N., Kitchener, Ontario, Canada N2G 4J6, Tel: 519-744-7111, FAX: 519-749-3136; Sls. Mgr.: Alan Caskey

**ELECTROID CO.**, Div. of Valcor Engrg. Corp., 45 Fadem Rd., Springfield, NJ 07081, Tel: 201-467-8100, TELEX: 139241, FAX: 201-467-5656; Empl: 100; Sls. Mgr.: E.D. Lazorchak

**ELECTRO IMPULSE**, 1805 Corlies Ave. Box 278, Neptune, NJ 07754-0278, Tel: 908-776-5800, FAX: 908-776-6793; FSC No.: 91161; Empl: 48; Sls. Mgr.: Mark Rubin

**ELECTRO INDUSTRIES**, Div. E.I. Elctms., Inc., 1800 Shames Drive, Westbury, NY 11590, Tel: 516-334-0870, TELEX: 4948652 ELECTRO, FAX: 516-338-4741; Empl: 40; Sls. Mgr.: S. Kagan

For further information call toll free: 800-645-6342

**ELECTRO INSULATION CORP.**, 3921 Ventura Drive, Arlington Hts., IL 60004, Tel: 708-632-1020, FAX: 708-632-1089; Empl: 25; Sls. Mgr.: Mike Kamperschroer; Dist. Mgr.: Mike Kamperschroer

**ELECTROL CO.**, 321 Dewey St., P.O. Box 29, York, PA 17405, Tel: 717-848-1722, FAX: 717-848-4514; Empl: 30; Sls. Mgr.: Debra Dudley; Dist. Mgr.: Debra Dudley

**ELECTROL, Hamlin, Inc.**, 612 East Lake St., Lake Mills, WI 53551, Tel: 414-648-3000, FAX: 414-648-3001; Empl: 350; Sls. Mgr.: Mike Bucher **B-1513**

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| AZ  | Tempe, Westrep                            | 602-820-9932 |
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| CA  | San Jose, Vermax                          | 408-972-4903 |
| CO  | Boulder, Design Tech. Sls.                | 303-440-5121 |
| CT  | Brantford, Coakley, Boyd & Abbott         | 203-481-2218 |
| FL  | Tampa, Electramark, Inc.                  | 813-889-7775 |
| GA  | Atlanta, Wallace Elec. (Sen/Sw only)      | 404-634-3159 |
| GA  | Norcross, Electramark, Inc. (Relays only) | 404-446-7915 |
| IL  | Itasca, LTD Technlgs.                     | 708-773-2900 |
| IN  | Carmel, Technlg. Mktg. Corp.              | 317-844-8462 |
| IA  | Davenport, Rush & West                    | 319-388-9609 |
| KS  | Olathe, Rush & West                       | 913-764-2700 |
| KY  | Louisville, Technlg. Mktg. Corp.          | 502-893-1377 |
| MD  | Gaithersburg, Naudain Assocs. South       | 301-258-5040 |
| MA  | Bridgewater, Coakley, Boyd & Abbott       | 508-559-6700 |
| MA  | Framingham, Coakley, Boyd & Abbott        | 508-820-0800 |
| MI  | Farmington Hills, J.L. Montgomery         | 313-489-0099 |
| MN  | Minneapolis, RK Sls.                      | 612-571-1001 |
| MO  | St. Louis, Rush & West                    | 314-965-3529 |
| NJ  | Hackensack, Coakley, Boyd, Abbott/Metro   | 201-440-4114 |
| NJ  | Marlton, Naudain Assocs.                  | 609-983-5300 |
| NY  | Ithaca, Bob Dean, Inc.                    | 607-257-1111 |
| NC  | Kernersville, Wallace Elctm. Sls.         | 919-996-2742 |
| OH  | Richfield, Bear Mktg.                     | 216-659-3131 |
| OR  | Tigard, Earl & Brown                      | 503-639-2100 |
| PA  | Allison Pk., Bear Mktg.                   | 412-492-1150 |
| TN  | Tullahoma, Wallace Elctms. Sls.           | 615-455-0501 |
| WA  | Redmond, Earl & Brown                     | 206-885-5064 |
| WI  | Watertown, Deaken Tech. Sls.              | 414-261-7600 |
| Can | Ontario, Indigo                           | 416-670-0284 |

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| AL | Huntsville, Hammond Elctms.     | 205-830-4764 |
| AZ | Phoenix, Force Elctms.          | 602-437-1060 |
| AZ | Tempe, Cypress Elctms.          | 602-966-2256 |
| AR | Springdale, Radio Inc.          | 501-751-8200 |
| CA | Agoura Hills, Cypress Elctms.   | 881-597-9491 |
| CA | Costa Mesa, Cypress Elctms.     | 714-549-2424 |
| CA | Los Angeles, Bell Inds.         | 213-826-6778 |
| CA | Los Angeles, Master Dists.      | 301-452-1229 |
| CA | Milpitas, Sierra West Elctms.   | 408-945-1050 |
| CA | San Jose, Capstone              | 408-453-9804 |
| CA | Santa Clara, Cypress Elctms.    | 408-980-8400 |
| CA | Santa Clara, Kent Elctms.       | 408-727-9810 |
| CA | Tustin, Capstone                | 714-730-0349 |
| CO | Aurora, Capstone Elctms.        | 303-375-2550 |
| CO | Denver, Newark Elctms.          | 303-757-3351 |
| CO | Englewood, Cypress Elctms.      | 303-792-5829 |
| CO | Englewood, Harrison Equip. Co.  | 303-694-6320 |
| CT | Southbury, Hellind Elctms.      | 203-262-1700 |
| CT | Wallingford, Sager Elec.        | 203-262-1700 |
| FL | Ft. Lauderdale, Hammond Elctms. | 305-973-7103 |
| FL | Lakeland, AA Elec.              | 813-665-6941 |
| FL | Orlando, Hammond Elctms.        | 407-489-8060 |
| GA | Norcross, AA Elec.              | 404-449-8670 |



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| GA  | Norcross, EMSCO                        | 404-925-8366 |
| GA  | Norcross, Hammond Elctms.              | 404-449-1996 |
| ID  | Boise, Radar Elec.                     | 208-336-2227 |
| IL  | Bensenville, Cypress Elctms.           | 708-350-2005 |
| IL  | Chicago, Newark Elctms.                | 312-784-5100 |
| IL  | Itasca, Capstone                       | 708-250-0300 |
| IL  | Palatine, Ohm Elctms.                  | 708-359-5500 |
| IN  | Wayne, Bell Inds.                      | 219-423-3422 |
| IN  | Indianapolis, Bell Inds.               | 317-875-8200 |
| IN  | Indianapolis, Custom Svc. Elctms.      | 317-879-9119 |
| KS  | Wichita, Radio, Inc.                   | 316-264-2798 |
| MD  | Baltimore, Bell Inds.                  | 301-953-2566 |
| MD  | Columbia, DK Elctms.                   | 301-995-1950 |
| MD  | Columbia, Peerless Radio               | 301-997-1717 |
| MD  | Columbia, Sager Elec.                  | 301-995-4900 |
| MA  | Andover, Bell Inds.                    | 508-474-8880 |
| MA  | Hingham, Sager Elctrl. Supp.           | 617-749-6700 |
| MA  | Wilmington, Capstone                   | 508-657-5874 |
| MA  | Wilmington, Heiland Elctms.            | 508-657-4870 |
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| MI  | Oak Park, Newark Elctms.               | 313-967-0600 |
| MN  | Eden Prairie, Cypress Elctms.          | 612-934-2104 |
| MN  | Minneapolis, Newark Elctms.            | 612-331-6350 |
| MN  | Thief River Falls, Digi-Key Corp.      | 218-681-6674 |
| MN  | Thief River Falls, Voyager Elctms.     | 218-571-7766 |
| NH  | Salem, Sager Elec.                     | 603-898-1348 |
| NJ  | Fairfield, Bell Inds.                  | 201-227-6060 |
| NJ  | Marlton, Capstone                      | 609-596-7500 |
| NJ  | Oakland, Relay Specs.                  | 201-337-1000 |
| NJ  | W. Berlin, Gent. Comps.                | 609-768-6767 |
| NM  | Albuquerque, Bell Inds.                | 505-292-2700 |
| NM  | Albuquerque, Harrison Intl.            | 505-291-9951 |
| NM  | Los Alamos, Capstone                   | 505-662-0745 |
| NY  | Buffalo, Summit Dists., Inc.           | 716-887-2800 |
| NY  | Hauppauge, Sager Elec.                 | 516-348-1300 |
| NY  | Lynbrook, Peerless Radio               | 516-593-2121 |
| NY  | Plainview, Astrex                      | 516-433-1700 |
| NY  | Rochester, Simcona Elctms. Corp.       | 716-328-3230 |
| NY  | Rome, Rome Elctms. Inc.                | 315-337-5400 |
| NC  | Greensboro, Hammond Elctms.            | 919-275-6391 |
| NC  | Raleigh, Capstone                      | 919-954-0600 |
| NC  | Winston-Salem, Kirkman Elctms.         | 919-722-9131 |
| OH  | Solon, Repco Elctms.                   | 216-248-8900 |
| OH  | Valley View, Newark Elctms.            | 216-447-8860 |
| OK  | Oklahoma City, Radio Inc.              | 405-789-0741 |
| OK  | Tulsa, Radio Inc.                      | 918-587-9123 |
| OR  | Oswego, Bell Inds.                     | 503-635-6500 |
| OR  | Portland, Cypress Elctms.              | 503-223-8900 |
| OR  | Portland, Radar Elec.                  | 503-232-3404 |
| PA  | McKean, Advacom Inc.                   | 814-476-7774 |
| PA  | Pittsburgh, Bell Inds.                 | 412-787-3883 |
| PA  | Trevosa, Bell Inds.                    | 215-953-2899 |
| SC  | Greenville, EMSCO Inc.                 | 803-233-4121 |
| TX  | Austin, Harrison Equip. Co.            | 512-258-1320 |
| TX  | Carrollton, Capstone                   | 214-380-9049 |
| TX  | Dallas, Harrison Equip. Co.            | 214-239-2750 |
| TX  | El Paso, Harrison Equip. Co.           | 915-598-3406 |
| TX  | Farmers Branch, Force Elctms.          | 214-247-9955 |
| TX  | Fl. Worth, Allied Elctms.              | 817-595-3500 |
| TX  | Fl. Worth, Tandy Elctms.               | 812-870-5614 |
| TX  | Garland, Newark Elctms.                | 214-494-5911 |
| TX  | Houston, Kent Elctms.                  | 713-780-7770 |
| TX  | Stafford, Harrison Equip. Co.          | 713-879-2727 |
| WA  | Redmond, Kent Elctms.                  | 206-883-7200 |
| WA  | Richland, Radar Elec. Co.              | 509-943-8336 |
| WA  | Seattle, Radar Elec. Co.               | 206-282-2511 |
| WA  | Spokane, Radar Elec. Co.               | 509-474-3053 |
| WI  | Cedarburg, Automation Engrg.           | 414-377-7500 |
| WI  | Green Bay, Automation Engrg.           | 414-449-6000 |
| WI  | Mequon, Taylor Elec.                   | 414-241-4321 |
| Can | Burnaby, BC, ITT Multicomps.           | 604-291-8866 |
| Can | Calgary, Alb. ITT Multicomps.          | 403-273-2780 |
| Can | Concord, Ont., ITT Multicomps.         | 416-798-7884 |
| Can | Markham, Ont., Semad Elctms.           | 416-475-8500 |
| Can | Mississauga, Ont., Capstone            | 416-670-2010 |
| Can | Nepean, Ont., ITT Multicomps.          | 613-596-6980 |
| Can | Ville St. Laurent, PQ, ITT Multicomps. | 514-335-7697 |
| Can | Winnipeg, Manitoba, ITT Multicomps.    | 403-273-2780 |

**ELECTRO MAGNETIC PROCESSES, INC.**, 20360 Plummer St., Chatsworth, CA 91311-5371, Tel: 818-882-6333, FAX: 818-709-4668; FSC No.: 51290; Empl: 100

**ELECTROMATIC CONTROLS CORP.**, 2495 Pembroke Road, Hoffman Estates, IL 60195-2010, Tel: 708-882-5757, TWX: 910-222-3452; FSC No.: 75203; Empl: 400; Sls. Mgr.: Mike Meurer; Dist. Mgr.: Mike Meurer

**ELECTRO MAZE AIR FILTERS**, 5936 Don Way, Carmichael, CA 95608, Tel: 916-485-4079, FAX: 916-485-7925; Empl: 7

**ELECTROMECH, INC.**, 2 Cordier St., Irvington, NJ 07111, Tel: 201-318-7999, FAX: 201-318-7995; Empl: 40; Sls.

Mgr.: Solomon Ezra ..... A-2324-2325; D-1672  
Local Sales Offices & Reps  
NJ Irvington, Electromech, Inc. .... 201-318-7999

**ELECTRO MECHANICAL SYSTEMS, INC.**, 801 W. Bradley Ave., Champaign, IL 61820, Tel: 217-359-7125, FAX: 217-359-2075; Empl: 26; Sls. Mgr.: Julie L. Redman

**ELECTRO-MECHANISMS, INC.**, 990 Amelia, San Dimas, CA 91773, Tel: 909-394-9953, FAX: 909-394-0782; FSC No.: 52592; Empl: 27 ..... B-1636-1637

Local Sales Offices & Reps  
OH Dayton, Harvey Teplitz ..... 513-898-5282

**ELECTRO-MECH CO.**, 707 Hathaway Dr., Colorado Springs, CO 80915, Tel: 719-597-1620, FAX: 719-597-1628 ..... D-1673

Local Sales Offices & Reps  
AZ Phoenix, C.T. Carlberg & Assocs. .... 602-468-0782  
CA Santa Clara, Caltronics ..... 408-727-7552  
CA Roswell, JWL Assocs. .... 404-518-8500  
IL Cary, Bob Burns & Assocs. .... 708-516-3322  
IA Cedar Rapids, KKB & Co. .... 319-373-7111  
MN Minneapolis, Harold Mercer Co. .... 612-933-7111  
MO Blue Springs, KKB & Co. .... 816-229-0001  
MO St. Louis, KKB & Co. .... 314-647-2400  
NJ Berkley Hgts., Cambridge Allen & Assocs. .... 908-464-0203  
NM Albuquerque, C.T. Carlberg & Assocs. .... 505-899-2155  
NC Charlotte, JWL Assocs. .... 704-541-5750  
OR Lake Oswego, Abacus Sls. .... 503-777-8111

Local Distributors  
AL Birmingham, Forbes Elctms. .... 205-251-3941  
AL Huntsville, Mock Elctms. .... 205-539-2401  
AL Montgomery, Handeys Elctm. Cir. .... 205-262-4885  
FL Ft. Walton Bch., Key Elctm. Supp. .... 904-863-2191  
FL Pensacola, Pensacola Elctms. .... 904-478-3771  
FL Tampa, Applied Power .... 813-725-9587  
GA Norcross, Applied Power .... 404-263-0421  
IL Mount Prospect, Tri-State Elctms. .... 708-255-0600  
IA W. Des Moines, Ramco Elec. Co. .... 515-225-6933  
MA Boston, IME .... 800-254-1700  
MI Brighton, Applied Power .... 313-227-3604  
MN St. Paul, DC Battery Prods. .... 612-646-7478  
MO Kansas City, Elctm. Supp., Inc. .... 816-931-0250  
NC Greensboro, Guilford Elctm. Supp. .... 919-275-1385  
SC Spartanburg, Harley's Whlse. Elctms. .... 803-582-7961  
TN Clarksville, Randolph Hale & Mathews .... 615-647-2325  
TN Columbia, Randolph & Williams .... 615-388-7686  
TN Nashville, Randolph & Rice .... 615-255-5602  
TN Tullahoma, Randolph & Vandergriff .... 616-455-4531  
TX Dallas, Computer Comps. .... 214-239-0271  
TX Richardson / Dallas, Off the Shelf Comps. .... 214-238-9625  
UT Salt Lake City, Standard Supply .... 801-486-3371  
WI Madison, Wisconsin Elctm. Supp. .... 608-222-3400

**ELECTRO-MECH COMPONENTS, INC.**, 1826 N. Floradale Ave., South El Monte, CA 91733-3689, Tel: 818-442-7180, FAX: 818-350-8070; FSC No.: 07150; Empl: 15; Sls. Mgr.: Terry Trumbull; Dist. Mgr.: Terry Trumbull ..... B-1714-1715

Local Sales Offices & Reps  
CA Irvine, Vale Elctm. Assoc. .... 714-551-4004  
CA San Diego, Qualtronics .... 619-695-0118  
CA Santa Clara, Engrg. Assocs. .... 408-988-5001  
CO Boulder, Design Technlg. Sls. .... 303-440-5121  
FL Orlando, Publicover .... 407-898-9361  
IL Chicago, IRI .... 708-967-8430  
MD Baltimore, Callas Elctms., Inc. .... 410-744-7711  
MI Livonia, Leading Edge Sls. .... 313-478-6700  
MN Minneapolis, D. A. Case Assocs. .... 612-831-6777  
NJ Medford, Comp. Conslts. .... 609-654-5300  
NY Mamaroneck, Bassin Tech. .... 914-698-9332  
NY Orchard Park, SHR ..... 716-662-0589  
OH Cincinnati, KCH Co. .... 513-931-1686  
OR Hillsboro, Doran Sls. .... 503-640-4500  
RI Smithfield, Todino Engr. Sls. .... 401-232-5656  
TX Richardson, McCoy Assocs. .... 214-864-1838  
WA Redmond, Doran Sls. .... 206-488-1200

Local Distributors  
CA Los Angeles, Elec. Switches .... 213-660-1310  
CA Los Angeles, Master Dists. .... 310-452-1229  
NY Mamaroneck, Logicomp Elctms. .... 800-431-2625

**ELECTRO-METRICS, INCORPORATED**, A Penril Corp., 100 Church St., Amsterdam, NY 12010, Tel: 518-843-2600, TWX: 710-446-4798, FAX: 518-843-2812; FSC No.: 18581; Empl: 80; Sls. Mgr.: Colleen M. DiCaprio



**Electro-Miniatures Corp.**

**FAX: 201-935-8153**

**ELECTRO MINIATURES CORP.**, 68 West Commercial Ave., Moonachie, NJ 07074, Tel: 201-460-0510; FSC No.: 17399; Empl: 45; Sls. Mgr.: Barbara Triolo ..... B-1251-1253

**ELECTRO NATIONAL CORP.**, P.O. Box 402 Matthews Ave., Canton, MS 39046, Tel: 601-858-5511, FAX: 601-859-5518; FSC No.: M-54208; Empl: 32; Sls. Mgr.: Patsy Hicks

**ELECTRONETICS, INC.**, 3101-111th St. S.W., Everett, WA 98204, Tel: 206-355-1855, FAX: 206-355-1855; Empl: 10



**FAX: 818-442-6873**

**ELECTRONIC APPLICATIONS CO.**, 4918 Santa Anita Ave., El Monte, CA 91734, Tel: 818-442-3212; Empl: 92 ..... B-1483

**ELECTRONIC COIL CORP.**, 125 Old Iron Ore Rd., Bloomfield, CT 06002, Tel: 203-243-5233, FAX: 203-243-2247; Empl: 8; Sls. Mgr.: R.B. Gorski

**ELECTRONIC COMPONENTS & MATERIALS, GTE**, Sylvania, 816 Lexington Ave., Warren, PA 16365, Tel: 814-726-6500, FAX: 814-726-6942; Empl: 1800; Sls. Mgr.: Robert Scalise



**FAX: 908-542-0524**

**ELECTRONIC CONCEPTS, INC.**, Box 1278, Eatontown, NJ 07724, Tel: 908-542-7880, TELEX: 7107226661; FSC No.: 50558; Empl: 240; Sls. Mgr.: Philip N. Lepore ..... A-1068-1073

Local Sales Offices & Reps  
CA La Mirada, Select Elctms. .... 714-739-8891  
CA Simi Valley, Elctm. Concepts, Inc. .... 805-582-9501  
CO Englewood, TMC ..... 303-770-8995  
IL Wheaton, Elctm. Concepts, Inc. .... 312-668-8747  
MN Minneapolis, Components Grp. .... 612-374-1250  
MO Grandview, Harris-Hanson Co. .... 816-763-6200  
NJ Eatontown, Elctm. Concepts, Inc. .... 908-542-7880  
MO St. Louis, Harris-Hanson Co. .... 314-432-3611

Local Distributors  
NJ Clifton, Elcon Sls. .... 201-546-5022

**ELECTRONIC CONNECTION CORP.**, 125 Old Iron Ore Rd., Bloomfield, CT 06002, Tel: 203-243-3356, FAX: 203-243-2247; Empl: 15; Sls. Mgr.: Ray Gorski, Jr.

**ELECTRONIC CONNECTORS, INC.**, 125 South Fifth St., Reading, PA 19602, Tel: 215-374-3796, FAX: 215-374-0630; FSC No.: 15971; Empl: 34; Sls. Mgr.: D. E. Fronheiser; Dist. Mgr.: D. E. Fronheiser

**ELECTRONIC CONTROLS DESIGN**, 4287-A SE International Way, Milwaukie, OR 97222, Tel: 503-659-6100, FAX: 503-659-4422; Empl: 100; Sls. Mgr.: Steven Glass

**ELECTRONIC DESIGN ENGINEERING**, 1820 Temescal Av., Norco, CA 91760, Tel: 909-735-1761; Empl: 3

**ELECTRONIC DESIGNS INC.**, 42 South Street, Hopkinton, MA 01748, Tel: 508-435-2341, TELEX: 948004, FAX: 508-435-6302

**ELECTRONIC DEVELOPMENT ASSOCIATES**, 1 Westcliff Drive, Dix Hills, New York 11746, Tel: 516-673-3881, FAX: 516-673-5979; FSC No.: 9V841



**ELECTRONIC DEVELOPMENT CORP., EDC, 11**  
 Hamlin St., Boston, MA 02127-4198, Tel: 617-268-9696,  
 TELEX: 951596, FAX: 617-268-6754; FSC No.: 12619;  
 Empl: 25; Sls. Mgr.: R. B. Ross **D-1253**

| Local Sales Offices & Reps |                                    |              |
|----------------------------|------------------------------------|--------------|
| AL                         | Huntsville, Jim Springer           | 205-883-4163 |
| AZ                         | Tempe, Rusler Tech                 | 602-897-2877 |
| CA                         | All of CA, F.L.W.                  | 800-339-6030 |
| CO                         | Englewood, R. A. Mayes Co.         | 303-761-9447 |
| FL                         | Cape Canaveral, Teqspec            | 407-783-3444 |
| FL                         | Palm Harbor, Teqspec               | 813-942-6006 |
| IL                         | Arlington Heights, Berndt Assoc.   | 708-632-0900 |
| IN                         | Carmel, Berndt Assocs.             | 317-844-0114 |
| KS                         | Overland Park, Ramsey Assocs.      | 913-541-1007 |
| MA                         | Boston, Elctrn. Dev. Corp.         | 617-268-9696 |
| MA                         | Needham, Addeco Corp.              | 617-444-4754 |
| MI                         | Hazel Park, Tiby Co.               | 313-547-3550 |
| MN                         | Minneapolis, The Mark Co.          | 612-933-3026 |
| MO                         | Chesterfield, Ramsey Assocs.       | 314-532-9386 |
| NJ                         | Union, Friedman Assocs.            | 908-964-6200 |
| NM                         | Albuquerque, Mesa Technlg.         | 505-883-8333 |
| NY                         | Victor, SAN WAL Technlg.           | 716-924-1950 |
| NC                         | Raleigh, Teqspec                   | 919-851-9112 |
| OH                         | Cleveland, Tiby Co.                | 216-371-5335 |
| OR                         | Portland, Topp Engrg. Sls.         | 503-244-7265 |
| PA                         | Hatboro, Rhodes Technlg.           | 215-672-3336 |
| TX                         | Richardson, Scientific Sls.        | 214-231-6541 |
| VA                         | Richmond, Advance Control Equip.   | 804-282-9499 |
| WI                         | Milwaukee, Berndt Assoc.           | 414-545-8400 |
| Can                        | Mississauga, Ont., Omnitronix Ltd. | 416-828-6221 |

**ELECTRONIC DEVELOPMENT LABS., See EDL Inc.**

**ELECTRONIC DEVICES, INC., 21 Gray Oaks Ave.,**  
 Yonkers, NY 10710, Tel: 914-965-4400, TELEX: 681-8047,  
 FAX: 914-965-5531; Empl: 200; Sls. Mgr.: Paul Dengler;  
 Dist. Mgr.: Paul Dengler **A-2143**

| Local Sales Offices & Reps |                                     |              |
|----------------------------|-------------------------------------|--------------|
| CA                         | Northridge, Myco Sls.               | 818-886-7101 |
| CA                         | San Jose, Nelson                    | 408-437-9300 |
| CO                         | Englewood, Dynatech                 | 303-773-2830 |
| FL                         | Melbourne, Kennedy                  | 407-676-6875 |
| GA                         | Lawrenceville, Funderburk           | 404-963-9495 |
| IL                         | Arlington Hgts., Rozner Sls.        | 312-577-0067 |
| IN                         | Carmel, Berndt Assoc.               | 317-844-0114 |
| MA                         | Sharon, Cummings Assoc.             | 617-784-5600 |
| MI                         | Livonia, Amtech                     | 313-474-8300 |
| MN                         | Burnsville, Xerox Tech              | 612-894-5007 |
| MO                         | St. Louis, Reptronics               | 314-997-4707 |
| NY                         | Bohemia, Optimum Metro Sls.         | 516-244-5744 |
| NY                         | Victor, Net Sls.                    | 716-924-1844 |
| NC                         | Raleigh, Funderburk                 | 919-846-2373 |
| OH                         | Willoughby Hills, Versatron         | 216-944-0082 |
| OR                         | Portland, Index Inc.                | 503-289-9627 |
| PA                         | Montgomeryville, Eastern Sci. Mktg. | 215-368-5072 |
| TX                         | Dallas, Kruvand Assoc.              | 214-437-3355 |
| WI                         | Mequon, Stumm Sls.                  | 414-241-8414 |
| Can                        | Toronto, Norgay Entrps.             | 416-234-8966 |

| Local Distributors |                                 |              |
|--------------------|---------------------------------|--------------|
| AL                 | Huntsville, Comp. Dists.        | 205-851-7800 |
| AZ                 | Costa Mesa, Orange Cnty. Comps. | 714-979-3597 |
| CA                 | San Jose, Compass               | 408-432-7515 |
| CO                 | Englewood, Comp. Dists.         | 303-770-6214 |
| CT                 | Greenwich, Wise Comps.          | 203-531-4880 |
| FL                 | Melbourne, Comp. Dists.         | 407-724-9910 |
| GA                 | Norcross, Comp. Dists.          | 404-441-3320 |
| IL                 | Chicago, E.M.D.                 | 708-577-0067 |
| IN                 | Indianapolis, Gateway Megatech  | 317-844-3906 |
| KY                 | Louisville, Peerless Elctns.    | 502-637-7672 |
| MA                 | Billerica, Mayer Elctns.        | 617-229-2255 |
| MI                 | Grand Rapids, SF Elctns. Supp.  | 616-459-0216 |
| MN                 | Minneapolis, Berquist Inc.      | 612-835-2322 |
| MO                 | St. Louis, Rio-Tronics          | 314-576-9816 |
| NY                 | Albany, Ed Taylor Co.           | 518-438-7811 |
| NY                 | Buffalo, Summit Distr.          | 716-887-2815 |
| NY                 | Elmsford, Multimetrix           | 914-347-3666 |
| NY                 | Mt. Vernon, Janesway            | 914-699-6710 |
| NY                 | Rochester, Masline Elctns.      | 716-546-5373 |
| NC                 | Raleigh, Century Elctns.        | 919-782-2116 |
| NC                 | Raleigh, Comp. Distr.           | 919-787-7311 |
| OH                 | Willoughby, Gateway Megatech    | 216-953-0333 |
| OR                 | Portland, Radar Elec.           | 503-232-3404 |
| PA                 | Pittsburgh, Advacom             | 814-476-7774 |
| VA                 | Roanoke, Peoples Elctns.        | 703-342-8933 |
| WI                 | Racine, Badger Elctns.          | 414-637-1256 |

**ELECTRONIC DISPLAYS, INC., 780 Creel Dr., Wood**  
 Dale, IL 60191, Tel: 708-860-5838, FAX: 708-860-0502;  
 Sls. Mgr.: Bob Holmberg **B-1043**

**ELECTRONIC ENCLOSURES, Div. Wyle**  
 Laboratories, 225 South Aviation Blvd., El Segundo, CA  
 90245, Tel: 310-643-8181, FAX: 310-643-8565; FSC No.:  
 09097; Empl: 230; Sls. Mgr.: Robert Sproul

**ELECTRONIC ENGRG. CO. OF CAL., See EECO**

**EEM/ELECTRONIC ENGINEERS MASTER, 645**  
 Stewart Ave., Garden City, NY 11530, Tel: 516-227-1300,  
 FAX: 516-227-1901



**FAX: 203-755-0659**

**ELECTRONIC FILM CAPACITORS, INC., 41**  
 Interstate Lane, Waterbury, CT 06705, Tel: 203-755-5629;  
 Empl: 65 **A-1075**

| Local Sales Offices & Reps |                                        |              |
|----------------------------|----------------------------------------|--------------|
| CA                         | San Carlos, Francisco & Assocs.        | 415-591-8009 |
| CA                         | Torrance, Orion Eclipse                | 213-326-0999 |
| FL                         | Melbourne, Phoenix Comps.              | 407-723-4414 |
| FL                         | Palm Harbor, Phoenix Comps.            | 813-786-1391 |
| IL                         | Schaumburg, ABC Elctrn. Sls.           | 708-924-9974 |
| MD                         | Columbia, PSA, South                   | 301-953-4884 |
| MA                         | Hudson, Compak, Inc.                   | 508-568-0331 |
| MI                         | Millford, Elctrn. Comp. Sls.           | 313-360-3790 |
| NJ                         | E. Brunswick, Winch Sls. Assocs.       | 908-613-1515 |
| NY                         | Plainview, Winch Sls. Assocs.          | 516-681-3163 |
| NC                         | Raleigh, Pinnacle Mktg.                | 919-848-0404 |
| OH                         | Columbus, Elctrn. Comps. Inc.          | 614-231-2318 |
| OH                         | Miamisburg, Elctrn. Comps. Inc.        | 513-866-3340 |
| OH                         | Rocky River, Elctrn. Comps. Inc.       | 216-331-6330 |
| OH                         | Westlake, Elctrn. Comps. Inc.          | 216-835-4856 |
| PA                         | Exton, The Wright Rep Co.              | 215-594-9654 |
| WA                         | Bellevue, Advanced Power Comps.        | 206-747-9127 |
| WA                         | Seattle, Advanced Power Comps.         | 206-527-7945 |
| WA                         | Spokane, Advanced Power Comps.         | 509-928-7959 |
| WA                         | Vancouver, Advanced Power Comps.       | 206-896-4239 |
| Can                        | Vancouver, B.C., Advanced Power Comps. | 604-436-0552 |

| Local Distributors |                                      |              |
|--------------------|--------------------------------------|--------------|
| CA                 | Chatsworth, Passive Comps. Inc.      | 818-700-8838 |
| CA                 | Garden Grove, Capacitor Supply       | 714-638-0510 |
| CA                 | Irvine, IEC                          | 714-837-9960 |
| CA                 | Irvine, Kelex Elctns.                | 714-863-1230 |
| CA                 | Milpitas, California Capacitor, Inc. | 408-262-6000 |
| CA                 | San Jose, Stotts Friedman            | 800-869-5558 |
| CA                 | Sunnyvale, Capasco Sls. Inc.         | 408-734-3020 |
| FL                 | Boca Raton, NRC Elctns.              | 407-241-8600 |
| FL                 | Melbourne, Pridmore                  | 407-727-2491 |
| GA                 | Norcross, NRC Elctns.-Dixie          | 404-729-0411 |
| IN                 | Indianapolis, Mar Elctns. Inc.       | 317-633-6699 |
| MA                 | North Adams, Elctrn. Supp.           | 413-664-1086 |
| MI                 | Grand Rapids, Calder Elctns.         | 616-698-7400 |
| MN                 | North Plymouth, Leeds Electro Comps. | 612-557-1277 |

|    |                              |              |
|----|------------------------------|--------------|
| NH | Hampstead, Astrum Elctns.    | 603-329-5656 |
| NJ | Ft. Lee, ATI Inc.            | 201-592-8810 |
| NJ | Rockaway, Tonar Inds.        | 201-586-9000 |
| NY | Bohemia, RBD Elctns.         | 516-589-7717 |
| OH | Dayton, Stotts Friedman      | 513-298-5555 |
| PA | Harrisburg, Ad Tech Elctns.  | 717-561-9905 |
| PA | Norristown, Century Elctns.  | 215-631-5400 |
| VT | Charlotte, Kellner Elctns    | 802-425-3250 |
| WI | Salem, Badger Capacitor Sls. | 414-281-1330 |



**FAX: 516-752-1971**

**ELECTRONIC HARDWARE CORP., Formerly Jan**  
**Hardware Mfg. Co., 320 Broad Hollow Rd.,**  
 Farmingdale, NY 11735, Tel: 516-752-1950; FSC No.:  
 23480; Empl: 75; Sls. Mgr.: John Powers **C-1523-1529**

**ELECTRONIC INDUSTRIES ASSOC., 2001**  
 Pennsylvania Ave. NW, Washington, DC 20006, Tel: 202-  
 457-4900, FAX: 202-457-4985

**ELECTRONIC INNOVATIONS CORP. (E.I.C.), 3333 S.**  
 Wadsworth Blvd. C101, Lakewood, CO 80227, Tel: 303-  
 987-2441, FAX: 303-988-5907; Empl: 4



**FAX: 908-922-9334**

**ELECTRONIC MEASUREMENTS, 405 Essex Rd.,**  
 Neptune, NJ 07753, Tel: 908-922-9300; FSC No.: 89022;  
 Empl: 250; Sls. Mgr.: Charles Lehmann **D-1674-1683, 2104-2105**

| Local Sales Offices & Reps |                                  |              |
|----------------------------|----------------------------------|--------------|
| AL                         | Currie, Peak & Frazier           | 205-536-1506 |
| AZ                         | Tempe, Tremblay Assoc.           | 602-431-9417 |
| CA                         | Huntington Beach, Tri Tek        | 714-840-3501 |
| CA                         | San Diego, Tri Tek               | 619-573-0157 |
| CA                         | San Jose, Tri Tek/SD             | 408-554-0455 |
| CO                         | Golden, Tremblay Assoc.          | 303-279-3019 |
| FL                         | Currie, Peak & Frazier           | 407-855-0843 |
| IL                         | Elmhurst, Sector Engrg.          | 708-530-7850 |
| IN                         | Indianapolis, Sector Engrg.      | 317-253-9221 |
| MD                         | Lanover, Seltronics              | 301-341-2700 |
| MA                         | Winchester, FJS Assoc.           | 617-729-3135 |
| MN                         | Edina, Dytec Instrs.             | 612-831-7169 |
| NJ                         | Laurel Springs, Williams Assocs. | 609-346-2876 |
| NM                         | Albuquerque, Tremblay Assoc.     | 505-266-8616 |
| NY                         | Whitney Point, Tae Rep           | 607-692-3705 |
| OH                         | Dayton, WKM Assoc.               | 513-434-7500 |
| PA                         | Pittsburgh, WKM Assoc.           | 412-892-2953 |
| TX                         | Houston, Kemp Instrs.            | 713-466-1485 |
| WA                         | Redmond, Sci. Dvcs.              | 206-885-0004 |
| WI                         | Milwaukee, Sector Engrg.         | 414-352-8280 |

**ELECTRONIC MODULES, INC., 10410 Vista Park Rd.,**  
 Dallas, TX 75238-1687, Tel: 214-340-6789; Empl: 40-50;  
 Sls. Mgr.: Leo Rios; Dist. Mgr.: Paul Stolar

**ELECTRONIC NAVIGATION INDUSTRIES, See ENI,**  
 Div. of Astec America, Inc.



**FAX: 319-377-3674**

**ELECTRONIC PACKAGING SYSTEM, 201 35th St.,**  
 Marion, IA 52302, Tel: 319-377-3423; FSC No.: OH1K2;  
 Empl: 5; Sls. Mgr.: G.R. Grishaber **C-1023**

**ELECTRONIC PRECISION COMPONENTS, 519**  
 South 5th Ave., Mt. Vernon, NY 10550-4430, Tel: 914-664-  
 2333, FAX: 914-664-4729; FSC No.: 59131; Empl: 8; Sls.  
 Mgr.: Don Edwards **A-1633; D-1254**



**FAX: 617-661-2989**

**ELECTRONIC PRECISION TECHNOLOGY INC.,**  
 126 Jackson St., Cambridge, MA 02140, Tel: 617-661-  
 2454; Empl: 4; Sls. Mgr.: Werner Christ **C-1315-1320**

| Local Sales Offices & Reps |                                     |                   |
|----------------------------|-------------------------------------|-------------------|
| AL                         | Huntsville, Hughes Assocs.          | 205-533-9108      |
| AZ                         | Tempe, Phase 4, Inc.                | FAX: 205-533-4667 |
|                            |                                     | 602-966-2018      |
|                            |                                     | FAX: 602-968-7565 |
| CA                         | Campbell, PCA Mktg. & Sls. Engrg.   | 408-559-2866      |
|                            |                                     | FAX: 408-559-8277 |
| CA                         | Dana Point, P C A                   | 714-493-9822      |
|                            |                                     | FAX: 714-240-1894 |
| CO                         | Boulder, Comp. Prod. Sls. Co., Inc. | 303-530-2800      |
|                            |                                     | FAX: 303-530-9568 |
| FL                         | Hialeah, Hughes Assocs.             | 305-362-8167      |
|                            |                                     | FAX: 305-823-9873 |
| FL                         | Melbourne, Hughes Assocs.           | 407-253-3031      |
|                            |                                     | FAX: 407-253-3031 |
| FL                         | Palm Harbor, Hughes Assocs.         | 813-785-6696      |
|                            |                                     | FAX: 813-533-9108 |
| GA                         | Marietta, Hughes Assocs.            | 404-578-0664      |
|                            |                                     | FAX: 404-578-0820 |
| IL                         | Crystal Lake, Komac Entrps., Inc.   | 815-459-7456      |
|                            |                                     | FAX: 815-459-8612 |



|    |                                                  |                                  |
|----|--------------------------------------------------|----------------------------------|
| IN | Fishers, Carter, McCormic & Peirce Inc.          | 317-842-9277,FAX:317-577-2741    |
| MD | Randalstown, Chesepeak Indl. Mktg.               | 301-653-0476,FAX:301-653-4675    |
| MA | Concord, Noyes Assoc.                            | 508-369-0425<br>FAX:508-371-2931 |
| MI | Farmington Hills, Carter, McCormic & Pierce Inc. | 313-477-7700,FAX:313-477-4149    |
| MS | Corinth, Hughes Assocs.                          | 601-287-2915<br>FAX:205-533-9108 |
| MO | St. Louis, Acorn Elctms.                         | 314-421-1751<br>FAX:314-421-1752 |
| NY | Peconic, HLJ Comp-Tech.                          | 516-734-7760<br>FAX:516-734-7784 |
| NC | Gary, Hughes Assocs.                             | 919-487-7029<br>FAX:919-460-8607 |
| OH | Englewood, Carter, McCormic & Peirce Inc.        | 513-836-0951,FAX:513-836-2358    |
| OH | Parma, Carter, McCormic & Peirce Inc.            | 216-398-0400,FAX:216-398-0766    |
| PA | Pittsburgh, Carter, McCormic & Peirce Inc.       | 412-826-3800,FAX:412-826-3800    |
| PA | Southampton, Campbell Assocs.                    | 215-322-6630<br>FAX:215-322-2627 |
| TX | Plano, Connector Specs.                          | 214-517-1207<br>FAX:214-517-3660 |
| WA | Edmonds, Advanced Comp. Des. Corp.               | 206-745-5445,FAX:206-745-5445    |

## Local Distributors

|     |                                 |                                  |
|-----|---------------------------------|----------------------------------|
| CA  | Burbank, Atwater Elctms., Co.   | 215-631-5404<br>FAX:215-631-5406 |
| CA  | Costa Mesa, Eric Elctms.        | 714-751-1185<br>FAX:619-236-9910 |
| CA  | San Diego, Cableconn            | 619-571-7111<br>FAX:619-571-0309 |
| CA  | San Jose, Eric Elctms.          | 408-432-1111<br>FAX:408-433-0570 |
| CA  | Santa Ana, BDS Elctms., Inc.    | 714-662-1050<br>FAX:714-662-3929 |
| CA  | Santa Anna, Elcom Cabletek      | 714-432-6630<br>FAX:714-556-0468 |
| CA  | Sunnyvale, PSC                  | 800-654-1518,FAX:408-737-0502    |
| CO  | Denver, QPS Elctms.             | 303-373-2766<br>FAX:303-373-4029 |
| IL  | Crystal Lake, Sub-Sem, Inc.     | 815-459-4139                     |
| IL  | Schaumburg, QPS Elctms.         | 708-884-6620<br>FAX:708-884-7573 |
| MD  | Beltsville, PSC/Petricks Sls.   | 800-333-5292<br>FAX:301-937-5299 |
| MD  | Gaithersburg, Axis Elctms.      | 800-368-2815<br>FAX:301-840-9299 |
| MA  | Ashland, Quality Components     | 508-881-6504<br>FAX:508-881-1704 |
| NJ  | Burlington, Secom Elctms.       | 609-386-9400<br>FAX:609-386-9333 |
| PA  | Clifton Hgts., Tri-Corn         | 215-259-7400<br>FAX:215-259-4785 |
| TX  | Arlington, Bell Comp. Sls. Inc. | 817-461-5303                     |
| Can | Mississauga, Ont., R. Theta     | 416-890-0221<br>FAX:416-890-1628 |

**ELECTRONIC PRODUCTS MAGAZINE**, 645 Stewart Avenue, Garden City, NY 11530, Tel: 516-227-1300, FAX: 516-227-1444

**ELECTRONIC RESEARCH CO.**, 7618 Wedd St, Overland Park, KS 66204, Tel: 913-631-6700, FAX: 913-631-7849; FSC No.: 13571; Empl: 60; Sls. Mgr.: Charles Ditzler

**THE ELECTRONICS GROUP, INC.**, 2828 Interstate St, Charlotte, NC 28208, Tel: 704-391-9500, FAX: 704-597-9500 Ext. 20; Empl: 30; Sls. Mgr.: Doug McKenzie



**FAX: 619-452-9464**

**ELECTRONIC SOLUTIONS, Zero Corporation**, 6790 Flanders Dr., San Diego, CA 92121, Tel: 800-854-7086, TELEX: 910-335-1169; FSC No.: 61081; Empl: 150  
C-1116-1117, 1128-1133

## Local Sales Offices &amp; Reps

|    |                      |              |
|----|----------------------|--------------|
| AL | Huntsville, EMA      | 205-830-4030 |
| AZ | Tempe, Holder Hauer  | 602-431-1212 |
| CA | San Diego, Amasco    | 619-292-7666 |
| CA | Santa Clara, Amasco  | 408-987-7760 |
| CA | Simi Valley, Amasco  | 805-581-2031 |
| CA | Torrance, Amasco     | 310-781-9494 |
| CO | Denver, Holder Hauer | 303-427-3434 |
| CT | Bethany, Trilogic    | 203-393-1040 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| FL | Altamonte Springs, EMA              | 407-339-2333 |
| FL | Boca Raton, EMA                     | 407-394-6709 |
| GA | Roswell, EMA                        | 404-992-7240 |
| IL | Hoffman Estates, Micro-Tex, Inc.    | 708-765-3000 |
| KS | Lenexa, Midtec Assocs.              | 913-541-0505 |
| MD | Annapolis Junction, Stemler Assocs. | 301-490-1078 |
| MD | Rockville, Spectro Assocs.          | 301-294-9770 |
| MA | Wilmington, Trilogic                | 508-658-3800 |
| MI | Ann Arbor, The Sys. Grp.            | 313-930-1800 |
| MI | Livonia, The Sys. Grp.              | 313-478-6700 |
| MO | St. Louis, Midtec Assocs.           | 314-275-8666 |
| NH | Nashua, Trilogic                    | 603-595-9859 |
| NJ | Clementon, Systech Assocs., Inc.    | 609-784-8300 |
| NJ | Florham Pk., Gebhardt Mktg.         | 201-377-3696 |
| NM | Albuquerque, Holder Hauer           | 505-888-9614 |
| NM | Albuquerque, Nelco Electronix       | 505-293-1399 |
| NY | Clarence Center, Tech-Mark, Inc.    | 716-741-9138 |
| NY | Mendon, Tech-Mark, Inc.             | 716-624-3840 |
| NY | Rochester, Gebhardt Mktg.           | 716-256-6240 |
| NY | Utica, Tech-Mark, Inc.              | 315-733-0575 |
| NC | Charlotte, EMA                      | 704-553-0110 |
| NC | Raleigh, EMA                        | 919-846-9317 |
| OH | Cincinnati, The Sys. Grp.           | 513-742-2700 |
| OK | Tulsa, Acudata, Inc.                | 918-743-1875 |
| OR | Portland, Thorson Co. NW            | 503-293-9001 |
| PA | Aston, Systech Assocs., Inc.        | 215-459-2223 |
| PA | Bala Cynwyd, Systech Assocs., Inc.  | 215-328-0267 |
| TX | Austin, Acudata, Inc.               | 512-478-1018 |
| TX | Houston, Acudata, Inc.              | 713-580-2451 |
| TX | Plano, Acudata, Inc.                | 214-424-3567 |
| UT | Salt Lake City, Holder Hauer        | 801-487-7077 |
| WA | Bellevue, Thorson Co. N.W.          | 206-455-9180 |
| WA | Lynnwood, Blair Hirsch Co., Inc.    | 206-774-8151 |
| WI | Waukesha, Micro-Tex                 | 414-542-5352 |

## Local Distributors

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AL | Huntsville, Hall-Mark Elctms.           | 205-837-8700 |
| AL | Huntsville, RS Elctms.                  | 205-721-9999 |
| AZ | Phoenix, Force Elctms.                  | 602-437-1060 |
| AR | Phoenix, Hall-Mark Elctms.              | 602-437-1200 |
| CA | Chatsworth, Hall-Mark Elctms.           | 818-773-4500 |
| CA | El Segundo, Force Elctms.               | 213-772-1324 |
| CA | Inglewood, Newark Elctms.               | 310-672-8548 |
| CA | Irvine, Hall-Mark Elctms.               | 714-727-6000 |
| CA | Rocklin, Hall-Mark Elctms.              | 916-624-9781 |
| CA | San Diego, Force Elctms.                | 619-569-9661 |
| CA | San Diego, Hall-Mark Elctms.            | 619-268-1201 |
| CA | San Jose, Hall-Mark Elctms.             | 408-432-4000 |
| CA | San Jose, Rose Elctms.                  | 408-263-9700 |
| CA | Santa Clara, Force Elctms.              | 408-748-1324 |
| CO | Denver, Newark Elctms.                  | 303-757-8531 |
| CO | Englewood, Hall-Mark Elctms.            | 303-790-1662 |
| CO | Englewood, Harrison Equip. Co., Inc.    | 303-694-6320 |
| CT | Cheshire, Hall-Mark Elctms.             | 203-271-2844 |
| CT | Danbury, Heiland Elctms., Inc.          | 800-243-1043 |
| CT | Danbury, Pilgram Elctms.                | 203-792-7274 |
| CT | Wallingford, Greene-Shaw Co., Inc.      | 203-265-3333 |
| FL | Casselberry, Hall-Mark Elctms.          | 407-830-5855 |
| FL | Largo, Hall-Mark Elctms.                | 813-541-7440 |
| FL | Pompano Bch., Hall-Mark Elctms.         | 305-971-9280 |
| GA | Duluth, Hall-Mark Elctms.               | 404-623-4400 |
| GA | Norcross, RS Elctms.                    | 404-242-0520 |
| IL | Chicago, Newark Elctms.                 | 312-784-5100 |
| IL | Des Plaines, Advent Elctms.             | 708-297-6200 |
| IL | Wood Dale, Hall-Mark Elctms.            | 708-860-3800 |
| IN | Indianapolis, Advent Elctms.            | 317-872-4910 |
| IN | Indianapolis, Chelsea Elctm. Dist. Grp. |              |
| IN | Indianapolis, Hall-Mark Elctms.         | 317-253-9065 |
| IN | Indianapolis, RS Elctms.                | 317-872-8875 |
| IN | Indianapolis, RS Elctms.                | 317-253-9065 |
| IA | Cedar Rapids, Advent Elctms.            | 319-363-0221 |
| KS | Lenexa, Hall-Mark Elctms.               | 913-888-4747 |
| KS | Overland Pk., Olive Elctms., Inc.       | 913-362-1923 |
| MD | Columbia, Hall-Mark Elctms.             | 301-988-9800 |
| MD | Jessup, Treko Elctms., Inc.             | 301-470-3300 |
| MA | Billerica, Hall-Mark Elctms.            | 617-935-9777 |
| MA | Newton, Greene-Shaw Co., Inc.           | 800-678-6876 |
| MA | Wilmington, Heiland Elctms., Inc.       | 508-657-4870 |
| MI | Flint, RS Elctms.                       | 313-742-5000 |
| MI | Farmington Hills, Advent Elctms.        | 313-477-1650 |
| MI | Grand Rapids, RS Elctms.                | 616-241-3483 |
| MI | Livonia, Hall-Mark Elctms.              | 313-462-1205 |
| MI | Livonia, RS Elctms.                     | 313-525-1155 |
| MI | Oak Park, Newark Elctms.                | 313-967-1570 |
| MN | Eden Prairie, Hall-Mark Elctms.         | 612-881-2600 |
| MN | Minneapolis, Newark Elctms.             | 612-331-6350 |
| MO | Earth City, Hall-Mark Elctms.           | 314-291-5350 |
| MO | Maryland Hgts., Olive Elctms., Inc.     | 314-997-7709 |
| NJ | Cranford, Garden State Ind. El., Inc.   | 908-272-6400 |
| NJ | Moorestown, Hall-Mark Elctms.           | 809-235-1900 |
| NJ | Parsippany, Hall-Mark Elctms.           | 201-515-3000 |
| NM | Albuquerque, Harrison Int. Elctms.      | 505-291-9951 |
| NY | Bohemia, Car-Lac Elctms.                | 516-567-4200 |
| NY | Buffalo, Summit Dists., Inc.            | 716-887-2800 |
| NY | Fairport, Hall-Mark Elctms.             | 716-425-3300 |
| NY | Hauppauge, Fairmont Elctms.             | 516-231-3313 |
| NY | Lynbrook, Peerless Radio Corp.          | 516-593-2121 |
| NY | Rochester, Summit Dists., Inc.          | 716-334-8110 |
| NY | Ronkonoma, Hall-Mark Elctms.            | 516-737-0600 |

|     |                                        |              |
|-----|----------------------------------------|--------------|
| NC  | Raleigh, Greene-Shaw Co., Inc.         | 508-791-7861 |
| NC  | Raleigh, Hall-Mark Elctms.             | 919-872-0712 |
| OH  | Maumee, RS Elctms.                     | 419-893-0721 |
| OH  | Solon, Hall-Mark Elctms.               | 216-349-4632 |
| OH  | Valley View, Newark Elctms.            | 216-447-8866 |
| OH  | Worthington, Hall-Mark Elctms.         | 617-888-3313 |
| OK  | Tulsa, Hall-Mark Elctms.               | 918-254-6110 |
| PA  | Clifton Hgts., Tri-Corn, Inc.          | 215-259-7400 |
| SC  | Gaffney, Newark Elctms.                | 803-487-1900 |
| TX  | Austin, Force Elctms.                  | 512-258-8848 |
| TX  | Austin, Hall-Mark Elctms.              | 512-258-8848 |
| TX  | Austin, Harrison Equip. Co., Inc.      | 512-258-1320 |
| TX  | Dallas, Hall-Mark Elctms.              | 214-343-5000 |
| TX  | Dallas, Hall-Mark Elctms.              | 214-553-4300 |
| TX  | Dallas, Harrison Equip. Co., Inc.      | 214-239-2750 |
| TX  | El Paso, Harrison Int. Elctms.         | 915-598-3406 |
| TX  | Farmers Branch, Force Elctms.          | 214-247-9955 |
| TX  | Garland, Newark Elctms.                | 214-487-8144 |
| TX  | Houston, Force Elctms.                 | 512-476-2104 |
| TX  | San Antonio, Harrison Equip. Co., Inc. |              |
| TX  | Stafford, Harrison Equip. Co., Inc.    | 512-490-0615 |
| WA  | Seattle, Hall-Mark Elctms.             | 713-879-2789 |
| WI  | Milwaukee, Marsh Elctms., Inc.         | 206-547-0415 |
| WI  | New Berlin, Hall-Mark Elctms.          | 414-475-6000 |
| WI  | West Allis, Advent Elctms.             | 414-797-7844 |
| Can | Burnaby, BC, Semad                     | 414-475-6860 |
| Can | Calgary, Alb., Semad                   | 604-420-9889 |
| Can | Calgary, Ont., Semad                   | 403-252-5661 |
| Can | Markham, Ont., Semad                   | 416-475-8500 |
| Can | Ottawa, Ont., Semad                    | 613-727-8325 |
| Can | Pt. Claire, Que., Semad                | 514-694-0864 |

**ELECTRONIC SPACE SYSTEMS CORP.**, Old Powder Mill Rd., Concord, MA 01742, Tel: 508-369-7200, TELEX: 923480 ESSCO WCPD, FAX: 508-369-7641; FSC No.: 15175; Empl: 140; Sls. Mgr.: Stephen J. Contons

**ELECTRONIC SPECIALISTS**, 171 South Main St., Natick, MA 01760, Tel: 508-655-1532, 800-225-4876, TELEX: 955-329 ATTN: ESP; Empl: 42; Sls. Mgr.: Frank Brown



**FAX: 206-573-4635**

**ELECTRONIC SPECIALTY CORP.**, 14511 N.E. 13th Ave., Vancouver, WA 98685, Tel: 206-574-5000; FSC No.: 98927; Empl: 100; Sls. Mgr.: Leon Fuller  
B-1484-1485

## Local Sales Offices &amp; Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| MN | Hopkins, The Kits Co.             | 612-933-1888 |
| MN | Stillwater, The Kits Co.          | 612-439-8088 |
| OR | Beaverton, Earl & Brown Co., Inc. | 503-643-5500 |
| WA | Redmond, Earl & Brown Co., Inc.   | 206-885-5064 |

**EP/ELECTRONICS PRODUCTS**, 645 Stewart Ave., Garden City, NY 11530, Tel: 516-227-1300, TELEX: 516-227-1901

**ELECTRONICS REPRESENTATIVE ASSOC.**, 20 E. Huron St., Chicago, IL 60611, Tel: 312-649-1333, FAX: 312-649-9509

**ELECTRONIC SYSTEMS DIVISION**, Boeing Defense & Space Grp., P.O. Box 3999, M/S 3E-WF, Seattle, WA 98124-2499, Tel: 206-657-7474, TELEX: 329430, FAX: 206-657-1439; FSC No.: 81205; Empl: 4,000; Sls. Mgr.: A.M. Sullivan

**ELECTRONICS SYSTEMS, INC.**, P.O. Box 5013, Sioux Falls, SD 57117, Tel: 605-338-6868, FAX: 605-338-5061; Empl: 150; Sls. Mgr.: Leo Reynolds

**ELECTRONICS TEST CENTRE**, Alberta Research Council, 250 Karl Clark Road, Edmonton, AB, Canada T6N 1E4, Tel: 403-450-5370, TELEX: 0372147, FAX: 403-462-7285; Empl: 16; Sls. Mgr.: Chris Tallis

**ELECTRONIC TELE-COMMUNICATIONS, INC.**, 3605 Clearview Place, Atlanta, GA 30340-2178, Tel: 404-457-5600, FAX: 404-455-3822; Empl: 200; Sls. Mgr.: Doug Altman; Dist. Mgr.: Doug Altman

**ELECTRONIC TRANSFORMER CORP.**, P.O. Box 487, Paterson, NJ 07544-0487, Tel: 201-942-2222, FAX: 201-942-9014; FSC No.: 72149; Empl: 130; Sls. Mgr.: Dan Rovine

**ELECTRON PRODUCTS**, 5367 Third St., Irwindale, CA 91706, Tel: 818-960-2299, ESYLNK: 910-333-9810, FAX: 818-814-4434; FSC No.: 99515; Empl: 65; Sls. Mgr.: Cliff Sailor; Dist. Mgr.: Ann Meunier




**FAX: 909-695-7246**

**ELECTRO-NUMERICS, INC.**, 42213 Sarah Way, Temecula, CA 92590, Tel: 909-699-2437; FSC No: 51666; Empl: 16; *Sls. Mgr:* Ro Shultz **D-1345**

#### Local Distributors

IL Chicago, Dalec Dists. .... 312-283-0300  
CA Costa Mesa, FLW, Inc. .... 714-751-7512  
GA Atlanta, FLW S.E., Inc. .... 404-424-1731  
MI Detroit, RAM Meter, Inc. .... 313-398-6767  
NY Syracuse, W.E.I., Inc. .... 315-437-4281  
UT Murray, Instr. Specialists, Inc. .... 801-261-0142  
VA Roanoke, Electr. Equip. Sls. Co. .... 703-985-0446

**ELECTRO OPTICAL INDUSTRIES INC.**, 859 Ward Drive, Santa Barbara, CA 93111, Tel: 805-964-6701 (ext. 280), TELEX: 65-8427 EOIND SNC, FAX: 805-967-8590; Empl: 50

**ELECTRO PHYSICS CO., INC.**, 3009 Central Ave., Waukegan, IL 60085, Tel: 708-249-5801; Empl: 6; *Sls. Mgr:* Abe Siegelman

**ELECTROPHYSICS CORP.**, 373 Route 46 West Bldg. E, Fairfield, NJ 07004, Tel: 201-882-0211; Empl: 25; *Sls. Mgr:* Frank J. Vallesse

**ELECTRO-PREP, INC.**, 14 Kendrick Rd, Unit 3, Wareham Ind. Park, Wareham, MA 02571, Tel: 508-291-2880, FAX: 508-291-2882; Empl: 10; *Sls. Mgr:* R. M. Sullivan

**ELECTRORACK PRODUCTS CO.**, 1443 S. Sunkist St., Anaheim, CA 92806, Tel: 714-776-5420, FAX: 714-776-9683; FSC No: 26073; Empl: 60; *Sls. Mgr:* Chris Allen; *Dist. Mgr:* Mike Deming, V.P. Mktg. **C-1097**

#### Local Sales Offices & Reps

AL Huntsville, DHR Mktg., Inc. .... 205-536-0242  
AZ Phoenix, Mercier & Assoc. .... 602-404-1318  
CA Los Gatos, Northwest Elctms. .... 408-395-9019  
CO Littleton, Mercier & Assoc. .... 303-770-0666  
FL Altamonte Springs, DHR Mktg., Inc. .... 407-331-1169  
GA Duluth, DHR Mktg., Inc. .... 404-564-0529  
NC Statesville, DHR Mktg., Inc. .... 704-872-0242  
SC Greenville, DHR Mktg., Inc. .... 803-235-3594  
TN Knoxville, DHR Mktg., Inc. .... 615-690-0870  
UT Sandy, Mercier & Assoc. .... 801-942-2665  
WA Seattle, Horton Assoc. .... 206-365-2795

**ELECTRO RENT CORP.**, 6060 Sepulveda Blvd., Van Nuys, CA 91411, Tel: 800-688-1111, FAX: 818-786-4224; Empl: 460; *Sls. Mgr:* Gary Phillips

**ELECTRO-SCIENCE LABS., INC.**, 416 E. Church Rd., Po Box 1533, King of Prussia, PA 19406-1533, Tel: 215-272-8000, TELEX: 83-4788, FAX: 215-272-6759; Empl: 120

**ELECTRO SCIENTIFIC INDUSTRIES, INC. (ESI)**, 13900 N.W. Science Pk. Dr., Portland, OR 97229, Tel: 503-641-4141, TELEX: 474-2064; FSC No: 11837; Empl: 500; *Sls. Mgr:* Dick Donaca, Sys.


**FAX: 215-682-2133**

**ELECTRO SPACE FABRICATORS**, 300 W. High St., P.O. BOX 67, Topton, PA 19562-0067, Tel: 215-682-7181; Empl: 205; *Sls. Mgr:* Robert J. Flynn **C-1026-1029**

#### Local Sales Offices & Reps

CA Anaheim, Alpha Electro Sls. .... 714-665-6580  
CA Los Gatos, Shursales .... 408-399-7487  
CT Bloomfield, Zaslow Sls. Co. .... 203-242-7781  
FL Davie, DTS Mechanical Sls. .... 305-581-2884  
GA Norcross, Benchmark Tech. Sls. .... 404-446-1711  
IL Northbrook, Howard Benjamin Assocs. .... 312-272-2900  
MD Manchester, Imagitron Sls. Co. .... 800-638-3592  
NJ Boonton, Winter Assocs. .... 201-334-3434  
NM Albuquerque, Tremblay Assocs. .... 505-266-8616  
NY Tonawanda, Promark Elctms., Inc. .... 716-877-6300  
OH Galion, James R. Bright .... 419-468-3787  
PA Trevoise, Omega Elctms. Sls. .... 215-244-4000

TX Dallas, DJ Sls. & Assocs. .... 214-783-8876  
WA Issaquah, Elctms. Northwest .... 206-557-0851

#### Local Distributors

CA Irvine, McGillis Inds. .... 714-551-4004  
CA Redwood City, HdB Elctms. .... 415-368-1388  
MD Columbia, DK Elctms. .... 301-995-1950  
NY Baldwin, Accessories for Elctms. .... 516-546-1751

**ELECTROSPACE SYSTEMS, INC.**, P. O. Box 831359, Richardson, TX 75083-1359, Tel: 214-470-2106, TELEX: 163590 ESIUT, TWX: 910-867-4768, FAX: 214-470-2466; FSC No: 33875; Empl: 1047; *Sls. Mgr:* Richard M. McCloskey

**ELECTRO STANDARDS LAB, INC.**, Data Communications Products Div., 36 Western Industrial Dr., Cranston, RI 02921, Tel: 401-943-1164, FAX: 401-946-5790; Empl: 40; *Sls. Mgr:* R. B. Sepe; *Dist. Mgr:* R. B. Sepe

**ELECTROSTATIC CONSULTING ASSOCS.**, 556 Lowell Rd., P.O. Box 552, Groton, MA 01450, Tel: 508-448-5485, FAX: 508-448-5583; Empl: 5; *Sls. Mgr:* Paul Malinaric

**ELECTROSTATICS**, 7718 Clairemont Mesa Blvd., San Diego, CA 92111, Tel: 619-279-1414, FAX: 619-279-1126; FSC No: 34538; Empl: 6

**ELECTRO-SUPPORT SYSTEMS**, 43445 Business Park Dr., Temecula, CA 92590, Tel: 909-676-2751, FAX: 909-694-0097; FSC No: 66760; Empl: 37; *Sls. Mgr:* Don Pretot

**ELECTROSWITCH, Unit of Electro Switch Corp.**, 180 King Ave., Weymouth, MA 02188, Tel: 617-335-5200, FAX: 617-335-4253; FSC No: 82121; Empl: 290; *Sls. Mgr:* W. M. Mello **B-1716**

#### Local Sales Offices & Reps

AZ Phoenix, Howe & Howe Sls. .... 602-264-7971  
CA Irvine, Vale Elctms. .... 714-551-4004  
CA San Ramon, W. Nott & Co. .... 415-820-8102  
CO Boulder, Comp. Prods. Sls. .... 303-530-2800  
FL Apopka, Floritronics .... 407-886-4818  
GA Albany, Holman-Gillespie .... 912-883-5565  
GA Atlanta, Holman-Gillespie .... 404-992-8820  
IL Wheeling, Electroschwitch .... 708-593-2225  
MD Baltimore, Eastern Comps. Sls. .... 301-788-7050  
MD Gaithersburg, Naudain Assocs.-Southern .... 301-258-5040  
MA Weymouth, Electroschwitch .... 617-340-0066  
MI Grand Haven, Hilltronics, Inc. .... 616-847-1010  
MI Royal Oak, Hilltronics .... 313-435-0920  
MN Roseville, Pro Tech Power Sls., Inc. .... 612-483-0409  
MO Chesterfield, Weisler & Assocs. .... 314-537-0010  
MO Kansas City, Weisler & Assocs. .... 816-421-1679  
NH Salem, Sales Engrg. Co. .... 603-893-5521  
NJ Fairfield, Electroschwitch .... 201-227-6559  
NJ Marlton, Naudain Assocs. .... 609-983-5300  
NY Buffalo, Upstate Engrg. .... 716-632-0011  
NY Johnson City, Upstate Engrg. .... 607-729-0827  
NY Rochester, Upstate Engrg. Sls. .... 716-225-2383  
NC Cary, L.G. White Co. .... 919-380-8084  
NC Winston-Salem, L.G. White Co. .... 919-765-1665  
OH Medina, Rockford Controls OH, Inc. .... 216-725-3705  
PA Pittsburgh, R. F. Clark .... 412-242-9500  
PA W. Conshohocken, Eastern Comps. .... 215-825-8610  
SC Greenville, L.G. White Co. .... 803-271-0630  
TX Plano, Brice Co. .... 214-442-9808  
TX Stafford, Brice Co. .... 713-240-1788  
VA Ashland, L.G. White Co. .... 804-752-7055  
WA Kent, C.B. Parsons & Co. .... 206-762-7073  
WI Wauwatosa, Larsen Assocs. .... 414-258-0529

#### Local Distributors

CA Los Angeles, Electric Switches .... 213-660-1310  
FL Ft. Lauderdale, Peerless Radio Corp. of Fla. .... 305-973-4141  
OH Medina, R.C.O. .... 216-725-3705  
TX Stafford, Barclay Whls. .... 713-240-1788  
WA Seattle, C.B. Parsons Co. .... 206-762-3733

**ELECTRO-TEC CORPORATION A KAYDON COMPANY**, 1501 North Main St., Blackburg, VA 24060, Tel: 703-552-2111, FAX: 703-951-3832; Empl: 200; *Sls. Mgr:* John J. Daly

**ELECTRO-TECH SYSTEMS, INC.**, 115 E. Glenside Ave., Glenside, PA 19038, Tel: 215-887-2196, TELEX: 797137, FAX: 215-887-0131; Empl: 14; *Sls. Mgr:* Brian E. Hohman; *Dist. Mgr:* Brian E. Hohman

**ELECTROVERT USA CORP.**, 805 W. North Carrier Pkwy., No. 200, Grand Prairie, TX 75050, Tel: 214-606-1900, FAX: 214-606-1700; Empl: 500; *Sls. Mgr:* Craig Biggs

**ELECTROWEAVE, INC.**, 425 Shrewsbury St., Worcester, MA 01604, Tel: 508-752-8932, FAX: 508-753-2173; FSC No: 54207; Empl: 25; *Sls. Mgr:* Peter Andrews

**ELEKTRISOLA INC.**, 126 High Street, Boscawen N, NH 03303, Tel: 603-796-2114, FAX: 603-796-2119; Empl: 150; *Sls. Mgr:* John W. Mueller

**ELETECH ELECTRONICS, INC.**, 1262 E. Katella Ave., Anaheim, CA 92805, Tel: 714-385-1707, FAX: 714-385-1708; Empl: 5

**ELF ATOCHEM NORTH AMERICA**, Three Pkwy., Philadelphia, PA 19102, Tel: 215-587-7520, FAX: 215-587-7497

**ELFORM, INC.**, P.O. Box 7362, Reno, NV 89510, Tel: 702-829-1905, FAX: 702-829-1693; *Sls. Mgr:* Roger R. Reinke


**FAX: 619-458-0267**

**ELGAR ELECTRONICS CORPORATION**, 02850 Brown Deer Rd., San Diego, CA 92121, Tel: 619-450-0055, 800-733-5427, TELEX: 211063 ELSD UR, FSC No: 25965; Empl: 275 **D-1684-1685, 2257-2259**

#### Local Sales Offices & Reps

AL Huntsville, Southern Mktg. Assocs., Inc. .... 205-534-6020  
AZ Phoenix, Tech. Mktg. Spec. .... 602-678-4940  
CA Carpentaria, Elgar Corp. .... 805-684-4400  
CA Redondo Beach, Ward/Davis Assocs. .... 310-643-6977  
CA Santa Clara, Ward/Davis Assocs. .... 408-245-3700  
CO Englewood, Tech. Mktg. Spec. .... 303-781-8819  
FL Longwood, Southern Mktg. Assocs., Inc. .... 407-682-7317  
FL Satellite Bch., Southern Mktg. Assocs., Inc. .... 407-777-3587  
GA Alpharetta, Southern Mktg. Assocs., Inc. .... 404-664-9797  
IL Arlington Heights, Dytec/Midwest .... 708-255-3200  
IN Indianapolis, Dytec/Midwest .... 317-849-9898  
KS Lenexa, Dytec/South .... 913-888-0215  
KS Wichita, Dytec/South .... 316-262-3189  
MD Columbia, Creative Mktg. Assoc. .... 410-880-4161  
MA Beverly, P. Jenks Assocs. .... 508-921-4600  
MI Troy, WKM Assocs. .... 313-588-2300  
MN Edina, Dytec Instrs. .... 612-831-7169  
MO Maryland Heights, Dytec/South Inc. .... 314-739-0665  
NJ Ridgewood, Elgar East .... 201-652-2898  
NJ Wayne, Advanced Tech. Mktg. .... 201-633-7070  
NM Albuquerque, Tech. Mktg. Specialists .... 505-291-1363  
NY Syracuse, Labtronics .... 315-455-7314  
NC Greensboro, Southern Mktg. Assocs., Inc. .... 919-632-9370  
OH Dayton, WKM Assocs. .... 513-434-7500  
OH Independence, WKM Assocs. .... 216-524-5930  
OR Wilsonville, Syntek .... 503-682-2750  
PA Southampton, Eastern Instrmn. of PA .... 215-355-7700  
PA Wexford, WKM Assocs. .... 412-934-2730  
TX Austin, Testech .... 512-338-9246  
TX Euless, Testech, Inc. .... 817-540-1944  
TX Houston, Testech .... 713-893-9661  
TX Richardson, Testech, Inc. .... 214-644-5010  
TX San Antonio, Jack Howard Assoc. .... 512-828-5741  
WA Bellevue, Syntek .... 206-462-7700  
WA Nine Mile Falls, Syntek .... 509-466-0451  
WI Hartland, Dytec Midwest .... 414-367-4550  
Intl CA San Diego, Elgar Intl. Corp. .... 619-450-0085

**ELGENCO, INC.**, Box 460, Hurricane, UT 84737, Tel: 801-635-4954, FAX: 801-635-2158; FSC No: 15455; *Sls. Mgr:* D. E. Beecher **D-1255**

#### Local Sales Offices & Reps

CA Sherman Oaks, Windsor Dynamics .... 818-990-4173  
CA Sunnyvale, N-S Westronics .... 408-745-1102  
CT Meriden, Polytek Assoc. .... 203-634-4499  
MA Ashland, Polytek Assoc. .... 508-881-4741  
NJ Marmore, SWR Tech., Inc. .... 609-390-0094  
NM Albuquerque, Technology Mktg. Assoc. .... 505-345-8921  
PA Broomall, SWR Tech., Inc. .... 215-353-6639

**ELGIN ELECTRONICS**, 5533 New Perry Hwy., Erie, PA 16509-3570, Tel: 814-864-4921, FAX: 814-864-1260; Empl: 300; *Sls. Mgr:* Paul R. Barlock; *Dist. Mgr:* Stanley R. Carlburg

**ELITE ELECTRONIC ENGINEERING CO.**, 1516 Centre Circle, Downers Grove, IL 60515, Tel: 708-495-9770, FAX: 708-495-9785; FSC No: 099-9999; Empl: 34



**ELITE ELECTRONICS, INC.**, 1408 Summit - Suite #5,  
Plano, TX 75074, Tel: 214-881-0026, 800-553-4376, FAX:  
214-424-7299; Empl: 4

**ELITE SOFTWARE DEVELOPMENT, INC.**, P.O. Drawer  
1194, Bryan, TX 77806, Tel: 409-846-2340, FAX: 409-846-  
4367; Empl: 9; *Sls. Mgr.*: Terri J. King

**ELIWELL, INC.**, 2121 Downer St., Baldwinville, NY 13027,  
Tel: 315-638-9598, FAX: 315-638-9718; *Sls. Mgr.*: William  
Corcoran; *Dist. Mgr.*: Joseph Markert



**FAX: 510-656-3783**

**ELMA ELECTRONIC INC.**, 44350 Grimmer Blvd.,  
Fremont, CA 94538, Tel: 510-656-3400; Empl: 60; *Sls. Mgr.*: Kris Holla  
**B-1148, 1718-1720, 1827;  
C-1031-1033, 1530**

| <i>Local Sales Offices &amp; Reps</i> |                                              |
|---------------------------------------|----------------------------------------------|
| AZ                                    | Scottsdale, I.M. Systems .....               |
| CA                                    | Fremont, Bear Resources .....                |
| CA                                    | Fremont, ELMA Elctm. Inc. ....               |
| CA                                    | La Habra, West Coast Reps .....              |
| CA                                    | Ontario, Elma Elctm. Inc. ....               |
| IL                                    | Schaumburg, Martan, Inc. ....                |
| MI                                    | Ann Arbor, The Systems Grp. ....             |
| MN                                    | Medina, James R. Johnson & Assocs. ....      |
| NH                                    | Nashua, Bell Controls Inc. ....              |
| NY                                    | Port Chester, Radiation Elctms, Inc. ....    |
| OH                                    | Cincinnati, The Systems Grp. ....            |
| OH                                    | Dayton, Doffuss-Root & Co. ....              |
| OH                                    | Lakewood, The Systems Grp. ....              |
| OH                                    | West Lake, Doffuss-Root & Co. ....           |
| OH                                    | Worthington, Doffuss-Root & Co. ....         |
| OR                                    | Beaverton, Cascade Data Mktg. ....           |
| PA                                    | Hatboro, Monument Tech. Assoc. ....          |
| TX                                    | Austin, Strategic Solutions Inc. ....        |
| TX                                    | Houston, Strategic Solutions Inc. ....       |
| TX                                    | Lewisville, Strategic Solutions Inc. ....    |
| TX                                    | Plano, Elma Elctm. Inc. ....                 |
| VA                                    | Newington, Scott Data Corp. ....             |
| WA                                    | Redmond, Cascade Data Mktg. ....             |
| WI                                    | Mequon, Martan, Inc. ....                    |
| CA                                    | Mississauga, Ont., Tracan Elctms. Corp. .... |
| Can                                   | N. Vancouver, Tracan Elctms. Corp. ....      |

**ELMA ENGINEERING**, 1066 E. Meadow Circle, Palo Alto,  
CA 94303, Tel: 415-494-7303, TELEX: 345-560, FAX: 415-  
494-1093; FSC No.: 59810; Empl: 38; *Sls. Mgr.*: T. A. Beno;  
*Dist. Mgr.*: T. A. Beno

**ELMEC, INC.**, Technautic Corp., 300 N. McKemy Ave.,  
Chandler, AZ 85226, Tel: 602-961-7100, FAX: 602-961-  
7173; FSC No.: 50691; Empl: 55; *Sls. Mgr.*: Jim Hunt

**ELMEC®**  
**Delay Lines**

**FAX: 415-341-2370**

**ELMEC TECHNOLOGY OF AMERICA, INC.**, 1875  
South Grant St., Ste. 560, San Mateo, CA 94402, Tel: 415-  
341-1611; *Sls. Mgr.*: Thomas Y. Miracle

| <i>Local Sales Offices &amp; Reps</i> |                                      |
|---------------------------------------|--------------------------------------|
| CA                                    | Seal Beach, TEXEL .....              |
| CA                                    | Sunnyvale, Repron Assocs. ....       |
| CO                                    | Denver, Promo Tech Sls. ....         |
| IL                                    | Northfield, Feller Assocs. Inc. .... |
| MA                                    | Natick, Wayland Engrg. Sls. ....     |
| MN                                    | Minneapolis, HMR Inc. ....           |
| OR                                    | Portland, General Elctms, Inc. ....  |
| WA                                    | Stanwood, General Elctms, Inc. ....  |



**FAX: 401-728-5390**

**ELMWOOD SENSORS**, 500 Narragansett Park Drive,  
Pawtucket, RI 02861, Tel: 401-727-1300, TELEX: 6814066  
ELMWOOD; Empl: 1,000; *Sls. Mgr.*: Cesare Giammarco,  
Dir. of Sls. **B-1872-1873**

*Local Sales Offices & Reps*

|     |                                             |              |
|-----|---------------------------------------------|--------------|
| AL  | Decatur, Tenn. Tech. Sls. ....              | 205-350-5548 |
| AZ  | Phoenix, O'Donnell SW .....                 | 602-944-9542 |
| CA  | San Diego, O'Donnell South .....            | 619-578-1645 |
| CA  | San Jose, O'Donnell South .....             | 408-456-2950 |
| CA  | Torrance, O'Donnell South .....             | 301-781-2255 |
| CO  | Boulder, Front Range Mktg. ....             | 303-443-4780 |
| FL  | Coral Springs, CBC Electronics .....        | 305-755-1111 |
| FL  | Longwood, CBC Elctms. ....                  | 407-831-5380 |
| FL  | Tampa, CBC Elctms. ....                     | 813-969-1901 |
| GA  | Marietta, Tenn. Tech. Sls. ....             | 404-971-1419 |
| IL  | Arlington Heights, Thermek .....            | 708-577-6900 |
| IN  | Fort Wayne, O. H. Bromberg .....            | 219-456-6010 |
| KY  | Alexandria, O. H. Bromberg & Assocs. ....   | 606-635-3036 |
| KY  | Louisville, O. H. Bromberg .....            | 502-456-1498 |
| MD  | Towson, Arbotek .....                       | 410-825-0775 |
| MN  | Mendota, G-II Sls. ....                     | 612-454-3086 |
| MO  | Kansas City, Hill & Company .....           | 816-361-1669 |
| MO  | St. Louis, Hill & Co. ....                  | 314-842-6868 |
| NH  | Barrington, Global Tech. Sls. ....          | 603-664-5780 |
| NJ  | Pittman, Colrud Corp. ....                  | 609-589-5866 |
| NM  | Albuquerque, O'Donnell Assocs. ....         | 505-889-4522 |
| NY  | E. Syracuse, Bastian Sales Agency .....     | 315-437-1482 |
| NY  | Fairport, Bastian Sls. ....                 | 716-223-0237 |
| NY  | Islip, Cogent Technlgs. ....                | 516-277-7101 |
| NY  | Katonah, Cogent Technlg. Assocs. ....       | 914-232-2500 |
| NC  | Garner, Tenn-Tech .....                     | 919-779-3309 |
| OH  | Cleveland, Allied Entprs. ....              | 216-779-0080 |
| OH  | Dayton, O. H. Bromberg .....                | 513-434-8788 |
| OR  | Hillsboro, Temco-Northwest .....            | 503-645-2030 |
| NJ  | Pittman, Colrud Corp. ....                  | 609-589-5866 |
| PA  | Pittsburgh, Allied Entprs. East .....       | 412-788-2992 |
| TX  | Arlington, Ion Assocs. ....                 | 817-695-8000 |
| TX  | Austin, Ion Assocs. ....                    | 512-331-7251 |
| TX  | Houston, Ion Assocs. ....                   | 713-537-7717 |
| WA  | Birch Bay, Temco B.C. ....                  | 206-371-0423 |
| WA  | Bothell, Temco Northwest .....              | 206-481-6150 |
| WA  | Spokane, Temco Northwest .....              | 509-927-9392 |
| WI  | Mequon, Dickson-Zingler Assoc. ....         | 414-241-9140 |
| Can | Mississauga, Ont., Andy Baumen Assocs. .... | 416-828-2600 |

**ELNA AMERICA, INC.**, 5886 Corporate Ave., Cypress, CA  
90630, Tel: 714-761-8600, FAX: 714-761-9188; Empl:  
3500; *Sls. Mgr.*: Barbara Andrews; *Dist. Mgr.*: Barbara  
Andrews

**ELNA FERRITE LABORATORIES, INC.**, PO Box 395,  
234 Tinker St., Woodstock, NY 12498, Tel: 800-553-2870,  
FAX: 914-679-7010; Empl: 14; *Sls. Mgr.*: Deborah  
McIntosh

**ELNETIC ELECTRONICS, INC.: PLANT LOCATIONS**,  
1332 130th St., Gardena, CA 90247, Tel: 310-515-1546;  
FSC No.: 98460; Empl: 10; *Sls. Mgr.*: Ernest H. Carlson, Jr.

**ELNIK SYSTEMS, IPM, Inc.**, 3 Edison Place, Fairfield, NJ  
07004, Tel: 201-882-8033, FAX: 201-882-8037; Empl: 8;  
*Sls. Mgr.*: Claus J. Joens

**ELOGRAPHICS INC.**, 105 Randolph Rd., Oak Ridge, TN  
37830, Tel: 615-482-4100, FAX: 615-482-4943; *Sls. Mgr.*:  
Joe Barresi

**ELPAC COMPONENTS, Elpac Electronics, Inc.**,  
1562 Reynolds, Irvine, CA 92714, Tel: 714-476-6070, FAX:  
714-476-6085; FSC No.: 12406; Empl: 130; *Sls. Mgr.*: Jim  
Degerstrom; *Dist. Mgr.*: Jim Degerstrom

| <i>Local Distributors</i> |                                      |
|---------------------------|--------------------------------------|
| CA                        | Chatsworth, Mil-Comm .....           |
| CA                        | Irvine, Kelex .....                  |
| CA                        | San Diego, Neumann Elctms. ....      |
| CA                        | San Diego, BDS Elctms. ....          |
| CA                        | San Jose, PSC Elctms. ....           |
| FL                        | Melbourne, New Yorker .....          |
| IL                        | Northbrook, Classic Components ..... |
| IA                        | Cedar Rapids, Dee Elctms. ....       |
| MA                        | Andover, Aved Elctms. ....           |
| MN                        | Roseville, Parts 1 .....             |
| NJ                        | S. Hackensack, Waltech .....         |
| NJ                        | Whippany, American Distr. Inc. ....  |
| NY                        | Mamaroneck, New Yorker Elec. ....    |
| NY                        | Elmsford, Ancar .....                |
| OH                        | Dayton, Electro Supply .....         |
| OK                        | Tulsa, Altair Co. ....               |
| TX                        | Houston, Altair Co. ....             |
| TX                        | Richardson, Altair .....             |
| VT                        | Charlotte, Kellner .....             |
| WA                        | Seattle, Kam Elec. ....              |
| WI                        | Milwaukee, Progressive Image .....   |

|    |                             |              |
|----|-----------------------------|--------------|
| WI | New Berlin, Classic .....   | 414-786-5300 |
| WI | Racine, Badger Elctms. .... | 414-637-1256 |

**ELPAC POWER SYSTEMS**, Elpac Electronics, Inc.,  
1562 Reynolds, Irvine, CA 92714, Tel: 714-476-6070, FAX:  
714-476-6075; Empl: 115; *Sls. Mgr.*: H. Myers; *Dist. Mgr.*:  
H. Myers

**ELPAKCO, INC.**, 70 Wilbur St., Lowell, MA 01851, Tel: 508-  
453-3000, FAX: 508-453-9348; Empl: 10; *Dist. Mgr.*:  
Stephen Fallon

**ELPAQ, Elmo Semiconductor**, 7590 N. Glenoaks Blvd.,  
Burbank, CA 91504-1052, Tel: 818-768-7500, FAX: 818-  
767-3195; Empl: 150

**ELPAZ INSTRUMENTS, INC.**, 3000 Reed Blvd.,  
Murrysville, PA 15668, Tel: 412-327-8744, FAX: 412-733-  
7609; FSC No.: OA2J2; Empl: 5; *Sls. Mgr.*: Jim Shipman;  
*Dist. Mgr.*: Jim Shipman

**E-L PRODUCTS COMPANY**, Sub. of Astronics  
Corporation, 77 Olean Rd., E. Aurora, NY 14224, Tel: 716-  
655-0800, FAX: 716-655-0309; FSC No.: 14550; Empl: 75;  
*Sls. Mgr.*: Time Zeigler

**ELTECH**, 181 Gibraltar Rd., Horsham, PA 19044, Tel: 215-  
441-0404, FAX: 215-441-8299; Empl: 50; *Sls. Mgr.*: Brad  
Lizotte **B-1149**

| <i>Local Sales Offices &amp; Reps</i> |                                 |
|---------------------------------------|---------------------------------|
| AZ                                    | Tempe, Gassner & Clark .....    |
| CA                                    | Anaheim, Gabriel & Assocs. .... |
| CO                                    | Golden, Cristee-Meade .....     |
| IL                                    | Rolling Meadows, Staffco .....  |
| IN                                    | Angola, Staffco .....           |
| MI                                    | Rockford, Staffco .....         |
| OH                                    | Cleveland, Staffco .....        |
| RI                                    | Warwick, Etronics .....         |
| TN                                    | Brentwood, Staffco .....        |

**ELTEC INSTRUMENTS INC.**, P.O. Box 9610, Daytona  
Bch, FL 32120, Tel: 904-253-5328, TWX: 810-832-6294,  
FAX: 904-258-3791; Empl: 75; *Sls. Mgr.*: Douglas S.  
Armstrong

**ELTEK CORPORATION**, 445 E. Main St., Hagerstown, IN  
47346, Tel: 317-489-6121, FAX: 317-489-5491; Empl: 7

**ELTROL CORPORATION**, 20942 Osborne Street, Bldg.  
I, Canoga Park, CA 91304, Tel: 818-709-0131, FAX: 818-  
709-0132; FSC No.: IER54; Empl: 6; *Sls. Mgr.*: Terry E.  
Donovan **B-1250**

| <i>Local Sales Offices &amp; Reps</i> |                                         |
|---------------------------------------|-----------------------------------------|
| CA                                    | Van Nuys, Halbar Assocs. ....           |
| OH                                    | Broadview Hgts., Controlled Prods. .... |

**ELVO: DIVISION OF ZUMBACH ELECTRONICS  
CORPORATION**, 140 Kisco Avenue, Mt. Kisco, NY  
10549-1407, Tel: 914-241-1008, FAX: 914-241-7096; *Sls.  
Mgr.*: Thomas O'Connor

**E-MARK, INC.**, 4 Daniels Farm Rd., Ste. 328, Trumbull, CT  
06611, Tel: 203-452-1003, FAX: 203-452-1135; FSC No.:  
0L7X6; Empl: 4; *Sls. Mgr.*: Bryan West

**EMC GLOBAL TECHNOLOGIES INC.**, 4059 Skyrn Dr.,  
Doylesdale, PA 18901, Tel: 215-340-0650, FAX: 215-340-  
1737; Empl: 70; *Sls. Mgr.*: Joel Hayes

**EMCO, Components Specialties Inc.**, 1172 Rte. 109,  
Lindenhurst, NY 11757, Tel: 516-957-8700, FAX: 516-957-  
9142; Empl: 20; *Sls. Mgr.*: Eric Forman; *Dist. Mgr.*: Angela  
Carolán

**EMCO HIGH VOLTAGE CO.**, 11126 Ridge Road, Sutter  
Creek, CA 95685, Tel: 209-223-3626, 800-546-3680,  
TELEX: 5101008006, FAX: 209-223-2779; FSC No.:  
3T243; Empl: 38; *Sls. Mgr.*: Jennifer Jackson **D-1686**

**E/M CORPORATION**, 2801 Kent Avenue, P.O. Box 2400,  
W. Lafayette, IN 47906, Tel: 317-497-6346, FAX: 317-497-  
6348; FSC No.: 11770; Empl: 300; *Sls. Mgr.*: Nathan B.  
Barlow; *Dist. Mgr.*: Nathan B. Barlow

**EMCOR PRODUCTS, Crenlo, Inc.**, 1600 Fourth Ave.,  
NW, Rochester, MN 55901, Tel: 507-289-3371, FAX: 507-  
287-3405; *Sls. Mgr.*: Dan Estes **C-1034-1037**

**EMC TECHNOLOGY INC.**, 1971 Old Cuthbert Rd., Cherry  
Hill, NJ 08034, Tel: 609-429-7800, FAX: 609-429-6814;  
FSC No.: 24602; Empl: 70; *Sls. Mgr.*: Peter Semitschew

**E M D ELECTRONICS**, Sigmatron LP., 2201 Landmeier  
Rd., Elk Grove Village, IL 60007, Tel: 708-956-8000, FAX:  
708-956-8082; Empl: 150; *Sls. Mgr.*: Glen Holmes



**EMDS, INC.**, 16618 Oakmont Ave., Gaithersburg, MD 20877, Tel: 301-840-5710, FAX: 301-840-8589; *Sls. Mgr.*: Anne Ledger ..... **D-1256**

**EMERSON & CUMING, INC.**, 77 Dragon Court, Woburn, MA 01888, Tel: 617-938-8630

**EMERSON COMPUTER POWER**, 9650 Jeronimo Rd., Irvine, CA 92718, Tel: 714-457-3600, FAX: 714-457-3788; Empl: 20; *Dist. Mgr.*: R. Braud

Please call factory for sales offices and nearest reps.

**EMHART CANADA, LTD.**, See Mallory Components Div.

**EMICO INC.**, 920 Candia Rd., Manchester, NH 03109, Tel: 603-669-5121, FAX: 603-669-5922; FSC No.: 85925; Empl: 3000; *Sls. Mgr.*: Eileen M. Fagan

**EMI TECHNOLOGY INC.**, See Penny & Giles Data Sys., Inc.

**EMPIRE MAGNETICS**, 5780 B LaBath Ave., Rohnert Park, CA 94928, Tel: 707-584-2801, FAX: 707-584-3418; Empl: 10



**FAX: 317-823-4835**

**EMPRO MANUFACTURING COMPANY, INC.**, P.O. Box 26060, Indianapolis, IN 46226, Tel: 317-823-4478; Empl: 25 ..... **D-1257**

*Local Sales Offices & Reps*

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Montrose, Signal Entrs. Inc.            | 818-957-0640 |
| GA | Atlanta, Brownell Electro Inc.          | 404-362-9009 |
| IL | Chicago, Best Rep Co.                   | 708-632-0473 |
| MA | Burlington, ELL Instr.                  | 617-272-9450 |
| NJ | Franklin, D. F. Tobias & Co.            | 201-209-8825 |
| OH | Cleveland, Weschler Elec. Corp.         | 216-238-2550 |
| PA | Philadelphia, Sunshine Sci. Instr. Inc. | 215-673-5600 |
| TX | Houston, Ev Smith Sls.                  | 713-931-0403 |
| WA | Seattle, Branom Instr. Co.              | 206-762-6050 |

*Local Distributors*

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AZ | Tempe, Metermaster                        | 602-431-0880 |
| CA | Glendale, Instr. Meter Specialties        | 818-243-0416 |
| CA | Livermore, Std. Meter Lab                 | 510-449-0220 |
| CA | Santa Fe Springs, Dae Instr. & Svc., Inc. | 213-942-8843 |
| FL | Miami Beach, PA Instrs., Inc.             | 305-868-5686 |
| LA | Harahan, Indl. Instrs. Works              | 504-733-8355 |
| MD | Hunt Valley, E.L.L. Instrs.               | 301-584-7400 |
| NJ | Belleville, Miscorp                       | 201-751-1190 |
| OR | Portland, Westcon Inc.                    | 503-283-0132 |
| PA | Norristown, Kimberly-James                | 215-666-7286 |
| TX | Beaumont, Strathgirn Elctms.              | 409-838-4563 |
| TX | Houston, American Analog                  | 713-941-7265 |
| TX | Houston, Meters & Instrs.                 | 713-644-1631 |
| WA | Seattle, Branom Instr. Co.                | 206-762-6050 |
| WI | Milwaukee, E-M Instrs.                    | 414-272-7799 |

**E.M.S., Div. of Sandberg Industries**, 14251 Chambers Rd., Tustin, CA 92680, Tel: 714-669-9473, FAX: 714-838-2967; Empl: 125; *Sls. Mgr.*: Duane Halverson, VP Sls. .... **C-1672**

*Local Distributors*

|    |                 |              |
|----|-----------------|--------------|
| RI | Warwick, E.M.S. | 401-884-4790 |
|----|-----------------|--------------|

**E M S DEVELOPMENT CORP.**, 100 Sea La., Farmingdale, NY 11735, Tel: 516-293-7900, FAX: 516-694-1093; FSC No.: 51435; Empl: 100



**FAX: 408-982-0664**

**EMULATION TECHNOLOGY, INC.**, 2344 Walsh Ave., Bldg. F, Santa Clara, CA 95051, Tel: 408-982-0660, TELEEX: 981866; Empl: 18; *Sls. Mgr.*: Joseph J. Bagliere Jr., Mktg. Mgr. .... **C-1321**

*Local Sales Offices & Reps*

|    |                            |              |
|----|----------------------------|--------------|
| IL | Chicago, El/Mech Inc.      | 312-794-9100 |
| OR | Beaverton, Blair Hirsh Co. | 503-649-1007 |

|     |                               |              |
|-----|-------------------------------|--------------|
| TX  | Carrollton, CTI Elctms.       | 214-245-1266 |
| WA  | Kirland, Turn-A-Round         | 206-822-4634 |
| Can | Ottawa, Ont., E.G. Lomas Ltd. | 613-725-2177 |

*Local Distributors*

|    |                                        |              |
|----|----------------------------------------|--------------|
| MI | Bloomfield Hills, Mackellar Assocs.    | 313-335-4440 |
| NJ | Union, Meridian Supply Co.             | 908-687-6220 |
| TX | Allen, Prime Distributing Co.          | 214-231-0170 |
| TX | Richardson, Off The Shelf Comps., Inc. | 214-238-0808 |

**ENCLOSURE CORP.**, 2900 Wharton Rd., Bristol, PA 19007, Tel: 215-785-2900, FAX: 215-785-2960; FSC No.: 32360; Empl: 75; *Sls. Mgr.*: Gene Goldner

**ENCODER DIV., LITTON SYSTEMS, INC.**, See Litton Encoder Div.

**ENCODER PRODUCTS**, 1601 B Dover Rd-Hwy.2, Sandpoint, ID 83864, Tel: 208-263-8541, FAX: 208-263-0541; Empl: 100; *Sls. Mgr.*: Jim Burcham; *Dist. Mgr.*: Jim Burcham

**ENCORE ELECTRONICS, INC.**, 4400 Route 50, Saratoga Springs, NY 12866, Tel: 518-584-5354, FAX: 518-584-5963; Empl: 20

*Local Sales Offices & Reps*

|    |                                       |              |
|----|---------------------------------------|--------------|
| CA | Huntington Beach, Transducer Sys.     | 714-969-7690 |
| PA | Blairsville, Meas. Instrs. East, Inc. | 412-459-8090 |

**ENDECO, Leads Metal Products Inc.**, 1125-C Brookside Ave., Indianapolis, IN 46202-2748, Tel: 317-631-7200, FAX: 317-631-7237; Empl: 6; *Sls. Mgr.*: Eileen Alexander; *Dist. Mgr.*: Eileen Alexander

**ENDEVCO CORPORATION**, Meggitt Aerospace, 30700 Rancho Viejo Rd., San Juan Capistrano, CA 92675, Tel: 714-493-8181, TELEEX: 68-5608, FAX: 714-661-7231; FSC No.: 95411; Empl: 400; *Sls. Mgr.*: B. Clark

**ENDICOTT COIL CO., INC.**, 24 Charlotte St., Binghamton, NY 13905, Tel: 607-797-1263, FAX: 607-797-0151; Empl: 110; *Sls. Mgr.*: Thomas E. Frank



**FAX: 607-754-9255**

**ENDICOTT RESEARCH GROUP**, 2601 Wayne St., P.O. Box 269, Endicott, NY 13760, Tel: 607-754-9187; FSC No.: 63312; Empl: 120 ..... **B-1045-1048; D-1687, 2106-2107**

*Local Sales Offices & Reps*

|    |                                          |                                 |
|----|------------------------------------------|---------------------------------|
| AZ | Finn-Patt                                | 602-954-8275                    |
| CA | Granada Hills, Plustronics               | 818-830-3304, FAX: 714-475-0717 |
| CA | Imperial Counties, Mesa Comps., Inc.     | 619-278-8021, FAX: 619-576-0964 |
| CA | Newport Beach, Plustronics               | 714-476-8009, FAX: 714-475-0717 |
| CA | Saratoga, Testco, Inc.                   | 408-253-1900, FAX: 408-253-3444 |
| CO | Seale & Assocs.                          | 303-695-1980, FAX: 303-695-1984 |
| CT | Bloomfield, Sir/DSA                      | 203-243-9343, FAX: 203-243-8346 |
| IL | Elk Grove Village, Carlson Elctm. Sls.   | 708-956-8240, FAX: 708-956-8289 |
| IA | Spectrum Sls.                            | 319-366-0576, FAX: 319-366-0635 |
| KS | Overland Park, Spectrum Sls.             | 913-648-6811, FAX: 913-648-6823 |
| MD | Freedman-Malta Assocs.                   | 301-879-3148, FAX: 301-838-0789 |
| MA | Westford, SIR/DSA                        | 508-692-2500, FAX: 508-692-9085 |
| MN | Minneapolis, OEM Prods.                  | 612-831-7373, FAX: 612-831-7376 |
| MO | Florissant, Spectrum Sls.                | 314-921-1313, FAX: 314-921-0701 |
| NJ | Budd Lake, Guido Assoc.                  | 201-347-4643, FAX: 201-691-1468 |
| NC | Kernersville, Wallace Elctms. Sls., Inc. | 919-996-2742, FAX: 919-996-1630 |
| OH | EMA/DeMuesy                              | 614-436-9452, FAX: 614-436-0969 |
| OH | EMA, Inc.                                | 216-562-6104, FAX: 216-562-7498 |
| OH | Centerville, EMA, Inc.                   | 513-433-2800, FAX: 513-433-3147 |
| PA | King of Prussia, Freedman-Malta Assocs.  | 215-337-9211, FAX: 215-265-8764 |
| WA | Bellevue, Testco, Inc.                   | 206-454-7422, FAX: 206-455-1706 |
| WA | Vancouver, Testco, Inc.                  | 206-693-7262, FAX: 206-455-1706 |

|    |                                |                                 |
|----|--------------------------------|---------------------------------|
| WI | Milwaukee, Carlson Elctm. Sls. | 414-476-2790, FAX: 414-476-2682 |
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|     |                                     |                                 |
|-----|-------------------------------------|---------------------------------|
| Can | Delta, B. C. Norgay Entrs. Ltd.     | 604-275-1121                    |
| Can | New Foundland, Indigo Elctms., Ltd. | 613-831-3106, FAX: 613-831-3107 |

|     |                               |                                 |
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| Can | Ontario, Indigo Elctms., Ltd. | 416-670-0284, FAX: 416-670-1743 |
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| Can | Ottawa, Ont., Norgay Entrs. Ltd. | 613-745-4051, FAX: 613-745-5626 |
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| Can | Quebec, Indigo Elctms., Ltd. | 514-696-6104, FAX: 514-626-1244 |
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| Can | Sackville, NS, Norgay Entrs. Ltd. | 902-864-4321, FAX: 902-865-9044 |
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| Can | Toronto, Ont., Norgay Entrs. | 416-234-8966, FAX: 416-234-8970 |
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| Can | Westmount, Que., Norgay Entrs. Ltd. | 514-932-3233, FAX: 819-657-4337 |
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**ENDRESS & HAUSER INSTRUMENTS**, 2350 Endress Place, Greenwood, IN 46143, Tel: 317-535-7138, 800-428-4344, TELEEX: 27-2195, FAX: 317-535-8498; Empl: 200; *Sls. Mgr.*: Mike Stillabower

**ENERCO, INC.**, 9615 W. Marginal Way S., Seattle, WA 98108, Tel: 206-762-1422; Empl: 5; *Sls. Mgr.*: Lee Rabie



**FAX: 301-699-8107**

**ENERGY, LTD.**, 4714 Upshur Street, Bladensburg, MD 20710, Tel: 301-699-1144; Empl: 10 ..... **D-2260**

*Local Sales Offices & Reps*

|    |                           |              |
|----|---------------------------|--------------|
| MD | Bladensburg, Energy, Ltd. | 301-699-1144 |
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*Local Distributors*

|    |                           |              |
|----|---------------------------|--------------|
| MD | Bladensburg, Energy, Ltd. | 301-699-1144 |
|----|---------------------------|--------------|

**ENERGY SYSTEMS**, 12004 NE 95th St., No. 840, Vancouver, WA 98682, Tel: 206-896-8310, FAX: 206-896-8457; Empl: 25

**ENERTECH CONSULTANTS**, 300 Orchard City Dr., Ste. 132, Campbell, CA 95008, Tel: 408-866-7266, FAX: 408-866-7279; Empl: 20; *Sls. Mgr.*: Carolyn J. Persall

**ENGINEERED ASSEMBLIES & COMPONENTS CORP.**, 380 North St., Teterboro, NJ 07608, Tel: 201-288-4477, 800-447-5639, FAX: 201-288-1515; Empl: 106; *Sls. Mgr.*: Tim Teem / Peter Hunkeler; *Dist. Mgr.*: John Deleodice ..... **D-1448-1449**

*Local Sales Offices & Reps*

|    |                                                          |              |
|----|----------------------------------------------------------|--------------|
| FL | St. Petersburg, EAC-Engrd. Assemblies & Comp. Corp.      | 813-328-1970 |
| GA | Norcross, EAC-Engrd. Assemblies & Comp. Corp.            | 404-446-3135 |
| MA | Sutton, EAC-Engrd. Assemblies & Comp. Corp.              | 508-865-0722 |
| NJ | Teterboro (Hdqtrs.), EAC-Engrd. Assemblies & Comp. Corp. | 201-288-4477 |
| NC | Raleigh, EAC-Engrg. Assemblies & Comp. Corp.             | 919-790-9700 |

**ENGINEERED COMPONENTS CO., P. O. Box 8121**, San Luis Obispo, CA 93403-8121, Tel: 805-544-3800, FAX: 805-544-8091; FSC No.: 32440; Empl: 102

**ENGINEERED MAGNETICS, INC.**, 18435 Susana Rd., Rancho Dominguez, CA 90221, Tel: 310-635-9555, TWX: 910-325-6208, ESYLNK: 310-631-0313; FSC No.: 06509; Empl: 100; *Sls. Mgr.*: S. Miller

**ENGINEERED SYSTEMS & DESIGNS**, 119A Sandy Dr., Newark, DE 19713, Tel: 302-456-0446, FAX: 302-456-0441; Empl: 12; *Sls. Mgr.*: Jamie C. Smith

**ENGINEERING DESIGN & SLS.**, One E.D.S. Way, Danville, VA 24541, Tel: 804-792-6405, FAX: 804-792-6415; Empl: 75; *Sls. Mgr.*: Mark Gignac

**ENGLER INSTRUMENTS OPERATION**, See Sterco Instruments, Colt Inds.

**ENI, DIV. OF ASTEC AMERICA, INC.**, 100 Highpower Road, Rochester, NY 14623, Tel: 716-427-8300, ESYLNK: 62855365, FAX: 716-427-7839; Empl: 300 ..... **D-1011**

*Local Sales Offices & Reps*

|    |                            |              |
|----|----------------------------|--------------|
| AZ | Tempe, Trembly Assocs.     | 602-967-2058 |
| CA | Chatsworth, Technlgs. West | 818-700-6426 |
| CA | Santa Clara, ENI           | 408-727-0993 |



|     |                                    |              |
|-----|------------------------------------|--------------|
| CO  | Golden, Trembly Assocs.            | 303-279-3019 |
| FL  | Cocoa Beach, Teqspec               | 407-783-3444 |
| FL  | Palm Harbor, Teqspec               | 813-942-6006 |
| GA  | Snellville, Teqspec                | 404-972-7955 |
| IL  | Elmhurst, Sector Engrg.            | 708-530-7850 |
| IN  | Indianapolis, Sector Engrg.        | 317-253-9221 |
| KS  | Overland Pk, Ramsey Assocs.        | 913-541-1007 |
| MD  | Laurel, Electrn. Mktg. Assoc.      | 301-953-7800 |
| MA  | Stow, HG Assocs.                   | 508-897-3190 |
| MI  | Troy, WKM Assocs.                  | 313-588-2300 |
| MN  | Minneapolis, Sector Engrg.         | 612-378-2123 |
| MO  | St. Louis, Ramsey Assocs.          | 314-532-9386 |
| NM  | Albuquerque, Trembly Assocs.       | 505-266-8616 |
| NY  | Great Neck, RTI, Inc.              | 516-829-3770 |
| NY  | Rochester, Taerap, Inc.            | 716-586-8710 |
| NY  | Whitney Pt, Taerap, Inc.           | 607-692-3705 |
| NC  | Winston Salem, Teqspec             | 919-765-5553 |
| OH  | Dayton, WKM Assocs.                | 513-434-7500 |
| OH  | Independence, WKM Assocs.          | 216-524-5930 |
| OR  | Wilsonville, Syntek                | 503-682-2750 |
| TX  | Houston, Lear Assocs.              | 713-488-7893 |
| TX  | Richardson, Lear Assocs.           | 214-231-5388 |
| UT  | N. Salt Lake, Trembly Assocs.      | 801-295-4703 |
| WA  | Bellevue, Syntek                   | 206-462-7700 |
| WI  | Milwaukee, Sector Engrg.           | 414-352-8280 |
| Can | Dorval, Arritsu Wiltron Inst.      | 514-421-3737 |
| Can | Mississauga, Arritsu Wiltron Inst. | 416-890-7799 |
| Can | Nepean, Arritsu Wiltron Inst.      | 613-828-4090 |
| Can | Richmond, Arritsu Wiltron Inst.    | 604-244-3815 |

ENM COMPANY, 5617 Northwest Highway, Chicago, IL 60646, Tel: 312-775-8400, TELEX: 25-4068, FAX: 312-775-5968; Empl: 1000; Sls. Mgr.: Lee Bryant

ENNOVATION OF WISCONSIN, INC., 806 Elm St.-P.O. Box 258, Watertown, WI 53094, Tel: 414-261-2996, FAX: 414-261-3432; Empl: 5; Sls. Mgr.: Enno Knief; Dist. Mgr.: Enno Knief

ENPROTECH CORP., 445 West Michigan Ave., Kalamazoo, MI 49007, Tel: 616-381-0665, FAX: 616-381-9810; Empl: 125

## Ensign Corporation

CUSTOM & PRE-DESIGNED TRANSFORMERS

**FAX: 708-789-3206**

ENSIGN CORP., 7960 S. Madison Street, Burr Ridge, IL 60521, Tel: 708-325-9343; Empl: 150; Sls. Mgr.: J. Darrel Ensign ..... **A-2326-2328**

### Local Sales Offices & Reps

|    |                              |              |
|----|------------------------------|--------------|
| AL | Huntsville, El Tech          | 205-464-0599 |
| AZ | Tempe, Gassner-Clark         | 602-968-9037 |
| CA | Campbell, Kingway            | 408-866-5010 |
| CA | Huntington Bch, Kingway      | 714-846-3834 |
| CA | Tarzana, Kingway             | 818-609-1974 |
| CO | Denver, Donohue              | 303-455-1719 |
| CT | Meriden, Gerber              | 203-630-3477 |
| FL | Boynton Bch, D-Assocs, Inc.  | 305-492-8634 |
| FL | Orlando, D-Assocs, Inc.      | 407-321-9594 |
| FL | Tampa, D-Assocs, Inc.        | 813-960-0935 |
| GA | Lilburn, El Tech             | 404-564-1236 |
| IL | Godfrey, Crosslink           | 618-466-1118 |
| IL | Mt. Prospect, Dombrow        | 708-253-3326 |
| IN | Indianapolis, J.H. Weaver    | 317-849-1659 |
| KS | Prairie Vlg, Crosslink       | 913-649-7100 |
| KY | Ft. Wright, El Tech          | 606-331-3495 |
| MA | Burlington, Gerber           | 617-229-1510 |
| MA | Marlboro, Gerber             | 508-481-3130 |
| MI | S. Dartmouth, Gerber         | 617-990-3454 |
| MI | Bloomfield Hills, Mac Kellar | 313-335-4440 |
| MI | Grand Haven, Mac Kellar      | 616-846-7990 |
| MN | Minneapolis, Tek Rep         | 612-832-0277 |
| NH | Hudson, Gerber               | 603-882-1566 |
| NY | Fairport, Promark            | 716-425-8100 |
| NY | Franklin Sq, Cooper-Simon    | 516-489-0404 |
| NY | Tonawanda, Promark           | 716-877-6300 |
| NC | Charlotte, El Tech           | 704-342-3648 |
| OH | Cleveland, L.H. Kaiser       | 216-461-4930 |
| OK | Tulsa, Comptech              | 918-266-1966 |
| OR | Beaverton, Luscombe          | 503-636-6664 |
| PA | Horsham, Jacobsen            | 215-674-2937 |
| TX | Austin, Comptech             | 512-343-0300 |
| TX | El Paso, Comptech            | 915-566-1022 |
| TX | Harlingen, Comptech          | 210-421-4501 |
| TX | Houston, Comptech            | 713-492-0005 |
| TX | Irving, Comptech             | 214-751-1181 |
| TX | San Antonio, Comptech        | 210-525-9913 |
| VA | Herndon, Metal Resources     | 703-318-8682 |
| WA | Bellevue, Luscombe           | 206-223-1541 |
| WI | Milwaukee, Dombrow           | 414-263-4116 |

|     |                         |              |
|-----|-------------------------|--------------|
| Can | Dorval, Que, Weiss      | 514-685-6644 |
| Can | Mississauga, Ont, Weiss | 416-673-0011 |
| Can | Nepean, Ont, Weiss      | 613-225-1810 |
| Can | Vancouver, B.C, Weiss   | 604-873-1112 |
| Can | Winnipeg, Man, Weiss    | 204-772-3665 |

ENTECH CORP. OF VOLUSIA COUNTY, 8 Tower Circle West, Ormond Beach, FL 32174-8761, Tel: 904-672-7335, FAX: 904-672-7233

ENTECH SYSTEMS, INC., 17B Herman Dr., Simsbury, CT 06070, Tel: 203-651-9557, FAX: 203-658-2740; Sls. Mgr.: A. D. Jorczak

ENTERPRISE SYSTEMS CORP., PO Box 698, Dover, NH 03820, Tel: 603-742-7363, FAX: 603-742-7399; FSC No.: 79543; Empl: 5; Sls. Mgr.: George Perrine

ENTRA CORPORATION, 8651 Castle Park Drive, Indianapolis, IN 46256, Tel: 317-849-8270, FAX: 317-849-7041; Empl: 75; Sls. Mgr.: F. Paul McDonald; Dist. Mgr.: T.P. Wagner

ENTRAN DEVICES, 10 Washington Ave., Fairfield, NJ 07004, Tel: 201-227-1002, 800-635-0650, TELEX: 130-361, FAX: 201-227-6865; Sls. Mgr.: Robert L. Morrell ..... **B-1936-1947**

ENTRELEC INC., 1950 Hurd Drive, Irving, TX 75038, Tel: 214-550-9025, FAX: 214-550-9215; Empl: 50; Sls. Mgr.: F. D. Leynard

ENVIRONMENTAL CONTAINER SYS., INC., See ECS Composites

ENVIRONMENTAL STRESS SYSTEMS, INC., 16310 N. Morris Rd., Sonoma, CA 95370, Tel: 209-928-4900, FAX: 209-928-1117; Sls. Mgr.: Mel Ainsworth; Dist. Mgr.: Mel Ainsworth

ENVIRONMENTAL TELESIS & CONTROLS, P.O. Box 180206, Austin, TX 78718, Tel: 512-835-0330, FAX: 512-832-1775; Empl: 12; Sls. Mgr.: Anna Diaz

ENVIROPLAN, 3 Becker Farm Rd, Roseland, NJ 07068, Tel: 201-994-2300, FAX: 201-994-5100; Empl: 50; Sls. Mgr.: Robert Mallowney

EOG, INC., OMX, INC., 10947 Golden West Drive, Hunt Valley, MD 21031, Tel: 410-785-3000, FAX: 410-771-5814; FSC No.: 17521; Empl: 175; Sls. Mgr.: John D. Fabrizio

EPC IDENTIFICATION SYS., 505 Martin Ave., Rohnert Park, CA 94928, Tel: 707-585-8811, TWX: 910-3382-311, FAX: 707-585-8688; FSC No.: 67041; Empl: 16; Sls. Mgr.: William Bolster; Dist. Mgr.: William Bolster

EPCO PRODUCTS INC., P.O. Box N. Cottage St, Wallkill, NY 12589, Tel: 914-895-2033, FAX: 914-895-2279; Empl: 45; Sls. Mgr.: Mark Giegel

EPD ELECTRONICS, INC., 16921 S. Western Ave.-Bldg. 300, Gardena, CA 90247, Tel: 310-515-4996, FAX: 310-515-5011; Empl: 6 ..... **D-1073, 1688**

### Local Sales Offices & Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| IA | Burlington, JS Ridge Entrs, Inc.  | 319-754-8745 |
| NJ | Bricktown, Bryan Elctrn. Sls. Co. | 201-840-8487 |
| OR | Portland, Dale G. Weber Co.       | 503-234-0686 |
| TN | White House, Apple Sls. & Mktg.   | 615-672-4498 |

EPE TECHNOLOGIES, INC., Subsidiary of Square D, 1660 Scenic Avenue, Costa Mesa, CA 92627, Tel: 714-557-1636, FAX: 714-957-1103; Empl: 300; Sls. Mgr.: Dan Mathews, Dir. of Sls.; Dist. Mgr.: Dan Mathews, Dir. of Sls.

Please call factory for sales representative and distributor information.

EPH ENGINEERING ASSOCIATES, INC., 21 East 400 South, Orem, UT 84058, Tel: 801-226-1383, FAX: 801-226-1437

EPIC, INC., 150 Nassau St, New York, NY 10038, Tel: 212-349-2470, FAX: 212-406-2508; Empl: 8; Sls. Mgr.: Kelly Irwin

EPIC RESINS, General Fiberglass Supply, Inc., 1415 Ellis St, Waukesha, WI 53186, Tel: 414-521-2255, FAX: 414-521-1320; Empl: 20; Sls. Mgr.: Daniel Veenhuis

EPM CORPORATION, 8866 Kelso Dr., Baltimore, MD 21221, Tel: 410-686-7800, TELEX: 87569, FAX: 410-686-4662; Empl: 75

EPOXY TECHNOLOGY, INC., 14 Fortune Dr., Billerica, MA 01821, Tel: 508-667-3805, 800-227-2201, FAX: 508-663-9782; FSC No.: 33246; Empl: 26; Sls. Mgr.: Ann L. Delmarsh

### Local Sales Offices & Reps

|    |                                |              |
|----|--------------------------------|--------------|
| AZ | Phoenix, Wadsworth/Pacific     | 602-994-4840 |
| CA | Atherton, Wadsworth/Pacific    | 415-321-3619 |
| CA | Fullerton, T.C. Rapp Co.       | 714-773-9350 |
| CO | Ft. Collins, Rep Sls.          | 303-226-1504 |
| FL | Tampa, Florida Elctrn. Assoc.  | 813-972-7992 |
| IL | Palatine, Crimson Sls. Inc.    | 708-304-8250 |
| MA | Newton, Normell Assoc.         | 617-969-5478 |
| MN | Minneapolis, InterTec Assoc.   | 612-921-8443 |
| NY | Fair Haven, Felkert Assoc.     | 315-433-1124 |
| OH | Dayton, J. Stephenson & Assoc. | 513-435-0745 |
| OR | Hillsboro, Ryan Tech. Svcs.    | 503-881-0790 |
| PA | Bethlehem, Microstar           | 215-867-0612 |

THE EPPLEY LABORATORY, INC., 12 Sheffield Avenue, Newport, RI 02840, Tel: 401-847-1020, FAX: 401-847-1031; Empl: 25

EPSCO INCORPORATED, 1115 Hilltop Dr., Itasca, IL 60143-1120, Tel: 708-250-0410, FAX: 708-250-0521; FSC No.: 53003; Empl: 8; Sls. Mgr.: Wendie Peters V.P. .... **D-1689**

### Local Distributors

|    |                                        |                |
|----|----------------------------------------|----------------|
| AR | Little Rock, Carlton-Bates Co.         | 501-562-9100   |
| CA | Santa Barbara, Abbeon Cal Inc.         | 805-966-0810   |
| CO | Denver, Fisher Scientific              | 303-371-0888   |
| CT | Stanford, Aero Quality Sls.            | 1-800-288-1954 |
| IL | Chicago, Electro Inds.                 | 312-736-0999   |
| IL | Countryside, Inotek/Pacific Indicator  | 708-352-3500   |
| IL | Elmhurst, McMaster-Carr Supp.          | 708-834-9600   |
| IN | East Chicago, Acro Elctms. Corp.       | 219-397-8681   |
| LA | Lafayette, Ralph's Inc.                | 318-233-0105   |
| LA | New Orleans, Radio Parts Inc.          | 504-581-5959   |
| MA | Lynn, Land Elctms.                     | 617-592-2220   |
| MI | Jackson, Fulton Radio Supp.            | 517-784-6106   |
| MN | Minneapolis, Allied Elctms.            | 612-881-0838   |
| MO | Olivette, Fryer Co.                    | 314-997-6807   |
| NJ | Aberdeen, J.G. Elctms.                 | 908-883-5352   |
| NJ | Bridgeport, VWR Scientific             | 609-467-2600   |
| NJ | New Brunswick, McMaster-Carr Supp. Co. | 908-329-3200   |
| NM | Albuquerque, Southwest Metals & Supps. | 505-247-2111   |
| NY | Syracuse, Stewart Smith                | 315-437-7836   |
| OH | Warren, Rem Elctms. Supp.              | 216-373-1300   |
| SC | Charleston, Wholesale Inds. Elec.      | 803-722-2634   |
| TX | Ft. Worth, Allied Elctms.              | 817-595-3500   |
| TX | Houston, Angie Elctms.                 | 1-800-666-4616 |
| WI | Milwaukee, Industrial Elctms. Supp.    | 414-276-1212   |

EPSILON-LAMBDA ELCTRNS. CORP., 427 Stevens St, Geneva, IL 60134, Tel: 708-232-9611, TELEX: 708-232-9613; Empl: 20; Sls. Mgr.: R. Knox

# EPSON®

**FAX: 310-782-5350**

EPSON AMERICA, INC./OEM DIV., 20770 Madrona Ave., Torrance, CA 90503, Tel: 310-787-6300; Empl: 900; Sls. Mgr.: Walter Carlos, Dir. of Sls. .... **A-1388-1395; B-1050-1061; D-1088-1095**

### Local Sales Offices & Reps

|    |                                             |              |
|----|---------------------------------------------|--------------|
| CA | Los Angeles, Epson America, Inc./OEM Div.   | 714-768-7474 |
| CA | San Francisco, Epson America, Inc./OEM Div. | 408-249-0710 |
| IL | Chicago, Epson America, Inc./OEM Div.       | 815-455-7630 |
| MA | Boston, Epson America, Inc./OEM Div.        | 617-245-8007 |

# EPSON

**FAX: 310-782-5320**

EPSON AMERICA INC., Component Sales Dept., 20770 Madrona Ave., Torrance, CA 90503, Tel: 310-782-5318; Sls. Mgr.: Hideo Akiyama; Dist. Mgr.: Rob Turner ..... **A-1388-1395; B-1050-1061; D-1088-1095**



## Local Sales Offices &amp; Reps

|    |                                        |                                   |
|----|----------------------------------------|-----------------------------------|
| AL | Madison, Concord Comp Reps             | 205-772-8883,<br>FAX:205-772-8262 |
| AZ | Scottsdale, Fred Board Assocs.         | 602-994-9388,<br>FAX:602-994-9477 |
| AZ | Tucson, Fred Board Assocs.             | 602-299-1508,<br>FAX:602-797-1683 |
| CA | Cupertino, Costar, Inc.                | 408-446-9339,<br>FAX:408-446-4885 |
| CA | Encinitas, Bager Elctms. Inc.          | 619-632-8816,<br>FAX:619-632-8810 |
| CA | Woodland Hills, Bager Elctms. Inc.     | 818-712-0011,<br>FAX:818-712-0160 |
| CO | Colorado Springs, Western Region Mktg. |                                   |
| CO | Westminster, Western Region Mktg.      | 719-548-8282,FAX:719-548-0462     |
| FL | Casselberry, Dyne-A-Mark               | 407-831-2822,<br>FAX:407-834-4524 |
| FL | Ft. Lauderdale, Dyne-A-Mark            | 305-771-6501,<br>FAX:305-772-0114 |
| GA | Norcross, Concord Comp. Reps           | 404-416-9597,<br>FAX:404-441-0790 |
| IL | Itasca, LTD Technlgs.                  | 708-773-2900,<br>FAX:708-773-0358 |
| IN | Indianapolis, C.C. Electro Sls.        | 317-921-5000,<br>FAX:317-921-5005 |
| KS | Shawnee Mission, Microtronics, Inc.    | 913-262-1444,<br>FAX:913-262-1445 |
| MD | Ellicott City, Technlg. Sls. Assocs.   | 301-461-7802,<br>FAX:301-461-7888 |
| MA | Needham Heights, Rosen Assocs. Inc.    | 617-449-4700,FAX:617-449-5245     |
| MN | Eden Prairie, Electromark              | 612-944-5850,<br>FAX:612-944-5855 |
| NJ | Parlin, JMR Sls; Inc.                  | 201-525-8000,<br>FAX:201-525-8805 |
| NY | Pittsford, Elcom Sls., Inc.            | 716-385-1400,<br>FAX:716-248-8531 |
| NY | Skaneateles, Elcom Sls., Inc.          | 315-685-8967,<br>FAX:315-685-6273 |
| NY | Wading River, Niktronics               | 516-929-4671,<br>FAX:516-929-1683 |
| NC | Raleigh, WLA Assocs.                   | 919-231-9939,<br>FAX:919-231-9949 |
| OH | Sheffield, J.D. Babb                   | 216-934-4454,<br>FAX:216-934-4454 |
| OR | Tigard, Matrex Sls.                    | 503-245-8080,<br>FAX:503-246-1848 |
| PA | Trevose, Omega Sls.                    | 215-244-4000,<br>FAX:215-244-4104 |
| TX | Austin, Component Technlg. Sls.        | 512-250-2450,<br>FAX:512-288-7328 |
| TX | Dallas, Component Technlg. Sls.        | 214-783-8831,<br>FAX:214-783-4801 |
| TX | Houston, Component Technlg. Sls.       | 713-961-1262,<br>FAX:713-462-9906 |
| UT | Salt Lake City, Western Region Mktg.   |                                   |
| WA | Bellevue, Matrex Sls.                  | 206-643-0363,<br>FAX:206-746-3672 |
| WI | Milwaukee, LTD Technlgs.               | 414-774-1000,<br>FAX:414-774-0593 |

## Local Distributors

|    |                                       |                                   |
|----|---------------------------------------|-----------------------------------|
| AL | Bell Inds., Inc.                      | 205-837-1074,FAX:205-830-5598     |
| AL | Huntsville, Nu Horizons Elctms. Corp. |                                   |
| AZ | Tempe, Bell Inds., Inc.               | 205-722-9330,FAX:205-722-9348     |
| CA | Agoura Hills, Bell Inds., Inc.        | 818-879-9494,<br>FAX:818-991-7695 |
| CA | Cypress, Bell Inds., Inc.             | 714-895-7801,<br>FAX:714-891-4570 |
| CA | Irvine, IEC Irvine                    | 714-837-9960,FAX:714-837-8308     |
| CA | Los Angeles, Bell Inds., Inc.         | 310-826-2355,<br>FAX:310-820-8238 |
| CA | Riverside, Elctms. Supp.              | 714-683-7300,<br>FAX:714-781-0453 |
| CA | Rocklin, Bell Inds., Inc.             | 916-652-0414,<br>FAX:916-652-0403 |
| CA | Sacramento, Integrated Elctms. (IEC)  |                                   |
| CA | San Diego, Bell Inds., Inc.           | 619-268-1277,<br>FAX:619-268-3737 |
| CA | San Diego, Elctms. Supp.              | 619-693-8222                      |
| CA | San Jose, Elctms. Supp.               | 408-453-3770,<br>FAX:408-453-0398 |
| CA | San Jose, IEC San Jose                | 408-734-8500,<br>FAX:408-435-8709 |
| CA | San Jose, Merit Elctms., Inc.         | 408-434-0800,<br>FAX:408-434-0935 |
| CA | Sunnyvale, Bell Inds., Inc.           | 408-734-8570,<br>FAX:408-734-8875 |
| CA | Vienna, Dove Elctms.                  | 703-893-1821,<br>FAX:703-448-8598 |
| CO | Denver, Bell Inds., Inc.              | 303-691-9010,<br>FAX:303-691-9036 |

|    |                                           |                                   |
|----|-------------------------------------------|-----------------------------------|
| CO | Denver, Integrated Elctms. (IEC)          | 303-292-5537,<br>FAX:303-292-0114 |
| CT | Wallingford, Bell Inds., Inc.             | 203-269-6801,<br>FAX:203-269-6527 |
| CT | Wallingford, Cronin Elctms., Inc.         | 203-265-3134                      |
| CT | Wallingford, Nu Horizons Elctms. Corp.    |                                   |
| FL | Altamonte Springs, Bell Inds., Inc.       | 203-265-0162,<br>FAX:407-339-0078 |
| FL | Ft. Lauderdale, Bell Inds., Inc.          | 305-421-1997,<br>FAX:305-421-5706 |
| FL | Ft. Lauderdale, Nu Horizons Elctms. Corp. |                                   |
| FL | Melbourne, Pro-Formance Elctms., Inc.     | 407-768-2866,FAX:407-768-2526     |
| FL | Tampa, Bell Inds., Inc.                   | 813-541-4434                      |
| GA | Norcross, Bell Inds., Inc.                | 404-446-7167,<br>FAX:404-446-7264 |
| GA | Norcross, Nu Horizons Elctms. Corp.       |                                   |
| IL | Bensenville, Voyager Elctms.              | 708-860-1300,<br>FAX:708-860-1573 |
| IL | Elk Grove Village, Bell Inds., Inc.       | 708-640-1910,<br>FAX:708-640-0474 |
| IL | Hoffman Estates, IEC IL (Hoffman Estates) |                                   |
| IL | Urbana, Bell Inds., Inc.                  | 708-843-2040,FAX:708-843-2320     |
| IN | Ft. Wayne, Bell Inds., Inc.               | 217-328-1077,<br>FAX:217-328-1148 |
| IN | Indianapolis, Bell Inds., Inc.            | 219-423-3422,<br>FAX:219-424-2433 |
| IN | Indianapolis, Custom Svc. Elect.          | 317-875-8200,<br>FAX:317-875-8219 |
| IN | Indianapolis, Custom Svc. Elect.          | 317-879-9119,<br>FAX:317-879-9136 |
| IA | Bell Inds., Inc.                          | 319-395-0730,FAX:317-875-8219     |
| KS | Olathe, ECS Inc.                          | 913-782-7787,FAX:913-782-6991     |
| KY | East, Bell Inds., Inc.                    | 800-582-7492                      |
| KY | West, Bell Inds., Inc.                    | 800-445-8795                      |
| MD | Columbia, Nu Horizons Elctms. Corp.       |                                   |
| MD | Jessup, Bell Inds., Inc.                  | 410-995-6330,FAX:410-995-6332     |
| MA | Andover, Bell Inds., Inc.                 | 301-290-5100,<br>FAX:301-953-0039 |
| MA | Needham, Cronin Elctms., Inc.             | 508-474-8880,<br>FAX:508-474-8902 |
| MA | Wakefield, Nu Horizons Elctms. Corp.      | 617-449-5000,<br>FAX:617-444-8395 |
| MI | Wixom, Bell Inds., Inc.                   | 617-246-4442,FAX:617-246-4462     |
| MN | Bel Inds., Inc.                           | 800-937-2355,<br>FAX:513-435-6765 |
| MN | Bel Inds., Inc.                           | 612-941-1493,FAX:612-938-7410     |
| MN | Fridley, Voyager Elctms. Corp.            | 612-571-7766,<br>FAX:612-571-9519 |
| MN | Thief River Falls, Digi-Key Corp.         | 612-944-5855,<br>FAX:612-344-4539 |
| MO | Bell Inds., Inc.                          | 314-647-2355,FAX:317-875-8219     |
| NJ | Edison, Dove Elctms.                      | 908-738-0321,<br>FAX:908-738-0507 |
| NJ | Fairfield, Bell Inds., Inc.               | 201-227-6060,<br>FAX:201-227-2626 |
| NJ | Flanders, Dove Elctms.                    | 201-927-6399                      |
| NJ | Mt. Laurel, Nu Horizons Elctms. Corp.     |                                   |
| NJ | Pine Brook, Nu Horizons Elctms. Corp.     | 609-231-0900,FAX:609-231-9510     |
| NJ | West Berlin, G.C.I. Corp.                 | 201-882-8300,FAX:201-882-8398     |
| NM | Albuquerque, Bell Inds., Inc.             | 609-768-6767,<br>FAX:609-768-4289 |
| NY | Amityville, Nu Horizons Elctms. Corp.     | 505-292-2700,<br>FAX:505-275-2819 |
| NY | Amityville, Nu Horizons Elctms. Corp.     |                                   |
| NY | E. Setauket, Dove Elctms.                 | 516-226-6000,FAX:516-227-0082     |
| NY | Rochester, Nu Horizons Elctms. Corp.      | 516-689-7733,<br>FAX:516-689-7362 |
| NC | Bell Inds., Inc.                          | 716-292-0777,FAX:716-292-0750     |
| NC | Dayton, Bell Inds., Inc. (Industrial)     | 919-821-4041,FAX:919-821-4953     |
| OH | Dayton, Bell Inds., Inc. (Military)       | 513-435-8660,<br>FAX:513-435-6765 |
| OR | Beaverton, IEC Beaverton (OR)             | 513-434-8231,<br>FAX:513-434-8103 |
| OR | Lake Oswego, Bell Inds., Inc.             | 503-641-1690,<br>FAX:503-646-3737 |
| PA | Pittsburgh, Bell Inds., Inc.              | 503-635-6500,<br>FAX:503-635-4095 |
| PA | Trevose, Bell Inds., Inc.                 | 412-787-3883,<br>FAX:412-788-4035 |
| SC | Bell Inds., Inc.                          | 215-953-2800,<br>FAX:215-364-4928 |
| TN | Bell Inds., Inc.                          | 800-322-7908,FAX:407-339-0139     |
| TX | Austin, Norvell Austin                    | 615-367-4400,FAX:205-837-1074     |
| TX | Austin, Omni Pro Elctms.                  | 512-343-2900,<br>FAX:512-343-9602 |
| TX | Dallas, Norvell Elctms., Inc.             | 512-794-9200,<br>FAX:512-338-9576 |
| TX | Dallas, Omni Pro Elctms.                  | 214-233-0020,<br>FAX:214-490-7245 |
| TX | Dallas, Omni Pro Elctms.                  | 214-713-9000,<br>FAX:214-732-8743 |

|    |                                        |                                   |
|----|----------------------------------------|-----------------------------------|
| TX | Houston, Norvell Houston               | 713-462-1666,<br>FAX:713-462-3210 |
| TX | Houston, Omni-Pro Elctms.              | 713-270-1700,<br>FAX:713-270-8020 |
| TX | Richardson, Bell Inds., Inc.           | 214-690-0466,<br>FAX:214-690-0822 |
| UT | Midvale, Bell Inds., Inc.              | 801-255-9611,<br>FAX:801-255-2477 |
| UT | West Valley City, IEC Utah (Salt Lake) |                                   |
| WA | Bell Inds., Inc.                       | 801-977-9750,FAX:801-975-1207     |
| WA | Bellevue (WA), IEC Bellevue (MA)       | 206-867-5410,FAX:206-867-5159     |
| WI | Waukesha, Bell Inds., Inc.             | 206-455-2727,<br>FAX:206-453-2963 |
|    |                                        | 414-547-8879,<br>FAX:414-547-6547 |

**EQUIPMENT REMARKETING COMPANY**, Boston Financial & Equity Corporation, 20 Overland Street, Boston, MA 02215, Tel: 617-267-8600, FAX: 617-267-2370

**EQUIPTO**, 225 S. Highland Ave., Aurora, IL 60506, Tel: 708-859-1000, 800-323-0801, TWX: 910-232-0845, FAX: 708-859-3255; Empl: 300; Sls. Mgr: Tom Nilles; Dist. Mgr: Jerry Reidy

**EQUIPTO ELECTRONICS CORP.**, 351 Woodlawn Ave., Aurora, IL 60506-9988, Tel: 708-897-4691, FAX: 708-897-5314; FSC No.: 14002; Multiple; Empl: 78; Sls. Mgr: Robert Golz ..... **C-1038-1041**

**ERA POLY-PLANAR DIV.**, See Poly-Planar, Inc.

**ERASER CO.**, Box 4961, Syracuse, NY 13221, Tel: 315-454-3237, TELEX: 93-7442, FAX: 315-454-3090; Empl: 45; Sls. Mgr: Linda S. Cahill

**ERC**, See Electronic Research Co.

**ERCONA**, 979 North Ocean Ave., Patchogue, NY 11772, Tel: 516-758-0700, FAX: 516-758-0422; Empl: 10; Sls. Mgr: G. Moore; Dist. Mgr: L. Mills

**ERCON INCORPORATED**, 26 Emerson Road, Waltham, MA 02154, Tel: 617-899-1497, FAX: 617-899-2650; Sls. Mgr: Dennis Ehrreich

**ERGOTRON, INC.**, 3450 Yankee Dr., Eagan, MN 55121, Tel: 612-452-8135, TELEX: 4310015, FAX: 612-452-8346; Empl: 24; Sls. Mgr: Harry C. Sweere

# ERICSSON

## FAX: 214-680-1059

**ERICSSON COMPONENTS, INC.**, 403 International Parkway, Richardson, TX 75081, Tel: 214-997-6561, TELEX: 735389 ERICS RCHN ..... **D-1691-1697**

## Local Sales Offices &amp; Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AL | Huntsville, The Novus Grp., Inc.        | 205-534-0044 |
| AZ | Scottsdale, Sun Tech Sls.               | 602-860-8262 |
| CA | Cupertino, PEI Assocs. Inc.             | 408-253-1960 |
| CA | Garden Grove, ElSCO Elctms.             | 714-891-4621 |
| CA | San Diego, ElSCO Elctms.                | 619-292-1771 |
| CO | Denver, AKI                             | 303-388-4488 |
| CT | Greenwich, Ericsson Comps. Inc.         | 203-625-7300 |
| FL | Altamonte Springs, Kinetic Sls., Inc.   | 407-339-3855 |
| GA | Norcross, The Novus Grp., Inc.          | 404-263-0320 |
| IL | Elk Grove Village, Carlson Elctms. Sls. |              |
| KS | Lenexa, Web Assoc./Elctms., Inc.        | 708-956-8240 |
| MA | Whitinsville, Power Factor & Assoc.     | 913-541-8585 |
| MN | Edina, Mel Foster Tech. Sls., Inc.      | 508-234-6415 |
| MO | Florissant, Web Assoc./Elctms., Inc.    | 612-941-9790 |
| NJ | Marlton, Naudain Assocs., Inc.          | 314-921-5720 |
| NJ | Parlin, JMR Sls., Inc.                  | 609-983-5300 |
| NY | Wading River, Niktronics                | 201-525-8000 |
| NC | Cary, The Novus Grp., Inc.              | 516-929-4671 |
| OH | Cleveland, RK Comp. Sls., Inc.          | 919-460-7787 |
| TX | Dallas, Dynamark                        | 216-642-9312 |
| VA | Herndon, Stinson Assocs.                | 214-437-3333 |
| WA | Redmond, EMG-Elec. Mktg. Grp.           | 703-620-1331 |
| WA | Vancouver, EMG Elec. Mktg. Grp.         | 206-882-0962 |
| WI | Milwaukee, Carlson Elctms. Sls.         | 206-944-0761 |
|    |                                         | 414-476-2790 |

## Local Distributors

Can Markham, Ont., Deskin Inc. .... 416-475-1412

**ERICSON MANUFACTURING CO.**, 4215 Hamann Pkwy., Willoughby, OH 44094, Tel: 216-951-8000, TELEX: 98-5390, FAX: 216-951-1867; Empl: 110; Sls. Mgr: Dave Hardy



ERIE TECHN. PRODS., See Murata Erie No. Amer., Inc.

ERNI COMPONENTS, 520 Southlake Blvd., Richmond, VA 23236, Tel: 804-794-6367, FAX: 804-379-2109; Empl: 700; Sls. Mgr.: Thomas Noack



**FAX: 201-947-0406**

**ESC ELECTRONICS CORP.**, 534 Bergen Blvd., Palisades Pk, NJ 07650, Tel: 201-947-0400; Empl: 120  
A-1552-1565, 2329

**Local Sales Offices & Reps**

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AL  | Huntsville, Murcota Corp.             | 205-539-8476 |
| AZ  | Mesa, Sedco Sls.                      | 602-461-9069 |
| CA  | Newbury Pk, Westaironics              | 805-499-9844 |
| CA  | Santa Clara, Rodgers Assocs.          | 408-984-8110 |
| CO  | Denver, Donohue Sls. Co.              | 303-455-1719 |
| FL  | Palm Harbor, Sigma Tech. Assocs.      | 813-789-5522 |
| IL  | Elk Grove, Carlson Elctm. Sls. Co.    | 312-956-8240 |
| IA  | Cedar Rapids, Carlson Elctm. Sls. Co. | 319-378-1450 |
| KS  | Lenexa, Midwest Tech. Sls.            | 913-888-5100 |
| MD  | Ellicott City, Saltech                | 410-461-7350 |
| MA  | Swansea, Poisson Assocs., Inc.        | 508-677-3655 |
| MN  | Minneapolis, R-J, Inc.                | 612-866-3661 |
| MO  | Earth City, Midwest Tech. Sls.        | 314-298-8787 |
| NC  | Winston-Salem, Murcota Corp.          | 919-722-9445 |
| OR  | Beaverton, Ravenscraft                | 503-579-9261 |
| TX  | Plano, Zeus Engrg.                    | 214-423-2027 |
| WI  | Milwaukee, Carlson Elctm. Sls. Co.    | 414-476-2790 |
| EXP | NJ, Palisades Pk, ESC Elctms. Corp.   | 201-947-0400 |
| Can | Toronto, Ont., CEA Assocs.            | 416-231-9717 |

**ESCOD INDUSTRIES**, Insilco, 755 New Ludlow Rd., S. Hadley, MA 01075, Tel: 413-536-1800, FAX: 413-536-8425; Empl: 875

**ESC TECHNOLOGIES, INC.**, 14115 Chadron Ave., Hawthorne, CA 90250, Tel: 310-970-4090, FAX: 310-970-0820; Empl: 35; Sls. Mgr.: Gary L. Peterson; Dist. Mgr.: Gary L. Peterson

**ESE**, 142 Sierra St., El Segundo, CA 90245, Tel: 310-322-2136, FAX: 310-322-8127; FSC No.: 58525; Empl: 25; Sls. Mgr.: Brian Way, Dist. Mgr.: Brian Way

**ESICO/TRITON**, Triton Industries Inc., Box 247, Deep River, CT 06417, Tel: 203-526-5361, TELEX: 955439, FAX: 203-526-9524; FSC No.: 54195

**ESP SOLDER PLUS**, 14 Blackstone Valley Pl, Lincoln, RI 02865, Tel: 800-338-4353, 401-333-3800, FAX: 401-333-4954; Empl: 40; Sls. Mgr.: Ms. Kim Ranallo

**E-SQUARED TECHNOLOGY CORP.**, 4475 Dupont Ct #9, Ventura, CA 93003, Tel: 805-644-9544, FAX: 805-644-9584; Empl: 19; Sls. Mgr.: Larry D. Emery, Pres. & G.M.

**ESS, INC.**, 16310 No. Morris Rd., Sonora, CA 95370, Tel: 209-928-4900, FAX: 209-928-1117

**E-SWITCH, Electronic Components Groupe**, 26 North Fifth St., Minneapolis, MN 55403, Tel: 612-375-9639, FAX: 612-375-1900; Sls. Mgr.: Rick Hampton; Dist. Mgr.: Rick Hampton  
B-1722-1723

**Local Sales Offices & Reps**

|    |                                   |              |
|----|-----------------------------------|--------------|
| AL | Huntsville, New Age Elctms.       | 205-895-9400 |
| AZ | Tempe, ACS of Arizona             | 602-731-9711 |
| CA | Orange, RD & D Sls., Engrg., Inc. | 714-771-6110 |
| CA | San Jose, Westron Assocs.         | 408-264-4070 |
| CO | Littleton, Romulus Elctms., Inc.  | 303-770-4888 |
| FL | Melbourne, Phoenix Comps., Inc.   | 407-723-4414 |
| GA | Duluth, New Age Elctms.           | 404-476-0079 |
| IL | Palatine, Golbeck Milota          | 708-705-0602 |
| IN | Fishers, Connect 21, Inc.         | 317-578-2121 |
| KS | Lenexa, Midtec Assocs.            | 913-541-0505 |
| MI | Madison Hgts., D.E.M. Sls., Inc.  | 313-583-1500 |
| MN | Oakdale, Complete Sls.            | 612-731-2923 |
| MO | St. Louis, Midtec Assocs.         | 314-275-8666 |
| NH | Nashua, Bennetron                 | 603-880-7008 |
| NY | Syracuse, ADR Technlgs., Inc.     | 315-437-7087 |
| OH | Cleveland, Comps., Inc.           | 216-243-9200 |
| OK | Atoka, AID Elctms., Inc.          | 405-889-7638 |
| OR | Aloha, Turn-A-Round Sls.          | 503-649-1007 |
| PA | Fl. Washington, SMC, Inc.         | 215-628-3394 |
| TX | Irving, AID Elctms.               | 214-790-4761 |

|     |                                     |              |
|-----|-------------------------------------|--------------|
| VA  | Sterling, Beacon North Inc.         | 703-470-2480 |
| WA  | Kirkland, Turn-A-Round Sls.         | 206-822-4634 |
| WI  | Madison, Golbeck Milota             | 608-222-7037 |
| Can | Burlington, Ont., White Radio, Ltd. | 416-632-6894 |

**E-SYSTEMS**, Greenville Div., P.O. Box 6056, Greenville, TX 75403-6056, Tel: 903-455-3450, FAX: 903-457-4413; Sls. Mgr.: C. L. Byrom

**E-SYSTEMS**, Melpar Div., 7700 Arlington Blvd., Falls Church, VA 22046, Tel: 703-560-5000, FAX: 703-280-4627; Empl: 2,180

**E-SYSTEMS**, See Memcor-Truohm, Inc.



**FAX: 708-647-7494**

**E-T-A CIRCUIT BREAKERS**, 7400 N. Croname Rd., Niles, IL 60714, Tel: 708-647-8303; FSC No.: CAGE 06402; Sls. Mgr.: John Palsir; Dist. Mgr.: John Palsir  
B-1353-1357, 1721

**Local Sales Offices & Reps**

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AL  | Huntsville, South Tech Sls.         | 205-880-8200 |
| AZ  | Phoenix, Chaparral Elctms.          | 602-996-5909 |
| CA  | Los Angeles, Sierra-Pacific Eng.    | 714-731-3411 |
| CA  | Oceanside, Sierra-Pacific Engrg.    | 619-945-5917 |
| CA  | San Francisco, Ross Mktg.           | 408-988-8111 |
| CA  | Santa Clara, Ross Mktg. Assocs.     | 408-988-8111 |
| CA  | Tustin, Sierra-Pacific Engrg.       | 714-731-3411 |
| CO  | Denver, Promo Tech                  | 303-692-8484 |
| CT  | East Haven, Eagle Assocs.           | 203-467-4562 |
| FL  | Winter Springs, Sunland Assocs.     | 407-365-9533 |
| GA  | Atlanta, South Tech                 | 404-822-1764 |
| GA  | Lilburn, South Tech Sls.            | 404-381-2088 |
| IN  | Fl. Wayne, Needler Sls. Co.         | 219-447-2123 |
| IN  | Indianapolis, Needler Sls. Co.      | 317-255-8056 |
| KS  | Lenexa, Midtec Assoc.               | 913-541-0505 |
| MA  | Boston, Eagle Assocs.               | 617-444-3446 |
| MI  | Grand Rapids, Hilltronics, Inc.     | 616-364-0010 |
| MI  | Royal Oak, Hilltronics, Inc.        | 313-435-0920 |
| MN  | Eden Prairie, PWC, Inc.             | 612-934-1409 |
| MO  | St. Louis, Midtec Assoc.            | 314-275-8666 |
| NH  | Raymond, Eagle Assocs.              | 617-444-3446 |
| NM  | Albuquerque, Chaparral Elctms.      | 505-271-2266 |
| NY  | Hauptpage, Aurora-Schmitt Assocs.   | 516-434-1313 |
| NY  | Rochester, Lamb Comps.              | 716-328-6350 |
| NC  | Raleigh, Godwin Assocs.             | 919-878-8000 |
| OH  | Beachwood, Thompson & Assoc., Inc.  | 216-831-6277 |
| OH  | Dayton, Thompson & Assoc., Inc.     | 513-435-7733 |
| OH  | Orient, Thompson & Assoc., Inc.     | 614-877-4304 |
| OR  | Tigard, Eltech                      | 503-684-3458 |
| PA  | Horsham, Jacobsen Assoc.            | 215-674-2937 |
| PA  | Pittsburgh, Del Steffen & Assoc.    | 412-276-7366 |
| TX  | Seagoville, Delta Comps.            | 214-287-6333 |
| UT  | Salt Lake City, Frank Merchant      | 801-277-3775 |
| VA  | Sterling, Beacon North Inc.         | 703-478-2480 |
| WA  | Bellevue, Eltech                    | 206-643-4330 |
| WI  | Milwaukee, Star Engineering         | 414-645-3680 |
| Can | Dartmouth, N.S., Reptronics         | 902-465-4400 |
| Can | Montreal, Que., Cana Rep Grp., Inc. | 514-276-4477 |
| Can | Oakville, Ont., Cana Rep Grp., Inc. | 416-338-3399 |
| Can | Ottawa, Ont., Cana Rep Grp., Inc.   | 613-692-4682 |
| Can | Surrey, B.C., Cana Rep Grp., Inc.   | 604-599-1232 |

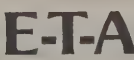
**Local Distributors**

|     |                                         |                |
|-----|-----------------------------------------|----------------|
| CA  | Van Nuys, Wes-Garde                     | 1-800-275-7101 |
| CT  | Hartford, Wes-Garde                     | 1-800-275-7091 |
| FL  | Lakeland, Wes-Garde                     | 1-800-275-7102 |
| IL  | Carol Stream, Wes-Garde                 | 1-800-275-7095 |
| KS  | Overland Park, Wes-Garde                | 1-800-275-7099 |
| MO  | St. Louis, Wes-Garde                    | 1-800-275-7097 |
| NH  | Nashua, Wes-Garde                       | 1-800-275-7093 |
| NJ  | Mt. Laurel, Wes-Garde                   | 1-800-275-7094 |
| OH  | Westerville, Wes-Garde                  | 1-800-275-7096 |
| OR  | Wilsonville, Wes-Garde                  | 1-800-275-7073 |
| TX  | Dallas, Wes-Garde                       | 1-800-275-7103 |
| Can | Burnaby, B.C., Cesco Elctri. Supps.     | 604-273-2911   |
| Can | Calgary, Alb., B & E Indust. Elctms.    | 403-243-7215   |
| Can | Calgary, Alb., Cardinal Indt. Elctms.   | 403-259-6817   |
| Can | Calgary, Alb., Electro Sonic            | 403-255-9550   |
| Can | Calgary, Alb., Memco                    | 403-258-3399   |
| Can | Calgary, Alb., R.L. Brews & Sons Ltd.   | 403-243-1144   |
| Can | Chomedy Laval, Que., Futech A.S.C. Inc. | 514-668-8086   |
| Can | Dartmouth, N.S., Arcorn Elctms.         | 902-464-1600   |
| Can | Edmonton, Alb., Cardinal Indt. Elctms.  | 403-483-6266   |
| Can | Edmonton, Alb., R.L. Brews & Sons Ltd.  | 603-452-3730   |

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| Can | Langley, B.C., Panda Indust. Prods. Ltd. | 604-888-2220 |
| Can | Ottawa, Ont., Electro Sonic Inc.         | 613-728-8333 |
| Can | Richmond, B.C., Electro Sonic            | 604-273-2911 |
| Can | Saskatoon, Sas., Cardinal Indt. Elctms.  | 306-934-3443 |
| Can | St. Laurent, Que., Besco Elctri. Supps.  | 514-337-6110 |
| Can | St. Laurent, Que., Futech- St. Laurent   | 514-956-1630 |
| Can | St. Laurent, Que., Westburne Que., Inc.  | 514-332-5331 |
| Can | Surrey, B.C., Memco                      | 604-590-1553 |
| Can | Willowdale, Ont., Electro Sonic Inc.     | 416-494-1666 |
| Can | Winnipeg, Man., Electro Sonic            | 204-789-3105 |
| Can | Winnipeg, Man., Westburne Amesco Entprs. | 204-786-4451 |

**ETA POWER**, See JETA Power Systems

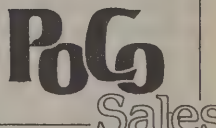
**ETI SYSTEMS**, Polaris Indl. Entprs., 2251 Las Palmas Dr., Carlsbad, CA 92009, Tel: 619-929-0749, FAX: 619-929-0748; FSC No.: 952 762672; Sls. Mgr.: Bill Tice; Dist. Mgr.: Debbie Marshall  
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|----|----------------------------------|--------------|
| AZ | Phoenix, Allied Elctms.          | 602-437-9080 |
| CA | Fremont, Allied Elctms.          | 510-505-0220 |
| CA | S. San Francisco, Allied Elctms. | 415-952-9599 |
| CA | San Diego, Allied Elctms.        | 619-279-2550 |
| CA | Torrance, Allied Elctms.         | 310-373-8828 |
| CO | Englewood, Allied Elctms.        | 303-790-1664 |
| CT | Cheshire, Allied Elctms.         | 203-272-7730 |
| FL | Ft. Lauderdale, Allied Elctms.   | 305-733-3144 |
| GA | Atlanta, Motion Elctms., Inc.    | 404-455-8262 |
| GA | Duluth, Allied Elctms.           | 404-497-9544 |
| IL | Wood Dale, Allied Elctms.        | 708-860-0007 |
| MD | Columbia, Allied Elctms.         | 410-381-1560 |
| MA | Billerica, Allied Elctms.        | 508-667-7921 |
| NY | Mineola, Allied Elctms.          | 516-248-2360 |
| NC | Raleigh, Allied Elctms.          | 919-876-5845 |
| OH | Beachwood, Allied Elctms.        | 216-831-4900 |
| OK | Tulsa, Allied Elctms.            | 918-664-0844 |
| PA | Newton Square, QDI               | 215-359-1000 |
| PA | Pittsburgh, Allied Elctms.       | 412-367-4124 |
| TX | Ft. Worth, Allied Elctms.        | 817-595-3500 |
| TX | Houston, Allied Elctms.          | 713-455-3993 |
| TX | Humble, Allied Elctms.           | 713-446-8005 |
| VA | Virginia Bch, Allied Elctms.     | 804-363-8662 |
| WA | Everett, Allied Elctms.          | 206-353-7313 |
| WI | New Berlin, Allied Elctms.       | 414-796-1280 |

ETM ELECTROMATIC INC, 35451 Dumbarton Ct,  
Newark, CA 94560, Tel: 510-797-1100, FAX: 510-797-  
4358; Empl: 85; Sls. Mgr: Kenneth F. Lillis

# ETRI

FAX: 704-283-7170

ETRI, INC., 1503 Rocky River Rd, North, Monroe, NC  
28110, Tel: 704-289-5423; Sls. Mgr: Peter Pignetti  
C•1585-1591

## Local Sales Offices &amp; Reps

|     |                                    |              |
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| AL  | Huntsville, New Age Elctms.        | 205-895-9400 |
| AZ  | Scottsdale, Spectrum Mktg.         | 602-890-9000 |
| CA  | Cupertino, Prism Tech. Sls.        | 408-366-6766 |
| CA  | Irvine, Groh Assocs.               | 714-837-9871 |
| CA  | San Diego, Bestronics              | 619-693-1111 |
| FL  | Boca Raton, Electrocraft           | 407-394-9686 |
| FL  | Largo, Electrocraft                | 813-544-1766 |
| GA  | Duluth, New Age Elctms.            | 404-476-0079 |
| IL  | Glen Ellyn, Lincoln, Hodges        | 708-469-6075 |
| KS  | Overland Pk, Spectrum Sls.         | 913-648-6811 |
| MD  | Pasadena, EES                      | 410-255-9686 |
| MI  | Chelsea, Sean T. Sls.              | 313-475-2021 |
| MN  | Minneapolis, Milt Westlund Assocs. | 612-866-5002 |
| MO  | Florissant, Spectrum Sls.          | 314-921-1313 |
| NH  | Salem, Sls. Engrg. Co.             | 603-893-5521 |
| NJ  | Medford, McCoy Grp.                | 609-953-0770 |
| NY  | Port Washington, Ashtec, Inc.      | 516-767-0336 |
| OH  | Dayton, K W Elctms.                | 513-890-2150 |
| OH  | Shaker Hgts., K W Elctms.          | 216-491-9177 |
| PA  | Pittsburgh, K W Elctms.            | 412-492-0777 |
| PA  | Valley Forge, McCoy Grp.           | 215-783-1919 |
| TX  | Dallas, Fralia Co. & Assoc.        | 817-354-1144 |
| VA  | Remington, EES                     | 703-439-2866 |
| WA  | Redmond, SEA                       | 206-883-4999 |
| WA  | Vancouver, SEA                     | 206-573-5161 |
| Can | Mississauga, Ont, R-Theta          | 416-890-0221 |



## Local Distributors

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AZ  | Tempe, Acacia/Deanco                     | 602-894-2874 |
| CA  | Fountain Valley, Components Ctr.         | 714-979-0433 |
| CA  | Fremont, Acacia/Deanco                   | 510-663-7500 |
| CA  | Irvine, Acacia/Deanco                    | 714-660-0834 |
| CA  | Oakland, Brill                           | 510-834-5888 |
| CA  | San Diego, Acacia/Deanco                 | 619-597-0577 |
| CA  | Santa Clara, Components Ctr.             | 408-988-3751 |
| CO  | Lakewood, Acacia/Deanco                  | 303-232-2882 |
| CT  | Milford, Milgray Elctms.                 | 203-878-5538 |
| FL  | Altamonte Springs, Pioneer Elctms.       | 305-834-9090 |
| FL  | Deerfield Beach, Pioneer Elctms.         | 305-428-8877 |
| FL  | Lake Mary, Milgray Elctms.               | 407-321-2555 |
| FL  | Tampa, Reptron                           | 813-855-4656 |
| GA  | Norcross, Milgray Elctms.                | 404-446-9777 |
| IL  | Bensenville, Voyager Elctms.             | 312-860-1300 |
| IL  | Palatine, Milgray Elctms.                | 708-202-1900 |
| IL  | Palatine, OHM Elctms.                    | 312-359-5500 |
| IN  | Indianapolis, Advent Elctms.             | 317-872-4910 |
| KS  | Overland Park, Milgray Elctms.           | 913-236-8800 |
| MD  | Columbia, Milgray Elctms.                | 301-621-8169 |
| MD  | Gaithersburg, MS Elctms.                 | 301-921-0200 |
| MA  | Andover, Bell Industries                 | 508-474-8880 |
| MA  | Tewksbury, Jaco Elctms., Inc.            | 508-640-0010 |
| MA  | Wilmington, MilGray Elctms.              | 508-657-5900 |
| MA  | Winchester, Webb Distribution            | 617-729-5800 |
| MI  | Livonia, LWC Elctms.                     | 313-464-7700 |
| MN  | Minneapolis, Stark Elctms.               | 612-332-1325 |
| NJ  | Marlton, Milgray Elctms.                 | 609-983-5010 |
| NY  | Farmingdale, Milgray Elctms.             | 516-420-9800 |
| NY  | Pittsford, Milgray Elctms.               | 716-381-9700 |
| NC  | Raleigh, Milgray Elctms.                 | 919-790-8094 |
| OH  | Cleveland, Milgray Elctms.               | 216-447-1520 |
| OR  | Beaverton, Acacia/Deanco                 | 503-646-3377 |
| PA  | Allentown, P.A. Peters                   | 215-434-5237 |
| PA  | Montgomeryville, Reptron                 | 215-643-2850 |
| TX  | Dallas, Milgray Elctms.                  | 214-248-1603 |
| TX  | Dallas, Norvell Elctms.                  | 214-233-0020 |
| UT  | Midvale, Bell Inds.                      | 801-255-9611 |
| VA  | Charlottesville, Virginia Elctrn. Comps. | 804-296-4184 |
| WA  | Redmond, Acacia/Deanco                   | 206-881-5566 |
| Can | Mississauga, Ont, R-Theta                | 416-890-0221 |

EU BANKS ENGINEERING, 950 E. Royal Oaks Dr.,  
Monrovia, CA 91016, Tel: 818-357-7011, TELEX: 675403,  
FAX: 818-357-4718; Empl: 90; Sls. Mgr: James Reed

EURO-DIP, See Mil-Max Manufacturing Corp.

EURO QUARZ GMBH, See Raltron Electronics Corp.

EVANS ELECTRONICS, Box 5055, Berkeley, CA 94705,  
Tel: 510-653-3083

EVAPORATED COATINGS, INC., 2365 Maryland Rd.,  
Willow Grove, PA 19090, Tel: 215-659-3080, FAX: 215-  
659-1275; Empl: 40; Sls. Mgr: Stephen L. Schaffer

EVENTIDE, INC., One Alsan Way, Little Ferry, NJ 07643,  
Tel: 201-641-1200, FAX: 201-641-1640; Empl: 53; Sls.  
Mgr: Gil Griffith; Dist. Mgr: Gil Griffith



FAX: 314-982-4078

EVEREADY BATTERY CO. INC., Checkerboard  
Square, St. Louis, MO 63164, Tel: 314-982-2000

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| CA | Irvine        | 714-753-0588 |
| GA | Duluth        | 404-279-0228 |
| IL | Lisle         | 708-964-8668 |
| MO | St. Louis     | 314-982-2000 |
| NJ | Saddle Brook  | 201-845-5400 |
| OH | Independence  | 216-447-1127 |
| TX | Dallas        | 214-661-1351 |
| WA | Battle Ground | 206-687-0375 |

EVEREST ELECTRONIC EQUIPMENT, 2683 Hamilton  
Mill Rd., Buford, GA 30518, Tel: 404-932-2900, FAX: 404-  
932-5473; Empl: 240; Sls. Mgr: Barry Holman; Dist. Mgr:  
Barry Holman

EVEREST ELECTRONIC EQUIPMENT, INC., 2100 E.  
Orangewood Avenue, Anaheim, CA 92806, Tel: 714-634-  
2200, FAX: 908-446-5362; Empl: 200; Sls. Mgr: Barry  
Holman; Dist. Mgr: Barry Holman

EVEREST INTERSCIENCE, INC., P. O. Box 3840,  
Fullerton, CA 92634-3640, Tel: 800-422-4342, FAX: 714-  
992-0178; Empl: 20; Sls. Mgr: Patrick Cash; Dist. Mgr:  
Marilyn M. Everest

EVERETT CHARLES TECHNOLOGIES, FIXTURE  
DIVISION, One Fairchild Square, Clifton Park, NY 12065,  
Tel: 518-877-7042; Empl: 150; Sls. Mgr: Jack Banyas

EVI, INC., 7138 Columbia Gateway Dr., Columbia, MD 21046,  
Tel: 410-290-1919, FAX: 410-290-1925; Empl: 30

EVOX-RIFA INC., 100 Tri State Int'l, Ste 290, Lincolnshire,  
IL 60069, Tel: 708-948-9511, FAX: 708-948-9320; Empl:  
2000; Sls. Mgr: George Sinnokrak; Dist. Mgr: George  
Sinnokrak

EWALD INSTRUMENTS CORP., 28 Maple St, Kent, CT  
06757, Tel: 203-927-3278, FAX: 203-927-3031



FAX: 908-446-5362

EWC, INC., 385 Highway 33, Englishtown, NJ 07726, Tel:  
908-446-3110; FSC No: 15387; MIL-T-27D; Empl: 120;  
Sls. Mgr: Jay Stevenson; Dist. Mgr: Jay Stevenson  
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| CA | Canoga Park, Cummings & Assocs.         | 818-340-6035 |
| CA | Los Gatos, Featherstone Sls.            | 408-356-3243 |
| CO | Broomfield, Summitwest Mktg.            | 303-460-9600 |
| FL | Orlando, GRA-MAR                        | 407-658-1971 |
| IL | Wooddale, Dab Elctms.                   | 708-595-9210 |
| IA | Cedar Rapids, Pattison Sls.             | 319-395-9866 |
| KS | Prairie Village, Clyde Logsdon & Assoc. | 913-381-3833 |
| MA | Chelmsford, ISA Sls.                    | 508-256-2287 |
| MO | St. Louis, Clyde Logsdon & Assocs.      | 314-849-5125 |
| NJ | Allenwood, ACl Sls.                     | 201-223-5895 |
| NJ | E. Brunswick, Winch Assoc.              | 201-228-4615 |
| NY | Pittsford, James E. Zimmerman Sls.      | 716-381-3186 |
| NY | Plainview, Winch Assocs.                | 516-681-3163 |
| OH | Cincinnati, Frank E. Kahsar Sls.        | 513-598-1484 |
| PA | Youngwood, Pro Mark                     | 412-925-1905 |
| TX | Dallas, Rem Air Comps.                  | 214-234-1069 |
| WI | Waukesha, Dab Elctms.                   | 414-784-3544 |

EXAR CORP., 2222 Qume Dr., P.O. Box 49007, San Jose,  
CA 95161-9007, Tel: 408-434-6400, TWX: 910-339-9233,  
FAX: 408-943-8245; Empl: 500; Sls. Mgr: Fred Umutia,  
Sls. Dir.; Dist. Mgr: Jack Hanoka

EXATRON AUTOMATIC TEST EQUIP., 2842 Aiello Dr.,  
San Jose, CA 95111, Tel: 408-629-7600, 800-EXA-TRON,  
FAX: 408-629-2832; Empl: 24; Sls. Mgr: Kathryn  
Henderson

EXCEL SPECIALTY CORP., 6335 N. Broadway, Chicago,  
IL 60660, Tel: 312-262-4781, FAX: 312-262-1330; Empl:  
50

EXCEL TECHNOLOGY INTL CORP., 5-4 Stryker La.,  
Belle Mead, NJ 08502, Tel: 908-874-4747, ESYLNK: 908-  
874-3278; Sls. Mgr: Michi Chen

B•1062

EXELTECH INC., 7018 Baker Blvd., Ft. Worth, TX 76118,  
Tel: 817-595-4969, FAX: 800-886-4683; Empl: 12

EXFO. E.O. ENGINEERING, INC., 465 Godin Ave.,  
Vanier, QC, Canada G1M 3G7, Tel: 418-683-0211, 1-800-  
663-EXFO, FAX: 418-683-2170; Empl: 100; Sls. Mgr:  
Germain Lamonde; Dist. Mgr: John Spychka

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| IL | Arlington Heights, EXFO E.O. Eng. | 708-259-9440 |
| NC | Wake Forest, EXFO E.O. Eng.       | 919-554-4884 |
| PA | Horsham, EXFO E.O. Eng.           | 215-672-4065 |
| TX | Dallas, EXFO E.O. Eng.            | 214-692-9018 |

## Local Distributors

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| AZ | Phoenix, Jensen Tools, Inc.            | 602-968-6241 |
| CA | Cypress, Ward/Davis Assoc.             | 714-827-8490 |
| CA | Mountain View, Ichirep Co., Inc.       | 415-856-2503 |
| CO | Lakewood, T.M.M.I.                     | 303-232-1516 |
| FL | Melbourne, Reynolds & Assocs.          | 407-259-7000 |
| IL | South Holland, Fiber Solutions         | 708-339-2500 |
| MD | Chelmsford, Fico, Inc.                 | 508-250-4445 |
| MI | Farmington Hills, Advanced Comms, Inc. | 313-489-1400 |
| NJ | New Jersey, Thaw Sls. & Mktg.          | 908-757-8150 |



NM Albuquerque, T.M.M.I. .... 505-298-6893  
 NY New York, Codenoll Tech. Corp. .... 914-965-6300  
 OH Akron, Famous Telephone Inc. .... 216-762-8811  
 PA Southampton, W.A. Drobile Inc. .... 215-364-2501  
 TX Plano, Engrg. Equip. Sls. Inc. .... 214-578-1146  
 VA Fairfax, Schibley Assocs., Inc. .... 703-591-3008  
 WA Seattle, Radar Elec. Co., Inc. .... 206-282-2511

EXPRESS TEST CORP., 975 Benicia Ave., P.O. Box 3419,  
 Sunnyvale, CA 94088-3419, Tel: 408-737-3555, TELEX:  
 4942091, FAX: 408-737-3558; Sls. Mgr.: Frank S. Gavin

EXSELECT ENGINEERING LTD., 355 Rayette Rd.,  
 Concord, Ont, Canada LK4G2, Tel: 416-738-4077, FAX:  
 416-738-6604; Empl: 28

EXTech INSTRUMENTS CORP., 335 Bear Hill Rd.,  
 Waltham, MA 02154, Tel: 617-890-7440, FAX: 617-890-  
 7864

EXTRUSION TECHNOLOGY, INC., 82 Trim Way,  
 Randolph, MA 02368, Tel: 617-963-7200, FAX: 617-963-  
 7203; Empl: 50; Sls. Mgr.: Matt Travers ..... **B-1828;**  
**C-1042-1043**

EYRING, INC., 1455 W. 820 N., Provo, UT 84601, Tel: 801-  
 375-2434, TELEX: 882000, FAX: 801-374-8339; Empl:  
 150; Sls. Mgr.: David S. Turner

E-Z HOOK, Tektest Inc., 225 N. Second Ave., Arcadia, CA  
 91006, Tel: 818-446-6175, FAX: 818-446-0972; FSC No.:  
 08505; Empl: 23; Sls. Mgr.: P.C. Wood; Dist. Mgr.: P.C.  
 Wood

FABRICAST, 2517 Seaman Ave., P.O. Box 3176, S. El  
 Monte, CA 91733, Tel: 818-443-3247, FAX: 818-443-5594;  
 FSC No.: 13345; Sls. Mgr.: Phelps Wood ..... **B-1254-1259**

FAGOR ELECTRONIC COMPONENTS, INC., Fagor  
 Electronica S. Coop., 2250 Estes Avenue, Elk Grove  
 Village, IL 60007, Tel: 708-981-0161, FAX: 708-981-1311

FAIRBANKS SCALES: FAIRBANKS INC., 711 E. St.  
 Johnsbury Rd., St. Johnsbury, VT 05819, Tel: 800-451-  
 4107, 802-748-5111, FAX: 802-748-5216

FAIR-RITE PRODS., PO Box J, Wallkill, NY 12589, Tel:  
 914-895-2055, FAX: 914-895-2629; FSC No.: 34899;  
 Empl: 2000; Sls. Mgr.: B. G. Tolén

FALCON ELECTRIC, 1960 Walker Ave., Monrovia, CA  
 91016, Tel: 800-842-6940, FAX: 818-285-0102; Empl:  
 100; Sls. Mgr.: Ron Seredian, Acct. Mgr.; Dist. Mgr.: Ron  
 Seredian, Acct. Mgr.

FANCORT INDUSTRIES, INC., 31 Fairfield Place, W.  
 Caldwell, NJ 07006, Tel: 201-575-0610, FAX: 201-575-  
 9234; Empl: 23; Sls. Mgr.: Robert Antonelli; Dist. Mgr.:  
 Lucille Ott

FAN-S CORP., See Qualtek Electronics Corp.

FARIA, THOMAS G., CORP., P.O. Box 983, Uncasville, CT  
 06382-0983, Tel: 203-848-9271, FAX: 203-848-2704; FSC  
 No.: 09527; Empl: 250; Sls. Mgr.: A. Knupp

FARNELL ADVANCE POWER, 32111 Aurora Rd.,  
 Solon, OH 44139, Tel: 216-349-0755, FAX: 216-349-0142;  
 Empl: 10 ..... **D-1699-1704**

Local Sales Offices & Reps  
 AZ Scottsdale, Fred Board Assocs. .... 602-994-9388,  
 FAX: 602-944-9477  
 CA Anaheim, Leonard P. Beckman ..... 714-491-7441,  
 FAX: 714-491-2408  
 CA Long Beach, L.A. Sls. .... 213-491-0791  
 CA San Ramon, Synergy Sls. .... 510-830-0829,  
 FAX: 510-830-0951  
 CA San Ramon, Tim Joynson ..... 510-735-8206,  
 FAX: 510-735-8207  
 CO Englewood, Comp. Sls., Inc. .... 303-779-8060,  
 FAX: 303-779-8357  
 FL Orlando, Aurora-Schmitt Assocs. .... 407-297-6039  
 IL Elk Grove, Carlson Elctms. .... 708-956-8240,  
 FAX: 708-956-8289  
 MD Baltimore, Herman K. Kramer ..... 410-528-9120,  
 FAX: 410-528-9116  
 MD Monkton, Imagitron Sls. Co; Inc. .... 301-374-5600,  
 FAX: 301-372-5888  
 MN Minneapolis, Comps. Grp. Corp. .... 612-374-1250,  
 FAX: 612-374-5434  
 NH Salem, Sls. Engrg. .... 603-893-5521,  
 FAX: 603-893-7680  
 NY Clarence, R.W. Mitscher Co. .... 716-759-2350,  
 FAX: 716-759-6976

NY Hauppauge, Aurora-Schmitt Assocs. .... 516-434-1313, FAX: 516-434-1572  
 OH Dayton, The Lyons Corp. .... 512-278-0714,  
 FAX: 512-278-3609  
 PA Drexel Hill, DNE Sls. Co. .... 215-789-6822,  
 FAX: 215-789-3508  
 SC Walhalla, Overton Assocs. .... 803-638-7101,  
 FAX: 803-638-2830  
 TX Dallas, Blair Engrg., Inc. .... 214-241-5655,  
 FAX: 214-241-3642

FARRAND CONTROLS, Ruhle Companies, Inc.,  
 99 Wall St., Valhalla, NY 10595, Tel: 914-761-2600, FAX:  
 914-761-0405; Empl: 55 ..... **B-1949**

FASCO MOTORS GROUP, 500 Chesterfield Center No.  
 500, Chesterfield, MO 63017, Tel: 314-532-3505, FAX:  
 314-532-9306; Empl: 4000; Dist. Mgr.: R. J. Darragh/D.  
 Schmitt Merchandising Mgr.

FASTEX, Illinois Tool Works, 195 Algonquin Rd., Des  
 Plaines, IL 60016, Tel: 708-299-2222, FAX: 708-390-6183;  
 FSC No.: 02768; Empl: 175; Sls. Mgr.: Andy Flis; Dist.  
 Mgr.: Andy Flis

FASTEX DISTRIBUTOR BUSINESS, Illinois Tool  
 Works, 195 Algonquin Rd., Des Plaines, IL 60016, Tel:  
 708-350-8200, FAX: 708-595-2141; Empl: 170; Sls. Mgr.:  
 Andy Flis

# FDK

FAX: 408-435-7478

FDK AMERICA, INC., Fuji Electrochemical Co.,  
 Ltd., 3099 N. First St., San Jose, CA 95134, Tel: 408-432-  
 8331; Sls. Mgr.: Sumio Watanabe ..... **A-1698, 2348;**  
**D-1096**

Local Sales Offices & Reps  
 CA San Jose, FDK America, Inc. .... 408-432-8331  
 MA Boston, FDK America, Inc. .... 617-487-3198  
 TX Dallas, FDK America, Inc. .... 214-650-7742

F-DYNE ELECTRONICS, See Southern Electronics  
 F-Dyne

FEE FIL-MAG, 9445 Farnham Street, San Diego, CA  
 92123, Tel: 619-569-6577, FAX: 619-569-6073; Empl:  
 1200; Sls. Mgr.: Marc Jay Lampert; Dist. Mgr.: Jim Seifert  
 ..... **A-1634-1637, 2349-2351; D-2109**

Local Sales Offices & Reps  
 CA San Diego, FEE Fil-Mag ..... 619-569-6577  
 CA Santa Clara, FEE Fil-Mag ..... 408-562-6264  
 CO Englewood, FEE Fil-Mag ..... 303-721-8513  
 GA Cummings, FEE Fil-Mag ..... 404-889-8231  
 IL Des Plaines, FEE Fil-Mag ..... 708-297-6937  
 MA Medfield, FEE Fil-Mag ..... 508-359-9691  
 NJ Fairfield, TAM ..... 201-575-4130  
 Can Don Mills, Ont., Canadian Source Corp. .... 416-445-0211

Local Distributors  
 CA San Jose, CAPSTONE ..... 408-453-9804  
 CA Tustin, CAPSTONE ..... 714-730-0349  
 CO Aurora, CAPSTONE ..... 303-375-1300  
 IL Itasca, CAPSTONE ..... 708-250-0300  
 MA Wilmington, CAPSTONE ..... 508-657-5874  
 NJ Marlton, CAPSTONE ..... 609-596-7500  
 NM Los Alamos, CAPSTONE ..... 505-662-0745  
 NC Raleigh, CAPSTONE ..... 919-954-0600  
 TX Carrollton, CAPSTONE ..... 214-380-9049  
 Can Mississauga, Ont., CAPSTONE ..... 416-670-2010

FEI MICROWAVE, INC., Frequency Electronics, Inc.,  
 825 Stewart Dr., Sunnyvale, CA 94086, Tel: 408-732-0880,  
 FAX: 408-730-1622; FSC No.: 21847; Empl: 240; Sls.  
 Mgr.: Joe Lee

FELLER US CORPORATION, AFN Div., 72 Veronica  
 Ave./Unit 4, Somerset, NJ 08873, Tel: 908-247-7333, FAX:  
 908-247-7279; Empl: 310; Sls. Mgr.: Elfie Schwarzwinger

FEL-PRO CHEMICAL PRODUCTS LP., 6120 E. 58th  
 Ave., Commerce City, CO 80022, Tel: 303-289-5651, FAX:  
 303-289-5283; Sls. Mgr.: James R. Hallstrom

FEMA ELCTRNS. CORP., 12-6 Edgeboro Rd., E.  
 Brunswick, NJ 08816, Tel: 908-238-1223, FAX: 908-238-  
 7981; Empl: 16 to 20; Sls. Mgr.: E. Wong; Dist. Mgr.: E.  
 Wong ..... **B-1063**

FENWAL INC., 400 Main St., Ashland, MA 01721, Tel: 508-  
 881-2000, TELEX: 948421, FAX: 508-881-6729; Empl:  
 1000; Sls. Mgr.: D. Rieley



FAX: 508-473-6035

FENWAL ELECTRONICS, INC., 450 Fortune Blvd.,  
 Milford, MA 01757, Tel: 508-478-6000, TELEX: 299550;  
 Empl: 450; Sls. Mgr.: Herb Holmstedt; Dist. Mgr.: Herb  
 Holmstedt ..... **B-1875**

Local Sales Offices & Reps  
 CA Garden Grove, Elscoc Elctms., Inc. .... 714-891-4621  
 CO Denver, Spectrum Mktg. Assocs., Inc. .... 303-480-9991  
 FL Palm Beach Gardens, Graham Assoc., Inc. .... 407-622-4049  
 IL Itasca, Janus Inc. .... 708-250-9650  
 IN Indianapolis, CC Electro Sales, Inc. .... 317-921-5000  
 IA Cedar Rapids, Dy-Tronix, Inc. .... 319-377-8275  
 KS Wichita, Dy-Tronix, Inc. .... 316-838-0884  
 MD Gaithersburg, Naudain Assoc. So., Inc. .... 301-258-5040  
 MI Royal Oak, Hilltronics, Inc. .... 313-435-0920  
 MN So. St. Paul, Northport Engrg., Inc. .... 612-457-8000  
 MO Bridgeton, Dy-Tronix, Inc. .... 314-291-4777  
 KS Leawood, Dy-Tronix, Inc. .... 913-339-6333  
 NY Huntington, CDB Entprs. .... 516-692-5200  
 NY Penfield, Upstate Comps. Sls., Inc. .... 716-381-6070  
 NC Raleigh, Prime Comps., Inc. .... 919-850-9866  
 PA Allison Park, Bear Mktg., Inc. .... 412-942-1150  
 PA Wynnewood, Metz-Jade Assoc. .... 215-896-7300  
 TX Austin, W. Pat Fralia Co. & Assoc., Inc. .... 817-354-1144

TX Euless, W. Pat Fralia Co. & Assoc., Inc. .... 817-267-3577  
 TX Houston, W. Pat Fralia Co. & Assoc., Inc. .... 817-354-1144  
 UT Ogden, Spectrum Mktg. Assocs., Inc. .... 801-972-8552  
 WA Bellevue, Elctm. Sources, Inc. .... 206-451-3500  
 EXP MA, Milford, Fenwal Elctms. .... 508-478-5255  
 Can Que., John G. Weiss Co., Ltd. .... 514-685-6644

Local Distributors  
 CA Chatsworth, Mil-Comm Distr. .... 818-998-3111  
 CA San Jose, Rose Elctm. Distr. .... 408-943-0200  
 CO Denver, Newark-Denver Elctm. Supp. .... 303-757-3351  
 FL Clearwater, Newark Elctms. .... 813-443-0661  
 GA Norcross, Newark Elctms. .... 404-448-1300  
 IL Chicago, Newark Elctms. Corp. .... 312-784-5100  
 MD Ellicott City, Newark Elctms. .... 301-461-2300  
 MA Woburn, Newark Elctms. .... 617-935-8350  
 MI Oak Park, Newark Elctms. .... 313-967-0600  
 NJ Pennsauken, Newark Elctms. .... 609-663-9490  
 NY Buffalo, Summit Dist. .... 716-887-2800  
 NY Rochester, Summit Elctms. .... 716-334-8110  
 NC Winston-Salem, Kirkman Elctms. .... 919-722-9131  
 OH Cleveland, Newark Elctms. .... 216-391-9330  
 PA Wynnewood, Metz-Benham Assoc., Inc. .... 215-896-7300  
 TX Fort Worth, Patco Supply .... 817-429-8596  
 TX Garland, Newark Elctms. .... 214-494-5911  
 Can Que., John G. Weiss Co., Ltd. .... 514-337-5022

FERNO-SALESMAKER, Ferno-Washington, Inc., 70  
 Weill Way, Wilmington, OH 45177, Tel: 513-382-1451,  
 TELEX: 214282, FAX: 513-383-1157; Empl: 600

FERNWOOD TRANSFORMER CO., Transistor  
 Devices Inc., 560 Independence St., Belvidere, NJ  
 07823, Tel: 908-475-3207, FAX: 908-475-3242; FSC No.:  
 3S657; Empl: 90 ..... **A-2355**

FERRANTI-PACKARD, See F-P Electronics

FERRANTI VENUS, INC., Ferranti International, 399  
 Smith St., Farmingdale, NY 11735, Tel: 516-293-4100,  
 TWX: 510-224-6492, FAX: 516-752-7976; Empl: 400; Sls.  
 Mgr.: Thomas White

FERRAZ CORPORATION, 14 Eastmans Rd., Parsippany,  
 NJ 07054, Tel: 201-428-8400, 800-526-9067, TELEX:  
 136045, FAX: 201-428-0599; Empl: 100; Sls. Mgr.:  
 Douglas L. Bennett; Dist. Mgr.: Douglas L. Bennett

FERRETEC INC., 3342 Gateway Blvd., Fremont, CA 94538-  
 6525, Tel: 510-226-1216, FAX: 510-651-8771; FSC No.:  
 7W279; Empl: 65; Sls. Mgr.: Dirk Hoekstra



**FERRITE INTERNATIONAL**, 15280 Wadsworth Rd., Wadsworth, IL 60083, Tel: 708-249-4900, FAX: 708-249-4988; Empl: 60; *Sls. Mgr.*: George Orenchak

**FERRO CORPORATION, Filled & Reinforced Plastics Div.**, 5001 O'Hara Dr., Evansville, IN 47711, Tel: 812-423-5218, FAX: 812-423-1864; *Sls. Mgr.*: J. C. Vaughn

**FERRO CORPORATION, Electronic Glass Department**, 4150 East 56th Street, Cleveland, OH 44101, Tel: 216-641-8580, FAX: 216-641-8857; *Sls. Mgr.*: Tack Whang, Bus. Mgr.

**FERRO CORPORATION, Electronic Materials Div.**, 27 Castilian Dr., Santa Barbara, CA 93117-3092, Tel: 805-968-5000, TELEX: 98-0165, FAX: 805-968-8624; *Sls. Mgr.*: William T. Faix, Nat. Sls. Mgr.

**FERRO CORPORATION, Frit Division**, 4150 East 56th St., Cleveland, OH 44101, Tel: 216-641-8580, TELEX: 98-0165, FAX: 216-641-2049; *Sls. Mgr.*: James Stalder

**FERRO CORPORATION, Powder Coatings Div.**, 4150 East 56th St., Cleveland, OH 44101, Tel: 216-641-8580, TELEX: 98-0165, FAX: 216-641-8596; Empl: 300

**FERRO CORPORATION, Plastic Colorants & Dispersions**, 3 Railroad Ave., P.O. Box 603, Stryker, OH 43557, Tel: 419-682-3311, TELEX: 419-682-4924; *Sls. Mgr.*: Robert T. Schneider

**FERRO CORPORATION, Transelco Div.**, P.O. Box 217, Penn Yan, NY 14527-0127, Tel: 315-536-3357, FAX: 315-536-8091; *Sls. Mgr.*: J. F. Arthur/W. Germond

**FERROFLUIDICS CORP.**, 40 Simon St., Nashua, NH 03061, Tel: 603-883-9800, FAX: 603-883-2308; Empl: 221; *Dist. Mgr.*: Kurt J. Lesker Company

**FERRONICS**, 45 O'Connor Rd., Fairport, NY 14450, Tel: 716-388-1020, FAX: 716-388-0036; FSC No.: 33062; Empl: 49; *Sls. Mgr.*: Tim Reeder

*Local Sales Offices & Reps*

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Huntsville, L & D                     | 205-837-1469 |
| AZ | Tempe, Gassner & Clark                | 602-968-9037 |
| CA | San Diego, Texel                      | 619-576-2162 |
| CA | San Jose, Texel/North                 | 408-272-6836 |
| CA | Seal Beach, Texel                     | 213-596-9411 |
| FL | Oviedo, Comps. Co.                    | 407-366-7399 |
| GA | Atlanta, L & D                        | 404-395-7079 |
| IL | Rolling Meadows, Sumer, Inc.          | 708-991-8500 |
| IN | Indianapolis, John H. Weaver Co. Inc. |              |

|     |                                 |              |
|-----|---------------------------------|--------------|
| IA  | Cedar Rapids, Dytronix Inc.     | 317-257-7661 |
| IA  | Cedar Rapids, Dytronix Inc.     | 319-377-8275 |
| KS  | Leawood, Dytronix Inc.          | 913-339-6333 |
| MA  | Canton, New England Elctm. Sls. | 617-828-4835 |
| MN  | St. Paul, Countryman Assoc.     | 612-645-9151 |
| MO  | Bridgeton, Dytronix Inc.        | 314-291-4777 |
| NC  | Raleigh, L & D                  | 919-876-5301 |
| NC  | Wilmington, L & D               | 919-256-8110 |
| OH  | Cleveland, C. J. Voneman Co.    | 216-226-8000 |
| OR  | Portland, General Elctms.       | 503-297-8500 |
| TX  | Dallas, Comp. Tech.             | 214-783-8831 |
| TX  | Houston, Comp. Tech.            | 713-690-3011 |
| WA  | Stanwood, General Elctms.       | 503-297-8500 |
| WI  | Brookfield, Sumer, Inc.         | 414-784-6641 |
| Can | Don Mills, Ont., R.D. Assocs.   | 416-444-0959 |

*Local Distributors*

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Los Alamitos, Dexter Magnetic Materials | 714-952-2091 |
| CA | Sunnyvale, Dexter Magnetic Materials    |              |
| CA | Norcross, Dexter Magnetic Materials     | 408-738-1080 |
| GA | Chicago, Dexter Magnetic Materials      | 404-448-4998 |
| MA | Billerica, Dexter Magnetic Materials    | 508-663-7500 |
| MN | Chanhassen, Dexter Magnetic Materials   |              |
|    |                                         | 612-934-4635 |
| NY | Hicksville, Dexter Magnetic Materials   |              |
|    |                                         | 516-822-3311 |
| OH | Toledo, Dexter Magnetic Materials       | 419-385-4621 |
| TX | Richardson, Dexter Magnetic Materials   |              |
|    |                                         | 214-699-1121 |

**FERROX-CUBE**, See Philips Components Discrete Products Division

**FETCO**, 421 Cornwall Rd., Sanford, FL 32773, Tel: 407-321-3800 **A#2352-3554**

**FIBERGUIDE INDUSTRIES INC.**, 1 Bay St., Stirling, NJ 07980, Tel: 908-647-6601, FAX: 908-647-8464; Empl: 65; *Sls. Mgr.*: Allan Kreutzer; *Dist. Mgr.*: James Murray

**FIBERLIGN**, Preform Line Products, 24 Colonnade Rd., Nepean, ON, Canada K2E 7J6, Tel: 613-226-4000, FAX: 613-226-4602; Empl: 55; *Sls. Mgr.*: Jean Paul Clermont

**FIBEROPTICS TECHNOLOGY, INC.**, Quassett Rd., Pomfret, CT 06258, Tel: 203-928-0443, 800-433-5248, FAX: 203-928-7664, 800-543-2558

**FIBEROPTIC SYSTEMS, INC.**, 4680-B E. Los Angeles Ave., Simi Valley, CA 93063, Tel: 805-583-2088, FAX: 805-583-4018; Empl: 30; *Sls. Mgr.*: Richard Lockett

**FIBERTEK INC.**, P.O. Box 4000, 305 Beasley Dr., Franklin, TN 37065, Tel: 615-794-1400, FAX: 615-790-8289; Empl: 30; *Sls. Mgr.*: Pete Kutz; *Dist. Mgr.*: Jim Friel

**FIBRONICS INTERNATIONAL INC.**, Communications Way, 33 Riverside Dr., Pembroke, MA 02359, Tel: 617-826-0099, FAX: 617-826-7745; Empl: 500; *Sls. Mgr.*: Bruce Gilliat; *Dist. Mgr.*: Don Dorchester



**FAX: 301-881-0530**

**FIC CORP.**, 12216 Parklawn Dr., Rockville, MD 20852, Tel: 301-881-8124, 800-638-6594, TWX: 710-828-9809; FSC No.: 3613; Empl: 46; *Sls. Mgr.*: Robert E. Frye, V.P.; *Dist. Mgr.*: Raymond Vernon **B#1359**

**FIDELITY CHEMICAL PRODUCTS CORP.**, 472 Frelinghuysen Ave., Newark, NJ 07114, Tel: 201-242-4110, FAX: 201-242-5796; Empl: 55; *Sls. Mgr.*: Michael Aleksinas

**FIELDPIECE INSTRUMENTS**, 8322 B Artesia, Buena Park, CA 90621, Tel: 714-992-1239, FAX: 714-992-1239; Empl: 5; *Sls. Mgr.*: Jan Nall; *Dist. Mgr.*: Rey Harju



**FAX: 609-599-9508**

**FIFTH DIMENSION, INC.**, 801 New York Ave., Trenton, NJ 08638, Tel: 609-393-8350; Empl: 75; *Sls. Mgr.*: Mike Cioppi, Mktg. Mgr.

**B#1260-1261, 1486-1487, 1726-1727**

*Local Sales Offices & Reps*

|    |                          |              |
|----|--------------------------|--------------|
| NJ | Trenton, Fifth Dimension | 609-393-8350 |
|----|--------------------------|--------------|

**FILM MICROELECTRONICS**, See General Microcircuits

**FILM MICROELECTRONICS INC.**, 10 B Centennial Drive, Peabody, MA 01960, Tel: 508-532-9913, FAX: 508-532-9954; FSC No.: 27851; Empl: 101; *Sls. Mgr.*: Karl Cyr

**FILTER CONCEPTS INC.**, 2624 S. Rousselle, Santa Ana, CA 92707, Tel: 714-545-7003, FAX: 714-545-4607; *Sls. Mgr.*: Les Edelberg **A#1592-1595**

**FILTER PRODUCTS**, Rockwell International, 2990 Airway Ave., Costa Mesa, CA 92626, Tel: 714-641-5311, TELEX: 685532(COLLINS CSMA), FAX: 714-641-5320; FSC No.: 2X491; Empl: 60; *Sls. Mgr.*: Bob Johnson

**FILTRON, RFI Corporation**, 100 Pine Aire Dr., Bayshore, NY 11706, Tel: 516-231-6400, FAX: 516-231-6465; FSC No.: 81831; Empl: 90; *Sls. Mgr.*: Richard Michelson

**FILTRONETICS, INC.**, 6010 Parretta, Kansas City, MO 64120, Tel: 816-231-7375, FAX: 816-241-0368; FSC No.: 53733; Empl: 70; *Sls. Mgr.*: Brenda Gabbert

**FINETECH ENGINEERING, INC.**, 119 Northrup St., Bridgewater, CT 06752, Tel: 203-350-2882, FAX: 203-350-2878; Empl: 3; *Sls. Mgr.*: John Porter

**THE FIRST ELECTRONICS CORP.**, 71 Von Hillern St., Boston, MA 02125, Tel: 617-288-2430, FAX: 617-288-0332; FSC No.: 14532; Empl: 70; *Sls. Mgr.*: Chris Nastopoulos



**FAX: 404-551-6969**

**W.W. FISCHER ELECTRONIC CONNECTORS**, 1040 Crown Pointe Pkwy., Ste. 560, Atlanta, GA 30338, Tel: 1-800-551-0121 **C#1322-1329**

*Local Sales Offices & Reps*

|    |                             |              |
|----|-----------------------------|--------------|
| CA | Los Angeles, W.W. Fischer   | 818-727-0277 |
| CA | San Francisco, W.W. Fischer | 408-970-0631 |
| MA | Boston, M.A. Olson Assocs.  | 617-244-4030 |

**FISHERCAST**, Fisher Gauge Limited, 194 Sophia St., Peterborough, Ont., Canada K9J 6Y9, Tel: 705-748-9522, FAX: 705-745-8818; Empl: 400; *Sls. Mgr.*: Larry Hatfield

**FISHERTECH**, Fisher Gauge Limited, 194 Sophia Street, P.O. Box 179, Peterborough, Ontario, Canada K9J 6Y9, Tel: 705-748-9522, TELEX: 06-962838, FAX: 705-748-6312; Empl: 2000; *Sls. Mgr.*: Greg Patterson

**FITCHBURG COATED PRODUCTS**, Technographics, Inc., P.O. Box 1106, Scranton, PA 18501, Tel: 717-347-2035, FAX: 717-347-2507; Empl: 300

**FJA INDUSTRIES**, P.O. Box 242, Santa Clara, CA 95052, Tel: 408-727-0100, FAX: 408-496-0117; *Sls. Mgr.*: Frank J. Ardezzone

**FLANN MICROWAVE INC.**, Ste. 2200, One Kendall Square, Cambridge, MA 02139, Tel: 1-800-937-3772, FAX: 617-577-8234; Empl: 80; *Sls. Mgr.*: Lawrie Lansdell

**FLEX-CORE DIV., Morlan & Assocs., Inc.**, 6625 McVey Blvd., Worthington, OH 43235, Tel: 614-889-6152, FAX: 614-876-8538; Empl: 11; *Sls. Mgr.*: D. Morlan **A#2357**

**MCI FLEXIBLE FURNITURE DIVISION METAL COMPONENTS INC.**

**FAX: 616-685-9195**

**FLEXIBLE FURNITURE DIVISION, Metal Components, Inc.**, 323 Acorn Street, Plainwell, MI 49080, Tel: 616-685-6831, 800-875-6836; Empl: 32; *Sls. Mgr.*: Lynn D. Middlebrook **C#1044**

*Local Sales Offices & Reps*

|    |                                       |                |
|----|---------------------------------------|----------------|
| CO | Manhattan Beach, Fore Tec             | 1-800-344-3832 |
| FL | Orlando, Imhoof & Assocs.             | 407-658-0807   |
| IL | Bensenville, ESI                      | 708-766-3667   |
| KS | Overland Park, Corporate Environments |                |
|    |                                       | 913-677-0603   |
| MI | Livonia, Lowell-Wendt Mktg.           | 313-464-2722   |
| NJ | Ringwood, Eastern Scientific Prods.   | 201-728-7200   |
| OH | Cleveland, Tech. Sls. Assoc.          | 216-461-0826   |
| VA | Vienna, Morgan Scientific             | 703-893-4306   |
| WA | Bellevue, The Western Rep.            | 206-637-0945   |

**FLEXIBLE TECHNOLOGIES**, Arlon, P.O. Box 4305, 199 Amarl St., E. Providence, RI 02914, Tel: 401-434-2340, TELEX: 6972602, FAX: 401-434-2557; Empl: 65; *Sls. Mgr.*: Herb Howard

For sales offices and reps. in the Northeastern region, call Ron Sencer- 401-434-2340 For sale offices and reps. in California, call Rick Kirchhoff- 714-540-2811 For sales offices and reps. in Michigan, Ohio, and Indiana, call STAFFCO- 216-331-5100 For sales offices and reps in Chicago, Minnesota, and Colorado, call Phil Hansen- 612-942-9902

**FLEX-KEY CORPORATION**, Emerson Ave., Gloucester, MA 01930, Tel: 508-281-2040, FAX: 508-281-4730; FSC No.: 51163; Empl: 50; *Sls. Mgr.*: Robert Keane **B#1829**

*Local Sales Offices & Reps*

|    |                                  |              |
|----|----------------------------------|--------------|
| AZ | Scottsdale, DGI                  | 602-947-3724 |
| CA | Santa Clara, Detomasi & Grupp    | 408-492-9266 |
| CO | Denver, Advent Corp.             | 303-455-1985 |
| DC | Rockville, Marktron              | 301-251-8990 |
| IA | Cedar Rapids, Tech. Elctms. Inc. | 319-366-5443 |
| MD | Hunt Valley, Marktron            | 301-628-1111 |
| NY | Huntington, J. A. Keeneth Co.    | 516-351-7008 |



**FLEX-LINK PRODUCTS, INC.**, 599 Fourth St, San Fernando, CA 91340, Tel: 818-898-1451, FAX: 818-365-3022; FSC No.: 6Z867; Empl: 80; Sls. Mgr: Al Wasserzug

**FLEXSTAR TECHNOLOGY**, 213 Hammond Ave, Fremont, CA 94539, Tel: 510-440-0170, TELEX: 510-440-0177; Empl: 17; Sls. Mgr: Jim Yasueda, VP Sls.

**FLEXTRONICS INTERNATIONAL**, 48001 Fremont Blvd, Fremont, CA 94538, Tel: 510-226-3539, FAX: 510-226-3535; Empl: 1800

**FLIGHT CONNECTOR**, See Transtechnology Electronics

**FLUID COMPONENTS, INC.**, 1755 La Costa Meadows Dr, San Marcos, CA 92069, Tel: 619-744-6950, TELEX: 695092, FAX: 619-736-6250; Empl: 160; Sls. Mgr: Glen Fishman

# FLUKE®

**FAX: 206-356-5962**

**JOHN FLUKE MFG. CO., INC.**, 6920 Seaway Blvd, Everett, WA 98203, Tel: 206-347-6100, TELEX: 185102, TWX: 810-445-2943; Empl: 1925; Sls. Mgr: R. Wambolt; Dist. Mgr: R. Mewett ..... **D-1259, 1403**

#### Local Sales Offices & Reps

|     |                                             |              |
|-----|---------------------------------------------|--------------|
| AZ  | Phoenix, John Fluke Mfg. Co., Inc.          | 602-438-8314 |
| CA  | Fremont, John Fluke Mfg. Co., Inc.          | 510-651-5112 |
| CA  | Irvine, John Fluke Mfg. Co., Inc.           | 714-863-9031 |
| DC  | Washington, John Fluke Mfg. Co., Inc.       |              |
|     |                                             | 301-770-1570 |
| FL  | Orlando, John Fluke Mfg. Co., Inc.          | 407-331-4881 |
| GA  | Atlanta, John Fluke Mfg. Co., Inc.          | 404-953-4747 |
| IL  | Chicago, John Fluke Mfg. Co., Inc.          | 708-705-0500 |
| IN  | Indianapolis, John Fluke Mfg. Co., Inc.     |              |
|     |                                             | 317-875-7870 |
| MA  | Boston, John Fluke Mfg. Co., Inc.           | 508-663-2400 |
| NJ  | Paramus, John Fluke Mfg. Co., Inc.          | 201-262-9550 |
| NY  | Rochester, John Fluke Mfg. Co., Inc.        | 716-323-1400 |
| PA  | Philadelphia, John Fluke Mfg. Co., Inc.     |              |
|     |                                             | 215-647-9550 |
| TX  | Dallas, John Fluke Mfg. Co., Inc.           | 214-406-1000 |
| WA  | Seattle, Fluke Elctms. Canada Inc.          | 206-356-5512 |
| WA  | Seattle, John Fluke Mfg. Co., Inc.          | 206-881-6966 |
| Can | Mississauga, Ont, Fluke Elctms. Canada Inc. |              |
|     |                                             | 416-890-7600 |

Fluke Dist. Prods. are available from Fluke authorized dist. Call 800-443-5853 for your nearest dist.

**FORCE, INC.**, 825 Park St, Christiansburg, VA 24073, Tel: 703-382-0462, FAX: 703-381-0392; FSC No.: 64871; Empl: 52; Sls. Mgr: James W. Vanhoozier

#### Local Sales Offices & Reps

|     |                                  |                |
|-----|----------------------------------|----------------|
| CA  | San Mateo, Epic Mktg.            | 1-800-727-9066 |
| FL  | Boca Raton, D & V Concepts, Inc. | 407-451-4641   |
| IL  | South Holland, Fiber Specs, Inc. | 708-339-2500   |
| MA  | Southbridge, Northern Fibercom   | 508-765-5131   |
| NJ  | Ho-Ho-Kus, D.J. Fisher Co., Inc. | 201-652-0090   |
| WA  | Everett, Cunningham Sls, Inc.    | 206-348-4800   |
| Can | Markham, Ont, Deskin, Inc.       | 1-800-268-9832 |

**FOREDOM ELEC. CO.**, Blackstone Inds. Inc. 16 Stony Hill Rd, Bethel, CT 06801, Tel: 203-792-8622, FAX: 203-790-9832; Empl: 80

**FORMA SCIENTIFIC, INC.**, Box 649, Marietta, OH 45750, Tel: 614-373-4763, FAX: 614-373-6770; Empl: 425; Sls. Mgr: Art Fad, VP of Domestic Sls.

**FORMAX**, 1120 Federal Road, Brookfield, CT 06804, Tel: 203-775-9492, FAX: 203-775-4376; Empl: 20; Sls. Mgr: Frank Barbera

**FORSTER ENTERPRISES, INC.**, 57 Bristol St, Waterbury, CT 06708, Tel: 203-574-3832, FAX: 203-755-2973; FSC No.: 3621; Empl: 64; Sls. Mgr: C. M. Colt

**FORTE TECHNOLOGY, INC.**, 201 Carnegie Row, Norwood, MA 02062, Tel: 617-769-9150, FAX: 617-769-5308; Empl: 20

**FORTRON/SOURCE CORP.**, Power Supplies, 6818-G Patterson Pass Rd, Livermore, CA 94550, Tel: 415-373-1008, TELEX: 559291 FORTRON UD, FAX: 415-373-1168; Empl: 150; Sls. Mgr: Louie Aldama

**FOURJAY INDUSTRIES**, Box 14617 Northridge Br, Dayton, OH 45413-0617, Tel: 513-890-6444, FAX: 513-890-1692; Empl: 42; Sls. Mgr: M. W. Frawley

**FOXCONN INTERNATIONAL**, Hon Hai, 930 W. Maude Ave, Sunnyvale, CA 94086, Tel: 408-749-1228, FAX: 408-749-1266; Empl: 120; Sls. Mgr: S.C. Huang; Dist. Mgr: Ted Ho



**FAX: 813-693-1554**

**FOX ELECTRONICS**, 5570 Enterprise Pkwy, Ft. Myers, FL 33905, Tel: 813-693-0099, TWX: 510-951-7386; FSC No.: 61429; Empl: 75; Sls. Mgr: Mike Huennkens/West; Dist. Mgr: Ann Clark ..... **A-1397-1401**

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Southeast Tech. Grp.    | 205-534-2376 |
| AZ | Chandler, Techni-Source             | 602-497-0711 |
| AZ | Conway, Design Mktg.                | 501-327-9303 |
| CA | Fair Oaks, Brooks Tech. Grp.        | 916-965-3255 |
| CA | Irvine, Groh Assocs.                | 714-837-9871 |
| CA | Mt View, Brooks Tech. Grp.          | 415-960-3880 |
| CA | Newbury Park, Groh Assocs.          | 805-499-8856 |
| CA | Poway, Groh Assocs.                 | 619-451-9544 |
| CO | Littleton, Megatronix               | 303-730-6262 |
| CO | Williamsville, Pi Tronics           | 303-292-5537 |
| CT | North Haven, Kitchen & Kutchin      | 203-239-0212 |
| FL | Altamonte Spring, Semtronic Assocs. |              |
|    |                                     | 407-831-8233 |

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| FL  | Clearwater, Semtronic Assocs.           | 813-461-4675 |
| FL  | FL Lauderdale, Semtronic Assocs.        | 305-731-2484 |
| GA  | Lawrenceville, Southeast Tech. Grp.     | 404-979-2055 |
| IL  | Itaska, Janus Inc.                      | 708-250-9650 |
| IN  | Indianapolis, Wilson Tech. Sls. Inc.    | 317-872-2513 |
| IA  | Cedar Rapids, Spectrum Sls.             | 319-366-0576 |
| KS  | Overland Park, Spectrum Sls.            | 913-648-6811 |
| MD  | Ellicott City, Beacon North Inc.        | 800-877-3747 |
| MD  | Randallstown, Beacon North Inc.         | 800-877-3747 |
| MA  | Burlington, Kitchen & Kutchin           | 617-229-2660 |
| MI  | Grosse Pointe, Greiner                  | 313-499-0188 |
| MN  | Edina, Gibb Elctm. Sls.                 | 612-835-3370 |
| MS  | Meridian, Southeast Tech. Grp.          | 601-485-7055 |
| MO  | Florissant, Spectrum Sls.               | 314-921-1313 |
| NC  | Zebulon, Southeast Tech. Grp.           | 919-269-5589 |
| NJ  | Medford, Component Consultants          | 609-654-5300 |
| NJ  | Parsippany, HLM                         | 201-263-1535 |
| NM  | Albuquerque, Techni-Source              | 505-268-4232 |
| NY  | Northport, HLM                          | 516-757-1606 |
| NY  | Syracuse, Pi Tronics                    | 315-455-7346 |
| OK  | Bethany, Design Mktg.                   | 405-789-5911 |
| OH  | Centerville, Bear Mktg. Inc.            | 513-436-2061 |
| OH  | Richfield, Bear Mktg. Inc.              | 216-659-3131 |
| OR  | Portland, E.S. Chase                    | 503-292-8840 |
| PA  | Allison Park, Bear Mktg. Inc.           | 412-492-1150 |
| TX  | Austin, Design Mktg.                    | 512-263-9151 |
| TX  | Dallas, Design Mktg.                    | 214-247-4745 |
| TX  | Houston, Design Mktg.                   | 713-469-7949 |
| UT  | Salt Lake City, Luscombe Engrg. Co.     | 801-268-3434 |
| VA  | Sterling, Beacon North Inc.             | 703-478-2480 |
| WA  | Kirkland, E.S. Chase                    | 206-823-9535 |
| WI  | Delafield, Janus Inc.                   | 414-646-5421 |
| PR  | Hato Rey, Semtronic Assocs.             | 809-766-0700 |
| Can | Kanata, ON, Electro Source, Inc.        | 613-592-3214 |
| Can | Pointe Claire, PQ, Electro Source, Inc. |              |
|     |                                         | 514-630-7486 |
| Can | Rexdale, ON, Electro Source, Inc.       | 416-675-4490 |
| Can | Vancouver, BC, Electro Source, Inc.     | 604-275-2734 |

#### Local Distributors

|    |                                                          |              |
|----|----------------------------------------------------------|--------------|
| CA | El Monte (for all locations), Marshall Inds. (Corp.)     | 818-307-6313 |
| CA | Reseda (for all locations), Jan Devices (Corp.)          | 818-708-1100 |
| CA | Santa Clara (for all locations), Cypress Elctms. (Corp.) | 408-980-8400 |
| CO | Denver (for all locations), Integrated Elctms. (Corp.)   | 303-292-5537 |
| FL | Tampa (for all locations), Repton Elctms. Inc. (Corp.)   | 813-855-4656 |
| IN | Carmel, Altex Elctms. Inc. (Corp.)                       | 317-848-1323 |
| IA | Cedar Rapids, Dee Elctms. (Corp.)                        | 319-365-7551 |
| MA | Needham (for all locations), Cronin Elctms. Inc. (Corp.) | 617-449-5000 |
| MI | Grand Rapids, RM Michigan/Inc.                           | 616-531-9300 |
| MO | St. Louis, Franklin Elctms.                              | 314-429-3111 |
| MO | St. Peters, Heartland Elctms. Inc.                       | 314-928-6010 |
| NY | East Setauket, Dove Elctms. (Corp.)                      | 516-689-7733 |
| NY | Hauppauge, Jaco Elctms. Inc. (Corp.)                     | 516-273-5500 |
| OH | Cleveland, CAM/RPC (Corp.)                               | 216-461-8259 |

|     |                                                       |              |
|-----|-------------------------------------------------------|--------------|
| PA  | McKean, Advacom (Corp.)                               | 814-476-7774 |
| WA  | Bellevue (for all locations), Almac Elctms. (Corp.)   | 206-643-9992 |
| WI  | Milwaukee, Progressive Image Inc. (Corp.)             | 414-321-4722 |
| Can | Pointe Claire, PQ (all locatio, Future Elctms. Corp.) | 514-694-7710 |



# FOX

**FAX: 815-758-1640**

**FOX METER INC.**, 333 B Dietz AVE, DeKalb, IL 60115, Tel: 815-758-7000 ..... **B-1065; D-1160, 1346-1351**

**F-P ELECTRONICS, A Mark IV Industries Company**, 6030 Ambler Dr, Mississauga, Ont, Canada L4W 2P1, Tel: 416-624-3020; Empl: 280; Sls. Mgr: J. D. Greenwood ..... **B-1066-1069**

**FRAMAR METAL PRODUCTS CO., INC.**, 345 Carnegie Avenue, Kenilworth, NJ 07033, Tel: 908-241-0710, FAX: 908-241-1876; Empl: 7; Sls. Mgr: John W. Moore, Jr.

**JOHN FRANEK CO., INC.**, See Power Star, Inc.

**THE FREDERICKS COMPANY**, Philmont Ave. & Anne Street, Huntingdon Valley, PA 19006, Tel: 215-947-2500, FAX: 215-947-7464; Sls. Mgr: William J. Devlin

## FREED Megohmmeters®

**FREED MEGOHMMETERS**, See Industrial Test Equipment

**FREED TRANSFORMER CO., INC.**, Electronic Transformer Corp, PO Box 487, Paterson, NJ 07544-0487, Tel: 201-942-2222, FAX: 201-942-9014; Empl: 130; Sls. Mgr: Dan Rovine

**FREQUENCY & TIME SYSTEMS, INC., Datum, Inc.**, 34 Tozer Rd, Beverly, MA 01915, Tel: 508-927-8220, TELEX: 94-0518 FTS BVLY, FAX: 508-927-4099; FSC No.: 56219; Empl: 72; Sls. Mgr: Jim Hungerford, VP Sls./Mktg. .... **A-1405**

#### Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| AL | Huntsville, Southern Mktg. Assocs. | 205-534-6020 |
| AZ | Chandler, Vic Myers Assocs.        | 602-345-6449 |
| CA | Costa Mesa, Ward Davis Assocs.     | 714-556-7466 |

# FLUKE



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SANTA MONICA, CA 90404

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2413 S. 21st. STREET  
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**(510) 835-1500**  
1026 6th. AVENUE  
OAKLAND, CA 94606



|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Redondo Bch, Ward Davis Assocs.         | 213-643-6977 |
| CA | San Diego, Ward Davis Assocs.           | 619-292-1000 |
| CA | Santa Clara, Ward-Davis Assocs.         | 408-245-3700 |
| FL | Longwood, Southern Mktg. Assocs.        | 305-682-7317 |
| FL | Satellite Bch, Southern Mktg. Assocs.   |              |
|    |                                         | 407-777-6705 |
| GA | Marietta, Southern Mktg. Assocs.        | 404-565-0603 |
| IL | Elk Grove, Loren Green Assocs.          | 708-593-0282 |
| MD | Rockville, Creative Mktg. Assocs., Ltd. |              |
|    |                                         | 301-251-4100 |
| MA | Marlboro, G.F.I. Technlgs.              | 508-481-9303 |
| MN | Edina, Dytech Instrs.                   | 612-831-7169 |
| NJ | Haddonfield, G. L. Williams Assocs.     | 609-428-6060 |
| NJ | Union, Friedman Assocs., Inc.           | 201-964-6204 |
| NC | Greensboro, Southern Mktg. Assocs.      |              |
|    |                                         | 919-282-6001 |
| OH | Centerville, Micro Sls. Corp.           | 513-433-8171 |
| OH | Dublin, Micro Sls. Corp.                | 614-792-9117 |
| TX | Houston, Barnhill Assocs.               | 713-917-6777 |
| TX | Richardson, Barnhill Assocs.            | 214-331-2599 |

**FREQUENCY DEVICES, INC.**, 25 Locust St, Haverhill, MA 01830, Tel: 508-374-0761, FAX: 508-521-1839; Empl: 30; Sls. Mgr.: Gregory T. Anderson **A-1638-1639**

#### Local Sales Offices & Reps

|     |                                    |              |
|-----|------------------------------------|--------------|
| CA  | Laguna Hills, Elotek Sys., Inc.    | 714-830-4856 |
| IL  | Buffalo Grove, Torkelson Assoc.    | 708-520-0710 |
| IN  | Indianapolis, Torkelson Assoc.     | 317-244-7867 |
| MD  | Linthicum, KD Assoc.               | 410-859-5151 |
| MA  | Holbrook, McLellan Assoc.          | 617-767-4771 |
| MI  | Livonia, Lowell-Wendt Mkt.         | 313-464-2722 |
| MN  | Minneapolis, Torkelson Assoc.      | 612-835-2414 |
| NJ  | East Brunswick, Winch Sls. Assocs. | 908-613-1515 |
| NY  | DeWitt, DB Environmental, Inc.     | 515-446-0220 |
| NY  | Roslyn Heights, Winch Sls. Assocs. | 516-681-3163 |
| OH  | Dayton, Midwest Mktg.              | 513-433-2511 |
| PA  | Ft. Washington, SMC Inc.           | 215-628-3394 |
| SC  | Marion, Zelco Assoc.               | 803-423-0299 |
| WA  | Seattle, Brett Assocs.             | 206-328-6900 |
| WI  | Milwaukee, Torkelson Assoc.        | 414-784-7736 |
| Can | N. York, Ont, R. D. Assocs.        | 416-444-0959 |



**FAX: 516-794-4340**

**FREQUENCY ELECTRONICS, INC.**, 55 Charles Lindbergh Blvd, Mitchell Field, NY 11553, Tel: 516-794-4500; FSC No.: 14844; Empl: 650; Sls. Mgr.: Gene Kushner **A-1402-1403**

#### Local Sales Offices & Reps

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Huntsville, Summit Mktg. Assoc., Inc. | 205-721-1701 |
| AZ | Scottsdale, Detomasi & Grupp, Inc.    | 602-947-3724 |
| CA | San Diego, Detomasi & Grupp, Inc.     |              |
|    |                                       | 818-365-8285 |
| CA | Mountain View, Dismar-Bakner          | 415-969-5620 |
| CA | San Diego, Detomasi & Grupp, Inc.     | 619-277-0178 |
| CA | Torrance, Detomasi & Grupp, Inc.      | 310-618-8898 |
| CO | Franktown, Excelcis                   | 303-841-4305 |
| FL | Orlando, Truex Assoc.                 | 407-859-2160 |
| GA | Norcross, Summit Mktg. Assoc., Inc.   | 404-498-4530 |
| KS | Lenexa, Midtec Assocs., Inc.          | 913-541-0505 |
| MD | Rockville, Marktron, Inc.             | 301-251-8990 |
| MA | Wayland, High Tech, Inc.              | 508-653-3838 |
| MN | Minneapolis, Tecteam Sls., Inc.       | 612-854-6616 |
| MO | St. Louis, Midtec Assocs., Inc.       | 314-275-8666 |
| NH | Bradford, High Tech Sls., Inc.        | 603-938-2992 |
| NJ | Clarksburg, Micro Lambda              | 609-259-0400 |
| NJ | Roseland, Technical Mktg. Assocs.     | 201-228-7800 |
| NY | E. Syracuse, Em-Tech Assocs., Inc.    | 315-437-6410 |
| NC | Cary, Summit Mktg. Assoc., Inc.       | 919-233-1836 |
| TX | Richardson, Vector Sls. Co.           | 214-234-4291 |

**FREQUENCY SELECTIVE NETWORKS**, 69-20 Garfield Ave., Woodside, NY 11377, Tel: 718-424-7500, FAX: 718-424-3790; FSC No.: 56662; Empl: 30; Sls. Mgr.: Michael L. Izzolo

**FRIWO, Friemann & Wolf**, 176 Thomas Johnson Dr., Ste. 202, Frederick, MD 21702, Tel: 301-694-7479, FAX: 301-694-7698

For all Distrs. listing, call Vale Distrib. in Vincentown, NJ 609-859-2800

**FRONTIER ELECTRONICS**, 69 Moreland Rd., Simi Valley, CA 93065, Tel: 805-522-9998, FAX: 805-522-9989; Empl: 350 **A-1236-1237**

**FSI/FORK STANDARDS, INC.**, 668 Western Ave., Lombard, IL 60148-2097, Tel: 708-932-9380, 800-468-6009, FAX: 708-932-0016; FSC No.: 14986; Empl: 25; Sls. Mgr.: Alfredo J. Ramirez

**FTS/AUSTRON**, P.O. Box 14766, Austin, TX 73761-4766, Tel: 512-251-2341, TWX: 910-874-1356, FAX: 512-251-9685; FSC No.: 24672; Empl: 55; Sls. Mgr.: R. F. Ellis **A-1405**

#### Local Sales Offices & Reps

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Huntsville, Southern Mktg.            | 205-534-6020 |
| AZ | Chandler, Vic Myers Assocs.           | 602-345-6449 |
| AZ | Tempe, Barnhill Assoc.                | 602-598-0330 |
| CA | Anaheim, Datum Inc.                   | 714-533-6333 |
| CA | Sunnyvale, N.S. Westronics            | 408-745-1102 |
| CO | Englewood, Barnhill Assocs.           | 303-721-0800 |
| CO | Grand Junction, Barnhill Assocs.      | 303-241-0039 |
| CO | Littleton, Vic Myers Assocs. Inc.     | 303-730-7313 |
| CO | Redondo Beach, Ward/Davis Assoc.      |              |
|    |                                       | 310-643-6977 |
| FL | Longwood, Southern Mktg.              | 407-682-7317 |
| GA | Marietta, Southern Mktg.              | 404-427-3540 |
| IL | Decatur, Dataport Technlgs.           | 217-423-9948 |
| IL | Elk Grove, Loren Green Assoc.         | 708-593-0282 |
| IL | Schaumburg, Dataport Technlgs.        | 708-397-3411 |
| KS | Lenexa, Dytec/South Inc.              | 913-888-0215 |
| KS | Wichita, Dytec/South Inc.             | 316-263-7090 |
| LA | Metairie, Data Mktg.                  | 504-833-3655 |
| MD | Columbia, Creative Mktg. Assocs. Ltd. |              |
|    |                                       | 301-880-4161 |
| MD | Laurel, FTS/Austron                   | 301-725-3636 |
| MN | Edina, Dytec Instrs.                  | 612-831-7169 |
| MN | Minneapolis, Dataport Technlgs.       | 612-546-0273 |
| MO | Maryland Heights, Dytec/South Inc.    | 314-739-0665 |
| NE | Omaha, Dataport Technlgs.             | 402-334-1222 |
| NH | Concord, Concord Comms.               | 603-228-8667 |
| NH | Haddonfield, G.L. Williams Assocs.    | 609-428-6060 |
| NJ | Union, Friedman Assocs.               | 908-964-6200 |
| NM | Albuquerque, Barnhill Assocs.         | 505-299-7658 |
| NM | Albuquerque, Vic Myers Assocs. Inc.   | 505-884-6878 |
| NY | Frankfort, Capital Instr. Sls.        | 315-894-4245 |
| NC | Greensboro, Southern Mktg.            | 919-632-9370 |
| OH | Dublin, Micro Sls.                    | 614-792-9117 |
| TX | Allen, FTS/Austron                    | 214-727-3807 |
| TX | Houston, Barnhill Assocs.             | 512-343-6448 |
| TX | Austin, Data Mktg.                    | 512-338-4701 |
| TX | Dallas, Data Mktg.                    | 214-661-0300 |
| TX | Houston, Barnhill Assocs.             | 713-266-2666 |
| TX | Houston, Data Mktg.                   | 713-579-2995 |
| TX | Richardson, Barnhill Assocs.          | 214-231-2573 |
| TX | San Antonio, Data Mktg.               | 512-342-3031 |
| UT | Orem, Barnhill Assocs.                | 801-226-1239 |
| UT | Salt Lake City, Vic Myers Assocs.     | 801-467-1795 |
| VA | Front Royal, FTS/Austron              | 703-636-7771 |
| WA | Lynnwood, Bert Technlgs.              | 206-776-9205 |

**FTS AUSTRON DATUM, INC.**, See Frequency & Time Sys. Inc., Datum Inc.

**FTS SYSTEMS, INC.**, Rte. 209, P.O. Box 158, Stone Ridge, NY 12484, Tel: 914-687-0071, TWX: 510-247-0547, FAX: 914-687-7481; Empl: 1000; Sls. Mgr.: Brian Adams



**FAX: 908-272-2241**

**FUJIPOLY, AMERICA CORP.**, 750 Walnut Ave., Cranford, NJ 07016, Tel: 908-272-3850; Empl: 100 **B-1830; C-1330-1332, 1663**

#### Local Sales Offices & Reps

|     |                                  |               |
|-----|----------------------------------|---------------|
| CA  | Conaga Pk., C&W Comp. Sls.       | 818-700-2684  |
| CO  | Longmont, Butler Tech. Sls.      | 303-651-7703  |
| IL  | Palatine, Technlgy. Sls.         | 708-991-6600  |
| MN  | Anoka, Tech. Solutions Inc.      | 612-785-9303  |
| NY  | Clarence, R.W. Mitscher Co. Inc. | 716-759-2350  |
| NC  | Raleigh, R. W. Mitscher Co.      | 919-848-0941  |
| TX  | Piano, EMI Sys.                  | 214-618-4337  |
| WA  | Bellevue, Quest Mktg. Inc.       | 206-747-9424  |
| EXP | Israel, Elimec                   | 972-3-9643441 |
| Can | Toronto, Norgay Entprs. Ltd.     | 416-234-8966  |

**FUJITSU AMERICA, INC.**, Computer Products Group, 3055 Orchard Dr., San Jose, CA 95134, Tel: 408-432-1300, TWX: 910-338-2193; Sls. Mgr.: Roger Baldelli; Dist. Mgr.: Dave Krevanko

**FUJITSU MICROELECTRONICS, INC.**, COMPONENT DIVISION, 3545 N. First St., San Jose, CA 95135, Tel: 408-922-9000, TWX: 910-338-0190, FAX: 408-432-9044; Empl: 40; Sls. Mgr.: Don Dealtry; Dist. Mgr.: Hal Mumma



**FAX: 408-432-9044**

**FUJITSU MICROELECTRONICS, INC.**, Semiconductor Division & Electronic Components Div., 3545 North First St., San Jose, CA 95134-1804, Tel: 408-922-9000, TWX: 910-338-0190; Empl: 1000; Dist. Mgr.: Clyde Brewer, Dir. Distr. Sls. **B-1489-1499, 1831; C-1334-1339**

#### Local Sales Offices & Reps

|     |                                            |              |
|-----|--------------------------------------------|--------------|
| AL  | Huntsville, CSR Elctms.                    | 205-533-2444 |
| AZ  | Scottsdale, Aztech Comp. Sls., Inc.        | 602-991-6300 |
| CA  | Chula Vista, Solano Electronica (Sonika)   |              |
|     |                                            | 619-424-9190 |
| CA  | Newport Beach, Infinity Sls., Inc.         | 714-833-0300 |
| CA  | Roseville, Norcomp                         | 916-782-8070 |
| CA  | Santa Clara, Norcomp                       | 408-727-7707 |
| CO  | Boulder, Talisman Assocs.                  | 303-444-7300 |
| CT  | Cheshire, Connecticut Applied Technl.      |              |
|     |                                            | 203-272-6564 |
| FL  | Altamonte Springs, Semtronic Assocs., Inc. | 407-831-8233 |
| FL  | Clearwater, Semtronic Assoc., Inc.         | 813-461-4675 |
| FL  | Ft. Lauderdale, Semtronic Assoc., Inc.     |              |
|     |                                            | 305-731-2484 |
| GA  | Norcross, Fujitsu Microelectrnics.         | 404-242-5862 |
| ID  | Meridian, Intermtn. Tech. Mktg.            | 208-888-6071 |
| IL  | Itasca, Beta Technl.                       | 708-250-8580 |
| IL  | Itasca, Fujitsu Microelectrnics.           | 708-250-8586 |
| IN  | Greenwood, Valentine Assocs.               | 317-888-2260 |
| IN  | Kokomo, Valentine Assocs.                  | 317-453-3799 |
| IN  | South Bend, Valentine Assocs.              | 219-288-7070 |
| IA  | Cedar Rapids, Electromec Sls.              | 319-393-1637 |
| KS  | Olathe, Rothkopf & Assocs., Inc.           | 913-829-8897 |
| KY  | Henderson, Valentine Assocs.               | 317-888-2260 |
| MD  | Towson, Arbotek Assoc., Inc.               | 410-825-0775 |
| MA  | Woburn, Mil-Bern Assocs.                   | 617-932-3311 |
| MI  | Farmington Hills, R.C. Merchant & Co.      |              |
|     |                                            | 313-476-4600 |
| MN  | Burnsville, Electromec Sls.                | 612-894-8200 |
| NJ  | Marlton, BGR Assocs.                       | 609-983-1020 |
| MO  | St. Louis, Rothkopf & Assocs., Inc.        | 314-961-4485 |
| NJ  | Fairfield, Tech Applications & Mktg.       | 201-575-4130 |
| NY  | Buffalo, Quality Comps.                    | 716-837-5430 |
| NY  | Manlius, Quality Comps.                    | 315-682-8885 |
| NY  | Rochester, Quality Comps.                  | 716-342-7229 |
| NC  | Raleigh, CSR Elctms.                       | 919-878-9200 |
| OH  | Cincinnati, Steman Blaine Mktg.            | 513-729-1969 |
| OH  | Cleveland, Stegman Blaine Mktg.            | 216-572-0003 |
| OH  | Vandalia, Stegman Blaine Mktg.             | 513-890-7975 |
| OR  | Beaverton, L-Squared Ltd.                  | 503-629-8555 |
| TN  | Knoxville, CSR Elctms.                     | 615-637-0293 |
| TX  | Carrollton, Technical Mktg., Inc.          | 214-387-3601 |
| TX  | Houston, Technical Mktg., Inc.             | 713-783-4497 |
| TX  | Round Rock, Technical Mktg., Inc.          | 512-244-2291 |
| UT  | Salt Lake, R-Squared Mktg.                 | 801-595-0631 |
| WA  | Kirkland, L-Squared Ltd.                   | 206-827-8555 |
| WI  | Milwaukee, Beta Technl.                    | 414-543-6609 |
| PR  | Hato Rey, Semtronic Assocs.                | 809-766-0700 |
| Can | Islington, Ont., Pipe Thompson Ltd.        | 416-236-2355 |
| Can | Kanata, Ont., Pipe Thompson Ltd.           | 613-591-1821 |

#### ECD Direct Sales Offices

|    |                                             |                                 |
|----|---------------------------------------------|---------------------------------|
| CA | Irvine, Fujitsu Microelectronics, Inc.      | 714-724-1634, FAX: 714-724-1709 |
| CA | San Jose, Fujitsu Microelectronics, Inc.    | 408-922-8900, FAX: 408-428-0640 |
| CA | Santa Clara, Fujitsu Microelectronics, Inc. | 408-982-1820, FAX: 408-982-1825 |
| GA | Norcross, Fujitsu Microelectronics, Inc.    | 404-242-5862, FAX: 404-441-2016 |
| IL | Itasca, Fujitsu Microelectronics, Inc.      | 708-250-8580, FAX: 708-250-8591 |
| MA | Waltham, Fujitsu Microelectronics, Inc.     | 617-487-0029, FAX: 617-890-9002 |
| AL | Huntsville, CSR Elctms., Inc.               | 205-533-2444                    |
| AZ | Phoenix, Howe & Howe Sls., Inc.             | 602-264-7971                    |
| CA | Chula Vista, Solano Electronica (Sonika)    |                                 |
|    |                                             | 619-424-9190                    |
| CA | Granite Bay, Norcomp                        | 916-791-7776                    |
| CA | Irvine, Balzer-Wolf Assoc.                  | 714-261-6877                    |
| CA | San Diego, Earle Assocs., Inc.              | 619-278-5441                    |
| CA | Santa Clara, Norcomp                        | 408-727-7707                    |
| CO | Boulder, Talisman Assocs.                   | 303-444-7300                    |
| CT | Cheshire, Connecticut Applied Technl.       | 203-272-6564                    |
| FL | Altamonte Springs, Semtronic Assocs.        |                                 |
|    |                                             | 407-831-8233                    |
| FL | Clearwater, Semtronic Assocs.               | 813-461-4675                    |
| FL | Ft. Lauderdale, Semtronic Assocs.           | 305-731-2484                    |
| GA | Atlanta, CSR Elctms., Inc.                  | 404-396-3720                    |
| IL | Highland Park, Bransky Sls.                 | 708-433-2375                    |
| IN | Ft. Wayne, Gen II Mktg., Inc.               | 219-436-4485                    |
| IN | Indianapolis, Gen II Mktg., Inc.            | 317-848-3083                    |
| IA | Cedar Rapids, Electromec Sls.               | 319-393-1637                    |
| IA | Marion, A.E.M., Inc.                        | 319-377-1129                    |
| KS | Lenexa, A.E.M., Inc.                        | 913-888-0022                    |
| KY | Louisville, Gen II Mktg., Inc.              | 502-491-5250                    |
| MD | Towson, Arbotek Assocs.                     | 410-825-0775                    |
| MA | Norwell, Norris & Assocs.                   | 617-659-7988                    |
| MI | Farmington, R.C. Merchant & Co.             | 313-476-4600                    |



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| MI  | St. Joseph, R.C. Merchant & Co.        | 616-983-7378 |
| MN  | Burnsville, Electromec Sls.            | 612-894-8200 |
| MO  | St. Louis, AEM, Inc.                   | 314-298-9900 |
| NJ  | Fairfield, Tech. Appl & Mktg.          | 201-575-4130 |
| NM  | Albuquerque, FP Sls.                   | 505-345-5553 |
| NY  | Rochester, H.C. Johnson Agency         | 716-586-0777 |
| NC  | Indian Trail, CSR Elctms., Inc.        | 704-882-3995 |
| NC  | Matthews, CSR Elctms., Inc.            | 704-882-3995 |
| NC  | Raleigh, CSR Elctms., Inc.             | 919-878-9200 |
| OH  | Columbus, Mc Fadden Sls., Inc.         | 614-761-3177 |
| OH  | Madison, Mc Fadden Sls., Inc.          | 614-761-3177 |
| OR  | Beaverton, L Squared Ltd.              | 503-629-8555 |
| PA  | Horsesham, Jacobsen Assocs.            | 215-674-2937 |
| TN  | Knoxville, CSR Elctms., Inc.           | 615-637-0293 |
| TX  | Austin, Technical Mktg., Inc.          | 512-343-6976 |
| TX  | Carrollton, Technical Mktg., Inc.      | 214-387-3601 |
| TX  | Houston, Technical Mktg., Inc.         | 713-783-4497 |
| UT  | Salt Lake City, Hendrickson Sls.       | 801-467-1445 |
| WA  | Kirkland, L Squared Ltd.               | 206-827-8555 |
| WI  | Cedarburg, Bransky Sls.                | 414-377-6837 |
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| Can | Burnaby, B.C., DMI                     | 604-430-3680 |
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| Can | Mississauga, Ont., CMT Renmark, Inc.   | 416-612-0900 |
| Can | Pointe-Claire, Que., CMT Renmark, Inc. | 514-694-6088 |

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**FURNAS ELEC.,** 1000 McKee Street, Batavia, IL 60510, Tel: 708-879-6000, TELEX: 72-0458; Empl: 1,500; Sls. Mgr.: Paul P. Welch

**FURY PRODUCTS, Cowden Metal Specialties,** 14165 Ramona Ave., Chino, CA 91710, Tel: 909-597-7860, FAX: 909-393-5582; FSC No: CAGE OUTXO; Empl: 200; Sls. Mgr.: Dan Fury; Dist. Mgr.: Dan Fury C-1045

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| IL                         | Glen Ellyn, Lincoln Hodges | 708-469-6750 |
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| MO                         | Kansas City, Turner Entrs. | 816-333-4097 |
| NJ                         | Woodbridge, Jade Mktg.     | 908-750-2998 |
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| TX                         | Piano, Milco Mktg.         | 214-578-1996 |
| WA                         | Bothell, Quadra Sls.       | 206-489-3428 |

**FUSES UNLIMITED, D.E.I.,** 16216 Raymer St., Van Nuys, CA 91406, Tel: 818-786-8111, FAX: 818-786-8222; Empl: 35; Dist. Mgr.: Pat White B-1358

**FUTABA CORPORATION OF AMERICA,** Electronic Components Div., 711 East State Pkwy., Schaumburg, IL 60173, Tel: 708-884-1444, FAX: 708-884-1635; Empl: 50; Sls. Mgr.: Julie Bristol, Bill Lichtner, Dist. Mgr.: Julie Bristol

**FUTURETECH,** 525 Auburn St., Auburndale, MA 02166, Tel: 617-965-3834, TWX: 510-600-6663, FAX: 617-332-4760; Empl: 2

**F. W. CAPACITORS INC.,** 98 Toledo Rd/Hwy. 301 South, Florence, SC 29504-0636, Tel: 803-662-4728, 803-662-4844, FAX: 803-667-6142; FSC No: 58368; Empl: 12; Sls. Mgr.: Joseph A. (Jay) Falcone Jr.

**GABRIEL ELCTRNS. INC.,** Box 70, Scarborough Indl Pk., Scarborough, ME 04070, Tel: 207-883-5161, FAX: 207-883-4469; Empl: 225; Sls. Mgr.: D. B. Crisman

**GALILEO ELECTRO-OPTICS CORP.,** Galileo Park, P.O. Box 550, Sturbridge, MA 01566-0550, Tel: 508-347-9191, FAX: 508-347-3849; FSC No: 28719; Empl: 360; Sls. Mgr.: Robert White

**GALL MOTION CONTROL, INC.,** 575 Maude Court, Sunnyvale, CA 94086, Tel: 408 746-2300, FAX: 408 746-2315; Empl: 13; Sls. Mgr.: Lisa Wade

**GAMMA-F CORP.,** Vertex Communications, 3111 Fujita, Torrance, CA 90505, Tel: 310-539-6704, FAX: 310-539-7463; FSC No: (CAGE) 50478; Empl: 40; Sls. Mgr.: Gary R. Peale



**FAX: 904-677-3039**

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**GANDALF TECHNOLOGIES, INC.,** See Gandalf Data, Inc.

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**GC INTERNATIONAL INC.,** 1301 Precision Dr., Plano, TX 75074, Tel: 214-423-8411, FAX: 214-423-4550; Sls. Mgr.: Hinkki Chen

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**GEC-MARCONI ELECTRONIC SYSTEMS CORP.,** 164 Totowa Rd., P.O. Box 975, Wayne, NJ 07474-0975, Tel: 201-633-6000, FAX: 201-633-6167; FSC No: 0D0D0; Empl: 2041; Sls. Mgr.: G. Soloway, Dir. Business Dev.; Dist. Mgr.: M. Gordon, Dir. Business Dev.

**GECO,** 145 Penn St., Millheim, PA 16854, Tel: 814-349-5555, FAX: 814-349-5657; Empl: 13

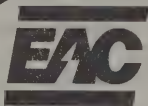
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**GE FANUC AUTOMATION NORTH AMERICA INC.,** P.O. Box 8106, Charlottesville, VA 22906, Tel: 804-978-5000, 800-648-2001, FAX: 804-978-5205

**GEIGER ELECTRONICS, INC.,** 42A Sandy Hollow Rd., Port Washington, NY 11050, Tel: 516-767-0700, FAX: 516-767-0700; FSC No: 0JP62

**GEMINI INC.,** 103 Mensing Way, Cannon Falls, MN 55009, Tel: 507-263-3957, 800-533-3631, FAX: 507-263-4887; Sls. Mgr.: John Weinel C-1046-1047

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 Can Mississauga, Ont., IMO Inds. (Canada) Inc. .... 416-564-3344

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**GENERAL CONTROLS ELECTRONICS INC.**, 2350 Brickvale Ave, Elk Grove Village, IL 60007, Tel: 708-595-2152, FAX: 708-595-2271; Empl: 206; Sls. Mgr.: Fritz von Mering

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 FL Maitland, Krutek & Assoc. .... 407-628-4837  
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 MI Royal Oak, Hilltronics, Inc. .... 313-435-0920  
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 Can Markham, Ontario, Birde Mktg., Inc. .... 416-477-7722  
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**GENERAL ELEC. CO.**, Electromaterials Dept., 1350 South Second Street, Coshocton, OH 43812, Tel: 614-622-5310, TELEX: 810-255-2921; Empl: 600; Sls. Mgr.: D.E. Allen

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**GENERAL FIBER OPTICS, INC.**, 98 Commerce Rd, Cedar Grove, NJ 07009, Tel: 201-239-3400, FAX: 201-239-4258; Dist. Mgr.: William W. Lentz

**GENERAL INSTRUMENT**, Govt. Systems, 600 W. John St., C. S. 710, Hicksville, NY 11802-0709, Tel: 516-933-3000, TELEX: 311512, TWX: 510-221-1865, FAX: 516-933-3432; Empl: 548; Sls. Mgr.: T. Turco/J. Zielesinski

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**GENERAL MICROWAVE CORPORATION**, 5500 New Horizons Blvd, Amityville, NY 11701, Tel: 516-226-8900, TELEX: 310-287-780, FAX: 516-226-8966; FSC No.: 11332; Empl: 180

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 TX Plano, Dick Cunningham .... 602-964-8594  
 VA Dumfries, Consult Factory .... 203-481-5721  
 WA Seattle, Datacom Assocs. .... 206-285-2525  
 WI New Berlin, Marsland Assocs. .... 708-298-2620  
 Can Scarborough, Ont., Multitest Elctms. .... 416-609-8396

**Components**  
 AZ Tempe, Dick Cunningham .... 602-964-8594  
 CA Saratoga (North), TESTCO .... 408-253-1900  
 CO Golden, J. F. Hurlbut Co. .... 303-279-7796  
 MD Randallstown, Beacon North, Inc. .... 703-478-2480  
 MI Brighton, W. R. Hummon & Assoc. .... 313-486-5333  
 OH Dayton, RIXAN Assocs. .... 513-278-4216  
 TX Richardson, Blackburn Assocs. .... 214-238-8181  
 VA Sterling, Beacon North, Inc. .... 703-478-2480

**Local Distributors**  
 CA Saratoga, TESTCO .... 408-253-1900  
 OH Dayton, RIXAN Assocs. .... 513-278-4216

**GENERAL SCANNING RECORDER PRODUCTS DIVISION**, 37 Broadway, Arlington, MA 02174, Tel: 617-641-2702, TELEX: 212838, FAX: 617-648-4906; Sls. Mgr.: Patrick Cooney D-1413

**GENERAL SECURITY INC.**, 3677 23rd Ave, South, Lake Worth, FL 33461, Tel: 407-533-0064, ESYLNK: 800-572-8989, FAX: 407-547-2844; Empl: 10; Sls. Mgr.: J.N. Benjamin

**GENERAL TECHNOLOGY CORP.**, 6816 Washington Avenue, NE, Albuquerque, NM 87109, Tel: 505-345-5591, FAX: 505-344-3227; FSC No.: 61666; Empl: 150; Sls. Mgr.: Ralph H. Anderson

**GENERAL TRANSISTOR CORP.**, GTC, 216 W. Florence Av., Inglewood, CA 90301, Tel: 310-673-8422, FAX: 310-672-2905; FSC No.: IT853; Empl: 66; Sls. Mgr.: Jack Hobb

**GENERAL VIBRATIONS MFG. CO.**, 77 Hilliard St, Manchester, CT 06040, Tel: 203-646-0090, FAX: 203-646-0090; Empl: 4

**GENERAL WIRE PRODUCTS, INC.**, 425 Shrewsbury Street, Worcester, MA 01604, Tel: 617-752-8260, FAX: 617-753-2173; FSC No.: 5F262; Empl: 58; Sls. Mgr.: Thomas P. Andrews, Jr.

**GENICOM**

**FAX: 703-949-1416**

**GENICOM CORP.**, 1 Genicom Dr., Waynesboro, VA 22980, Tel: 703-949-1471, TWX: 710-839-0407; FSC No.: 01528; Empl: 3000; Sls. Mgr.: L.B. Martin B-1010-1011, 1500-1503

**Local Sales Offices & Reps**  
 CA Santa Ana, Genicom Corp. .... 714-549-5101  
 CT Suffield, Genicom Corp. .... 203-668-6530  
 FL Bonita Springs, Genicom Corp. .... 813-947-5622  
 VA Waynesboro, Genicom Corp. .... 703-949-1666

**Local Distributors**  
 AL Montgomery, Southern Controls Inc. .... 800-392-5770  
 CA San Jose, JACO/Distel Inc. .... 408-432-9290  
 CA Santa Ana, Norstan .... 800-854-8344  
 CA Tustin, JACO/Distel Inc. .... 714-258-9003



|    |                                           |              |
|----|-------------------------------------------|--------------|
| CA | Westlake Village, JACO/Distel Inc.        | 800-824-0151 |
| FL | Boca Raton, JACO/QC                       | 407-241-7950 |
| FL | Orlando, T & T Prods., Inc.               | 305-857-2282 |
| GA | Norcross, JACO/QC                         | 404-449-9508 |
| ID | Coeur d'Alene, A-I Consolidated           | 800-635-1545 |
| MD | Baltimore, Elctrm. Comp. Sls.             | 301-728-2772 |
| MA | Columbia, JACO Elctms. Inc.               | 301-995-6620 |
| MA | Tewksbury, JACO Elctms. Inc.              | 508-640-0010 |
| NY | Hempstead, JACO/Elctms. Inc.              | 516-273-5500 |
| NC | Charlotte, Electronics Mktg. Corp.        | 704-394-6195 |
| NC | Raleigh, JACO/QC                          | 919-876-7767 |
| OH | Cleveland, Electronics Mktg. Corp.        | 216-442-3441 |
| OH | Columbus, Electronics Mktg. Corp.         | 614-299-4161 |
| OH | Dayton, Electronics Mktg. Corp.           | 513-439-4711 |
| OH | Highland Heights, Electronics Mktg. Corp. | 216-442-3441 |
| TX | Addison, JACO/QC                          | 214-733-4300 |
| TX | Austin, JACO/QC                           | 512-835-0220 |
| TX | Dallas, Associated Aircraft Supp. Co.     | 214-331-4381 |
| TX | Sugarland, JACO/QC                        | 713-240-2255 |
| WA | Redmond, Pan Pacific Elctms., Inc.        | 206-881-7252 |



FAX: 714-563-4353

**GENISCO ELECTRONICS, A Division of GTC,**  
1230 South Lewis Street, Anaheim, CA 92805, Tel: 714-563-4300; FSC No.: 07294; Empl: 200; Sls. Mgr: Doug Chapman/Tom Hudson ..... **A•1641; B•1151**

## Local Sales Offices &amp; Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| AL | Birmingham, Electro-South Inc.     | 205-822-5713 |
| AL | Huntsville, EMA                    | 205-830-4030 |
| AZ | Phoenix, Mayco                     | 602-867-3076 |
| CA | Claremont, Cook Enrtprs.           | 714-626-3997 |
| CA | San Jose, Kottmeier Assoc. Inc.    | 408-371-8700 |
| CA | Sunnyvale, DJM Elctms.             | 408-749-8936 |
| CA | Valencia, DJM Elctms.              | 805-254-2677 |
| CA | Vista, DJM Elctms.                 | 619-726-1266 |
| CO | Englewood, R.A. Mays Co.           | 303-761-9447 |
| GA | Roswell, E M A                     | 404-992-7240 |
| KX | Lenexa, Midtech Assoc.             | 913-541-0505 |
| MD | Rockville, Computer Power Techlg.  | 301-251-4717 |
| NH | Brookline, EMC Sls.                | 603-672-4455 |
| NM | Albuquerque, Mayco                 | 505-299-4002 |
| NY | Roslyn Hgts., November Elctm. Sls. | 516-621-6378 |
| OH | Dayton, Jay Engrg.                 | 513-253-2151 |
| WA | Bellevue, Underwood-Hanify Inc.    | 206-643-1793 |

**GENNUM CORP.,** P.O. Box 489, Sta. A, Burlington, ON, Canada L7R 3Y3, Tel: 800-263-9353, 416-632-2996, TELEX: 061-8525, FAX: 416-632-2055; Empl: 210; Sls. Mgr: Byron Nielsen

**GENRAD, INC.,** 300 Baker Ave., Concord, MA 01742-2174, Tel: 508-369-4400, TELEX: 200272, TWX: 95-1037, FAX: 508-369-6974; Empl: 1,370; Sls. Mgr: John Bulman, VP. World Sls. Bnd. Test

**GENROCO, INC.,** 205 Kettle Moraine Drive North, Slinger, WI 53086-9501, Tel: 414-644-8700, FAX: 414-644-6667; Sls. Mgr: Donald D. Woelz; Dist. Mgr: Barbara Pick

**GENSTAR RENTALS, INC.,** 23901 Calabasas Rd., Ste. 1073, Calabasas, CA 91302, Tel: 800-422-3300, FAX: 818-876-0099; Empl: 140; Sls. Mgr: Irene E. Tricamo

**GENTRAN, Safetytek Corp.,** 49050 Milmont Dr., Fremont, CA 94538, Tel: 510-226-9343, FAX: 510-226-1112; Empl: 12

## GENTRON CORPORATION

FAX: 602-443-1408

**GENTRON CORPORATION,** 7345 E. Acoma, Ste. 101, Scottsdale, AZ 85260, Tel: 602-443-1288; Empl: 50; Sls. Mgr: Rick Heinz ..... **B•1504-1506**

**GEOPHYSICAL SURVEY SYSTEMS, INC.,** 13 Klein Dr., North Salem, NH 03073-0097, Tel: 603-893-1109, FAX: 603-889-9984; FSC No.: 02-0278634; Empl: 55; Sls. Mgr: Thomas J. Fenner

**GEOPOWER INC.,** 50 Spring St., Ramsey, NJ 07446, Tel: TEL:201-236-0156, FAX: 201-236-0224 ..... **D•1858**

**GEORATOR CORP.,** 9617 Center Street, Manassas, VA 22110-5512, Tel: 800-523-9938, FAX: 703-368-1078; FSC No.: 91723; Sls. Mgr: Steve Hylton ..... **D•2261-2263**

## Local Sales Offices &amp; Reps

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|-----|----------------------------------------------------|---------------------------------|
| AL  | Birmingham, Simpson, Kiritity & Assoc.             | 205-951-0850, FAX: 205-951-0358 |
| CA  | Downey, Sierra Indl. Eng. Co.                      | 310-803-6330, FAX: 310-803-0617 |
| CA  | Fremont, Coherent Automation                       | 510-657-2100, FAX: 510-657-2511 |
| CT  | Hamden, IMAC Engrg. Sls. Inc.                      | 203-879-3555, FAX: 203-879-9137 |
| FL  | Altamonte Springs, Machine Controls, Inc.          | 407-788-6606, FAX: 407-862-9380 |
| IL  | Arlington Heights, Hill Sls. Corp.                 | 708-255-4400, FAX: 708-255-0192 |
| NY  | Victor, Controlled Motion Prods. Co.               | 716-924-3830, FAX: 716-924-5458 |
| OH  | Dublin, Robert S. Howley Co., Inc.                 | 614-889-1123, FAX: 614-889-1146 |
| PA  | Jim Thorpe, Brisbane Indl. Dr. Co.                 | 717-325-3684, FAX: 717-325-3870 |
| TX  | Houston, King Mktg. Assocs. Co.                    | 713-621-6915, FAX: 713-621-7917 |
| Can | Waterloo, Ont., Mfrs. Automation Peripheral Prods. | 519-746-0401, FAX: 519-746-3047 |



FAX: 308-235-2609

**GEORGE RISK INDUSTRIES, INC.,** 802 S. Elm St., Kimball, NE 69145, Tel: 308-235-4645; FSC No.: 24229; Empl: 180; Sls. Mgr: Mary Ann Brothers; Dist. Mgr: Mary Ann Brothers ..... **B•1832**

## Local Sales Offices &amp; Reps

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| AZ | Phoenix, J. F. Hurlbut Co.                   | 602-997-7285 |
| VA | Alexandria, Tech-Reps, Inc.                  | 703-370-2600 |
| CA | Los Altos, W.W. Posey Co.                    | 415-969-7635 |
| CO | Golden, F.J. Hurlbut Co.                     | 303-279-7796 |
| GA | Duluth, Stelmack Comps.                      | 404-441-7927 |
| MA | Lexington, Jodan Technlg.                    | 617-863-8898 |
| MI | Farmington Hills, Carter, McCormick & Peirce | 313-477-7700 |
| MN | Eden Prairie, O'Reilly Assocs.               | 612-941-6480 |
| NY | Huntington Station, Morgan Elctms.           | 516-549-5180 |
| PA | Horsham, Jacobsen Assocs.                    | 215-674-2937 |

**GERMANIUM POWER DEVICES,** Box 3065, Shawshen Village Sta., Andover, MA 01810-3065, Tel: 508-475-5982, TELEX: 94-7150, FAX: 508-470-1512; FSC No.: 53399; Empl: 100; Sls. Mgr: R. W. Kassiotis

**GERTSCH INSTRUMENTATION DIV., Tegan, Inc.,** 7230 North Ridge Rd., Madison, OH 44057, Tel: 216-428-7505, FAX: 216-428-1068

**GETTYS CORPORATION,** an AEG Company, 2701 N. Green Bay Rd., Racine, WI 53404, Tel: 414-637-6591, TELEX: 201-309, FAX: 414-637-8400; Empl: 173; Sls. Mgr: Jim Vojtko

**GETTYSBURG TRANSFORMER CORPORATION,** 1380 Old Harrisburg Rd., PO Box 4356, Gettysburg, PA 17325, Tel: 717-334-2191, FAX: 717-334-4961; Empl: 50; Sls. Mgr: Charles A. Ritter

**GEYER SYSTEMS,** See GSI Corp.

**GGB INDUSTRIES, INC.,** Picoprobe Division, PO Box 10958, Naples, FL 33941, Tel: 813-643-4400, FAX: 813-643-4403; Sls. Mgr: Greg Boll

**GHIEMMETTI, INC.,** 30961 Agoura Rd., Ste 311, Westlake Village, CA 91361, Tel: 800-228-1097, FAX: 818-707-1754; Empl: 4; Sls. Mgr: Rick Odorfer

**GIANNINI INSTITUTE,** 51-555 Madison St., Indio, CA 92201, Tel: 619-347-2833, FAX: 619-342-4006; FSC No.: 24727; Empl: 10; Sls. Mgr: Fred P. Ciambrone

**GIC THERMODYNAMICS,** 2611 Parmenter, Royal Oak, MI 48073, Tel: 313-280-1648, FAX: 313-280-0998; Empl: 20; Sls. Mgr: Denny Desmond

**GIDDINGS & LEWIS-NEXES AUTOMATION,** Giddings & Lewis, Inc., 666 S. Military Rd., P.O. Box 1658, Fond du Lac, WI 54936-1658, Tel: 414-921-7100, TELEX: 26-2722, TWX: 910-275-1100; FSC No.: 8P681; Empl: 175

**GIGA-TRONICS, INC.,** 488 Tasman Dr., Sunnyvale, CA 94089, Tel: 408-734-5780, FAX: 408-747-1265; Sls. Mgr: Dean Armann, Div. Sls. Mgr.

For sales offices and representatives, Giga-tronics, Pleasant Hill 1-800-726-GIGA



FAX: 617-938-5867

**GILWAY TECHNICAL LAMP,** 800 W. Cummings Pk., Woburn, MA 01801, Tel: 617-935-4442; FSC No.: 3T059; Empl: 17; Sls. Mgr: Clark Benjamin III; Dist. Mgr: Erin Hurley ..... **B•1152-1161**

**GIMIX, INC.,** 3223 Arnold Lane, Northbrook, IL 60062-2406, Tel: 708-559-0909, FAX: 708-559-0942; Empl: 14; Sls. Mgr: Robert Phillips

**GLASGAL COMMUNICATIONS, INC.,** 151 Veterans Dr., Northvale, NJ 07647, Tel: 201-768-8082, FAX: 201-768-2947; FSC No.: 22-2209693; Empl: 130; Sls. Mgr: Gerald C. Walsh

**GLASSMAN EUROPE LIMITED,** Studio 4 Intec 2 Wade Rd., Basingstoke, Hampshire RG24 0NE, Tel: (0256) 810808, FAX: (0256) 810815; Sls. Mgr: J. Ellis



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**GLASSMAN HIGH VOLTAGE INC.,** P.O. Box 551, Salem Indl. Pk., Whitehouse Sta., NJ 08889, Tel: 908-534-9007, TWX: 710-480-2839; Empl: 60; Sls. Mgr: John R. Belden ..... **D•1712-1729**

**GLASSMAN JAPAN HIGH VOLTAGE LTD.,** Taira Bldg., 1-17, Taira 1-Chome, Miyamae-Ku, Kawasaki 216, Japan, Tel: (044) 877-4546, FAX: (044) 877-3395

**GLATZER INDUSTRIES CORP.,** 15 River St., New Rochelle, NY 10801, Tel: 914-576-2700, FAX: 914-576-7075; Empl: 25; Sls. Mgr: Patricia M. Wyllie

**GLENAIR INC.,** 1211 Air Way, Glendale, CA 91201-2497, Tel: 818-247-6000, TELEX: 67-3485, TWX: 910-437-2066, FAX: 818-500-9912; FSC No.: 06324; Empl: 485; Sls. Mgr: Ronald E. Platz

**GLENMARC MANUFACTURING INC.,** 970 Woodlands Pkwy., Vernon Hills, IL 60061, Tel: 708-634-6080, 800-323-5350, FAX: 708-634-9527; Empl: 13; Sls. Mgr: David Greenwood

**GLEN MILLS INC.,** 395 Allwood Rd., Clifton, NJ 07012, Tel: 201-777-0777, FAX: 201-777-0070; Empl: 12; Sls. Mgr: Stanley I. Goldberg



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Empl: 50; Sls. Mgr: Sterling Pitt



**FAX: 310-322-7709**

**GLENTEK, INC.**, 208 Standard St., El Segundo, CA 90245,  
Tel: 310-322-3026 ..... **B•1262-1264**

**GLOBAL COMPONENTS & CONTROLS**, 3301-B  
Fairmont Ave., Wanamassa, NJ 07712-4010, Tel: 908-389-  
1470, FAX: 908-389-5284; Empl: 4; Sls. Mgr: John M.  
Chapiski

**GLOBAL SPECIALTIES**, Interplex Electronics, Inc., 70  
Fulton Terrace, P.O. Box 1942, New Haven, CT 06509, Tel:  
203-624-3103, FAX: 203-468-0060; Empl: 50; Sls. Mgr:  
Rachael Femicola; Dist. Mgr: Rachael Femicola

**GLOBE BATTERY DIV.**, See Johnson Controls,  
Globe Battery Div.

**GLOBE MOTORS**, 2275 Stanley Avenue, Dayton, OH  
45404, Tel: 513-228-3171, FAX: 513-229-8531; Empl:  
580; Dist. Mgr: Derek Keegan

**GLOBETRON ELECTRONICS CORP.**, 3175 Dundas St.  
West, Oakville, Ont., Can L6J 4Z3, Tel: 416-825-1335, 1-  
800-800-4606, FAX: 416-825-0475; Empl: 4; Sls. Mgr:  
Alan Montgomery

**GLOBE UNION**, See Johnson Controls, Globe  
Battery Div.

**GLOBTEK, INC.**, 186 Veterans Drive, Northvale, NJ  
07647, Tel: 201-784-1000, FAX: 201-784-0111; Empl: 20;  
Sls. Mgr: Tom Devaney; Dist. Mgr: Bob Siepmann  
..... **C•1340, 1748; D•1730-1732**

*Local Sales Offices & Reps*

|    |                                |              |
|----|--------------------------------|--------------|
| CA | La Mesa, Tektris Electro Corp. | 619-697-4563 |
| CO | Boulder, The Stratford Grp.    | 303-530-3194 |
| CT | Ridgfield, Harbor Elctms.      | 203-438-9625 |
| FL | Valrico, Unirep, Inc.          | 813-681-3477 |
| GA | Suwanee, Overton Assocs.       | 404-497-0166 |
| IL | Chicago, Meca Sls.             | 312-334-4020 |
| MD | Lisbon, S. K. MacDonald        | 301-982-1088 |
| MI | Howell, Great Lakes Comp.      | 517-548-9100 |
| NH | Amherst, Bennetron             | 603-880-7008 |
| NJ | Bay Head, Cuccaro Co.          | 903-892-2511 |
| NC | Raleigh, Bestec                | 919-790-8988 |
| OH | Dayton, Thompson and Assoc.    | 513-435-7733 |
| OR | Beaverton, Unicom              | 503-643-1645 |
| TN | New Tazewell, Overton Assocs.  | 615-626-6009 |
| TX | Dallas, Exel Tech              | 214-239-3935 |
| WA | Spokane, DES Elctms.           | 509-922-2971 |

**GLOLITE SALES LTD/GLOWLITE DIV.**, See  
Advanced Rubber Concepts

**GME SYSTEMS, INC.**, 12300 Perry Highway, Pittsburgh,  
PA 15090, Tel: 412-935-0440, FAX: 412-935-9640; Empl:  
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044, Tel: (91) 842-660106,661593, TELEX: 0425-2105  
GML IN, FAX: (91) 842-661484; Empl: 50

**GM NAMEPLATE, INC.**, 2040 15th Ave. West, Seattle,  
WA 98119, Tel: 206-284-2200, FAX: 206-284-3705; Empl:  
350; Sls. Mgr: Gerry Gallagher ..... **B•1836-1837;  
C•1665**

*Local Sales Offices & Reps*

|     |                                           |              |
|-----|-------------------------------------------|--------------|
| AL  | Huntsville, JWL Assocs.                   | 205-883-1712 |
| AZ  | Tempe, Elctm. Dev. & Sls.                 | 602-438-1547 |
| CA  | Irvine, Balzer-Wolf Assoc.                | 714-261-6877 |
| CA  | San Jose, GM Nameplate, Inc.              | 408-435-1666 |
| CO  | Englewood, Delltron                       | 303-741-2122 |
| FL  | Orlando, Comp. Sls.                       | 407-823-7480 |
| HI  | Honolulu, Meneshune Unltd.                | 808-737-3472 |
| ID  | Eagle, GM Nameplate                       | 208-939-7202 |
| IL  | Elmhurst, Utronix                         | 708-834-1100 |
| IN  | Zionsville, Custom Engineered Parts, Inc. | 317-873-5626 |
| MI  | Southfield, Ebling Enltns.                | 313-647-0330 |
| MN  | Burnsville, Electromec Sls, Inc.          | 612-894-8200 |
| MO  | St. Louis, Halpin D. Burke & Son          | 314-968-2727 |
| NH  | Mont Vernon, GM Nameplate, Inc.           | 603-673-9737 |
| NJ  | Pitman, Colrud Corp.                      | 609-589-5866 |
| NJ  | W. Caldwell, Grimm, Siegel Assocs.        | 201-575-9300 |
| NC  | Charlotte, JWL Assocs.                    | 704-541-5750 |
| OH  | Akron, Augnat Assocs.                     | 216-239-2499 |
| OR  | Portland, GM-Portland                     | 503-223-9879 |
| PA  | Robinson Township, Allied Enltns.         | 412-788-2992 |
| TX  | Dallas, Comp. Technlg.                    | 214-783-8831 |
| VA  | Reston, Colrud Corp.                      | 703-904-0240 |
| WA  | Bellevue, American Intl. Enltns.          | 206-455-4697 |
| EXP | Monterrey, NL, Meixco, Grupo Etimex       | 83 43-00-41  |
| EXP | Singapore, S & T Enltns.                  | 065-745-9235 |
| Can | Calgary, Alberta, Enerlec Sls. Ltd.       | 403-256-3627 |
| Can | Richmond, BC, Enerlec Sls. Ltd.           | 604-273-0882 |

**GMR CO.**, 804 Main St., Venice, CA 90291-3218, Tel: 310-  
399-1490, TELEX: 499 2468, FAX: 310-399-1901; Empl:  
62; Sls. Mgr: Harvey Mushman



**FAX: 415-368-0816**

**GMW ASSOCIATES**, P.O. Box 2578, Redwood City, CA  
94064, Tel: 415-368-4884; Empl: 7; Sls. Mgr: Ian Walker  
..... **B•1950-1951; D•1260-1263**



**FAX: 714-993-6023**

**GOLDEN PACIFIC ELECTRONICS, INC.**, 560 S.  
Melrose St., Placentia, CA 92670, Tel: 714-993-6970;  
Empl: 15; Sls. Mgr: James Au; Dist. Mgr: James Au  
..... **D•1030-1032, 1734-1735**

*Local Sales Offices & Reps*

|     |                                            |              |
|-----|--------------------------------------------|--------------|
| CA  | Garden Grove, ELSCO Elctms                 | 714-891-4621 |
| CA  | Norwalk, Ed Rivers Assocs.                 | 310-868-1471 |
| CA  | San Jose, Applied Elctms Mktg              | 408-441-9610 |
| CO  | Longmont, Butler Tech. Sls.                | 303-651-7703 |
| IL  | Arlington Heights, M.J. Peterson & Assocs. | 708-577-8200 |
| MN  | Maple Grove, Electronic Prods. for Ind.    | 612-493-3346 |
| NJ  | Wayne, Breen Assocs                        | 201-696-8683 |
| OH  | Cleveland, Tech. Sls. Assoc.               | 216-661-0826 |
| PA  | Pittsburgh, K-T Mktg.                      | 412-367-1011 |
| TX  | Richardson, Jim D. Gray & Assoc.           | 214-699-9976 |
| UT  | Salt Lake City, Luscombe Engrg.            | 801-268-3434 |
| Can | Ottawa, Ont., Current Mktg.                | 613-224-4811 |

**GOLDEN POWER SYSTEMS, INC.**, 2125-B Madera Rd.,  
Simi Valley, CA 93065, Tel: 805-582-4400, FAX: 805-582-  
3230; Empl: 550; Sls. Mgr: Mark Richey

**GOLDSTAR PRECISION CO. LTD.**, Lucky Goldstar,  
13013 E. 166th St., Cerritos, CA 90701, Tel: 310-404-0101,  
FAX: 310-921-6227; Empl: 12; Sls. Mgr: Reginald Bale;  
Dist. Mgr: Reginald Bale

**GOLDSTAR TECHNOLOGY, INC.**, 3003 N. First St., San  
Jose, CA 95134, Tel: 408-432-1331, FAX: 408-432-6053

**GOOD-ALL ELECTRIC, INC.**, 3725 Canal Drive, Fort  
Collins, CO 80524, Tel: 303-484-3080, 800-826-7891,  
TWX: 910-930-9015, FAX: 303-484-8649; FSC No.: 22096;  
Empl: 135; Sls. Mgr: Sandi K. Salvhus

**GORDON BRUSH MFG. CO., INC.**, 2150 Sacramento  
St., Los Angeles, CA 90021-1786, Tel: 213-627-6889, FAX:  
213-623-4397; FSC No.: 17987; Empl: 35

**J. GORDON ELECTRONIC DESIGN, INC.**, 7671  
Central Ave. NE, Minneapolis, MN 55432, Tel: 612-786-  
2405, FAX: 612-786-5778; Empl: 3; Sls. Mgr: Jim  
Hogenson

**GORDON INSTRUMENTS, INC.**, 3645 California Rd.,  
Orchard Park, NY 14127, Tel: 716-662-5353, 1-800-333-  
2672, FAX: 716-662-7839; Empl: 20; Sls. Mgr: John  
Savage

**GORDON, L. PACKAGING**, 1050 S. Paca St., Baltimore,  
MD 21230, Tel: 410-539-6537, FAX: 410-625-7510; Empl:  
150

**GORDON PRODUCTS**, 67 Del Mar Dr., Brookfield, CT  
06804, Tel: 203-775-4501, FAX: 203-775-1162; Empl: 45;  
Sls. Mgr: Leon Najman; Dist. Mgr: Leon Najman

# GORDOS

**FAX: 214-250-3865**

**GORDOS, Crouzet Corp.**, 3237 Commander Dr.,  
Carrollton, TX 75006-2506, Tel: 214-250-1647, 1-800-677-  
5311; Sls. Mgr: Bill Wiberg ..... **A•1695; B•1458-1463;  
D•1182-1183**

*Local Sales Offices & Reps*

|      |                                              |                                    |
|------|----------------------------------------------|------------------------------------|
| AZ   | Scottsdale, Jeff Miller                      | 602-948-0751                       |
| CA   | Costa Mesa, Automation Control & Data Inc.   | 714-751-6760, FAX: 714-751-0726    |
| CA   | San Diego, Automation Control & Data Inc.    | 619-674-5811                       |
| CT   | Westbrook, John Brewer                       | 203-399-7311                       |
| CA   | Marietta, Levine Electronics                 | 404-565-1556                       |
| IL   | Schaumburg, Eric Pfister                     | 708-885-5696                       |
| IN   | Indianapolis, Hi-Tek Sls. Co.                | 317-887-2564,<br>FAX: 317-888-6476 |
| IA   | W. Des Moines, HDI, Ltd.                     | 515-225-3777                       |
| KS   | Lenexa, Midtec Assocs., Inc.                 | 913-541-0505,<br>FAX: 913-541-1729 |
| MA   | Burlington, Anacon Sls. Assocs.              | 617-272-9080, FAX:<br>617-272-9102 |
| MN   | St. Paul, Johnson Co.                        | 612-429-2544                       |
| MO   | St. Louis, Midtec Assocs., Inc.              | 314-275-8666,<br>FAX: 314-275-8859 |
| NJ   | Budd Lake, Guido Assocs.                     | 201-347-4643,<br>FAX: 201-691-1468 |
| NM   | Albuquerque, Syntech                         | 505-266-7051,<br>FAX: 505-266-7953 |
| OH   | Centerville (Dayton), Omega Sls., Inc.       | 513-434-5507, FAX: 513-434-5722    |
| OH   | Cleveland, Omega Sls., Inc.                  | 216-360-9400,<br>FAX: 216-360-0712 |
| OH   | Powell, Jack Matthews                        | 614-766-1932                       |
| OR   | Portland, Control Devices Northwest          | 503-659-3216                       |
| PA   | Valley Forge, Providence Mktg. Assocs., Inc. | 215-935-3300, FAX: 215-935-3387    |
| TX   | Dallas, Crouzet Corp.                        | 214-250-1647                       |
| WA   | Bellevue, Control Devices Northwest          | 206-451-8552                       |
| Intl | AR Rogers, Gordos                            | 501-636-5000                       |
| Can  | Montreal, Que., Crouzet Corp.                | 514-735-7926                       |

*Local Distributors*

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| CA | Santa Monica, Master Distrs.  | 310-452-1229 |
| IL | Chicago, Newark               | 312-784-3670 |
| MA | Peabody, Time Elctms.         | 508-532-6200 |
| NJ | Oakland, Relay Specs.         | 201-337-1000 |
| OH | Cincinnati, Aetna Elec.       | 513-871-8338 |
| PA | Willow Grove, C.A. Briggs Co. | 215-784-9250 |
| SC | Columbia, Resources Elctms.   | 803-779-5332 |
| WI | Waukesha, Powermation         | 414-523-0600 |

**W. L. GORE & ASSOCS., INC.**, 4747 E. Beautiful Lane,  
Phoenix, AZ 85044, Tel: 602-431-0077, FAX: 602-431-  
1512

**W.L. GORE & ASSOCS.**, 555 Paper Mill Rd., Newark, DE  
19174, Tel: 302-738-4880, TWX: 510-666-0825, FAX: 302-  
738-7710; Empl: 2000; Sls. Mgr: Daniel D. Johnson



**W.L. GORE & ASSOCIATES, INC.**, 1505 North Fourth St., P.O. Box 3000, Flagstaff, AZ 86003-3000, Tel: 602-526-3030, 1-800-344-3644, FAX: 602-526-2919; FSC No.: 60622; Sls. Mgr.: Jerry H. Johnson; Dist. Mgr.: Jerry H. Johnson

**GORMAN MACHINE CORP.**, 7 Burke Dr., Brockton, MA 02401, Tel: 508-588-2900, FAX: 508-588-9560; Empl: 25; Sls. Mgr.: Kenneth P. Gorman

**GORMAN-REDLICH MFG. CO.**, 257 W. Union St., Athens, GA 45701, Tel: 614-593-3150, FAX: 614-592-3898; Empl: 4; Sls. Mgr.: Jim Gorman

# GOSSEN

**FAX: 619-598-9828**

**GOSSEN/TEXMATE**, 995 Park Center Dr., Vista, CA 92083-8397, Tel: 619-598-9899, 1-800-394-8344  
D=1145, 1204-1205, 1372-1387, 1965

*Local Sales Offices & Reps*  
Can Toronto, Ont., R.H. Nichols ..... 416-851-8871

*Local Distributors*  
CA Duarte, Pathfinder ..... 818-357-1890  
CA Laguna Hills, Hill House ..... 714-951-1048  
CA Palo Alto, Priz-Co. .... 415-493-8600  
CA San Bruno, Control Tech. .... 415-593-2111  
CO R&R Instrmn. .... 303-340-8728  
IL Algonquin, Marshall Wolf ..... 708-658-8130  
IN Fishers, Couchman-Conant ..... 317-849-9890  
LA New Orleans, Currier & Roser Inc. .... 504-734-1147  
MI Highland Park, Marsh Instrs. .... 313-869-9200  
MI Highland Pk, Marsh Instrs. .... 313-869-9200  
MN New Brighton, J & W Instrs. .... 612-784-5708  
MT Billings, Kirst Engrg. .... 406-656-9570  
NJ Landing, PC & S ..... 201-398-5843  
NJ Marmora, Brooks Tech., Inc. .... 609-390-2380  
NY E Syracuse, Liberty Elctms. .... 315-437-8100  
NC Statesville, Statesville Process Instrs. .... 704-873-1835

OR Portland, HIS Elctms. .... 503-643-5648  
PA Bridgeville, Norton Equip. Comp. .... 412-221-3131  
PA Wayne, Mainline Instrs. .... 215-687-5307  
PR Knoxville, Southeastern Automation Grp. .... 615-675-3080  
TX Houston, Talon Tech. Sls. .... 713-999-8588  
TX Houston, The Metershop of Texas .... 713-957-8586  
TX Lewisville, KSE-Texas .... 800-594-2121  
TX Odessa, Whitlock Instrs Repair .... 915-337-3412  
UT Sandy, Industrial Instrs. .... 801-566-2980  
WA Bellevue, Eustis Comp. .... 206-451-0700  
WI Milwaukee, Gordon Hatch Co. .... 414-671-6550  
PR San Juan, Tomas Cuerda, Inc. .... 809-758-7830

**GO SWITCH**, P.O. Box 37290, Louisville, KY 40233, Tel: 502-969-2386, FAX: 502-969-5911; Empl: 60; Sls. Mgr.: David Lambert; Dist. Mgr.: David Lambert

**GOULD INC.**, Corporate Headquarters, 35129 Curtis Blvd., Eastlake, OH 44094, Tel: 216-953-5000, TELEX: 687-3157, FAX: 216-953-5050; Empl: 8000

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**GOULD INC.**, Electronic Power Sources, 35129 Curtis Blvd., Eastlake, OH 44094, Tel: 216-953-5000, TELEX: 687-3157, FAX: 216-953-5050; Empl: 8000

*Local Sales Offices & Reps*  
OH Eastlake, Gould Inc., Power Sources .. 800-722-7890

**GOULD INC., FOIL DIV.**, Gould Inc., 35129 Curtis Blvd., Eastlake, OH 44095, Tel: 216-953-5000, FAX: 216-953-5174; Empl: 15; Sls. Mgr.: John P. Callahan

**GOULD INC.**, Test and Measurement Group, 8333 Rockside Rd., Valley View, OH 44125, Tel: 216-328-7000, TELEX: 196113GLD RS UT, FAX: 216-328-7400; FSC No.: 96795; Empl: 550; Sls. Mgr.: C. Nazelli, Sls. V.P.

**GOULD SHAWMUT**, 374 Merrimac St., Newburyport, MA 01950, Tel: 508-462-6662/3131, FAX: 508-465-6419; FSC No.: 71424; Sls. Mgr.: Edward Calhoun

**GOWANDA ELECTRONICS CORP.**, 1 Industrial Pl., Gowanda, NY 14070, Tel: 716-532-2234, TWX: 710-529-1211, FAX: 716-532-2702; FSC No.: 24226; 15305; Empl: 250; Sls. Mgr.: H.F. Gearhart; Dist. Mgr.: H.F. Gearhart  
A=1239-1241

*Local Sales Offices & Reps*  
AL Huntsville, L&D, Inc. .... 205-837-8395  
AZ Mesa, Sys. Sls. of AZ Inc. .... 602-464-9989  
NM Albuquerque, Sys. Sls. of N.M. .... 505-889-2901  
CA Fremont, Ed Blake Assocs. .... 510-770-9058  
CA San Diego, Earle & Assocs. .... 619-278-5441  
CA Torrance, Orion-Eclipse .... 213-326-0999  
CO Parker, Parker-Webster Co. .... 303-841-4888  
FL Margate, EPM Corp. .... 305-977-0331  
FL Orlando, EPM Corp. .... 407-425-6149  
GA Atlanta, L & D, Inc. .... 404-395-7079  
IL Palatine, Key Entrp. .... 708-991-2144  
IA Cedar Rapids, Gavin Sales .... 319-366-1229  
MD Ellicott City, Nelson Elctms. .... 301-747-7887  
MN Reading, Lincoln Assocs. .... 508-664-6800  
MI Madison Heights, D.E.M. Sls. .... 313-583-1500  
MN Chanhassen, Barnes Sls. Assocs. .... 612-934-2907  
MO Lee's Summit, Omni Tech. Sls. .... 816-578-4221  
NY Manhasset, Win-Cor Elctm. .... 516-627-9474  
NY Pittsford, Andres Comps. .... 716-385-3818  
NC Raleigh, L & D, Inc. .... 919-876-5301  
OH Cincinnati, Stegman Blaine Mktg. .... 513-729-1969  
OH Cleveland, Stegman Blaine Mktg. .... 216-572-0003  
PA Exton, Linear Sls. .... 215-524-8080  
TX Richardson, Texoma Tech. Sls. .... 214-238-8127  
UT Murray, Parker-Webster Co. .... 801-266-9939  
WA Olympia, Bergford & Assocs. .... 206-866-2001  
WI Milwaukee, Key Entrp. .... 414-762-2323  
Can St. Laurent, Comptonics .... 514-331-9930

*Local Distributors*  
AL Huntsville, Component Distrs. .... 205-883-7501  
CA Chatsworth, Passive Comps. .... 818-700-8838  
NJ E Brunswick, Brothers Elctms. .... 201-238-2200  
CA Fremont, KEA Elctms. .... 510-651-2600  
CA Stanton, Inductive Comps. .... 714-828-3420  
CT Bridgeport, Park Distributors .... 203-366-7200  
FL Ft. Lauderdale, Component Distrs. .... 800-558-2351  
MI Grand Rapids, Calder Elctms. .... 616-698-7400  
MN Chanhassen, G&F Distribution .... 612-934-2907  
NY Hauppauge, Broadline Electric .... 516-231-4100  
PA Exton, VSH Elctms. .... 215-363-2250  
VA Charlottesville, Va. Elctm. Comps. .... 804-296-4184  
Can Pointe Claire, Que., Ferrotronics .... 514-426-0300

**GOW-MAC INSTR. CO.**, P.O. Box 32, Bound Brook, NJ 08805-0032, Tel: 908-560-0600, TELEX: 833-174, FAX: 908-271-2782; Empl: 52; Sls. Mgr.: Jeff Lawson

**G P BATTERIES USA**, Gold Peak International Ltd., 2772 Loker Ave. West, Carlsbad, CA 92008, Tel: 619-438-2202, TELEX: 01830, FAX: 619-438-0694; FSC No.: 01830; Empl: 30; Sls. Mgr.: Gregg Kuehn; Dist. Mgr.: Bryan Myers

**GP:50 NEW YORK**, 2770 Long Rd., Grand Island, NY 14072, Tel: 716-773-9300, FAX: 716-773-5019; Empl: 26; Sls. Mgr.: Pat Murphy

**GP TRAINING SYSTEMS**, GPS Technologies, Inc., 76 Robinson St., Pottstown, PA 19464, Tel: 215-327-8800, FAX: 215-327-1158; Empl: 1681; Sls. Mgr.: Richard Smith; Dist. Mgr.: Stacey Jarsberg

**GRADO LABORATORIES**, 4614 Seventh Ave., Brooklyn, NY 11220, Tel: 718-435-5340, FAX: 718-633-6941

**GRAFOPLAST S.P.A.**, Wiremarkers, 13, Via Arrivabene, Genova, Italy 16154, Tel: 010. 621687, TELEX: 0283828, FAX: 010. 674448; Empl: 45; Sls. Mgr.: Giorgio Patrone

**GRAHAM ELECTRONIC MANUFACTURING INC.**, 109-State Pl., Escondido, CA 92025, Tel: 619-747-9177, 800-628-4095, FAX: 619-747-9326; Empl: 14; Sls. Mgr.: Samuel L. Band

**GRALEX INDUSTRIES**, 70 Oak St., Ste. 204, Norwood, NJ 07048, Tel: 800-486-4499, FAX: 201-767-7015; FSC No.: 11332; Empl: 15; Dist. Mgr.: Jan Noothout  
D=1353

*Local Sales Offices & Reps*  
CA San Leandro, Coast ..... 415-483-3774  
IL Franklin Park, Alca ..... 708-451-6644  
NJ Norwood, Gralex Inds., Inc. .... 800-486-4499

*Local Distributors*  
AZ Phoenix, Metermaster ..... 602-243-4111  
AZ Tempe, CMI Metermaster ..... 602-431-0880  
CA Los Angeles, Crompton Metermaster ..... 714-921-2101  
CA Los Angeles, Metermaster ..... 213-685-4340  
CA Palo Alto, CMI Metermaster ..... 415-960-8500  
CA Palo Alto, Metermaster ..... 415-968-0313

GA Atlanta, Metermaster ..... 404-446-0166  
GA Atlanta, Metermaster ..... 404-446-0188  
IL Chicago, Metermaster ..... 312-593-8650  
IL Glendale Hgts., Crompton Metermaster ..... 312-351-4554  
MA N.Billerica, Electra Test, Inc. .... 508-667-8541  
MA Waltham, Calibron Instrs. .... 617-894-6440  
NJ Somerset, CMI Metermaster ..... 201-271-1277  
NY Great Neck, Instrument Marl ..... 516-487-7430  
OH Cleveland, Crompton Metermaster .... 216-651-4100  
TX Dallas, Metermaster ..... 214-271-5671  
TX Houston, Meters & Instrs. .... 713-644-1631

**GRAND TRANSFORMER, INC.**, 1500 Marion St., Box 799, Grand Haven, MI 49417, Tel: 616-842-5430, FAX: 616-842-1780; Empl: 125; Sls. Mgr.: Ted Jackson; Dist. Mgr.: G. V. Retzlaff, Exp. Sls. Mgr.

**GRAPHICODE, INC.**, 19101 36th Ave. W., Ste.204, Lynnwood, WA 98036, Tel: 206-672-1980, FAX: 206-672-2705; Empl: 5; Sls. Mgr.: Douglas M. Pratt

**GRAPHICS MICROSYSTEMS, INC.**, 10375 Brockwood Rd., Dallas, TX 75225, Tel: 214-340-4584, 800-527-1207, TELEX: 13-1571, FAX: 914-968-8468; Empl: 178; Sls. Mgr.: Eddie Deering

**GRAPHITE METALLIZING CORP.**, 1036 Nepperhan Ave., P.O. Box 110, Yonkers, NY 10702, Tel: 914-968-8400, TELEX: 13-1571, FAX: 914-968-8468; Empl: 178; Sls. Mgr.: E. Walker  
B=1265

*Local Sales Offices & Reps*  
OR Beaverton, Graphite Metallizing ..... 503-646-9964

**GRASEBY INFRARED**, Graseby PLC, 12151 Research Parkway, Orlando, FL 32826, Tel: 407-282-7700, FAX: 407-273-9046; Empl: 50

**GRASSLIN CONTROLS CORP.**, GRASSLIN GMBH & CO., K.G., 24 Park Way, Upper Saddle River, NJ 07458, Tel: 201-825-9696, FAX: 201-825-8694; Empl: 7; Sls. Mgr.: Gene K. Manghi

**GRAYHILL INC.**, 561 Hillgrove Ave., La Grange, IL 60525, Tel: 708-354-1040, FAX: 708-354-2820; FSC No.: 5930; Empl: 615; Sls. Mgr.: Richard K. Neumann; Dist. Mgr.: Robert J. Ferrel  
B=1507, 1729-1733, 1833; C=1341

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| AZ  | Phoenix, Mercury Engrg. Sls.                     | 602-265-0344 |
| CA  | Irvine, Quadrep Southern Inc.                    | 714-727-4222 |
| CA  | San Jose, Quadrep, Inc.                          | 408-432-3300 |
| CO  | Denver, Lindberg Co.                             | 303-758-9033 |
| CT  | Branford, Coakley Boyd & Abbott                  | 203-481-2218 |
| FL  | Clearwater, Sundland Assocs.                     | 813-536-2955 |
| FL  | Lauderhill, Sundland Assocs.                     | 305-748-1303 |
| FL  | Oviedo, Sundland Assocs.                         | 407-365-9533 |
| GA  | Tucker, Rep, Inc.                                | 404-938-4358 |
| IL  | Itasca, LTD Elctms.                              | 708-773-2900 |
| IN  | Fl. Wayne, Menze Sls.                            | 219-747-5616 |
| IA  | Cedar Rapids, Lorenz Sls.                        | 319-377-4666 |
| KS  | Overland Pk, Spectrum Sls.                       | 913-648-6811 |
| MD  | Gaithersburg, Naudain Assocs. Southern           | 301-258-5040 |
| MA  | Framingham, Coakley Boyd & Abbott                | 508-820-0800 |
| MI  | Royal Oak, Hilltronics Inc.                      | 313-435-0920 |
| MN  | S. St. Paul, Northport Engrg.                    | 612-457-8000 |
| MO  | Florissant, Spectrum Sls.                        | 314-921-1313 |
| NE  | Lincoln, Lorenz Sls, Inc.                        | 402-475-4660 |
| NJ  | Hackensack, Coakley Boyd Abbott/Metro Div.       | 201-440-4114 |
| NJ  | Marlton, Naudain Assocs.                         | 609-983-5300 |
| NM  | Albuquerque, Lindberg Co.                        | 505-881-1006 |
| NY  | Ithaca, Bob Dean, Inc.                           | 607-257-1111 |
| NY  | Wantage, Coakley Boyd Abbott                     | 516-783-4102 |
| NY  | Wappingers Falls, Bob Dean, Inc.                 | 914-297-6406 |
| NC  | Morrisville, Reps, Inc.                          | 919-469-9997 |
| OH  | Centerville, Bear Mktg. Inc.                     | 513-436-2061 |
| OH  | Richfield, Bear Mktg. Inc.                       | 216-659-3131 |
| OR  | Tigard, Eltech, Inc.                             | 503-684-3458 |
| PA  | Allison Park, Bear Mktg.                         | 412-492-1151 |
| TN  | Jefferson City, Rep, Inc.                        | 615-475-9012 |
| TX  | Austin, Fralia & Co.                             | 512-835-7911 |
| TX  | Eulless, Fralia & Co.                            | 817-267-3577 |
| TX  | Houston, Fralia & Co.                            | 713-772-1572 |
| UT  | Salt Lake City, Lindberg Co.                     | 801-484-8689 |
| WA  | Bellevue, Eltech, Inc.                           | 206-643-4330 |
| WI  | Mequon, Badgerap                                 | 414-241-9200 |
| Can | Burnaby, BC, A.C. Simmonds & Sons Ltd.           | 604-451-9488 |
| Can | Pickering, Ont, A. C. Simmonds & Sons Ltd.       | 902-865-1889 |
| Can | Ville LeMoyne, Quebec, A.C. Simmonds & Sons Ltd. | 416-839-8041 |
|     |                                                  | 514-466-5250 |

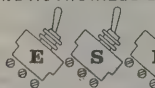
## Local Distributors

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| AL | Birmingham, Regan Controls          | 205-664-2877 |
| AL | Huntsville, Powell Elctms.          | 205-837-5300 |
| AL | Huntsville, Time Elctms.            | 205-721-1133 |
| AZ | Phoenix, Sterling Elctms.           | 602-437-5565 |
| AZ | Tempe, LCOMP Inc.                   | 602-730-1633 |
| AZ | Tempe, Time Elctms.                 | 602-967-2000 |
| AR | Little Rock, Carlton-Bates Co.      | 501-562-9100 |
| CA | Garden Grove, Richey/Impact Elctms. | 800-421-7258 |
| CA | Gardena, Calif. Switch & Signal     | 213-770-2330 |
| CA | Inglewood, Newark Elect.            | 213-671-7377 |
| CA | Los Angeles, Electric Switches      | 213-660-1310 |
| CA | Mission Viejo, Distributed Motion   | 714-855-9902 |
| CA | Novato, Westech Automation          | 415-382-2577 |
| CA | Riverside, Electronic Supply        | 714-683-7300 |
| CA | San Diego, Electronic Supply        | 619-693-8222 |
| CA | San Diego, Richey/Impact Elctms.    | 619-271-4511 |
| CA | San Diego, Time Elctms.             | 619-674-2800 |
| CA | San Francisco, Westech Automation   | 415-563-9876 |
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| CA | Tustin, Time Elctms.                         | 714-669-0216 |
| CA | Woodland Hills, Time Elctms.                 | 818-593-8400 |
| CO | Denver, CSID, Inc.                           | 303-292-9594 |
| CO | Denver, Newark Elctms.                       | 303-757-3351 |
| CO | Englewood, Cypress                           | 303-792-5829 |
| CO | Englewood, Kent/Shelley Ragon, Inc.          | 303-792-9100 |
| CO | Englewood, Motion Solutions                  | 303-792-5518 |
| CO | Englewood, Time Elctms.                      | 303-721-8882 |
| CT | Southbury, Time Elctms.                      | 203-271-3200 |
| CT | Southington, Electro Mechanical Drives, Inc. | 203-621-7335 |
| CT | Wallingford, Sager                           | 203-265-4600 |
| FL | Ft. Lauderdale, Hammond Elctms.              | 305-973-7103 |
| FL | Ft. Lauderdale, Powell Elctms.               | 305-484-8377 |
| FL | Ft. Lauderdale, Time Elctms.                 | 305-484-1778 |
| FL | Orlando, Hammond Elctms, Inc.                | 407-849-6060 |
| FL | Orlando, Sager Elctms.                       | 407-354-1130 |
| FL | Orlando, Time Elctms.                        | 407-841-6565 |
| FL | Pompano Beach, Peerless Radio                | 305-973-4141 |
| GA | Duluth, Pioneer Technlgs./Georgia            | 404-623-1003 |
| GA | Norcross, Hammond Elctms, Inc.               | 404-449-1996 |
| GA | Norcross, Time Elctms.                       | 404-368-0969 |
| ID | Meridian, Pacific Control Sply.              | 208-286-7404 |
| IL | Batavia, Control Source                      | 708-406-0880 |
| IL | Chicago, Newark Elctms.                      | 312-784-5100 |
| IL | Chicago, Waldom Elctms.                      | 312-585-1212 |
| IL | Northbrook, Classic Comp. Supp.              | 708-272-9650 |
| IL | Palatine, Ohm Elctm.                         | 708-359-5500 |
| IL | Schaumburg, Time Elctms.                     | 708-303-3000 |
| IN | Fort Wayne, Bell Inds.                       | 219-423-3422 |
| IN | Indianapolis, Bell Inds.                     | 317-875-8200 |
| IN | Indianapolis, Meunier Elctm. Supp., Inc.     | 317-635-3511 |
| IN | Indianapolis, Pioneer Standard               | 317-573-0880 |
| IN | Indianapolis, Process Automation Devs.       | 317-879-1100 |
| IA | Cedar Rapids, Advent Elctms.                 | 319-363-0221 |
| KS | Overland Pk, Olive Elctms.                   | 913-362-1923 |
| MD | Annapolis Jct, Powell Elctms.                | 301-953-3435 |
| MD | Baltimore, Resco/Baltimore                   | 410-931-8200 |
| MD | Columbia, Sager Elctms. Sply.                | 410-995-4900 |
| MD | Columbia, Time Elctms.                       | 410-964-3090 |
| MD | Gaithersburg, Pioneer Technlgs.              | 301-921-0660 |
| MD | Kensington, Marine Air Supp.                 | 301-949-9560 |
| MA | Hingham, Sager Elctms.                       | 617-749-6700 |
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| MA | Peabody, Time Elctms.                        | 508-532-9900 |
| MA | Westborough, Powell Elctms.                  | 508-366-6100 |
| MI | Grand Rapids, Pioneer Standard               | 616-698-1800 |
| MI | Livonia, Pioneer/STD Elctms.                 | 313-525-1800 |
| MI | Livonia, RS, Elctms.                         | 313-525-1155 |
| MI | Oak Park, Newark/Detroit Elctms.             | 313-967-1570 |
| MI | Edina, Time Elctms.                          | 612-943-2433 |
| MN | Minneapolis, Electrol, Inc.                  | 612-521-5051 |
| MN | Minneapolis, Newark Elec.                    | 612-331-6350 |
| MN | St. Paul, Gopher Elctms.                     | 612-490-4900 |
| MN | St. Paul, Kent/Shelley-Ragon, Inc.           | 612-642-2624 |
| MN | Thief River Falls, Digi-Key Corp.            | 218-681-6878 |
| MO | Kansas City, LComp, Inc.                     | 816-241-0111 |
| MO | Kansas City, Missouri Valley Elctrl.         | 816-471-5308 |
| MO | Manchester, Time Elctms.                     | 314-391-6444 |
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| MO | Maryland Hgts, Olive Elctms.                 | 314-997-7709 |
| NE | Omaha, Electrol, Inc.                        | 402-691-0662 |
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| NH | Salem, Sager Elect. Sply, Inc.               | 603-898-1348 |
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| NJ | Marlton, JRH Elctms.                         | 609-988-8696 |
| NJ | Marlton, Time Elctms.                        | 609-596-6700 |
| NJ | West Berlin, General Comps.                  | 609-768-6767 |
| NY | Albany, Kom Lamb, Inc.                       | 518-869-8746 |
| NY | Amherst, Kom Lamb, Inc.                      | 716-691-6400 |
| NY | Binghamton, Pioneer STD Elctms.              | 607-722-9300 |
| NY | Buffalo, Summit Distrs.                      | 716-887-2800 |
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| NY | Hempstead, Time Elctms.                      | 516-273-0100 |
| NY | Lynbrook, Peerless Radio                     | 516-593-2121 |
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| NY | Rochester, Simcona Elctms.                   | 716-328-3230 |
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| NC | Charlotte, Regan Controls                    | 704-523-9137 |
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| NC | Raleigh, Regan Controls                      | 919-790-0811 |
| NC | Raleigh, Sager Elctms.                       | 919-850-9550 |
| OH | Cincinnati, Hughes-Peters, Inc.              | 513-351-2000 |
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| OH | Columbus, Hughes-Peters                      | 614-294-5351 |
| OH | Columbus, Time Elctms.                       | 614-794-3301 |
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| OH  | Dayton, Stotts-Friedman Co., Inc.           | 513-298-5555 |
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| OH  | Valley View, Newark Elect. Cleveland        | 216-447-8860 |
| OH  | Willoughby, Gateway Megatech                | 216-953-0333 |
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| OK  | Tulsa, Norvell                              | 918-628-1916 |
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| OR  | Portland, Pacific Control Supply, Inc.      | 503-249-2033 |
| OR  | Portland, Radar Elec. Co.                   | 503-232-3404 |
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| PA  | King of Prussia, Applied Controls, Inc.     | 215-265-3832 |
| PA  | Mars, Sager Elect. Supply Co.               | 412-772-2233 |
| PA  | McKean, Advacom                             | 814-476-7774 |
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| TX  | Austin, Time Elctms.                        | 512-346-7346 |
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| TX  | Dallas, Norvell Elctms.                     | 214-233-0020 |
| TX  | Dallas, Stuart C. Irby Co.                  | 214-934-3300 |
| TX  | Fl. Worth, Allied Elctms.                   | 817-595-3500 |
| TX  | Garland, Newark Elctms.                     | 214-487-8144 |
| TX  | Houston, Newark Elect/Houston               | 713-270-4800 |
| TX  | Houston, Norvell Elctms.                    | 713-462-1666 |
| TX  | Irving, Cypress Elctms.                     | 214-255-0065 |
| TX  | Richardson, Motion Dynamics, Inc.           | 214-690-3488 |
| TX  | Richardson, Time Elctms.                    | 214-644-4644 |
| TX  | Stafford, Harrison Equip.                   | 713-879-2600 |
| UT  | Salt Lake City, Standard Supp.              | 801-486-3371 |
| UT  | West Valley, Time Elctms.                   | 801-973-8494 |
| VA  | Midlothian, Associated Technlgs.            | 804-794-6094 |
| WA  | Kent, Component Resources, Inc.             | 206-454-8666 |
| WA  | Kirkland, Time Elctms.                      | 206-820-1525 |
| WA  | Redmond, Cascade Controls                   | 206-881-8843 |
| WA  | Seattle, Radar Elect. Co., Inc.             | 206-282-2511 |
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| WI  | Milwaukee, Marsh Elctms.                    | 414-475-6000 |
| WI  | Milwaukee, Progressive Image                | 414-321-4722 |
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| Can | Willowdale, Ont, Electrosonic, Inc.         | 416-494-1555 |

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GREIBACH INSTRUMENTS DIV., 25 Dock St. Mt.  
Vernon, NY 10550, Tel: 914-699-9717, FAX: 914-699-  
9410; FSC No: 32590; Empl: 35

THE GRIEVE CORPORATION, 500 Hart Rd., Round  
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IL Cary, J. D. Noble & Assocs., Inc. .... 708-639-2440  
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NC Raleigh, DTM, Inc. .... 919-859-0025  
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HAMAMATSU PHOTONIC SYSTEMS CORP., Industrial Video, 47A Manning Rd., Billerica, MA 01821, Tel: 508-671-5000, FAX: 508-671-9415; Empl: 25; *Sls. Mgr.*: Paul Roehrenbeck

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| OR  | Tigard, Earl & Brown                          | 503-639-2100 |
| PA  | Allison Pk., Bear Mktg.                       | 412-492-1150 |
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| AZ | Tempe, Cypress Electrn.         | 602-966-2256 |
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| CA | Los Angeles, Bell Inds.         | 213-826-6778 |
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| CA | Tustin, Capstone                | 714-730-0349 |
| CO | Aurora, Capstone Electrn.       | 303-275-2550 |
| CO | Denver, Newark Electrn.         | 303-757-3351 |
| CO | Englewood, Cypress Electrn.     | 303-792-5829 |
| CO | Englewood, Harrison Equip. Co.  | 303-694-6320 |
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| FL | FL Lauderdale, Hammond Electrn. | 305-973-7103 |
| FL | Lakeland, AA Elec.              | 813-665-6941 |
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PHOENIX, AZ 85034**
**(510) 833-1500**
**1026 6th AVENUE  
OAKLAND, CA 94606**

|     |                                        |              |
|-----|----------------------------------------|--------------|
| IL  | Bensenville, Cypress Electrn.          | 708-350-2005 |
| IL  | Chicago, Newark Electrn.               | 312-784-5100 |
| IL  | Itasca, Capstone                       | 708-250-0300 |
| IL  | Palatine, OHM Electrn.                 | 708-359-5500 |
| IN  | Fort Wayne, Bell Inds.                 | 219-423-3422 |
| IN  | Indianapolis, Bell Inds.               | 317-875-8200 |
| IN  | Indianapolis, Custom Svc. Electrn.     | 317-879-9119 |
| KS  | Wichita, Radio, Inc.                   | 316-264-2798 |
| MD  | Baltimore, Bell Inds.                  | 301-953-2566 |
| MD  | Columbia, DK Electrn.                  | 301-995-1950 |
| MD  | Columbia, Peerless Radio               | 301-997-1717 |
| MD  | Columbia, Sager Elec.                  | 301-995-4900 |
| MA  | Andover, Bell Inds.                    | 508-474-8880 |
| MA  | Hingham, Sager Elec. Supp.             | 617-749-6700 |
| MA  | Wilmington, Capstone                   | 508-657-5874 |
| MA  | Wilmington, Heilind Electrn.           | 508-657-4870 |
| MI  | Livonia, R S Electrn.                  | 313-525-1155 |
| MI  | Oak Park, Newark Electrn.              | 313-967-0600 |
| MN  | Eden Prairie, Cypress Electrn.         | 612-934-2104 |
| MN  | Minneapolis, Newark Electrn.           | 612-331-6350 |
| MN  | Thief River Falls, Digi-Key Corp.      | 218-681-6674 |
| NH  | Salem, Sager Elec.                     | 603-898-1348 |
| NJ  | Fairfield, Bell Inds.                  | 201-227-6060 |
| NJ  | Marlton, Capstone                      | 609-596-7500 |
| NJ  | Oakland, Relay Specs.                  | 201-337-1000 |
| NJ  | W. Berlin, General Comps.              | 609-768-6767 |
| NM  | Albuquerque, Bell Inds.                | 505-292-2700 |
| NM  | Albuquerque, Harrison Intl.            | 505-291-9951 |
| NM  | Los Alamos, Capstone                   | 505-662-0745 |
| NY  | Hauppauge, Sager Elec.                 | 516-348-1300 |
| NY  | Lynbrook, Peerless Radio Corp.         | 516-593-2121 |
| NY  | Rochester, Simcona Electrn. Corp.      | 716-328-3230 |
| NY  | Rome, Rome Electrn., Inc.              | 315-337-5400 |
| NC  | Greensboro, Hammond Electrn.           | 919-275-6391 |
| NC  | Raleigh, Capstone                      | 919-954-0600 |
| NC  | Winston-Salem, Kirkman Electrn.        | 919-722-9131 |
| OH  | Solon, Repco Electrn.                  | 216-248-8900 |
| OH  | Valley View, Newark Electrn.           | 216-447-8860 |
| OK  | Oklahoma City, Radio Inc.              | 405-789-0741 |
| OK  | Tulsa, Radio Inc.                      | 918-587-9123 |
| OR  | Oswego, Bell Inds.                     | 503-635-6500 |
| OR  | Portland, Cypress Electrn.             | 503-223-8900 |
| OR  | Portland, Radar Elec.                  | 503-232-3404 |
| PA  | McKean, Advacom Inc.                   | 814-476-7774 |
| PA  | Pittsburgh, Bell Inds.                 | 412-787-3883 |
| PA  | Trevosa, Bell Inds.                    | 215-953-2899 |
| SC  | Greenville, Emco Inc.                  | 803-233-4121 |
| TX  | Austin, Harrison Equip. Co.            | 512-258-1320 |
| TX  | Carrollton, Capstone                   | 214-380-9049 |
| TX  | Dallas, Harrison Equip. Co.            | 214-239-2750 |
| TX  | El Paso, Harrison Equip. Co.           | 915-598-3406 |
| TX  | Farmers Branch, Force Electrn.         | 214-247-9955 |
| TX  | Fort Worth, Allied Electrn.            | 817-595-3500 |
| TX  | FL. Worth, Tandy Electrn.              | 817-870-5614 |
| TX  | Garland, Newark Electrn.               | 214-494-5911 |
| TX  | Houston, Kent Electrn.                 | 713-780-7770 |
| TX  | Stafford, Harrison Equip. Co.          | 713-879-2727 |
| WA  | Redmond, Kent Electrn.                 | 206-883-7200 |
| WA  | Richland, Radar Elec. Co.              | 509-943-8336 |
| WA  | Seattle, Radar Elec. Co.               | 206-282-2511 |
| WA  | Spokane, Radar Elec. Co.               | 509-747-3053 |
| WI  | Cedarburg, Automation Engr.            | 414-377-7500 |
| WI  | Green Bay, Automation Engr.            | 414-499-6000 |
| WI  | Mequon, Taylor Elec.                   | 414-241-4321 |
| Can | Burnaby, BC, ITT Multicomps.           | 604-291-8866 |
| Can | Calgary, AB, ITT Multicomps.           | 403-273-2780 |
| Can | Concord, Ont., ITT Multicomps.         | 416-798-7884 |
| Can | Markham, Ont., Semad Electrn.          | 416-475-8500 |
| Can | Nepean, Ont., ITT Multicomps.          | 613-596-6980 |
| Can | Ville St. Laurent, PQ, ITT Multicomps. | 514-335-7697 |
| Can | Winnipeg, ITT Multicomps.              | 403-273-2780 |

**HAMLIN INC./ELEC-TROL**, 612 East Lake St, Lake Mills, WI 53551, Tel: 414-648-3000, FAX: 414-648-3001; Empl: 350; Sls. Mgr: Michael L. Bucher  
**B-1513**
**Local Sales Offices & Reps**

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Irvine, Groh Assocs.                    | 714-837-9871 |
| CA | San Jose, Vermetx                       | 408-972-4903 |
| CO | Boulder, Design Tech. Sls.              | 303-440-5121 |
| CT | Brantford, Coakley, Boyd & Abbott, Inc. | 203-481-2218 |
| FL | Tampa, Electramark                      | 813-889-7775 |
| GA | Atlanta, Wallace Electrn. Sls. (Sen/SW) | 404-634-3159 |
| GA | Norcross, Electramark (Relays only)     | 404-446-7915 |
| IL | Itasca, LTD Technologies                | 708-773-2900 |
| IN | Carmel, Technlg. Mktg. Corp.            | 317-844-8462 |
| IA | Davenport, Rush & West                  | 319-388-9609 |
| KS | Olathe, Rush & West                     | 913-764-2700 |
| KY | Louisville, Technlg. Mktg. Corp.        | 502-893-1377 |
| MD | Gaithersburg, Naudain Assocs. South     | 301-258-5040 |
| MA | Bridgewater, Coakley, Boyd & Abbott     | 508-559-6700 |
| MA | Framingham, Coakley, Boyd & Abbott      | 508-820-0800 |

|     |                                          |              |
|-----|------------------------------------------|--------------|
| MI  | Farmington Hills, J.L. Montgomery Assoc. | 313-489-0099 |
| MN  | Minneapolis, R K Sls.                    | 612-571-1001 |
| MO  | St. Louis, Rush & West                   | 314-965-3529 |
| NJ  | Hackensack, Coakley, Boyd, Abbott, Metro | 201-440-4114 |
| NJ  | Marlton, Naudain Assoc.                  | 609-983-5300 |
| NY  | Ithaca, Bob Dean, Inc.                   | 607-257-1111 |
| NC  | Kernersville, Wallace Electrn. Sls.      | 919-996-2742 |
| OH  | Richfield, Bear Mktg.                    | 216-659-3131 |
| OR  | Tigard, Earl & Brown                     | 503-639-2100 |
| PA  | Allison Pk., Bear Mktg.                  | 412-492-1150 |
| TN  | Tullahoma, Wallace Electrn. Sls.         | 615-455-0501 |
| TX  | Dallas, Allied Comp.                     | 214-238-0408 |
| WA  | Redmond, Earl & Brown                    | 206-885-5064 |
| WI  | Watertown, Deaken Tech.                  | 414-261-7600 |
| Can | Ontario, Indigo Electrn.                 | 416-670-0284 |

**Local Distributors**

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Cypress Electrn.        | 205-533-0783 |
| AL | Huntsville, Hammond Electrn.        | 205-830-4764 |
| AZ | Phoenix, Force Electrn.             | 602-437-1060 |
| AZ | Tempe, Cypress Electrn.             | 602-966-2256 |
| AR | Springdale, Radio Inc.              | 501-751-8200 |
| CA | Agoura Hills, Cypress Electrn.      | 881-597-9491 |
| CA | Costa Mesa, Cypress Electrn.        | 714-549-2424 |
| CA | Los Angeles, Bell Inds.             | 213-826-6778 |
| CA | Los Angeles, Master Distrs.         | 310-452-1229 |
| CA | Milpitas, Sierra West Electrn.      | 408-945-1050 |
| CA | San Jose, Capstone                  | 408-453-9804 |
| CA | Santa Clara, Cypress Electrn.       | 408-980-8400 |
| CA | Santa Clara, Kent Electrn.          | 408-727-9810 |
| CA | Tustin, Capstone                    | 714-730-0349 |
| CO | Aurora, Capstone Electrn.           | 303-275-2550 |
| CO | Denver, Newark Electrn.             | 303-757-3351 |
| CO | Englewood, Cypress Electrn.         | 303-792-5829 |
| CO | Englewood, Harrison Equip. Co.      | 303-694-6320 |
| CT | Littleton, Indeco                   | 303-795-3431 |
| CT | Southbury, Heilind Electrn.         | 203-262-1700 |
| CT | Wallingford, Sager Electrn.         | 203-262-1700 |
| FL | FL Lauderdale, Hammond Electrn.     | 305-973-7103 |
| FL | Lakeland, AA Elec.                  | 813-665-6941 |
| FL | Orlando, Hammond Electrn.           | 407-849-6060 |
| GA | Norcross, AA Elec.                  | 404-449-8670 |
| GA | Norcross, Emco                      | 404-925-8366 |
| GA | Norcross, Hammond Electrn.          | 404-449-1996 |
| ID | Boise, Radar Elec.                  | 208-336-2227 |
| IL | Bensenville, Cypress Electrn.       | 708-350-2005 |
| IL | Chicago, Newark Electrn.            | 312-784-5100 |
| IL | Itasca, Capstone                    | 708-250-0300 |
| IL | Palatine, OHM Electrn.              | 708-359-5500 |
| IN | FL. Wayne, Bell Inds.               | 219-423-3422 |
| IN | Indianapolis, Bell Inds.            | 317-875-8200 |
| IN | Indianapolis, Custom Svc. Electrn.  | 317-879-9119 |
| KS | Wichita, Radio, Inc.                | 316-264-2798 |
| MD | Baltimore, Bell Inds.               | 301-953-2566 |
| MD | Columbia, DK Electrn.               | 301-995-1950 |
| MD | Columbia, Peerless Radio            | 301-997-1717 |
| MD | Columbia, Sager Elec.               | 301-995-4900 |
| MA | Andover, Bell Inds.                 | 508-474-8880 |
| MA | Hingham, Sager Electrn.             | 617-749-6700 |
| MA | Wilmington, Capstone                | 508-657-5874 |
| MA | Wilmington, Heilind Electrn.        | 508-657-4870 |
| MI | Livonia, R S Electrn.               | 313-525-1155 |
| MI | Oak Park, Newark Electrn.           | 313-967-0600 |
| MN | Eden Prairie, Cypress Electrn.      | 612-934-2104 |
| MN | Minneapolis, Newark Electrn.        | 612-331-6350 |
| MN | Thief River Falls, Digi-Key Corp.   | 218-681-6674 |
| MN | Thief River Falls, Voyager Electrn. | 612-571-7766 |
| NH | Salem, Sager Elec.                  | 603-898-1348 |
| NJ | Fairfield, Bell Inds.               | 201-227-6060 |
| NJ | Marlton, Capstone                   | 609-596-7500 |
| NJ | Oakland, Relay Specialties          | 201-337-1000 |
| NJ | West Berlin, Gen. Comps.            | 609-768-6767 |
| NM | Albuquerque, Bell Inds.             | 505-292-2700 |
| NM | Albuquerque, Harrison Intl.         | 505-291-9951 |
| NM | Los Alamos, Capstone                | 505-662-0745 |
| NY | Hauppauge, Sager Elec.              | 516-348-1300 |
| NY | Lynbrook, Peerless Radio            | 516-593-2121 |
| NY | Plainview, Astress                  | 516-433-1700 |
| NY | Rochester, Simcona Electrn. Corp.   | 716-328-3230 |
| NY | Rome, Rome Electrn., Inc.           | 315-337-5400 |
| NC | Greensboro, Hammond Electrn.        | 919-275-6391 |
| NC | Raleigh, Capstone                   | 919-954-0600 |
| NC | Winston-Salem, Kirkman Electrn.     | 919-722-9131 |
| OH | Solon, Repco                        | 216-248-8900 |
| OH | Valley View, Newark Electrn.        | 216-447-8860 |
| OK | Oklahoma City, Radio Inc.           | 405-789-0741 |
| OK | Tulsa, Radio Inc.                   | 918-587-9123 |
| OR | Oswego, Bell Inds.                  | 503-635-6500 |
| OR | Portland, Cypress Electrn.          | 503-223-8900 |
| OR | Portland, Radar Electrn.            | 503-232-3404 |
| PA | McKean, Advacom Inc.                | 814-476-7774 |
| PA | Pittsburgh, Bell Inds.              | 412-787-3883 |
| PA | Trevosa, Bell Inds.                 | 215-953-2899 |
| SC | Greenville, Emco Inc.               | 803-233-4121 |
| TX | Austin, Harrison Equip. Co.         | 512-258-1320 |
| TX | Carrollton, Capstone                | 214-380-9049 |
| TX | Dallas, Harrison Equip. Co.         | 214-239-2750 |



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| TX  | El Paso, Harrison Equip. Co.              | 915-598-3406 |
| TX  | Farmers Branch, Force Elctms.             | 214-247-9955 |
| TX  | Fort Worth, Allied Elctms.                | 817-595-3500 |
| TX  | Fort Worth, Tandy Elctms.                 | 817-870-5614 |
| TX  | Garland, Newark Elctms.                   | 214-494-5911 |
| TX  | Houston, Kent Elctms.                     | 713-780-7770 |
| TX  | Stafford, Harrison Equipment              | 713-879-2727 |
| WA  | Redmond, Kent Elctms.                     | 206-883-7200 |
| WA  | Richland, Radar Elec. Co.                 | 509-943-8336 |
| WA  | Seattle, Radar Elec. Co.                  | 206-282-2511 |
| WA  | Spokane, Radar Elec. Co.                  | 509-477-3053 |
| WI  | Cedarburg, Automation Engrg.              | 414-377-7500 |
| WI  | Green Bay, Automation Engrg.              | 414-499-6000 |
| WI  | Mequon, Taylor Electric                   | 414-241-4321 |
| Can | Burnaby, BC, ITT Multicomponents          | 604-291-8866 |
| Can | Calgary, AB, ITT Multicomponents          | 403-273-2780 |
| Can | Concord, Ont., ITT Multicomponents        | 416-798-7884 |
| Can | Markham, Ont., Semad Elctms.              | 416-499-6000 |
| Can | Mississauga, Ont., Capstone               | 416-670-2010 |
| Can | Nepean, Ont., ITT Multicomponents         | 613-596-6980 |
| Can | Ville S. Laurent, PQ, ITT Multicomponents | 514-335-7697 |
| Can | Winnipeg, MB, ITT Multicomponents         | 403-273-2780 |

HAMLIN LCD STANDISH INDS., See Standish Industries, Hamlin LCD Div.



FAX: 716-894-1156

**HAMMOND MANUFACTURING CO.**, 1690 Walden Ave., Buffalo, NY 14225, Tel: 716-894-5710; Empl: 1,450; Sls. Mgr.: Ray Shatzel **C-1049**

|                                       |                                         |              |
|---------------------------------------|-----------------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                         |              |
| AZ                                    | Phoenix, TriTek                         | 602-371-0860 |
| CA                                    | N. Hollywood, Bassett Sls. Corp.        | 818-766-2117 |
| CA                                    | San Carlos, Bridge Mktg.                | 415-965-8045 |
| CO                                    | Boulder, The Stratford Grp.             | 303-530-3194 |
| FL                                    | Tampa, SRT Mktg.                        | 813-884-4805 |
| GA                                    | Atlanta, Millar Elctms.                 | 404-634-3350 |
| IL                                    | Highland Park, Bransky Sls.             | 312-433-2375 |
| IN                                    | Indianapolis, Schank Elctms. Mktg.      | 317-842-6204 |
| MD                                    | Hunt Valley, S.K. McDonald              | 410-584-8631 |
| MA                                    | N. Scituate, W. A. Hendrickson Co.      | 617-545-0652 |
| MI                                    | Southfield, Component Assocs.           | 313-355-4110 |
| MN                                    | Golden Valley, Ambassador Inds. Mktg.   | 612-542-8437 |
| MO                                    | St. Louis, Kathrinus, Kelly & Baumhauer | 314-647-2400 |
| NY                                    | Manhasset, Win-Cor Elctrn. Sls.         | 516-627-9474 |
| NY                                    | Victor, Net Sls.                        | 716-924-1844 |
| NC                                    | Raleigh, Millar Elctms.                 | 919-828-8840 |
| OH                                    | Cincinnati, Frank E. Kahsar Sls.        | 513-922-3133 |
| OR                                    | Lake Oswego, Joseph Blancard Sls.       | 503-620-6888 |
| TX                                    | Dallas, J. Y. Schoonmaker Co., Inc.     | 214-349-1650 |

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| <b>Local Distributors</b> |                                  |                  |
| AL                        | Birmingham, ACK, Inc.            | 205-322-0588     |
| AZ                        | Phoenix, Electronic Parts Co.    | 602-277-7281     |
| AZ                        | Phoenix, Tri-Tek                 | 602-371-0860     |
| AZ                        | Tucson, Southwest Sls.           | 602-628-1613     |
| AR                        | Fl. Smith, Carlton Bates         | 501-646-8201     |
| AR                        | Little Rock, Carlton Bates       | 501-562-9100     |
| CA                        | Chatsworth, Poco Sls.            | 818-700-8727     |
| CA                        | Milpitas, Zack Elctms.           | 408-942-5432     |
| CA                        | Redwood City, H.D.B.             | 415-368-1388     |
| CA                        | San Diego, Western Radio Elec.   | 619-268-4400     |
| CA                        | San Jose, Quement Elctms.        | 408-998-5900     |
| CA                        | San Rafael, Elctms. Plus         | 415-457-0466     |
| CA                        | Santa Ana, ITT Multicomponents   | 714-727-4001     |
| CO                        | Denver, Fisteil Elctms.          | 303-629-1312     |
| CT                        | Bridge Port, Park Distrib.       | 203-366-7200     |
| CT                        | Danbury, Pilgrim Elec.           | 203-792-7274     |
| CT                        | Hartford, Hatry Elec.            | 203-527-1881     |
| CT                        | New London, Jan Elctrn. Supp.    | 203-442-4386     |
| CT                        | Norwalk, Cobra                   | 203-847-6442     |
| CT                        | Wallingford, Midstate Elec.      | 203-285-9900     |
| DE                        | Wilmington, Whistl Elctms.       | 302-652-3222     |
| FL                        | Jacksonville, EMSCO              | 904-356-4851     |
| FL                        | Orlando, EMSCO                   | 407-849-6060     |
| FL                        | Tampa, EMSCO                     | 813-253-2684     |
| FL                        | West Palm Beach, Atlantic Elect. | 407-686-8553     |
| GA                        | Atlanta, Ack, Inc.               | 404-351-6340     |
| GA                        | Norcross, EmSCO                  | 404-925-8366     |
| GA                        | Norcross, Whitehead Elctms.      | 404-923-6867     |
| GA                        | Norcross, Wholesale Inds. Elec.  | 404-447-8431     |
| IL                        | Benerville, Goold Elctms.        | 708-860-7171     |
| IL                        | Chicago, Newark Elec.            | 312-784-5100     |
| IL                        | Joliet, Mainline Elec.           | 815-436-3900     |
| IL                        | Niles, Joseph Elec.              | 708-312-297-4200 |
| IL                        | Wheeling, Hawk Elec.             | 708-459-4030     |

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| IN | Carmel, Altex Elctms.                  | 317-848-1323 |
| IN | Indianapolis, Advent Elec.             | 317-872-4910 |
| IN | Indianapolis, Mar Elec.                | 317-633-6699 |
| IA | Cedar Rapids, Dee Elec.                | 319-365-7551 |
| KY | Louisville, Peerless Elctms.           | 502-637-7674 |
| LA | New Orleans, W. B. Allen Supp.         | 504-525-8222 |
| MD | Beltsville, Mark Elctms.               | 301-595-5040 |
| MD | Gaithersburg, M. S. Elec.              | 301-921-0200 |
| MA | Needham, Spartan Elctms.               | 508-373-1200 |
| MA | Needham, Y.D.I.                        | 617-449-1005 |
| MA | Springfield, Signal Elctrn. Supp.      | 413-739-3893 |
| MA | Wellesley Hills, Target Elctms. Supp.  | 617-235-2545 |
| MI | Farmington Hills, Advent Elctms.       | 313-477-1650 |
| MN | Eden Prairie, Cassidy Elctms.          | 612-895-9026 |
| MN | Minneapolis, Bergquist                 | 612-835-2322 |
| MN | Minneapolis, Torte Corp.               | 612-866-3662 |
| MO | Kansas City, Electronic Supp.          | 816-931-0250 |
| MO | Kansas City, Walters Ind. Elec.        | 816-561-7015 |
| MO | St. Louis, Van Sickle Radio            | 314-621-5000 |
| NH | Dover, American Radio Corp.            | 603-335-3118 |
| NJ | Oakland, Relay Specialties             | 201-337-1000 |
| NJ | Randolph, Mouser Elctms.               | 201-328-3322 |
| NJ | Raritan, Masters Elctrn. Supp.         | 201-725-3533 |
| NJ | Totowa, Route Elctms.                  | 201-256-8555 |
| NM | Albuquerque, Beta Tron Elctms.         | 505-821-1122 |
| NY | Buffalo, Genesee Ind. Elec.            | 716-873-9661 |
| NY | Buffalo, Summit Dist.                  | 716-887-2800 |
| NY | Long Island City, H.L. Dalis Inc.      | 718-361-8700 |
| NY | Poughkeepsie, Chief Elctms.            | 914-471-1300 |
| NY | Rochester, Masline Elec.               | 716-546-5373 |
| NY | Rochester, Simcona Elctms.             | 716-328-3230 |
| NY | Rome, Rome Elec.                       | 315-337-5400 |
| NY | Syracuse, Salina Elec.                 | 315-422-2336 |
| NY | Troy, Trojan Elec.                     | 518-272-4481 |
| NC | Greensboro, Hammond Elctms.            | 919-275-6391 |
| NC | Greensboro, Hammond Elec.              | 919-275-6391 |
| NC | Winston-Salem, Kirkman Elctms.         | 919-722-9131 |
| OH | Cleveland, Roberts Elec.               | 216-238-1711 |
| OH | Columbus, Thompson Elec. Supp.         | 614-228-6191 |
| OH | Dayton, Stotts Friedman                | 513-298-5555 |
| OH | Warren, Rem Elctms. Supp.              | 216-373-1300 |
| OK | Oklahoma City, Radio, Inc.             | 405-528-2391 |
| OK | Tulsa, Radio, Inc.                     | 918-587-9123 |
| OR | Corvallis, International Co.           | 503-336-2221 |
| PA | Drexel Hill, Kass Elec.                | 215-449-2300 |
| PA | Erie, REM Elctms.                      | 814-453-5626 |
| PA | McKean, Advacom                        | 814-476-7774 |
| PA | Wayne, Peak Elec.                      | 215-293-9000 |
| RI | Pawtucket, Major Elec. Supp.           | 401-725-7400 |
| SC | Charleston, Wholesale Inds. Elctms.    | 803-722-2634 |
| SC | Greenville, EMSCO                      | 803-233-4121 |
| SC | Taylors, Cantrell Wholesale            | 803-268-1194 |
| TX | Corpus Christi, Douglas Elec.          | 512-883-5103 |
| TX | Dallas, Off-the-Shelf Comps.           | 214-247-0052 |
| TX | Dallas, Wholesale Elec.                | 214-969-9400 |
| TX | Fl. Worth, Allied Elec.                | 817-336-5401 |
| TX | Houston, Kent Elctms.                  | 713-780-7770 |
| TX | Houston, The Altair Co.                | 713-462-3029 |
| TX | Houston, Tri Star Elctms.              | 713-667-7200 |
| TX | Midland, ESI Supp.                     | 915-694-9657 |
| TX | San Antonio, Altex Elctms.             | 512-828-0503 |
| TX | San Antonio, Sherman Elec.             | 512-224-1001 |
| UT | Salt Lake City, Standard Elec. Supp.   | 801-486-3371 |
| VA | Annadale, Arcade Elctms.               | 703-941-1074 |
| VA | Annadale, Arcade Elctms.               | 703-256-4610 |
| VA | Arlington, Arlington Elctms.           | 703-524-2412 |
| VA | Virginia Beach, Norfolk Wire & Elctms. | 804-499-1100 |
| WA | Bellevue, Integrated Elec.             | 206-455-2727 |
| WI | Oshkosh, Elctrn. Inds.                 | 414-235-8930 |
| WI | Racine, Badger Elctrn. Supp.           | 414-637-1256 |
| WI | Waukesha, Hawk Elctms.                 | 414-547-4457 |

**HANCOCK ELECTRONICS CORP.**, 350 Lincoln St., Hingham, MA 02043, Tel: 617-740-4190, FAX: 617-740-4192; FSC No.: 66851; Empl: 8; Sls. Mgr.: Robert H. Sturdy

**HANDLES UNLIMITED**, Vernaline Products Division, 333 Strawberry Field Rd., Warwick, RI 02887-6979, Tel: 800-227-0254, 401-739-7600, FAX: 401-732-6119; FSC No.: 08730; Empl: 25; Sls. Mgr.: William Rife, Dist. Mgr.: William Rife

**HAND HELD PRODUCTS, INC.**, 8008 Corporate Center Dr., Charlotte, NC 28226, Tel: 704-541-1380, TWX: 810-621-0380 PROTECH, FAX: 704-541-1333; Sls. Mgr.: Jim Trautwein; Dist. Mgr.: Jim Trautwein

**H & L INSTRUMENTS**, 1440 Rollins Road, Burlingame, CA 94010, Tel: 415-342-7850, FAX: 415-347-1065; Empl: 7; Sls. Mgr.: Jennifer H. Landman

**HANDY & HARMAN ELCTRN. MATLS. CORP.**, 72 Elm St., N. Attleboro, MA 02760, Tel: 508-695-1401, FAX: 508-695-7565; Empl: 300; Sls. Mgr.: T. Longo

**HANDY & HARMAN PRECIOUS METALS REFINING**, 300 Rye Street, S. Windsor, CT 06074, Tel: 1-800-421-0411, 203-289-4327, FAX: 203-289-6494

**HANIFY-KING PC**, 1 Federal St., Ste. 13 Fl., Boston, MA 02110-2003, Tel: 617-492-0700, TELEX: 6714194, FAX: 617-492-7908; Sls. Mgr.: Paul Blumeufeld

**HANKSCRAFT MOTORS**, Sub of Gerber Prod. Co., P.O. Box 190, Reedsburg, WI 53959, Tel: 608-524-4341, FAX: 608-524-4342; Empl: 75

**HANOVIA**, Canrad, 100 Chestnut St., Newark, NJ 07105, Tel: 201-589-4300, TELEX: 13-8531, FAX: 201-589-4430; Empl: 250; Sls. Mgr.: Dennis M. Priscandaro; Dist. Mgr.: Dennis M. Priscandaro

**HANSCOM, H. F., CO., INC.**, 225 Chapman St., Providence, RI 02905, Tel: 401-941-1455, FAX: 401-781-8835; Empl: under 50; Sls. Mgr.: Allan Hanscom

**HANSEN CORP.**, Box 23, Princeton, IN 47670-0023, Tel: 812-385-3415, FAX: 812-385-3013; Empl: 400; Sls. Mgr.: Dennis E. Monforton



FAX: 408-749-0477

**HANTRONIX, INC.**, Liquid Crystal Display, 250 Santa Ana Ct., Sunnyvale, CA 94086, Tel: 408-736-3191, TELEX: 880165; Empl: 25; Sls. Mgr.: Jake B. Yu; Dist. Mgr.: Ken Mc Reynolds **B-1070-1071**

|                                       |                                   |              |
|---------------------------------------|-----------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                   |              |
| AL                                    | Madison, Benchmark Tech. Sls.     | 205-464-0033 |
| AZ                                    | Phoenix, Howe & Howe Sls.         | 602-264-7971 |
| CA                                    | Laguna Hills, 4 Star Elctrn. Sls. | 714-583-9781 |
| CA                                    | Riverside, 4 Star Elctrn. Sls.    | 909-780-5146 |
| CA                                    | San Jose, Luscombe Engrg.         | 408-370-2020 |
| CO                                    | Longmont, Butler Tech. Sls.       | 303-651-7703 |
| CT                                    | Waterbury, Ray Perron & Co., Inc. | 203-756-9684 |
| FL                                    | Davie, Dan-Tech. Sls.             | 305-581-2882 |
| IL                                    | Arlington Hights, Coombs Assoc.   | 708-439-9810 |
| IN                                    | Indianapolis, C.M.P. Engrg./Sls.  | 317-849-9277 |
| KS                                    | Prairie Village, Crosslink        | 913-649-7100 |
| MD                                    | Ellicott City, Technology Sls.    | 410-461-7802 |

**HAMMOND**

CABINETS  
ENCLOSURES

In Stock

**POCO SALES**  
8925 Fullbright Avenue  
Chatsworth, CA 91311

(818) 700-8727





|    |                                 |              |
|----|---------------------------------|--------------|
| MA | Needham, Ray Perron & Co., Inc. | 617-449-6162 |
| MI | Detroit, C.M.P. Engrg./Sls.     | 313-477-7700 |
| NJ | Lebanon, Sylvester Sls. Assoc.  | 908-735-2488 |
| NJ | Medford, CEF Assoc.             | 609-953-8945 |
| NY | Manlius, Lamtec Sls.            | 315-682-4780 |
| NC | Raleigh, Benchmark Tech. Sls.   | 919-850-0633 |
| OH | Cleveland, C.M.P. Engrg./Sls.   | 216-398-0400 |
| OH | Dayton, C.M.P. Engrg./Sls.      | 513-836-0951 |
| OR | Hillsboro, Temco Northwest      | 503-645-2030 |
| PA | Pittsburgh, C.M.P. Engrg./Sls.  | 412-826-3800 |
| TX | Dallas, Innovative Tech. Sls.   | 214-699-3485 |
| WA | Birch Bay, Temco North West     | 206-371-0423 |
| WA | Bothell, Temco North West       | 206-681-6150 |
| WI | Milwaukee, Coombs Assoc.        | 414-351-6123 |

## Local Distributors

|     |                                  |              |
|-----|----------------------------------|--------------|
| CA  | Costa Mesa, Orange County Comps. | 714-979-3597 |
| CA  | Industry, Ital Elctms Sls.       | 818-968-8515 |
| CA  | Mission Viejo, Opto Plus         | 714-380-8654 |
| CA  | San Diego, Deco Elctms, Inc.     | 619-693-1595 |
| CA  | San Diego, Mock 3                | 619-693-8230 |
| CA  | San Jose, Spectra Elctm. Inc.    | 408-855-7800 |
| CO  | Aurora, Q.P.S.                   | 303-343-9260 |
| CO  | Littleton, Displays Plus         | 303-730-7333 |
| IL  | Chicago, Lead Elctms, Inc.       | 312-625-2800 |
| IL  | North Brook, Classic Comps.      | 708-272-9650 |
| IL  | Schaumburg, Q.P.S.               | 708-884-6620 |
| MA  | Wilmington, North Star Elec.     | 508-657-5155 |
| MN  | Brooklyn Park, Tech. Comps.      | 612-561-5556 |
| MN  | Plymouth, Leeds Elctms, Inc.     | 612-557-1277 |
| NJ  | Rockaway, Tonar Inds., Inc.      | 201-586-9000 |
| NM  | Albuquerque, Betatron            | 505-821-1122 |
| NY  | Rochester, North Star Elect.     | 716-244-9846 |
| NY  | Salem, Light Wave Elctms.        | 503-585-4770 |
| PA  | Prairie Village, Crosslink       | 913-649-7100 |
| TX  | Austin, Omni Pro                 | 512-794-9200 |
| TX  | Austin, Wofford                  | 512-339-1131 |
| TX  | Carrollton, Omni Pro             | 214-713-9000 |
| TX  | Dallas, Omni Pro Elctms.         | 214-233-0500 |
| TX  | Dallas, Wofford                  | 214-340-8555 |
| TX  | Houston, Omni Pro                | 713-270-1700 |
| TX  | Tomball, Wofford Elctms.         | 713-351-2255 |
| WI  | New Berlin, Classic Comps.       | 414-786-5300 |
| Can | Ontario, Inteltech, Inc.         | 416-629-0082 |

HARBIN ELCTRNS. CO., 3826 Old Getwell Rd., Memphis, TN 38118, Tel: 901-794-1667, FAX: 901-794-2515; Empl: 15

HARBOUR IND. (CANADA) LTD., 1365 Industriel Blvd., Farnham, Quebec, Canada J2N 2X3, Tel: 514-293-5304, FAX: 514-293-2421; Empl: 31; Sls. Mgr.: Marc Longpre

HARDIGG CASES, Hardigg Industries, 393 N. Main St. P.O. Box 201, South Deerfield, MA 01373, Tel: 413-665-2163, FAX: 413-665-8061; FSC No.: 11214; Empl: 200; Sls. Mgr.: Stanley J. Morgan

HARDMAN: HARGROS CHEMICALS INC., 600 Cortlandt St., Belleville, NJ 07109, Tel: 201-751-3000, FAX: 201-751-8407; Empl: 75; Sls. Mgr.: Donald J. Wirth

HAROWE SERVO CONTROLS, INC.: A FASCO CO., 110 Westown Rd. P.O. Box 547, West Chester, PA 19380, Tel: 215-692-2700, FAX: 215-696-2264; FSC No.: 06989; Empl: 300; Sls. Mgr.: William J. Cuff

HARREL, INC., 16 Fitch St., E. Norwalk, CT 06855, Tel: 203-866-2573; Sls. Mgr.: Richard Decew

HARRIS CORP., Dracon Div., 809 Calle Plano, Camarillo, CA 93012, Tel: 805-987-9511, TELEX: 182327, FAX: 805-987-2547; Empl: 350; Sls. Mgr.: Tom Erdmann; Dist. Mgr.: Jeff Shaffer

HARRIS MICROWAVE SEMICONDUCTOR, Harris Semiconductor, 1530 McCarthy Blvd., Milpitas, CA 95035, Tel: 408-433-2222, TWX: 910-338-2247, FAX: 408-432-3268; Sls. Mgr.: Jim Klug

HARRIS SEMICONDUCTOR, Box 883, Melbourne, FL 32902, Tel: 1-800-4-HARRIS, FAX: 407-724-3937; FSC No.: 34371; Empl: 9000; Sls. Mgr.: Carlton Smith; Dist. Mgr.: Valerie Lewis

HARTING ELEKTRONIK, INC., 2155 Stonington Ave., Ste. 212, Hoffman Estates, IL 60195, Tel: 708-519-7700, ext. 200, FAX: 708-519-9771; Empl: 24; Sls. Mgr.: Donald G. Blummer, Natl. Sls. Mgr.: C-1343-1345

## Local Distributors

|    |                             |              |
|----|-----------------------------|--------------|
| AZ | Phoenix, Beswitched         | 602-275-4805 |
| AZ | Phoenix, Dalis Elctms.      | 602-272-2626 |
| CA | Irvine, Kensington          | 714-588-0575 |
| CA | San Jose, Compass Comps.    | 408-432-7575 |
| CA | San Jose, Foresight Elctms. | 408-980-9700 |
| CA | San Jose, Trinity Elctms.   | 408-980-9011 |

|     |                                            |              |
|-----|--------------------------------------------|--------------|
| CT  | Wallingford, Control Design Supp.          | 203-269-9955 |
| IL  | Arlington Hgts., LoDan Elctms.             | 708-398-5311 |
| IL  | Schaumburg, Control Design Supp.           | 708-307-8900 |
| IN  | Indianapolis, Control Design Supp.         | 317-788-4559 |
| MA  | Woburn, Control Design Supp.               | 617-932-9404 |
| MI  | Madison Hgts., Tracer Control Co.          | 313-545-7140 |
| MO  | Maryland Hgts., French Gerleman Elec. Co.  | 314-569-3122 |
| NM  | Albuquerque, Bestech Elctm. Comp. Sls.     | 505-298-0034 |
| NC  | Charlotte, Control Design Supp.            | 704-588-4410 |
| OR  | Portland, Dunn Elctms.                     | 503-285-0214 |
| PA  | Malvern, Control Design Supp.              | 215-296-0150 |
| PA  | North Versailles, CMD Elctms, Inc.         | 412-678-6020 |
| TX  | Dallas, Control Design Supp.               | 214-358-1441 |
| TX  | Dallas, Omni Pro Elctms, Inc.              | 800-926-8926 |
| TX  | Houston, TriStar Elctms. Corp.             | 713-667-7200 |
| WA  | Seattle, Radar Elec. Co., Inc.             | 206-282-2511 |
| WI  | New Berlin, Control Design Supp.           | 414-784-1015 |
| Can | Kington, Ont., Elctm. Packaging Sys. Ltd.  | 613-384-1142 |
| Can | Victoria, B.C., Pacific Coast Elctms, Ltd. | 604-385-5111 |

HARTLEY PRODUCTS, 5732 Oleander Dr., P.O. Box 4794, Wilmington, NC 28406, Tel: 919-392-0500, FAX: 919-392-1077; Sls. Mgr.: R. Schmetterer

HARWIL CORPORATION, 1548 17th St., Santa Monica, CA 90404, Tel: 310-829-2310, FAX: 310-829-2259; Empl: 14

HASCO COMPONENTS INTERNATIONAL CO., 247-40 Jericho Tpke., Bellrose Village, NY 11001, Tel: 516-328-9292, FAX: 516-326-9125; Empl: 30; Sls. Mgr.: Tab Hauser; Dist. Mgr.: Chris Mennella

B-1514-1520, 1735

## Local Sales Offices &amp; Reps

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AL | Huntsville, Hasco Comps. Intl. Corp.      | 800-852-5050 |
| AK | Anchorage, Hasco Comps. Intl. Corp.       | 800-852-5050 |
| AZ | Phoenix, Hasco Comps. Intl. Corp.         | 800-852-5050 |
| CA | Irvine, Hasco Comps. Intl. Corp.          | 800-852-5050 |
| CA | Los Angeles, Hasco Comps. Intl. Corp.     | 800-852-5050 |
| CA | San Francisco, Hasco Comps. Intl. Corp.   | 800-852-5050 |
| CT | Hartford, Hasco Comps. Intl. Corp.        | 800-852-5050 |
| GA | Atlanta, Hasco Comps. Intl. Corp.         | 800-852-5050 |
| IL | Chicago, Hasco Comps. Intl. Corp.         | 800-852-5050 |
| KS | Kansas City, Hasco Comps. Intl. Corp.     | 800-852-5050 |
| LA | New Orleans, Hasco Comps. Intl. Corp.     | 800-852-5050 |
| MA | Framingham, Hasco Comps. Intl. Corp.      | 800-852-5050 |
| MO | Kansas City, Hasco Comps. Intl. Corp.     | 800-852-5050 |
| NM | Albuquerque, Hasco Comps. Intl. Corp.     | 800-852-5050 |
| NY | Port Washington, Hasco Comp. Intl. Corp.  | 800-852-5050 |
| NY | Rochester, Hasco Comps. Intl. Corp.       | 800-852-5050 |
| NC | Raleigh, Hasco Comps. Intl. Corp.         | 800-852-5050 |
| OH | Cleveland, Hasco Comps. Intl. Corp.       | 800-852-5050 |
| TX | Dallas, Hasco Comps. Intl. Corp.          | 800-852-5050 |
| VA | Charlottesville, Hasco Comps. Intl. Corp. | 800-852-5050 |
| WA | Seattle, Hasco Comps. Intl. Corp.         | 800-852-5050 |
| WI | Milwaukee, Hasco Comps. Intl. Corp.       | 800-852-5050 |

## Local Distributors

|     |                                  |              |
|-----|----------------------------------|--------------|
| AR  | N. Little Rock, Control Design   | 501-851-3137 |
| CT  | Wallingford, Control Design      | 203-269-9955 |
| FL  | Sanford, Control Design          | 407-328-8011 |
| GA  | Stone Mountain, Control Design   | 800-432-0072 |
| IL  | Carroll Stream, Lectro Comps.    | 800-323-2282 |
| MA  | Woburn, Control Design           | 617-932-9404 |
| MO  | St. Louis, Control Design        | 314-432-1116 |
| NJ  | Rockaway, Tonar                  | 201-586-9000 |
| NY  | Hauppauge, Jaco Elctms.          | 516-273-5500 |
| NC  | Charlotte, Control Design        | 704-588-4410 |
| PA  | Philadelphia, Sharp Elctms.      | 215-969-3300 |
| WI  | New Berlin, Control Design Supp. | 414-784-1016 |
| Can | Mississauga, C.E.A.              | 416-602-9717 |

HATHAWAY CORPORATION: MOTION CONTROL DIV., 10827 E. Marshall, Tulsa, OK 74116, Tel: 918-438-7800, FAX: 918-438-7629; Empl: 80; Sls. Mgr.: David Richards

HAUMAN, INC., 2031 Ringwood Avenue, San Jose, CA 95131, Tel: 408-434-0888, FAX: 408-434-9832; Sls. Mgr.: Willis Yeh

D-1265, 1737

## Local Sales Offices &amp; Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, B & C Instruments, Inc. | 205-883-6530 |
| CA | Sunnyvale, E.I.L. Instrs.           | 408-744-0271 |

|    |                                |              |
|----|--------------------------------|--------------|
| CO | Denver, E.I.L. Instrs.         | 303-534-4160 |
| CT | Cheshire, Allied Elctms.       | 203-272-7730 |
| FL | Casselberry, Allied Elctms.    | 407-831-3331 |
| IL | Wood Dale, Allied Elctms.      | 708-860-0007 |
| IN | Indianapolis, Allied Elctms.   | 317-875-0448 |
| KY | Louisville, Allied Elctms.     | 502-452-2293 |
| MD | Columbia, Allied Elctms.       | 301-381-1560 |
| MA | Boston, E.I.L. Instrs.         | 617-272-4500 |
| MI | Grand Rapids, Allied Elctms.   | 616-949-8200 |
| NJ | Moorestown, Allied Elctms.     | 609-234-7769 |
| NY | Rochester, E.I.L. Instrs.      | 716-586-8251 |
| NC | Raleigh, Allied Elctms.        | 919-876-5845 |
| OH | Dayton, E.I.L. Instrs.         | 513-435-2134 |
| OK | Tulsa, Allied Elctms.          | 918-664-0844 |
| OR | Portland, Weston Inc.          | 503-283-0132 |
| PA | Pittsburgh, E.I.L. Instrs.     | 412-823-2255 |
| SC | Greenville, Allied Elctms.     | 803-288-8835 |
| TX | Houston, E.I.L. Instrs.        | 713-271-3100 |
| UT | Salt Lake City, Allied Elctms. | 801-261-5244 |
| VA | McClean, E.I.L. Instrs.        | 703-569-2611 |
| WA | Seattle, Allied Elctms.        | 206-547-2827 |
| WI | Milwaukee, Allied Elctms.      | 414-796-1280 |

## Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| AL | Huntsville, Allied Elctms.      | 205-721-3500 |
| AK | Anchorage, Alaska Elctm. Supp.  | 907-563-3774 |
| AZ | Phoenix, Allied Elctms.         | 602-437-9080 |
| CA | Canoga Pk., RAG Elctms.         | 818-998-6500 |
| CO | Englewood, Allied Elctms.       | 303-790-1664 |
| CT | Newtown, Conn Cal Labs          | 203-270-1263 |
| FL | Melbourne, E.I.L. Instrs.       | 407-725-8300 |
| GA | Duluth, Allied Elctms.          | 404-497-9544 |
| ID | Bridge View, E.I.L. Instrs.     | 708-430-2292 |
| IL | Oak Forest, Allied Elctms.      | 708-918-0250 |
| IN | Indianapolis, E.I.L. Instrs.    | 317-545-1373 |
| IA | West Des Moines, Allied Elctms. | 515-223-6488 |
| KS | Lenexa, Allied Elctms.          | 913-599-6227 |
| KY | Louisville, E.I.L. Instrs.      | 502-454-3420 |
| LA | Metairie, Allied Elctms.        | 504-885-1195 |
| MD | North Valley, Allied Elctms.    | 410-584-7400 |
| MA | Billerica, Allied Elctms.       | 508-667-7921 |
| MI | Livonia, Allied Elctms.         | 313-462-0190 |
| MN | Bloomington, Allied Elctms.     | 612-881-0838 |
| MO | Earth City, Allied Elctms.      | 314-291-7031 |
| NE | Omaha, Allied Elctms.           | 402-697-0038 |
| NH | Nashua, Allied Elctms.          | 603-883-3006 |
| NJ | Clarksburg, Accutest Instrs.    | 800-524-0747 |
| TX | Garland, Tucker Elctms.         | 800-527-4642 |
| WA | Bellevue, Vetco                 | 206-869-7025 |

HAUEG DIVISION, A Subsidiary of Ametek Inc., 900 Greenbank Rd., Wilmington, DE 19808, Tel: 302-995-0400, 800-441-7777, FAX: 302-995-0491; Sls. Mgr.: Bill Wenner

HAVERLY SYSTEMS, INC., 12 Hinchman Ave., Box 919, Denville, NJ 07834, Tel: 201-627-1424, FAX: 201-625-2296; Empl: 33; Sls. Mgr.: Ken Spencer

HAYDON SWITCH & INSTRUMENT, 1500 Meriden Rd., P.O. Box 3329, Waterbury, CT 06705, Tel: 203-756-7441, TELEX: 643852-HSIINTLWBV, FAX: 203-756-8724; FSC No.: 02005; Empl: 100; Sls. Mgr.: Wendy Rossi

HAYES INSTRUMENT SERVICE INC., 530 Boston Rd., Billerica, MA 01821, Tel: 508-663-4800, FAX: 508-663-3812; Empl: 25; Sls. Mgr.: Thomas P. Fitzgerald

HBM, INC., 19 Bartlett Street, Marlboro, MA 01752, Tel: 508-624-4500, FAX: 508-485-7480; Empl: 105; Sls. Mgr.: Robert Gray

HBS EQUIPMENT CORPORATION, 3000 Supply Ave., Los Angeles, CA 90040, Tel: 213-726-3033, FAX: 213-888-9982; Empl: 60; Sls. Mgr.: Sam Houston

## HC Power, inc.

FAX: 714-261-6584

HC POWER INC., 17032 Armstrong Ave., Irvine, CA 92714-5716, Tel: 714-261-2200; FSC No.: 0D6P8; Sls. Mgr.: Jack Graham

D-1738-1741

## Local Sales Offices &amp; Reps

|    |                           |              |
|----|---------------------------|--------------|
| AL | Phoenix, Murcota          | 205-539-8476 |
| AZ | Phoenix, Tektris          | 602-437-1915 |
| CA | Huntington Beach, Tektris | 714-964-8560 |
| CA | La Mesa, Tektris          | 800-875-0855 |
| CA | San Diego, ATA Assocs.    | 619-792-6079 |
| CA | San Jose, Electro Venture | 408-727-1553 |
| CA | Valencia, Tektris         | 805-295-8747 |
| CO | Englewood, Taylor Mktg.   | 303-850-0207 |



|     |                                      |              |
|-----|--------------------------------------|--------------|
| CO  | Littleton, Taylor Mktg.              | 303-850-0207 |
| FL  | Oldsmar, Suncoast                    | 813-787-9221 |
| GA  | Lawrenceville, Murcota               | 404-513-8093 |
| IL  | Elmhurst, Utronix                    | 708-834-1100 |
| IN  | Indianapolis, JC Hofstetter          | 317-897-7914 |
| IA  | Des Moines, The Beams Co.            | 515-255-1148 |
| KS  | Shawnee Mission, The Beams Co.       | 913-631-0300 |
| MN  | Minneapolis, Electro-Serv            | 612-338-3475 |
| MO  | St. Louis, The Beams Co.             | 314-434-8448 |
| NH  | Londonderry, Power Solutions Mktg.   | 603-432-5476 |
| NY  | Rochester, Power Conversion & Assoc. |              |
|     |                                      |              |
| NC  | Winston-Salem, Murcota               | 716-426-3598 |
| OH  | Dayton, JC Hofstetter                | 919-722-9445 |
| OH  | Medina, JC Hofstetter                | 513-296-1010 |
| OR  | Portland, Power Factor Assocs.       | 216-725-4477 |
| PA  | Pittsburg, JC Hofstetter             | 503-233-6969 |
| RI  | Barrington, Power Solutions Mktg.    | 412-356-2305 |
| TX  | Dallas, Dynamark                     | 401-245-5045 |
| UT  | Ogden, Taylor Mktg.                  | 214-437-3333 |
| VA  | Sterling Park, Beacon North          | 801-546-9570 |
| NY  | Spring Valley, Powertronics          | 703-478-2480 |
| Can | Lachine, Digidyne                    | 914-735-3775 |
| Can | Napean, Digidyne                     | 514-631-1891 |
| Can | Toronto, Digidyne                    | 613-727-5632 |
| Can | Toronto, Digidyne                    | 416-674-0444 |

HC PROTEK, 154 Veterans, Northvale, NJ 07647, Tel: 201-767-7242, FAX: 201-767-7343; Sls. Mgr.: Alex Orloff

HDR POWER SYSTEMS, INC., 4242 Reynolds Dr., Hilliard, OH 43026, Tel: 614-771-5500, FAX: 614-771-7219; Empl: 90; Sls. Mgr.: Harlan W. Bates

HDS INC., 12310 Pinecrest Rd., Reston, VA 22091, Tel: 703-620-6200, TELEX: 64585, FAX: 703-620-3169; Empl: 95

H D SYSTEMS, INC., 89 Cabot Court, Hauppauge, NY 11788, Tel: 516-231-6630, FAX: 516-231-6803; Empl: 5; Sls. Mgr.: Tetsuo Ikuta

HEADWAY RESEARCH, INC., 3713 Forest La., Garland, TX 75042, Tel: 214-272-5431, FAX: 214-272-7817; Empl: 45

HECON CORP., 15 Meridian Road, Eatontown, NJ 07724, Tel: 908-542-9200, TELEX: 13-2457; Empl: 75; Sls. Mgr.: Kenneth W. Aurin

HEDRICH USA, INC., 4201-D Stuart Andrew Blvd., Charlotte, NC 28217, Tel: 704-522-0006, FAX: 704-522-0036

HEEGER, INC., 6400 Fleet St., City of Commerce, CA 90040, Tel: 213-728-5108, 728-4729, 728-6913, FAX: 213-728-4740; Empl: 10; Sls. Mgr.: Robert A. Heeger

HEI CORPORATION, P.O. Box 88806, Carol Stream, IL 60188, Tel: 708-665-5500, FAX: 708-665-5769; Empl: 20

HEIDENHAIN CORP., 115 Commerce Dr., Schaumburg, IL 60173, Tel: 708-490-1191, FAX: 708-490-3931; Empl: 72; Sls. Mgr.: Rick Korte; Dist. Mgr.: Rick Glos

HEI, INC., Hybrid Electronics Div., 1495 Steiger Lake Ln., Victoria, MN 55386, Tel: 612-443-2500, ESYLNK: 62940281, FAX: 612-443-2668; Empl: 200; Sls. Mgr.: Dale Nordquist

Local Sales Offices & Reps  
MN Victoria, HEI Inc. 612-443-2500

HEI, INC., Optoelectronics Div., 1495 Steiger Lake La., P.O. Box 5000, Victoria, MN 55386, Tel: 612-443-2500, TWX: 510-601-7785, ESYLNK: 62940281, FAX: 612-443-2668; Empl: 150; Sls. Mgr.: Dale Nordquist

HEINEMANN PRODUCTS, Eaton Corporation, P.O. Box 6800, Lawrenceville, NJ 08648-0800, Tel: 609-896-0009, FAX: 609-896-1631; FSC No.: 74193; Empl: 350; Sls. Mgr.: John McNamara

|                            |                                     |              |
|----------------------------|-------------------------------------|--------------|
| Local Sales Offices & Reps |                                     |              |
| AZ                         | Phoenix, Mercury Engrg. Sls.        | 602-265-0344 |
| CA                         | San Diego, O'Donnell Assocs., Inc.  | 619-578-1645 |
| CA                         | San Jose, O'Donnell Assocs. No.     | 408-456-2950 |
| CA                         | Torrance, O'Donnell Assocs., Inc.   | 213-539-9664 |
| CO                         | Englewood, CompuTech Mktg.          | 303-773-3981 |
| FL                         | Oviedo, Conley & Assocs.            | 407-365-3283 |
| FL                         | Wellington, Conley & Assocs., Inc.  | 407-790-3926 |
| GA                         | Duluth, Dixie Mktg.                 | 404-381-5592 |
| IL                         | Northbrook, D. Dolin Sls.           | 708-498-6770 |
| IN                         | Ft. Wayne, O.H. Bromberg & Assocs.  | 219-456-6010 |
| IA                         | Hiawatha, Ard Sls. Co.              | 319-393-6392 |
| KY                         | Alexandria, O.H. Bromberg & Assoc.  | 606-635-3063 |
| KY                         | Louisville, O.H. Bromberg & Assocs. | 502-456-1498 |
| MD                         | Upperco, Imagitron Sls. Co., Inc.   | 301-374-5600 |
| MA                         | Ashland, Sullivan Tech. Sls.        | 508-881-2215 |

|    |                                       |              |
|----|---------------------------------------|--------------|
| MI | Southfield, L. H. Dickelman Co.       | 313-353-8210 |
| MN | Minneapolis, Furber Sls. Co., Inc.    | 612-881-3620 |
| MO | Kansas City, Hill & Co.               | 816-361-1669 |
| MO | St. Louis, Hill & Co.                 | 314-842-6868 |
| NY | Ridgewood, Ballou, Inc.               | 201-444-6990 |
| NJ | Rochester, R. M. Scanlon & Assocs.    | 716-359-0773 |
| NY | Syracuse, FLM. Scanlon & Assoc., Inc. |              |
|    |                                       |              |
| NC | Charlotte, J. Rudisill Assocs.        | 315-463-7682 |
| NC | Cleveland, Brown Elect. Prod.         | 704-377-6901 |
| OH | Dayton, KW Elctm. Sls.                | 216-331-2072 |
| OH | Dayton, O. H. Bromberg & Assocs.      | 513-890-2150 |
| OR | Beaverton, Westmark Elctms. Inc.      | 513-434-8788 |
| PA | Allison Park, KW Elctm. Sls.          | 503-641-8780 |
| PA | Lawrenceville, DVS Co.                | 412-366-9396 |
| TX | Dallas, Glidden Electro Equip.        | 609-896-1112 |
| TX | Houston, Glidden Electro Equip.       | 214-341-0610 |
| WA | Bellevue, Westmark Elctms. Inc.       | 713-681-1415 |
| WI | Milwaukee, Key Entrp.                 | 206-454-1944 |
| WI | Milwaukee, Key Entrp.                 | 414-762-2323 |

|                    |                                       |              |
|--------------------|---------------------------------------|--------------|
| Local Distributors |                                       |              |
| AL                 | Montgomery, Southern Controls         | 205-277-5030 |
| CA                 | Chatsworth, POCO Sls.                 | 818-700-8727 |
| CA                 | Inglewood, Newark Elctms.             | 301-671-7370 |
| CA                 | Los Angeles, Master Distrs.           | 213-452-1229 |
| CA                 | Oakland, Brill Elctms.                | 510-834-5888 |
| CA                 | San Carlos, Campbell & George         | 415-594-1994 |
| CA                 | Santa Clara, Cypress Elctms.          | 408-980-8400 |
| CA                 | Van Nuys, Fuses, Unltd.               | 818-786-8111 |
| CO                 | Aurora, Jet Elctms.                   | 303-364-1000 |
| CO                 | Denver, CSID Inc.                     | 303-292-9594 |
| CO                 | Denver, Newark Elctms.                | 303-757-3351 |
| CT                 | Hartford, L. E. Whelan Co.            | 203-296-5000 |
| CT                 | Wallingford, Green Shaw Co.           | 203-265-3333 |
| FL                 | Oviedo, Dixie Sls.                    | 407-365-1515 |
| GA                 | Atlanta, Georgia Control Cen.         | 404-767-6677 |
| IL                 | Chicago, Newark Elctms.               | 312-784-5100 |
| IL                 | Morton Grove, Nedco Elctms.           | 708-967-0500 |
| IL                 | Northbrook, Classic Comps. Supp.      | 708-272-9650 |
| IN                 | Carmel, Breakers Unltd.               | 317-896-5399 |
| IN                 | Indianapolis, Bell Inds.              | 317-875-8200 |
| MD                 | Columbia, DK Elctms. Inc.             | 301-995-1950 |
| MD                 | Crofton, Custom Marine Svcs.          | 301-721-7354 |
| MA                 | Andover, Bell Inds.                   | 508-474-8880 |
| MA                 | Needham, Power Electro Supp.          | 617-444-6866 |
| MA                 | Newton, Green Shaw Co.                | 617-969-8900 |
| MA                 | Woburn, Apparatus Svc.                | 617-933-5999 |
| MI                 | Oak Pk, Newark Elctms.                | 313-967-1570 |
| MI                 | Southfield, Michigan Lectrols Corp.   | 313-353-1350 |
| MN                 | Minneapolis, Newark Elctms.           | 612-331-6350 |
| MO                 | Maryland Heights, Lcomp, Inc.         | 314-291-6200 |
| NJ                 | Lawrenceville, Riverside Comps. Supp. |              |

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|--------------|----------------------------------------|--------------|
| 609-896-1611 | NY Johnson City, Help Elctms. Inc.     | 607-729-3528 |
| 607-729-3528 | NY New Hyde Park, I/O Corp. of NY      | 516-355-0135 |
| 516-355-0135 | NY Ronkonkoma, Arrow Elctms.           | 516-467-1000 |
| 516-467-1000 | NY Whitestone, Power Electro Supp. Co. |              |

|              |                                              |              |
|--------------|----------------------------------------------|--------------|
| 718-767-1447 | NC Charlotte, Motionex Inc.                  | 704-377-1555 |
| 704-377-1555 | NC Raleigh, Greene-Shaw Co.                  | 919-954-7138 |
| 919-954-7138 | OH Cleveland, I/O Corp. of Cleveland         | 216-642-7300 |
| 216-642-7300 | OH Dayton, Duellman Elec.                    | 513-461-8022 |
| 513-461-8022 | OH Dayton, Stotts Friedman Co.               | 513-298-5555 |
| 513-298-5555 | OH Shandon, Cartessa Corp.                   | 513-738-4477 |
| 513-738-4477 | OH Valley View, Newark Elctms.               | 216-447-8860 |
| 216-447-8860 | OR Portland, Taylor Elec.                    | 503-233-5321 |
| 503-233-5321 | PA Allison Park, Circuit Breakers, Inc.      | 412-487-9090 |
| 412-487-9090 | PA Erie, REM Elctms.                         | 814-453-5626 |
| 814-453-5626 | PA Fort Washington, I/O Corp. of Phila.      | 215-641-1870 |
| 215-641-1870 | PA West Chester, West Chester Elec. & Elctm. |              |

|              |                                            |              |
|--------------|--------------------------------------------|--------------|
| 215-696-7500 | TN Chattanooga, Techni-Tronics, Inc.       | 615-332-2119 |
| 615-332-2119 | TX Dallas, Geeco Sls. Co.                  | 214-341-2626 |
| 214-341-2626 | TX Garland, Newark Elctms.                 | 214-487-8144 |
| 214-487-8144 | TX Houston, Newark Elctms.                 | 713-782-4800 |
| 713-782-4800 | VA Ashland, Hanover Controls & Supp. Corp. |              |
| 804-550-2449 | VA Charlottesville, Va. Elctm. Comps.      | 804-296-4184 |
| 804-296-4184 | WA Seattle, H. C. Campbell Co.             | 206-433-1900 |
| 206-433-1900 | WI Milwaukee, Hunt Co.                     | 414-383-1781 |

HEITZ, KARL, INC., P.O. Box 427, Woodside, NY 11377, Tel: 718-565-0004, FAX: 718-565-2582; Empl: 15

HELICAL PRODS. CO., INC., Box 1069, Santa Maria, CA 93456-1069, Tel: 805-928-3851, FAX: 805-928-2369; FSC No.: 13201; Empl: 85

HELM INSTRUMENT CO., INC., 1387 Dussel Drive, Maumee, OH 43537, Tel: 419-893-4356, FAX: 419-893-1371; Empl: 55; Sls. Mgr.: M. Wilhelm; Dist. Mgr.: N. Phillips

HENRICKS TECHNOLOGIES, INC., 365 College St., Forsyth, GA 31029, Tel: 912-993-1060, 800-241-0806, FAX: 912-993-1068; Empl: 30; Sls. Mgr.: Paul D. Setters

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**HERBERT PRODS. INC.**, 180 Linden Ave., Westbury, NY 11590-0384, Tel: 516-334-6500, TWX: 510-222-5963, FAX: 516-334-6538; Empl: 94; Sls. Mgr: B. J. Simmons

**HERGA INC. HERGA ELECTRIC LIMITED**, 602 Brandywine Parkway, West Chester, PA 19380, Tel: 215-430-1970, FAX: 215-430-7785; Empl: 5

**HERITAGE METAL FINISHING INC.**, 800 S. Market St. P.O. Box 446, Elizabethtown, PA 17022, Tel: 717-367-1561, FAX: 717-367-2474; Empl: 43; Sls. Mgr: Terry L. Rinesmith

**HERMETIC SEAL CORP.**, 4232 Temple City Blvd., Rosemead, CA 91770, Tel: 213-283-0411, FAX: 818-443-6610; FSC No.: 04820; Empl: 200

**HERMETIC SWITCH**, Box 1325, Hwy. 92, Chickasha, OK 73018, Tel: 405-224-4046, TELEX: 796125 Hermetic CKSA, FAX: 405-224-9423; FSC No.: 65623; Empl: 200; Sls. Mgr: R. Helms, Kim Baker .... **B-1737, 1954-1955**

#### Local Sales Offices & Reps

AZ Phoenix, Toward Engrg. Assocs. .... 602-955-3193  
CA Arcadia, V. Gott & Assocs. .... 818-445-9729  
CA Palo Alto, Adtek Assocs. .... 415-327-0300  
CA San Diego, V. Gott & Assocs. .... 619-489-0893  
GA Atlanta, Electro Technlg. Prods. .... 404-262-1522  
IL Lemont, Trend-Tronics, Inc. .... 708-972-1166  
MA Canton, New England Elctm. Sls. .... 617-828-4835  
MN Minneapolis, Peterson Sls. & Assocs. .... 612-835-5281  
NY Oceanside, Current Inds. .... 516-678-3895  
OR Beaverton, Unicomp, Inc. .... 503-684-8221  
PA Furlong, Avenir .... 215-348-8290  
TX Austin, R. F. Kimball Co. .... 512-443-5284  
TX Houston, R. F. Kimball Co. .... 713-890-8810  
TX Richardson, R. F. Kimball Co. .... 214-231-3447  
WA Snohomish, Unicomp, Inc. .... 206-568-0511  
WA Spokane, Unicomp, Inc. .... 509-922-4883

#### Local Distributors

TX Ft. Worth, Allied Elctms. Inc. .... 817-595-3500

**HERSEY MEASUREMENT CO.**, Flow Measurement, Inc., P.O. Box 4585, Spartanburg, SC 29305, Tel: 803-574-8960, 1-800-845-2102, FAX: 803-578-7308; Empl: 80; Sls. Mgr: Bob Hill

**HERTNER DIV.:EXIDE CORP.**, 12690 Elmwood Ave., Cleveland, OH 44111, Tel: 216-252-4242, FAX: 216-941-4330; FSC No.: 28398; Empl: 100; Sls. Mgr: R.C. Wright

**HEURISTICS INCORPORATED**, 9845 Horn Rd., Ste. 100, Sacramento, CA 95827, Tel: 916-369-6606, FAX: 916-369-6175; Empl: 70; Sls. Mgr: Mike McMann, Gent. Mgr.

**HEWLETT-PACKARD COMPANY**, Direct Marketing Organization, P.O. Box 58059, MS 51L-SJ, Santa Clara, CA 95051-8059, Tel: 800-452-4844; Empl: 93,100

**HEXACON ELECTRIC CO.**, 161 W. Clay Ave., Roselle Park, NJ 07204, Tel: 908-245-6200, FAX: 908-245-6176; Empl: 150; Sls. Mgr: Robert L. Miller

**HEYCO MOLDED PRODUCTS, INC.**, Box 160, Kenilworth, NJ 07033, Tel: 908-245-0033, 800-526-4182, FAX: 908-245-3238; FSC No.: 28520; Empl: 135

**HEYCO STAMPED PRODUCTS**, See Cabletest International Inc.

**HH CONTROLS CO., INC.**, 16 Frost St., Arlington, MA 02174, Tel: 617-646-2626, FAX: 617-646-2662; Empl: 13

**HIAC/ROYCO**, Pacific Scientific Co., 11801 Tech Rd., Silver Spring, MD 20904, Tel: 301-680-7000, TELEX: 197635 PACSCIUT; Empl: 125; Sls. Mgr: Lou Sarto

**HIBBING ELCTRNS. CORP.**, OECO Corp., 3125 East 14th Ave., P.O. Box 129, Hibbing, MN 55746-0129, Tel: 218-263-8971, FAX: 218-263-8970; Empl: 405; Sls. Mgr: Michael Walsh

**HICKOK ELECTRICAL INSTRUMENT COMPANY**, 10514 Dupont Ave., Cleveland, OH 44108, Tel: 216-541-8060, FAX: 216-761-9879; FSC No.: 28569; Empl: 230; Sls. Mgr: Bob Fiorille

**HICO HORIZONS INTL CO.**, See Maxon Precision Motors

**HI-G COMPANY SUB. OF NYTRONICS**, See Stuthers-Dunn, Inc. and HI-G Co., Inc. Sub. of Nytronics

**HIGH ENERGY**, Inductotherm Industries, Lower Valley Rd., Parkersburg, WV 19365, Tel: 215-593-2800, TELEX: 759888, FAX: 215-593-2985; FSC No.: 21052; Empl: 50; Sls. Mgr: Joseph F. Quinn

**HIGHLAND TECHNOLOGY, INC.**, 320 Judah Street, San Francisco, CA 94122, Tel: 415-753-5814, FAX: 415-753-3301; Empl: 12; Sls. Mgr: David Taeler

**HIGH REL GROUP**, 2127 Ringwood Ave, San Jose, CA 95131, Tel: 408-321-6400, FAX: 408-321-6415; FSC No.: 4Y548; Empl: 25; Sls. Mgr: Beth Pagino

**HIGH VOLTAGE SYSTEMS, INC.**, Universal Designs Corp., P.O. Box 649, Chappaqua, NY 10514, Tel: 914-238-8462, FAX: 914-238-8462; Empl: 15; Sls. Mgr: Vincent A. Gianguzzi

**HIGH VOLTAGE TECHNOLOGY INC.**, 71 Alexander St., Yonkers, NY 10701, Tel: 914-423-6636, FAX: 914-968-0347; Empl: 12

**HILEVEL TECHNOLOGY**, 2991 Dow Ave., Tustin, CA 92680, Tel: 714-573-1888, FAX: 714-573-1899; Empl: 30; Sls. Mgr: Dolores DeRosa

**HILTON INDUSTRIES, INC.**, Subsidiary of Core Industries, 1177 Cattlemen Road, Sarasota, FL 34232, Tel: 813-371-2600, FAX: 813-371-7750; Empl: 137; Sls. Mgr: Larry Copenhaver; Dist. Mgr: Larry Copenhaver

**HIPOTRONICS INC.**, Rte. 22, P.O. Box 414, Brewster, NY 10509, Tel: 914-279-8091, TELEX: 425476, TWX: 710-574-2420, FAX: 914-279-2467; FSC No.: 25284; Empl: 230; Sls. Mgr: Kenneth Johnson

**HIRAM JONES ELECTRONICS**, 11607 Vanowen St., No. Hollywood, CA 91605, Tel: 213-875-0213, FAX: 818-982-7339; FSC No.: 04867; Empl: 8

**THE HIROL COMPANY**, 1170 W. McNab Rd., Ft. Lauderdale, FL 33309, Tel: 305-974-4900, FAX: 305-975-4734; Empl: 45; Sls. Mgr: Richard Diefenderfer **B-1072; C-1664, 1685**

#### Local Sales Offices & Reps

CA Laguna Nigel, E.J. Stanton & Sons .... 714-496-4027  
MA Norton, Paul Vincent .... 508-285-9037  
Intl Singapore, Dynamar Computer .... 011-65-2813388  
Intl United Kingdom, Read Cosine Ltd. .... 0202-632274/5

**HIROSE ELECTRIC U.S.A., INC. (HRS)**, Div. of Hirose Electric Co. Ltd. (Japan), 2688 Westhills Ct., Simi Valley, CA 93065, Tel: 805-522-7958, FAX: 805-522-3217; Empl: 55

**RICHARD HIRSCHMANN OF AMERICA INC.**, Industrial Row, P.O. Box 229, Riverdale, NJ 07457, Tel: 201-835-5002, FAX: 201-835-8354; Sls. Mgr: A. Hoell, Ops. Mgr: Connectors **C-1347**

#### Local Distributors

CA Irvine, Kensington Elctms. .... 714-583-0575  
CA San Diego, Instrument Engrs. .... 619-673-3644  
CA San Jose, Spectra Elctms. .... 408-955-7800  
CO Aurora, Jet Elctms. Supp. .... 303-364-1000  
CT Bridgeport, Park Distrs. .... 203-366-7200  
IL Addison, Belford Elctms. .... 708-691-1100  
IL Glendale Hgts, Mac Gregor & Co. .... 708-469-4080  
IN Carmel, Altex Elctms. Inc. .... 317-848-1323  
MA Westboro, In Stock Prods. .... 508-870-5750  
MN Minneapolis, Elec-Trol .... 612-521-5051  
NH Atkinson, Astrum Elctms. .... 603-898-3399  
NJ Moorestown, Marlac Elctms. .... 609-234-4200  
NJ Union, Meridian Supply Co. .... 908-687-6220  
NC Fugay-Varina, Fye Inds., Inc. .... 919-557-0511  
TX Richardson (exc. El Paso City), Centurion Mktg. .... 214-783-6762  
TX Tomball, Wofford Elctms. .... 713-351-2255  
Can Montreal, Que, Hooker Elctms. .... 514-487-5151

**HISONIC, INC.**, 310 North Marion, P.O. Box 1130, Olathe, KS 66051, Tel: 913-782-0012, FAX: 913-782-0562; FSC No.: 11402; Empl: 185; Sls. Mgr: Jack O. Cooper III **A-2360**

#### Local Sales Offices & Reps

AL Huntsville, MacKay, Smith & Assocs. .... 205-539-8000  
AZ Scottsdale, Arcorn Sls., Inc. .... 602-947-5745  
FL Ft. Lauderdale, MacKay, Smith & Assocs. .... 407-423-4353  
FL Orlando, MacKay, Smith & Assocs. .... 407-423-4353  
FL Palm Coast, MacKay, Smith & Assocs. .... 904-445-8328  
FL St. Petersburg, MacKay, Smith & Assocs. .... 407-423-4353  
GA Atlanta, MacKay, Smith & Assocs. .... 404-496-9913

KS Shawnee Mission, Florence & Meyer ..... 913-722-5210  
MA Boston, Rosen & Assocs. .... 617-449-4700  
MO St. Louis, Florence & Meyer ..... 913-722-5210  
NC Charlotte, MacKay, Smith & Assocs. .... 919-847-2277  
NC Raleigh, MacKay, Smith & Assocs. .... 919-847-2277  
TX Austin, Aid Elctms. .... 512-836-6724  
TX Irving, Aid Elctms. .... 214-790-4761

#### Local Distributors

FL ..... 407-423-4353



**FAX: 404-409-3028**

**HITACHI AMERICA, LTD., Electron Tube Division**, 3850 Holcomb Bridge Rd., Ste. 300, Norcross, GA 30092, Tel: 404-409-3000; Empl: 50; Sls. Mgr: Tim Patton; Dist. Mgr: Steve Bubbs **B-1073-1076**

#### Local Sales Offices & Reps

AL Huntsville, Group 2000 .... 205-536-2000  
AL Huntsville, Technlg. Mktg. Assoc. .... 205-883-7893  
AZ Mesa, System Sls. of Arizona .... 602-464-9989  
CA Agoura Hills, Quadrep Southern Inc. .... 818-597-0222  
CA Irvine, Quadrep .... 714-527-4222  
CA San Diego, Quadrep Southern Inc. .... 619-560-8330  
CA San Jose, Quadrep .... 408-432-3300  
CO Parker, Parker Webster .... 303-841-4888  
CT Wallingford, Technlg. Sls., Inc. .... 203-269-8853  
FL Deerfield Beach, Technlg. Mktg. Assoc. .... 305-427-1090  
FL Largo, Technlg. Mktg. Assoc. .... 813-531-4405  
FL Orlando, Technlg. Mktg. Assoc. .... 407-857-3760  
FL Winter Park, Technlg. Mktg. Assoc. .... 407-671-2245  
GA Norcross, Group 2000 Sls. .... 404-729-1889  
ID Ketchum, Crown Elctms. .... 208-622-8125  
IL Chicago, Sumer Inc. .... 708-991-8500  
IN Indianapolis, Elctm. Sls. & Engrg. .... 317-849-4260  
IN Kokomo, M. Gottlieb Assoc. Inc. .... 317-455-0444  
IA Cedar Rapids, Wes Tech Assocs. .... 319-393-9790  
KS Overland Park, Electri Rep .... 913-649-2168  
MD Columbia, Robert Elctm. Sls. .... 410-995-1900  
MA Waltham, Technlg. Sls. Inc. .... 617-890-5700  
MI Flint, M. Gottlieb Assoc. Inc. .... 313-732-3922  
MI Plymouth, Jay Mktg. .... 313-459-1200  
MN Minneapolis, Tek Rep Inc. .... 612-832-0277  
MO St. Louis, Electri Rep .... 314-993-4421  
NJ Teaneck, Strategic Sls., Inc. .... 201-833-0099  
NM Albuquerque, System Sls. of AZ .... 505-889-2901  
NY Fairport, Technlg. Sls., Inc. .... 716-223-7500  
NC Cary, Group 2000 Sls. .... 919-481-1531  
OH Beachwood, Thompson & Assoc. .... 216-831-6277  
OH Dayton, Thompson & Assocs. .... 513-435-7733  
OH Orient, Thompson & Assoc. .... 614-877-4304  
OK Tulsa, West Assoc. .... 918-492-4300  
OR Portland, Crown Elctms. .... 503-620-8320  
PA Warrington, Strategic Sls. Inc. .... 215-491-0340  
PA Willow Grove, Technlg. Sls., Inc. .... 215-784-0170  
TX Austin, West Assocs. .... 512-343-1199  
TX Houston, West Assocs. .... 713-621-5983  
TX Richardson, West Assoc. .... 214-680-2800  
UT Murray, Parker Webster .... 801-266-9939  
WA Bellevue, Crown Elctms. .... 206-453-5100  
WI Brookfield, Sumer, Inc. .... 414-784-6641  
Can Kanata, Ont, Hitachi Canadian Ltd. .... 613-591-1990  
Can Mississauga, Ont, Longman Sls. .... 416-670-8100

#### Local Distributors

AL Huntsville, Marshall .... 205-881-9235  
AL Huntsville, Repton .... 205-722-9500  
AZ Phoenix, Marshall .... 602-496-0290  
AZ Phoenix, Sterling .... 602-437-5565  
CA Agoura Hills, Western Micro .... 818-707-0377  
CA Calabasas, Marshall Inds. .... 818-878-7028  
CA Chatsworth, Sterling .... 818-407-8850  
CA El Monte, Marshall Inds. .... 808-307-6000  
CA Irvine, Marshall .... 714-458-5394  
CA Irvine, Marshall Ind. .... 714-458-5398  
CA Milpitas, Marshall .... 408-942-4600  
CA Milpitas, Marshall Inds. .... 408-942-4700  
CA Orange, Western Micro .... 714-637-0200  
CA Rancho Cordova, Marshall Inds. .... 916-635-9700  
CA San Diego, Marshall .... 619-578-9600  
CA San Diego, Sterling .... 619-271-6555  
CA San Diego, Western Micro .... 619-453-8430  
CA San Jose, Merit Elctms. .... 408-434-0800  
CA Saratoga, Western Micro .... 408-725-4753  
CA Tustin, Sterling .... 714-259-0900  
CO Englewood, Sterling .... 303-792-3939  
CO Thornton, Marshall .... 303-451-8383  
CT Milford, Milgray .... 203-878-5538  
CT Wallingford, Cronin .... 203-265-3134



|     |                                  |              |
|-----|----------------------------------|--------------|
| CT  | Wallingford, Marshall            | 203-265-3822 |
| CT  | Wallingford, Sterling            | 203-265-9539 |
| FL  | Altamonte Springs, Marshall      | 407-767-8585 |
| FL  | Altamonte Springs, Vantage       | 305-429-1001 |
| FL  | Ft. Lauderdale, Marshall         | 305-977-4880 |
| FL  | Ft. Lauderdale, Repton           | 305-735-1112 |
| FL  | Orlando, Milgray                 | 407-647-5747 |
| FL  | Tampa, Repton                    | 813-854-2351 |
| FL  | Tampa, Repton                    | 813-855-4656 |
| GA  | Atlanta, Marshall                | 404-923-5750 |
| GA  | Atlanta, Milgray                 | 404-446-9777 |
| GA  | Norcross, Repton                 | 404-446-1300 |
| IL  | Palatine, Milgray                | 708-202-1900 |
| IL  | Schaumburg, Marshall             | 708-490-0755 |
| IL  | Schaumburg, Repton               | 312-882-1700 |
| IN  | Indianapolis, Marshall           | 317-297-0483 |
| KS  | Kansas City, Marshall            | 913-492-3121 |
| KS  | Lenexa, Sterling                 | 913-492-5406 |
| KS  | Overland Park, Milgray           | 913-236-8800 |
| MD  | Baltimore, Resco                 | 301-931-8200 |
| MD  | Beltsville, Resco                | 301-937-9100 |
| MD  | Columbia, Milgray                | 301-995-6169 |
| MD  | Columbia, Sterling               | 301-290-3800 |
| MD  | Columbia, Vantage                | 301-720-5100 |
| MD  | Silver Springs, Marshall         | 301-622-1118 |
| MA  | Andover, Vantage                 | 508-687-3900 |
| MA  | Burlington, Western Micro        | 508-273-2800 |
| MA  | Needham, Cronin                  | 617-449-5000 |
| MA  | New England, Milgray             | 508-657-5900 |
| MA  | Wilmington, Marshall             | 508-657-9064 |
| MI  | Livonia, Marshall                | 313-525-5850 |
| MI  | Livonia, Repton                  | 313-525-2700 |
| MN  | Minneapolis, Marshall            | 612-559-2211 |
| MN  | Minneapolis, Sterling            | 612-831-2666 |
| MN  | Minnetonka, Repton               | 612-938-0000 |
| MO  | Bridgeport, Marshall             | 314-291-4650 |
| NJ  | Clifton, Vantage                 | 201-777-4100 |
| NJ  | Edison, Sterling                 | 908-417-1000 |
| NJ  | Fairfield, Marshall Inds.        | 201-882-0169 |
| NJ  | Marlton, Milgray                 | 609-983-5010 |
| NJ  | Marlton, Western Micro           | 609-596-7775 |
| NJ  | Mt. Laurel, Marshall             | 609-234-9100 |
| NJ  | Parsippany, Milgray              | 201-335-1766 |
| NM  | Albuquerque, Sterling            | 505-884-1900 |
| NY  | Farmingdale, Milgray             | 516-420-9800 |
| NY  | Hauppauge, LI, Marshall          | 516-273-1515 |
| NY  | Johnson City, Marshall           | 607-798-1611 |
| NY  | Pittsford, Milgray               | 716-381-9700 |
| NY  | Rochester, Marshall              | 716-235-7620 |
| NY  | Smithtown, Vantage               | 516-543-2000 |
| NC  | Raleigh, Marshall                | 919-878-9882 |
| NC  | Raleigh, Milgray                 | 919-790-8094 |
| NC  | Raleigh, Repton                  | 614-436-6675 |
| OH  | Dayton, Marshall                 | 513-898-4480 |
| OH  | Solon, Marshall                  | 216-248-1788 |
| OH  | Solon, Repton                    | 216-349-1415 |
| OH  | Worthington, Repton              | 614-436-6675 |
| OK  | Tulsa, Sterling                  | 918-663-2410 |
| OR  | Beaverton, Marshall              | 503-644-5050 |
| OR  | Beaverton, Western Micro         | 503-629-2087 |
| PA  | Pittsburgh, Marshall Inds.       | 412-788-0441 |
| TX  | Austin, Marshall                 | 512-837-1991 |
| TX  | Austin, Sterling                 | 512-836-1341 |
| TX  | Carrollton, Marshall             | 214-233-5200 |
| TX  | Carrollton, Sterling             | 214-243-1600 |
| TX  | Dallas, Milgray                  | 214-248-1603 |
| TX  | Houston, Marshall                | 713-895-1200 |
| TX  | Houston, Sterling                | 713-627-9800 |
| TX  | Stafford, Milgray                | 713-240-5360 |
| UT  | Salt Lake City, Marshall         | 801-485-1551 |
| UT  | Salt Lake City, Milgray          | 801-272-4999 |
| UT  | Salt Lake City, Sterling         | 801-972-5444 |
| VA  | Richmond, Sterling               | 804-226-2190 |
| WA  | Bothel, Marshall Inds.           | 206-486-5747 |
| WA  | Redmond, Western Micro           | 206-881-6737 |
| WI  | Milwaukee, Marsh                 | 414-475-6000 |
| WI  | Waukesha, Marshall               | 414-797-8400 |
| Can | Alberta, ITT                     | 403-273-2780 |
| Can | Alberta, ITT                     | 403-436-9555 |
| Can | Brampton, Ont., Marshall Inds.   | 416-458-8046 |
| Can | British Columbia, ITT            | 604-291-8866 |
| Can | Manitoba, ITT                    | 204-697-2300 |
| Can | Ontario, ITT                     | 416-736-1144 |
| Can | Ontario, ITT                     | 413-596-6980 |
| Can | Pt. Claire, Que., Marshall Inds. | 514-694-8142 |
| Can | Quebec, ITT                      | 514-335-7697 |

**HITACHI AMERICA, LTD.**, 2000 Sierra Point Parkway, Brisbane, CA 94005, Tel: 415-589-8300, 1-800-HITACHI (Sales Offices), TELEX: 17-1581, TWX: 910-338-2103, FAX: 415-583-4207

**HITACHI AMERICA, LTD.**, 220 White Plains Rd., Tarrytown, NY 10591, Tel: 914-631-0600, TELEX: 234553, FAX: 914-631-0672; Sls. Mgr.: William Porter; Dist. Mgr.: John McDonnell

**HITACHI DENSHI AMERICA LTD.**, Test & Meas. Div., 371 Van Ness Way, Ste. 120, Torrance, CA 90501, Tel: 310-328-6116, FAX: 310-328-6252; Empl: 110; Sls. Mgr.: Richard Westle, Natl. Sls. Mgr.

**HITECH EQUIPMENT CORP.**, 9400 Activity Rd., San Diego, CA 92126, Tel: 619-566-1892, FAX: 619-530-1458; Empl: 12

**HI-TECH, INC.**, 3600 16th St., Zion, IL 60099, Tel: 708-746-2447, FAX: 708-746-4945; Empl: 35; Sls. Mgr.: J. Gordon Johnson

**HITEMP TECHNOLOGIES, INC.**, 118 Charcot Ave., San Jose, CA 95131-1101, Tel: 408-922-0740, FAX: 408-922-0534; Empl: 15; Sls. Mgr.: Roger Meade



**FAX: 908-782-9733**

**HITRAN CORPORATION**, 362 Highway 31, Flemington, NJ 08822-1238, Tel: 908-782-5525; FSC No.: 27672; Empl: 120; Sls. Mgr.: James Hindle **A-2361; D-1744, 2266-2267**

*Local Sales Offices & Reps*

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AL  | Birmingham, Robertson Sls.              | 205-823-4187 |
| AZ  | Scottsdale, Electro Mktg.               | 602-991-0110 |
| CT  | Ridgefield, Manning & Assocs., Inc.     | 203-438-5027 |
| CT  | W. Reading, Vesco, Inc.                 | 203-790-0702 |
| IL  | Addison, Hedge Assocs., Inc.            | 312-543-0888 |
| LA  | Metairie, RAPCO Assocs., Inc.           | 504-887-9500 |
| NC  | Charlotte, Servicon Sls. Corp.          | 704-588-1035 |
| PA  | Fort Washington, Hostvedt-Pavoni, Inc.  | 215-643-5757 |
| PA  | Pittsburgh, Greye Glass Assocs.         | 412-366-6664 |
| WV  | Sissonville, Interstate Ind. Sls. Corp. | 304-988-3687 |
| Can | Mississauga, Reemio                     | 416-821-9375 |

*Local Distributors*

|    |                             |               |
|----|-----------------------------|---------------|
| RI | Providence, WALCO Elec. Co. | 401-467-6500, |
|----|-----------------------------|---------------|

**HMC/HUB MATERIAL COMPANY**, 33 Springdale Ave., Canton, MA 02021, Tel: 617-821-1870, FAX: 617-821-4133; FSC No.: SIC CODE 5085; Empl: 20; Sls. Mgr.: Howard Chase

**HMW ENTERPRISES, INC.**, 207 N. Franklin St., Waynesboro, PA 17268, Tel: 717-765-4690, FAX: 717-765-4660; FSC No.: 06A150; Empl: 40; Sls. Mgr.: M. K. Ensminger

**HOBBART TAFE TECHNOLOGIES**, Hobart Bros. Co., 146 Pembroke Rd., Concord, NH 03301, Tel: 603-224-9585, TELEX: 94-3424, FAX: 603-225-4342; Empl: 60; Sls. Mgr.: Robert Ungler; Dist. Mgr.: Robert Ungler

**HOBBSON BROS.**, 4940 W. Lawrence Ave., Chicago, IL 60630-3884, Tel: 312-283-3600, FAX: 312-283-3606; Empl: 75; Sls. Mgr.: Betty Maager

**HODGE MANUFACTURING CO., INC.**, 55 Fisk Ave., Springfield, MA 01107, Tel: 413-781-6800, FAX: 413-733-6573; Sls. Mgr.: Edwin L. Kossoy

**HOFFMAN, P.R., CO., MATERIALS PROC.**, 321 Cherry St., Carlisle, PA 17013, Tel: 717-243-2011, FAX: 717-243-1672; Empl: 125; Sls. Mgr.: Galen Martin

**HOFFMAN ENGINEERING**, 900 Ehlen Dr., Anoka, MN 55303, Tel: 612-421-2240, FAX: 612-421-1556; Dist. Mgr.: Paul Premo

**HOFFMAN ENGINEERING CORP.**, 20 Acosta St., Stamford, CT 06902, Tel: 203-325-8933, FAX: 203-327-4812; FSC No.: 06097; Empl: 49; Sls. Mgr.: Jack DeSoye

**HOKE INCORPORATED**, 1 Tenakill Pk., Cresskill, NJ 07626, Tel: 201-568-9100, TELEX: 135428, FAX: 1-201-568-5913; Sls. Mgr.: Ray Pohlike; Dist. Mgr.: Ray Pohlike

**HOKURIKU USA LTD.**, 117 Jetplex Circle, Sta. C-1, Madison, AL 35758, Tel: 205-772-9620, FAX: 205-772-3475; Empl: 9; Sls. Mgr.: Kathleen Leverock

**HOLADAY INDUSTRIES, INC.**, 14825 Martin Drive, Eden Prairie, MN 55344, Tel: 612-934-4920, FAX: 612-934-3604; Empl: 29; Sls. Mgr.: David Baron

**HOLD-HEET PRODUCTS CORP.**, 5011 N. Ravenswood Ave., Chicago, IL 60640, Tel: 312-728-4454, 312-728-4455, FAX: 312-728-2016; Empl: 15; Sls. Mgr.: Dan Mundt; Dist. Mgr.: Dan Mundt

**HOLLEX, INC.**, See Cabletest Products Co.

**HOLLINGSEAD INTERNATIONAL**, 13701 Excelsior Drive, Santa Fe Springs, CA 90670, Tel: 310-921-3438, FAX: 310-921-6313; FSC No.: 30528; Empl: 85; Sls. Mgr.: Keith McKinney

**HOLLIS AUTOMATION**, Esterline Corporation, 15 Charron Ave., Nashua, NH 03063, Tel: 603-889-1121, FAX: 603-880-0939; FSC No.: RCA 294005; Empl: 130; Sls. Mgr.: Brian Duffey; Dist. Mgr.: Jerry Vermette

**HOLT INC.**, 9351 Jeronimo Rd., Irvine, CA 92718, Tel: 714-859-8800, TELEX: 182704, FAX: 714-859-9643; FSC No.: 44270; Empl: 53; Sls. Mgr.: Keith Thayer

**HOLT INSTRUMENT, C.P.D. Engineering, Inc.**, 126 Mott St., PO Box 230, Ocoito, WI 54153, Tel: 414-834-2222, FAX: 414-834-5710; FSC No.: 09435; Empl: 10; Sls. Mgr.: C. P. De Witt

*Local Sales Offices & Reps*

|     |                                     |                |
|-----|-------------------------------------|----------------|
| CA  | Torrance, Cutlass Elctns., Inc.     | 714-549-9358   |
| IL  | I & C Sls.                          | 1-800-536-5555 |
| IN  | I & C Sls.                          | 1-800-536-3333 |
| MI  | Southgate, I & C Sls.               | 1-800-536-5555 |
| OH  | Cincinnati, I & C Sls.              | 1-800-536-5555 |
| Can | Ontario, Duncan Instrs. Canada Ltd. | 416-742-4448   |

# HOMALITE™

**FAX: 302-652-4578**

**HOMALITE, Whitco, Inc.**, 11 Brookside Dr., Wilmington, DE 19804, Tel: 302-652-3686; FSC No.: 4330,4240,4710,6605; Empl: 35; Sls. Mgr.: Jack Whittaker **B-1077**

**HOME AND BUILDING CONTROL**, Honeywell Inc., MN 27-3176, Honeywell Plaza, Minneapolis, MN 55408, Tel: 1-800-328-5111; Empl: 5000

**HONDA CONNECTORS**, See Mhotronics, Inc.

**HONEYWELL INFORMATION SYSTEMS**, 200 Smith St., MS 440, Waltham, MA 02154, Tel: 617-895-6000

**HONEYWELL MICROSWITCH DIV.**, 830 E. Arapaho Dr., Richardson, TX 75081, Tel: 214-470-4271, TELEX: 73-0890, FAX: 214-470-4417; Empl: 300; Sls. Mgr.: Tom Mabrey; Dist. Mgr.: Frank Davis

**HOOSIER MAGNETICS, INC.**, 6545 W. Central Ave., Rm.203, Toledo, OH 43617, Tel: 419-841-7173, FAX: 419-841-7359; FSC No.: 3160; Empl: 90

**HOPPECKE BATTERY SYSTEMS, INC.**, 10 Park Place, Butler, NJ 07405, Tel: 201-492-0045, FAX: 201-492-2714; Sls. Mgr.: Ted Czauski, Dir. Mktg. & Sls.

**HOPPER ELECTRONICS**, 1943 West North Lane, Ste.9, Phoenix, AZ 85021-1932, Tel: 602-870-3093, FAX: 602-944-6704; Empl: 10

**HOTPACK CORP.**, 10940 Dutton Rd., Philadelphia, PA 19154, Tel: 215-824-1700, 800-523-3608, TWX: 710-670-1694, FAX: 215-637-0519; FSC No.: 66; Empl: 100; Sls. Mgr.: Hugh McKenna

Hotpack is a manufacturer and is sold direct. To contact the salesman in your area call 800-523-3608 or 215-824-1700.

# HOUSE OF BATTERIES

**FAX: 714-375-0235**

**HOUSE OF BATTERIES**, 16512 Burke La., Huntington Beach, CA 92647, Tel: 1-800-432-3385, 714-375-0222; Empl: 20; Sls. Mgr.: Pat Hoscoe **D-1446**



## Local Sales Offices &amp; Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AZ | Phoenix, JBS                        | 602-893-2382 |
| CA | Cupertino, Prism Tech. Sls.         | 408-435-7377 |
| CA | Irvine, Atlas Tech. Sls.            | 714-474-9850 |
| CA | Martinez, Tech Sls.                 | 415-686-2680 |
| CA | Nonwalk, Ed Rivers Assoc.           | 310-868-1471 |
| CA | San Diego, Jack Murphy Co.          | 619-697-2150 |
| CA | Simi Valley, W.H. Daugherty Co.     | 213-622-2849 |
| IL | Schiller Park, Wm. R. Bolles Assoc. | 708-678-7888 |
| MN | Afton, Real Elctms.                 | 612-436-1950 |
| NY | Newburgh, Anderson Sls.             | 914-565-2493 |
| OR | Portland, Roger Minthorne Co.       | 503-246-4556 |
| TX | Richardson, Krone & Assocs.         | 214-437-1892 |
| WI | Mequon, Wm. R. Bolles Assoc.        | 414-241-3320 |

HOUSTON ATLAS, Envirotech Controls, Inc., 22001 Northpark Dr., Kingwood, TX 77339-3804, Tel: 713-348-1000, TELEX: 6821159 BCAC UW, FAX: 713-462-1831; Empl: 250; Sls. Mgr.: Marshall Brown

HOUSTON INSTRUMENT, AMETEK, Inc., 8500 Cameron Rd., Austin, TX 78753, Tel: 512-835-0900, TWX: 910-874-2022; Empl: 450; Dist. Mgr.: Rod Schaffner

HOWARD INDUSTRIES, INC./BREVOL MOTORS, Box 287, One North Dixie Hwy., Milford, IL 60953, Tel: 815-889-4105, FAX: 815-889-4313; Empl: 350; Sls. Mgr.: Hans Wolf; Dist. Mgr.: Dave Hotter

HP DIRECT, Hewlett-Packard, 1320 Kifer Rd., Sunnyvale, CA 94086, Tel: 800-538-8787; Empl: 80,000

HUALON MICROELECTRONICS CORP., Chung Shan North Road, Taipei, Taiwan, Tel: 886-2-536-2151, FAX: 886-2-531-3241

HUALON MICROELECTRONICS CORPORATION, Hualon Group, #1 R & D 4th Rd., S.B.I.P., Hsin-Chu, Taiwan, Tel: 415-288-0390, FAX: 415-288-0399; Empl: 984; Sls. Mgr.: Mr. Tyrone Huang; Dist. Mgr.: Mr. Tyrone Huang

## Local Sales Offices &amp; Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| CA | San Francisco, The Summa Grp. Ltd. | 415-288-0390 |
|----|------------------------------------|--------------|

HUBBELL INDUSTRIAL CONTROLS INC., 50 Edwards St., Madison, OH 44057, Tel: 216-428-1161, ESYLNK: 980-439, FAX: 216-428-7635

HUDSON TOOL & DIE CO., 1327 U.S. Hwy 1, Ormond Beach, FL 32174, Tel: 904-672-2000, FAX: 904-676-6212; FSC No.: 02875; Empl: 300

HUGHES AIRCRAFT CO., Interconnect Systems Div., 17150 Von Karman Ave., Irvine, CA 92714, Tel: 714-660-5772, FAX: 714-660-6981; FSC No.: 53669; Sls. Mgr.: Terry Jamigan; Dist. Mgr.: Terry McCann

HUGHES AIRCRAFT CO., Electron Dynamics Div., 3100 W. Lomita Blvd., P.O. Box 2999, Torrance, CA 90509-2999, Tel: 310-517-6000, TELEX: 67-7064, TWX: 910-347-7372, FAX: 310-517-6714; Empl: 1000; Sls. Mgr.: D.B. Giguere

HUGHES AIRCRAFT CO., Industrial Products Division, 2051 Palomar Airport Rd., Carlsbad, CA 92009, Tel: 619-931-3000, FAX: 619-931-3334

HUGHES ELECTRONICS PRODUCTS CORP., 34467 Industrial Rd., Livonia, MI 48150, Tel: 313-427-8310, FAX: 313-427-2282; Empl: 20; Sls. Mgr.: Richard L. Smith

HUGHES MICROELECTRONIC CIRCUITS DIVISION, 500 Superior Ave., P.O. Box H, Newport Beach, CA 92658-8903, Tel: 714-759-2952, TWX: 8, FAX: 714-759-2280

HUGHES SEMICONDUCTOR PRODUCTS CTR., M/S B1250, 500 Superior Ave., Newport Beach, CA 92663, Tel: 714-759-2665, FAX: 714-759-2913; Sls. Mgr.: 62458; Empl: 328; Sls. Mgr.: Del Brand; Dist. Mgr.: Kathie Lake

HUGHEY & PHILLIPS, INC., 2162 Union Pl., P.O. Box 2167, Simi Valley, CA 93062, Tel: 805-581-5591, FAX: 805-581-5032; FSC No.: 94295; Empl: 40; Sls. Mgr.: Peter H. Johnson; Dist. Mgr.: Peter H. Johnson

HUGIN INDUSTRIES INC., 745 Distel Dr., Los Altos, CA 94022, Tel: 415-961-2950, FAX: 415-961-6431; Empl: 6; Sls. Mgr.: Peter Hugin

HUMISEAL DIV., CHASE CORPORATION, 26-60 BQE West, Woodside, NY 11377, Tel: 718-932-0800, FAX: 718-932-4345; FSC No.: 99109/46058; Empl: 150; Sls. Mgr.: William G. Lott



FAX: 619-565-6873

HUMPHREY, INC., 9212 Balboa Ave., San Diego, CA 92123, Tel: 619-565-6631; Empl: 325 B-1956-1958

## Local Sales Offices &amp; Reps

|    |                                            |                   |
|----|--------------------------------------------|-------------------|
| CA | Granada Hills, L.L. Stoakes, Inc.          | 818-368-6752      |
|    |                                            | FAX: 818-831-0015 |
| CA | Palo Alto, Harris Engrg. Assocs.           | 415-328-3370      |
|    |                                            | FAX: 415-328-4191 |
| CA | Playa Del Rey, L.L. Stoakes, Inc.          | 310-822-8553      |
|    |                                            | FAX: 213-200-3662 |
| CA | San Diego, L.L. Stoakes, Inc.              | 619-452-1600      |
|    |                                            | FAX: 619-452-0966 |
| CA | San Jose, ECC Products, Inc.               | 408-289-8545      |
|    |                                            | FAX: 408-289-9123 |
| FL | Orlando, Gra-Mar, Inc.                     | 407-658-1971      |
|    |                                            | FAX: 407-658-4101 |
| IN | Fishers, Carter, McCormic & Peirce, Inc.   | 317-842-2777      |
|    |                                            | FAX: 317-577-2741 |
| IA | Cedar Rapids, Dy-Tronix Inc.               | 319-377-8275      |
|    |                                            | FAX: 319-377-9163 |
| KS | Leawood, Dy-Tronix Inc.                    | 913-339-6333      |
|    |                                            | FAX: 913-339-9449 |
| KS | Wichita, Dy-Tronix Inc.                    | 316-838-0884      |
|    |                                            | FAX: 316-838-2645 |
| LA | Broussard, The Instr. Shoppe               | 318-837-9976      |
| MD | Annapolis Junction, Sterner Assocs, Inc.   | 301-490-1078      |
|    |                                            | FAX: 301-490-1078 |
| MA | Wayland, High Tech Sls., Inc.              | 508-653-3638      |
|    |                                            | FAX: 508-651-3784 |
| MI | Farmington Hills, Carter Technlg, Inc.     | 313-477-7700      |
|    |                                            | FAX: 313-477-4149 |
| MO | Bridgeton, Dy-Tronix Inc.                  | 314-291-4777      |
|    |                                            | FAX: 314-291-3861 |
| NY | E. Setauket, Eastern Metro Assocs., Inc.   | 516-928-2726      |
|    |                                            | FAX: 516-928-3807 |
| OH | Englewood, Carter, McCormic & Peirce, Inc. | 513-836-0951      |
|    |                                            | FAX: 513-836-2358 |
| OH | Parma, Carter, McCormic & Peirce, Inc.     | 216-398-0400      |
|    |                                            | FAX: 216-398-0766 |
| PA | Pittsburgh, Carter Technlg, Inc.           | 412-826-3800      |
|    |                                            | FAX: 412-826-5009 |
| TX | Dallas, W.N. Rider Co.                     | 214-357-2246      |
|    |                                            | FAX: 214-357-2246 |
| TX | El Paso, Nokomis of El Paso, Inc.          | 915-778-2801      |

HUNTINGTON ELECTRIC INC., P.O. Box 366, Dept. EEM 87, Huntington, IN 46750, Tel: 219-356-0778, FAX: 219-356-7891; Sls. Mgr.: Michael Khorshid

A-1936-1938

## Local Sales Offices &amp; Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| IN | Huntington, HEI                     | 219-356-0756 |
| MA | Burlington, Tri-Com Assocs., Inc.   | 617-272-8163 |
| MN | Roseville, Pro Tec Power Sls., Inc. | 612-483-0409 |
| MO | St. Louis, Rep-Tronics              | 314-576-9816 |
| PA | Greensburg, Pro-Mark                | 412-832-3800 |

## Local Distributors

|    |                                  |              |
|----|----------------------------------|--------------|
| CA | Fountain Valley, Comp. Center    | 714-979-0433 |
| CA | Los Angeles, Cal State Elctms.   | 213-933-8187 |
| CA | Monrovia, Daring                 | 818-357-0021 |
| FL | Ft. Lauderdale, NRC Elctms, Inc. | 305-772-4500 |
| MO | St. Louis, Franklin Elctms.      | 314-933-5333 |

HUNTSVILLE MICROSYSTEMS, INC., 3322 South Memorial Pkwy., Huntsville, AL 35801, Tel: 205-881-6005, TWX: 510-600-8258, FAX: 205-882-6701; Empl: 50; Sls. Mgr.: Jim Bell

HURRICANE ELECTRONICS LAB, P.O. Box 1280, Hurricane, UT 84737, Tel: 801-635-2003, FAX: 801-635-2495; FSC No.: 64109; Empl: 35; Sls. Mgr.: C. R. Reeve

## Local Distributors

|    |                                            |              |
|----|--------------------------------------------|--------------|
| TX | Fort Worth, Tandy Elctms. Natl. Parts Div. | 817-870-5600 |
|----|--------------------------------------------|--------------|



hurst

FAX: 812-386-7504

HURST MANUFACTURING DIV., Box 326, Princeton, IN 47670, Tel: 812-385-2564; Empl: 200; Sls. Mgr.: Don Morrow B-1266-1270

## Local Sales Offices &amp; Reps

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AZ  | Phoenix, Sierra Ind. Eng.            | 602-272-0084 |
| CA  | Fremont, Coherent Automation         | 510-657-2100 |
| CA  | Los Angeles, Sierra Ind'l Engrg. Co. | 213-624-3123 |
| IL  | Chicago, Golden Assocs.              | 708-512-0093 |
| IN  | Indianapolis, Emerson Motor Div.     | 317-842-1342 |
| MD  | Glen Arm, Hodgins Assoc.             | 301-592-7047 |
| MA  | Lexington, Hathaway Elctms.          | 617-861-7010 |
| MI  | Grand Rapids, Emerson Motor Div.     | 616-942-9500 |
| MN  | Wayzata, Cardinal Sls. Co.           | 612-475-0042 |
| NJ  | Sussex, Carbone Assocs.              | 201-875-1882 |
| NM  | Phoenix, Sierra Ind. Eng.            | 602-272-0084 |
| NY  | Youngstown, D & O Engrg.             | 716-754-2091 |
| NC  | Charlotte, Cartwright & Bean, Inc.   | 704-536-0303 |
| OH  | Centerville, Omega Sls. Inc.         | 513-434-5507 |
| OK  | Edmond, Emerson Motor Div.           | 405-340-8228 |
| GA  | Norcross, Cartwright & Bean, Inc.    | 404-368-0160 |
| TX  | Arlington, Emerson Motor Div.        | 214-380-2670 |
| WA  | Seattle, Northmar                    | 206-524-5170 |
| WI  | Milwaukee, Badgerrep Inc.            | 414-241-9200 |
| EXP | NY, Freeport, Churchin Assoc. Ltd.   | 516-864-8589 |

## Local Distributors

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AZ  | Phoenix, Minarik Elec.                  | 602-233-3000 |
| CA  | Glendale, Minarik Elec.                 | 818-507-6500 |
| CA  | Santa Clara, Minarik Elec.              | 408-727-0575 |
| CA  | Sunnyvale, Abacus Elctms.               | 408-732-2000 |
| CO  | Commerce City, Minarik Elec.            | 303-289-5800 |
| FL  | Ft. Lauderdale, Powell Elctms.          | 305-484-8377 |
| FL  | Orlando, EMSCO                          | 407-849-6362 |
| GA  | Norcross, EMSCO                         | 404-925-8366 |
| IL  | Schaumburg, Minarik Elec.               | 708-885-9337 |
| IN  | Indianapolis, Bell Inds.                | 317-875-8200 |
| MA  | Somerville, Electro Sls.                | 617-666-0500 |
| MN  | Mendota Hgts.                           | 612-452-6467 |
| NJ  | Fanwood, MacPherson Controls            | 201-757-5110 |
| NY  | Long Island City, B & B Motor & Control | 718-784-1313 |
| NC  | Greensboro, EMSCO                       | 919-275-8776 |
| OH  | Solon, Repco Elctms.                    | 216-248-8900 |
| OK  | Tulsa, Radio, Inc.                      | 918-587-8123 |
| OR  | Portland, Minarik Elec.                 | 503-253-3402 |
| PA  | Philadelphia, H & R Corp.               | 215-426-1700 |
| SC  | Greenville, EMSCO                       | 803-233-4121 |
| TX  | Dallas, Mechanical Southwest            | 214-634-0921 |
| TX  | Ft. Worth, Allied Elctms.               | 817-595-3500 |
| TX  | Irving, Minarik Elec.                   | 214-402-8188 |
| WA  | Redmond, Minarik Elec.                  | 206-885-0832 |
| Can | Burlington, Ont., White Radio Ltd.      | 416-632-6894 |

HUTRONIX, INC., 101 W 11th Street, Douglas, AZ 85607, Tel: 602-364-2432, FAX: 602-364-6174; FSC No.: 70206; Empl: 50; Sls. Mgr.: John Huls

HV COMPONENT ASSOCIATES INC., P O Box 2484, Farmingdale, NJ 07727, Tel: 908-938-4499, FAX: 908-938-4451; Empl: 20; Sls. Mgr.: Dennis R. Dean

HYBRICON CORPORATION, 12 Willow Road, Ayer, MA 01432, Tel: 508-772-5422, TWX: 710-347-0654, FAX: 508-772-2963; Empl: 74; Sls. Mgr.: Jim Gallagher

HYBRID DESIGNS, INC., 666 W. Baker, Costa Mesa, CA 92626, Tel: 714-557-9933, FAX: 714-557-0322; FSC No.: 16450; Empl: 65; Sls. Mgr.: Bob Soberman

HYBRID ELECTRONICS CORP., 6 DeAngelo Dr., Bedford, MA 01730, Tel: 617-275-5350, FAX: 617-275-3470; Empl: 12; Sls. Mgr.: John Pantazis

HYBRIDS INTERNATIONAL, Frequency Products Div., 311 N. Lindenwood Dr., Olathe, KS 66062, Tel: 913-764-4544, TWX: 910-743-0029, FAX: 913-764-6400; Empl: 20; Sls. Mgr.: Abdul Ghalfoor



THICK FILM DIV.

FAX: 913-764-6409

HYBRIDS INTERNATIONAL LTD., Thick Film Division, 311 N. Lindenwood Dr., Olathe, KS 66062, Tel: 913-764-6400; Empl: 45; Sls. Mgr.: Bob Goodwin A-1406-1407, 1699

HYBRIDYNE, INC., 2155 N. Forbes Blvd., Tucson, AZ 85745, Tel: 602-629-0001, FAX: 602-791-3899; Empl: 65; Sls. Mgr.: Tom Fern

HY-CAL ENGINEERING, Unit of General Signal, 9650 Telstar Ave., El Monte, CA 91731, Tel: 818-444-4000, FAX: 818-444-1314; FSC No.: 12199; Empl: 98; Sls. Mgr.: Douglas W. Rasmussen



**HYCOMP, INC.**, 165 Cedar Hill St, Marlborough, MA 01752, Tel: 508-485-6300, FAX: 508-481-1547; FSC No.: 34707; Empl: 43; *Sls. Mgr.*: David Petros

**HYDRO-GEN PRODUCTS INC.**, P.O. Box 1517, Fort Collins, CO 80522-1517, Tel: 800-779-0126, FAX: 303-498-0528; Empl: 25; *Sls. Mgr.*: Derek Bobo; *Dist. Mgr.*: Derek Bobo

**HYLETRONICS/LITTON INDUSTRIES**, 10 Maguire Rd, Lexington, MA 02173-3199, Tel: 617-276-3298, FAX: 617-276-2127; FSC No.: ODZK6; Empl: 48; *Sls. Mgr.*: Rodney Hsing

**HY MEG CORP.**, 854 Westgate, Addison, IL 60101, Tel: 708-543-9250, FAX: 708-543-9260; Empl: 24; *Sls. Mgr.*: Vincent Cupidro

**HYPATIA INC.**, 15270 SW Holly Hill Rd, Hillsboro, OR 97123-9074, Tel: 503-628-2936, FAX: 503-628-2936; *Sls. Mgr.*: Bruce Campbell

**HYPERION INDUSTRIES CORP.**, 134 Coolidge Ave., Watertown, MA 02172, Tel: 617-926-0140, FAX: 617-926-3707; FSC No.: 09448; Empl: 130; *Sls. Mgr.*: Aldo Bussi

**HYPERLOGIC CORPORATION**, 1855 E. Valley Pkwy., Ste.210, Escondido, CA 92027, Tel: 619-746-2765, FAX: 619-746-4089

**HYPERTRONICS CORP.**, 16 Brent Dr., Hudson, MA 01749, Tel: 508-568-0451, 800-225-9228, FAX: 508-568-0680; FSC No.: 50541; Empl: 145; *Sls. Mgr.*: E. Dalrymple **C-1348-1352**

*Local Sales Offices & Reps*

|    |                                    |              |
|----|------------------------------------|--------------|
| AL | Huntsville, Elec. Mktg. Assoc.     | 205-880-8050 |
| AZ | Scottsdale, TC Elctms. Sls. Inc.   | 602-994-5153 |
| CA | Newbury Park, Interconn            | 805-499-4024 |
| CA | Pleasanton, Leddy Assocs.          | 510-417-1033 |
| CO | Commerce City, Williams Assocs.    | 303-289-5647 |
| CT | Bethany, Reps. Corp.               | 203-393-0024 |
| DC | Washington, Tyler Griffin Co.      | 215-647-1550 |
| FL | Melbourne, Synergistic Technigs.   | 407-242-9661 |
| GA | Atlanta, Elec. Mktg. Assoc.        | 404-448-1215 |
| IL | Northbrook, Howard Benjamin Assoc. | 708-272-2900 |

|    |                                  |              |
|----|----------------------------------|--------------|
| IN | Indianapolis, CO Elctms.         | 317-921-5000 |
| MD | Baltimore, Tyler Griffin Co.     | 301-995-1215 |
| MD | Columbia, Tyler Griffin Co.      | 301-995-1215 |
| MA | Wellesley, Reps. Corp.           | 617-237-6476 |
| MA | Wellesley, The Reps.             | 617-237-6476 |
| MI | Bloomington, Murnco, Inc.        | 612-854-4161 |
| NJ | Wayne, G.T. Assocs.              | 201-694-6040 |
| NM | Albuquerque, Williams Assocs.    | 505-255-1638 |
| NY | E. Syracuse, R. D. Sherman       | 315-433-1165 |
| NC | Raleigh, Elec. Mktg. Assoc.      | 919-847-8800 |
| SC | Greenville, Elec. Mktg. Assoc.   | 803-233-4637 |
| TX | Irving, Trice Mktg.              | 214-255-1877 |
| UT | Salt Lake City, Williams Assocs. | 801-485-6511 |
| WA | Bellevue, ALE Inc.               | 206-455-4697 |

**HY-Q INTERNATIONAL (USA) INC.**, 1438 Cox Rd, Erlanger, KY 41018, Tel: 606-283-5000, FAX: 606-283-0883; FSC No.: 1CU70; Empl: 35; *Sls. Mgr.*: Pam Desher **A-1408**

**HYTEK MICROSYSTEMS, INC.**, 400 Hot Springs Rd, Carson City, NV 89706, Tel: 702-883-0820, FAX: 702-883-0827; FSC No.: 0ANM4; Empl: 40; *Sls. Mgr.*: Jon Presnell

**HYTRONICS CORPORATION**, 15401 Roosevelt Blv., Clearwater, FL 34620, Tel: 813-536-7861; Empl: 50; *Sls. Mgr.*: Jack Colgan

**HYUNDAI ELECTRONICS AMERICA**, Semiconductor Division, 166 Baypointe Parkway, San Jose, CA 95134, Tel: 408-473-9200, TELEX: 278841 HEA UR, FAX: 408-943-9567

**HYUNDAI ELECTRONICS INDUSTRIES CO. LTD.**, San 136-1, Amri-r, Bubal-eub, 1 Chon-Kun, Kyoungki-do, Korea, Tel: (0336)30-4114,(02)741-0661, FAX: (0336)30-2077/8,(02)744-3526

**IBI SYSTEMS INC.**, 6842 NW 20 Ave, Ft. Lauderdale, FL 33309, Tel: 305-978-9225, FAX: 305-978-9226; Empl: 7



**IBM UNITED STATES/US OEM MARKETING**, 1133 Westchester Ave, White Plains, NY 10604, Tel: 1-800-969-8643 **D-1117-1141**

**ICI INC.**, 1901 Petra La, Placentia, CA 92670, Tel: 714-579-7575, FAX: 714-579-3127; Empl: 8

**IC MASTER**, 645 Stewart Ave., Garden City, NY 11530, Tel: 516-227-1300, FAX: 516-227-1901

**ICO-RALLY CORPORATION**, 2575 E. Bayshore Rd, Palo Alto, CA 94303, Tel: 415-856-9900, FAX: 415-856-8378; FSC No.: 51705; Empl: 45; *Dist. Mgr.*: B. Enad/A. Bourassa

**ICS ELECTRONICS CORP.**, 744 S. Hillview Dr., Milpitas, CA 95035-5545, Tel: 408-263-5500, 1-800-952-4499, FAX: 408-263-5896; FSC No.: 58558; Empl: 15; *Sls. Mgr.*: Bill Wallace; *Dist. Mgr.*: Jerry Mercola

*Local Sales Offices & Reps*

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Huntsville, Saber Assocs.            | 800-327-0853 |
| AZ | Phoenix, Scientific Dvcs-Mtn.        | 602-839-6626 |
| CA | Los Alamitos, Tritek Solutions       | 714-236-1190 |
| CA | San Diego, Tritek Solutions          | 619-455-1911 |
| CA | San Jose, Tritek Solutions           | 408-554-0455 |
| CO | Denver, Scientific Dvcs-Mtn          | 303-665-8089 |
| CT | Mt. Carmel, Scientific Dvcs-New Eng. | 203-248-9361 |

|    |                                      |              |
|----|--------------------------------------|--------------|
| FL | Ft. Lauderdale, Saber Assocs.        | 305-792-7280 |
| FL | Melbourne, Saber Assocs.             | 407-724-0920 |
| FL | Orlando, Saber Assocs.               | 407-724-0920 |
| FL | Tampa, Saber Assocs.                 | 407-724-0920 |
| GA | Atlanta, Saber Assocs.               | 800-327-0853 |
| IL | Chicago, Berndt Assocs.              | 708-632-0900 |
| IN | Carmel, Berndt Assocs.               | 317-844-0114 |
| IA | Cedar Rapids, KJS Mktg.              | 816-578-4751 |
| MD | Burtonsville, Eastern Instrmn. Corp. | 301-384-8500 |
| MA | Waltham, Scientific Dvcs-New Eng.    | 617-890-2252 |
| MI | Detroit, TMS Inc.                    | 313-462-2100 |
| MI | Minneapolis, Berndt Assocs.          | 612-546-2021 |
| MO | St. Louis, KJS Mktg.                 | 314-770-1412 |
| NJ | Teaneck, Scientific Dvcs-East        | 201-440-3430 |
| NM | Albuquerque, Scientific Dvcs-Mtn     | 505-883-3668 |
| NY | Liverpool, Northern Tech. Sls.       | 315-451-1091 |
| NC | Raleigh, Saber Assocs.               | 800-327-0853 |
| OH | Cleveland, TMS Inc.                  | 216-327-3527 |
| OH | Dayton, TMS Inc.                     | 513-429-1142 |
| PA | Horsham, Scientific Dvcs-East        | 215-956-0700 |
| PA | Pittsburg, TMS Inc.                  | 412-221-2338 |
| WA | Bellevue, The Western Rep            | 206-746-1127 |
| WI | Milwaukee, Berndt Assocs.            | 414-545-8400 |

*Local Distributors*

|     |                                   |              |
|-----|-----------------------------------|--------------|
| Can | Montreal, Que., Multitest Elctms. | 514-337-0723 |
| Can | Ottawa, Ont., Multitest Elctms.   | 613-727-0848 |
| Can | Toronto, Ont., Multitest Elctms.  | 416-609-8396 |
| Can | Vancouver, B.C., Jerome & Francis | 604-986-1286 |

**IC SENSORS, INC.**, 1701 McCarthy Blvd, Milpitas, CA 95035, Tel: 800-767-1888, FAX: 408-432-7322; Empl: 160; *Sls. Mgr.*: Richard A. Auxer



## FAX: 210-690-1352

**IDEA, INC.**, 1300 Pioneer St, Ste. B, Brea, CA 92621, Tel: 310-697-4332; *Dist. Mgr.*: Desiree A. Owsian **B-1164-1165**

*Local Sales Offices & Reps*

|     |                                    |              |
|-----|------------------------------------|--------------|
| AL  | Madison, E-Squared Mktg.           | 205-464-0392 |
| CO  | Longmont, Butler Tech. Sls.        | 303-651-7703 |
| CA  | Marietta, E-Squared Mktg.          | 404-565-2088 |
| IA  | Cedar Rapids, Tech. Elect., Inc.   | 319-366-5443 |
| KS  | Andover, QDC South                 | 316-733-9756 |
| KS  | Overland Park, QDC Inds.           | 913-341-2214 |
| MIN | Eagan, QDC North                   | 612-454-0893 |
| MO  | Ballwin, QDC East                  | 314-458-1896 |
| NH  | Nashua, Bennetron                  | 603-880-7008 |
| OH  | Columbus, The Bill Romine Co.      | 614-436-0565 |
| TX  | Carrollton, All Tech. Sls. & Mktg. | 214-418-0850 |

*Local Distributors*

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AL  | Huntsville, CRI                      | 205-722-0038 |
| CA  | Buena Park, Ford Elctms. Inc.        | 714-521-8080 |
| CA  | San Jose, Rose Elctm. Distrib.       | 408-943-0200 |
| CO  | Denver, QPS Elctms. Inc.             | 303-373-2766 |
| FL  | Delray Beach, Fastbolt Florida Corp. | 407-272-3100 |
| IL  | Chicago, Leeds Electro Comps.        | 312-625-3800 |
| IL  | Schaumburg, QPS Elctms. Inc.         | 708-884-6620 |
| MN  | Plymouth, Leeds Electro Corp.        | 612-557-1277 |
| NH  | Atkinson, Astrum Elec. Inc.          | 603-898-3399 |
| NY  | Farmingdale, Bultronics              | 516-249-2272 |
| OH  | Columbus, Elctms. Mktg. Corp.        | 614-299-4161 |
| TX  | Austin, Applied Prods.               | 512-832-9804 |
| WI  | Brookfield, Leeds Electro Corp.      | 414-789-6995 |
| Can | Calgary, Alb., Memco Corp.           | 403-258-3399 |

Can Markham, Ont., Carsten Elctms. .... 416-477-9898  
Can St. Laurent, Que., Carsten Elctms. .... 514-334-8321  
Can Surrey, B.C., Memco Corp. .... 604-590-1553

**IDEAL INDUSTRIES, INC.**, Becker Place, Sycamore, IL 60178, Tel: 815-895-5181, TWX: 910-639-0613; Empl: 700; *Sls. Mgr.*: Bob Bukowsky

**IDEAL PRECISION METER**, 214 Franklin St, Brooklyn, NY 11222, Tel: 212-383-6904, TWX: 710-584-2160; FSC No.: 11707;10304-41; Empl: 150; *Sls. Mgr.*: T. Bell

**IDEAL SEMICONDUCTOR**, 46721 Fremont Blvd., Fremont, CA 94538, Tel: 510-226-7000, FAX: 510-226-1564

**IDEAL TAPE CO.**, American Bitrite Inc., 1400 Middlesex St, Lowell, MA 01851, Tel: 508-458-6833, FAX: 508-458-0302



## FAX: 408-744-9055

**IDEC CORPORATION**, 1213 Elko Drive, Sunnyvale, CA 94089-2211, Tel: 408-747-0550, TELEX: 34-0601, TWX: 910-339-9383; FSC No.: 60886; Empl: 90; *Sls. Mgr.*: Wallace Baldwin, Genl. Sls. Mgr. **B-1522-1523, 1738-1740**

*Local Sales Offices & Reps*

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Birmingham, Bryco Co.                 | 205-672-9760 |
| AZ | Phoenix, Western Automation           | 602-265-2788 |
| CA | Laguna Hills, Western Automation      | 714-859-6988 |
| CA | Sunnyvale, Idac Corp.                 | 408-747-0550 |
| CO | Lakewood, T.M.M.I.                    | 303-232-1516 |
| IL | South Barrington, Bu-Nell Engrg.      | 312-551-9000 |
| IN | Indianapolis, Ronald Ray & Assoc.     | 317-841-9144 |
| KS | Overland Park, TMW                    | 913-383-1818 |
| MA | Norwood, Hyland Assocs.               | 617-762-0345 |
| MI | Detroit, IDEC Corp.                   | 313-795-0291 |
| MI | Farmington, Nova Elctri. Assocs. Inc. | 313-553-0100 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| MN | Minnetonka, J. J. Collins & Assocs. | 612-933-7661 |
| MO | St. Louis, TMW Co.                  | 314-664-4005 |
| NM | Albuquerque, T.M.M.I.               | 505-298-6893 |
| NY | Patchogue, Optimum Sls. Co.         | 516-758-0644 |
| NY | Syracuse, Lachut Elctri. Sls. Inc.  | 315-458-6480 |
| NC | Kernersville, Heritage Sls. Assocs. | 919-996-4374 |
| OH | Cleveland, Matthew Haley Co.        | 216-892-1820 |
| OH | Perrysburg, Matthew Haley Co.       | 419-874-0488 |
| OK | Tulsa, Don Plummer Sls. Co.         | 918-835-0979 |
| PA | Cuddy, Brown-Yates Elec.Equip. Co.  | 412-221-4200 |
| PA | Philadelphia, Fite-Walker, Inc.     | 215-233-2100 |
| SC | Taylor, Heritage Sls. Assocs.       | 803-292-1723 |
| TN | Knoxville, Tubbs Agy.               | 615-577-0689 |
| TN | Memphis, Winstead Tech. Svcs.       | 901-372-4550 |
| TX | Dallas, SW Mktg. Assocs.            | 214-341-8631 |
| TX | Houston, SW Mktg. Assocs.           | 713-537-8166 |
| UT | Salt Lake City, T.M.M.I.            | 801-487-7676 |
| VA | Northboro, IDEC Corp.               | 508-393-2474 |
| VA | Richmond, Dunnington & Assocs.      | 804-282-8383 |
| WI | Appleton, Bu-Nell Engrg.            | 414-733-4242 |
| WI | Waukesha, Bu-Nell Engrg.            | 414-784-0994 |

**IDENTATRONICS, INC.**, 425 Lively Blvd, Elk Grove Village, IL 60007-2082, Tel: 708-437-2654, 1-800-323-5403, TELEX: 754319 CARD UD, FAX: 708-437-2660; Empl: 50; *Sls. Mgr.*: Mike Sloe





IDM (INTERNATIONAL DESIGN MODELING), 43 Smith Rd, Bedford, NH 03110, Tel: 603-472-7068, FAX: 603-472-7043

IEC ELECTRONICS CORP., 105 Norton St, Newark, NJ 14513, Tel: 315-331-7742, FAX: 315-331-3547; Empl: 900; Sls. Mgr.: Stephen Hotchkiss; Dist. Mgr.: Stephen Hotchkiss

IEE (INDUSTRIAL ELECTRONIC ENGINEER, INC.), 7740 Lemona Ave, Van Nuys, CA 91409, Tel: 818-787-0311, FAX: 818-787-3953; Empl: 300; Sls. Mgr.: R. Nisar B-1078-1079, 1835

#### Local Sales Offices & Reps

AL Huntsville, TMA Technlg. Mktg. Assocs. .... 205-883-7893; FAX: 205-882-6162  
AZ Phoenix, Howe & Howe Sls, Inc. .... 602-264-7971, FAX: 602-263-8914  
CA Campbell, LCO Tech. Sls. .... 408-378-9900, FAX: 408-370-0447  
CA Carlsbad, Zerimar Sls; Inc. .... 619-436-3379  
CA Woodland Hills, Varigon, Inc. .... 818-594-5080  
CO Golden, Cristee-Meade Co. .... 303-279-5070, FAX: 303-232-0323  
CT North Haven, Kitchen & Kutchin, Inc. .... 203-239-0212; FAX: 203-234-9108  
FL Deerfield, TMA Tech. Mktg. Assocs. .... 305-427-1090, FAX: 305-427-1626  
FL Largo, TMA Technlg. Mktg. Assocs. .... 813-531-4405, FAX: 813-545-8617  
FL Winter Park, TMA Tech. Mktg. Assocs. .... 407-671-2245; FAX: 407-857-6412  
GA Norcross, TMA Tech. Mktg. Assocs. .... 404-446-3565, FAX: 404-446-0569  
IL Highland Park, Bransky Sls. .... 708-433-2375, FAX: 708-433-2377  
IN Indianapolis, Wilson Tech. Sls. .... 317-872-2513, FAX: 317-872-0664  
KS Lenexa, Midtec ... 913-541-0505; FAX: 913-541-1729  
MA Burlington, Kitchen & Kutchin, Inc. .... 617-229-2660, FAX: 617-273-5895  
MI Southfield, L. H. Dickelman Co. .... 313-353-8210, FAX: 313-353-1433  
MN Burnsville, 2M Sales, Inc. .... 612-890-7774, FAX: 612-894-9342  
MO St. Louis, Midtec ... 314-275-8666; FAX: 314-275-8859  
NY Buffalo, Advanced Comps, Inc. .... 716-832-6791  
NY E. Syracuse, Advanced Comps. Corp., Inc. .... 315-437-6700; FAX: 315-699-4611  
NY Endicott, Advanced Comps. Corp. Inc. .... 607-785-3191  
NY Manhasset, Win-Cor elctrm. Sls. .... 516-627-9474  
OH Richfield, Geotronics, Inc. .... 216-659-3435, FAX: 216-659-3435  
OH Trotwood, Geotronics, Inc. .... 513-854-5939, FAX: 513-837-0537  
OR Beaverton, Olson Tech. Sls. Corp. .... 503-643-9488, FAX: 503-626-1985  
PA Allison Pk, Geotronics, Inc. .... 412-487-1770, FAX: 412-487-1331  
PA Norristown, RJL ... 215-631-1414; FAX: 215-631-1640  
TX Dallas, M-Rep, Inc. .... 214-484-5711  
VA Springfield, Pantech ... 703-451-5700, FAX: 703-451-5949  
WA Bellevue, Olson Tech. Sls. Corp. .... 206-883-7792, FAX: 206-883-9478  
WI Cedarburg, Bransky Sls. .... 414-377-6837, FAX: 414-377-6837

#### Local Distributors

AZ Phoenix, Tri-Tek, Inc. .... 602-371-0860, FAX: 602-371-0874  
CA Garden Grove, Richey/Impact Elctrms. .... 714-895-0060; FAX: 714-891-3563  
CA Gardena, California Switch & Signal Co. .... 213-538-9830; FAX: 213-327-2741  
CO Denver, Integrated Elctrms. (IEC) .... 303-292-6121, FAX: 303-297-2053  
FL Miami, Electronic Equip. Co., Inc. .... 305-526-6000, FAX: 305-871-3736  
IL Bensenville, Voyager Elctrms. Corp. .... 708-860-1300, FAX: 708-860-1573  
IL Chicago, Newark Elctrms. .... 312-784-5100, FAX: 312-784-5100  
MA Needham, Cronin Elctrms. Inc. .... 617-449-5000, FAX: 617-444-8395  
MI Southfield, Michigan Lectrols Corp. .... 313-353-1350, FAX: 313-353-1433  
MN Minneapolis, Stark Elctrms. .... 612-332-1325, FAX: 612-332-1783  
NM Albuquerque, Betatron Elctrms. .... 505-821-1122, FAX: 505-828-0450  
NY Mamaroneck, Logicomp Elctrms. .... 914-698-9332, FAX: 914-698-9456  
NY Rochester, Masline Elctrms. .... 716-546-5373, FAX: 716-546-2004  
NC Raleigh, So. Eastern Elctrms. .... 919-828-2311, FAX: 919-828-2311

OH Dayton, The Stotts-Friedman Co. .... 513-298-5555, FAX: 513-298-3046  
OH Richfield, Alpha Distr. Corp. .... 216-659-7100, FAX: 216-659-3459  
SC Taylors, Cantrell Whls. .... 803-268-1194, FAX: 803-244-9080  
TX Richardson, The Altair Co. .... 214-231-4665, FAX: 214-699-3207  
TX Stafford, Southwest Elctrms. .... 713-240-4000, FAX: 713-240-5672

IEH CORP., 140 West 58th St-8E, Bay Ridge, NY 11220, Tel: 718-492-4440, FAX: 718-492-9897; FSC No: 97913; Empl: 100; Sls. Mgr.: Terry Hart; Dist. Mgr.: Jenny Heredia

ITEM-FUSION INC., 30275 Bainbridge Rd, Cleveland, OH 44139, Tel: 216-349-1960, FAX: 216-349-2206; Empl: 4; Sls. Mgr.: Larry Shindell

IERC, 135 W. Magnolia Blvd, Burbank, CA 91502, Tel: 213-849-2481, TWX: 910-498-2206, ESYLNK: 62951515, FAX: 818-848-8872; FSC No: 98978; Empl: 97; Sls. Mgr.: George S. Ollen C-1592

#### Local Sales Offices & Reps

AL Huntsville, Mtn. Electro Mktg. .... 205-881-3937  
AZ Scottsdale, Faser Tech. Sls. .... 602-948-4404  
CA Chatsworth, Wes-K/Raltech .... 818-700-0933  
CA La Jolla, Coastal Elctrm. Sls. .... 619-459-4148  
CA Santa Clara, Pinnacle Sls. .... 408-249-7400  
CO Boulder, R.F. Mayo Assocs. .... 303-422-2155  
CT Danbury, Hathaway Elctrms. .... 203-790-6993  
FL Maitland, Hawkins-Frederickson .... 407-831-2474  
GA Norcross, Mtn. Electro Mktg. .... 404-448-5594  
IL Park Ridge, Synmark Sls. Inc. .... 708-390-9696  
IN Indianapolis, Elctrm. Rep., Inc. .... 317-894-1414  
KS Wichita, Thunderbird Tech. Sls. .... 316-636-5777  
KY East, Catalyst Sls. Co. .... 800-873-0170  
KY Lexington, Elctrm. Reps., Inc. .... 606-277-0436  
MD Silver Springs, Mid-Atlantic Sls. Co. .... 301-593-7749  
MA Lexington, Hathaway Elctrms, Inc. .... 617-861-7010  
MI Canton, Techrep, Inc. .... 313-981-1950  
MN Minneapolis, Elec. Comp. Sls, Inc. .... 612-933-2594  
MO Maryland Heights, Thunderbird Tech. Sls. .... 314-298-8940

NJ E. Brunswick, Shepard & Assocs. .... 908-254-5757  
NJ Marlton, BGR Assocs. .... 609-983-1020  
NM Albuquerque, C.T. Carlberg & Assoc. .... 505-899-2155  
NY E. Syracuse, Advanced Comps. Corp. .... 315-437-6700

NC Raleigh, Mtn. Electro Mktg. .... 919-839-8662  
OH Hamilton, Catalyst Sls. Corp. .... 800-873-0170  
OR Portland, Temper Tech. Mktg. .... 503-292-8201  
PA Pittsburgh, Catalyst Sls. Co. .... 412-826-3434  
TX Houston, R.J. Powers & Assocs., Inc. .... 713-784-5860  
VA Charlottesville, Mid-Atlantic Sls. Co. .... 804-973-8099  
Can Mississauga, R-Theta Mfg. .... 416-890-0221

#### Local Distributors

AZ Scottsdale, Spirit Elctrms. .... 602-998-1533  
CA Burbank, IERC .... 818-842-7277  
CA San Jose, Rose Elctrms. .... 408-943-0200  
CA Sunnyvale, PSC .... 408-737-1333  
CO Littleton, Indelco .... 303-795-3431  
FL Clearwater, Lynch Gentry Assocs. .... 813-433-2697  
FL Coral Springs, HAI Elctrms. .... 305-752-7551  
FL Sunrise, QAR/All American .... 305-572-7999  
GA Atlanta, Motion Elctrms., Inc. .... 404-455-8262  
IL Addison, Belford Elctrms. .... 708-691-1100  
IN Carmel, Altex Elctrm., Inc. .... 317-848-1323  
MD Gaithersburg, M.S. Elctrms. .... 301-921-0200  
MD Rockville, QAR/All American .... 301-251-1205  
MA Billerica, A.W. Mayer Elctrms. .... 617-229-2255  
MI Wyoming, North Coast Comps., Inc. .... 616-452-0800  
MN Eden Prairie, QAR/All American .... 612-944-2151  
NM Albuquerque, Walker Elctrms. Supp. .... 505-883-2992  
NY Bohemia, Car-Lac Elctrms. .... 516-567-4200  
NY Bohemia, March Elctrms. .... 516-563-6000  
NY Mt. Vernon, QAR/All American .... 914-699-2240  
NC Raleigh, Resco-Raleigh .... 919-781-5700  
OH Cleveland, Advacom, Inc. .... 216-688-5311  
OR Portland, Radar Elec. Co., Inc. .... 503-232-3404  
OR Portland, United Radio Supp. .... 503-233-5341  
PA Bristol, Aim Elctrms. .... 215-946-3900  
RI Pawtucket, Major Edwards Elctrms. .... 401-725-7400  
TX Ft. Worth, Carlton-Bates .... 817-293-5558  
TX Houston, Lenet Co. .... 713-225-1465  
TX Mansfield, Mouser Elctrms. .... 817-483-0165



**FAX: 516-334-5988**

IET LABS, INC., 534 Main St, Westbury, NY 11590, Tel: 516-334-5959, 800-899-8438; FSC No: 62015; Sls. Mgr.: Sam Sheena D-1214, 1266-1273

IFR SYS. INC., 10200 W. York St, Wichita, KS 67215, Tel: 316-522-4981, TWX: 910-741-6952, FAX: 316-522-1360; Empl: 550; Sls. Mgr.: T. Dideum

IICON CORPORATION, 16040 Caputo Drive, Morgan Hill, CA 95037, Tel: 408-779-7466, FAX: 408-779-7350; Empl: 14; Sls. Mgr.: Ron De Jong



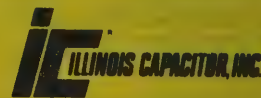
**FAX: 516-567-7358**

ILC DATA DEVICE CORP., 105 Wilbur Pl, Bohemia, NY 11716-2482, Tel: 516-567-5600; FSC No: 19645; Empl: 700; Sls. Mgr.: Marshall Lacoff D-1190-1191

#### Local Sales Offices & Reps

AL Huntsville, Montgomery Mktg. .... 205-830-0498  
AZ Scottsdale, Fred Board Assocs. .... 602-994-9388  
AZ Tucson, Fred Board Assocs. .... 602-994-9388  
CA Fallbrook, Gary Chilcote & Assocs. .... 619-728-7678  
CA Garden Grove, ILC Data Dvcs. Corp. .... 714-895-9777  
CA Woodland Hills, ILC Data Dvcs. Corp. .... 818-992-1772  
CO Englewood, Quorum 3 Sls. Grp. .... 303-799-8100  
CT Canton Center, Dynamic Sls. of New Eng. .... 203-693-6567  
FL Boca Raton, Perrott Assocs. .... 407-362-0191  
FL Cassleberry, Perrott Assocs. .... 407-830-0094  
FL Melbourne, Perrott Assocs. .... 407-676-0305  
FL Palm Harbor, Perrott Assocs. .... 813-789-9393  
GA Norcross, Montgomery Mktg., Inc. .... 404-447-6124  
IL Itasca, Janus, Inc. .... 708-250-9650  
IN Carmel, Giesting & Assocs. .... 317-844-5222  
KS Lenexa, Dytec/South .... 913-888-0215  
KS Wichita, Dytec South, Inc. .... 316-263-7090  
MD Baltimore, Bagoul/Grimm Assocs. .... 410-719-0770  
MA Burlington, Dynamic Sls. of New Eng. .... 617-272-5676  
MI Comstock Pk, Giesting & Assocs. .... 616-784-9437  
MI Livonia, Giesting & Assocs. .... 313-478-8106  
MN Eden Prairie, Comprehensive Tech. .... 612-941-7181  
MO Maryland Hgts., Dytec/South .... 314-739-0665  
NJ Marlton, BGR Assocs. .... 609-983-1879  
NJ Totowa, ILC Data Dvcs. Corp. .... 201-785-1734  
NM Albuquerque, Nelco Electronix .... 505-292-1399  
NY E. Rochester, Tri Tech Elctrms., Inc. .... 716-385-6500  
NY Fayetteville, Tri-Tech Elctrms., Inc. .... 315-446-2881  
NY Fishkill, Tri Tech Elctrms., Inc. .... 914-897-5611  
NC Cary, Montgomery Mktg., Inc. .... 919-467-6319  
NC Raleigh, Montgomery Mktg., Inc. .... 919-851-0010  
OH Cincinnati, Giesting & Assocs. .... 513-385-1105  
OH Dayton, Lionel Fedotin .... 513-275-9345  
OH Euclid, Giesting & Assocs. .... 216-261-9705  
OH Portland, Venture Elctrms. .... 503-624-0617  
PA Pittsburgh, Giesting & Assocs. .... 412-828-3553  
TX Austin, Bonser-Philhower Sls. .... 512-346-9186  
TX Houston, Bonser-Philhower Sls. .... 713-782-4144  
TX Richardson, Bonser-Philhower Sls. .... 214-234-8438  
VT Granville, Dynamic Sls. of New Eng. .... 802-476-4223  
VA Sterling, ILC Data Dvcs. Corp. .... 703-450-7900  
WA Bellevue, Venture Elctrms. .... 206-454-4594  
WI Waukesha, Janus, Inc. .... 414-542-7575  
WI Oakton, Cantec Rep., Inc. .... 416-791-5922  
Can Ontario, Cantec Rep., Inc. .... 613-725-3704  
Can Quebec, Cantec Rep., Inc. .... 514-623-5496

ILC TECHNOLOGY, INC., 399 Java Dr, Sunnyvale, CA 94089, Tel: 408-745-7900, FAX: 408-744-0829; Empl: 375; Sls. Mgr.: Lynn Reiter; Dist. Mgr.: John Reilly



**FAX: 708-673-2850**

ILLINOIS CAPACITOR, INC., 3757 W. Touhy Ave., Lincolnwood, IL 60465, Tel: 708-675-1760; Empl: 35; Sls. Mgr.: George Wundsan A-1082-1083

#### Local Sales Offices & Reps

AZ Scottsdale, Lindberg Co. .... 602-998-2944  
AR Little Rock, Doby Assocs., Inc. .... 501-221-0326  
CA Anaheim, WestRep .... 714-527-2822  
CA San Diego, Westrep .... 619-674-1880  
CO Denver, Lindberg Co. .... 303-758-9033  
GA Roswell, JWL Assocs. .... 404-518-8500



|    |                                       |              |
|----|---------------------------------------|--------------|
| IL | Lincolnwood, Illinois Capacitor, Inc. | 708-675-1760 |
| IN | Carmel, Valentine & Assocs.           | 317-846-0008 |
| IA | Marion, AEM, Inc.                     | 319-377-1129 |
| KS | Lenexa, AEM Inc.                      | 913-888-0022 |
| KY | Henderson, Valentine & Assocs.        | 502-826-9444 |
| MD | Gaithersburg, Bresson Assocs.         | 301-330-8274 |
| MD | Germantown, Bresson Assocs.           | 301-540-0110 |
| MA | Brookline, Technology Prods. Grp.     | 617-731-0858 |
| MI | Canton, TechRep, Inc.                 | 313-981-1950 |
| MN | Bloomington, Horizon Technigs.        | 612-884-6515 |
| MS | Jackson, Doby Assocs.                 | 601-981-1138 |
| MO | Bridgeton, AEM, Inc.                  | 314-298-9900 |
| NJ | Woodbridge, Jade Mktg.                | 201-750-2998 |
| NM | Albuquerque, Lindberg Co.             | 505-881-1006 |
| NY | Electra Sls.                          |              |
| NY | Rochester, Electra Sls. Corp.         | 716-427-7860 |
| NC | Charlotte, JWL Assocs.                | 704-541-5750 |
| OH | Cincinnati, Stegman Blaine Mktg.      | 513-729-1969 |
| OR | Portland, Caruso & Camelleri Assocs.  |              |

|    |                                      |              |
|----|--------------------------------------|--------------|
| PA | Narberth, Bresson Assocs.            | 503-246-5439 |
| TN | Collierville, Doby Assocs. Inc.      | 215-664-6460 |
| TX | Dallas, Innovative Tech. Sls. Inc.   | 901-854-5482 |
| UT | Salt Lake City, Lindberg Co.         | 214-699-3485 |
| WA | Bellevue, Caruso & Camelleri Assocs. | 801-484-8689 |

|                           |                                      |              |
|---------------------------|--------------------------------------|--------------|
| WI                        | Milwaukee, Erdman Sls. Co.           | 206-455-8811 |
|                           |                                      | 414-281-1330 |
| <b>Local Distributors</b> |                                      |              |
| AL                        | Huntsville, Hammond Elctms.          | 205-830-4764 |
| AL                        | Huntsville, Resticap Inc.            | 205-883-4270 |
| AZ                        | Phoenix, Arizona Comps. Co.          | 602-269-5655 |
| AZ                        | Phoenix, Neumann Elctms.             | 602-788-3737 |
| AR                        | Fl. Smith, Carlton Bates             | 501-646-8201 |
| AR                        | Little Rock, Carlton Bates           | 501-562-9100 |
| AR                        | Springdale, Carlton Bates Co.        | 501-756-5012 |
| CA                        | Irvine, Integrated Elctms. Corp.     | 714-753-0127 |
| CA                        | Milpitas, California Capacitor       | 408-262-6000 |
| CA                        | Milpitas, Projections Unltd.         | 408-942-1717 |
| CA                        | Norwalk, Myco Elctmc. Supp.          | 213-404-2053 |
| CA                        | Sacramento, Integrated Elctms. Corp. |              |

|    |                                           |              |
|----|-------------------------------------------|--------------|
|    |                                           | 916-363-6030 |
| CA | San Diego, Neumann Elctms.                | 619-695-3005 |
| CA | San Diego, Projections Unltd.             | 619-453-7900 |
| CA | Tustin, Projections Unltd.                | 714-544-2700 |
| CO | Denver, Integrated Elctms. Corp.          | 303-292-5537 |
| CO | Englewood, Kimball Elctms.                | 303-893-1413 |
| CO | Littleton, Indelco                        | 303-795-3431 |
| CT | Wallington, GRS Midan Elctms.             | 203-265-2077 |
| CT | Wallington, Midstate Elctms. Co.          | 203-265-9900 |
| FL | FL Lauderdale, Hammond Elctms.            | 305-973-7103 |
| FL | Melbourne, GRS Elctms.                    | 407-768-6966 |
| FL | Melbourne, Pridmore Corp.                 | 407-727-2491 |
| FL | Orlando, Hammond Elctms.                  | 407-849-6060 |
| GA | Norcross, Hammond Elctms.                 | 404-449-1996 |
| GA | Norcross, Whitehead Elctms.               | 404-923-6667 |
| ID | Boise, Kimball Elctms.                    | 208-342-3559 |
| ID | Pocatello, Kimball Elctms.                | 208-232-2241 |
| IL | Hoffman Estates, Integrated Elctms. Corp. |              |

|    |                                          |              |
|----|------------------------------------------|--------------|
|    |                                          | 708-843-2040 |
| IL | Northbrook, Classic Comps. Supp. Co.     |              |
|    |                                          | 708-272-9650 |
| IL | Wood Dale, NEP Elctms.                   | 708-595-8500 |
| IN | Carmel, Altex                            | 317-848-1323 |
| IN | Indianapolis, Advent Elctms.             | 317-872-4910 |
| IA | Cedar Rapids, Advent Elctms., Inc.       | 319-363-0221 |
| IA | Des Moines, Mid-State Distrib.           | 515-244-7231 |
| IA | Mason City, Mid-State Distrib.           | 515-243-8012 |
| KS | Shawnee, Finnigan Elctms.                | 913-268-6917 |
| KS | Wichita, RSC Elctms.                     | 316-267-5213 |
| LA | Shreveport, Carlton Bates                | 318-636-9975 |
| MD | Baltimore, Resco/Baltimore               | 301-931-8200 |
| MD | Beltsville, Resco/Washington             | 301-937-9100 |
| MD | Columbia, GRS Elctms. Co. Inc.           | 410-995-6744 |
| MA | Billerica, Mayer Elctms. Co.             | 508-667-2545 |
| MA | Woburn, Lorcor                           | 617-935-5024 |
| MI | Farmington Hills, Advent Elctms., Inc.   |              |
|    |                                          | 313-477-1650 |
| MI | Grand Rapids, Calder Elctms.             | 616-698-7400 |
| MN | Etzen, Capacitor Assocs.                 | 607-495-3306 |
| MN | Fridley, Voyager Elctms.                 | 512-571-7766 |
| MN | Minneapolis, Bergquist Co.               | 612-835-2322 |
| MO | Kansas City, Walters Indl. Elctms., Inc. |              |
|    |                                          | 816-531-7015 |
| MO | Springfield, Carlton Bates               | 417-862-1699 |
| MO | St. Charles, Finnigan Elctms.            | 314-946-6201 |
| NE | Omaha, Mid-State Distrib.                | 402-592-5965 |
| NJ | Camden, G.R.S. Elctms. Co., Inc.         | 609-964-8560 |
| NJ | Teterboro, EAC                           | 201-288-4477 |
| NJ | Union, Lectron Inds.                     | 908-687-2626 |
| NY | Buffalo, Summit Dists. Inc.              | 716-887-2829 |
| NY | E. Rochester, Rome Elctms.               | 716-248-0160 |
| NY | Johnson City, Help Elctms.               | 607-729-3528 |
| NY | Rochester, Help Elctms.                  | 716-264-9300 |
| NY | Rochester, Summit Dists., Inc.           | 716-334-8110 |
| NY | Rome, Rome Elctms.                       | 315-337-5400 |
| NY | Williamsville, Rome Elctms.              | 716-626-1602 |
| NC | Charlotte, EMC                           | 704-394-6195 |
| NC | Greensboro, Hammond Elctms.              | 919-275-6391 |

|    |                                            |              |
|----|--------------------------------------------|--------------|
| OH | Akron, AESCO Elctms.                       | 216-762-8818 |
| OH | Columbus, AESCO Elctms.                    | 614-882-6762 |
| OH | Columbus, EMC                              | 614-299-4161 |
| OH | Highland Hgts., EMC                        | 216-442-3441 |
| OK | Oklahoma City, Carlton Bates Co.           | 405-681-4446 |
| OK | Oklahoma City, RSC Elctms.                 | 405-631-7729 |
| OK | Tulsa, Altair Elctms.                      | 918-252-5781 |
| OK | Tulsa, Carlton Bates Co.                   | 918-250-1626 |
| OR | Beaverton, Integrated Elctms. Corp.        | 503-641-1690 |
| PA | Exton, VSH Elctms.                         | 215-363-2250 |
| PA | No. Versailles, CMD                        | 412-678-6020 |
| PA | Philadelphia, Shap Elctms. Co., Inc.       | 215-969-3300 |
| PA | York, ECI                                  | 717-854-8880 |
| RI | Pawtucket, Major/Edwards Elctm. Supp. Inc. | 401-725-7400 |
|    |                                            | 901-664-2714 |
| TN | Jackson, Carlton-Bates Co.                 | 901-365-3539 |
| TN | Memphis, Carlton Bates                     | 901-365-3539 |
| TN | Nashville, Carlton Bates                   | 615-885-3232 |
| TX | Austin, Carlton-Bates Co.                  | 512-837-9098 |
| TX | Fl. Worth, Carlton-Bates Co.               | 817-293-5558 |
| TX | Houston, Altair Elctms.                    | 713-462-3029 |
| TX | Houston, Carlton-Bates Co.                 | 800-622-4420 |
| TX | Richardson, Altair Elctms.                 | 214-231-5166 |
| TX | Richardson, RSC Elctms.                    | 214-644-3444 |
| TX | San Antonio, Carlton-Bates Co.             | 512-805-8300 |
| TX | Texarkana, Carlton-Bates Co.               | 903-792-6923 |
| UT | Salt Lake City, Integrated Elctms. Corp.   |              |
|    |                                            | 801-977-9750 |
| UT | Salt Lake City, Kimball Elctms.            | 801-328-2075 |
| WA | Bellevue, Integrated Elctms. Corp.         | 206-455-2727 |
| WI | Milwaukee, Badger Capacitor Sls.           | 414-281-1330 |
| WI | New Berlin, Classic Comps. Supp. Co.       |              |
|    |                                            | 414-786-5300 |
| WI | New Berlin, NEP Elctms.                    | 414-785-9100 |

## Illinois Lock

FAX: 708-537-1881

**ILLINOIS LOCK CO., The Eastern Co.**, 301 W. Hintz Rd., Wheeling, IL 60090, Tel: 708-537-1800; Empl: 120; Sls. Mgr: Brian D. Reed **B-1742-1743**

**IMAGE GRAPHICS, INC.**, 917 Bridgeport Ave., Shelton, CT 06484, Tel: 203-926-0100, FAX: 203-926-9705; FSC No.: 5M867; Empl: 65; Sls. Mgr: Putnam Morgan

**IMAGENATION CORPORATION**, 1200 N.E. Keyes Rd., Vancouver, WA 98684, Tel: 206-944-9131, FAX: 206-944-9131; FSC No.: 5998; Empl: 7

**IMAGE SYSTEMS CORP.**, 11595 K-Tel Dr., Hopkins, MN 55343, Tel: 612-935-1171, FAX: 612-935-1386; Empl: 25; Sls. Mgr: Marta Scheff Volbrecht

**IMAGRAPH CORP.**, Microfilm Graphics, 11 Elizabeth Drive, Chelmsford, MA 01824, Tel: 508-256-4624, FAX: 508-250-9155; Empl: 30; Sls. Mgr: Joseph Plonski

**IMAGING TECHNOLOGY INC.**, 55 Middlesex Tpke., Bedford, MA 01730-1421, Tel: 617-275-2700, FAX: 617-275-9590; Empl: 120; Sls. Mgr: John Hughes; Dist. Mgr: John Hughes

**IMAGRAPH CORP.**, Microfilm Graphics, 11 Elizabeth Drive, Chelmsford, MA 01824, Tel: 508-256-4624, FAX: 508-250-9155; Empl: 30; Sls. Mgr: Joseph Plonski

**IMATRONIC, INC.**, 1275 Paramount Pkwy., Batavia, IL 60510, Tel: 708-406-1920, FAX: 708-879-6749; Empl: 15; Sls. Mgr: Annette J. Elias **B-1323**

**I.M.C.**, (International Microtronics Corp.), 4016 E. Tennessee St., Tuscon, AZ 85714, Tel: 602-748-7900, FAX: 602-790-2808; FSC No.: 5371; Empl: 22; Sls. Mgr: O. Fest; Dist. Mgr: O. Fest

**IMC MAGNETICS CORP.**, 1900 E. Fifth St., Tempe, AZ 85281, Tel: 602-968-4441, TWX: 910-951-0001, FAX: 602-968-5026; Sls. Mgr: Joseph Gute

**IMC MAGNETICS CORP.**, NMB Corp., 475 Wireless Blvd., Hauppauge, NY 11788, Tel: 516-231-8100, FAX: 516-231-0477; Empl: 150; Sls. Mgr: Bob Baker, Dir. of Sls.

**IMC POWER SOURCES**, 1435 Koll Circle, Ste. 102, San Jose, CA 95112, Tel: 408-441-9614, FAX: 408-441-7912; Empl: 12; Sls. Mgr: B. Burres

**IM/D, E.P.E. Corp.**, 540 Commercial St., Manchester, NH 03101, Tel: 603-669-5224, FAX: 603-669-3826; Empl: 20; Sls. Mgr: Frank N. Haigh

## IMPERIAL ASTRONICS

An ANDIG Company

FAX: 818-886-4658

**IMPERIAL ASTRONICS, Andig Inc.**, 19151 Parthenia St. J, Northridge, CA 91324, Tel: 818-886-7672; FSC No.: 50843; Empl: 38; Sls. Mgr: Laurie Lee, GM

**A-1940-1943**

|                                       |                                     |
|---------------------------------------|-------------------------------------|
| <b>Local Sales Offices &amp; Reps</b> |                                     |
| CA                                    | American Canyon, Jacobson & Assocs. |
| MD                                    | Churchton, Dawn Assoc.              |
| MA                                    | Shrewsbury, Janco New England Inc.  |
|                                       | 508-754-9840                        |
| MN                                    | Apple Valley, Comm-Link Inc.        |
| MO                                    | Grandview, R.R. Burton & Assocs.    |
| NJ                                    | Lakewood, Atek                      |
| NM                                    | Albuquerque, J. Smith & Assoc. Inc. |
| OH                                    | Cleveland, John O. Olsen Co. Inc.   |
| TX                                    | Dallas, Weisler & Assoc. Inc.       |

**IMPULSE ENGINEERING**, 7647 Pine Tree Pl., Goleta, CA 93117-1023, Tel: 805-685-2030, FAX: 805-968-1000; Empl: 1

**I.M.S. EQUIPMENT, INC.**, See Worldnet Marketing, Inc.

**IMTRONICS INDUSTRIES INC.**, 11930 31st Ct. N., St. Petersburg, FL 33716, Tel: 813-572-9010, FAX: 813-572-9012; Empl: 10; Sls. Mgr: Steven B. Cohen

**INA BEARING CO., INC.**, 308 Springhill Farm Rd., Fort Mill, SC 29715, Tel: 803-548-8500, FAX: 803-548-8599; Empl: 1300; Sls. Mgr: Richard Angell, VP Sls./Mktg.; Dist. Mgr: Earl Dukes, VP

**INCONIX CORP.**, See Hancock Electronics Corp.

**INCOTHERM LIMITED**, Inco Alloys Ltd., Holmer Road, Hereford, United Kingdom HR4 9SL, Tel: (44) 432 355880, FAX: (44)432 352711; Empl: 10; Sls. Mgr: C. Paul Furniss

## ELINA FAN INDEX

FAX: 408-433-9330

**INDEK CORPORATION**, 2360 Gume Dr., No. A, San Jose, CA 95131, Tel: 408-432-1199; Empl: 7; Sls. Mgr: Charles Granata; Dist. Mgr: Charles Granata, Dir. Sls. **C-1593-1596**

|                                       |                                     |
|---------------------------------------|-------------------------------------|
| <b>Local Sales Offices &amp; Reps</b> |                                     |
| AL                                    | Huntsville, Hughes Assocs.          |
| AZ                                    | Scottsdale, Jackson Mktg.           |
| CA                                    | Dana Point, PCA Mktg. & Sls. Engrg. |
|                                       | 714-493-9822; FAX: 714-240-1894     |
| CA                                    | Santa Clara, I Squared Inc.         |
| CT                                    | Guilford, Liberty Electro Mktg.     |
| FL                                    | Hialeah, Hughes Assocs.             |
| FL                                    | Melbourne, Hughes Assocs.           |
| GA                                    | Norcross, Mountain Electro Mktg.    |
|                                       | FAX: 404-448-8230                   |
| IL                                    | Deerfield, Brock & Cushman          |
|                                       | FAX: 708-405-9777                   |
| IN                                    | Valparaiso, Catalyst Sls.           |
| MA                                    | Topsfield, Liberty Electro Mktg.    |
|                                       | FAX: 508-887-2329                   |
| MN                                    | Eden Prairie, PWC, Inc.             |
| MO                                    | Florissant, Delltron                |
|                                       | FAX: 314-839-0033                   |
|                                       | FAX: 314-839-4290                   |
| NJ                                    | Cherry Hill, Vantage Sls. Co.       |
|                                       | FAX: 609-424-6777                   |
| NY                                    | Glen Cove, Dyno-Rep                 |
|                                       | FAX: 516-676-4355                   |
| NC                                    | Cary, Hughes Assocs.                |
| OH                                    | Columbus, Bill Romine Co.           |
| OH                                    | Dayton, Bill Romine Co.             |
| TX                                    | Austin, Kruvand Assocs.             |
| TX                                    | Dallas, Kruvand Assocs.             |
| VA                                    | Front Royal, Eltron Sls. Inc.       |
|                                       | FAX: 703-635-7201                   |
|                                       | FAX: 703-635-1933                   |
| Can                                   | Laval, Interep Technigs. Ltd.       |
|                                       | 514-667-1444                        |

|                           |                            |
|---------------------------|----------------------------|
| <b>Local Distributors</b> |                            |
| AZ                        | Phoenix, Force Electronics |
| AZ                        | Tempe, Time Elctms.        |
|                           | 602-967-2000               |



|                                    |                                   |
|------------------------------------|-----------------------------------|
| AR Little Rock, Carlton-Bates      | 501-562-9100                      |
| CA El Segundo, Force Electronics   | 213-772-1324,<br>FAX:213-536-0139 |
| CA San Diego, Force                | 619-569-9661                      |
| CA San Diego, Time Elctms.         | 619-578-2500                      |
| CA San Jose, Compass Comps.        | 408-432-7575                      |
| CA San Jose, D.C. Elctms.          | 408-453-2400                      |
| CA San Jose, Daine Prods.          | 408-265-7220                      |
| CA Sunnyvale, Time Elctms.         | 409-734-9890                      |
| CA Tustin, Time Elctms.            | 714-669-0100                      |
| CA Woodland Hills, Time Elctms.    | 818-593-8400                      |
| CO Englewood, Time Elctms.         | 303-721-8882                      |
| CT Southbury, Heiland Elctms.      | 203-262-1700                      |
| CT Southbury, Time Elctms.         | 203-262-1319                      |
| FL Ft. Lauderdale, Time Elctms.    | 305-484-7778                      |
| FL Orlando, Time Elctms.           | 407-841-6565                      |
| GA Norcross, Time Elctms.          | 404-368-0969                      |
| IL Palatine, Ohm Elctms.           | 708-303-3000                      |
| IL Schaumburg, Time Elctms.        | 708-303-3000                      |
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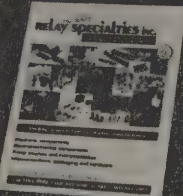
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INDIUM CORPORATION OF AMERICA, 1676 Lincoln Ave., Utica, NY 13502, Tel: 315-853-4900, 1-800-4INDIUM, TELEX: 937363, FAX: 315-853-1000; Empl: 150; Sls. Mgr.: Micheal W. Beam - Dir. Worldwide Sls.; Dist. Mgr.: Michael W. Beam

INDRAMAT, The Rexroth Corp., 255 Mittel Dr., Wood Dale, IL 60191, Tel: 708-860-1010, FAX: 708-530-4631; Empl: 120; Sls. Mgr.: Richard J. Huss; Dist. Mgr.: Richard J. Huss

INDUCTOR SUPPLY, 1849 W. Sequoia Ave., Orange, CA 92668-1017, Tel: 714-978-2277, 800-854-1881, 800-472-8421, FAX: 714-978-2411; Empl: 25; Sls. Mgr.: Neal McDonald

INDUSTRIAL COMPUTER DESIGNS, INC., 31264 Labaya Dr., Westlake Village, CA 91362, Tel: 818-889-3179, FAX: 818-889-1490; Empl: 10; Sls. Mgr.: L. Webb

INDUSTRIAL COMPUTER SOURCE, 10180 Scripps Ranch Blvd., San Diego, CA 92131, Tel: 619-271-9340, FAX: 619-271-9666; FSC No: 7042; Empl: 85; Sls. Mgr.: Nate Bailey

INDUSTRIAL CONTROL CO., 3100 Suntree Blvd., Rockledge, FL 32955, Tel: 407-259-7105; FSC No: 90081; Empl: 15; Sls. Mgr.: I. Nobilio

INDUSTRIAL CPU SYSTEMS, INTL., 111 W. Dyer Rd., Ste. D, Santa Ana, CA 92707, Tel: 714-957-2815, FAX: 714-957-3128; Empl: 8; Sls. Mgr.: Dick McCormick

INDUSTRIAL DEVICES CORPORATION, 64 Digital Drive, Novato, CA 94949-5728, Tel: 415-883-3535, 800-747-0064, FAX: 415-883-2094; Empl: 60; Sls. Mgr.: Louis Walton; Dist. Mgr.: Alan Statz



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| CA Torrance, Universal Comps.                     | 213-783-0220 |
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| FL Tampa, APM Assocs.                             | 813-886-2457 |
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| MD Columbia, PSA, Inc.                            | 215-245-0513 |
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| MO St. Louis, KKB, Inc.                           | 314-647-2000 |
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| NY Rochester, Apex Assocs.                        | 716-254-6050 |
| NC Raleigh, Electro-Mech Sls. Engrg. Co., Inc.    | 919-790-9300 |
| OH Dayton, J. C. Hofstetter Co.                   | 513-286-1010 |
| OH Medina, J. C. Hofstetter Co.                   | 216-241-4880 |
| OR Hillsboro, Temco Northwest                     | 503-649-8375 |
| PA Hickory, J. C. Hofstetter Co.                  | 412-356-2305 |
| PA Trevoze, PSA, Inc.                             | 215-245-0513 |
| TX Austin, R. F. Kimball Co.                      | 512-443-5284 |
| TX Houston, R. F. Kimball Co.                     | 713-580-5754 |
| TX Richardson, R. F. Kimball Co.                  | 214-231-3447 |
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| WA Bothell, Temco Northwest                       | 206-821-5434 |
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| CA Sacramento, Zack Elctms.            | 916-446-3131 |
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| FL W. Palm Beach, Atlantic Elctms.     | 407-686-8553 |
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| UT | Salt Lake City, Standard Supp.     | 801-486-3371 |
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| WA | Seattle, Allied Elctms.            | 206-547-2827 |
| WA | Seattle, Radar Elec.               | 206-282-2511 |
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| WI | Milwaukee, Marsh Elctms.           | 414-475-6000 |

**INDUSTRIAL DIELECTRICS, INC.**, P.O. Box 357, Noblesville, IN 46060, Tel: 317-773-1766, FAX: 317-773-3877; Empl: 250; Sls. Mgr.: Tom Merrell; Dist. Mgr.: Tom Merrell

**INDUSTRIAL ELECTRONIC RESOURCES**, 172 Business Center Drive, Corona, CA 91720, Tel: 909-734-1111, 800-433-5160, FAX: 909-734-2710; Empl: 14

**INDUSTRIAL ELECTRONICS CORP.**, 24175 Gibson Drive, Warren, MI 48089, Tel: 313-759-4450, FAX: 313-759-1589; Empl: 30; Sls. Mgr.: Allen A. Russell

**INDUSTRIAL INDEXING SYSTEMS, INC.**, 626 Fishers Run, Victor, NY 14564, Tel: 716-924-9181, FAX: 716-924-2169; Empl: 40; Sls. Mgr.: David Dunnill; Dist. Mgr.: David Dunnill

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**INDUSTRIAL TIMER CO.**, 30 Industrial Park Rd., P.O. Box 307, Centerbrook, CT 06705, Tel: 203-767-7130, FAX: 203-767-9137; Empl: 55; Sls. Mgr.: Ann Fraser Carroll

**INERTIAL MOTORS**, 280 N. Broad St., Doylestown, PA 18901, Tel: 215-345-1010, FAX: 215-345-0111; FSC No.: 6115; Empl: 14; Sls. Mgr.: Joanne Dorr; Dist. Mgr.: D. E. Sanderson

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**INFODEX, INC.**, 10 Venus Dr., Wolcott, CT 06716, Tel: 203-879-4944; FSC No.: 09087; Empl: 44; Sls. Mgr.: Robert Vance  
**B-1012-1013, 1080**

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**INFOMETRIX**, 2200 Sixth Ave. N., Seattle, WA 98121, Tel: 206-441-4696, FAX: 206-441-0841; Empl: 10; Sls. Mgr.: Paul Bailey

**INFOPRINT, INC.**, Micro Electronic Business, Inc., 4315 N. Elston Ave., Chicago, IL 60641, Tel: 312-539-6045, FAX: 312-539-6645

**INFORMATION RETRIEVAL SYSTEMS, INC.**, 1705 Second Ave. Ste. 3N, New York, NY 10128, Tel: 212-348-6268; Empl: 3; Sls. Mgr.: Lynne McNamara

**INFORMATION TRANSFER INC.**, Box 357, Bloomfield, NY 14469, Tel: 716-657-7074, FAX: 716-657-7432; FSC No.: 55137; Empl: 50; Sls. Mgr.: John Dillman  
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FL Winter Park, Wade H. Boggs, Inc. .... 407-647-2226  
MD Baltimore, Stemler Assocs. .... 301-944-8262  
NJ Cherry Hill, Stemler Assocs. .... 609-966-4070  
NM Albuquerque, VIC Myers Assocs. .... 505-884-6878  
UT Salt Lake City, Vic Myers Assocs. .... 801-581-1760

**INFRANOR**, 45E Great Hill Road, Naugatuck, CT 06770, Tel: 203-729-8258, 800-BE-SERVO, FAX: 203-729-6969; Empl: 11  
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**INJECTO MOLD INC.**, Crellin International, 2601 N. Pulaski Rd., Chicago, IL 80639, Tel: 312-384-6000, FAX: 312-384-8910; Empl: 170; Sls. Mgr.: Thomas R. Sund

**INJECTORALL ELECTRONICS (WOMAN OWNED)**, 110 Keyland Court, Bohemia, NY 11716, Tel: 516-563-3388, FAX: 516-563-3389; Sls. Mgr.: Adam P. Friedman  
**C-1136**

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AL Birmingham, ACK Radio Supp. .... 205-322-0588  
AZ Tucson, Electronic City .... 602-622-1173  
CA San Luis Obispo, Midstate Elctms. Supp. .... 805-543-2770  
CA San Rafael, Elctms. Plus .... 415-457-0466  
CA Sunnyvale, Halted Specialties .... 408-732-1573  
IL Lombard, NyTron Elctms. .... 312-691-8900  
IN Evansville, Tri-State Supp. Co. .... 812-423-4257  
IA Cedar Rapids, Iowa Radio Supp. Co. .... 800-332-5296  
KY Louisville, P.I. Burkes .... 502-589-3960  
MD Rockville, Capitol Radio Whlrs. .... 301-881-2270  
MA Needham, Y.D.I. .... 617-449-1005  
MI Canton, The Elctr. Connection .... 313-595-6655  
NY Lindenhurst, RNJ Elctms. .... 516-226-2700  
NY Long Island City, Typeco .... 718-706-6666  
NY Richmond Hill, Anchor .... 212-846-2420  
NC Charlotte, Slayton Elctms. .... 704-375-6600  
OK Oklahoma City, Radio Supp. Inc. .... 405-332-6127  
OR Beaverton, Norvac .... 503-644-1025  
SC Charleston, Wholesale Indl. Elctms. .... 803-722-2634  
TX Fort Worth, Swico .... 817-335-6521  
VA Roanoke, H. C. Baker .... 703-344-9209

**INLAND MOTOR**, Kollmorgen Corp., 501 First St., Radford, VA 24141, Tel: 703-639-9045, FAX: 703-731-4193; FSC No.: 11384; Empl: 580

**INMARK CORP.**, 4 Byington Pl., Norwalk, CT 06850, Tel: 203-866-8474, FAX: 203-866-0918; Sls. Mgr.: Roger Hibbert

**INMET CORPORATION**, 300 Dino Drive, Ann Arbor, MI 48103, Tel: 313-426-5553, FAX: 313-426-5557; FSC No.: 64671; Empl: 40; Sls. Mgr.: Tim Solomon

**INNOVATEK MICROSYSTEMS, INC.**, Smithfield Rd., R1 Box 104, Millerton, NY 12546-9720, Tel: 914-373-9003; Empl: 8; Sls. Mgr.: Paul F. Fitts

**INNOVATIVE ELECTRONICS, INC.**, Dynatech Corporation, 10110 USA Today Way, Miramar, FL 33025, Tel: 305-432-0300, FAX: 305-432-0705; Empl: 40; Sls. Mgr.: Marshall Roper

**INRECO**, See Ransco Industries

**INRESCO, INC.**, 2411 Atlantic Avenue, Manasquan, NJ 08736, Tel: 908-223-6330, FAX: 908-223-2571; Empl: 8

**INSERVCO, INC.**, 128 Commerce Drive, Box 110, LaGrange, OH 44050, Tel: 1-216-355-5102, FAX: 1-216-355-5342; Empl: 100; Sls. Mgr.: C. Scott Sudnick

**INSTEK CORPORATION**, 1205 John Reed Ct., City of Industry, CA 91745, Tel: 818-336-6537, FAX: 818-369-1748; Empl: 350; Sls. Mgr.: Michael Silverstein, National  
**D-1745**

*Local Sales Offices & Reps*

AL Hoover, Henry Phillips Co., Inc. .... 205-733-0043  
AZ Tempe, Sertek, Inc. .... 800-334-7127  
CO Englewood, Sertek, Inc. .... 800-334-7127  
CA Roswell, Henry Phillips Co., Inc. .... 404-992-3070  
IL Addison, Elctr. Specs. .... 708-250-9080  
IN Mulberry, Maish Sls. .... 317-296-2322  
MI Warren, Burcaw Co. .... 313-573-4605  
MN Minneapolis, MSJ Mktg. Inc. .... 612-755-1865  
NM Sertek, Inc. .... 800-334-7127  
NY Little Neck, M S Sls. .... 718-224-9746  
NC Statesville, Henry Phillips Co., Inc. .... 704-876-0730  
SC Henry Phillips Co., Inc. .... 800-877-3070  
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**INSTRULAB**, P.O. B. 98, Dayton, OH 45404, Tel: 513-223-2241; Empl: 22; Sls. Mgr.: Fred Pummill

**INSTRUM**, 176 W. Pomona Ave., Monrovia, CA 91016, Tel: 818-303-4210, FAX: 818-303-4210; Empl: 5; Sls. Mgr.: Ralph Morrison



**FAX: 708-543-6244**

**INSTRUMENTATION & CONTROL SYS., ICS, Inc.**, 520 Interstate Rd., Addison, IL 60101, Tel: 708-543-6200, TELEX: 271503 ICS UR; Empl: 20; Sls. Mgr.: Harold Miller  
**B-1524-1525; D-2272-2273**

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MA Topsfield, Whitehead Assocs., Inc. .... 508-887-8050  
UPS Representatives  
TX Dallas, Adair & Assocs. .... 214-321-9970  
TX Houston, Adair & Assocs. .... 713-827-7155

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AL Huntsville, Allied Elctms. .... 205-721-3500  
AL Mobile, Allied Elctms. .... 205-476-1875  
AZ Phoenix, Allied Elctms. .... 602-437-9080  
CA Chatsworth, Allied Elctms. .... 818-882-6981  
CA Fremont, Allied Elctms. .... 510-770-0590  
CA Irvine, Allied Elctms. .... 714-727-3010  
CA Rocklin, Allied Elctms. .... 916-632-3104  
CA San Diego, Allied Elctms. .... 619-279-2550  
CA San Francisco, Allied Elctms. .... 415-952-9599  
CA Torrance, Allied Elctms. .... 310-373-8828  
CO Englewood, Allied Elctms. .... 303-790-1664  
CT Cheshire, Allied Elctms. .... 203-272-7730  
FL Casselberry, Allied Elctms. .... 407-831-3331  
FL Jacksonville, Allied Elctms. .... 904-346-0761  
FL Largo, Allied Elctms. .... 813-541-4660  
FL Pompano Bch., Allied Elctms. .... 305-978-3008  
GA Duluth, Allied Elctms. .... 404-497-9544  
GA Roswell, Henderson Ind. Equip. .... 404-552-0185  
IL Des Plaines, Allied Elctms. .... 708-803-1040  
IL Libertyville, Allied Elctms. .... 708-918-0250  
IL New Lenox, Allied Elctms. .... 815-485-1511  
IL Oak Forest, Allied Elctms. .... 708-535-0038  
IL Rockford, Powermation .... 815-397-0510  
IL Wood Dale, Allied Elctms. .... 708-860-0007  
IN Indianapolis, Allied Elctms. .... 317-875-0448  
IA W. Des Moines, Allied Elctms. .... 515-223-6488  
KS Lenexa, Allied Elctms. .... 913-599-6227  
KY Louisville, Allied Elctms. .... 502-452-2293  
LA Metairie, Allied Elctms. .... 504-885-1195  
MD Columbia, Allied Elctms. .... 301-381-1560  
MA Billerica, Allied Elctms. .... 508-667-7921  
MA Norwood, Allied Elctms. .... 617-255-0361  
MI Grand Rapids, Allied Elctms. .... 616-949-8200  
MI Plymouth, Allied Elctms. .... 313-416-9300



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| MIN | Bloomington, Allied Elctms.     | 612-881-0838   |
| MO  | St. Paul, Powermation           | 612-645-0781   |
| MO  | Earth City, Allied Elctms.      | 314-291-7031   |
| NE  | Omaha, Allied Elctms.           | 402-697-0238   |
| NH  | Nashua, Allied Elctms.          | 603-883-3006   |
| NJ  | Audubon, Universal Elctm. Supp. | 1-800-327-3529 |
| NJ  | Edison, Allied Elctms.          | 908-572-9600   |
| NJ  | Moorestown, Allied Elctms.      | 609-234-7769   |
| NJ  | Parsippany, Allied Elctms.      | 201-428-3350   |
| NY  | Fairport, Allied Elctms.        | 716-425-3850   |
| NY  | Lagrangeville, Allied Elctms.   | 914-452-1470   |
| NY  | Mineola, Allied Elctms.         | 516-248-2360   |
| NC  | Raleigh, Allied Elctms.         | 919-876-5845   |
| OH  | Cincinnati, Allied Elctms.      | 513-771-6990   |
| OH  | Solon, Allied Elctms.           | 216-248-4200   |
| OH  | Worthington, Allied Elctms.     | 614-785-1270   |
| OK  | Tulsa, Allied Elctms.           | 918-664-0844   |
| OR  | Portland, Allied Elctms.        | 503-252-0335   |
| PA  | Camp Hill, Allied Elctms.       | 717-975-3570   |
| PA  | Pittsburgh, Allied Elctms.      | 412-367-4124   |
| SC  | Greenville, Allied Elctms.      | 803-288-8835   |
| TN  | Memphis, Allied Elctms.         | 901-367-2895   |
| TX  | Austin, Allied Elctms.          | 214-553-4370   |
| TX  | Austin, Allied Elctms.          | 512-219-7171   |
| TX  | El Paso, Allied Elctms.         | 915-779-6294   |
| TX  | Ft. Worth, Allied Elctms.       | 817-595-3500   |
| TX  | Houston, Allied Elctms.         | 713-455-3993   |
| TX  | Humble, Allied Elctms.          | 713-466-8005   |
| UT  | Salt Lake City, Allied Elctms.  | 801-261-5244   |
| VA  | Alexandria, Allied Elctms.      | 703-750-8206   |
| VA  | Springfield, Allied Elctms.     | 703-644-9515   |
| VA  | Virginia Beach, Allied Elctms.  | 804-363-8662   |
| WA  | Seattle, Allied Elctms.         | 206-547-2827   |
| WI  | Allied Elctms.                  | 1-800-433-5700 |
| WI  | Green Bay, Powermation          | 414-496-0944   |
| WI  | New Berlin, Allied Elctms.      | 414-796-1280   |
| WI  | Waukesha, Powermation           | 414-523-0600   |

**INSTRUMENTATION NORTHWEST**, 14972 N.E. 31st Circle, Redmond, WA 98052, Tel: 206-885-3729, FAX: 206-867-0404; Empl: 26; Sls. Mgr.: Robert Shea

**INSTRUMENTATION SERVICES, INC.**, 957 Winnetka Ave. N., Minneapolis, MN 55427, Tel: 612-544-8916, FAX: 612-544-4887; Empl: 30; Sls. Mgr.: G. Ryan

**INSTRUMENT DESIGN ENGINEERING ASSOCS., INC.**, See IDEA, Inc.

**INSTRUMENTED SENSOR TECHNOLOGY, INC.**, 4704 Moore St., Okemos, MI 48864, Tel: 517-349-8487, FAX: 517-349-8469; Empl: 10

**INSTRUMENT ENCLOSURES**, 4088 South K St., Tulare, CA 93274, Tel: 209-688-1100, FAX: 209-688-1193; FSC No.: 62012; Empl: 40; Sls. Mgr.: Mike Love

**INSTRUMENT RESEARCH CO.**, Box 40207, Santa Barbara, CA 93103, Tel: 805-962-8336; Empl: 26

**INSTRUMENT RESEARCH CO.**, 6420A Dobbin Rd., Columbia, MD 21045, Tel: 410-740-3411, FAX: 410-740-2928; Empl: 10

**INSTRUMENTS, INC.**, 7263 Engineer Rd., Ste. G, San Diego, CA 92111, Tel: 619-571-1111, FAX: 619-571-0188; FSC No.: 34563; Empl: 28; Sls. Mgr.: Ken Kalbfill



**FAX: 516-467-8558**

**INSTRUMENTS FOR INDUSTRY, INC.**, 731 Union Parkway, Ronkonkoma, NY 11779, Tel: 516-467-8400; Empl: 25 **D-1013**

| Local Sales Offices & Reps |                                  |              |
|----------------------------|----------------------------------|--------------|
| AL                         | Eva, Barr Elctm. Instrs.         | 205-796-7533 |
| AZ                         | Mesa, DJM Elctms.                | 602-821-1440 |
| CA                         | Fremont, DJM Elctms.             | 415-490-7406 |
| CA                         | Sunnyvale, DJM Elctms.           | 408-749-8936 |
| CA                         | Valencia, DJM Elctms.            | 805-254-2677 |
| CO                         | Englewood, R.A. Mayes Co.        | 303-761-9447 |
| FL                         | Barr Elctms.                     | 800-242-7138 |
| KS                         | Lenexa, KJS Mktg.                | 913-962-1795 |
| MD                         | Centerville, EMC Technologists   | 301-758-3510 |
| MO                         | Maryland Heights, KJS Mktg.      | 314-770-1412 |
| NH                         | Brookline, EMC Sls. Inc.         | 603-672-4455 |
| NJ                         | N. Plainfield, Brady Co.         | 908-755-7900 |
| NM                         | Albuquerque, Mesa Tech. Corp.    | 505-883-8833 |
| PA                         | Sewickley, Teplitz/Byrne Assocs. | 412-741-3628 |

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|-----|------------------------------|--------------|
| TX  | Richardson, Scientific Dvcs. | 214-231-8106 |
| VA  | Sterling, EMC Technologists  | 703-450-7988 |
| WA  | Bothell, Del Black Assocs.   | 206-487-4396 |
| Can | Nepean, Ont., Multilek, Inc. | 613-226-2365 |

**INSTRUMENT SOCIETY OF AMERICA**, P.O. Box 12277, Research Triangle Park, NC 27709, Tel: 919-549-8411, TELEX: 802-540, FAX: 919-549-8288; Empl: 102



**Instrument Specialties Co., Inc.**

**FAX: 717-424-6213**

**INSTRUMENT SPECIALTIES CO.**  
**HEADQUARTERS**, P.O. Box A, Delaware Water Gap, PA 18327-0136, Tel: 717-424-6510, TWX: 510-671-4526; Empl: 330; Sls. Mgr.: John Blazejewski **C-1687-1694**

| Local Sales Offices & Reps |                                                  |              |
|----------------------------|--------------------------------------------------|--------------|
| AZ                         | Phoenix, O'Donnell Assocs.                       | 602-944-9542 |
| CA                         | San Jose, O'Donnell Assocs.                      | 408-456-2950 |
| CA                         | Torrance, O'Donnell Assocs.                      | 310-781-2255 |
| CO                         | Littleton, D. M. Harthun Assocs.                 | 303-795-5545 |
| FL                         | Altamonte Springs, Kinetic Sls., Inc.            | 407-339-3855 |
| FL                         | Deerfield Bch., Kinetic Sls., Inc.               | 305-480-6040 |
| FL                         | Palm Harbor, Kinetic Sls., Inc.                  | 813-934-3768 |
| KS                         | Prairie Village, Thunderbird Tech. Sls. & Svcs.  | 913-642-7220 |
| KS                         | Wichita, Thunderbird Tech. Sls. & Svcs.          | 316-636-5018 |
| MI                         | Howell, Great Lakes Comps.                       | 517-548-9100 |
| MN                         | St. Paul, Arko Sls.                              | 612-777-7454 |
| MO                         | Maryland Heights, Thunderbird Tech. Sls. & Svcs. | 314-298-8940 |
| NM                         | Albuquerque, O'Donnell Assocs.                   | 505-889-4522 |
| TN                         | Franklin, D. L. Clark & Assocs.                  | 615-790-7457 |
| TX                         | Dallas, Materials Technlg.                       | 214-484-4677 |
| WA                         | Bothell, Temco Northwest                         | 206-481-6150 |
| WA                         | Spokane, Temco Northwest                         | 509-927-9392 |
| Can                        | Pickering, Ont., A. C. Simmonds & Sons           | 416-839-8041 |

**INSTRUMENT SPECIALTIES CO., Western Div.**, 505 Porter Way, Placentia, CA 92670, Tel: 714-579-7100, FAX: 714-579-7105; Empl: 25; Sls. Mgr.: William Oliver; Dist. Mgr.: Phil Strong **C-1687-1694**

| Local Sales Offices & Reps |                                              |              |
|----------------------------|----------------------------------------------|--------------|
| AZ                         | Phoenix, O'Donnell Assocs., S.W.             | 602-944-9542 |
| CA                         | San Diego, O'Donnell Assocs., Inc.           | 619-578-1645 |
| CA                         | San Jose, O'Donnell Assocs., Inc.            | 408-456-2950 |
| CA                         | Torrance, O'Donnell Assocs., Inc.            | 213-539-9664 |
| CO                         | Englewood, D.M. Harthun Assocs., Inc.        | 303-792-5050 |
| CO                         | Littleton, D.M. Harthun Assoc.               | 303-795-5545 |
| FL                         | Altamonte Springs, Kinetic Sls.              | 407-339-3855 |
| FL                         | Boca Raton, Kinetic Sls., Inc.               | 407-852-8595 |
| FL                         | Palm Harbor, Kinetic Sls.                    | 813-934-3768 |
| ID                         | Boise, Temco Northwest                       | 208-345-2051 |
| KS                         | Leawood, Thunderbird Tech Sls. & Svcs., Inc. | 913-642-7220 |
| KS                         | Wichita, Thunderbird Tech. Sls.              | 316-636-5018 |
| MN                         | St. Paul, Arko Sls.                          | 612-777-7454 |
| MO                         | Maryland Heights, Thunderbird Tech. Sls.     | 314-298-8940 |
| NM                         | Albuquerque, O'Donnell Assocs., S.W.         | 505-889-4522 |
| OR                         | Hillsboro, Temco Northwest                   | 503-645-2030 |
| TN                         | Franklin, D.L. Clark & Assoc., Inc.          | 615-790-7457 |
| TX                         | Dallas, J.M. Spell                           | 214-620-0040 |
| TX                         | Dallas, Materials Technlg. Co.               | 214-484-4677 |
| WA                         | Bothell, Temco Northwest                     | 206-481-6150 |
| WA                         | Spokane, Temco Northwest                     | 509-927-9392 |
| Can                        | Pickering, Ont., A.C. Simmonds & Sons, Ltd.  | 416-839-8041 |

**INSULATION COMPONENTS ASSOCIATES, INC.**, P.O. Box 4849, Downey, CA 90241, Tel: 310-861-7268, FAX: 310-861-7265

**INSULCAST**, Permagile Inds. Inc., 101 Commercial St., Plainview, NY 11803, Tel: 516-349-1100, 800-645-7546, TELEX: 221720 PERM UR, FAX: 516-349-1156; FSC No.: 13549; Empl: 37; Sls. Mgr.: William P. Flaim, Natl. Sls. Mgr.



**FAX: 206-284-3705**

**INTAQ KEY PANELS, GM Nameplate, Inc.**, 2040 15th Ave. W., Seattle, WA 98119, Tel: 206-284-2200; FSC No.: 9905; Empl: 350; Sls. Mgr.: Gerry Gallagher **B-1836-1837; C-1665**

| Local Sales Offices & Reps |                                       |              |
|----------------------------|---------------------------------------|--------------|
| AZ                         | Tempe, Elctm. Dev./Sls.               | 602-438-1547 |
| AL                         | Huntsville, JWL Assocs.               | 205-883-1712 |
| CA                         | San Diego, Omni                       | 619-268-9606 |
| CA                         | San Jose, G M California              | 408-435-1666 |
| CA                         | Irvine, Balzer-Wolf Assoc.            | 714-261-6877 |
| CO                         | Englewood, Delltron                   | 303-741-2122 |
| FL                         | Orlando, Comp. Sls.                   | 407-823-7480 |
| HI                         | Honolulu, Menchune Unlimited          | 808-737-3472 |
| ID                         | Eagle, GM/West                        | 208-939-7202 |
| IL                         | Elmhurst, Utronix                     | 708-834-1100 |
| IN                         | Zionsville, WK/Custom Engrd. Pts.     | 317-873-5626 |
| MI                         | Southfield, E&A Inds., Inc.           | 313-647-0330 |
| MN                         | Burnsville, Electromec Sls., Inc.     | 612-894-8200 |
| MO                         | St. Louis, Halpin D. Burke & Son      | 314-968-2727 |
| NH                         | Mt. Vernon, GM/Northeast              | 603-673-9737 |
| NJ                         | Pitman, Colrud Corp.                  | 609-589-5866 |
| NJ                         | West Caldwell, Grimm, Siegel & Assoc. | 201-575-9300 |
| NC                         | Charlotte, JWL Assocs.                | 704-541-5750 |
| OK                         | Ahron, Augnat Assocs.                 | 216-238-2499 |
| OR                         | Portland, GM-Portland                 | 503-223-9879 |
| PA                         | Robinson Township, Allied Entprs.     | 412-788-2992 |
| TX                         | Dallas, Comp. Technlg.                | 214-783-8831 |
| VA                         | Reston, Colrud Corp.                  | 703-904-0240 |
| WA                         | Bellevue, American Intl. Entprs.      | 206-455-4697 |
| EXP                        | Singapore, S&T Entprs.                | 065-745-9235 |
| Can                        | Calgary, Alb., Enerlec Sls. Ltd.      | 403-256-3627 |
| Can                        | Richmond B.C., Enerlec Sls. Ltd.      | 604-273-0882 |

**INTEC CONTROLS CORP.**, 55 West St., Walpole, MA 02081, Tel: 508-660-1221, FAX: 508-660-2374; Empl: 40; Sls. Mgr.: Gerard Feldesen; Dist. Mgr.: Gerard Feldesen

**INTEGRATED CIRCUITS INC. (ICI)**, See Interpoint Corporation

**INTEGRATED CIRCUIT SYSTEMS INC.**, PO Box 968, 2435 Blvd. of the Generals, Valley Forge, PA 19482-0968, Tel: 215-666-1900, FAX: 215-666-1099; Empl: 150; Sls. Mgr.: J. Black

**INTEGRATED DEVICE TECHNOLOGY, INC.**, 2975 Stender Way, Santa Clara, CA 95054-3090, Tel: 408-727-6116, TWX: 910-338-2070, FAX: 408-492-8674; FSC No.: 61772; Empl: 2090; Sls. Mgr.: Dan Lewis, VP; Dist. Mgr.: Bill Franciscovich

**INTEGRATED ENGINEERING SOFTWARE**, 347-435 Ellice Ave., Winnipeg, Man., Canada R3B 1Y6, Tel: 204-942-5636, FAX: 204-944-8010; Empl: 14; Sls. Mgr.: Bennetta Benson

**INTEGRATED MICROWAVE**, 3422 Tripp Ct., San Diego, CA 92121-1009, Tel: 619-259-2600, FAX: 619-755-8879; FSC No.: 60656; Empl: 75; Sls. Mgr.: Dennis R. Clark

**INTEGRATED POWER DESIGNS, INC.**, 300 Stewart Rd., Wilkes-Barre, PA 18706, Tel: 717-824-4666, FAX: 717-824-4843; Empl: 42; Sls. Mgr.: Steven Thompson **D-1747-1749**

| Local Sales Offices & Reps |                                   |              |
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| CA                         | Mountain View, Swanson Carlton    | 415-961-0565 |
| CO                         | Boulder, Aspreco                  | 303-442-6018 |
| FL                         | Land O'Lakes, A/J's Power Source  | 813-996-2583 |
| MD                         | Burtonsville, Chesapeake Technlg. | 301-236-0530 |
| MA                         | Wakefield, Howard Jappe Co.       | 617-245-9359 |
| MI                         | Brighton, Reprtronics             | 313-229-3066 |
| MN                         | Eagan Prairie, Professional Mktg. | 612-934-5939 |
| NJ                         | Madison, Venture Quest, Inc.      | 201-377-4922 |
| NY                         | Fairport, Hi-Tec Sls.             | 716-223-5922 |
| OH                         | Dayton, Electro-Mktg.             | 513-890-8322 |
| PA                         | Pipersville, Yax Assocs.          | 215-766-2100 |
| TX                         | Plano, G.W. Prods.                | 214-422-1746 |
| Can                        | Mississauga, Altus Technlg.       | 416-670-0783 |

**INTEGRATED SILICON SOLUTIONS INC.**, 680 Almaror Avenue, Sunnyvale, CA 94086, Tel: 408-733-4774, FAX: 408-245-4774

**INTEGRATED SYSTEMS, INC.**, 3260 Jay St., Santa Clara, CA 95054, Tel: 408-980-1500, FAX: 408-980-0400; Empl: 200; Sls. Mgr.: Dennis O'Donnell



**FAX: 516-420-0453**

**INTEGRATED TECHNOLOGIES SOLUTIONS INC.**, 262 A Eastern Pkwy, Farmingdale, NY 11735, Tel: 516-420-9401; Empl: 8; Sls. Mgr.: M. Lieber **D-2274-2275**



**Local Sales Offices & Reps**  
CA Chino, Deltatec Intl. Inc. .... 714-551-8546

**INTEGRITY TECHNOLOGY CORPORATION**, 1400 Coleman Ave., Ste. E15, Santa Clara, CA 95050, Tel: 408-262-8640, FAX: 408-262-1680; Empl: 127; *Sls. Mgr.*: Larry Young

**INTEK, INC.**, 751 Intek Way, Westerville, OH 43081, Tel: 614-895-0301, FAX: 614-895-0319; FSC No.: 6680; *Sls. Mgr.*: Robert Curry

**INTEL CORPORATION**, 3065 Bowers Ave., Santa Clara, CA 95051, Tel: 409-987-8080, TELEX: 34-6372, TWX: 910-338-0026

**INTELLIGENT INSTRUMENTATION**, A Burr-Brown Company, 1141 W. Grant Road, MS 131, Tucson, AZ 85705, Tel: 602-623-9801, FAX: 602-623-8965; *Sls. Mgr.*: Bill McGovern

**INTELLIGENT INTERFACES, INC.**, P.O. Box 1486, Stone Mountain, GA 30086, Tel: 404-381-9891, 1-800-842-0888; FSC No.: 0A4H9; Empl: 3; *Sls. Mgr.*: Robert E. Jarvis

**INTELLITECH**, 1300 Shiloh Rd., N.W., Kennesaw, GA 30144, Tel: 404-514-7999, FAX: 404-514-1285; Empl: 6; *Sls. Mgr.*: Sam Zamarripa

**INTELLUTION, INC.**, 315 Norwood Park South, Norwood, MA 02062, Tel: 617-769-8878, FAX: 617-769-1990; *Sls. Mgr.*: John Curtis; *Dist. Mgr.*: John Curtis

**INTERACTION SYSTEMS INC.**, 86 Coolidge Ave., Watertown, MA 02172, Tel: 617-923-6001, FAX: 617-923-2112 ..... **D-1097**

**Local Sales Offices & Reps**  
AL Huntsville, E.G. Holmes & Assocs. .... 205-859-4199  
FL Orlando, E.G. Holmes & Assocs. .... 407-281-0067  
GA Atlanta, E.G. Holmes & Assocs. .... 404-451-6161  
NC Apex, E.G. Holmes & Assocs. .... 919-387-1072

**INTERACTIVE CIRCUITS SYSTEMS LTD.**, 5430 Canotek Rd., Gloucester, Ont., Canada K1J 9G2, Tel: 613-749-9241, 1-800-267-9794, FAX: 613-749-9461; Empl: 20

**INTERACTIVE COMPUTER PRODUCTS, INC.**, 23482 Peralta, unit C, Laguna Hills, CA 92653, Tel: 714-770-5332, FAX: 714-770-8137; Empl: 20; *Sls. Mgr.*: Pat Cooper

**Local Sales Offices & Reps**  
MA Medfield, Nortech Engrg. Sls, Inc. .... 508-359-6063

**INTERCONNECT DEVICES, INC.**, 5101 Richland Ave., Kansas City, KS 66106, Tel: 913-342-5544, TELEX: 286767 IDIK UR, FAX: 913-342-7043; Empl: 150; *Sls. Mgr.*: Mike Richards; *Dist. Mgr.*: Carol Narr

**INTERCONNECT SPECIALTIES, INC.**, 2861-B Saturn St., Brea, CA 92621, Tel: 800-752-4777, 714-961-7955, FAX: 714-996-9537; Empl: 10; *Sls. Mgr.*: Diana Fitzpatrick

**INTERELECTRONICS CORP.**, Interelectronics Park, 550 U.S. Rte. 303, Congers, NY 10920, Tel: 914-EL8-8000; Empl: 82; *Sls. Mgr.*: M. H. Pintell; *Dist. Mgr.*: G. Sherwood ..... **D-1750**

**INTERFACE, INC.**, 7401 E. Butherus Dr., Scottsdale, AZ 85260, Tel: 602-948-5555, TELEX: 825-882, FAX: 602-948-1924; FSC No.: 32311; Empl: 85; *Sls. Mgr.*: Irv Wilson

**INTERFACE ENGINEERING INC.**, 300 Centre St., Holbrook, MA 02343, Tel: 617-986-2600, TELEX: 249-545, FAX: 617-986-8932; FSC No.: 14352; Empl: 25; *Sls. Mgr.*: Thomas Scanlon

**INTERFACE PRODUCTS, INC.**, 4630 North Ave., Oceanside, CA 92056, Tel: 619-945-0230, FAX: 619-945-0239; FSC No.: 55300; Empl: 75; *Sls. Mgr.*: William Lang

**INTERFACE TECHNOLOGY**, Dynatech Corp., 196 University Parkway, Pomona, CA 91768-4300, Tel: 714-595-6030, TELEX: 4945489, FAX: 714-595-7177; *Sls. Mgr.*: Lee Davis

**INTERFAN**, William J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-1203, FAX: 415-340-1670; Empl: 12; *Sls. Mgr.*: F. L. Nelson

**INTERGRAPH CORP.**, Advanced Processor Division, 2400 Geng Rd., Palo Alto, CA 94303, Tel: 415-494-8800, FAX: 415-856-9224; *Sls. Mgr.*: James Pierce; *Dist. Mgr.*: James Pierce, *Sls. Rep. Mgr.*

**INTERLOGIC INDUSTRIES**, 85 Marcus Dr., Melville, NY 11747-4294, Tel: 516-420-8111, FAX: 516-420-8007; Empl: 46; *Sls. Mgr.*: Bert Freifeld

**INTERLOOP**, 706 Charcot Ave., San Jose, CA 95131, Tel: 408-922-0520, FAX: 408-922-0545; Empl: 3

**INTER-MARKET**, 1946 Lehigh Ave., Glenview, IL 60025, Tel: 708-729-5330, FAX: 708-729-4849; FSC No.: 34165; Empl: 10; *Sls. Mgr.*: Phil Gardanier

**INTERMATIC**, Intermatic Plaza, Spring Grove, IL 60081, Tel: 815-675-2321, TELEX: 25-265, FAX: 815-675-2112; Empl: 1000

**INTERMETRICS MICROSYSTEMS SOFTWARE, INC.**, 733 Concord Ave., Cambridge, MA 02138, Tel: 617-661-0072, 800-356-3594, FAX: 617-868-2843; Empl: 6006; *Sls. Mgr.*: Harry Erickson

**INTER METRO INDUSTRIES CORP.**, North Washington St., Wilkes-Barre, PA 18705, Tel: 717-825-2741, TELEX: 831-833, FAX: 717-825-2852

**INTERNATIONAL CMOS TECHNOLOGY**, 2123 Ringwood Ave., San Jose, CA 95131, Tel: 408-434-0678, TWX: 910-997-1531

**INTERNATIONAL COMPONENTS CORP.**, 105 Maxess Rd., Melville, NY 11747, Tel: 516-293-1500, TELEX: 221576, FAX: 516-293-4983; Empl: 100; *Sls. Mgr.*: Ken Reed ..... **D-1033-1038**

**Local Sales Offices & Reps**  
AL Huntsville, CIMS ..... 205-881-6699  
AZ Phoenix, Santino Mktg, Inc. .... 602-866-2321  
AR Mabelville, Erickson Sls. .... 501-455-0618  
CA Campbell, Senah ..... 408-374-1031  
CA Laguna Niguel, Aktron Sls. .... 714-496-5057  
CO Littleton, Romulus Elctms. .... 303-770-4888  
IL Arlington Heights, MJ Petersen ..... 708-577-8200  
IN Carmel, Current Elctrn. Mktg. .... 317-844-1770  
IA Cedar Rapids, Delltron Co. .... 319-393-0075  
LA Chalmette, Erickson Sls, Inc. .... 504-271-1976  
MA Framingham, Stone Comp. Sls. .... 508-875-3226  
MD Near Meadow, Stone Comp. Sls. .... 413-567-1019  
MI Brighton, AP Assocs. .... 313-229-6550  
MN Minneapolis, Intl. Elctms. Inc. .... 612-571-0000  
MO Florissant, Delltron Co. .... 314-839-0033  
MO Kansas City, Delltron Co. .... 816-436-6445  
NJ Tenafly, Michel Assocs. .... 201-894-8964  
NY Melville, ICO ..... 516-293-1500  
NY N. Syracuse, Entec Grp. Inc. .... 315-458-7936  
NC Raleigh, Spears ..... 919-790-7606  
OH Cincinnati, Bob Gilbert Assocs. .... 513-574-1932  
OR Portland, Adapt E2 ..... 503-297-2151  
TX Dallas, Erickson Sls. Inc. .... 214-739-5833  
VA Lynchburg, James A. Griffin Co. .... 804-237-0598  
WA Bellevue, Adapt E2 ..... 206-637-0302  
Can Markham, Ont., Kellock Sls. & Mktg. Ltd. .... 416-471-0202

**Local Distributors**  
CA Fremont, Kea Elctms. .... 510-651-2600  
CA San Diego, Tauber Elctms. Corp. .... 619-274-7242  
CT Bridgeport, Park Distr. .... 203-366-7200  
CT East Haven, JV Elctms. .... 203-469-2321  
FL FL Lauderdale, Bros. Elctms. .... 305-561-6700  
FL FL Lauderdale, National Resistor Co. .... 305-772-4500  
GA Norcross, Applied Power, Inc. .... 404-263-0421  
IL Bensenville, Voyager Elctms. Corp. .... 312-860-1300  
IL Wheeling, Hawk Elctms, Inc. .... 708-459-4030  
IN Indianapolis, RM Elctms. .... 317-291-7110  
IA Cedar Rapids, Dee Elctms. .... 319-365-7551  
MA Chelmsford, Shelly Ragon ..... 508-250-9666  
MA Middleboro, Glynn Elctms. .... 508-947-4262  
MA Sharon, Adcou Passive Comps. .... 617-884-8123  
MI Grand Rapids, R M Elctms. .... 616-531-9300  
MI Southfield, R M Elctms. .... 313-262-1582  
MN Eden Prairie, Cassidy Elctms. .... 612-944-0100  
MN Fridley, Voyager Elctms. Corp. .... 612-571-7766  
MN Minneapolis, Cassidy Elctms. .... 612-835-7746  
MN New Brighton, Chris Elctms. .... 612-631-2647  
MO St. Louis, Beckwith Elctms. .... 314-343-6463  
NJ Bellmar, Mid-Atlantic Elctms. .... 609-931-5303  
NJ Clifton, Vantage Comps. .... 201-667-1840  
NJ Rockaway, Tonar Inds. .... 201-586-9000  
NJ Sparta, Instruments & Equip. .... 201-729-4293  
NY Commack, Vantage Comps. Corp. .... 516-543-2000  
OH Columbus, Thompson Elctms. .... 614-228-6191  
PA Philadelphia, Mur Tronics ..... 215-632-4330  
TN Hixson, Techni-Tronics ..... 615-842-0514  
TX Dallas, Wholesale Elctms. .... 214-969-9400  
TX Fort Worth, Allied Elctms. .... 817-336-7414  
TX Ft. Worth, C & W Supp. Co. .... 817-831-0395  
WA Seattle, Vesco ..... 206-575-3607

**INTERNATIONAL COMPONENTS CORP.**, 420 North May St., Chicago, IL 60622, Tel: 312-829-7101, FAX: 312-829-0422; Empl: 92; *Sls. Mgr.*: David Schmidt

**INTERNATIONAL CONFIGURATIONS, INC.**, 7 Moody Rd., P.O. Box 3374, Enfield, CT 06082, Tel: 203-749-6380, FAX: 203-749-2985; FSC No.: 62484; Empl: 4-6; *Sls. Mgr.*: Ov. L. Baldwin ..... **C-1353**



**FAX: 405-235-1904, 1-800-322-9426**

**INTERNATIONAL CRYSTAL MFG.**, 10 N. Lee, P.O. Box 26330, Oklahoma City, OK 73126-0330, Tel: 405-236-3741, 1-800-725-1426; Empl: 100; *Sls. Mgr.*: Michael Eastman; *Dist. Mgr.*: Michael Eastman ..... **A-1409**

**INTERNATIONAL DATA AQUITION & CONTROL, INC.**, Box 397, Rte. 101 The Meeting Place, Amherst, NH 03031, Tel: 603-673-0765, FAX: 603-673-0767; Empl: 7; *Sls. Mgr.*: Gene Calvano; *Dist. Mgr.*: Gerry Klein

**INTERNATIONAL DIODE**, 229 Cleveland Ave., Harrison, NJ 07029, Tel: 201-482-6518, FAX: 201-482-4958; Empl: 9; *Sls. Mgr.*: Lee Toong

**INTERNATIONAL ELECTRO MAGNETICS, INC.**, 350 N. Eric Dr., Palatine, IL 60067, Tel: 708-358-4622, FAX: 708-358-4623; Empl: 6; *Sls. Mgr.*: T. Pretto ..... **D-1039**

**Local Sales Offices & Reps**  
CA Valley Center, Team Sls. .... 619-749-2033  
MA Still River, Still River Technlg. .... 508-456-3369

**INTERNATIONAL EYELETS, INC.**, 5674 El Camino Real No. L, Carlsbad, CA 92008-9812, Tel: 619-931-1466, 1-800-333-9353, FAX: 619-931-8667; FSC No.: 5325; Empl: 5; *Sls. Mgr.*: Sally Dalrymple

**INTERNATIONAL INSTRUMENTATION, INC.**, 2282 Townsgate Rd., Westlake Vlg., CA 91361, Tel: 805-495-7673, FAX: 805-379-0701; Empl: 32; *Dist. Mgr.*: John Mesenbring

**INTERNATIONAL INSTRUMENTS, A PRIME TECHNOLOGY COMPANY**, Twin Lakes Rd., P.O. Box 185, N. Branford, CT 06471, Tel: 203-481-5721, TWX: 710-452-3092, FAX: 203-481-8937; Empl: 150; *Dist. Mgr.*: Keith MacDowall ..... **D-1354**

**Local Sales Offices & Reps**  
CO Golden, J. F. Hurlbut Co. .... 303-279-7796  
CT N. Branford, II Consult Factory ..... 203-481-5721  
FL Lakeland, Munday Sls. Co. .... 813-858-5606  
KS Olathe, Tech. Sls. Assoc. .... 913-829-2800  
MO Ferguson, Tech. Sls. Assocs. .... 314-725-5361  
OH Westlake, Advanced Tech. Assocs. .... 216-835-5050  
PA Malvern, Stitzer Assocs. .... 215-644-5500

**Local Distributors**  
CA Los Angeles, E.I.L. Instrs., Inc. .... 213-685-7020  
CA Palo Alto, Metermaster ..... 415-960-8500  
CA San Diego, Metermaster ..... 619-560-4841  
CA Sunnyvale, E.I.L. Instrs. .... 408-245-4320  
CO Denver, E.I.L. Instrs., Inc. .... 303-534-4160

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| CT | Middletown, E.L. Instrs., Inc.          | 203-346-6646 |
| FL | Palm Bay, E.L. Instrs., Inc.            | 407-725-8300 |
| GA | Kennesaw, CMI Meternaster               | 404-425-8902 |
| IL | Bridgeview, E.L. Instrs., Inc.          | 312-430-2292 |
| IL | Glendale Heights, CMI Meternaster       | 312-351-4554 |
| IN | Indianapolis, E.L. Instrs., Inc.        | 317-545-1373 |
| KY | Louisville, E.L. Instrs., Inc.          | 502-454-3420 |
| LA | New Orleans, Industrial Instr. Works    | 504-733-8355 |
| MD | Sparks, E.L. Instrs.                    | 301-771-4800 |
| MA | Burlington, E.L. Instrs.                | 617-272-9450 |
| MA | Southbridge, CMI-Meternaster            | 508-765-1676 |
| MI | Ferdand, Ram Meter Inc.                 | 313-398-6767 |
| MN | Minneapolis, Process Meas. Co.          | 612-544-0035 |
| NJ | Pensauken, E.L. Instrs., Inc.           | 609-488-0474 |
| NY | Clarence, E.L. Instrs.                  | 716-634-8500 |
| NY | Hauapauge, E.L. Instrs., Inc.           | 516-231-6333 |
| NY | Long Island City, Meternod Instr. Corp. |              |

|    |                                      |              |
|----|--------------------------------------|--------------|
|    |                                      | 718-726-4850 |
| NY | Rochester, E.L. Instrs.              | 716-586-8251 |
| NC | Charlotte, E.L. Instrs.              | 704-376-2237 |
| OH | Cleveland, Process Measurement Corp. |              |

|     |                                            |              |
|-----|--------------------------------------------|--------------|
|     |                                            | 216-587-3600 |
| OH  | Dayton, E.L. Instrs., Inc.                 | 513-435-2134 |
| PA  | Pittsburgh, E.L. Instrs.                   | 412-823-2255 |
| TX  | Dallas, E.L. Instrs., Inc.                 | 214-357-0297 |
| TX  | Garland, CMI Meternaster                   | 214-271-5671 |
| TX  | Houston, CMI Meternaster                   | 713-644-1631 |
| TX  | Houston, E.L. Instrs., Inc.                | 713-271-3100 |
| VA  | Norfolk, E.L. Instrs., Inc.                | 804-855-9553 |
| VA  | Springfield, E.L. Instrs., Inc.            | 703-569-2611 |
| WA  | Redmond, E.L. Instrs., Inc.                | 206-882-3222 |
| Can | Longueuil, Que., E.L. Instrs.              | 514-651-4844 |
| Can | Mississauga, Toronto, E.L. Instrs.         | 416-624-6660 |
| Can | Toronto, Ont., Versatile Measuring Instrs. |              |

|    |                        |              |
|----|------------------------|--------------|
|    |                        | 416-239-8161 |
| AZ | Tempe, CMI Meternaster | 603-431-0880 |

**INTERNATIONAL LIGHT**, 17 Graf Rd., Newburyport, MA 01950-4092, Tel: 508-465-5923, TELEX: 94-7135, FAX: 508-462-0759; Empl: 19; *Sls. Mgr.*: Bob Angelo; *Dist. Mgr.*: Bob Angelo

**INTERNATIONAL MACHINE & TOOL CORP.**, 115 Maple St., Warwick, RI 02888, Tel: 401-467-6905, FAX: 401-467-5885; Empl: 35; *Sls. Mgr.*: Peter S. Piscopio

**INTERNATIONAL MANUFACTURING SERVICES**, 50 Schoolhouse La., Portsmouth, RI 02871-2418, Tel: 401-683-9700, FAX: 401-683-5571; FSC No.: 45177; Empl: 32; *Sls. Mgr.*: William Hall **A-1944-1945**

|                                       |                                     |              |
|---------------------------------------|-------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                     |              |
| FL                                    | Satellite Bch., BWS Microwave Mktg. |              |
|                                       |                                     | 407-773-6170 |
| GA                                    | Marietta, BWS Microwave Mktg.       | 404-499-7492 |
| MA                                    | Attleboro, Antex-Overseas Sls.      | 508-699-6911 |
| PA                                    | Downingtown, Grasso Tech. Sls.      | 215-458-8967 |
| TX                                    | Double Oak, Carolyn Bender Assoc.   | 214-539-9461 |

**INTERNATIONAL MICROELECTRONIC PRODUCTS**, 2830 N. First St., San Jose, CA 95134, Tel: 408-434-1489, FAX: 408-434-0335

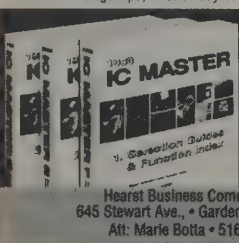
**INTERNATIONAL MICROELECTRONICS, P.O. Box** 170415, Arlington, TX 76003, Tel: 817-473-1730, FAX: 817-473-0525

**INTERNATIONAL MICROSYSTEMS**, 521 Valley Way, Milpitas, CA 95035, Tel: 408-942-1001, FAX: 408-942-1051; Empl: 10; *Sls. Mgr.*: Peter Schade

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|                           |                                        |              |
|---------------------------|----------------------------------------|--------------|
| <i>Local Distributors</i> |                                        |              |
| CA                        | Santa Ana, Tech-Ser, Inc.              | 408-496-1004 |
| CA                        | Torrance, Tech-Ser, Inc.               | 213-370-7200 |
| CO                        | Aurora, R&R Instrmn.                   | 303-340-8728 |
| IL                        | Chicago, Data Elctms.                  | 312-283-0300 |
| MA                        | Waltham, Calibron/Burton Instr.        | 617-894-6440 |
| MO                        | Manchester, Universal Precision Instr. |              |
|                           |                                        | 314-394-4693 |
| NY                        | Rochester, Masline Elctms.             | 716-546-5373 |
| TX                        | Dallas, Textrol Inc.                   | 214-637-6262 |

**INTERNATIONAL POLARIZER, INC.**, 320 Elm Street, Marlborough, MA 01752, Tel: 508-481-7495, FAX: 508-481-0222; Empl: 10; *Sls. Mgr.*: Donald Rickert

**INTERNATIONAL POWER DC POWER SUPPLIES, INC.**, 360 Bernoulli Circle, Oxnard, CA 93030-5167, Tel: 805-981-1188, FAX: 805-981-1184; Empl: 25; *Sls. Mgr.*: Ron Ostlund



**FAX: 617-782-7416**

**INTERNATIONAL POWER DEVICES INC.**, 20 Linden St., Boston, MA 02134, Tel: 617-782-3331; Empl: 150; *Sls. Mgr.*: Russell Mitnik; *Dist. Mgr.*: Cathleen Joyce **D-1751-1755**

|                                       |                                              |              |
|---------------------------------------|----------------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                              |              |
| AL                                    | Huntsville, Macro Mktg.                      | 205-883-9630 |
| AZ                                    | Chandler, ELEC-COM                           | 602-893-2930 |
| CA                                    | Corona, Diane Ward                           | 909-279-2838 |
| CA                                    | San Ramon, Synergy Sls.                      | 510-830-0829 |
| CO                                    | Denver, Motion Technlg.                      | 303-757-3003 |
| FL                                    | Maitland, Hawkins Fredrickson Assocs.        |              |
|                                       |                                              | 407-831-2474 |
| FL                                    | Pompano Beach, Hawkins Fredrickson Assoc.    |              |
|                                       |                                              | 305-979-0330 |
| FL                                    | Tampa, Hawkins Fredrickson Assoc.            |              |
|                                       |                                              | 813-651-1063 |
| GA                                    | Norcross, Macro Mktg.                        | 404-662-5580 |
| IL                                    | Chicago, M. Gottlieb Assocs.                 | 312-775-8620 |
| IA                                    | Cedar Rapids, Lorenz Sls.                    | 319-377-4666 |
| MA                                    | Lexington, Kanan Technlgs.                   | 617-861-7300 |
| MN                                    | Minneapolis, Stan Clothier Co.               | 612-944-6904 |
| NJ                                    | Glen Gardner, Daner-Hayes                    | 800-225-8760 |
| NJ                                    | Haddonfield, Sunday O'Brien                  | 609-429-4013 |
| NY                                    | Massapequa, Daner-Hayes                      | 800-225-8760 |
| NY                                    | Rochester, Indl. Tech. Sls.                  | 716-872-1628 |
| NC                                    | Raleigh, C-Tech Sls.                         | 919-782-8100 |
| OH                                    | Dayton, Electro-Mktg., Inc.                  | 800-338-6856 |
| OR                                    | Beaverton, Pacific Mktg. Specialists Inc.    |              |
|                                       |                                              | 503-641-9373 |
| TX                                    | Dallas, Seaton Corp.                         | 214-980-9860 |
| TX                                    | Houston, Seaton Corp.                        | 713-731-2649 |
| VA                                    | Richmond, Glascock Assocs.                   | 804-798-2125 |
| Can                                   | Kanata, Ont., Canadian Mktg. Technlg.        |              |
|                                       |                                              | 613-591-9555 |
| Can                                   | Mississauga, Ont., Canadian Mktg. Technlg.   |              |
|                                       |                                              | 416-612-0900 |
| Can                                   | Pointe Claire, Que., Canadian Mktg. Technlg. |              |
|                                       |                                              | 514-694-6088 |

|                                       |                                          |              |
|---------------------------------------|------------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                          |              |
| AL                                    | Huntsville, Microcta                     | 205-539-8476 |
| AZ                                    | Scottsdale, Power Up Elctms.             | 602-955-1105 |
| CA                                    | Dana Point, Electro Venture South        | 714-496-5225 |
| CA                                    | Los Altos Hills, H B Mktg.               | 415-941-4080 |
| FL                                    | Palm Beach Gardens, Graham Assocs., Inc. |              |
|                                       |                                          | 407-622-4049 |

|    |                                              |              |
|----|----------------------------------------------|--------------|
| IL | Arlington Hgts., Phoenix Elctm. Sls.         | 708-394-4422 |
| KS | Olathe, Tech. Sls. Assocs.                   | 913-829-2800 |
| MD | Hunt Valley, Eagle Sls. Corp.                | 410-666-3930 |
| MA | Bellingham, OEM Mktg. & Sls.                 | 508-528-4983 |
| MI | Brighton, A P Assocs.                        | 313-229-6550 |
| MN | Minneapolis, Engineering Prods. Assoc., Inc. |              |
|    |                                              | 612-835-9022 |
| MO | St. Louis, Tech. Sls. Assocs.                | 314-521-2044 |
| NH | Salem, OEM Mktg. & Sls.                      | 603-893-0009 |
| NY | Jericho, J-Square Mktg.                      | 516-935-3200 |
| NY | Manlius, Smith Tech. Sls.                    | 315-682-1777 |
| NC | Winston-Salem, Microcta                      | 919-722-9445 |
| OH | Cincinnati, KCH Co.                          | 513-931-1686 |
| OR | Portland, Caruso & Camelleri Assocs.         |              |
|    |                                              | 503-246-5439 |
| PA | Montgomeryville, Eastern Sci. Mktg.          | 215-368-4570 |
| TX | Richardson, Jim D. Gray & Assocs.            | 214-699-9976 |
| UT | Ogden, Taylor Mktg.                          | 801-546-9570 |
| WA | Bellevue, Caruso & Camelleri Assoc.          |              |
|    |                                              | 206-455-8811 |
| WI | Brookfield, McMahon Sls., Inc.               | 414-782-3335 |

|     |                                          |              |
|-----|------------------------------------------|--------------|
| GA  | Norcross, Applied Power, Inc.            | 404-263-0421 |
| GA  | Norcross, Future Elctms., Corp.          | 404-441-7676 |
| IL  | Elk Grove Village, Bell Inds.            | 708-640-1910 |
| IL  | Hoffman Estates, Future Electronics      | 708-882-1255 |
| IL  | Roselle, Foresight Elctms.               | 708-980-9890 |
| IN  | Fort Wayne, Bell Inds.                   | 219-423-3422 |
| IN  | Indianapolis, Bell Inds.                 | 317-875-8200 |
| MD  | Columbia, Bell Inds.                     | 410-290-5100 |
| MD  | Columbia, Future Elctms., Corp.          | 410-290-0600 |
| MA  | Andover, Bell Inds.                      | 508-474-8880 |
| MA  | Bolton, Future Electronics               | 508-779-3000 |
| MI  | Brighton, Applied Power, Inc.            | 313-227-3604 |
| MI  | Detroit, Future Elctms., Corp.           | 313-261-5270 |
| MI  | Livonia, L.W.C. Distributors             | 313-464-7700 |
| MN  | Eden Prairie, Future Elctms., Corp.      | 612-944-2200 |
| MO  | St. Louis, Future Elctms., Corp.         | 314-469-6805 |
| NH  | Windham, Orion Inds.                     | 603-437-4446 |
| NJ  | Marlton, Future Elctms., Corp.           | 609-596-4080 |
| NJ  | Parsippany, Future Elctms.               | 201-299-0400 |
| NM  | Albuquerque, Bell Inds.                  | 505-292-2700 |
| NY  | Hauapauge, Future Elctms., Corp.         | 516-234-4000 |
| NY  | Rochester, Future Elctms., Corp.         | 716-272-1120 |
| NY  | Syracuse, Future Elctms., Corp.          | 315-451-2371 |
| NC  | Charlotte, Future Elctms., Corp.         | 704-455-9030 |
| NC  | Raleigh, Future Elctms., Corp.           | 919-790-7111 |
| OH  | Dayton, Bell Inds.                       | 513-435-8660 |
| OH  | Mayfield Heights, Future Elctms.         | 216-449-6996 |
| OR  | Beaverton, Bell Inds.                    | 503-644-3444 |
| OR  | Beaverton, Future Elctms., Corp.         | 503-645-9454 |
| PA  | Philadelphia, Future Elctms., Corp.      | 609-778-7600 |
| PA  | Trevese, Bell Inds.                      | 215-953-2800 |
| TX  | Dallas, Future Elctms., Corp.            | 214-437-2437 |
| TX  | Dallas, Seaton Elctms.                   | 214-980-9860 |
| TX  | Houston, Future Elctms., Corp.           | 713-556-8696 |
| TX  | Houston, Seaton Elctms.                  | 713-731-2649 |
| UT  | Midvale, Bell Inds.                      | 801-561-9691 |
| UT  | Salt Lake City, Future Elctms., Corp.    | 801-972-8489 |
| WA  | Bothell, Future Elctms., Corp.           | 206-489-3400 |
| WI  | Waukesha, Bell Inds.                     | 414-547-8879 |
| WI  | Waukesha, Future Elctms., Corp.          | 414-786-1884 |
| Can | Calgary, Alb., Future Elctms., Corp.     | 403-250-5550 |
| Can | Edmonton, Alb., Future Elctms., Corp.    |              |
|     |                                          | 403-438-2858 |
| Can | Mississauga, Future Electronics          | 416-612-9200 |
| Can | Montreal, Que., Future Elctms., Corp.    | 514-694-7710 |
| Can | Ottawa, Ont., Future Elctms., Corp.      | 613-820-8313 |
| Can | Quebec City, Que., Future Elctms., Corp. |              |
|     |                                          | 418-877-6666 |
| Can | Vancouver, B.C., Future Elctms., Corp.   |              |
|     |                                          | 604-294-1166 |

**INTERNATIONAL POWER MACHINES**, 2975 Miller Park North, Garland, TX 75042, Tel: 800-527-1208, FAX: 214-494-2690; Empl: 200; *Sls. Mgr.*: Barry Papermaster, Mktg. VP

## International Power Sources, Inc.

**FAX: 508-879-8669**

**INTERNATIONAL POWER SOURCES, INC.**, 200 Butterfield Dr., Ashland, MA 01721, Tel: 508-881-7434 **D-2110-2111**

|                                       |                                              |              |
|---------------------------------------|----------------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                              |              |
| AL                                    | Huntsville, Microcta                         | 205-539-8476 |
| AZ                                    | Scottsdale, Power Up Elctms.                 | 602-955-1105 |
| CA                                    | Dana Point, Electro Venture South            | 714-496-5225 |
| CA                                    | Los Altos Hills, H B Mktg.                   | 415-941-4080 |
| FL                                    | Palm Beach Gardens, Graham Assocs., Inc.     |              |
|                                       |                                              | 407-622-4049 |
| IL                                    | Arlington Hgts., Phoenix Elctm. Sls.         | 708-394-4422 |
| KS                                    | Olathe, Tech. Sls. Assocs.                   | 913-829-2800 |
| MD                                    | Hunt Valley, Eagle Sls. Corp.                | 410-666-3930 |
| MA                                    | Bellingham, OEM Mktg. & Sls.                 | 508-528-4983 |
| MI                                    | Brighton, A P Assocs.                        | 313-229-6550 |
| MN                                    | Minneapolis, Engineering Prods. Assoc., Inc. |              |
|                                       |                                              | 612-835-9022 |
| MO                                    | St. Louis, Tech. Sls. Assocs.                | 314-521-2044 |
| NH                                    | Salem, OEM Mktg. & Sls.                      | 603-893-0009 |
| NY                                    | Jericho, J-Square Mktg.                      | 516-935-3200 |
| NY                                    | Manlius, Smith Tech. Sls.                    | 315-682-1777 |
| NC                                    | Winston-Salem, Microcta                      | 919-722-9445 |
| OH                                    | Cincinnati, KCH Co.                          | 513-931-1686 |
| OR                                    | Portland, Caruso & Camelleri Assocs.         |              |
|                                       |                                              | 503-246-5439 |
| PA                                    | Montgomeryville, Eastern Sci. Mktg.          | 215-368-4570 |
| TX                                    | Richardson, Jim D. Gray & Assocs.            | 214-699-9976 |
| UT                                    | Ogden, Taylor Mktg.                          | 801-546-9570 |
| WA                                    | Bellevue, Caruso & Camelleri Assoc.          |              |
|                                       |                                              | 206-455-8811 |
| WI                                    | Brookfield, McMahon Sls., Inc.               | 414-782-3335 |



## Local Distributors

|    |                               |              |
|----|-------------------------------|--------------|
| CA | Redwood City, HdB Elctms.     | 415-368-1388 |
| GA | Norcross, Applied Power, Inc. | 404-263-0421 |
| MI | Brighton, Applied Power, Inc. | 313-227-3604 |
| NH | Windham, Orion Inds., Inc.    | 603-437-4446 |
| TX | Stafford, Southwest Elctms.   | 713-240-4000 |
| TX | Tomball, Wofford Elctms. Inc. | 713-351-2255 |

# International IOR Rectifier

**FAX: 310-322-3332**

**INTERNATIONAL RECTIFIER CORP.**, 233 Kansas St., El Segundo, CA 90245, Tel: 310-322-3331; Empl: 2400; Sls. Mgr: Curtis Jones, V.P.; Dist. Mgr: Don Prescott, V.P. **B-1526**

## Local Sales Offices &amp; Reps

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AL  | Huntsville, Montgomery Mktg. Inc.        | 205-830-0498 |
| AZ  | Phoenix, Sun State Tech. Sls.            | 602-220-0595 |
| CA  | Fair Oaks, Brooks Tech. Grp.             | 916-965-3255 |
| CA  | Gilroy, Intl. Rectifier                  | 408-848-8467 |
| CA  | Mtn. View, Brooks Tech. Grp.             | 415-960-3880 |
| CA  | San Diego, Harvey King, Inc.             | 619-695-9300 |
| CA  | Westlake Village, First Rep              | 805-373-0887 |
| CO  | Englewood, Thorson Rocky Mountain, Inc.  | 303-773-6300 |
| CT  | Fairfield, N.R.G. Ltd., Inc.             | 203-384-1112 |
| FL  | Altamonte Springs, Kinetic Sls., Inc.    | 407-339-8855 |
| FL  | Kissimmee, Intl. Rectifier               | 407-933-2383 |
| GA  | Norcross, Montgomery Mktg. Inc.          | 404-447-6124 |
| IL  | Rolling Meadows, International Rectifier | 708-934-0020 |
| IL  | Rolling Meadows, Phase II Mktg., Inc.    | 708-806-1330 |
| IN  | Carmel, Tech. Mktg. Corp.                | 317-844-8462 |
| IN  | Ft. Wayne, Tech. Mktg. Corp.             | 219-432-5553 |
| IN  | Kokomo, Tech. Mktg. Corp.                | 317-459-5152 |
| KY  | Louisville, Tech. Mktg. Corp.            | 502-245-7411 |
| MA  | Burlington, Nova Sls., Inc.              | 617-272-5221 |
| MA  | Tewksbury, A/D Sls., Inc.                | 508-851-5400 |
| MI  | Farmington Hills, Luebbe Sls.            | 313-489-8828 |
| MN  | Edina, Mel Foster Tech. Sls.             | 612-941-9790 |
| MO  | Bridgeton, Hitec Central, Inc.           | 314-291-5920 |
| MO  | Independence, Hitec Central, Inc.        | 816-796-6684 |
| NJ  | W. Caldwell, Tech. Mktg. Grp.            | 201-226-3300 |
| NM  | Albuquerque, Repronix Ltd.               | 505-292-1718 |
| NY  | Bohemia, Intl. Rectifier                 | 516-244-8047 |
| NY  | E. Syracuse, Nycorn, Inc.                | 315-437-8343 |
| NY  | Fishkill, Intl. Rectifier                | 914-896-4262 |
| NY  | Melville, Tech. Mktg. Grp.               | 516-351-8833 |
| NY  | Burlington, Intl. Rectifier              | 919-584-0340 |
| NC  | Cary, Montgomery Mktg. Inc.              | 919-467-6319 |
| NC  | Raleigh, Montgomery Mktg. Inc.           | 919-851-0010 |
| OH  | Cincinnati, Luebbe Sls. Co.              | 513-530-0600 |
| OH  | Dayton, Luebbe Sls. Co.                  | 513-438-0490 |
| OH  | Northfield, Intl. Rectifier              | 216-467-0852 |
| OH  | Westlake, Luebbe Sls. Co.                | 216-899-0071 |
| OR  | Beaverton, Electra Tech. Sls., Inc.      | 503-643-5074 |
| PA  | Boothwyn, Intl. Rectifier                | 215-494-5080 |
| PA  | Broomall, L. D. Lowery, Inc.             | 215-356-5300 |
| PA  | Pittsburgh, Luebbe Sls. Co.              | 412-364-0490 |
| TX  | Austin, BP Sls.                          | 512-346-9186 |
| TX  | Houston, BP Sls.                         | 713-782-4144 |
| TX  | Richardson, BP Sls.                      | 214-234-8438 |
| UT  | Salt Lake City, Thorson Rocky Mtn., Inc. | 801-942-1683 |
| WA  | Kirkland, Electra Tech. Sls., Inc.       | 206-821-7442 |
| WI  | Brookfield, International Rectifier      | 414-784-2480 |
| WI  | Wauwatosa, Phase II Mktg., Inc.          | 414-771-9986 |
| Can | Markham, Ont., Intl. Rectifier           | 416-475-1897 |

**INTERNATIONAL RESISTIVE COMPANY**, P.O. Box 1860, Boone, NC 28607, Tel: 704-264-8861, TELEX: 46-9902, FAX: 704-264-8865; Empl: 1700; Sls. Mgr: Hugh Bolen; Dist. Mgr: Hugh Bolen

**INTERNATIONAL RESOURCE SVCS.**, 7792 N.W. 72nd Ave., Miami, FL 33166, Tel: 305-884-2924, FAX: 305-885-3127; Empl: 5; Sls. Mgr: Richard L. Winn

**INTERNATIONAL SENSOR SYSTEMS, INC.**, Aurora Industrial Pk., Box 345, Aurora, NE 68818, Tel: 402-694-6111, FAX: 402-694-6180; Empl: 45; Sls. Mgr: Wayne Roblee **A-1704-1705**

## Local Sales Offices &amp; Reps

|    |                                 |              |
|----|---------------------------------|--------------|
| AZ | Phoenix, Toward Engrg.          | 602-955-3193 |
| CA | Mission Viejo, EAB Assocs. Inc. | 714-859-7701 |
| CO | Longmont, Tri-Tech Sls.         | 303-440-7862 |
| IL | Lemont, Trend Tronics, Inc.     | 708-972-1166 |
| MD | Laurel, CSDS                    | 301-953-7884 |
| MA | Situate, Olsen Tech Sls. Inc.   | 617-545-5101 |

|    |                               |              |
|----|-------------------------------|--------------|
| MI | Midford, Elctm. Comp. Sls.    | 313-360-3790 |
| MN | Elk River, Ertech, Inc.       | 612-441-0602 |
| NE | Omaha, IONEB                  | 402-895-4431 |
| NJ | Manalapan, DMR Mktg.          | 908-303-0510 |
| NC | Summerfield, Harrington Inds. | 919-643-9293 |
| OR | Portland, Elctm. Engrg. Sls.  | 503-639-3978 |
| PA | Southampton, Campbell Assocs. | 215-322-6630 |
| TN | McMinnville, B & D Mktg.      | 615-473-7155 |
| TX | Ft. Worth, Merlin Elctms.     | 817-429-4420 |

**INTERNATIONAL SENSOR TECHNOLOGY**, 17771 Fitch St., Irvine, CA 92714, Tel: 714-863-9999, FAX: 714-474-7417; Sls. Mgr: Jack McCann

**INTERNATIONAL TECHNOLOGIES, INC.**, 68 Albany Rd., Warwick, RI 02888, Tel: 401-781-5595, FAX: 401-467-5885; Empl: 15; Sls. Mgr: R.W. Elsdorfer

**INTERNATIONAL TELECOMMUNICATIONS COMPONENTS, INC.**, 94 B East Jeffry Blvd., Deer Park, NY 11729, Tel: 516-243-1444, FAX: 516-595-9160; FSC No.: 0E6J8; Empl: 10; Sls. Mgr: Lloyd Estin

**INTERNATIONAL TEST INSTRUMENTS**, 3002 Dow Ave., Ste. 110, Tustin, CA 92680, Tel: 714-573-9000, FAX: 714-573-9500; Empl: 10; Sls. Mgr: Hank Pselos

**INTERNATIONAL TRANSDUCER CORP.**, Channel Technologies, Inc., 869 Ward Dr., Santa Barbara, CA 93111, Tel: 805-683-2575, TELEX: 658 495, FAX: 805-967-8199; FSC No.: ID 532; Empl: 65; Sls. Mgr: Christine M. Bashforth, Mktg. Mgr.

**INTEROPTICS**, Purdy Group, 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-7727, TELEX: 677-1439 (PURDY UW), FAX: 415-340-1670; Empl: 35

# interpoint

**FAX: 206-882-1990**

**INTERPOINT CORPORATION**, 10301 Willows Roads, P.O. Box 97005, Redmond, WA 98052, Tel: 206-882-3100; FSC No.: 50821; Empl: 500; Sls. Mgr: D.T. Baughman, Dir. of Sls. **A-1706-1707; D-2112-2123**

## Local Sales Offices &amp; Reps

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AL  | Huntsville, Novus Grp.                | 205-534-0044 |
| AZ  | Tempe, Gassner & Clark                | 602-968-9037 |
| TX  | Irving, Kite Elctm. Sls.              | 214-986-0321 |
| CA  | Los Altos, Cain-White & Co.           | 415-948-6533 |
|     |                                       | 415-948-0115 |
| CA  | San Diego, Varigon San Diego          | 619-576-0100 |
| CA  | Woodland Hills, Varigon Inc.          | 818-594-5080 |
| CO  | Parker, TMA/Colorado                  | 303-841-3435 |
| FL  | Lighthouse Point, Krutek & Assocs.    | 305-783-2501 |
| GA  | Norcross, Novus Grp.                  | 404-263-0320 |
| IL  | Elgin, Elctm. Comp. Intl. Ltd.        | 708-888-0099 |
|     |                                       | 708-888-0998 |
| IN  | FL Wayne, Corrao Marsh Inc.           | 219-482-2725 |
| IN  | Greenfield, Corrao Marsh Inc.         | 317-462-4446 |
| FL  | Maitland, Jack Krutek & Assoc.        | 407-628-4837 |
| MD  | Mariottsville, Neal Deoul Assoc.      | 410-795-5775 |
| MD  | Owings Mills, Neal Deoul Assocs.      | 410-363-4311 |
| MA  | Wakefield, Howard C. Jappe Co.        | 617-245-9359 |
| MN  | Minneapolis, Intertec                 | 612-921-8443 |
| KS  | Lenexa, Midwest Tech. Sls.            | 913-888-5100 |
| NJ  | Flanders, K & R Engrg. Sls.           | 201-584-5235 |
|     |                                       | 800-631-9362 |
| NY  | Quality Comps.                        | 315-682-8885 |
| NC  | Cary, Novus Grp.                      | 919-460-7771 |
| OH  | Mayfield Village, Arthur H. Baier Co. | 216-292-7500 |
| PA  | Pipersville, Yax Assocs.              | 215-766-2100 |
| TX  | Houston, Kite Elctm. Sls.             | 713-469-6729 |
| Can | Calgary, Alb., Cana Rep. Grp. Inc.    | 403-243-5148 |
| Can | Montreal, Que., Cana Rep. Grp. Inc.   | 514-276-4477 |
| Can | Surrey, BC, Cana Rep. Grp. Inc.       | 604-589-8595 |
| Can | Willowdale, Ont., Cana Rep. Grp. Inc. | 416-250-6683 |

## Local Distributors

|    |                                  |              |
|----|----------------------------------|--------------|
| IA | Cedar Rapids, Midwest Tech. Sls. | 319-377-1688 |
| KS | Goddard, Midwest Tech. Sls.      | 316-794-8565 |
| MO | Earth City, Midwest Tech. Sls.   | 314-298-8787 |
| UT | Salt Lake City, TMA/Colorado     | 801-483-1009 |



**INTERPOWER COMPONENTS**, See Panel Components Corporation

**INTERSWITCH**, Wm. J. Purdy Co., 770 Airport Blvd., Burlingame, CA 94010, Tel: 415-347-8217, TELEX: 677-1439, FAX: 415-340-1670; FSC No.: (Purdy UW); Empl: 32; Sls. Mgr: Clarence Bruce



**FAX: 914-347-7230**

**INTER-TECHNICAL GROUP INC.**, WIMA Div., 2269 Saw Mill River Rd., Ste. 400, P.O. Box 217, Elmsford, NY 10523, Tel: 914-347-2474; Empl: 17; Sls. Mgr: Gary M. Fey; Dist. Mgr: Andrew E. Dvorscak **A-1084**

## Local Sales Offices &amp; Reps

|    |                                             |              |
|----|---------------------------------------------|--------------|
| AL | Huntsville, J. R. Assocs.                   | 205-830-2130 |
| AZ | Scottsdale, Jackson Mktg.                   | 602-998-0831 |
| CA | Los Gatos, Shur Sls.                        | 408-399-7487 |
| CO | Arvada, Arrowhead Sls. Corp.                | 303-423-5556 |
| FL | Largo, Electrocraft, Inc.                   | 813-544-1766 |
| IL | Palatine, North Central Sls.                | 708-359-5556 |
| IN | Indianapolis, Gen II Mktg. Inc.             | 317-848-3083 |
| MA | Millford, Selmak Assocs. Inc.               | 508-478-9088 |
| MN | Minneapolis, Holmgren Assocs.               | 612-574-9983 |
| MO | Bridgeton, AEM, Inc.                        | 314-298-9900 |
| NY | Manhasset, Win-Cor Elctm. Sls. Corp.        | 516-627-9474 |
| NY | Rochester, BKT Assocs. Inc.                 | 716-461-9880 |
| OH | Cincinnati, Applied Data Management         | 513-579-8108 |
| PA | Allison Park, Elctm. Mktg. Consultant, Inc. | 412-366-7187 |
| TX | Plano, Richmar Elctms. Corp.                | 214-424-8388 |
| VA | Ashland, Glasscock Assocs.                  | 804-798-2125 |
| WA | Seattle, Harry Levinson Co.                 | 206-382-1300 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Resistacp, Inc.         | 205-883-4270 |
| CA | Milpitas, Kent Elctm. Corp.         | 408-956-5300 |
| CA | Sunnyvale, Capisco Sls., Inc.       | 408-734-3020 |
| CO | Littleton, Indelco, Inc.            | 303-795-3431 |
| CT | Bridgeport, Park Distrs. Inc.       | 203-366-7200 |
| CT | Wallingford, Midstate Elctms.       | 203-265-9900 |
| FL | Melbourne, Pridmore Corp.           | 407-727-2491 |
| IL | Rosemont, Advent Elctms., Inc.      | 708-297-6200 |
| MA | Ashland, March Elctms.              | 508-881-6715 |
| MN | Eitzen, Capacitor Assocs.           | 507-495-3306 |
| MN | Roseville, Chris Elctms. Distr.     | 612-631-2647 |
| MO | St. Charles, Finnigan Elctms.       | 314-946-6201 |
| NJ | East Brunswick, Brothers Elctms.    | 908-238-2200 |
| NM | Albuquerque, Betatron Elctms.       | 505-821-1122 |
| NY | Bohemia, March Elctms.              | 516-563-6000 |
| NY | Penn Yan, Advacom Technlg. Inc.     | 315-536-2221 |
| OH | Englewood, Argent Inds., Inc.       | 513-836-8633 |
| OH | Englewood, ADS Electra, Inc.        | 513-836-8636 |
| PA | Exton, VSH Elctms.                  | 215-363-2250 |
| PA | McKean, Advacom, Inc.               | 800-678-0512 |
| PA | North Versailles, CMD Elctms., Inc. | 412-678-6020 |
| TX | Allen, Prime Distrib. Corp.         | 214-231-0170 |
| WA | Seattle, Harry Levinson Co.         | 206-382-1300 |
| WI | Oconomowoc, GW Elctms. Ltd.         | 414-567-9445 |

**INTRA-COMPUTER INC.**, 87-46 Van Wyck Expwy., Jamaica, NY 11418, Tel: 718-297-5500, FAX: 718-297-5518; Empl: 9; Sls. Mgr: Art Yaglian

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INTRONICS, INC., 150 Dan Rd, Canton, MA 02021, Tel: 800-367-0004; Empl: 75 ... B•1081; D•1014, 2124-2125

## Local Sales Offices &amp; Reps

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AL  | Huntsville, Currie, Peak & Frazier  | 205-536-1506 |
| AZ  | Phoenix, Sheffer-Kahn               | 602-581-0884 |
| CA  | Los Alamitos, Power Specialists     | 213-594-9418 |
| CA  | San Jose, O'Donnell Assocs.         | 408-456-2950 |
| FL  | Orlando, Currie, Peak & Frazier     | 407-855-0843 |
| GA  | Duluth, Currie, Peak & Frazier      | 404-497-9404 |
| IL  | Arlington Hgts, Coombs Assocs.      | 312-439-9810 |
| MD  | Columbia, Delta III                 | 301-730-4700 |
| MA  | Canton, Intronics                   | 617-828-4992 |
| MO  | Webster Grove, EPI, Inc.            | 314-962-1411 |
| NC  | Greensboro, Currie, Peak & Frazier  | 919-373-0330 |
| OH  | Dayton, Thompson & Assocs.          | 513-435-7733 |
| PA  | Camp Hill, Quick Response Tech Sls. | 717-763-9577 |
| PA  | Camp Hill, Quick Response Tech Sls. | 717-763-9577 |
| TN  | Smyrna, Currie, Peak & Frazier      | 615-459-0743 |
| TX  | Richardson, Scientific Sls.         | 214-231-6541 |
| VA  | Midlothian, Delta III               | 804-379-1816 |
| WI  | Milwaukee, Coombs Assoc.            | 414-351-6123 |
| Can | Toronto, Strategic Elctns.          | 416-620-5381 |

ION PHYSICS CORPORATION, 11 Industrial Way, Atkinson, NH 03811, Tel: 603-893-6687, FAX: 603-893-6729

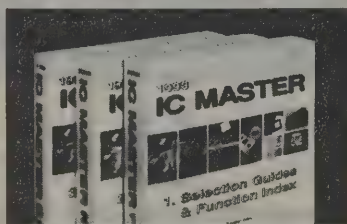
IPAC GRP., 3047 Indl Blvd, Bethel Pk, PA 15102, Tel: 412-831-9200, TWX: 510-697-3935, FAX: 412-831-9580; Empl: 50; Sls. Mgr: Larry Swift

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IRC, INC., P.O. Box 1860, Boone, NC 28607, Tel: 704-264-8861; FSC No.: 11502; Empl: 1000; Sls. Mgr: Hugh Bolen; Dist. Mgr: Sandy Todd ... A•1946-1951

## Local Sales Offices &amp; Reps

|     |                                            |              |
|-----|--------------------------------------------|--------------|
| AL  | Huntsville, RO Whitesell                   | 205-883-5110 |
| AZ  | Mesa, SW Sls.                              | 602-345-8080 |
| CA  | Los Gatos, Luscombe Engrg. Co. North       | 408-370-2020 |
| CA  | Montrose, Luscombe Engrg. Co. South        | 818-249-9000 |
| CO  | Westminster, Straube                       | 303-426-0890 |
| CT  | Branford, Coakley Boyd & Abbott Inc.       | 203-481-2218 |
| FL  | Boca Raton, South Atlantic Comp. Sls.      | 407-391-1034 |
| FL  | Orlando, South Atlantic Comp. Sls.         | 407-857-3650 |
| FL  | Seminole, South Atlantic Comp. Sls.        | 813-595-6397 |
| GA  | Norcross, South Atlantic Comp. Sls.        | 404-447-6154 |
| IL  | Itasca, Circuit Sls. Inc.                  | 708-773-0200 |
| IN  | Ft. Wayne, RO Whitesell                    | 219-489-0588 |
| IN  | Indianapolis, RO Whitesell                 | 317-876-9000 |
| IN  | Kokomo, RO Whitesell                       | 317-457-9127 |
| IA  | Cedar Rapids, CH Horn & Assocs.            | 319-393-8703 |
| KS  | Lenexa, Midtec Assocs. Inc.                | 913-541-0505 |
| MA  | Framingham, Coakley Boyd & Abbott Inc.     | 508-820-0800 |
| MA  | W. Bridgewater, Coakley Boyd & Abbott Inc. | 508-559-6700 |
| MI  | Grand Blanc, RO Whitesell                  | 313-695-0770 |
| MI  | Grand Rapids, RO Whitesell                 | 616-942-5420 |
| MI  | Southfield, RO Whitesell                   | 313-352-5454 |
| MI  | St. Joseph, RO Whitesell                   | 616-983-7337 |
| MN  | Minneapolis, Tecteam Sls.                  | 612-854-6616 |
| MO  | St. Louis, J G Macke Co.                   | 314-432-2830 |
| NJ  | Hackensack, Coakley Boyd & Abbott Inc.     | 201-440-4114 |
| NM  | Albuquerque, SW Sls.                       | 505-899-9005 |
| NY  | E. Syracuse, Electra Sls. Corp.            | 315-463-1248 |
| NY  | Rochester, Electra Sls. Corp.              | 716-427-7860 |
| NC  | Charlotte, South Atlantic Comp. Sls.       | 704-525-0510 |
| NC  | Raleigh, South Atlantic Comp. Sls.         | 919-859-9970 |
| OH  | Cincinnati, RO Whitesell                   | 513-528-5644 |
| OH  | Cleveland, RO Whitesell                    | 216-447-9020 |
| OH  | Columbus, RO Whitesell                     | 614-888-9396 |
| OH  | Dayton, RO Whitesell                       | 513-298-9546 |
| OR  | Tigard, Halbar-RTS Inc.                    | 503-624-6862 |
| PA  | Broomall, LD Lowery Inc.                   | 215-356-5300 |
| PA  | Pittsburgh, RO Whitesell                   | 412-963-6161 |
| TN  | Knoxville, RO Whitesell                    | 615-694-9476 |
| TX  | Arlington, ION Assocs., Inc.               | 817-695-8000 |
| TX  | Austin, ION Assocs., Inc.                  | 512-794-9006 |
| TX  | Houston, ION Assocs., Inc.                 | 713-537-7717 |
| UT  | Salt Lake City, Straube                    | 801-283-2840 |
| WA  | Redmond, Halbar-RTS Inc.                   | 206-882-0990 |
| WI  | Brookfield, Circuit Sls. Inc.              | 414-784-7773 |
| Can | Mississauga, Ont, CMT Renmark              | 416-612-0900 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AZ | Scottsdale, Spirit Elctns. Inc.     | 602-998-1533 |
| CA | Chatsworth, Passive Comps. Inc.     | 800-634-3462 |
| CA | San Diego, Neumann Elctns.          | 619-695-3005 |
| CO | Aurora, Capstone                    | 303-375-1300 |
| FL | Boca Raton, NRC                     | 407-241-8600 |
| IL | Chicago, Newark Elctns.             | 312-784-5100 |
| IL | Hillside, Schuten Elctns.           | 708-544-9600 |
| IA | Cedar Rapids, Dee Elctns.           | 319-365-7551 |
| MD | Columbia, JACO Elctns.              | 301-995-6620 |
| MA | Hingham, Sager Elctrl. Supp. Co.    | 617-749-6700 |
| MA | Norwood, Gerber Elctns.             | 617-769-6000 |
| NJ | Moorestown, Marlac Elctns.          | 609-234-4200 |
| NY | Buffalo, Summit Dists.              | 716-887-2800 |
| NY | Hauppauge, JACO Elctns., Inc.       | 516-273-5500 |
| NY | Mamaroneck, New Yorker Elctns.      | 914-698-7600 |
| NY | Rome, Rome Elctns. Inc.             | 315-337-5400 |
| NY | Valley Stream, L&S Elctns.          | 516-561-2474 |
| NC | Wilmington, Justin Elctns.          | 919-763-1234 |
| OH | Columbus, Elctns. Mktg. Corp.       | 614-299-4161 |
| OH | Dayton, Bell Inds. Inc.             | 513-435-8660 |
| OH | Dayton, Stotts Friedman             | 513-298-5555 |
| PA | Philadelphia, PEI-Genesis           | 215-673-0400 |
| TX | Addison, JACO Elctns.               | 214-733-4300 |
| TX | Richardson, Bell Inds. Inc.         | 214-690-0466 |
| WA | Redmond, Priebe Elctns.             | 206-881-2363 |
| CA | Pointe-Claire, Que., Future Elctns. | 514-694-7710 |
| KY | Versailles, RO Whitesell            | 605-873-1182 |

IRC-SHALLCROSS, U.S. Hwy. 70 East, Smithfield, NC 27577, Tel: 919-934-5181, TWX: 510-939-1463, FAX: 919-934-5186; FSC No.: 54294; Empl: 150; Sls. Mgr: Hugh Bolen

See IRC-Shallcross for Local Sales Reps. and Distributors

IRONWOOD ELCTRNS., INC., P.O. Box 21-151, St. Paul, MN 55121, Tel: 612-431-7025, FAX: 612-432-8616; Empl: 6; Sls. Mgr: Betty F. Fedde; Dist. Mgr: Paul Jasmin

IR SCIENTIFIC, Box 110, Carlisle, MA 01741, Tel: 508-667-7110; Empl: 10

ISC CARDIAN ELECTRONICS INC., See Cardion, Inc., A Siemens Co.

ISKRA ELECTRONICS, INC., 155 Dupont St, Plainview, NY 11803, Tel: 516-349-0222, TELEX: 221527, FAX: 516-349-7642; Sls. Mgr: Debbie Gremilo ... A•1085, 2146; B•1364

## Local Sales Offices &amp; Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| CA | Chula Vista, Inter Elctns.        | 619-476-0577 |
| CT | Groton, Primary Source            | 203-445-4968 |
| NM | Albuquerque, FP Sls.              | 505-345-5553 |
| IN | Indianapolis, Insul Reps.         | 317-251-1994 |
| LA | Hammond, Design Mktg. of LA, Inc. | 504-542-1115 |
| MA | Lawrence, Primary Source          | 508-682-5600 |
| AZ | Tempe, F P Sls.                   | 602-894-5303 |
| MO | Grandview, R.R. Burton & Assoc.   | 816-763-5385 |
| NH | Hampton, Primary Source           | 603-926-8044 |
| GA | Alpharetta, R A Sls.              | 404-442-6749 |
| NY | North Port, R. P. Luce & Co.      | 516-754-5064 |
| NC | New Bern, R A Sls.                | 919-244-2672 |
| OH | Mentor, Sales Plus                | 216-942-7811 |
| PA | Montgomeryville, Quick Response   | 215-362-9225 |
| SC | Easley, R A Sls.                  | 803-859-1859 |
| TN | Knoxville, Insul Reps             | 615-691-7586 |

## Local Distributors

|    |                                |              |
|----|--------------------------------|--------------|
| MA | Billerica, Baldwin Comps. Ctr. | 508-667-6710 |
| NJ | Westwood, Seacor               | 201-666-5600 |
| NY | Ronkonkoma, Baldwin Comps.     | 516-588-5700 |

ISLAND COMPONENTS GROUP, 340-A Central Ave, Bohemia, NY 11716, Tel: 516-563-4224, FAX: 516-563-4363; Empl: 10; Sls. Mgr: Roy A. Koch



FAX: 516-937-3840

ISL PRODUCTS INT'L, LTD., 235 Robbins La, Ste. 270, Syosset, NY 11791-6093, Tel: 516-937-3475, 800-626-6116; Empl: 10; Sls. Mgr: Ken Kwallier ... A•2087, 2362; C•1354, 1753; D•1041

## Local Sales Offices &amp; Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| IN | Indianapolis, C.C. Electro Sales | 317-921-5000 |
| KS | Chanute, Mi Ja Sls. Co.          | 316-431-1444 |
| MN | St. Paul, Countryman Assoc.      | 612-645-9151 |

ISOCOM INC., 274 E. Hamilton Ave, Ste.E, Campbell, CA 95008, Tel: 408-370-2212, FAX: 408-370-2309; Sls. Mgr: Stephen Parry; Dist. Mgr: Glenda Rees

ISOLATION PRODUCTS, INC., 157 San Lazaro Ave, Sunnyvale, CA 94086, Tel: 408-730-4672; Empl: 5

ISOTEK CORPORATION, 566 Wilbur Ave, Swansea, MA 02777, Tel: 508-673-2900, FAX: 508-676-0885; Empl: 4; Sls. Mgr: William Poisson ... A•1953-1955



FAX: 804-977-1849

ISOTEMP RESEARCH, INC., P.O. Box 3389, Charlottesville, VA 22903, Tel: 804-295-3101; FSC No.: 031785; Empl: 65; Sls. Mgr: Andrew Bell ... A•1410-1411

## Local Sales Offices &amp; Reps

|    |                               |              |
|----|-------------------------------|--------------|
| CA | Fremont, Edward Blake Assocs. | 510-770-9058 |
| CA | Fremont, Wm. Parks & Assocs.  | 415-796-0875 |
| CA | San Diego, Qualtronics        | 619-695-0118 |



|    |                                  |              |
|----|----------------------------------|--------------|
| IL | Lemont, Trend-Tronics            | 708-972-1166 |
| IL | Woodridge, Trend-Tronics         | 312-985-0626 |
| KS | Lenexa, Mid-Tec Assocs.          | 913-541-0505 |
| MD | Columbia, G Squared Technologies | 410-730-9209 |
| MN | Columbia, G Squared Technlgs.    | 301-730-9209 |
| MO | St. Louis, Mid-Tec Assocs.       | 314-275-8666 |

ITEK ENCODER, See BEI Motion System/ITEK Encoder Div.

ITF CORP., P.O. Box 543, Buford, GA 30518, Tel: 404-945-3844, FAX: 404-945-7766; Empl: 2; Sls. Mgr: Michael Wegner; Dist. Mgr: Michael Wegner

ITHACO, INC., Meas. & Control Instrs. Div., 735 W. Clinton St., P.O. Box 6437, Ithaca, NY 14851-6437, Tel: 607-272-7640, FAX: 607-272-4550; Empl: 100

ITI FERROTEC, 131 Stedman St., Chelmsford, MA 01824, Tel: 508-452-0212, FAX: 508-452-0104 C-1597

ITL CIRCUITS, 90 Don Park Road, Markham, Ontario, Canada L3R 1C4, Tel: 416-475-6658, 416-492-9307, FAX: 416-475-5097; FSC No.: FSCM 38747; Empl: 104; Sls. Mgr: Derk Wissink

ITT CANNON, 666 E. Dyer Road, Santa Ana, CA 92705-5884, Tel: 714-557-4700, TELEX: 75-3917, TWX: 910-997-0523; FSC No.: 71468/Multiple; Empl: 1500; Sls. Mgr: Richard Torson; Dist. Mgr: Richard Torson

ITT CANNON/SEAELECTRO, 585 East Main St., New Britain, CT 06051, Tel: 203-223-2700, TELEX: 71-425-501, FAX: 203-225-2781; FSC No.: 98291; Empl: 350; Sls. Mgr: Ray Champi; Dist. Mgr: Karen Muratori



FAX: 714-727-2109

ITT COMPONENTS, ITT Corporation, 18 Technology Dr., Ste. 200, Irvine, CA 92718, Tel: 714-727-3001; FSC No.: 61725; Empl: 10; Dist. Mgr: J. Harrison A-2147; B-1527-1535

|                                       |                                        |              |
|---------------------------------------|----------------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                        |              |
| AL                                    | Huntsville, Mtn. Mktg.                 | 205-881-3937 |
| AZ                                    | Phoenix, Sheffer-Kahn                  | 602-581-0884 |
| CA                                    | Burbank, Darco                         | 818-504-2425 |
| CA                                    | San Jose, Vermeex                      | 408-972-9072 |
| CA                                    | San Marcos, Falcon                     | 619-591-0504 |
| CO                                    | Denver, Promotech                      | 303-692-8484 |
| CT                                    | Guilford, Data Mark, Inc.              | 203-453-0575 |
| FL                                    | Orlando, Bolton                        | 407-856-0612 |
| FL                                    | St. Petersburg, Bolton                 | 813-864-2294 |
| GA                                    | Norcross, Mtn. Mktg.                   | 404-448-5594 |
| IL                                    | Inverness, Heartland Tech. Sls.        | 708-358-6622 |
| IN                                    | Ft. Wayne, M/S Sls.                    | 219-436-3023 |
| IN                                    | Indianapolis, M/S                      | 317-881-0110 |
| KS                                    | Wichita, Thunderbird Tech. Sls.        | 316-684-3941 |
| MD                                    | Lutherville, DGR                       | 301-583-1360 |
| MA                                    | Sudbury, KSA of New England            | 508-443-5881 |
| MI                                    | Brighton, Elctm. Sources Inc.          | 313-227-3598 |
| MN                                    | St. Louis Pk., Neotech                 | 612-545-5656 |
| MO                                    | Maryland Hgts., Thunderbird Tech. Sls. | 314-298-8940 |
| NJ                                    | Mt. Laurel, Wyck Mktg.                 | 609-727-1070 |
| NY                                    | Manhasset, Win Cor Elctms.             | 516-627-9474 |
| NY                                    | Victor, Net Sls. Co.                   | 716-924-1844 |
| NC                                    | Chapel Hill, Mtn. Mktg.                | 919-933-0388 |
| OH                                    | Centerville, Omega Sls.                | 513-434-5507 |
| OH                                    | Cleveland, Omega Sls.                  | 216-360-9400 |
| OK                                    | Broken Arrow, DJ Sls.                  | 918-258-1445 |
| TX                                    | Austin, DJ Sls.                        | 512-258-3002 |
| TX                                    | Dallas, DJ Sls.                        | 214-783-8876 |
| TX                                    | Houston, DJ Sls.                       | 713-690-2640 |
| UT                                    | Bountiful, Anderson Assoc.             | 801-292-8991 |
| WA                                    | Camas, EMG                             | 206-834-6548 |
| WA                                    | Redmond, EMG                           | 206-882-0962 |
| WI                                    | Brookfield, Heartland                  | 414-789-6860 |

|                           |                                     |              |
|---------------------------|-------------------------------------|--------------|
| <b>Local Distributors</b> |                                     |              |
| AL                        | Huntsville, Time                    | 800-772-8638 |
| AL                        | Madison, Gateway Megatech           | 205-464-9300 |
| AZ                        | Tempe, Cypress                      | 602-966-2256 |
| AZ                        | Tempe, Richey Impact Elctms.        | 800-421-7258 |
| AZ                        | Tempe, Time                         | 800-772-8638 |
| CA                        | Agoura Hills, Cypress               | 818-597-9491 |
| CA                        | Costa Mesa, Cypress                 | 714-549-2424 |
| CA                        | Garden Grove, Capacitor Supp.       | 714-638-0510 |
| CA                        | Garden Grove, Richey Impact Elctms. | 714-895-0060 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Irvine, Integrated Elctms.          | 714-837-9660 |
| CA | Irvine, ITT Multi Comps.            | 714-727-4001 |
| CA | Milpitas, Sierra West               | 408-945-1050 |
| CA | Oakland, Brill                      | 510-834-5888 |
| CA | Sacramento, Integrated Elctms.      | 916-363-6030 |
| CA | San Diego, Cypress                  | 619-535-0011 |
| CA | San Diego, Richey Impact Elctms.    | 800-772-8638 |
| CA | San Diego, Time/Harper              | 800-772-8638 |
| CA | San Jose, Integrated Elctms.        | 408-435-1000 |
| CA | San Jose, ITT Multicomps.           | 408-453-1404 |
| CA | Santa Clara, Cypress                | 408-980-8400 |
| CA | Santa Clara, Richey Impact Elctms.  | 408-727-7411 |
| CA | Santa Monica, Master Dists.         | 310-452-1229 |
| CA | Sunnyvale, Capco Sls.               | 408-734-3020 |
| CA | Sunnyvale, Time                     | 800-772-8638 |
| CA | Tustin, Time                        | 800-772-8638 |
| CA | Woodland Hills, Time                | 800-772-8638 |
| CO | Denver, Integrated Elctms.          | 303-292-6121 |
| CO | Englewood, Cypress                  | 303-792-5829 |
| CO | Englewood, Time                     | 800-772-8638 |
| CT | New Haven, Greene Shaw Co.          | 203-265-3333 |
| CT | Southbury, Time                     | 800-772-8638 |
| FL | FL Lauderdale, Time                 | 800-772-8638 |
| FL | Orlando, Time                       | 800-772-8638 |
| FL | Pompano Bch., Peerless Radio        | 305-973-4141 |
| FL | Sunrise, All American               | 305-572-7999 |
| GA | Atlanta, Peerless Radio             | 404-612-9090 |
| GA | Norcross, Time                      | 800-772-8638 |
| GA | Roswell, Gateway Megatech           | 404-642-8787 |
| IL | Chicago, Leeds Electro Comps.       | 312-625-3800 |
| IL | Hoffman Estates, Integrated Elctms. | 708-843-2040 |
| IL | Schaumburg, Time                    | 800-772-8638 |
| IL | Wood Dale, NEP Elctms.              | 708-595-8500 |
| IN | Indianapolis, CSE                   | 317-879-9119 |
| IN | Indianapolis, Mar Elctms.           | 317-633-6699 |
| MD | Columbia, Peerless Radio            | 410-997-1717 |
| MD | Columbia, Time                      | 800-772-8638 |
| MD | Jessup, TREEKO Sls.                 | 301-470-3300 |
| MD | Rockville, All American             | 301-251-1205 |
| MA | Newton, Greene-Shaw Co.             | 617-969-8900 |
| MA | Peabody, Time                       | 800-772-8638 |
| MA | Wakefield, All American             | 617-246-2300 |
| MA | Walpole, Richey Impact Elctms.      | 508-668-8200 |
| MA | Woburn, Control Design Supp.        | 617-932-9404 |
| MI | Livonia, Key Elctms.                | 313-489-5455 |
| MN | Eden Prairie, All American          | 612-944-2151 |
| MN | Eden Prairie, Cypress               | 612-934-2104 |
| MN | Edina, Time                         | 800-772-8638 |
| MN | Minneapolis, Bergquist              | 612-835-2322 |
| MN | Minneapolis, Control Design Supp.   | 612-721-1628 |
| MN | Plymouth, Leeds                     | 612-557-1277 |
| MO | Manchester, Time                    | 800-772-8638 |
| NH | Merrimack, Brevan Elctms.           | 603-429-1900 |
| NJ | Marlton, Time                       | 800-772-8638 |
| NJ | Oakland, Relay Specialties          | 201-337-1000 |
| NJ | Rockaway, Tonar Inds.               | 201-586-9000 |
| NJ | W. Berlin, GCI                      | 609-768-6767 |
| NJ | Wayne, Time                         | 800-772-8638 |
| NY | E. Syracuse, Time                   | 800-772-8638 |
| NY | Huappage, Time                      | 800-772-8638 |
| NY | Lymbrook, Peerless Radio            | 516-593-2121 |
| NY | Rochester, Masline                  | 716-546-5373 |
| NY | Rome, Rome Elctms.                  | 800-366-7663 |
| NY | Ronkonkoma, All American            | 516-981-3935 |
| NY | Century Elec. Comp.                 | 919-596-2220 |
| NC | Raleigh, Resco                      | 919-781-5700 |
| NC | Raleigh, Time                       | 800-772-8638 |
| OH | Cincinnati, Schuster                | 513-489-1400 |
| OH | Cleveland, Schuster                 | 216-425-8134 |
| OH | Columbus, Time                      | 800-772-8638 |
| OH | Willoughby, Gateway Megatech        | 216-953-0333 |
| OR | Beaverton, Integrated Elctms.       | 503-641-1690 |
| OR | Portland, Time                      | 800-772-8638 |
| PA | Norristown, Century Elec. Comp.     | 215-631-5400 |
| PA | Wayne, Peak Elctms.                 | 215-293-9000 |
| TX | Austin, Time                        | 800-772-8638 |
| TX | Irving, Cypress                     | 214-255-0065 |
| TX | Richardson, Time                    | 800-772-8638 |
| TX | Tomball, Wofford Elctms.            | 713-351-2255 |
| UT | Salt Lake City, All American        | 801-261-4210 |
| UT | W. Salt Lake, Integrated            | 801-298-1869 |
| UT | W. Valley, Time                     | 800-772-8638 |
| WA | Bellevue, Integrated Elctms.        | 206-455-2727 |
| WA | Bothell, Cypress                    | 206-483-1144 |
| WA | Kirkland, Time                      | 800-772-8638 |
| WA | Seattle, Richey Impact Elctms.      | 206-575-1910 |
| WI | Brookfield, Leeds Electro Comps.    | 414-789-6995 |
| WI | New Berlin, NEP Elctms.             | 414-785-9100 |

ITT CONOFLOW, ITT Fluid Technology Corp., Route 78, St. George, SC 29477, Tel: 803-563-9281, TELEX: 4945706, FAX: 803-563-2131; Sls. Mgr: Thomas Floro

ITT GILFILLAN, ITT Defense Inc., 7821 Orion Ave., P.O. Box 7713, Van Nuys, CA 91409, Tel: 818-988-2600, TELEX: 651421, TWX: 910-495-1787; FSC No.: 24930; Empl: 875; Sls. Mgr: Nick Riley, VP

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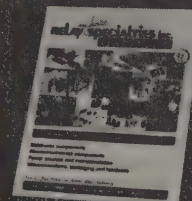
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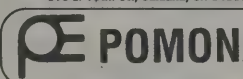
ITT HIGBIE BAYLOCK, 3000 University Drive, Auburn Hills, MI 48321-7016, Tel: 313-340-3000, FAX: 313-340-3707; Empl: 1500; Sls. Mgr.: W. Deneen, Dir. Sls.

ITT POMONA ELECTRONICS, 1500 E. 9th St., P.O. Box 2767, Pomona, CA 91766, Tel: 909-469-2900, FAX: 909-629-3317; FSC No.: 05276; Empl: 140 C-1355

| Local Sales Offices & Reps             |              |
|----------------------------------------|--------------|
| AL Hazel Green, Braden & Assocs.       | 205-828-6290 |
| AZ Phoenix, More Sls.                  | 602-331-8115 |
| AR Mablevale, Erickson Sls., Inc.      | 501-455-0618 |
| CA Burbank, Darco                      | 818-504-2425 |
| CA Irvine, Vale Elctm. Assocs.         | 714-551-4004 |
| CA Santa Clara, Engrg. Assocs. Corp.   | 408-988-5001 |
| CA So. San Francisco, Carelli/EMA      | 415-873-2524 |
| CO Bloomfield, Connors Co.             | 303-466-9628 |
| FL Maitland, EIR Inc.                  | 407-660-9600 |
| IL Barrington, W. M. Linz              | 708-382-9720 |
| IN Indianapolis, Blind Elctm. Sls. Co. | 317-273-9063 |
| IA West Des Moines, Nevco              | 515-225-9866 |
| LA Chalmette, Erickson Sls., Inc.      | 504-271-1976 |
| MD Baltimore, David S. Linz, Inc.      | 410-882-6289 |
| MA Burlington, Gerber Sls. Corp.       | 617-229-1150 |
| MN Minneapolis, Hei-lite Sls., Inc.    | 612-550-0506 |



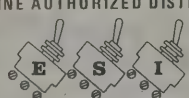
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| OH Cleveland, Marlow Assocs.             | 216-831-8232 |
| MO Kansas City, Nevco, Inc.              | 816-741-0601 |
| NJ Livingston, Tobias, API               | 908-686-1121 |
| NC Raleigh, Pinnacle Mktg.               | 919-848-0404 |
| OH Beachwood, Elctms. Salesmasters, Inc. | 800-544-4383 |
| OR Beaverton, Eclipse Mktg. Grp. Ltd.    | 503-642-1661 |
| PA Philadelphia, David S. Linz, Inc.     | 215-379-0734 |
| TX Dallas, Erickson Sls., Inc.           | 214-739-5833 |

ITT POWER SYSTEMS CORP, ITT Corp., 3400 E. Britannia Ave., Tucson, AZ 85706, Tel: 602-889-7600, FAX: 602-294-1808; Empl: 475; Sls. Mgr.: L. Friend; Dist. Mgr.: G. Ardolino

ITT SCHADOW, 8081 Wallace Rd., Eden Prairie, MN 55344, Tel: 612-934-4400, TELEX: 29-0556, TWX: 910-576-2469, FAX: 612-934-9121; Empl: 135; Sls. Mgr.: Darrell Wilk; Dist. Mgr.: Scott Mork

B-1744-1745, 1839



**FAX: 804-239-4730**

ITW PAKTRON, Div. of Illinois Tool Works, P.O. Box 4539, 1205 McConville Rd., Lynchburg, VA 24502, Tel: 804-239-6941; FSC No.: 19396; Sls. Mgr.: Richard Slocum A-1087

| Local Sales Offices & Reps             |              |
|----------------------------------------|--------------|
| AL Huntsville, ACM, Inc.               | 205-881-5493 |
| CA Playa-del-Ray, Corcoran Assoc.      | 213-823-4589 |
| FL Cassel Berry, Dyne-A-Mark           | 407-831-2822 |
| FL Clearwater, Dyne-A-Mark             | 813-441-4702 |
| FL Ft. Lauderdale, Dyne-A-Mark         | 305-771-6501 |
| GA Norcross, ACM, Inc.                 | 404-448-7025 |
| IN Indianapolis, Central Regional Off. | 317-257-3704 |
| IN Indianapolis, Leslie M. Devos       | 317-842-3245 |
| IA West Des Moines, SPS Assocs., Ltd.  | 515-225-0607 |
| KS Olathe, SPS Assocs., Ltd.           | 913-764-4460 |
| MA Randolph, Hatch Assocs.             | 617-963-3306 |
| MI Oak Pk., A. Blumenberg Assocs. Inc. | 313-968-3230 |
| MN Hopkins, Forsythe Assoc.            | 612-933-8267 |
| MO Earth City, SPS Assocs., Ltd.       | 314-291-0520 |
| NE Panama, SPS Assocs.                 | 402-788-2536 |
| NY E. Rochester, L-Mar Assocs., Inc.   | 716-681-9100 |
| NY Poughkeepsie, L-Mar Assoc. Inc.     | 914-462-8025 |
| NC Raleigh, C-Tech                     | 919-782-8100 |
| OH Solon, J R Thornberry Co. Inc.      | 216-248-4995 |
| TX Austin, Electra Reps, Inc.          | 512-339-1163 |
| TX Dallas, Electra Reps, Inc.          | 214-248-3852 |
| VA Lynchburg, Paktron Div.             | 804-239-6941 |
| WA Bellevue, Caruso & Co.              | 206-455-8811 |
| WI Hartland, Selective Sls. Inc.       | 414-367-1133 |
| Can Markham, Ont, Avotronics           | 416-475-2024 |
| Can Pointe Claire, Que, Avotronics     | 514-697-2135 |

| Local Distributors                         |              |
|--------------------------------------------|--------------|
| AZ Phoenix, Future Elctms.                 | 602-272-7951 |
| CA Chatsworth, Future Elctms.              | 818-772-6240 |
| CA Irvine, Future Elctms.                  | 714-250-4141 |
| CA San Diego, Future Elctms.               | 619-278-5020 |
| CA San Jose, Future Elctms.                | 408-434-1122 |
| CA Van Nuys, E.W. Elctms.                  | 818-782-9020 |
| CO Westminster, Future Elctms., Inc.       | 303-650-0123 |
| CT Bethel, Future Elctms.                  | 203-743-9594 |
| FL Altamonte Springs, Future Elctms., Inc. | 305-767-8414 |
| FL Clearwater, Future Elctms., Inc.        | 813-578-2770 |
| FL Ft. Lauderdale, N R C Elctms.           | 305-772-4505 |
| GA Augusta, Dixie Elctms., Inc.            | 404-722-2055 |
| GA Norcross, Future Elctms., Inc.          | 404-441-7676 |
| IL Elk Grove Village, Bell Inds.           | 312-640-1910 |
| IL Schaumburg, Future Elctms.              | 312-882-1255 |
| IN Indianapolis, Advent Elctms.            | 317-872-4910 |
| IN Indianapolis, Custom Svcs. Elec.        | 317-879-9119 |
| IN Cedar Rapids, Dee Elctms.               | 319-365-7551 |
| MD Columbia, Future Elctms.                | 301-290-0600 |
| MD Jessup, Treeko Sls.                     | 301-470-3300 |
| MD Spencerville, U.S. Elctms.              | 301-384-3300 |
| MA Billerica, Mayer Elctms.                | 508-667-6900 |
| MA Westboro, Future Elctms.                | 617-366-2400 |
| MI Livonia, Future Elctms.                 | 313-261-5270 |
| MN Eden Prairie, Future Elctms.            | 612-944-2200 |
| MN Etzen, Capacitor Assocs.                | 507-495-3306 |
| MN St. Paul, Gopher Elctms.                | 612-483-3322 |
| MO St. Charles, Finnigan Elctms.           | 314-986-6201 |
| NJ Bellmar, Mid Atlantic Elctms.           | 609-931-5303 |
| NJ E. Hanover, State Elctms.               | 201-887-2550 |
| NJ Fairfield, Future Elctms.               | 201-227-4346 |
| NJ Mt. Laurel, Future Elctms.              | 609-778-7600 |
| NY Farmingdale, Pride Elctms.              | 516-293-4020 |

|                                         |              |
|-----------------------------------------|--------------|
| NY Hauppauge, Broadline Elctms.         | 516-231-4100 |
| NY Hauppauge, Future Elctms. Inc.       | 516-234-4000 |
| NY Liverpool, Future Elctms.            | 315-451-2371 |
| NY Rochester, Future Elctms.            | 716-272-1120 |
| NY Rochester, Simcona Elctms.           | 716-328-3230 |
| NC Charlotte, Dixie Elctms.             | 704-377-5413 |
| NC Charlotte, Elctm. Mktg. Corp.        | 704-394-6195 |
| NC Charlotte, Future Elctms.            | 704-529-5500 |
| NC Greensboro, Golden Elctms.           | 919-294-4653 |
| NC Winston-Salem, Dixie Elctms.         | 919-724-5961 |
| OH Columbus, Elctm. Mktg. Corp.         | 614-299-4161 |
| OH Dayton, Elctm. Mktg. Corp.           | 513-439-4711 |
| OH Highland Heights, Elctm. Mktg. Corp. | 216-442-3441 |
| OK Tulsa, Altair Co.                    | 918-252-5781 |
| OR Beaverton, Future Elctms.            | 503-646-9454 |
| PA McKean, Advacom, Inc.                | 814-476-7774 |
| SC Columbia, Dixie Elctms., Inc.        | 803-779-5332 |
| SC Greenville, Dixie Elctms., Inc.      | 803-297-1435 |
| SC N. Charleston, Dixie Elctms.         | 803-552-2671 |
| TN Gray, Dixie Elctms., Inc.            | 615-477-3838 |
| TN Knoxville, Dixie Elctms., Inc.       | 615-938-4131 |
| TX Austin, Altair Co.                   | 512-837-4970 |
| TX Houston, Altair Co.                  | 713-462-3029 |
| TX Richardson, Altair Co.               | 214-231-5166 |
| TX Richardson, Future Elctms., Inc.     | 214-437-2437 |
| UT Salt Lake City, Future Elctms. Inc.  | 801-972-8489 |
| WA Redmond, Future Elctms., Inc.        | 206-881-8199 |
| WI Mequon, Taylor Elec.                 | 414-241-4321 |
| WI Racine, Badger Elctms. Co. Inc.      | 414-637-1256 |
| WI Waukesha, Bell Inds.                 | 414-547-8879 |
| EXP Bucks, Eng. C & CD Ltd.             | 494-882-848  |
| Can Calgary, Alberta, Future Elctms.    | 403-235-5325 |
| Can Downsview, Ont, Future Elctms.      | 416-638-4771 |
| Can Edmonton, Future Elctms.            | 403-438-2858 |
| Can Ottawa, Ont, Future Elctms.         | 613-802-8313 |
| Can Pointe Claire, Que, Future Elctms.  | 514-694-7710 |
| Can St. Foy, Que, Future Elctms.        | 418-682-8092 |
| Can Vancouver, B.C., Future Elctms.     | 604-294-1166 |
| Can Winnipeg, Manitoba, Future Elctms.  | 204-786-7711 |



**FAX: 312-545-4450**

ITW SWITCHES, Illinois Tool Works, 6615 W. Irving Park Rd., Chicago, IL 60634, Tel: 312-282-4040; Empl: 500; Dist. Mgr.: P. Smentek B-1746-1755

Local Sales Offices & Reps

|                                       |              |
|---------------------------------------|--------------|
| AL Huntsville, Electro Mech           | 205-880-0592 |
| AZ Glendale, The Knight Co.           | 602-433-2166 |
| CA Los Angeles, The Knight Co.        | 310-670-2833 |
| CA Santa Clara, ITW Switches          | 312-282-4040 |
| CO Parker, ITW Switches               | 312-282-4040 |
| CT Clinton, Selmak Assoc.             | 203-573-9088 |
| FL Coral Springs, HHP Assocs.         | 305-753-8389 |
| FL Palm Bay, HHP Assocs.              | 407-951-9236 |
| FL Tarpon Springs, HHP Assocs.        | 813-937-6099 |
| FL Winter Park, HHP Assocs.           | 407-740-0320 |
| GA Atlanta, Electro Mech              | 404-447-6478 |
| IL Downer's Cove, Goffen Assoc.       | 708-985-5100 |
| IA Cedar Rapids, R. F. Welch Co.      | 319-362-6824 |
| MD Baltimore, Chesapeake Tech.        | 301-236-0530 |
| MD Burtonsville, Chesapeake Tech.     | 301-236-0530 |
| MA Milford, Selmak Assoc.             | 508-478-9088 |
| MI Grand Rapids, Urban & Assoc.       | 616-245-0511 |
| MN Minneapolis, Comstrand             | 612-788-9234 |
| MO St. Louis, ITW Switches            | 312-282-4040 |
| NJ Red Bank, Varelman-Gorman Co.      | 908-219-0088 |
| NY E. Syracuse, Fountain, Young & Co. | 315-437-7733 |
| NC Raleigh, Electro Mech              | 919-790-9300 |
| OH Medina, Rockford Controls          | 216-725-3705 |
| OR Tigard, Earl & Brown Co.           | 503-639-2100 |
| PA Oreland, Precision Mktg.           | 215-233-9233 |
| TX Richardson, ITW Switches           | 214-235-9515 |
| WA Redmond, Earl & Brown Co.          | 206-885-5064 |

| Local Distributors                |              |
|-----------------------------------|--------------|
| AL Huntsville, Powell Elctms.     | 205-837-5300 |
| AZ Tempe, Control Design          | 602-829-7981 |
| CA Brea, Aero Flight              | 714-773-4251 |
| CA Fremont, Kea Elctms.           | 510-651-2600 |
| CA Garden Grove, Ritchey/Impact   | 714-895-0060 |
| CA Gardena, Cal Switch            | 213-538-9830 |
| CA Los Angeles, Elec. Switches    | 213-660-1310 |
| CA Torrance, Time                 | 213-320-0880 |
| CO Denver, CSID                   | 303-292-9594 |
| CT Hartford, L.E. Whelan          | 203-296-5000 |
| CT Wallingford, Sager Elctms.     | 203-265-4600 |
| FL Ft. Lauderdale, Powell Elctms. | 305-484-8377 |
| FL Maitland, Elctms. Equipmt.     | 407-539-0888 |
| FL Miami, Elctm. Equip.           | 305-526-6000 |
| FL Orlando, Sager Elctms.         | 407-354-1130 |



|     |                                    |              |
|-----|------------------------------------|--------------|
| FL  | Wellington, Wings Electro Sls.     | 407-798-6606 |
| IL  | Chicago, Newark Distrs.            | 312-784-5100 |
| IL  | Wheeling, Hawk Elctms.             | 708-459-4030 |
| IL  | Wheeling, Hawk Electronics         | 708-459-4030 |
| IN  | Indianapolis, R.S. Elctms.         | 317-253-9065 |
| KS  | Overland Park, Olive Elctms.       | 913-362-1923 |
| KS  | Wichita, R.S.C. Elctms.            | 316-267-5213 |
| MD  | Annapolis Junction, Powell Elctms. | 301-880-3255 |
| MD  | Columbia, Sager Elctms.            | 301-995-4900 |
| MD  | Gaithersburg, MS Elctms.           | 301-921-0200 |
| MD  | Kensington, Marine Air Supply      | 301-949-9560 |
| MA  | Hingham, Sager                     | 617-749-6700 |
| MA  | Westborough, Powell Elctms.        | 508-336-6100 |
| MI  | Livonia, R.S. Elctms.              | 313-525-1155 |
| MN  | Fridley, Voyager Elctms.           | 612-571-7766 |
| MN  | Minneapolis, Newark Elctms.        | 612-331-6350 |
| MO  | Maryland Heights, R.S. Elctms.     | 314-997-7709 |
| NH  | Salem, Sager                       | 603-898-1348 |
| NJ  | Little Falls, Powell               | 201-890-0010 |
| NY  | Buffalo, Summit                    | 716-887-2800 |
| NY  | Endwell, Astrex/ASI                | 607-754-3823 |
| NY  | Farmingdale, Iris Elctms.          | 516-420-8400 |
| NY  | Hauppauge, Sager                   | 516-348-1300 |
| NC  | Winston Salem, Kirkman             | 919-722-9131 |
| OH  | Akron, Aesco                       | 216-762-8818 |
| OH  | Columbus, Aesco Elctms.            | 614-882-6762 |
| OH  | Dayton, Advacom                    | 513-274-5900 |
| OR  | Beaverton, Comp. Resources         | 503-641-8488 |
| PA  | Mars, Sager Elctms.                | 412-772-2233 |
| PA  | Mc Kean, Advacom                   | 814-476-7774 |
| PA  | Montgomeryville, Pyttronic         | 215-643-2850 |
| PA  | Philadelphia, Powell               | 215-365-1900 |
| TX  | Austin, Wofford Elctms.            | 512-339-1131 |
| TX  | Dallas, Wes Garde                  | 214-357-1768 |
| TX  | Dallas, Wofford Elctms.            | 214-340-8555 |
| TX  | Irving, Powell Elctms.             | 214-550-0547 |
| TX  | Tomball, Wofford                   | 713-351-2255 |
| WA  | Kent, Comp. Resources              | 206-454-8666 |
| WI  | Milwaukee, Elctm. Expeditors       | 414-228-8100 |
| Can | Markham, Ont, Semad                | 416-475-8500 |

**IVEK CORP.**, Fairbanks Rd, N. Springfield, VT 05150, Tel: 802-886-2238, FAX: 802-886-8274; Empl: 25; Sls. Mgr.: Mark Tanny



**FAX: 908-542-2938**

**IVO INDUSTRIES, INC.**, 201 Industrial Way W., Eatontown, NJ 07724, Tel: 908-542-5151, 800-932-0489; Empl: 10; Sls. Mgr.: Frederick Hickey  
B-1756, 1960-1962; D-1162

**Local Distributors**

|    |                                   |              |
|----|-----------------------------------|--------------|
| CA | Long Beach, Elect. Power Controls | 310-498-6699 |
| FL | Clearwater, General Controls      | 813-446-6622 |
| SC | Greenville, Automation Supply     | 803-233-2145 |

**IXYS CORP.**, 2355 Zanker Rd, San Jose, CA 95131-1109, Tel: 408-435-1900, FAX: 408-435-0670; Empl: 350; Sls. Mgr.: Scott Lodor; Dist. Mgr.: Cliff Knudsen



**FAX: 714-753-2699**

**JAE ELECTRONICS INC.**, 142 Technology Drive, Irvine, CA 92718, Tel: 714-753-2600; Empl: 3400 (Worldwide); Sls. Mgr.: David Shaff, Dir. Field Sls.  
C-1356-1357

**Local Sales Offices & Reps**

|    |                             |                            |
|----|-----------------------------|----------------------------|
| CA | Santa Clara, Pinnacle Sls.  | 408-249-7400               |
| FL | Ft. Lauderdale, JAE Elctms. | 305-563-3484, 800-248-0737 |

**JAICO PRODUCTS, Jaidinger Mfg. Co., Inc.**, 1921 W. Hubbard St, Chicago, IL 60622, Tel: 312-421-1090, FAX: 312-421-1165; Empl: 25; Sls. Mgr.: John S. Jaidinger

**JAMES ELECTRONICS**, 4050 N. Rockwell, Chicago, IL 60618, Tel: 312-463-6500, FAX: 312-463-1504; Empl: 220; Sls. Mgr.: Vincent Kennedy



**FAX: 818-842-3396**

**JANCO CORP.**, Box 3038-Glenoaks Sta., Burbank, CA 91508, Tel: 818-846-1800; FSC No.: 91812; Empl: 144; Sls. Mgr.: Gary Smith  
B-1758-1759

**Local Sales Offices & Reps**

|    |                                    |              |
|----|------------------------------------|--------------|
| AZ | Mesa, Sys. Sls. of AZ. Inc.        | 602-464-9989 |
| CA | San Diego, Zerimar Sls.            | 619-436-3379 |
| CA | San Jose, Wes Tron Assocs.         | 408-264-4070 |
| CA | So. Calif., Gabriel & Assoc.       | 714-666-0660 |
| CO | Aurora, Key Specs.                 | 303-690-6106 |
| FL | Orlando, MacKay, Smith & Assocs.   | 305-423-4353 |
| GA | Atlanta, MacKay, Smith & Assocs.   | 404-449-7444 |
| IL | Addison, Vikeland Sls.             | 708-832-8425 |
| IN | Greenwood, Valentine & Assocs.     | 317-888-2260 |
| KS | Wichita, Dy-Tronix Inc.            | 316-838-2645 |
| MD | Ellicott, Tech. Sls. Inc.          | 800-225-4335 |
| MA | Swansea, Eastrep Corp.             | 617-672-0788 |
| MN | St. Paul, Debeck-Hays Assocs.      | 612-835-3610 |
| MO | Bridgeton, Dy-Tronix Inc.          | 314-291-4777 |
| NJ | Kenil, CFE/GRAY                    | 201-927-6662 |
| NY | Fairport, TAC Sls. Inc.            | 716-377-2250 |
| NC | Charlotte, MacKay, Smith & Assocs. | 704-372-1188 |
| OH | Columbus, Rathsbury Assocs., Inc.  | 614-457-2242 |
| PA | Southeastern, Quality Comps.       | 215-687-3553 |
| TX | Irving, Trice Mktg. Corp.          | 214-255-1877 |
| WA | Seattle, Norwest                   | 206-827-9562 |

**Local Distributors**

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Burbank, Merit Comp. Supp.          | 818-842-7607 |
| CA | Westlake Village, Tech-Cable Prods. | 818-991-4697 |

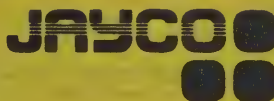
**JAN CRYSTALS, Bob Whan and Son Electronics**, 2341 Crystal Dr, Ft. Myers, FL 33907, Tel: 813-936-2397, 1-800-526-9825, FAX: 813-936-3750; Empl: 28

**JAN HARDWARE MFG. CO.**, See Electronics Hardware

**JAPANESE PRODUCTS CORP.**, 7 Westchester Plaza, Elmsford, NY 10523, Tel: 914-592-8880, TELEX: 516929 ANS BACK ENFD, FAX: 914-592-7001; Empl: 8; Sls. Mgr.: Don Cassalia

**JARO COMPONENTS, INC.**, 6600 Park of Commerce Blvd., Boca Raton, FL 33487-8295, Tel: 407-241-8600, FAX: 407-241-3328; Empl: 30; Sls. Mgr.: Floyd Burwell; Dist. Mgr.: Floyd Burwell

**J.A.W. INDUSTRIES, INC.**, 1750-A Costner Dr., Warrington, PA 18976, Tel: 215-343-8990, FAX: 215-343-8942; Empl: 20; Sls. Mgr.: J. McLaughlin; Dist. Mgr.: J. McLaughlin



**FAX: 714-998-4954**

**JAYCO INTERFACE TECHNOLOGY**, 507 W. Blueridge Ave., Orange, CA 92665, Tel: 714-974-1701; Empl: 33  
B-1840-1841

**Local Sales Offices & Reps**

|    |                                       |              |
|----|---------------------------------------|--------------|
| AZ | Scottsdale, Michael J. Dildine Assoc. | 602-966-4200 |
| CA | Los Angeles, Satori Elec.             | 310-214-1791 |
| CA | San Diego, Coastal Elctm. Sls.        | 619-459-4148 |
| CA | Sunnyvale, Pass Assocs.               | 408-735-9040 |
| CO | Denver, AKI Enterprises               | 303-756-0700 |
| GA | Atlanta, Satori Elec.                 | 404-242-0606 |
| IL | Elgin, MacKellar Assoc.               | 708-468-8900 |
| MI | Bloomfield Hills, MacKellar Assoc.    | 313-335-4440 |
| NJ | Wayne, Breen Assoc.                   | 201-696-8683 |
| NY | New York, Breen Assocs.               | 201-696-8683 |
| OH | Columbus, MacKellar Assoc.            | 614-848-3552 |
| OR | Portland, TAC Assoc.                  | 503-648-6110 |
| TX | Dallas, REM Comps.                    | 214-234-1069 |

**JAYCOR, P.O. Box 85154, San Diego, CA 92186**, Tel: 619-453-6580, FAX: 619-535-9763; FSC No.: 3M687; Empl: 800; Sls. Mgr.: Steven Lutjens

**JB ELECTRONIC TRANSFORMERS INC.**, 2310 W. Armitage Ave., Chicago, IL 60647, Tel: 312-342-0080, FAX: 312-342-9098; FSC No.: 11700; Empl: 150; Sls. Mgr.: Donald M. Gould

**JBM ELECTRONICS, INC.**, 1 Commerce Drive, Bedford, NH 03110-6802, Tel: 603-623-0222, FAX: 603-623-0446; FSC No.: 62694; Empl: 40; Sls. Mgr.: Susan Bennett; Dist. Mgr.: Susan Bennett  
A-1567, 2363; D-2127

**Local Distributors**

|     |                                   |              |
|-----|-----------------------------------|--------------|
| FL  | Casselberry, Aerco, Inc.          | 407-695-0600 |
| IN  | Indianapolis, Custom Svc. Elctms. | 317-879-9119 |
| NH  | Atkinson, Astrum Elctms.          | 603-898-3399 |
| SC  | Lamar, Aerco, Inc.                | 803-326-5463 |
| Can | Markham, Ont, SEMAD/Div. of DGW   | 416-475-8500 |

**J-B-T INSTRUMENTS, INC.**, Box 1818, New Haven, CT 06508-1818, Tel: 203-776-1111, FAX: 203-624-8142; Empl: 25; Sls. Mgr.: Lillian Sharron

**JC SYSTEMS, INC.**, 11535 Sorrento Valley Rd. Ste. 400, San Diego, CA 92121, Tel: 619-793-7117, FAX: 619-793-1931; Empl: 12; Sls. Mgr.: Ralph Anianus

**JDK CONTROLS, INC.**, 424 Crown Point Circle, Grass Valley, CA 95945-0512, Tel: 916-273-4608, FAX: 916-273-0769; Empl: 50; Sls. Mgr.: Reece Kendall  
A-2088-2091

**Local Sales Offices & Reps**

|    |                             |              |
|----|-----------------------------|--------------|
| NJ | Matawan, Tim Reilly Assocs. | 908-566-4555 |
|----|-----------------------------|--------------|

**JEFFERS ELECTRONICS**, 1331 W. Fairway Rd, Nogales, AZ 85621, Tel: 602-281-4925, FAX: 602-281-0090; FSC No.: 59474; Empl: 400; Sls. Mgr.: Ken Shobert; Dist. Mgr.: Steve Morris



**FAX: 708-251-3738**

**JEMA**, 1000 Skokie Blvd, Wilmette, IL 60091, Tel: 708-251-3600; Empl: 10; Sls. Mgr.: Dale R. Thompson; Dist. Mgr.: Chris Gantz  
D-1024-1025, 1042-1047

**JEMTEC ELECTRONICS CO., SEE SCIENTIFIC COLUMBUS CO.**

**W. S. JENKS & SON**, 1933 Montana Ave. NE, Washington, DC 20002, Tel: 202-529-6020, 800-673-8199, FAX: 202-832-3411

**JENSEN TOOLS, INC.**, Stanley Works, 7815 S. 46th St., Phoenix, AZ 85044, Tel: 602-968-6241, FAX: 800-366-9662; Empl: 250; Sls. Mgr.: Patrick Acton

**JEROME INDUSTRIES CORP.**, 730 E. Division St., Elizabeth, NJ 07201, Tel: 908-353-5700, FAX: 908-353-1021; Empl: 150; Sls. Mgr.: Anthony Di Girolamo  
D-1756-1760

**JERSEY SPECIALTY CO.**, See JSC Wire & Cable



**FAX: 310-426-2417**

**JETA POWER SYSTEMS, INC.**, 2675 Junipero, Signal Hill, CA 90806, Tel: 310-427-0095; Empl: 110  
D-1762-1763

**Local Sales Offices & Reps**

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AZ  | Scottsdale, Summit Sls.             | 602-998-4850 |
| CA  | Santa Clara, Gagner-Toomey Assoc.   | 408-244-2200 |
| CO  | Golden, J.F. Hurlbut Co.            | 303-279-7796 |
| CT  | Vernon, George Urban & Assocs.      | 617-329-4068 |
| IA  | Cedar Rapids, Advanced Tech. Sls.   | 319-393-8280 |
| KS  | Olathe, ATS, Inc.                   | 913-782-8702 |
| MA  | Dover, The Urban Grp.               | 617-329-4068 |
| MN  | Minneapolis, Engrg. Prods. Assocs.  | 612-835-9022 |
| MO  | Bridgeton, Advanced Tech. Sls.      | 314-291-5003 |
| NY  | Fairport, Hi-Tec Sls.               | 716-223-5922 |
| NY  | Franklin Square, Cooper-Simon Emtec | 516-489-0404 |
| OH  | Mentor, Sls. Plus                   | 216-942-7811 |
| TX  | Dallas, MGR Elctms.                 | 214-238-5246 |
| Can | Montreal, Empro Sls.                | 514-341-6420 |



**JETTRON PRODUCTS INC.**, P.O. Box 337, E. Hanover, NJ 07936, Tel: 201-887-0571, FAX: 201-887-4182; FSC No.: 04435; Empl: 30; Sls. Mgr.: Ben Latawiec  
C-1358-1359

*Local Sales Offices & Reps*  
CA El Cajon, A-Tronics ..... 619-444-1501

JFD ELCTRNS., See Murata Erie No. Amer., Inc.

JF MICROSYSTEMS, 3641 Frontier Road, Pasco, WA 99301-9619, Tel: 509-297-4294, 800-532-2737; Empl: 2; Sls. Mgr.: Jim Follansbee

**JFW INDUSTRIES, INC.**, 5134 Commerce Sq. Dr., Indianapolis, IN 46237, Tel: 317-887-1340, FAX: 317-881-6790; FSC No.: 61162; Empl: 125; Sls. Mgr.: Carrie Glover  
A-1722-1723; D-1275

*Local Sales Offices & Reps*  
AZ Scottsdale, TDSI/AZ ..... 602-998-2444  
CA Coronado, RF Assocs. .... 619-575-9011  
CA San Jose, MC Microwave, Inc. .... 408-446-4100  
CO Franktown, Excelsis ..... 303-841-4305  
FL Stuart, Microwave Comps. .... 407-286-4455  
KS Lenexa, Midwest Tech. Sls. .... 913-888-5100  
MA Chelmsford, Matrix Sls. .... 508-459-4000  
NY Melville, RF Elctm. Sls. .... 516-420-8890  
TX Dallas, Bradenco Corp. .... 214-352-3554  
VA Alexandria, Clifton Elctms. .... 703-360-9129  
WA Seattle, Datacom Assocs. .... 206-285-2525  
Can Ottawa, Ont., Giga-Tron Assocs., Ltd. .... 613-225-4090

*Local Distributors*  
MA New England Area, East Coast Microwave ..... 617-279-0900

**JH AMERICA, INC., JBT International, Inc.**, 20809 Higgins Court, Torrance, CA 90501, Tel: 310-328-0051, FAX: 310-328-0057; Sls. Mgr.: Mark Zimmermann  
C-1754-1755

*Local Sales Offices & Reps*  
CA Palm Springs, R D Sls. .... 619-324-5044  
CA Sunnyvale, Logan Sls. .... 408-732-6020  
FL Longboat Key, VSI, Inc. .... 813-383-1440  
MI Ann Arbor, VSI, Inc. .... 313-995-1200  
NY Rochester, VSI, Inc. ....  
NC Raleigh, VSI, Inc. .... 919-870-0060  
RI Coventry, VSI, Inc. .... 401-826-0040

*Local Distributors*  
AZ Scottsdale, Memory Plus Dist. .... 602-820-8819  
AZ Tempe, Comtel Corp. .... 602-829-9471  
CA Anaheim, Deco Elctms. .... 714-630-8252  
CA Chula Vista, Sonika Elctm. .... 619-424-9190  
CA San Diego, Deco Elctms. .... 619-693-1595  
FL Orlando, Computel .... 407-682-3957  
IL Elk Grove Vlg., Lutubusiness Sys. .... 708-803-6466  
NJ Kennilworth, Computel .... 201-241-5400  
NC Charlotte, Computel .... 704-376-4414  
OH Dayton, Tech. Dvc. .... 513-890-6811



**FAX: 818-897-3056**

**JKL COMPONENTS CORPORATION**, 13343 Paxton St., Pacoima, CA 91331-2376, Tel: 818-896-0091; FSC No.: 55335; Empl: 35; Sls. Mgr.: Ernie Soares; Dist. Mgr.: Ernie Soares  
B-1168

*Local Sales Offices & Reps*  
AL Huntsville, Southern Sls. .... 205-830-9322  
CA Burbank, Darco Elctm. Sls. .... 818-504-2425  
CT W. Hartford, Conti-Younger & Assoc. .... 203-521-0602  
IL Elk Grove, Control Sls. .... 708-595-2110  
NY Henrietta, CMJ, Inc. .... 716-334-3277  
MD Baltimore, Universal Elctms. .... 301-461-9946  
MA Burlington, Conti-Younger .... 617-273-1582  
MI Farmington Hills, Clark Sls. .... 313-553-0610  
MN Bloomington, Mumco .... 612-854-4161  
OH Cincinnati, Clark Sls. Co. .... 513-922-7555  
OH Painesville, Clark Sls. Co. .... 216-247-7848  
PA Philadelphia, Check Assoc. .... 215-487-3007  
TX Irving, Kite Elec. Sls. .... 214-986-0321

*Local Distributors*  
AL Huntsville, Powell Elec. .... 205-539-2731  
CA San Diego, Richey/Impact Sls. .... 619-271-4511  
AZ Phoenix, Capital Elctms. .... 602-252-5897  
CA Garden Grove, Richey Western .... 714-895-0060  
CA Gardena, Cal. Switch & Signal .... 213-770-2330  
CA San Diego, Richey/Impact Sls. .... 619-271-4511

CA Santa Clara, Richey/Western Elec. .... 408-727-7411  
CA Sunnyvale, Target Elec. .... 415-961-1170  
CT Wallingford, Sager Elec. .... 203-265-4600  
FL Ft. Lauderdale, Powell Elec. .... 305-484-8377  
GA Norcross, Specialty Distrib. Co. .... 404-446-3190  
IL Wheeling, Hawk Elec. .... 312-459-4030  
IN Indianapolis, Meunier Elctms. .... 317-635-3511  
KS Lenexa, Amer. Elec. & Cable .... 913-469-0099  
MD Kensington, Marine Air Supp. .... 301-949-1353  
MD Rockville, M S Elctms. .... 301-340-6400  
MA Hingham, Sager Elec. .... 617-749-6700  
MA Westborough, Powell Elec. .... 617-366-6100  
MN Minneapolis, Bergquist Co. .... 612-835-2322  
MO Richland, ATR Ent. .... 314-765-5219  
MN Fridley, Voyager Elec. .... 612-571-7766  
NJ Clifton, Vantage Comps. .... 201-777-4100  
NM Albuquerque, Walker Elec. Supply .... 505-883-2992  
NY Apalachin, Rogan Elec. .... 607-625-2949  
NH Salem, Sager Elec. .... 603-898-1348  
NC Greensboro, Hammond .... 919-275-6391  
OH Cincinnati, Schuster Elec. .... 216-425-8134  
OK Oklahoma City, Radio Supp. Inc. .... 405-232-6127  
PA Bristol, Aim Elec. .... 215-785-3500  
PA Philadelphia, Powell Elec. .... 215-365-1900  
TN Chattanooga, Specialty Distr. Co. .... 615-624-1400  
OH Yellow Springs, Electro-Shield .... 513-767-1054  
TX Ft. Worth, T & S Supp. .... 817-248-4781  
WA Seattle, Radar Elec. Co. .... 206-282-2511  
WI Oshkosh, Electronic Inds. .... 414-235-8930

**JMJ TECHNICAL PRODS.**, 517 Kimball Turn, Westfield, NJ 07090, Tel: 201-589-4257, FAX: 908-789-2447; Empl: 8; Sls. Mgr.: Kevin Kolenut  
C-1531



**FAX: 603-886-4115**

**JMK, INC.**, 15 Caldwell Dr., Amherst, NH 03031, Tel: 603-886-4100; Empl: 100; Sls. Mgr.: J. Kennedy  
A-1596-1597

*Local Sales Offices & Reps*  
CA Woodland Hills, Cummings & Assoc. South ..... 818-340-6035  
MN St. Paul, Arko Sls. .... 612-777-7454

**JM TRANSFORMER CO., INC.**, 112 Florida St., Farmingdale, NY 11735, Tel: 516-293-0475, FAX: 516-293-3923; Empl: 18; Sls. Mgr.: J. Millman  
A-2364-2369

**JOBMASTER CORP.**, 9010 Liberty Rd., P.O. Box 207E, Randallstown, MD 21133-0207, Tel: 410-655-1400, 1-800-642-1400, FAX: 410-521-5461; Empl: 16  
A-1300

**JOEMEX ELECTRICS**, 19 Hammond 508, Irvine, CA 92718, Tel: 714-855-4472

**JOHANSON DIELECTRICS, INC.**, 15191 Bledsoe St., Sylmar, CA 91342, Tel: 818-364-9800, FAX: 818-364-6100; Empl: 300  
A-1089

*Local Sales Offices & Reps*  
AL Huntsville, Elctm. Sls. Inc. .... 205-533-1735  
AZ Tempe, Reptonix, Inc. .... 602-230-2630  
CA Costa Mesa, Richland Tech. Sls. .... 714-646-6640  
CA Mountain View, Straube Assocs. .... 415-969-6060  
CO Westminster, Straube Assocs. .... 303-426-0890  
CT Waterbury, Compak Inc. .... 203-753-6431  
FL Ft. Lauderdale, VG Sales Co. .... 305-938-4331  
FL Altamonte Springs, VG Sales Co. .... 407-831-8688  
FL Largo, VG Sales Co. .... 813-536-7787  
GA Norcross, Elctm. Sls. Inc. .... 404-448-6554  
IL Lisle, WG Controls .... 708-963-5954  
IN Indianapolis, M & L Elctms. .... 317-359-4742  
IA Cedar Rapids, Spectrum Sls. .... 319-366-0571  
KS Overland Park, Spectrum Sls. .... 913-648-6811  
MD Columbia, PSA South .... 301-730-0359  
MA Hudson, Compak Inc. .... 508-568-0331  
MI Farmington, JP Bergin Assocs. .... 313-471-7940  
MN St. Paul, Cahill, Schmitz & Cahill, Inc. .... 612-646-7217

MO Florissant, Spectrum Sls. .... 314-921-1313  
NM Albuquerque, Reptonix, Inc. .... 505-292-1718  
NY Apalachin, T Squared Elctms. .... 607-625-3983  
NY Bellmore, Comp New York Inc. .... 516-221-7300  
NY Syracuse, T Squared Elctms. .... 315-463-8592  
NY Victor, T Squared Elctms. .... 716-924-9101  
NC Cary, Elctm. Sls., Inc. .... 919-467-8486  
NC Charlotte, Elctm. Sls., Inc. .... 704-543-8705  
OH Columbus, Dolfuss-Root & Co. .... 614-885-4844

OH Dayton, Dolfuss-Root & Co. .... 513-433-6776  
OH Westlake, Dolfuss-Root & Co. .... 216-899-9370  
OR Portland, Caruso & Camelleri Assoc. .... 503-246-5439  
PA Trevoise, PSA, Inc. .... 215-245-0513  
TX Arlington, Ion Assocs., Inc. .... 817-695-4905  
TX Austin, Ion Assocs., Inc. .... 512-794-9006  
TX Houston, Ion Assocs., Inc. .... 713-537-7717  
UT Salt Lake City, Straube Assocs. .... 801-263-2640  
VA Oakton, PSA South .... 703-281-1806  
PR Mayaguez, V.G. Sls. .... 809-831-4050  
Can Kanata, Ont., J-Squared Technigs. .... 613-592-9540  
Can Rexdale, Ont., J-Squared Technigs. .... 416-674-0927

*Local Distributors*  
AZ Tempe, Bell Inds. .... 602-966-7800  
CA Agoura Hills, Bell Inds. .... 818-879-9494  
CA Carson, Newark Elctms. .... 213-516-6511  
CA Cypress, Bell Inds. .... 714-895-7801  
CA El Toro, Pace Elctms. .... 714-588-2345  
CA Foster City, Newark Elctms. .... 415-572-8300  
CA Inglewood, Newark Elctms. .... 213-671-7377  
CA Irvine, Kelex .... 714-863-1230  
CA Los Alamitos, SEMI DICE .... 213-594-4631  
CA Los Angeles, Penstock .... 213-383-6100  
CA Rocklin, Bell Inds. .... 916-652-0414  
CA San Diego, Bell Industries .... 619-268-1277  
CA San Diego, Neumann Elctms. .... 619-995-3005  
CA San Jose, Co-Linear Sls. .... 408-441-6566  
CA Santa Clara, Pace Elctms. .... 408-748-3748  
CA Santa Clara, SEMI DICE .... 408-980-9777  
CA Sunnyvale, Bell Inds. .... 408-734-8570  
CA Sunnyvale, Capacitor Connection .... 408-737-8985  
CA Sunnyvale, Penstock .... 408-730-0300  
CA Van Nuys, C.W. Swift .... 818-989-1133  
CA Yorba Linda, Corona Elctms. .... 714-283-8185  
CO Denver, Bell Inds. .... 303-691-9010  
CO Denver, Newark Elctms. .... 303-757-8531  
CT Bloomfield, Newark Elctms. .... 203-243-1731  
CT Wallingford, Bell Inds. .... 203-269-6801  
FL Altamonte Springs, Bell Inds. .... 407-339-0078  
FL Orlando, Newark Elctms. .... 407-896-8350  
FL Palm Bay, Penstock .... 407-724-5300  
FL Pompano Bch., ASAP Elctms. .... 305-975-2477  
GA Atlanta, Penstock .... 404-951-0300  
GA Norcross, Bell Inds. .... 404-446-7167  
IL Chicago, Newark .... 312-784-5100  
IL Elk Grove Village, Bell Inds. .... 708-640-1910  
IL Palatine, Penstock .... 708-934-3700  
IN Ft. Wayne, Bell Inds. .... 219-423-3422  
IN Indianapolis, Bell Inds. .... 317-875-8200  
KS Olathe, Penstock .... 913-829-9330  
MD Columbia, Bell Inds. .... 410-290-5100  
MA Andover, Bell Inds. .... 508-474-8880  
MA Marlborough, Penstock .... 508-624-7300  
MA Middleboro, Glynn Elec. Inc. .... 508-947-4262  
MA South Easton, Semi Dice .... 508-238-8344  
MN Hibbins, Minntech .... 218-262-5227  
MN Minneapolis, Newark Elctms. .... 612-331-6350  
MS Jackson, Newark Elctms. .... 601-956-8300  
NH Atkinson, Astrum .... 603-898-3399  
NJ Fairfield, Bell Inds. .... 201-625-7777  
NJ Fairfield, Micros Comps. .... 201-227-8007  
NJ Fairfield, Penstock .... 201-808-1414  
NJ Fairfield, Prime Comps. .... 516-244-8190  
NJ Rockaway, NASCO .... 201-227-6060  
NM Albuquerque, Bell Inds. .... 505-292-2700  
NY Central Islip, Semi Dice, Inc. .... 516-234-7676  
NY Mt. Vernon, ASAP Elctms. .... 914-699-2727  
NY Sodus, Pace Elctms. .... 800-228-7223  
OH Dayton, Bell Inds. .... 513-435-8660  
OR Beaverton, Bell Industries .... 503-644-1500  
PA Trevoise, Bell Inds. .... 215-953-2800  
TX Allen, Prime Distr. .... 214-542-7915  
TX Allen, Prime Distribution .... 214-542-7915  
TX Dallas, Penstock .... 214-701-9555  
TX Garland, Newark Elctms. .... 214-487-8144  
TX Richardson, Bell Inds. .... 214-690-0466  
UT Midvale, Bell Inds. .... 801-561-9691  
WA Bellevue, Penstock .... 206-454-2371  
WA Redmond, Bell Inds. .... 206-867-5410  
WI Waukesha, Bell Industries .... 414-547-8879

CA Los Angeles, Penstock .... 213-383-6100  
CA Rocklin, Bell Inds. .... 916-652-0414  
CA San Diego, Bell Industries .... 619-268-1277  
CA San Diego, Neumann Elctms. .... 619-995-3005  
CA San Jose, Co-Linear Sls. .... 408-441-6566  
CA Santa Clara, Pace Elctms. .... 408-748-3748  
CA Santa Clara, SEMI DICE .... 408-980-9777  
CA Sunnyvale, Bell Inds. .... 408-734-8570  
CA Sunnyvale, Capacitor Connection .... 408-737-8985  
CA Sunnyvale, Penstock .... 408-730-0300  
CA Van Nuys, C.W. Swift .... 818-989-1133  
CA Yorba Linda, Corona Elctms. .... 714-283-8185  
CO Denver, Bell Inds. .... 303-691-9010  
CO Denver, Newark Elctms. .... 303-757-8531  
CT Bloomfield, Newark Elctms. .... 203-243-1731  
CT Wallingford, Bell Inds. .... 203-269-6801  
FL Altamonte Springs, Bell Inds. .... 407-339-0078  
FL Orlando, Newark Elctms. .... 407-896-8350  
FL Palm Bay, Penstock .... 407-724-5300  
FL Pompano Bch., ASAP Elctms. .... 305-975-2477  
GA Atlanta, Penstock .... 404-951-0300  
GA Norcross, Bell Inds. .... 404-446-7167  
IL Chicago, Newark .... 312-784-5100  
IL Elk Grove Village, Bell Inds. .... 708-640-1910  
IL Palatine, Penstock .... 708-934-3700  
IN Ft. Wayne, Bell Inds. .... 219-423-3422  
IN Indianapolis, Bell Inds. .... 317-875-8200  
KS Olathe, Penstock .... 913-829-9330  
MD Columbia, Bell Inds. .... 410-290-5100  
MA Andover, Bell Inds. .... 508-474-8880  
MA Marlborough, Penstock .... 508-624-7300  
MA Middleboro, Glynn Elec. Inc. .... 508-947-4262  
MA South Easton, Semi Dice .... 508-238-8344  
MN Hibbins, Minntech .... 218-262-5227  
MN Minneapolis, Newark Elctms. .... 612-331-6350  
MS Jackson, Newark Elctms. .... 601-956-8300  
NH Atkinson, Astrum .... 603-898-3399  
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NJ Rockaway, NASCO .... 201-227-6060  
NM Albuquerque, Bell Inds. .... 505-292-2700  
NY Central Islip, Semi Dice, Inc. .... 516-234-7676  
NY Mt. Vernon, ASAP Elctms. .... 914-699-2727  
NY Sodus, Pace Elctms. .... 800-228-7223  
OH Dayton, Bell Inds. .... 513-435-8660  
OR Beaverton, Bell Industries .... 503-644-1500  
PA Trevoise, Bell Inds. .... 215-953-2800  
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TX Allen, Prime Distribution .... 214-542-7915  
TX Dallas, Penstock .... 214-701-9555  
TX Garland, Newark Elctms. .... 214-487-8144  
TX Richardson, Bell Inds. .... 214-690-0466  
UT Midvale, Bell Inds. .... 801-561-9691  
WA Bellevue, Penstock .... 206-454-2371  
WA Redmond, Bell Inds. .... 206-867-5410  
WI Waukesha, Bell Industries .... 414-547-8879

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CA San Diego, Bell Industries .... 619-268-1277  
CA San Diego, Neumann Elctms. .... 619-995-3005  
CA San Jose, Co-Linear Sls. .... 408-441-6566  
CA Santa Clara, Pace Elctms. .... 408-748-3748  
CA Santa Clara, SEMI DICE .... 408-980-9777  
CA Sunnyvale, Bell Inds. .... 408-734-8570  
CA Sunnyvale, Capacitor Connection .... 408-737-8985  
CA Sunnyvale, Penstock .... 408-730-0300  
CA Van Nuys, C.W. Swift .... 818-989-1133  
CA Yorba Linda, Corona Elctms. .... 714-283-8185  
CO Denver, Bell Inds. .... 303-691-9010  
CO Denver, Newark Elctms. .... 303-757-8531  
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FL Orlando, Newark Elctms. .... 407-896-8350  
FL Palm Bay, Penstock .... 407-724-5300  
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MA South Easton, Semi Dice .... 508-238-8344  
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GA Norcross, Bell Inds. .... 404-446-7167  
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MA South Easton, Semi Dice .... 508-238-8344  
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OR Beaverton, Bell Industries .... 503-644-1500  
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TX Allen, Prime Distribution .... 214-542-7915  
TX Dallas, Penstock .... 214-701-9555  
TX Garland, Newark Elctms. .... 214-487-8144  
TX Richardson, Bell Inds. .... 214-690-0466  
UT Midvale, Bell Inds. .... 801-561



IL Lisle, W.G. Controls ..... 708-963-5954  
IN Kokomo, Schilling Assoc. .... 317-457-7241  
IA Hiawatha/Cedar Rapids, ARD Sales Co. ....  
KS Lenexa, Midtec Assocs. .... 319-393-6392  
MA Hudson, Compak, Inc. .... 913-541-0505  
MN St. Paul, Cahill, Schmirz & Cahill, Inc. .... 508-568-0331

612-646-7217  
MO St. Louis, Midtec Assocs. .... 314-275-8666  
NM Albuquerque, Repronix Inc. .... 505-292-1718  
NY Boonton, Johanson Mfg. Corp. .... 201-334-2676  
NY Syracuse, L.D. Allen, Inc. .... 315-487-8387  
NC Winston-Salem, Murocta Corp. .... 919-722-9445  
OH Dayton, Scott Elect. Inc. .... 513-294-0539  
PA Trevoise, P.S.A. .... 215-245-0513  
TX Austin, W. Pat Fralia & Assocs. .... 512-835-7911  
TX Euless/Ft. Worth, W. Pat Fralia & Assocs. ....

817-267-3577  
TX Houston, W. Pat Fralia & Assocs. .... 713-772-1572  
VA Oakton, PSA South ..... 301-953-4884  
WA Seattle, Northmar ..... 206-524-5170  
Can Montreal, A. C. Simmonds, LTD. .... 514-466-5250  
Can Toronto, A. C. Simmonds, LTD. .... 416-839-8041

**Local Distributors**  
CA Sunnyvale, Penstock ..... 408-730-0300  
CA Van Nuys, C.W. Swift ..... 818-989-1133  
FL Miami, All American ..... 305-621-8282  
FL Winter Pk, Pelcor ..... 407-644-1594  
IL Chicago, Newark Elctms. .... 312-784-5100  
IN Indianapolis, Bell Inds. .... 317-875-8200  
MD Beltsville, Resco/Washington ..... 301-937-9100  
MA Seekonk, M-Squared ..... 508-761-5490  
MO Baltimore, Resco/Baltimore ..... 301-931-8200  
NJ Rockaway, Tonar ..... 201-586-9000  
NY Hauppauge, Jaco Elctms. .... 516-273-5500  
NY Mt. Vernon, ASAP Elctms. .... 914-699-2727  
PA Philadelphia, PEI-Genesis ..... 215-673-0400  
TX Ft. Worth, PATCO Supplies ..... 817-429-8596  
Can St. Laurent, Q.C., Braydon Elctms. .... 514-332-5650  
Can Willowdale, Electro Sonic ..... 416-494-1555

JOHNSON, E. F., CO., 299 Johnson Ave., Waseca, MN 56093, Tel: 1-800-247-8256, FAX: 507-835-8287; Empl: 800; Sls. Mgr.: Kevin Lohmann; Dist. Mgr.: Kevin Lohmann

JOHNSON CONTROLS BATTERY GROUP, INC., 900 East Keefe Ave., Milwaukee, WI 53212, Tel: 414-961-6500, FAX: 414-961-6506; Empl: 250; Sls. Mgr.: James L. Winistorfer, Dir. Sls. & Mktg.

JOHNSON YOKOGAWA CORP., 4 Dart Road, Newnan, GA 30265, Tel: 404-254-0400, FAX: 404-254-0928; Empl: 700; Sls. Mgr.: Chuck Micallef

JOLO INDUSTRIES, INC., 13921 Nautilus Dr., Garden Grove, CA 92643, Tel: 714-554-6840, FAX: 714-554-0306; FSC No.: 30035; Empl: 20; Sls. Mgr.: J.S. Giampiccolo, Jr. **C1360-1361**

**Local Sales Offices & Reps**  
AZ Scottsdale, JK & Assocs. .... 602-990-8804  
CA Los Angeles, Quattro Sls. Assocs. .... 213-372-4221  
CA Orange County, Quattro Sls. Assocs. ....  
800-735-4510  
CA Pleasanton, Laddy Assocs. .... 510-417-1033  
CA San Diego, Quattro Sls. Assocs. .... 619-581-3093  
CA San Fernando Valley, Quattro Sls. Assocs. ....

805-523-2978  
FL Longwood, Mathias Assocs., Inc. .... 407-682-1700  
IL Schaumburg, Terry McNulty & Assocs. ....

708-980-9868  
MA Reading, Lincoln Tech. Sls. .... 617-944-9594  
MI Rochester Hills, Geotronics, Inc. .... 313-373-4334  
NJ Fairfield, Brunetta Mktg. Svcs. .... 201-227-2522  
OH Cleveland, Geotronics Mktg. Assocs. .... 216-659-6100  
OH Trotwood, Geotronics, Inc. .... 513-854-5939  
OR Portland, Evergreen Mktg. Grp. .... 503-598-7667  
PA Allison Park, Geotronics, Inc. .... 412-487-1770  
WA Edmonds, Evergreen Mktg. Grp. Inc. .... 206-485-8063  
Can Nepean, Ont., Tech-Trad, Inc. .... 613-727-1272

**Local Distributors**  
FL Miami, Elec. Equip. .... 305-526-6060  
OH Richfield, Alpha Distr. Corp. .... 216-659-7100

JONARD INDUSTRIES CORP., 134 Marbledale Rd., Tuckahoe, NY 10707, Tel: 914-793-0700, FAX: 914-793-4527; Empl: 65; Sls. Mgr.: Rich Gerszberg

JONATHAN MANUFACTURING CORP., 1101 So. Acacia Ave., Fullerton, CA 92631, Tel: 714-526-4651, FAX: 714-773-5582; Empl: 275; Sls. Mgr.: Todd Leverich

JONES, HIRAM, ELCTRNS. INC., See Hiram Jones Elctns. Inc.

JORI RESOURCES, 2128 Knoll Dr., Ventura, CA 93003, Tel: 805-642-2266, FAX: 805-642-5978; Empl: 4

JOSLYN ELECTRONIC SYSTEMS CORP., P.O. Box 817, 6868 Cortona Dr., Goleta, CA 93116, Tel: 800-752-8068, 805-968-3551, FAX: 805-968-2335; FSC No.: 23663; Empl: 240; Sls. Mgr.: M. Young

## JOSLYN JENNINGS CORPORATION

**FAX: 408-286-1789**

JOSLYN JENNINGS CORPORATION, 970 McLaughlin Ave., San Jose, CA 95122-2696, Tel: 408-292-4025, TELEX: 34-6311, TWX: 910-338-0159; FSC No.: 73905; Empl: 350; Sls. Mgr.: Dwane Gisi **A1090; B1536-1538; D1277**

**Local Sales Offices & Reps**  
AL Huntsville, Brandel-Stephens ..... 205-883-0445  
AZ Phoenix, Crown Systems ..... 602-274-3180  
CA Encino, King-Way Assocs. .... 818-788-4124  
CA San Jose, H. W. Assocs. .... 408-996-9940  
CO Denver, Lindberg Co. .... 303-758-9033  
FL Deerfield Beach, Brandel-Stephens ..... 305-427-8558  
FL Orlando, Brandel-Stephens ..... 305-425-3202  
GA Atlanta, Brandel-Stephens ..... 404-261-7579  
IL Arlington Hts., Berndt Assocs. .... 312-632-0900  
IN Carmel, Berndt Assocs. .... 317-844-0114  
KS Shawnee Mission, Lowell-Kangas & Assoc. ....  
913-631-3515  
MD Hunt Valley, Marktron ..... 301-628-1111  
MD Rockville, Marktron ..... 301-251-8990  
MA Haverhill, L.K. Assocs. .... 617-373-1313  
MN Minneapolis, Berndt Assocs. .... 612-546-2021  
MO St. Louis, Lowell-Kangas & Assoc. .... 314-821-4050  
NJ Flanders, K&R Engrg. Sls. .... 201-584-5235  
NM Albuquerque, Lindberg Co. .... 505-881-1006  
NY Kingston, Leonard D. Allen, Inc. .... 914-338-7588  
NY Syracuse, Leonard D. Allen, Inc. .... 315-437-8387  
NC Greensboro, Brandel-Stephens ..... 919-274-6952  
OH Centerville, Bear Mktg., Inc. .... 513-436-2061  
OH Richfield, Bear Mktg., Inc. .... 216-659-3131  
PA Huntingdon Valley, Omega Elctms. .... 215-947-4135  
PA Pittsburgh, Bear Mktg., Inc. .... 412-531-2002  
TX Houston, Barry Sales ..... 713-784-5860  
TX Richardson, Barry Sales ..... 214-234-0255  
UT Salt Lake City, Lindberg Co. .... 801-277-2643  
WI Milwaukee, Berndt Assocs. .... 414-545-8400

**Local Distributors**  
CA Carlsbad, Surcom Assocs. .... 619-438-4420  
IL La Fox, Richardson Elctms, Ltd. .... 312-456-0600  
TN Bristol, Kintronics ..... 615-878-3141

JOULE POWER, INC., Joyce Industrial Pk., Summer Rd., Boxborough, MA 01719, Tel: 508-263-9712, FAX: 508-263-9071 **D1765**

**Local Sales Offices & Reps**  
AL Huntsville, Over & Over ..... 205-837-7105  
AZ Scottsdale, Sun Tech Mktg. .... 602-483-1082  
CA San Jose, Silicon Valley Sls. .... 408-432-1967  
FL Altamonte Springs, Over & Over ..... 407-332-1222  
GA Norcross, Over & Over ..... 404-449-6205  
MA Tyngsboro, AMS Mktg. .... 508-649-3383  
NY Commack, RC Eng. Sls. .... 516-543-3325  
NC Raleigh, Over & Over ..... 919-876-7338  
OH Cincinnati, Century Tech. Sls. .... 513-677-5088  
PA Wayne, John Lyons Mktg. .... 215-687-2277  
TX Plano, Alticus ..... 214-964-0663  
UT Ogden, Doug Taylor & Assocs. .... 801-546-9570  
VA Alexandria, Mid-States Mktg. .... 703-370-2600  
WA Lake Oswego, SPS Elctms. .... 503-697-7768  
Can Montreal, Que., Solid State Engrg. .... 514-481-3313

JOVIL MANUFACTURING CO., INC., Precision Rd., Danbury, CT 06810, Tel: 203-792-6700, TELEX: 969634, FAX: 203-790-8645; Empl: 25; Sls. Mgr.: Keith Fredlund

JRW INDUSTRIES, INC., 2312 N Second St., Harrisburg, PA 17110, Tel: 717-236-1418, FAX: 717-236-1895; Empl: 4; Sls. Mgr.: Kevin J. Williams, Sls. Mgr.

JSC WIRE & CABLE, Box 248, Burgess Pl., Wayne, NJ 07474-0248, Tel: 201-694-6200, 1-800-572-9473, FAX: 201-694-8297; Empl: 40; Sls. Mgr.: Richard Wojtovitz

J.S.T. CORP., 1200 Business Ctr. Dr., Ste. 400, Mt. Prospect, IL 60056, Tel: 1-800-947-1110, FAX: 708-803-4918; Sls. Mgr.: Ron Lesky; Dist. Mgr.: Ron Lesky **C1363**

**Local Sales Offices & Reps**  
AL Huntsville, Over & Over, Inc. .... 205-837-7105, FAX: 205-837-7305  
AZ Scottsdale, Carefree Elctms. .... 602-951-9121, FAX: 602-951-1381

CA Canyon Country, Interconn Tech. Mktg. .... 805-298-3199, FAX: 805-298-3883  
CA Cupertino, Prism Tech. Sls. Co. .... 408-257-6766, FAX: 408-257-8847  
CA Newsbury Park, Interconn Tech. Mktg. .... 805-499-4024, FAX: 805-499-7937  
CA San Marcos, Falcon Sls. & Technlg. .... 619-591-0504, FAX: 619-591-4241  
CA Trabuco Canyon, Interconn Tech. Mktg. .... 714-589-4655, FAX: 714-589-3793  
FL Altamonte Spgs, Over & Over, Inc. .... 407-332-1222, FAX: 407-332-4433  
FL Brandon, Over & Over, Inc. .... 813-684-6486, FAX: 813-684-6486  
FL Ft. Lauderdale, Over & Over, Inc. .... 305-485-0115, FAX: 305-484-8131  
GA Norcross, Over & Over, Inc. .... 404-449-6205, FAX: 404-449-6177  
IL Itasca, Circuit Sls. .... 708-773-0200, FAX: 708-773-2721  
IN Indianapolis, Elctm. Sls. & Engrg. Co. .... 317-849-4260, FAX: 317-841-0231  
IA Blue Grass, Acorn Elctms. .... 319-381-2702, FAX: 319-381-2702  
KS Overland Pk, Acorn Elctms. .... 913-649-6402, FAX: 913-649-8005  
MA Canton, The T.M.R. Grp. .... 617-828-1848, FAX: 617-828-2459  
MI Bloomfield Hills, Trilogy Mktg., Inc. .... 313-338-2470, FAX: 313-338-6720  
MN St. Paul, Countryman Assoc. Co. .... 612-645-9151, FAX: 612-641-6153  
MO St. Louis, Acorn Elctms. .... 314-421-1751, FAX: 314-421-1752  
NJ Madsion, Venture Quest, Inc. .... 201-377-4922, FAX: 201-377-0453  
NY Holbrook, Venture Quest, Inc. .... 516-588-5130, FAX: 516-588-4424  
NY Marcellus, Franklin Sls. Corp. .... 315-673-1009, FAX: 315-673-4428  
NY New Hartford, Franklin Sls. Corp. .... 315-793-3161, FAX: 315-793-3139  
NY Pittsford, Franklin Sls. .... 716-248-8251, FAX: 716-248-3866  
NC Charlotte, Over & Over, Inc. .... 704-542-9111, FAX: 704-542-9937  
NC Raleigh, Over & Over ..... 919-876-7338, FAX: 919-876-8098  
OH Cincinnati, Stegman Blaine Mktg., Inc. .... 513-729-1969, FAX: 513-729-1984  
OH Cleveland, Stegman Blaine Mktg., Inc. .... 216-572-0003, FAX: 216-238-3229  
OH Stow, Stegman Blaine Mktg., Inc. .... 216-688-9603, FAX: 216-688-6421  
OH Vandalia, Stegman Blaine Mktg., Inc. .... 513-890-7975, FAX: 513-890-5191  
OR Aloha, Turn-A-Round Sls. .... 503-649-1007, FAX: 503-649-1008  
OR Hillsboro, Turn-A-Round Sls. .... 503-640-4641, FAX: 503-640-4640  
PA Fort Washington, SMC Inc. .... 215-628-3394, FAX: 215-628-3395  
TX Arlington, T-Tec Sls. .... 817-274-0505, FAX: 817-274-9682  
TX El Paso, T-Tec Sls. .... 915-581-7920, FAX: 915-585-1866  
TX Gilmer, T-Tec Sls. .... 903-734-4526, FAX: 903-734-5316  
TX Houston, T-Tec Sales ..... 713-578-9666, FAX: 713-578-5666  
VA Fairfax Station, Sac Communications Inc. .... 703-643-2344, FAX: 703-643-1842  
WA Kirkland, Turn-A-Round Sls. .... 206-822-4634, FAX: 206-828-0633  
WI Brookfield, Circuit Sls. .... 414-784-7773, FAX: 414-784-4528

EXP Mexico, Guadalajara, T-Tec Sls. .... 011-523-6353  
Can St. Lazare, Que, Atkinson & Ross Assoc. .... 514-424-5679, FAX: 514-424-5678  
Can Vancouver, BC, Fairwest Sls. .... 604-685-1473, FAX: 604-681-7712  
Can Whitby, Ont., Atkinson & Ross Assoc. .... 416-666-8359, FAX: 416-666-8360

**Local Distributors**  
AL Huntsville, Comp. Dists. Inc. .... 205-851-7800, FAX: 205-859-2249  
AZ Tucson, SWS Elctms, Inc. .... 602-628-1613, FAX: 602-628-1921

CA Brea, I.S.J. .... 714-961-7955, FAX: 714-996-9537  
CA Campbell, Prime Electro ..... 408-374-0707, FAX: 408-374-7711  
CA Fremont, Vic/Tal Sls. .... 510-651-6420, FAX: 510-651-8795  
CA Huntington Bch., On-Line Elctms. .... 714-847-5111, FAX: 714-847-4485  
CA Irvine, Kensington Elctms. .... 714-588-0575, FAX: 714-588-0176



|    |                                       |                                   |
|----|---------------------------------------|-----------------------------------|
| CA | Manhattan Bch, Prime Electro.         | 310-379-3642,<br>FAX:310-379-7768 |
| CA | Norwalk, Myco Elctm. Supp.            | 213-404-2053,<br>FAX:310-926-8536 |
| CA | S. San Francisco, Peters-De Laet Inc. | 415-873-6671,FAX:415-873-1680     |
| CA | San Carlos, Logan Elctms.             | 415-594-0700,<br>FAX:415-594-1687 |
| CA | San Diego, Deco Elctms.               | 619-693-1595,<br>FAX:619-693-0245 |
| CA | San Diego, Mock III                   | 619-693-8230,<br>FAX:619-693-3355 |
| CA | San Diego, Western Fastener           | 619-292-5115,<br>FAX:619-292-0427 |
| CA | San Jose, Spectra Elctms.             | 408-955-7800,<br>FAX:408-955-7810 |
| CA | Santa Clara, Bravo Foresight Elctms.  | 408-980-9700,FAX:408-980-8805     |
| CA | Santa Clara, Trinity Elctms.          | 408-980-9011,<br>FAX:408-980-9014 |
| CO | Englewood, Comp. Dists. Inc.          | 303-770-6214,<br>FAX:303-770-6057 |
| CO | Littleton, Indelco                    | 303-795-3431,FAX:303-794-8298     |
| CT | Wallingford, Midstate Elctms.         | 203-265-9900,<br>FAX:203-269-2374 |
| FL | Clearwater, Comp. Dists. Inc.         | 813-796-0466,<br>FAX:813-796-0846 |
| FL | Ft. Lauderdale, Comp. Dists.          | 305-973-6175,<br>FAX:305-973-6915 |
| FL | Ft. Lauderdale, KSM Elctms.           | 305-971-5900,<br>FAX:305-977-0489 |
| GA | Athens, Dixie Elctms.                 | 706-613-7755,<br>FAX:706-613-7856 |
| GA | Atlanta, KSM Elctms.                  | 404-458-2013,<br>FAX:404-451-0891 |
| GA | Norcross, Comp. Dists. Inc.           | 404-441-3320,<br>FAX:404-449-1712 |
| IL | Addison, Belford Elctms.              | 708-691-1100,<br>FAX:708-691-1118 |
| IL | Bensenville, Voyager I                | 708-860-1300,<br>FAX:708-860-1572 |
| IL | Glendale Hgts., KSM Elctms.           | 708-529-1700,<br>FAX:708-529-3668 |
| IL | Palatine, OHM Elctms.                 | 708-359-5500,<br>FAX:708-359-9886 |
| IL | Wood Dale, NEP Elctms.                | 708-595-8500,<br>FAX:708-595-8706 |
| IN | Beech Grove, Wire Supp. Inc.          | 317-786-4485,<br>FAX:317-787-0706 |
| IN | Carmel, Altex Elctms.                 | 317-848-1323,<br>FAX:317-844-6593 |
| IN | Indianapolis, Mar Elctms.             | 317-633-6699,<br>FAX:317-633-6687 |
| IA | Cedar Rapids, Dee Elctms.             | 319-365-7551,<br>FAX:319-365-8506 |
| MD | Gaithersburg, Axis Elctms., Inc.      | 301-840-9640,<br>FAX:301-840-9299 |
| MA | Franklin, JEM Elctms.                 | 508-520-3105,<br>FAX:508-520-3109 |
| MA | Nutting Lake, QPL Elctms. Dists.      | 508-671-9473,<br>FAX:508-671-0006 |
| MA | Westborough, In-Stock Prods.          | 508-870-5750,<br>FAX:508-898-3616 |
| MI | Grand Rapids, S.F. Elctm. Supp. Inc.  | 616-459-0216,<br>FAX:616-459-5601 |
| MI | Livonia, Michigan Lectrols Corp.      | 313-427-0300,<br>FAX:313-427-4045 |
| MI | Wyoming, E.C. Elctms.                 | 616-530-0576,<br>FAX:616-530-8598 |
| MN | Fridley, Voyager II                   | 612-571-7766,<br>FAX:612-571-9519 |
| MN | Roseville, Chris Elctm. Dists.        | 612-631-2647,<br>FAX:612-631-3071 |

|     |                                          |                                   |
|-----|------------------------------------------|-----------------------------------|
| MN  | Roseville, TLC Distbn.                   | 612-483-2226,<br>FAX:612-481-0287 |
| MO  | Earth City, Lectronix Distr. & Svc. Ctr. | 314-344-1166,FAX:314-344-1131     |
| NE  | Lincoln, Scott Elctms.                   | 402-466-8221,<br>FAX:402-466-4187 |
| NE  | Omaha, Scott Elctms.                     | 402-734-6750,<br>FAX:402-734-1442 |
| NV  | Reno, Peters-De Laet Inc.                | 702-827-5599,<br>FAX:702-827-4150 |
| NJ  | Cherry Hill, Jeta Corp.                  | 609-663-7272,<br>FAX:609-663-1688 |
| NJ  | Moorestown, Marlac Elctms.               | 609-234-4200,<br>FAX:609-239-0672 |
| NJ  | Woodbridge, Calmm Elctms.                | 908-750-4497,<br>FAX:908-750-4212 |
| NM  | Albuquerque, Betatron Elctms.            | 505-821-1122,<br>FAX:505-828-0450 |
| NM  | Albuquerque, TMA, Inc.                   | 505-345-8921,<br>FAX:505-344-1113 |
| NY  | Penn Yan, Advacom                        | 315-536-2221,<br>FAX:315-536-0828 |
| NY  | Rochester, Simcona Elctms.               | 716-328-3233,<br>FAX:716-436-5926 |
| NY  | Ronkonkoma, Jet Comps.                   | 516-471-3124,<br>FAX:516-981-1521 |
| NY  | Ronkonkoma, Spectrum Comp. Supp. Corp.   | 516-737-6900,FAX:516-737-6642     |
| NC  | Charlotte, Dixie Elctms.                 | 704-521-0602,<br>FAX:704-558-4696 |
| NC  | Hickory, Dixie Elctms.                   | 704-328-1130,<br>FAX:704-328-8318 |
| NC  | Raleigh, Dixie Elctms.                   | 919-829-0704,<br>FAX:919-829-0375 |
| NC  | Winston-Salem, Dixie Elctms.             | 919-724-5961,<br>FAX:919-723-7024 |
| OH  | Columbus, Spectra Elctms.                | 614-885-8881,<br>FAX:614-885-3233 |
| OH  | Dayton, Advacom                          | 513-274-5900,<br>FAX:513-274-9124 |
| OH  | Midpark, Advacom                         | 216-826-3300,<br>FAX:216-826-1669 |
| OH  | South Euclid, Circuit Elec.              | 216-382-0330,<br>FAX:216-382-4411 |
| OK  | Tulsa, Wofford Elctms.                   | 918-622-9555,<br>FAX:918-622-3999 |
| OR  | Beaverton, Micro Power Elctms.           | 503-626-7086,<br>FAX:503-643-1556 |
| PA  | East York, Advacom                       | 717-741-9277,<br>FAX:717-741-9462 |
| PA  | Export, Advacom                          | 412-325-7551,<br>FAX:412-733-9826 |
| PA  | McKean, Advacom                          | 814-476-7774,<br>FAX:814-476-7724 |
| PA  | Philadelphia, Shap Elctms.               | 215-969-3300,<br>FAX:215-934-5539 |
| SC  | Columbia, Dixie Elctms.                  | 803-779-5332,<br>FAX:803-765-9276 |
| SC  | Greenville, Dixie Elctms.                | 803-297-1430,<br>FAX:803-297-1439 |
| SC  | N. Charleston, Dixie Elctms.             | 803-552-2671,<br>FAX:803-552-2676 |
| TN  | Gray, Dixie Elctms.                      | 615-477-2131,<br>FAX:615-477-4407 |
| TN  | Oak Ridge, Dixie Elctms.                 | 615-481-3393,<br>FAX:615-481-3397 |
| TX  | Austin, Wofford Elctms.                  | 512-339-1311,<br>FAX:512-853-7351 |
| TX  | Dallas, Comp. Dists. Inc.                | 214-644-0373,<br>FAX:214-644-1115 |
| TX  | Dallas, Wofford Elctms.                  | 214-320-0294,<br>FAX:214-320-2017 |
| TX  | El Paso, Schick Entrs.                   | 915-772-3283,<br>FAX:915-772-3034 |
| TX  | Laredo, Indux S.A. Mexico                | 512-727-5935                      |
| TX  | N. Richland Hills, Swisco Elctms (Dixie) | 817-281-1811,FAX:817-281-1783     |
| TX  | Tomball, Wofford Elctms.                 | 713-351-2255,<br>FAX:713-351-2722 |
| WA  | Redmond, Priebe Elctms.                  | 206-881-2363,<br>FAX:206-881-0508 |
| WI  | New Berlin, NEP Elctms.                  | 414-785-9100,<br>FAX:414-785-9131 |
| Can | Burnaby, BC, Brockton Elctms. Ltd.       | 604-291-6665,<br>FAX:604-291-6664 |
| Can | Darhmouth, NS, Arcom Elctms.             | 902-464-1600,<br>FAX:902-469-6825 |
| Can | Edmonton, AB, Elctm. Connections         | 403-469-7222,<br>FAX:403-463-8149 |
| Can | Markham, Ont., ARMA Elctms. Sls. Inc.    | 416-475-1858,FAX:416-475-2019     |
| Can | Markham, Ont., Fastronics, Inc.          | 416-474-0808,<br>FAX:416-474-1994 |

J.S.T. Corp. PIPS Distributors

|    |                         |                                   |
|----|-------------------------|-----------------------------------|
| AZ | Marana, The Paul Co.    | 602-682-4330,<br>FAX:602-682-2264 |
| AZ | Tempe, Optimum Assembly | 602-968-2335,<br>FAX:602-968-2337 |

|     |                                            |                                   |
|-----|--------------------------------------------|-----------------------------------|
| CA  | Anaheim, Sophic Inds.                      | 714-632-2460,<br>FAX:714-632-1941 |
| CA  | Santa Ana, Paul Kaplin Co.                 | 714-556-7007,<br>FAX:714-751-6003 |
| CA  | Tracy, Ferreira Inds.                      | 209-832-0114,<br>FAX:209-832-0412 |
| IL  | Addison, Belford Elctms.                   | 708-691-1100,<br>FAX:708-691-1118 |
| IN  | Plainfield, AES Interconnections           | 317-272-2551,<br>FAX:317-272-3082 |
| MD  | Columbia, Custom Cables                    | 301-290-9777,<br>D:301-381-2036   |
| MA  | Westborough, In-Stock Prods.               | 503-970-5750,<br>FAX:503-898-3616 |
| MI  | Livonia, Michigan Lectrols Corp.           | 313-427-0300,<br>FAX:313-427-4045 |
| MN  | Roseville, TLC Distbn.                     | 612-483-2226,<br>FAX:612-481-0287 |
| NJ  | Madison, Pyxis Corp.                       | 201-377-4922,<br>FAX:201-377-0453 |
| NJ  | Pennsauken, Ram Elctms. Inds., Inc.        | 609-488-0601,<br>FAX:609-488-9196 |
| NY  | Dryden, Sturges Elctms.                    | 607-844-8604,<br>FAX:607-844-8416 |
| NC  | Kernville, EDC Inc.                        | 919-993-0468,<br>FAX:919-993-0368 |
| OH  | Dayton, Cables To Go                       | 513-224-8646,<br>FAX:800-331-2841 |
| OR  | Beaverton, ACA Mfg.                        | 503-646-3377,<br>FAX:503-646-1671 |
| TN  | Franklin, Telco                            | 615-377-9910,FAX:615-377-9940     |
| TN  | Greenville, Precision Wire Assemblies Inc. | 615-636-1416,FAX:615-638-9078     |
| TX  | El Paso, Border Grp.                       | 915-581-7920,<br>FAX:915-585-1886 |
| WA  | Vancouver, Unitrek Corp.                   | 206-699-2765,<br>FAX:206-694-9230 |
| Can | Mississauga, Ont., Sycon Technlg.          | 416-821-3591,<br>FAX:416-821-7260 |

JUDDCO MFG. INC., P.O. Box 487-E84, 1429 240th St.  
Harbor City, CA 90710, Tel: 310-534-0959; Sls. Mgr.: Kevin Johnson

**JUDD WIRE INC.**  
1-800-545-5833

FAX: 413-863-2305

JUDD WIRE INC., 57 Turnpike Rd., Turners Falls, MA  
01376, Tel: 413-863-4357, 800-545-5833; FSC No.: 3357;  
Empl.: 148 C-1756

|                            |                                    |              |
|----------------------------|------------------------------------|--------------|
| Local Sales Offices & Reps |                                    |              |
| AL                         | Huntsville, Innovative Sls.        | 205-772-7500 |
| AZ                         | Phoenix, O'Donnell Associates      | 602-944-9542 |
| CA                         | Laguna Hills, Bart Budge Assoc.    | 714-582-8720 |
| CA                         | Los Altos, Ewing Foley             | 415-941-4525 |
| CO                         | Boulder, Stratford Grp.            | 303-530-3194 |
| FL                         | Largo, Q Rep.                      | 813-397-8431 |
| ID                         | Boise, Jas. J. Backer              | 208-378-4680 |
| IL                         | Arlington Heights, Rozner Sls. Co. | 708-577-0067 |
| IA                         | Cedar Rapids, Lowell-Kangas        | 319-362-9290 |
| KS                         | Shawnee, Lowell-Kangas             | 913-631-3515 |
| MD                         | Baltimore, Spindler & Wafer        | 301-744-1133 |
| MA                         | Hudson, O.K. Engrg.                | 508-562-1010 |
| MN                         | Hopkins, Pathway Sls.              | 612-933-8267 |
| MO                         | St. Louis, Lowell-Kangas           | 314-821-4050 |
| NJ                         | Middletown, Elctm. Mktg.           | 908-615-9484 |
| NM                         | Albuquerque, O'Donnell Assocs.     | 505-889-4522 |
| NY                         | Fairport, Sennetec Sls.            | 716-425-3954 |
| NC                         | Greensboro, Reynolds Whitlock      | 919-691-1138 |
| OH                         | Worthington, Simcox Assocs.        | 614-885-8776 |
| OR                         | Beaverton, Jas. J. Backer Co.      | 503-627-0775 |
| PA                         | Willow Grove, Meldena Sls.         | 215-657-7760 |
| SC                         | Greenwood, Reynolds Whitlock       | 803-229-6801 |
| TX                         | Dallas, Stevens Sls. Co.           | 214-702-0132 |
| WA                         | Seattle, Jas. J. Backer Co.        | 206-285-1300 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Madison, Sea Wire & Cable           | 205-772-9616 |
| CA | Concord, Control Master             | 415-939-3600 |
| CA | Menlo Park, Bay Associates          | 415-321-2940 |
| CT | Manchester, L.M.S.                  | 203-649-4415 |
| FL | Altamonte Springs, Royce Elctms.    | 305-869-4700 |
| FL | Ft. Lauderdale, Pacer Elctms.       | 305-749-1910 |
| MA | Lowell, Colonial                    | 508-459-6400 |
| MA | Woburn, Pacer Elctms.               | 617-935-8330 |
| MN | Bloomington, K.L. Tannehill         | 612-881-6700 |
| NH | Amherst, North Country Wire & Cable | 603-889-0063 |
| NY | Rochester, Simcona Elctm.           | 716-328-3230 |
| NC | Raleigh, Wholesale Electric         | 919-878-9400 |
| OH | Dayton, Astro Inds.                 | 513-429-5900 |



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 TX Dallas, Interstate Wire .... 214-553-1311  
 WA Tukwila, Carlyle Inc. .... 206-251-0700  
 WI New Berlin, Indl. Elec. Wire & Cable ... 414-782-2255

**JUDD WIRE INC.**, 870 Los Vallecitos Blvd., San Marcos, CA 92069, Tel: 619-744-7720, 800-344-5251, FAX: 619-744-6089; FSC No.: 3357 C-1756

Refer to Judd Wire, Turners Falls, MA for sales office and distributor information.



**JULIE RESEARCH LABORATORIES, INC.**

**FAX: 212-691-3320**

**JULIE RESEARCH LABS.**, 508 West 26 Street, New York, NY 10001, Tel: 212-633-6625; FSC No.: 07062; Empl: 35; Sls. Mgr.: Pamela Spencer; Dist. Mgr.: Pamela Spencer A-1956; D-1278-1281

**JUMO PROCESS CONTROL, INC.**, 735 Fox Chase, Coatsville, PA 19320, Tel: 215-380-8002, FAX: 215-380-8009; Sls. Mgr.: Gunnar Oberg

**KAHLE ENGINEERING**, 50 S. Center St. Bldg. No. 1, Orange, NJ 07050, Tel: 201-678-2020, FAX: 201-678-0326; Empl: 50; Sls. Mgr.: Daniel Fowler



**FAX: 508-922-8374**

**KAISER SYSTEMS, INC., Inductotherm Industries, Inc.**, 126 Schieler Road, Beverly, MA 01915, Tel: 508-922-9300; FSC No.: IFD78; Empl: 100; Sls. Mgr.: Steve Swech D-1766-1769

#### Local Sales Offices & Reps

AZ Tempe, Griot Group Inc. .... 602-968-4428  
 CA Agoura Hills, Griot Group Inc. .... 818-706-7601  
 CA Irvine, Griot Group Inc. .... 714-727-4110  
 CA Santa Clara, Griot Group Inc. .... 408-727-2880  
 CO Denver, Griot Group Inc. .... 303-427-1111  
 NM Albuquerque, Griot Group Inc. .... 505-883-1022  
 OR Beaverton, Griot Group Inc. .... 503-646-5627  
 UT Salt Lake City, Griot Group Inc. .... 801-328-9471  
 WA Seattle, Griot Group Inc. .... 206-454-8592

**KALAMAZOO TECHNICAL FURNITURE**, See TECLAB

**KALGLO ELCTRNS. CO., INC.**, 6584 Ruch Rd., E. Allen Twp., Bethlehem, PA 18017-9359, Tel: 215-837-0700, TWX: 510-651-2101, FAX: 215-837-7978; FSC No.: 64521; Empl: 8; Sls. Mgr.: Charles Kerchner; Dist. Mgr.: Charles Kerchner

**KALMUS & ASSOCS., INC.**, 2424 S. 25th Ave., Broadview, IL 60153, Tel: 708-343-7004, FAX: 708-343-7016; Empl: 250; Sls. Mgr.: Kent Prather

**KAMAN INSTRUMENTATION**, 1500 Garden of the Gods, P.O. Box 7463, Colo Springs, CO 80907, Tel: 719-599-1132, FAX: 719-599-1823; FSC No.: 21732; Empl: 100; Sls. Mgr.: Steve Perry

**KAM COMPONENTS, INC.**, P. O. Box 192-EEM, Nesconset, NY 11767, Tel: 516-585-0666, FAX: 516-585-1580; Empl: 29; Sls. Mgr.: Cheryl Day

**K&L MICROWAVE, INC.**, 408 Coles Circle, Salisbury, MD 21801, Tel: 410-749-2424, FAX: 410-749-5725; FSC No.: 50140; Empl: 425; Sls. Mgr.: Jim Price

**K & L OSCILLATEK, A DOVER TECHNOLOGY CO.**, See Oscillatek, A Dover Technology Co.

**K & M ELECTRONICS INC.**, 11 Interstate Dr., W. Springfield, MA 01089, Tel: 413-781-1350, FAX: 413-737-0608; FSC No.: 66613; Empl: 300; Sls. Mgr.: Robert Patrick A-1957

#### Local Sales Offices & Reps

CA Fremont, C/G Assocs., Inc. .... 415-790-1193  
 OH Akron, Augnat Assoc. .... 216-666-2819



**FAX: 908-388-4786**

**KAPPA TECHNOLOGIES, INC.**, 1443 Pinewood St., Rahway, NJ 07065, Tel: 908-396-9400, 1-800-223-0603; FSC No.: 20933; Empl: 175; Sls. Mgr.: D. Pearl A-1568-1569, 1642-1645, 2370-2373; D-2128-2129

#### Local Sales Offices & Reps

AL Huntsville, Advanced Comps. Mktg. .... 205-881-5493  
 CA Sunnyvale, Matek Sls. .... 408-245-5300  
 CA West Hills, Bennet Tech. Sls. .... 818-385-8974  
 CO Wheatridge, Wescom Mktg. .... 408-422-8957  
 CT Plainville, Northeast Reps. .... 203-747-2423  
 GA Norcross, Advanced Comps. Mktg. .... 404-448-7025  
 KS Andover, QDC Inds. .... 316-733-9756  
 KS Overland Park, QDC Inds. .... 913-341-2214  
 MD Middletown, S.T. Woolard Co. .... 301-371-4500  
 MD Middletown, S.T. Woolard Co., Inc. .... 301-371-4500  
 MA Hingham, Northeast Reps. .... 617-749-8700  
 MN Eagan, QDC Inds. .... 612-454-0893  
 MO Ballwin, QDC Inds. .... 314-458-1896  
 NH Mt. Vernon, Northeast Reps. .... 603-673-1406  
 NY Cazenovia, S.T. Woolard Co., Inc. .... 315-655-8145  
 NY Plainview, Neptune Elctms. Co. .... 516-349-1600  
 PA Ft. Washington, SMC, Inc. .... 215-628-3394  
 TX Austin, Gardin-Moore Sls. .... 512-794-2900  
 TX Dallas, Gardin-Moore Sls. .... 214-985-1193  
 TX Houston, Gardin-Moore Sls. .... 713-496-7651  
 TX Plano, Gardin-Moore Sls. .... 214-985-1193  
 TX Stafford, Gardin-Moore Sls. .... 713-240-6767  
 UT Salt Lake City, Wescom Mktg. Inc. .... 801-269-0419

#### Local Distributors

CA Sherman Oaks, DLDI ... 818-986-9455, 800-624-2617

**KATRONIC ELEKTRONIC GES.M.B.H.**, OrtenburgerstraBe 28, Austria, Tel: 04762-5340, FAX: 534075; Empl: 74; Sls. Mgr.: Herbert Sandner

**KAUT & BUX MANUFACTURING CO.**, 675 Tower Rd., P.O. Box 867, Mundelein, IL 60060, Tel: 708-949-8505, TELEX: 6871289 KBM UN/, FAX: 1-708-949-4250; Sls. Mgr.: Gene Larson

**KAVLICO CORP.**, 14501 Los Angeles Ave., Moorpark, CA 93021, Tel: 805-523-2000, TELEX: 65-1481, FAX: 805-523-7125; Empl: 500; Dist. Mgr.: Bill Fry

**KAY ELEMETRICS CORP.**, 12 Maple Ave., P.O. Box 2025, Pine Brook, NJ 07058-2025, Tel: 201-227-2000, FAX: 201-227-7760; FSC No.: 80138; Empl: 50; Sls. Mgr.: Stephen P. Crump A-1846

**KAY-RAY/SENSALL, INC.**, 1400 Business Center Drive, Mt. Prospect, IL 60056, Tel: 708-803-5100; Empl: 170

**KB ELECTRONICS**, 73 Wortman Ave., Brooklyn, NY 11207, Tel: 718-257-3300, FAX: 718-257-4740; Empl: 100; Sls. Mgr.: A Bueller



**FAX: 708-577-0201**

**KCK AMERICA INC., Mitsubishi Materials Corporation**, 4080 Winnetka Ave., Rolling Meadows, IL 60008, Tel: 708-577-0200; Empl: 506; Sls. Mgr.: K. G. Such, V.P. A-1091, 1647; B-1365

#### Local Sales Offices & Reps

AL Southern Elctm. Reps. .... 205-461-8925  
 AZ Inmark .... 602-830-9104  
 CA Los Angeles, English/Damco Sls. Co., Inc. .... 213-772-7272  
 CA Orange County, English/Damco Sls. Co., Inc. .... 714-753-1950  
 CA San Diego, English/Damco Sls. Co., Inc. .... 619-271-0333  
 CO Tech. Mktg. Co. .... 303-989-3611  
 FL Kinetic Sls. Inc. .... 407-339-3855  
 GA Atlanta, Advantage Comp. Sls. .... 404-458-3777  
 ID Sierra Tech. Sls. .... 801-566-9719  
 IL BNI Elctms., Inc. .... 708-595-9210  
 IN J & B Engrg. Sls. Co., Inc. .... 219-483-2813  
 KS Microtronics, Inc. .... 913-262-1444

MD Karr Assocs. .... 410-280-2448  
 MA JMG Inc. .... 617-762-5333  
 MI DEM Sls., Inc. .... 313-583-1500  
 MN El. Sls. Co. .... 507-345-5786  
 MS Southern Elctm. Reps. .... 205-461-8925  
 MO Microtronics, Inc. .... 913-262-1444  
 MT Sierra Tech. Sls. .... 801-566-9719  
 NJ JMR Sls., Inc. .... 908-525-8000  
 NY Metropolitan, JMR Sls., Inc. .... 908-525-8000  
 NY Upstate, R Squared .... 315-457-3754  
 NC Raleigh, Vantage Mktg. Inc. .... 919-870-7123  
 OH Northern, J & B Engrg. Sls. Co., Inc. .... 216-766-5754  
 OH Southern, J & B Engrg. Sls. Co., Inc. .... 513-848-2626  
 PA Eastern, Check Assocs. .... 215-487-3007  
 PA Western, J & B Engrg. Sls. Co., Inc. .... 216-766-5754  
 TN Eastern, Electronic Comp. Mktg. .... 615-828-5741  
 TN Western, Southern Elctm. Reps. .... 205-461-8925  
 TX Passive Comps. Assocs. .... 214-824-6162  
 UT Sierra Tech Sls. .... 801-566-9719  
 WI Larsen Assocs., Inc. .... 414-258-0529  
 WY Eastern, Tech. Mktg. Co. .... 303-989-3611  
 WY Western, Sierra Tech. Sls. .... 801-566-9719  
 Can JRL Assocs. .... 416-754-3280

#### Local Distributors

AZ Fountain Hills, RCD Inds., Inc. .... 602-837-9387  
 CA Chatsworth, Passive Comps., Inc. .... 818-700-8838  
 CA Huntington Beach, Surface Mount Distn. .... 714-841-4556  
 CA Irvine, Kelex Elctms. .... 714-863-1230  
 CA Milpitas, California Capacitor .... 408-262-6000  
 CA San Diego, Neumann Elctms., Inc. .... 619-695-3005  
 CA San Jose, Passive Comps. .... 408-441-1441  
 CA San Jose, Surface Mount Distn. .... 408-451-9200  
 CA Santa Maria, Garrett Instrs. .... 805-922-0594  
 CO Aurora, QPS Elctms. .... 303-343-9260  
 FL Ft. Lauderdale, Brothers Elctms. of FL .... 305-561-6700  
 FL Longwood, RM Elctms Co., Inc. .... 407-767-8005  
 FL Melbourne, Pridmore Corp. .... 407-727-2491  
 ID Boise, Radar Elec. Co., Inc. .... 208-336-2227  
 IL Schaumburg, QPS Elctms., Inc. .... 708-834-6620  
 IL Wheeling, Alpha Tek Elctms. .... 800-798-2277  
 IN Indianapolis, Custom Srvc. Elctms., Inc. .... 317-879-9119  
 MI Farmington Hills, Key Elctms. .... 313-489-5455  
 MI Grand Rapids, Calder Elctms. .... 616-988-7400  
 MI Grand Rapids, RM Elctms. Co., Inc. .... 616-531-9300  
 MN Etizen, Capacitor Assocs. .... 507-495-3130  
 MN Roseville, Parts 1 .... 612-633-8079  
 NH Derry, Brothers Elctms. .... 603-437-8437  
 NH Nashua, Brevan Elctms. .... 603-429-1900  
 NJ Bloomfield, Solid State, Inc. .... 201-429-8700  
 NJ East Brunswick, Brothers Elctms., Inc. .... 908-238-2200  
 NM Albuquerque, Betatron Elctms. .... 505-821-1122  
 NY East Rochester, Rome Elctms., Inc. .... 716-248-0160  
 NY Rome, Rome Elctms., Inc. .... 315-337-5400  
 NY Syracuse, ADR Tech., Inc. .... 315-437-7087  
 NY Williamsville, Rome Elctms., Inc. .... 716-626-1602  
 NC Raleigh, Century Elctm. Comps., Inc. .... 919-782-2116

OH Solon, Repco Elctms. .... 800-544-1858  
 OR Portland, Radar Elec. Co., Inc. .... 503-232-3404  
 PA Norristown, Century Elctm. Comps., Inc. .... 215-631-5400  
 TX Arlington, Bell Comps. .... 817-461-5303  
 TX Austin, SMEC .... 800-336-7632  
 TX Richardson, CTC .... 214-437-2211  
 WA Richland, Radar Elec. Co., Inc. .... 509-943-8336  
 WA Seattle, Radar Elec. Co., Inc. .... 206-282-2511  
 WA Spokane, Radar Elec. Co., Inc. .... 509-747-3053  
 Can Nepean, Ont., Carsten Elctms. .... 613-726-9250  
 Can Scarborough, Ont., Carsten Elctms. .... 416-477-9898  
 Can Scarborough, Ont., U-Tech Elctms. .... 416-609-2900  
 Can St. Laurent, Que., Carsten Elctms. .... 514-334-8321

**KD COMPONENTS, INC.**, 2151 Challenger Way, Carson City, NV 89706, Tel: 702-883-8003, FAX: 702-883-1150; FSC No.: 58421; Empl: 44; Sls. Mgr.: John Horn

**KDI/TRIANGLE ELECTRONICS**, 60 S. Jefferson Rd., Whippany, NJ 07981, Tel: 201-887-5700; FSC No.: 64537; Empl: 385

**KDS AMERICA**, Daishinku Corp., 10901 Granada Ln., Overland Pk., KS 66211, Tel: 913-491-6825, FAX: 913-491-6812; Empl: 12; Sls. Mgr.: Tom Lawrence-East. Reg.; Dist. Mgr.: Sara Peterson, Claudia Broome

**KEDMAN CO.**, Box 25667, Salt Lake City, UT 84125, Tel: 801-973-9112, FAX: 801-972-2756; Empl: 100





**FAX: 216-248-6168**

**KEITHLEY INSTRS.**, 28775 Aurora Rd., Cleveland, OH 44139, Tel: 800-552-1115; Empl: 750; Sls. Mgr.: David Brock D-1283-1288

| Local Sales Offices & Reps           |              |
|--------------------------------------|--------------|
| AL Huntsville, W. A. Brown Instrs.   | 205-830-9224 |
| AZ Tempe, Aztec Enstrs.              | 602-431-8401 |
| CA Los Alamitos, Tritex Solutions    | 714-236-1190 |
| CO Denver, Aztec Enstrs.             | 303-779-5285 |
| FL Orlando, W. A. Brown Instrs.      | 407-648-9660 |
| IL Buffalo Grove, Torkelson          | 708-520-0710 |
| IN Indianapolis, Torkelson           | 317-244-7867 |
| IA Cedar Rapids, Torkelson           | 319-373-0200 |
| KS Lenexa, Midtek Assocs.            | 913-541-0505 |
| MA Lynnfield, Keithley               | 800-552-1115 |
| MI Detroit, EQS Sys.                 | 313-455-7920 |
| MN Minneapolis, Torkelson            | 612-835-2414 |
| NJ Paramus, Keithley                 | 800-552-1115 |
| NM Albuquerque, Aztec Enstrs.        | 505-262-1688 |
| NY Melville, Keithley                | 800-552-1115 |
| NY Syracuse, Labtronics              | 315-455-7314 |
| NC Cary, W.A. Brown Instrs.          | 919-480-1120 |
| OH Chesterland, EQS Sys.             | 216-729-2222 |
| OR Wilsonville, Syntek               | 503-682-2750 |
| PA Huntingdon Valley, Sci-Rep        | 215-322-6500 |
| TX Austin, Testech                   | 512-338-9246 |
| TX Houston, Testech                  | 713-893-9661 |
| TX Richardson, Testech               | 214-644-5010 |
| VA Fairfax, Sci-Rep                  | 703-385-0600 |
| WA Bellevue, Syntek                  | 206-462-7700 |
| WI Waukesha, Torkelson Assocs., Inc. | 414-784-7736 |

**KEITHLEY METRABYTE**, 440 Myles Standish Blvd., Taunton, MA 02780, Tel: 508-880-3000, TELEX: 503989, FAX: 508-880-0179; FSC No: 1 FG 11; Empl: 140; Sls. Mgr.: Gary Marraccini; Dist. Mgr.: Gary Marraccini

**KEL AM**, See Teltec, Inc.

**KELLER-PSI**, 503 No. 11 Vista Bella, Oceanside, CA 92056, Tel: 619-967-6066, FAX: 619-967-0563; Empl: 8; Sls. Mgr.: Dick Grove; Dist. Mgr.: Dick Grove

**KEL CONNECTORS, INC.**, KEL Corp., 1250 Oakmead Pkwy., No. 105, Sunnyvale, CA 94086, Tel: 408-720-9044, FAX: 408-720-1989; Sls. Mgr.: Jim Eilers

**KELLY AMERICAN, INC.**, 640 Federal Rd., Brookfield, CT 06804, Tel: 203-775-2590, TELEX: 4750159ELECABUL, FAX: 203-775-9048; Sls. Mgr.: Robert Buckley

**KELMET, INC.**, 569 W. Covina Blvd., San Dimas, CA 91773, Tel: 714-599-0954, FAX: 714-599-2835; Empl: 6; Sls. Mgr.: Paul Hodge

**KELTECH INC.**, 7508 Hitech Rd., Roanoke, VA 24019, Tel: 703-362-8466, FAX: 703-362-3957; Empl: 35; Sls. Mgr.: William Sinclair



**FAX: 617-899-9602**

**KELTRON CORP.**, High Voltage Power Supplies & Industrial Printers, 225 Crescent St., Waltham, MA 02154, Tel: 617-894-8700; FAX: 617-899-9602; Empl: 170; Sls. Mgr.: T. Chadurjian, Power Supp., D. Raymond, Printers D-1098, 1770-1771

| Local Sales Offices & Reps   |              |
|------------------------------|--------------|
| IL Park Ridge, Probe Elec.   | 312-696-2828 |
| NY Commack, R.C. Engrg.      | 516-543-3325 |
| PA Glenside, Koebeert Assoc. | 215-887-2310 |

**KELTRON CORP.**, Miniprinter/Security Systems Div., 225 Crescent St., Waltham, MA 02154, Tel: 617-894-8700, FAX: 617-899-9602; FSC No: 18662; Empl: 250; Sls. Mgr.: Steven P. Sargent D-1098

| Local Sales Offices & Reps              |              |
|-----------------------------------------|--------------|
| IL Palatine, Key Enstrs.                | 708-991-2144 |
| MD Baltimore, Advanced Tech. Sys., Inc. | 301-323-3140 |

|                                  |              |
|----------------------------------|--------------|
| NY Amsterdam, Traxionics         | 518-843-1445 |
| PA Oreland, Precision Mktg. Grp. | 215-233-9233 |
| WI South Milwaukee, Key Enstrs.  | 414-762-2323 |

#### Local Distributors

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| AL Decatur, Mgt. Security, Inc.             | 205-355-3030 |
| CA San Francisco, SF Fire & Burg.           | 415-861-0994 |
| DC District of Columbia, Ellenco Inc.       | 301-927-4370 |
| FL Miami, Glanz Technlg., Inc.              | 305-893-1269 |
| GA Albany, Tri-L Sys.                       | 912-888-1266 |
| IL Chicago, Natl. Guardian Alarm            | 312-775-8600 |
| MA Georgetown, B & B Engrg.                 | 508-352-6402 |
| MI Bloomfield Hills, W.E. Healy & Assocs.   |              |
|                                             | 313-335-9245 |
| NC Raleigh, National Security               | 919-821-1150 |
| OK Tulsa, Pendergraph, Inc.                 | 918-835-8403 |
| TX Amarillo, Firehawk Safety Sys.           | 806-374-9613 |
| WI Brookfield, John Guetzke & Assocs., Inc. |              |
|                                             | 414-784-5929 |

**KELVIN INDUSTRIES, INC.**, 14724 Ventura Blvd., No. 1003, Sherman Oaks, CA 91403-3501, Tel: 818-990-1192, FAX: 818-995-6460; FSC No: 19587; Empl: 180; Sls. Mgr.: R. A. Featherston



**FAX: 803-963-6521**

**KEMET ELECTRONICS CORPORATION**, Box 5928, Greenville, SC 29606, Tel: 803-963-6621, TELEX: 57-0496, TWX: 810-287-2536; FSC No: 31433; Empl: 6,200; Sls. Mgr.: Robert Taylor, VP-Domestic Sls.; Dist. Mgr.: Dan Manly A-1092-1093

#### Local Sales Offices & Reps

|                     |              |
|---------------------|--------------|
| AL Huntsville       | 205-830-1090 |
| AZ Tempe            | 602-831-2151 |
| CA Newport Beach    | 714-640-9320 |
| CA Santa Clara      | 408-986-0424 |
| CO Englewood        | 303-220-0759 |
| FL Orlando          | 407-855-8886 |
| GA Norcross         | 404-441-7701 |
| IL Schaumburg       | 708-517-1030 |
| IN Carmel           | 317-844-7756 |
| MD Columbia         | 410-992-5600 |
| MA Wakefield        | 617-245-4646 |
| MI Farmington Hills | 313-489-5850 |
| NY Elmsford         | 914-347-4390 |
| NC Raleigh          | 919-872-2877 |
| OH Columbus         | 614-885-3330 |
| PA Exton            | 215-363-8310 |
| SC Greenville       | 803-242-5789 |
| TX Irving           | 214-556-0009 |
| WA Kirkland         | 206-828-4853 |
| CA Montreal         | 514-694-9525 |
| Can Ontario         | 416-542-7930 |

#### Local Distributors

|                                        |              |
|----------------------------------------|--------------|
| CA Agoura Hills, Time Elctms.          | 818-707-2890 |
| CA Culver City, Hamilton/Avnet Elctms. | 213-558-2100 |
| CA Los Angeles, Bell Inds.             | 310-826-6778 |
| CA Sunnyvale, Capsco Sls., Inc.        | 408-734-3020 |
| CO Denver, Integrated Elctms.          | 303-292-5537 |
| GA Duluth, Pioneer Technlg.            | 404-623-1003 |
| IL Chicago, Newark Elctms.             | 312-784-5100 |
| MD Columbia, TTI                       | 301-955-1331 |
| NJ Old Bridge, Arm Bar Inds.           | 908-679-3377 |
| NM Albuquerque, Alliance Elctms.       | 505-292-3360 |
| NY Buffalo, Summit Dists., Inc.        | 716-887-2800 |
| NY Central Islip, Semicap Elctms.      | 516-582-4400 |
| NY Hauppauge, L.L. Jaco Elctms.        | 516-273-5500 |
| NY Westbury, Hamilton-Avnet            | 516-997-6868 |
| NC Greensboro, Golden Elctms.          | 919-294-4653 |
| NC Greensboro, Hammond Elctms.         | 919-275-6391 |
| OH Cleveland, Pioneer Elctms.          | 216-587-3600 |
| TX Fort Worth, TTI Elctms.             | 817-740-9000 |
| Can Vancouver, B.C., Deskin Sls.       | 604-324-8343 |

**KEMLOM PRODUCTS & DEVELOPMENT COMPANY**, 6310 Sidney, Houston, TX 77021, Tel: 713-747-5020, FAX: 713-747-0049; Empl: 165; Sls. Mgr.: Bob Horton

**KEMTRON CIRCUITS & ELCTRNS. CORP.**, 110 S. Long Bch. Rd., Rockville Centre, NY 11570, Tel: 516-766-2772; Empl: 7; Sls. Mgr.: Walter Carlock

**KENMAR/TSI**, 3020 Barrow Drive, Raleigh, NC 27604, Tel: 919-876-6049, FAX: 919-876-6292; Empl: 110

**M.S. KENNEDY CORP.**, 8170 Thompson Rd., Cicero, NY 13039, Tel: 315-699-9201, FAX: 315-699-8023; FSC No: 51651; Empl: 60; Sls. Mgr.: Greg Overend

**KENTRON, INC.**, P.O. Box 142, Cedarburg, WI 53012-0142, Tel: 414-377-3733; Sls. Mgr.: Kenneth L. Krolski

**KEN-TRON MFG., INC.**, 610 Industrial Dr., Owensboro, KY 42301, Tel: 502-684-0431, TELEX: 20-4305, FAX: 502-684-0435; Empl: 100; Sls. Mgr.: R. Thompson



**FAX: 310-537-8235**

**KENWOOD U.S.A.**, 2201 E. Dominguez St., Long Beach, CA 90810, Tel: 310-761-8295

D-1406-1407, 1772-1775

#### Local Sales Offices & Reps

|                                        |                                 |
|----------------------------------------|---------------------------------|
| CA Belmont, Western Digital & Instrmn. | 415-591-6535, FAX: 415-591-9180 |
| CA Long Beach, Kenwood U.S.A.          | 310-761-8295, FAX: 310-761-8246 |
| CO Lakewood, Tech. Mktg. Co.           | 303-989-3611, FAX: 303-989-7225 |
| CT Killingworth, Paul Gallagher        | 203-663-2338, FAX: 203-663-2338 |
| GA Marietta, Adams                     | 404-973-0853, FAX: 404-973-1903 |
| IL Mt. Prospect, Best Rep              | 708-632-0473, FAX: 708-632-0475 |
| IN Carmel, New Era Sls.                | 317-844-4534, FAX: 317-844-4534 |
| IA Cedar Rapids, KKB & Co.             | 319-373-1730, FAX: 319-373-1730 |
| MD Hampstead, Technical Instr. Sls.    | 410-239-4452, FAX: 410-239-4440 |
| MA Framingham, Paul Gallagher          | 508-626-2346, FAX: 508-626-2346 |
| MI Warren, Burcaw                      | 313-573-4605, FAX: 313-573-6048 |
| MI Wyoming, Burcaw                     | 616-532-2756, FAX: 616-532-3847 |
| MN Apple Valley, Alliance Tech Prods.  | 612-432-2111, FAX: 612-432-5060 |
| MN St. Paul, Alliance Tech Prods.      | 612-481-0518, FAX: 612-481-0518 |
| MO Blue Springs, KKB & Co.             | 816-229-0001, FAX: 816-228-1466 |
| MO St. Louis, KKB & Co.                | 314-647-2400, FAX: 314-647-3773 |
| NY Woodside, Greater Metro Sls.        | 718-424-1911, FAX: 718-458-6791 |
| NC Greensboro, Adams                   | 919-272-6838, FAX: 919-273-6850 |
| NC Raleigh, Adams                      | 919-872-0410, FAX: 919-872-0410 |
| OH Cincinnati, Dietrich                | 513-984-8924, FAX: 513-984-5351 |
| OH Cleveland, Dietrich                 | 216-642-7965, FAX: 216-642-3080 |
| OK Tulsa, Jim Wisdom & Assocs.         | 918-665-8899, FAX: 918-665-9456 |
| OR Aloha, Cain Sweet                   | 503-591-0647, FAX: 503-591-0856 |
| PA Lansdale, Technical Instr. Sls.     | 215-361-7850, FAX: 215-361-7803 |
| PA Pittsburgh, Dietrich                | 412-892-2992, FAX: 412-892-2992 |
| TX Richardson, Jim Wisdom & Assocs.    | 214-470-9122, FAX: 214-470-9122 |
| VA Woodford, Technical Instr. Sls.     | 804-633-4586, FAX: 804-633-4586 |
| WA Bellevue, Cain Sweet                | 206-462-2118, FAX: 206-451-9418 |

#### Local Distributors

|                                      |                                 |
|--------------------------------------|---------------------------------|
| CA Chatsworth, Testek Corp.          | 818-701-9911, FAX: 818-701-6011 |
| CA El Monte, Marshall Inds.          | 818-307-6393, FAX: 818-307-6299 |
| CA Los Alamitos, Power Specialists   | 310-594-9418, FAX: 310-594-9418 |
| CA Milpitas, R & D Elctm. Parts      | 408-262-7144, FAX: 408-262-7154 |
| CO Aurora, R & R Instrmn.            | 303-340-8228, FAX: 303-340-8228 |
| FL Orlando, Emco                     | 407-849-6362, FAX: 407-843-0909 |
| FL Tampa, Sunex Elctm. Supp., Inc.   | 813-885-4074, FAX: 813-888-6487 |
| IL Niles, Joseph Elctms.             | 708-297-4240, FAX: 408-297-6923 |
| IN Indianapolis, Meunier Elctms.     | 317-635-3511, FAX: 317-631-4707 |
| MD Baltimore, Davis Instrs.          | 410-358-3900, FAX: 410-358-0252 |
| MD Hunt Valley, E.I.L. Instrs., Inc. | 410-584-7400, FAX: 410-584-7561 |
| MA N. Andover, Contact East          | 508-682-2000, FAX: 508-688-7829 |
| MN Minneapolis, Stark Elctms., Inc.  | 612-332-1325, FAX: 612-332-1783 |



|    |                                     |              |
|----|-------------------------------------|--------------|
| MO | St. Louis, Scherrer Instrs.         | 314-644-5362 |
|    | FAX:314-644-3530                    |              |
| NJ | Elizabeth, NEI                      | 800-248-1634 |
| NJ | Mickleton, Total Video Prods., Inc. | 609-423-7400 |
|    | FAX:609-423-4742                    |              |
| NY | Bayside, Technimart                 | 718-479-1890 |
| NY | Rochester, Transcat                 | 800-828-1470 |
|    | FAX:800-395-0543                    |              |
| PA | Philadelphia, Sunshine Instrs.      | 215-673-5600 |
|    | FAX:215-673-5609                    |              |
| TN | Columbia, Randolph & Williams, Inc. | 615-388-7566 |
|    | FAX:615-381-7516                    |              |
| TX | Dallas, Inotek                      | 214-243-2924 |
| TX | Dallas, M. Hutton & Co.             | 214-239-0580 |
|    | FAX:214-239-5264                    |              |
| TX | Laredo, Franco Sls.                 | 512-727-0003 |
|    | FAX:512-727-0364                    |              |
| VA | Richmond, AVEC Elctns.              | 804-359-6071 |
|    | FAX:804-359-5609                    |              |
| WA | Seattle, Radar Elec.                | 206-282-2511 |
|    | FAX:206-282-1598                    |              |
| WI | Appleton, Appleton Elctns.          | 414-734-5767 |
|    | FAX:414-734-5172                    |              |



**KEPCO, INC.**, 131-38 Sanford Ave., Flushing, NY 11352.  
Tel: 718-461-7000, TWX: 710-582-2631; Empl: 300; Sls.  
Mgr: Frank Toich **D-1777-1806**

|                                       |                                            |              |
|---------------------------------------|--------------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                            |              |
| AL                                    | Huntsville, W. A. Brown, Inc.              | 205-830-9224 |
| AZ                                    | Mesa, Aztec Enltns.                        | 602-649-9158 |
| CA                                    | Arcadia, Syntek Mktg.                      | 818-357-0371 |
| CA                                    | San Diego, Earle Assocs., Inc.             | 619-278-5441 |
| CA                                    | Sunnyvale, N-S Westronics                  | 408-745-1102 |
| CO                                    | Denver, Aztec Enltns.                      | 303-779-5285 |
| CT                                    | Bethel, Ray Perron & Co., Inc.             | 203-798-0261 |
| CT                                    | Waterbury, R. Perron Co.                   | 203-756-9684 |
| DC                                    | Washington, Eastern Instrmn. Corp.         | 301-384-8500 |
| FL                                    | Melbourne, W. A. Brown Instrs., Inc.       | 407-723-0766 |
| FL                                    | Orlando, W. A. Brown Instrs., Inc.         | 407-648-9660 |
| GA                                    | Atlanta, W. A. Brown Instrs., Inc.         | 404-449-7160 |
| IL                                    | Plainfield, Kepco, Inc.-Illinois           | 815-436-8808 |
| LA                                    | Metairie, Data Mktg. Assocs., Inc.         | 504-833-3655 |
| MD                                    | Baltimore, Eastern Instrmn. Corp.          | 301-792-7039 |
| MA                                    | Boston, R. Perron Co.                      | 617-449-6162 |
| MI                                    | Plymouth, EQS                              | 313-455-7920 |
| MN                                    | Plymouth, Kepco Inc.                       | 612-559-1128 |
| MO                                    | St. Louis, Ramsey Assocs.                  | 314-532-9388 |
| NM                                    | Albuquerque, Aztec Enltns.                 | 505-262-1688 |
| OH                                    | Holbrook, Kepco Inc.-Long Island           | 516-472-5688 |
| NY                                    | Liverpool, NTS Assocs., Inc.               | 915-451-1091 |
| NY                                    | Port Chester, Radiation Elctns., Inc.      | 914-937-2300 |
| NC                                    | Cary, W. A. Brown Instrs., Inc.            | 919-460-1120 |
| OH                                    | Chesterland, EQS                           | 216-729-2222 |
| OH                                    | Dayton, EQS                                | 513-236-7676 |
| OR                                    | Beaverton, H. Levinson Co.                 | 503-690-1312 |
| PA                                    | West Chester, Kepco-Pennsylvania           | 215-594-0856 |
| PA                                    | Wexford, EQS                               | 412-935-0455 |
| TX                                    | Austin, Data Mktg. Assocs., Inc.           | 512-338-4701 |
| TX                                    | Dallas, Data Mktg. Assocs., Inc.           | 214-661-0300 |
| TX                                    | Houston, Data Mktg. Assocs., Inc.          | 713-579-2995 |
| TX                                    | San Antonio, Data Mktg. Assocs., Inc.      | 210-342-3031 |
| UT                                    | Salt Lake City, Aztec Enltns., Inc.        | 801-467-4675 |
| WA                                    | Seattle, H. Levinson Co.                   | 206-382-1300 |
| WA                                    | Seattle, KAM Elctns.                       | 206-382-1300 |
| WI                                    | Milwaukee, P.Q. Engineering                | 414-645-3680 |
| Can                                   | Montreal, P.Q. Multitest Elctns., Inc.     | 514-337-0723 |
| Can                                   | Ottawa, Multitest Elctns., Inc.            | 613-727-0848 |
| Can                                   | Scarborough, Ont., Multitest Elctns., Inc. | 416-609-8396 |

**KEPRO CIRCUIT SYSTEMS**, 630 Axminster Dr., Fenton, MO 63026-2992, Tel: 314-343-1630, FAX: 314-343-0668; FSC No: 5999; Empl: 17; Sls. Mgr: Jeff R. Keil; Dist. Mgr: Jeff R. Keil

**KESSLER-ELLIS PRODS.**, 120 1st Ave., Atlantic Highlands, NJ 07716, Tel: 908-291-0500, 800-631-2165, FAX: 908-291-8097; FSC No: 28222; Empl: 55

**KESTER SOLDER DIV.**, Litton Sys., Inc., 515 E. Touhy Ave., Des Plaines, IL 60018, Tel: 708-297-1600, FAX: 708-390-9338; Empl: 425; Sls. Mgr: Nick Bohun; Dist. Mgr: Carl Voelkel

**KESTREL SYSTEMS CO.**, 948 N. Hwy 101 74, Leucadia, CA 92024, Tel: 619-944-2957, FAX: 619-944-6010; Empl: 6; Sls. Mgr: Mark J. Prager



**FAX: 714-630-4131**

**KETEMA/RODAN DIVISION**, 2900 Blue Star St., Anaheim, CA 92806, Tel: 714-630-0081; FSC No: 15454; DESC-EQP-75-1387; Empl: 100; Sls. Mgr: Helen Hannah **B-1876-1878**

|                                       |                                        |              |
|---------------------------------------|----------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                        |              |
| AL                                    | Madison, Benchmark Tech. Sls.          | 205-464-0033 |
| AZ                                    | Scottsdale, TC Elctn. Sls., Inc.       | 602-994-5153 |
| CA                                    | Alpine, Wes-K/Raltech                  | 619-445-1126 |
| CA                                    | Chatsworth, Wes-K/Raltech              | 818-700-0933 |
| CA                                    | Los Altos, W.W. Posey Co.              | 415-969-7635 |
| CO                                    | Westminster, Straube Assocs.           | 303-426-0890 |
| FL                                    | Winter Springs, T-Squared Mktg.        | 407-699-9992 |
| GA                                    | Norcross, Benchmark Tech. Sls.         | 404-446-1711 |
| IL                                    | Inverness, Heartland Tech. Mktg.       | 708-358-6622 |
| IN                                    | El. Wayne, Menze Sls. Co.              | 219-747-5616 |
| IA                                    | Cedar Rapids, M.I.N.K. Assocs. Inc.    | 319-393-0373 |
| KS                                    | Overland Park, M.I.N.K. Assocs., Inc.  | 913-341-8309 |
| MA                                    | Framingham, Marathon Sls. Ltd.         | 508-875-3566 |
| MN                                    | Minnetonka, G-I Sls.                   | 612-454-3086 |
| MO                                    | Bridgeport, M.I.N.K. Assocs., Inc.     | 314-291-5454 |
| NJ                                    | Moorestown, TAI Corp.                  | 609-778-5353 |
| NY                                    | Islip, Cogent Technlg. Assoc.          | 516-277-7101 |
| NY                                    | Katonah, Cogent Technlg. Assocs.       | 914-232-2500 |
| NY                                    | Rochester, R.M. Scanlon & Assoc.       | 716-646-1349 |
| NY                                    | Syracuse, R.M.-Scanlon Assocs.         | 315-463-7682 |
| NY                                    | Webster, R.M. Scanlon Assocs.          | 716-671-6809 |
| NC                                    | Raleigh, Benchmark Tech. Sls.          | 919-850-0633 |
| OR                                    | Beaverton, Blair-Hirsh Co.             | 503-641-1875 |
| TX                                    | Bedford, R-Squared/El-Tec              | 817-268-2896 |
| TX                                    | Dallas, R-Squared/El-Tec               | 214-702-8566 |
| TX                                    | Houston, R-Squared/El-Tec              | 713-820-3210 |
| TX                                    | Round Rock, R-Squared/El-Tec           | 512-255-4245 |
| UT                                    | Salt Lake City, Straube Assocs.        | 801-263-2640 |
| WA                                    | Lynnwood, Blair-Hirsh Co.              | 206-774-8151 |
| WI                                    | Brookfield, Heartland Tech. Mktg.      | 414-789-6860 |
| Can                                   | Mississauga, Ont., Bestec Elctns. Ltd. | 416-671-1077 |

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| <i>Local Distributors</i> |                                       |              |
| CA                        | Chatsworth, Passive Comps.            | 818-700-8838 |
| CA                        | Los Alamitos, Dexter Magnetic Mats.   |              |
| CA                        | Riverside, Elctn. Supp.               | 714-952-2091 |
| CA                        | San Diego, Elctn. Supp.               | 714-683-7300 |
| CA                        | San Jose, Elctn. Supp.                | 619-693-8222 |
| CA                        | San Jose, Elctn. Supp.                | 408-453-3770 |
| CA                        | Sunnyvale, Dexter Magnetic Mats.      | 408-739-1080 |
| CA                        | Torrance, TSC Elctns. Ltd.            | 310-534-2739 |
| GA                        | Norcross, Dexter Magnetic Mats.       | 404-448-4998 |
| IL                        | Chicago, Leeds Elctns., Inc.          | 312-625-3800 |
| IL                        | Elk Grove Vlg., Dexter Magnetic Mats. |              |
| MA                        | Billerica, Dexter Magnetic Mats.      | 708-956-1140 |
| MA                        | Wilmington, North Star Elctns.        | 508-663-7500 |
| MN                        | Chanhassen, Dexter Magnetic Mats.     | 508-657-5155 |
| MN                        | Plymouth, Leeds Elctns., Inc.         | 612-934-4635 |
| MN                        | Hicksville, Dexter Magnetic Mats.     | 612-557-1277 |
| NY                        | Rochester, North Star Elctns.         | 516-822-3311 |
| OH                        | Toledo, Dexter Magnetic Mats.         | 716-244-9846 |
| TX                        | Carrollton, North Star Elctns.        | 419-385-4621 |
| TX                        | Richardson, Dexter Magnetic Mats.     | 214-980-2999 |
| WI                        | Brookfield, Leeds Elctns., Inc.       | 214-699-1121 |
| Can                       | Mississauga, Ont., R-Theta, Inc.      | 414-789-6995 |
| Can                       | Mississauga, Ont., R-Theta, Inc.      | 416-890-0221 |

**KEWAUNEE SCIENTIFIC CORP.**, Technical Workstation Div., 901 FM 20, P.O. Box 930, Lockhart, TX 78644, Tel: 512-398-5292, TELEX: 752706, FAX: 512-398-5104; Empl: 165 (This Location) 800 (Company Wide); Sls. Mgr: Frank Johnson, Dir. Sls./Mktg.

**KEYMARC ELECTRONICS, INC.**, 2310 205th St., Ste. 101, Torrance, CA 90501, Tel: 310-212-7724, FAX: 310-212-6545; Empl: 35; Sls. Mgr: Robert Chan; Dist. Mgr: James A. Sia **C-1598-1601**

|                                       |                                   |              |
|---------------------------------------|-----------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                   |              |
| AL                                    | Huntsville, L & D Sls.            | 205-837-1469 |
| AZ                                    | Scottsdale, Summit Sls.           | 602-998-4850 |
| CA                                    | Santa Clara, Cindel               | 408-988-8331 |
| CT                                    | Bloomfield, Zaslow Sls.           | 203-242-7781 |
| DE                                    | Denver, TechRep Sls.              | 303-758-7031 |
| FL                                    | Del Ray Bch, Phelps Assocs., Inc. | 407-276-7591 |
| GA                                    | Dunwoody, L & D Sls.              | 404-395-7079 |
| IL                                    | Palatine, Vine Sls.               | 708-934-5476 |
| MN                                    | Minneapolis, Holmgren & Assocs.   | 612-574-9983 |
| NY                                    | Islip, Cogent Tech. Assoc.        | 516-277-7101 |
| NC                                    | Raleigh, L & D Sls.               | 919-879-5301 |
| OR                                    | Beaverton, Elctn. Sources         | 503-627-0838 |

|     |                                |              |
|-----|--------------------------------|--------------|
| TX  | Dallas, Rem Air Comps. Corp.   | 214-234-1069 |
| WA  | Bellevue, Elctn. Sources, Inc. | 206-451-3500 |
| Can | Vancouver, Fairwest Sls.       | 604-685-1473 |

|                           |                                     |              |
|---------------------------|-------------------------------------|--------------|
| <i>Local Distributors</i> |                                     |              |
| CA                        | Gardena, California Switch & Signal | 310-538-9830 |
| CO                        | Littleton, Display Plus             | 303-730-7333 |
| NH                        | Atkinson, Astrum Elctns.            | 603-898-3399 |
| OR                        | Beaverton, Comp. Resources, Inc.    | 503-641-8488 |
| TX                        | Tomball, Wofford Elctns., Inc.      | 713-351-2255 |

**KEYSTONE CARBON, Thermistor Div.**, 1935 State Street, St. Marys, PA 15857, Tel: 814-781-1591, FAX: 814-781-7648; FSC No: 75-263; Empl: 1200; Sls. Mgr: John A. Brock; Dist. Mgr: John A. Brock **B-1879-1883**

|                                       |                                           |              |
|---------------------------------------|-------------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                           |              |
| AZ                                    | Tempe, Border States Tech.                | 602-839-1053 |
| CA                                    | Arcadia, Van Gott & Assoc.                | 818-445-9728 |
| CA                                    | San Jose, Westron Assoc.                  | 408-264-4070 |
| CA                                    | Santee, ProSales                          | 619-596-2190 |
| CT                                    | Wethersfield, L.J. Labant                 | 203-529-0048 |
| GA                                    | Marietta, J.J. Arnold                     | 404-427-1062 |
| IL                                    | Crystal Lake, David J. Brock              | 815-477-8966 |
| IN                                    | Fort Wayne, R.O. Whitesell & Assocs.      |              |
|                                       |                                           | 219-489-0588 |
| IN                                    | Indianapolis, R.O. Whitesell & Assocs.    | 317-876-9000 |
| IN                                    | Kokomo, R.O. Whitesell & Assocs.          | 317-457-9127 |
| MI                                    | Farmington Hills, J.L. Montgomery Assocs. | 313-489-0099 |
| MN                                    | Minneapolis, Dave Marrone                 | 612-566-6573 |
| NM                                    | Albuquerque, Border States Tech.          | 505-292-7400 |
| NY                                    | Rochester, Foster & Wager                 | 716-385-7744 |
| OH                                    | Cincinnati, R.O. Whitesell & Assocs.      | 513-528-5644 |
| OH                                    | Cleveland, R.O. Whitesell & Assocs.       | 216-447-9020 |
| OH                                    | Columbus, R.O. Whitesell & Assocs.        | 614-888-9396 |
| OH                                    | Dayton, R.O. Whitesell & Assocs.          | 513-298-9546 |
| NC                                    | Cary, J. E. Shea                          | 919-481-2475 |
| PA                                    | Pittsburgh, R.O. Whitesell & Assocs.      | 412-963-6161 |
| TX                                    | Dallas, Benson Engrg.                     | 214-342-0438 |
| TX                                    | Houston, Benson Engrg.                    | 713-333-3112 |
| Can                                   | Birmingham, Mi, Gregory J. Lukas          | 313-642-9155 |

Keystone's Natl. Distrs. for all locations

|                           |                                   |              |
|---------------------------|-----------------------------------|--------------|
| <i>Local Distributors</i> |                                   |              |
| AL                        | Huntsville, Newark Elctns.        | 205-837-9091 |
| AZ                        | Phoenix, Allied Elctns.           | 602-437-9080 |
| CA                        | Los Angeles, Newark Elctns.       | 800-367-3573 |
| CO                        | Denver, Newark Elctns.            | 303-757-3351 |
| CT                        | Cheshire, Allied Elctns.          | 203-272-7730 |
| FL                        | Plantation, Newark Elctns.        | 305-424-4040 |
| GA                        | Atlanta, Dexter Corp.             | 404-448-4998 |
| IL                        | Newark Elctns.                    | 800-367-3573 |
| IL                        | Elk Grove Vlg., Dexter Corp.      | 800-345-4082 |
| IN                        | Indianapolis, Allied Elctns.      | 317-875-0448 |
| KY                        | Louisville, Allied Elctns.        | 502-452-2293 |
| MA                        | Billerica, Dexter Corp.           | 508-663-7500 |
| MI                        | Farmington Hills, Newark Elctns.  | 313-737-5150 |
| MN                        | Digi-Key Corp.                    | 800-344-4539 |
| MN                        | Thief River Falls, Digi Key       | 800-344-4539 |
| MO                        | St. Louis, Newark Elctns.         | 314-291-7031 |
| NY                        | Buffalo, Summit Distrs.           | 800-678-6648 |
| OH                        | Toledo, Dexter Corp.              | 419-385-4621 |
| PA                        | Summit Distrs.                    | 800-678-6648 |
| TX                        | Fort Worth, Allied Elctns.        | 800-433-5700 |
| EXP                       | Germany, Dexter Corp.             | 089-857-3071 |
| Can                       | Summit Distrs.                    | 800-678-6648 |
| Can                       | Mississauga, Ont., Newark Elctns. | 416-670-7799 |

**KEYSTONE ELECTRONICS CORP.**, 31-07 20th Rd., Astoria, NY 11105-2017, Tel: 718-956-8900, TELEX: 35-3700, FAX: 718-956-9040; FSC No: 91833; Empl: 80; Sls. Mgr: Charles Gold

**KEYTEK INSTRUMENT CORP.**, 260 Fordham Rd., Wilmington, MA 01887, Tel: 508-658-0880, TELEX: 951389 KEYTEK BURL, FAX: 508-657-4803; Sls. Mgr: Michael Hopkins

**KEYTEK KEYBOARDS CANADA INC.**, 16 Mary St., Units 3 & 4, Aurora, Ontario, Canada L4G 3W8, Tel: 416-727-9491, FAX: 416-727-7118; Empl: 20

**KEYTRONICS, INC.**, 707 North St., Endicott, NY 13760, Tel: 607-754-5405, FAX: 607-754-9791; FSC No: 51181; Empl: 75; Sls. Mgr: Judith M. Olson

**KGS ELECTRONICS, INC.**, 418-A E. Live Oak Ave., Arcadia, CA 91006, Tel: 818-574-1175, FAX: 818-574-0553; Empl: 60 **D-1807, 2276**

|                                       |                            |              |
|---------------------------------------|----------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                            |              |
| NJ                                    | Wayne, BIZ Intl.           | 201-694-2417 |
| TX                                    | Hurst, McGarrath & Assocs. | 817-268-3557 |





**FAX: 310-986-1624**

**KIKUSUI INTERNATIONAL CORP.**, 1980 Orizaba Ave., Signal Hill, CA 90804-1203, Tel: 310-986-1677, 800-545-8784; *Sls. Mgr.*: Joe Engler; *Dist. Mgr.*: Tom Haygarth  
**D-1289, 1409, 1808-1809**

*Local Sales Offices & Reps*

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AZ  | Chandler, Vic Myers Assocs.             | 602-345-6449 |
| CA  | Santa Clara, W-J Elctms. Sls.           | 408-982-9222 |
| CA  | Torrance, Amasco South                  | 213-781-9494 |
| CO  | Littleton, Vic Myers Assocs.            | 303-730-7313 |
| FL  | W. Melbourne, Trilogic Sunforce         | 407-722-1324 |
| HI  | Honolulu, Honolulu Elctms.              | 808-949-5564 |
| IL  | Elmhurst, Sector Engrg. Sls.            | 708-530-7850 |
| IN  | Indianapolis, Sector Engrg. Sls.        | 317-253-9221 |
| MD  | Wheaton, KMA Sls.                       | 301-460-8876 |
| MA  | Billerica, Eastonix                     | 508-670-2400 |
| MI  | Bloomfield Hills, MacKellar Assoc. Inc. |              |
|     |                                         | 313-335-4440 |
| MN  | Minneapolis, Sector Engrg. Sls.         | 612-378-2123 |
| NJ  | Ridgefield Park, Scientific Dvcs. East  |              |
|     |                                         | 201-440-1400 |
| NM  | Albuquerque, Vic Myers Assocs. Inc.     |              |
|     |                                         | 505-884-6878 |
| NC  | Raleigh, Trilogic Sunforce              | 919-233-0270 |
| OH  | Columbus, MacKellar Assoc. Inc.         | 614-848-3552 |
| OR  | Wilsonville, Syntek, Inc.               | 503-682-2750 |
| PA  | Horsham, PA Scientific Dvcs.            | 215-956-0700 |
| UT  | Salt Lake City, Vic Myers Assoc. Inc.   | 801-581-1760 |
| WA  | Bellevue, Syntek, Inc.                  | 206-462-7700 |
| WI  | Milwaukee, Sector Engrg. Sls.           | 414-352-8280 |
| PR  | San Juan, David S. Terment              | 809-762-2688 |
| Can | Burnaby, BC, Interfax Sys., Inc.        | 604-430-1410 |
| Can | Nepean, Ont., Interfax Sys., Inc.       | 613-726-8888 |
| Can | Rexdale, Ont., Interfax Sys., Inc.      | 416-674-8970 |
| Can | St. Laurent, Que., Interfax Sys., Inc.  | 514-336-0392 |

**KILO INTERNATIONAL**, 1952 Ironton Blvd., Provo, UT 84606, Tel: 801-377-5530, FAX: 801-377-5573; FSC No.: 05129; Empl: 50; *Sls. Mgr.*: James T. Davis; *Dist. Mgr.*: James T. Davis



**FAX: 805-684-9679**

**KILOVAC CORP.**, Box 4422, Santa Barbara, CA 93140-4422, Tel: 805-684-4560, App. Hot Line 800-253-4560; FSC No.: 18741; Empl: 107; *Sls. Mgr.*: Patrick McPherson, VP Sls. & Mktg. **B-1540-1545**

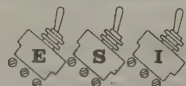
*Local Sales Offices & Reps*

|    |                                      |              |
|----|--------------------------------------|--------------|
| CA | Chatsworth, Cygnus Sls. Engrg. Corp. | 818-727-0312 |
| CA | Morgan Hill, Power Connection        | 408-779-8888 |
| CO | Englewood, Omega Limited             | 303-762-1921 |
| FL | Orlando, Comp. Design Mktg.          | 407-240-3903 |
| GA | Atlanta, Electro Tech                | 404-262-1522 |
| GA | Norcross, Benchmark Technical        | 404-446-1711 |



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 SECTION 5100.FREE CATALOG 40EM on REQUEST

|     |                                        |              |
|-----|----------------------------------------|--------------|
| IL  | Elgin, Gassner & Clark, Inc.           | 708-695-9540 |
| IA  | Cedar Rapids, Seltco Sls. Corp.        | 319-364-7660 |
| KS  | Wichita, Baka Corp.                    | 316-682-8411 |
| MO  | Bloomington, Jay Borman Sls.           | 612-830-1337 |
| MO  | St. Louis, Baka Corp.                  | 314-569-1250 |
| NH  | Nashua, Bell Controls                  | 603-882-6984 |
| NY  | Great Neck, Trionic Assocs.            | 516-466-2300 |
| NC  | Raleigh, Benchmark Tech.               | 919-850-0633 |
| OH  | Cleveland, Electronic Components, Inc. |              |
|     |                                        | 216-331-5330 |
| OH  | Columbus, Electronic Comp., Inc.       | 614-231-2318 |
| OH  | Miamisburgh, Electronic Comps. Inc.    |              |
|     |                                        | 513-866-3340 |
| OR  | Beaverton, Components West, Inc.       | 503-642-9110 |
| PA  | Treviso, PSA North                     | 215-245-0513 |
| TX  | Dallas, Caton Sls. Co.                 | 214-350-1612 |
| WA  | Redmond, Components West, Inc.         | 206-885-5880 |
| Can | Brit. Columbia, Macom Agencies, Ltd.   |              |
|     |                                        | 604-271-2661 |

**KIMBALL ELECTRONIC LAB. INC.**, 8081 W. 21 Lane, Hialeah, FL 33016, Tel: 305-822-5792, FAX: 305-362-3125; Empl: 15; *Sls. Mgr.*: Brenda Wright

**KINEMATRICS, INC.**, 222 Vista Ave., Pasadena, CA 91107, Tel: 818-795-2220, TELEX: 67-5402, FAX: 818-795-0868; Empl: 75; *Sls. Mgr.*: Mel Lund

**KINETICSYSTEMS CORP.**, 900 N. State St., Lockport, IL 60441, Tel: 815-838-0005, TWX: 910-638-2831, FAX: 815-838-4424; Empl: 100; *Sls. Mgr.*: Norman R. Ellison, Dir. Domestic Sls.

**Kingbright**

**FAX: 909-468-0505**

**KINGBRIGHT USA CORP., Kingbright Elec. Co., Ltd.**, 225 Brea Canyon Rd., City of Industry, CA 91789, Tel: 909-468-0500 **B-1169**

For all states not listed contact Mfr. at 909-468-0500

*Local Sales Offices & Reps*

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AL  | Madison, Contact Manufacturer        | 909-468-0500 |
| AZ  | Tempe, ACS of Arizona                | 602-731-9711 |
| CO  | Denver, Parker-Webster               | 303-841-4888 |
| CO  | Parker, Parker Webster Sls.          | 303-841-4888 |
| FL  | Ft. Lauderdale, Solutions            | 305-989-2931 |
| IL  | Buffalo Grove, Service Technlgs.     | 708-634-4995 |
| IN  | M/S Sls.                             | 219-436-3023 |
| IN  | Greenwood, M/S Sls.                  | 317-881-0110 |
| IA  | Davenport, Rush & West               | 319-388-9494 |
| KS  | Olathe, Rush & West                  | 913-764-2700 |
| MD  | Gaithersburg, KSA of New England     | 508-443-5881 |
| MA  | Sudbury, KSA of New England          | 508-443-5881 |
| MN  | Oakdale, Complete Sls.               | 612-731-2923 |
| MO  | St. Louis, Rush & West Assocs.       | 314-965-3322 |
| NJ  | N. Brunswick, Unirep                 | 908-940-1851 |
| NJ  | Tenafly, Michel Assocs.              | 201-894-8964 |
| NY  | East Syracuse, Fountain, Young & Co. |              |
|     |                                      | 315-437-7733 |
| OH  | Cleveland, RK Comps. Sls.            | 216-642-9312 |
| PA  | Pittsburgh, RK Comps. Sls.           | 412-775-0747 |
| UT  | Murray, Parker Webster Sls.          | 801-266-9939 |
| WI  | Colgate, Svc. Technlgs., Inc.        | 708-634-4995 |
| Can | Churchill, Ont., Ryslyn              | 705-456-3213 |

*Local Distributors*

|     |                                        |              |
|-----|----------------------------------------|--------------|
| AZ  | Tempe, CDS/AZ                          | 602-829-7981 |
| AR  | N. Little Rock, CDS/AR                 | 501-851-3137 |
| CA  | Chatsworth, Passive Comps. Inc.        | 818-700-8838 |
| CA  | Costa Mesa, Orange Cnty. Comps.        | 909-979-3597 |
| CA  | Los Angeles, Electric Switches Inc.    | 213-660-1310 |
| CA  | Milpitas, Sierra West Elctms.          | 408-945-1050 |
| FL  | Lauderdale, Lantern Elctms.            | 305-979-3188 |
| FL  | W. Palm Bch., Atlantic Elctms., Inc.   | 813-531-5900 |
| IL  | Morton Grove, Nedco Elctms.            | 708-967-0500 |
| IA  | Des Moines, Mid-State Distbg. Co.      | 515-244-7231 |
| MN  | Elitzen, Capacitor Assoc.              | 507-495-3306 |
| MO  | St. Louis, Ric-Tronics, Inc.           | 314-997-4707 |
| NJ  | Bloomfield, Solid State, Inc.          | 201-429-8700 |
| NY  | East Syracuse, ADR Technlgs., Inc.     | 315-437-7087 |
| NY  | Melville, Kelvin Elec.                 | 516-433-1700 |
| OH  | Twinsburg, Schuster Elec.              | 216-425-8134 |
| OR  | Salem, Light-Waves Elec.               | 503-585-4770 |
| TX  | Carrollton, LCD Elctms., Inc.          | 214-245-0600 |
| TX  | Houston, CDS/Houston                   | 713-868-4018 |
| TX  | Richardson, Ewing Elctms., Inc.        | 214-231-6725 |
| UT  | Nephi, CDS/UT                          | 801-623-2908 |
| WA  | Kent, Shannon Indl.                    | 206-575-8600 |
| EXP | City of Industry, Kingbright USA Corp. |              |
|     |                                        | 909-468-0500 |

Can Montreal, Megastar Electronics, Inc.  
 514-329-0042

**KINGS ELECTRONICS CO., INC.**, 40 Marbledale Rd., Tuckahoe, NY 10707, Tel: 914-793-5000, TELEX: 6818293, FAX: 914-793-5092; Empl: 308; *Sls. Mgr.*: E. Lagarto; *Dist. Mgr.*: Joel Cohn

**KIPP & ZONEN**, Enraf-Nonius, 390 Central Ave., Bohemia, NY 11716, Tel: 516-589-2885, 800-645-1025, FAX: 516-589-2068; Empl: 25; *Sls. Mgr.*: Joe Carlin; *Dist. Mgr.*: Joe Carlin

**KIP TRANSFORMERS INC.**, P.O. Box 6162, 13 Town Line Rd., Wolcott, CT 06716, Tel: 203-758-7085, FAX: 203-596-8041

**KIRKWOOD INDUSTRIES INC.**, 4855 West 130 St., Cleveland, OH 44135, Tel: 216-267-6200, TELEX: 980630, FAX: 216-362-3804; *Sls. Mgr.*: Tom Bauer

**KISTLER INSTRUMENTS CORP.**, 75 John Glenn Dr., Amherst, NY 14228-2171, Tel: 716-691-5100, FAX: 716-691-5226; Empl: 67; *Sls. Mgr.*: Mike Murphy

**KISTLER-MORSE**, P.O. Box 3009, Redmond, WA 98073, Tel: 206-881-8000, FAX: 206-883-4893; *Sls. Mgr.*: Stan Isenath, Jack Smith

**KIT MASTER**, 11 South Broad St., Peekskill, NY 10566, Tel: 914-736-1010, FAX: 914-736-1899 **C-1541**

**KLC/KARL LAMBRECHT CORP.**, 4204 N. Lincoln Ave., Chicago, IL 60618, Tel: 312-472-5442, FAX: 312-472-2724; Empl: 29; *Sls. Mgr.*: Raymond Lambrecht

**KLEIN TOOLS, INC.**, 7200 McCormick Blvd., P.O. Box 599033, Chicago, IL 60659-9033, Tel: 708-677-9500, TELEX: 72-4431; Empl: 1000; *Sls. Mgr.*: Ron Bost

**KLOCKNER MOELLER**, 25 Forge Pkwy., Franklin, MA 02038, Tel: 508-520-7080, FAX: 508-520-7084; Empl: 250; *Sls. Mgr.*: T. Thornton; *Dist. Mgr.*: P. Feruglio

**KMC SYSTEMS, INC.**, 140 Greenwood Ave. (Bldg. 3), Midland Pk., NJ 07432, Tel: 201-447-0007, FAX: 201-447-0014; Empl: 35; *Sls. Mgr.*: E. Verder

**KMS ADVANCED PRODUCTS, INC.**, 700 KMS Place, P.O. Box 1868, Ann Arbor, MI 48106-1868, Tel: 313-769-1780, FAX: 313-769-8660; Empl: 50; *Sls. Mgr.*: Bill McManus

**KNIGHTFIRE TECHNOLOGY**, 2139 University Dr., Ste.211, Coral Springs, FL 33071, Tel: 305-344-3682, FAX: 305-752-4353; FSC No.: FSC 6130; Empl: 4; *Sls. Mgr.*: Sue Pantelakis

**KNOWLEDGEWARE, INC.**, 3340 Peachtree Rd., N.E., Atlanta, GA 30326, Tel: 404-231-8575, TELEX: 544080; FSC No.: 7030-0003; Empl: 780; *Sls. Mgr.*: Robert Chamberlain, Sr. VP, Sls.

**KNOWLES ELECTRONICS, INC.**, 1151 Maplewood Dr., Itasca, IL 60143, Tel: 708-250-5100, TELEX: 433-0330, FAX: 708-250-0575; *Sls. Mgr.*: W. Jeff Taylor



**FAX: 805-584-8371**

**KNURR USA INC., Knurr A.G.**, 1890 N. Voyager Ave., Simi Valley, CA 93063, Tel: 805-526-7733; Empl: 20; *Sls. Mgr.*: Georg Wolf (acting) **C-1050-1052**

*Local Sales Offices & Reps*

|    |                                |              |
|----|--------------------------------|--------------|
| AL | Huntsville, Jim Springer Inc.  | 205-883-4163 |
| AZ | Phoenix, Facilities            | 602-581-5253 |
| CA | Daly City, Knurr USA           | 415-878-3300 |
| CA | Laguna Hills, Knurr USA        | 714-581-8350 |
| CA | Sherman Oaks, Knurr USA        | 818-986-3455 |
| CA | Simi Valley, Knurr USA, Inc.   | 805-526-7733 |
| CO | Englewood, Elctm. Comp. Sys.   | 303-762-9576 |
| FL | Longwood, Mathias Assocs. Inc. | 407-682-1700 |
| IL | Barrington, MCT Elctms.        | 708-438-3200 |
| MA | Bellingham, OEM Mktg. & Sls.   | 508-528-4983 |
| MI | Ann Arbor, Lintott Assoc.      | 313-662-1611 |
| MN | Brunsville, Schneiberg Co.     | 612-890-2416 |
| NH | Salem, OEM Mktg. & Sls.        | 603-893-0009 |
| NJ | Fair Lawn, The Jette Grp.      | 201-794-9610 |



|     |                                          |              |
|-----|------------------------------------------|--------------|
| NY  | Babylon, The Jette Grp.                  | 516-669-6788 |
| NY  | Rochester, Tech. Comp. Sls.              | 716-342-2406 |
| OH  | Westlake, KRW Sls.                       | 216-871-7521 |
| PA  | West Chester, Pantech Inc.               | 215-436-5440 |
| SC  | Columbia, Knurr USA East                 | 803-871-6147 |
| TX  | Dallas, Kite                             | 214-986-0321 |
| VA  | Springfield, Pantech Inc.                | 703-451-5700 |
| WA  | Seattle, Temper Tech. Mktg.              | 509-292-8201 |
| Can | Oakville, Ont., Elctn. Design Consulting | 416-827-5398 |

## Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| CO | Aurora, Ty Henkin               | 303-364-1000 |
| OR | Portland, Radar Elec. Co., Inc. | 503-232-3404 |
| WA | Seattle, Radar Elec. Co., Inc.  | 206-282-2511 |



FAX: 814-362-8883

**KOA SPEER ELECTRONICS**, Bolivar Dr., P.O. Box 547, Bradford, PA 16701, Tel: 814-362-5536; FSC No.: 09021; Empl.: 3000; Sls. Mgr.: L. G. Holzwarth; Dist. Mgr.: Fred L. Schenfield

A-1002, 1095, 1242-1243, 1858, 1958-1971

## Local Sales Offices &amp; Reps

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AL  | Huntsville, Cartwright & Bean         | 205-830-1540 |
| AZ  | Phoenix, Howe & Howe Sls.             | 602-264-7971 |
| CA  | Garden Grove, ELSCO Elctms.           | 714-891-4621 |
| Can | Mississauga, Ont., Indigo Elctms.     | 416-670-0284 |
| CA  | San Diego, ElSCO Elctms., Inc.        | 619-292-1771 |
| CA  | San Diego, Carlton Comps.             | 408-980-0181 |
| CO  | Boulder, R. G. Entprs.                | 303-447-9211 |
| CT  | Plainville, Northeast Representatives |              |

|    |                                        |              |
|----|----------------------------------------|--------------|
| FL | Boca Raton, APM Assocs.                | 203-747-2423 |
| FL | Tampa, APM Assocs.                     | 407-395-7308 |
| FL | Winter Park, APM Assocs.               | 813-886-2457 |
| GA | Norcross, Cartwright & Bean            | 407-678-2777 |
| IL | Arlington Hgts., C. L. Greenslade Sls. | 404-368-0160 |

|    |                                    |              |
|----|------------------------------------|--------------|
| IN | Fort Wayne, John F. Kilfoil        | 708-593-3450 |
| IA | Cedar Rapids, Spectrum Sls.        | 219-483-6208 |
| KS | Overland Plk., Spectrum Sls.       | 319-366-0576 |
| LA | Covington, Cartwright & Bean       | 913-648-6811 |
| MA | Hingham, Northeast Representatives | 504-892-1780 |

|    |                                        |              |
|----|----------------------------------------|--------------|
| MI | Troy, C. B. Jensen & Assocs.           | 617-749-8700 |
| MN | Edina, Grayden & Flemmer               | 313-643-0506 |
| MS | Jackson, Cartwright & Bean             | 612-941-1120 |
| MO | Florissant, Spectrum Sls.              | 601-981-1170 |
| NH | Mont Vernon, Northeast Representatives | 314-921-1313 |

|    |                                  |              |
|----|----------------------------------|--------------|
| NJ | Cherry Hill, Metz-Benham Assoc.  | 603-880-8199 |
| NM | Albuquerque, SynTech             | 609-424-0404 |
| NY | East Rochester, Tri-Tech Elctms. | 505-266-7951 |
| NY | Fayetteville, Tri-Tech Elctms.   | 716-385-6500 |
| NY | Fishkill, Tri-Tech Elctms.       | 315-446-2881 |

|    |                              |              |
|----|------------------------------|--------------|
| NY | Great Neck, MOS Assocs.      | 914-897-5611 |
| NC | Charlotte, Cartwright & Bean | 516-487-3966 |
| NC | Raleigh, Cartwright & Bean   | 704-536-0303 |
| NC | Raleigh, Cartwright & Bean   | 919-876-4130 |
| OH | Cincinnati, John F. Kilfoil  | 513-791-6150 |

|    |                                |              |
|----|--------------------------------|--------------|
| OR | Tigard, Earl & Brown Co.       | 503-639-2100 |
| PA | Pittsburgh, Catalyst Sls. Co.  | 412-826-3434 |
| PA | Wynnewood, Metz-Benham Assocs. | 215-896-7300 |
| TN | Knoxville, Cartwright & Bean   | 615-693-7450 |
| TN | Memphis, Cartwright & Bean     | 901-362-8345 |

|     |                                |              |
|-----|--------------------------------|--------------|
| TX  | Lewisville, Jim Hughes         | 214-221-1536 |
| WA  | Redmond, Earl & Brown Co.      | 206-885-5064 |
| PR  | San German, Digit-Tech Sls.    | 809-892-4260 |
| Can | Kanata, Ont., Indigo Elctms.   | 613-591-1053 |
| Can | Montreal, Que., Indigo Elctms. | 514-696-6104 |

## Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| AL | Huntsville, Repton           | 205-722-9500 |
| AZ | Ftn. Hill, RCD Inds.         | 602-483-6412 |
| AZ | Scottsdale, Shelley-Ragon    | 602-998-0399 |
| AZ | Tempe, T.T.I.                | 602-431-1191 |
| AR | Little Rock, Carlton-Bates   | 501-562-9100 |
| CA | Campbell, Lartronic          | 408-379-6454 |
| CA | Chatsworth, MIL-Comm Dists.  | 818-998-3111 |
| CA | Chatsworth, Shelley-Ragon    | 818-998-3333 |
| CA | Costa Mesa, Eric Elctms.     | 714-751-1185 |
| CA | Fountain Valley, Comps. Ctr. | 714-979-0433 |
| CA | Garden Grove, Natl. Elctms.  | 714-892-7749 |
| CA | Huntington Beach, SMD, Inc.  | 714-841-4556 |
| CA | Irvine, KELEX                | 714-863-1230 |
| CA | Milpitas, T.T.I.             | 408-946-5577 |
| CA | Mission Hills, T.T.I.        | 818-891-8885 |
| CA | San Diego, Shelley-Ragon     | 619-453-7133 |
| CA | San Diego, T.T.I.            | 619-748-2025 |
| CA | San Jose, Capstone Elctms.   | 408-453-9804 |
| CA | San Jose, Eric Elctms.       | 408-432-1111 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | San Jose, Jaco                      | 408-432-9290 |
| CA | San Jose, Shelley Ragon             | 408-432-0600 |
| CA | San Jose, Surface Mount Dists.      | 408-432-7274 |
| CA | Santa Ana, TTI                      | 714-641-9393 |
| CA | Santa Clara, Components Ctr.        | 408-988-3751 |
| CA | Tustin, Capstone Elctms.            | 714-730-0349 |
| CA | Tustin, Jaco Elctms.                | 714-258-9003 |
| CA | Westlake Village, Jaco              | 805-495-9998 |
| CO | Aurora, Capstone Elctms.            | 303-375-1300 |
| CO | Boulder, R. G. Entprs.              | 303-447-9211 |
| CO | Denver, T.T.I.                      | 303-429-6806 |
| CO | Englewood, Shelly-Ragon Elec. Parts |              |

|    |                               |              |
|----|-------------------------------|--------------|
| CT | Wallingford, Midstate Elctms. | 303-762-0670 |
| CT | Wallingford, T.T.I.           | 203-265-9900 |
| CT | Wallingford, Utronics         | 203-284-7474 |
| FL | Boca Raton, Jaco Elctms.      | 203-265-2724 |
| FL | Boca Raton, Jaco Elctms.      | 407-241-7943 |

|    |                                |              |
|----|--------------------------------|--------------|
| FL | Clearwater, Atlantic Elctms.   | 813-531-5900 |
| FL | Fl. Lauderdale, Repton Elctms. | 305-735-1112 |
| FL | Largo, Shelley-Ragon           | 813-545-0057 |
| FL | Orlando, TTI                   | 407-859-1000 |
| FL | Tampa, Repton                  | 813-855-4656 |
| FL | Tampa, Repton Elec.            | 813-854-2351 |

|    |                                 |              |
|----|---------------------------------|--------------|
| FL | W. Palm Beach, Atlantic Elctms. | 407-686-8553 |
| GA | Norcross, Repton                | 404-446-1300 |
| GA | Norcross, T.T.I.                | 404-662-0911 |
| IL | Bensenville, Gool Elctms.       | 708-860-7171 |
| IL | Glendale Heights, Shelley-Ragon | 708-529-9977 |
| IL | Itasca, Capstone Elctms.        | 708-250-0300 |

|    |                                 |              |
|----|---------------------------------|--------------|
| IL | Northbrook, Classic Comp. Supp. | 708-272-9650 |
| IL | Rosemont, Advent Elctms.        | 708-298-4210 |
| IL | Schaumburg, Repton Elctms.      | 708-882-1700 |
| IL | Schaumburg, TTI                 | 708-884-6500 |
| IN | Indianapolis, Advent Elctms.    | 317-872-4910 |
| IA | Cedar Rapids, Advent Elctms.    | 319-363-0221 |
| IA | Cedar Rapids, Dee Elctms.       | 319-365-7551 |

|    |                                 |              |
|----|---------------------------------|--------------|
| MD | Baltimore, Radio Elec. Svc. Co. | 301-931-8200 |
| MD | Beltville, Radio Elec. Svc.     | 301-937-9100 |
| MD | Columbia, Jaco Comps.           | 301-995-6620 |
| MD | Columbia, T.T.I.                | 301-995-1331 |
| MA | Billerica, Baldwin Comp. Ctr.   | 617-667-6710 |
| MA | Chelmsford, Shelly-Ragon        | 508-250-9666 |
| MA | Norwood, EMTE Electronics       | 617-769-9500 |

|    |                                  |              |
|----|----------------------------------|--------------|
| MA | Wilmington, Capstone Elctms.     | 508-657-5874 |
| MA | Wilmington, North Star Elect.    | 508-657-5155 |
| MA | Wilmington, T.T.I.               | 508-658-4700 |
| MI | Ann Arbor, Wedemeyer             | 313-665-8611 |
| MI | Farmington Hills, Advent Elctms. | 313-477-1650 |
| MI | Farmington Hills, Key Elctms.    | 313-489-5455 |
| MI | Hivonia, Repton Elctms.          | 313-525-2700 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| MN | Libbing, Minn Tech Elctms.          | 218-262-5228 |
| MN | Minnetonka, Repton                  | 612-938-0000 |
| MN | Minnetonka, T.T.I.                  | 612-933-8555 |
| MN | St. Paul, Shelley-Ragon Elctms.     | 612-642-8828 |
| MO | Independence, Shelley-Ragon Elctms. |              |

|    |                              |              |
|----|------------------------------|--------------|
| MO | St. Louis, Franklin Elctms.  | 816-254-3410 |
| NE | Lincoln, Scott Elctms.       | 314-429-3111 |
| NV | Las Vegas, Kiesub Corp.      | 402-466-8221 |
| NH | Nashua, Brevan Elctms.       | 702-733-3888 |
| NH | Mount Laurel, TTI Inc.       | 603-889-7230 |
| NJ | Mount Laurel, TTI Inc.       | 609-234-6400 |
| NJ | Mt. Laurel, Capstone Elctms. | 609-727-7800 |
| NJ | Rockaway, Nasco              | 201-625-7777 |

|    |                               |              |
|----|-------------------------------|--------------|
| NM | Albuquerque, Betatron         | 505-821-1122 |
| NY | Amherst, Standard Elctms.     | 716-691-3801 |
| NY | Bohemia, Prime Comps.         | 516-244-8190 |
| NY | Buffalo, Summit Dists.        | 716-887-2845 |
| NY | Hauppauge, Jaco               | 516-273-5500 |
| NY | Rochester, Summit Dists.      | 716-334-8110 |
| NY | Ronkonoma, Baldwin Comp. Ctr. | 516-588-5700 |
| NY | Ronkonoma, T.T.I.             | 516-737-2000 |

|    |                                 |              |
|----|---------------------------------|--------------|
| NC | Greensboro, Golden Elctms.      | 919-294-4653 |
| NC | Raleigh, Capstone Elctms.       | 919-954-0600 |
| NC | Raleigh, Jaco                   | 919-876-7767 |
| NC | Raleigh, Repton                 | 919-832-3117 |
| NC | Raleigh, Resco-Raleigh          | 919-781-5700 |
| OH | Cleveland, Roberts Elect. Corp. | 216-238-1711 |
| OH | Dayton, T.T.I.                  | 513-898-8330 |
| OH | Independence, TTI               | 216-328-9755 |
| OH | Solon, Repton                   | 216-349-1415 |

|    |                                 |              |
|----|---------------------------------|--------------|
| OK | Tulsa, Altair Co.               | 918-252-5781 |
| OR | Beaverton, Murphy Elctms.       | 503-642-2001 |
| PA | Erie, Rem Elctms.               | 814-453-5626 |
| PA | Harrisburg, Cumberland Elctms.  | 717-233-5883 |
| PA | Philadelphia, PEI/Genesis       | 215-673-0400 |
| PA | Philadelphia, Sager Electronics | 215-464-4336 |
| PA | Philadelphia, Shap              | 215-969-3300 |
| RI | Pawtucket, Major Edwards        | 401-725-7400 |
| TX | Addison, Jaco/QC Elctms.        | 214-733-4300 |
| TX | Carrollton, Capstone Elctms.    | 214-380-9049 |
| TX | Fort Worth, Chaparral Elctms.   | 817-232-2777 |
| TX | Fort Worth, TTI                 | 817-847-6666 |

|    |                          |              |
|----|--------------------------|--------------|
| TX | Ft. Worth, Carlton Bates | 817-293-5558 |
| TX | Ft. Worth, T.T.I.        | 817-740-9000 |
| TX | Ft. Worth, T.T.I. Inc.   | 817-595-3100 |
| TX | Houston, Altair Co.      | 713-462-3029 |
| WA | Redmond, Murphy Elctms.  | 206-881-1234 |
| WA | Redmond, Shelley-Ragon   | 206-883-2220 |

|     |                                   |              |
|-----|-----------------------------------|--------------|
| WA  | Redmond, T.T.I.                   | 206-882-0291 |
| WI  | Oconomowoc, G. W. Elctms.         | 414-567-9445 |
| Can | Calgary, Alb., A. Deskin Sls.     | 403-270-4440 |
| Can | Edmonton, Alb., A. Deskin Sls.    | 403-466-2106 |
| Can | Markham, Ontario, Sernad          | 416-475-8500 |
| Can | Transcona, Manit., A. Deskin Sls. | 204-224-1321 |
| Can | Vancouver, B.C., A. Deskin Sls.   | 604-324-8343 |

**KOBOLD INSTRUMENTS INC.**, 1810 Parkway View Dr., Pittsburgh, PA 15205, Tel: 412-788-2830, 800-998-1020, FAX: 412-788-4890; Sls. Mgr.: James M. Hall

**KOEP PRECISION STANDARDS, INC.**, 500 B. Great Bay Blvd., Tuckerton, NJ 08087, Tel: 609-296-9686, FAX: 609-296-9733; FSC No.: 57114; Empl.: 3; Dist. Mgr.: N/A

**KOLIN INDS., INC.**, Box 300, Dept. EEM, Pound Ridge, NY 10576, Tel: 914-764-5775, FAX: 914-764-5785; Empl.: 30; Sls. Mgr.: J. Kolinsky

## KOLLMORGEN

## Motion Technologies Group

Industrial and Commercial Products

FAX: 703-731-0847

**KOLLMORGEN MOTION TECHNOLOGIES GROUP**, 201 Rock Rd., Radford, VA 24141, Tel: 800-77-SERVO; FSC No.: 11384; Empl.: 343; Sls. Mgr.: Pete Dougherty B-1273-1277

|                            |                                       |              |
|----------------------------|---------------------------------------|--------------|
| Local Sales Offices & Reps |                                       |              |
| AZ                         | Mesa, Western Automation Inc.         | 602-830-6315 |
| AZ                         | Tempe, Thor Engrg.                    | 602-438-8494 |
| CA                         | Corona, Western Automation, Inc.      | 714-278-1900 |
| CA                         | Hermosa Bch., Western Automation Inc. |              |

|    |                                       |              |
|----|---------------------------------------|--------------|
| CA | La Jolla, KSA Inc.                    | 310-798-8532 |
| CA | Laguna Hills, Industrial Drives       | 619-453-5720 |
| CA | Laguna Hills, Western Automation      | 714-581-3626 |
| CA | Meadow Vista, O'Donnell Assocs. North | 916-878-9087 |
| CA | Milpitas, Maxim Elctn. Sls.           | 408-946-6001 |
| CA | San Jose, O'Donnell Assocs. North     | 408-456-2950 |
| CA | San Marcos, Western Automation Inc.   |              |

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|----|--------------------------------------------|--------------|
| CA | Valencia, Western Automation, Inc.         | 619-727-8895 |
| CA | Westminster, MJM Mktg. Inc.                | 805-254-7845 |
| FL | Lakeland, Ludlum Assoc. Co. Inc.           | 303-428-9611 |
| GA | Atlanta, Industrial Apparatus Co.          | 813-683-0200 |
| IL | Skokie, Koepke & Assoc. Inc.               | 800-525-1354 |
| MD | Annapolis, Homersmith, Inc.                | 404-875-8086 |
| MA | Wellesley, Electro Kinetics                | 708-581-0000 |
| MI | Sterling Hgts., Alliance Sls. Co.          | 301-269-6493 |
| MN | New Brighton, The Mackubin Grp.            | 617-235-9415 |
| NJ | Williamstown, Homersmith Inc.              | 313-726-8670 |
| NY | Commack, Indl. Drives PMI Motion Technlgs. | 612-636-5533 |
| NY | Commack, Indl. Drives PMI Motion Technlgs. | 609-567-7464 |

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|-----|--------------------------------------|--------------|
| NY  | E. Rochester, A&D Devices            | 516-864-1000 |
| NY  | Plainville, Motion Control Sls.      | 716-385-2778 |
| NY  | Charlotte, Motion Technl. Inc.       | 516-756-5656 |
| NC  | Charlotte, Motion Technl. Inc.       | 704-525-9855 |
| OH  | Columbus, Exonic Sys.                | 800-438-1380 |
| OH  | Dayton, Exonic Sys.                  | 614-337-8883 |
| OH  | Farmersville, The Kilroy Corp.       | 513-434-4100 |
| OH  | Medina, Cygnus                       | 513-696-2277 |
| OH  | Toledo, Exonic Sys.                  | 216-725-1663 |
| OH  | Twinsburg, Exonic Sys.               | 419-866-8600 |
| OK  | Broken Arrow, DJ Sls.                | 216-425-2100 |
| PA  | Downingtown, Homersmith, Inc.        | 918-258-1445 |
| PA  | Media, Homersmith, Inc.              | 215-269-3637 |
| PA  | Pittsburgh, Exonic Sys.              | 215-543-2434 |
| TX  | Austin, DJ Sls.                      | 215-825-6797 |
| TX  | Dallas, DJ Sls.                      | 512-258-3002 |
| TX  | Dallas, EC Sys. Inc.                 | 214-783-8876 |
| TX  | Dallas, EC Sys. Inc.                 | 214-960-1961 |
| TX  | Houston, DJ Sls.                     | 713-690-2640 |
| VA  | Radford, The Hatfield Co.            | 703-639-5471 |
| WA  | Bellevue, Thorson Co. N.W.           | 206-455-9180 |
| Can | Rexdale, Ont., Canadian Drives, Inc. | 416-745-1137 |

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|----|-----------------------------------|--------------|
| CA | Anaheim, Minarik Elec. Co.        | 714-994-2251 |
| CA | S. San Francisco, Steven Engrg.   | 800-258-9200 |
| CO | Denver, Tech Sls. Inc.            | 303-935-0109 |
| CO | Denver, Warren Fluid Power        | 303-377-2736 |
| DE | New Castle, J.C. Bennington Co.   | 302-322-3700 |
| FL | Orlando, Ross Equip.              | 407-872-0874 |
| IL | Chicago, Kelburn Engrg. Co.       | 312-775-8383 |
| IN | Indianapolis, J. N. Fauver Co.    | 317-872-3060 |
| KY | Louisville, J.N. Fauver Co.       | 502-267-7461 |
| MI | Madison Heights, J. N. Fauver Co. | 313-585-5252 |
| NJ | Fairfield, Dodge Newark           | 201-575-7033 |
| NY | Rochester, Magna Prods. Corp.     | 716-647-2880 |

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|--------------------|-----------------------------------|--------------|
| Local Distributors |                                   |              |
| CA                 | Anaheim, Minarik Elec. Co.        | 714-994-2251 |
| CA                 | S. San Francisco, Steven Engrg.   | 800-258-9200 |
| CO                 | Denver, Tech Sls. Inc.            | 303-935-0109 |
| CO                 | Denver, Warren Fluid Power        | 303-377-2736 |
| DE                 | New Castle, J.C. Bennington Co.   | 302-322-3700 |
| FL                 | Orlando, Ross Equip.              | 407-872-0874 |
| IL                 | Chicago, Kelburn Engrg. Co.       | 312-775-8383 |
| IN                 | Indianapolis, J. N. Fauver Co.    | 317-872-3060 |
| KY                 | Louisville, J.N. Fauver Co.       | 502-267-7461 |
| MI                 | Madison Heights, J. N. Fauver Co. | 313-585-5252 |
| NJ                 | Fairfield, Dodge Newark           | 201-575-7033 |
| NY                 | Rochester, Magna Prods. Corp.     | 716-647-2880 |



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|----|---------------------------------|--------------|
| NC | Jamestown, HSI-Piedmont Inc.    | 919-883-3999 |
| OH | Twinsburg, Exonic Sys.          | 216-425-2100 |
| PA | Pittsburgh, Exonic Sys.         | 216-825-6797 |
| TX | Dallas, Cates Drives & Controls | 214-960-1961 |
| TX | Houston, Cates Control Sys.     | 713-644-3911 |
| TX | Houston, Resch. Des. Inc.       | 713-995-8591 |
| WA | Fall City, Pacific Motion Grp.  | 206-222-7387 |
| WI | Elm Grove, Triphase Automation  | 414-821-5099 |
| WI | Oneida, MCL Inds. Inc.          | 414-434-4100 |

**KONTES, Kimble Div. of Owens/IL**, 1001 Spruce St., Vineland, NJ 08360, Tel: 800-223-7150, TWX: 510-687-8967

**KONTRON ELEKTRONIK-US KONTRON ELEKTRONIK GMBH-SUB. BM**, 66 Cherry Hill Dr., Beverly, MA 01915, Tel: 508-927-6575, FAX: 508-927-6511; Empl: 30

**KOOLTRONIC, INC.**, P.O. Box 300, Hopewell, NJ 08525, Tel: 609-466-3400, FAX: 609-466-1114; Empl: 200; Sls. Mgr.: John J. Drages

**KOOLTRONIC, INC.**, 1700 Morse Avenue, Ventura, CA 93003, Tel: 805-642-8521, FAX: 805-658-2901; Empl: 200

**KRAFT DYNATRONIX, INC.**, 105 Power St., Amery, WI 54001, Tel: 715-268-8118, 800-826-7172, FAX: 715-268-8183; Empl: 25; Sls. Mgr.: R. W. Kappler; Dist. Mgr.: R. W. Kappler, Natl. Sls. Mgr.

**KRECKMAN, HERB, CO.**, 27 Spruce Cabin Road, Cresco, PA 18326, Tel: 717-595-2212, FAX: 717-595-2024; Empl: 4

**KR ELECTRONICS, INC.**, 91 Avenel St., Avenel, NJ 07001, Tel: 908-636-1900, FAX: 908-636-1982; FSC No.: 55259; Empl: 15; Sls. Mgr.: Bob Fiordalisi

|                                       |                                 |              |
|---------------------------------------|---------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                 |              |
| CA                                    | Anaheim, Texel                  | 714-998-2941 |
| CA                                    | San Diego, Texel                | 619-576-2162 |
| CA                                    | Seal Beach, Texel               | 310-596-9411 |
| CA                                    | Simi Valley, Texel              | 805-582-1223 |
| CO                                    | Englewood, Tech. Mktg. Co.      | 303-989-3611 |
| FL                                    | Longwood, J-Squared Mktg., Inc. | 407-884-0810 |
| IL                                    | Chicago, Tech. Sls.             | 312-237-7210 |
| KS                                    | Kansas City, Abrams & Assocs.   | 913-432-2303 |
| MO                                    | St. Louis, Abrams & Assocs.     | 314-569-0447 |
| NJ                                    | Glenn Gardner, F & M Tech. Sls. | 908-537-7888 |
| OH                                    | Kettering, Frank Bold & Assocs. | 513-298-6145 |
| TX                                    | Richardson, Carl Tinch Sls. Co. | 214-231-1322 |

**KRENZ INSTRUMENTS, INC.**, 7234 Via Mariposa, Bonsall, CA 92003, Tel: 619-630-3488, FAX: 619-630-4267; Empl: 35; Sls. Mgr.: Michael Merget, G.M.

**KRISTEL CORPORATION**, 833 Industrial Dr., West Chicago, IL 60185, Tel: 708-293-0850, FAX: 708-293-1255; Empl: 35; Sls. Mgr.: Kevin Michael



**Bantry Components, Inc.**

**FAX: 603-624-0634**

**KRL/BANTRY COMPONENTS, INC.**, 160 Bouchard St., Manchester, NH 03103, Tel: 603-668-3210; FSC No.: 18235; Empl: 100; Sls. Mgr.: Bert A. Spiller

**A-1973-1979**

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|---------------------------------------|-----------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                   |              |
| CA                                    | Copperopolis, Francisco & Assocs. | 800-759-9607 |
| FL                                    | Boca Raton, Sls. Specialists      | 813-754-1329 |
| MI                                    | Millford, Elctrn. Comp. Sls.      | 313-360-3790 |
| NH                                    | Amherst, D. A. Crowley & Assocs.  | 603-673-7050 |
| NY                                    | Port Washington, Ashtec           | 516-767-0336 |
| NY                                    | Rochester, H. C. Johnson Agencies | 716-586-0777 |
| OH                                    | Aurora, EMA Inc.                  | 216-562-6104 |
| OH                                    | Centerville, EMA Inc.             | 513-433-2800 |
| OR                                    | Beaverton, Olsen Tech. Sls. Corp. | 503-643-9488 |
| TX                                    | Austin, Southwest Sys. Technlg.   | 512-467-2040 |
| TX                                    | Dallas, Southwest Sys. Technlg.   | 214-443-2688 |
| WA                                    | Bellevue, Olsen Tech. Sls. Corp.  | 206-883-7792 |

|                           |                                   |                            |
|---------------------------|-----------------------------------|----------------------------|
| <i>Local Distributors</i> |                                   |                            |
| FL                        | Boca Raton, NRC Elctns.           | 407-241-8600               |
| MA                        | Billerica, Baldwin Comps.         | 617-667-6710               |
| NY                        | Ronkonkoma, Baldwin Comps. Center | 516-588-5700, 800-645-5608 |
| PA                        | Harrisburg, Ad-Tech               | 717-939-8337               |

**KROHN-HITE CORP.**, Avon Indl. Pk., Bodwell St., Avon, MA 02322, Tel: 508-580-1660, FAX: 508-583-8989; Empl: 35 **A-1650; D-1291**

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|---------------------------------------|----------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                        |              |
| AL                                    | Huntsville, Gentry Assocs.             | 205-883-8455 |
| AZ                                    | Phoenix, Odyssey 1                     | 505-345-9659 |
| CA                                    | Huntington Bch., Sci-Dev West          | 714-236-1190 |
| CA                                    | San Jose, Scientific Devs. West        | 408-554-0455 |
| FL                                    | Orlando, Gentry Elctns., Inc.          | 407-859-4422 |
| FL                                    | Tampa, Gentry Elctns., Inc.            | 813-888-9218 |
| GA                                    | Atlanta, Gentry Elctns., Inc.          | 404-315-0092 |
| IL                                    | Chicago, Berndt Assocs.                | 708-632-0900 |
| IN                                    | Carmel, Berndt Assocs.                 | 317-844-0114 |
| KS                                    | Overland Park, Ramsey Assocs.          | 913-541-1007 |
| MD                                    | Baltimore, Sci-Rep                     | 703-385-0600 |
| MI                                    | Detroit, EQS Sys.                      | 313-961-3042 |
| MI                                    | Minneapolis, Berndt Assocs.            | 612-546-2021 |
| MO                                    | St. Louis, Ramsey Assocs.              | 314-532-9386 |
| NJ                                    | Ridgefield Park, Scientific Devs. East | 201-440-3430 |
| NM                                    | Albuquerque, Odyssey 1                 | 505-265-6645 |
| NY                                    | Syracuse, Labtronics                   | 315-455-7314 |
| OH                                    | Chesterland, EQS Sys.                  | 216-729-2222 |
| OH                                    | Columbus, EQS Sys.                     | 614-228-3453 |
| PA                                    | Pittsburgh, EQS Sys.                   | 216-729-2222 |
| PA                                    | Spring House, Scientific Devices East  | 215-643-3335 |
| RI                                    | Narragansett, Pat Assocs.              | 401-783-9598 |
| SC                                    | Columbia, Gentry Elctns., Inc.         | 803-772-6786 |
| TN                                    | Knoxville, Gentry Elctns., Inc.        | 615-584-0281 |
| TX                                    | Richardson, Scientific Sls. Co.        | 214-231-6541 |
| VA                                    | Fairfax, Sci-Rep, Inc.                 | 703-385-0600 |
| WA                                    | Bellevue, Sci. Devs. N. W.             | 206-747-5169 |
| WI                                    | Milwaukee, Berndt Assocs.              | 414-545-8400 |

**KRUEGER COMPANY**, 1544 W. Mineral Rd., Tempe, AZ 85283, Tel: 800-245-2235, 602-820-5330, FAX: 602-820-1707

**KSI**, See Kaiser Systems, Inc.

**K-TRONICS**, See U. S. Elco Inc. (Under Elco)

**KULITE SEMICONDUCTOR PRODS., INC.**, One Willow Tree Rd., Leonia, NJ 07605, Tel: 201-461-0900, TELEX: 685-3296, FAX: 201-461-0990; Empl: 320; Sls. Mgr.: George Bactor

|                                       |                                       |              |
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| <i>Local Sales Offices &amp; Reps</i> |                                       |              |
| AL                                    | Huntsville, Jim Springer, Inc.        | 205-883-4163 |
| AZ                                    | Scottsdale, Dave Menegay Assocs.      | 602-994-9519 |
| CA                                    | Montrose, Luscombe Engrg.             | 818-249-9000 |
| CA                                    | Walnut Creek, Dale-Dahl Assocs.       | 415-933-9595 |
| CO                                    | Boulder, Measurement Cnslts.          | 303-449-7506 |
| MA                                    | Brockton, JHL Assocs.                 | 508-580-1703 |
| MN                                    | Minneapolis, Instrmn. Resources, Inc. | 612-537-2434 |
| MO                                    | St. Louis, Ozark Elctrn. Mktg.        | 314-423-7200 |
| NM                                    | Albuquerque, Amomete Enptrs.          | 505-344-4143 |
| OH                                    | Dayton, Kulite Midwest                | 513-439-1958 |
| PA                                    | Philadelphia, Rabal Assocs., Inc.     | 215-922-6914 |
| TX                                    | Webster, Kulite Southwest             | 713-486-9748 |
| UT                                    | Centerville, MC 2                     | 801-298-3388 |
| WA                                    | Seattle, Brett Assocs.                | 206-431-8090 |

**KURZ INSTRUMENTS INC.**, 2411 Garden Rd., Monterey, CA 93940, Tel: 800-424-7356, TELEX: 172275; FSC No.: 94-24-11581; Empl: 72; Sls. Mgr.: Tom Setliff

**K-W MANUFACTURING CO., INC.**, P. O. Box 508, Prague, OK 74864, Tel: 405-567-2285, FAX: 405-567-4153; Empl: 60; Sls. Mgr.: Freda Pickard



**FAX: 408-295-8054**

**KYCON CABLE & CONNECTOR, INC.**, 1810 Little Orchard St., San Jose, CA 95125, Tel: 408-295-1110, 800-544-6941; Empl: 16; Sls. Mgr.: Wendy Wuertth; Dist. Mgr.: Wendy Wuertth **C-1364-1367, 1757**

|                                       |                             |              |
|---------------------------------------|-----------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                             |              |
| AZ                                    | Tempe, ACS of Arizona       | 602-731-9711 |
| CA                                    | Aliso Viejo, Pro Assocs.    | 714-588-2700 |
| CA                                    | San Diego, Pro Assocs.      | 714-588-2700 |
| CA                                    | San Jose, Kycon Sls. Off.   | 408-295-1110 |
| CA                                    | Sunnyvale, Repron           | 408-737-0510 |
| GA                                    | Alpharetta, Pinnacle        | 404-410-9980 |
| MA                                    | Sudbury, KSA of New England | 508-443-5881 |

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|-----|------------------------------------|--------------|
| MN  | Burnsville, Vermilyea Sls.         | 612-435-1728 |
| MO  | Chesterfield, Weisler and Assocs.  | 314-537-0010 |
| NJ  | Middletown, Varrelman-Gorman       | 908-219-0088 |
| NY  | Smithtown, Varrelman-Gorman        | 516-724-0907 |
| NY  | Webster, Frank J. Muto             | 716-671-2387 |
| NC  | Raleigh, Pinnacle Mktg.            | 919-848-0404 |
| OR  | Beaverton, Quest Mktg.             | 503-641-7377 |
| PA  | Frazer, Industrial Comps., Inc.    | 215-889-0650 |
| TX  | Dallas, Weisler and Assocs.        | 214-437-2386 |
| TX  | Houston, Weisler & Assocs.         | 713-849-3799 |
| WA  | Bellevue, Quest Mktg.              | 206-747-9424 |
| Can | Laval, Que., Interp Technigs. Ltd. | 514-667-1444 |

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|---------------------------|-----------------------------------|--------------|
| <i>Local Distributors</i> |                                   |              |
| AL                        | Huntsville, Resistacap            | 205-883-4270 |
| AZ                        | Tempe, Team Elctns.               | 602-731-9712 |
| CA                        | San Diego, Cableconn              | 619-571-7111 |
| CA                        | San Diego, Mock III Sls. Co.      | 619-693-8230 |
| CA                        | Sunnyvale, Capco Sls.             | 408-734-3020 |
| CA                        | Sunnyvale, PSC Elctns.            | 408-737-1333 |
| CO                        | Denver, Southwest Elctns., Inc.   | 303-430-4000 |
| FL                        | Orlando, Wallace Elctns.          | 407-578-1000 |
| MA                        | Ashland, Quality                  | 508-881-6500 |
| MA                        | Wilmington, North Star Elctns.    | 508-657-5155 |
| NY                        | Hauppauge, Century Elctns. Comps. | 516-273-1551 |

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|-----|---------------------------------------------|--------------|
| NY  | Rochester, North Star Elctns.               | 716-244-9846 |
| NC  | Raleigh, Century Elctns. Comps.             | 919-596-2220 |
| OR  | Beaverton, Murphy Elctns.                   | 503-642-5001 |
| PA  | Norristown, Century Elctns. Comps.          | 215-631-5400 |
| TX  | Austin, Southwest Elctns.                   | 512-837-8971 |
| TX  | Austin, Wallace Elctns.                     | 512-469-0400 |
| TX  | Carrollton, North Star Elctns.              | 214-980-2999 |
| TX  | Dallas, Wallace Elctns.                     | 214-340-0400 |
| TX  | Ft. Worth, Southwest Elctns., Inc.          | 817-338-1497 |
| TX  | Richardson, Southwest Elctns., Inc.         | 214-234-3050 |
| TX  | San Antonio, Southwest Elctns.              | 512-222-2425 |
| TX  | San Antonio, Wallace Elctns.                | 512-342-2314 |
| TX  | Stafford, Southwest Elctns.                 | 800-231-3612 |
| WA  | Redmond, Murphy Elctns.                     | 206-881-1234 |
| Can | St. Laurent, Que., Ferrotronic Comps., Inc. | 514-333-7288 |

**KYOCERA INDUSTRIAL CERAMICS CORP.**, 8611 Balboa Avenue, San Diego, CA 92123, Tel: 619-576-2688, TELEX: 4723069 (KYOSDGO), ESYLNK: 619-569-9412; Empl: 100; Sls. Mgr.: Lyle Gibson

**KYOCERA NORTHWEST**, See AVX Corp.

**LAB-LINE INSTRUMENTS**, 15th & Bloomingdale, Melrose Pl., IL 60160, Tel: 708-450-2600, TELEX: 6781028, FAX: 708-450-0943; Empl: 225

**LABORATORY TECHNOLOGIES CORP.**, 400 Research Drive, Wilmington, MA 01887, Tel: 508-657-5400, TELEX: 989695, FAX: 508-658-9972; Empl: 32; Sls. Mgr.: Neil Parmenter, Dir. of Sls.

**LABTRONICS INC.**, 75 Rickson Ave., Guelph, Ont., Canada N1G 3B6, Tel: 519-767-1061, FAX: 519-836-4431

**LAFRANCE CORP.**, 8425 Executive Ave., Philadelphia, PA 19153-3893, Tel: 215-365-8000, FAX: 215-365-4420; Empl: 300; Sls. Mgr.: Brian Mc Henry

**LAFRANCE CORP., PACTEC DIV.**, See PacTec Div., LaFrance Corp.

**LAKE SHORE CRYOTRONICS, INC.**, 64 E. Walnut St., Westerville, OH 43081, Tel: 614-891-2243, TELEX: 24-5415, FAX: 614-891-1392; Sls. Mgr.: Michael Swartz

**LAMBDA ELECTRONICS INC.**, 515 Broad Hollow Rd., Melville, NY 11747-3700, Tel: 516-694-4200, FAX: 516-293-0519; Empl: 1100; Sls. Mgr.: John Valenti



**FAX: 619-575-7185**

**LAMBDA QUALIDYNE INC.**, Lambda Group of Unitech, plc, 3055 Del Sol Blvd., San Diego, CA 92154, Tel: 619-575-1100; Empl: 400; Sls. Mgr.: Barry A. Chenes, Dir. of Mktg. **D-1810-1815**

**LAMB ELECTRIC DIVISION**, A Subsidiary of Ametek Inc., 627 Lake St., Kent, OH 44240, Tel: 216-673-3451, FAX: 216-673-8994



**LAMBERT ENGINEERING INC.**, 1155 S.W. Division, Ste. B-13, Bend, OR 97702-2181, Tel: 503-388-2623, FAX: 503-388-1794; Empl: 9

**LAMB INDUSTRIES, INC.**, 4826 S.W. Scholls Ferry Rd., Portland, OR 97225, Tel: 503-297-8878, 800-824-9374, FAX: 503-297-8879; Empl: 6; *Dist. Mgr.: Andrew Semon*  
**B-1760-1765**

*Local Sales Offices & Reps*

**IL** Chicago, Meca Sls. Inc. .... 312-334-3201, FAX: 312-334-4020  
**MN** Stillwater, Prof. Elctms. .... 612-439-8088, FAX: 612-439-1061  
**OR** Portland, Lamb Inds., Inc. .... 503-297-8878, FAX: 503-297-8879

*Local Distributors*

**AL** Mobile, Control Design/AL ..... 205-666-6693  
**AZ** Tempe, Control Design/AZ ..... 602-829-7981  
**AR** Maumet, Control Design/AR ..... 501-851-3137  
**CA** Anaheim, Control Design/S. CA ..... 714-821-1516  
**CA** Chatsworth, EW Elctms. .... 818-718-2500  
**CA** Industry, Ital Elctms. .... 818-968-8515  
**CA** Irvine, Kelex Elctms. .... 800-422-7224  
**CA** Irvine, Mann SW ..... 400-553-5543  
**CA** San Carlos, Control Design/N. CA ..... 815-592-4806  
**CA** San Carlos, Logan Elctms. .... 415-594-0700  
**CA** Tustin, Western Switches ..... 800-454-8144  
**CA** Van Nuys, Wes-Garde/CA ..... 213-873-4802  
**CO** Denver, Control Design/CO ..... 303-296-1922  
**CT** Hartford, Wes-Garde/CT ..... 203-527-7705  
**CT** Wallingford, Control Design/CT ..... 203-269-9955  
**FL** Altamonte Springs, Control Design/FL ..... 305-788-3220  
**FL** Ft. Lauderdale, Repton Elctms. .... 305-735-1112  
**FL** Lakeland, Wes-Garde/FL ..... 800-275-7102  
**FL** Pompano Bch., Control Design/FL ..... 305-782-1311  
**FL** Tampa, Repton Elctms. .... 800-659-1361  
**GA** Stone Mountain, Control Design/GA ..... 404-979-3500  
**IL** Carlel Stream, Wes-Garde/IL ..... 800-275-7095  
**IL** Franklin Park, Stetco Inc. .... 800-251-4558  
**IL** Schaumburg, Control Design/IL ..... 708-307-8900  
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LEPCO/LEONARD ELEC. PRODS., 85 Industrial Dr.,  
Brownsville, TX 78521, Tel: 210-546-1625, FAX: 210-546-  
4112; Empl: 245; Sls. Mgr.: Norma A. Solis



**LETCO INTERNATIONAL**, 160 So. Guenther, New Braunfels, TX 78131-1200, Tel: 1-800-222-9676, FAX: 210-625-6993; Empl: 35; Sls. Mgr.: Jim Carroll; Dist. Mgr.: Jim Carroll

**LEVEL ONE COMMUNICATIONS, INC.**, 105 Lake Forest Way, Folsom, CA 95630, Tel: 916-985-3670, FAX: 916-985-3512

**LEVEL PLUS, SENSORS DIVISION, MTS Sys. Corp.**, P.O. Box 13218, Research Triangle Park, NC 27709, Tel: 919-677-0100, FAX: 919-677-0200; Sls. Mgr.: Mitch Wandzel

**LEVITON TELCOM**, Leviton Manufacturing, 2222 22nd St. S.E., Bothell, WA 98021-4416, Tel: 206-485-4288, 206-486-2222, FAX: 206-483-5270; Empl: 40; Sls. Mgr.: Bill Minnis

**LXTEL, INC.**, P.O. Box 306, Wakefield, MA 01880, Tel: 617-245-5017, FAX: 617-245-6369

**LEYBOLD INFICON INC.**, Two Technology Place, E. Syracuse, NY 13057-9714, Tel: 315-434-1100, TWX: 710-541-0594, FAX: 315-437-3803; Empl: 200; Sls. Mgr.: Mark Wilson

**LFE INSTRUMENTS**, Mark IV Industries, Inc., 55 Green St., Clinton, MA 01510-3099, Tel: 508-365-3400, FAX: 508-365-3468; Empl: 200; Sls. Mgr.: Dave Flanagan; Dist. Mgr.: Dave Snyder

**LF ENGINEERING COMPANY INC.**, 17 Jeffery Road, East Haven, CT 06512, Tel: 203-467-3590

**LG SYSTEMS CORP.**, Lockwood Greene Engineers, Inc., P.O. Box 491, 1500 International Drive, Spartanburg, SC 29304, Tel: 803-578-2143, TELEX: 805288, TWX: 809436, FAX: 803-599-0436; Empl: 1720; Sls. Mgr.: Jim Anderson

**LH RESEARCH, INC.**, 14402 Franklin Ave., Tustin, CA 92680, Tel: 1-800-547-2537, FAX: 714-669-2562; Empl: 700; Sls. Mgr.: Vance Barnes

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| CO Arvada, Gemini Elctms.              | 303-428-5600 |
| CT Cheshire, The MacInnis Co.          | 203-272-3797 |
| IL Lisle, WG Controls, Inc.            | 708-963-5954 |
| KS Olathe, Advanced Tech. Sls.         | 913-782-8702 |
| MA Norwood, The MacInnis Co.           | 617-762-8090 |
| MI Detroit, R. P. Urban & Assocs.      | 313-535-2355 |
| MI Grand Rapids, R. P. Urban & Assocs. |              |
|                                        | 616-245-0511 |
| MN St. Paul, Countryman Assocs.        | 612-645-9151 |
| MO St. Louis, Advanced Tech. Sls.      | 314-878-2921 |
| NJ Englewood Cliffs, Mason-Esco Inc.   | 201-569-8868 |
| NY Hauppauge, Mason-Esco Inc.          | 516-273-3500 |
| NY Rochester, BRS Sls. Assocs.         | 716-586-1522 |
| OH Dayton, J. C. Hoffstetter Co.       | 513-296-1010 |
| OH Medina, J. C. Hoffstetter Co.       | 216-241-4880 |
| OR Portland, SPS Elctms. Inc.          | 503-297-6919 |
| TX Dallas, Reese & Assocs.             | 214-351-0703 |
| UT Slat Lake City, Gemini Elctms.      | 801-278-0201 |
| WA Redmond, SPS Elctms. Inc.           | 206-323-4140 |

**LIBERTY MIRROR CO.**, Pilkington Aerospace Inc., 851 Third Ave., Brackenridge, PA 15014, Tel: 412-224-1800, FAX: 412-224-8754; Empl: 45; Sls. Mgr.: Steve Williams

**LIBERTY POLYGLAS, INC.**, 1575 Lebanon School Rd., West Milford, PA 15122, Tel: 412-466-8611, FAX: 412-466-8640; FSC No.: 2E281; Empl: 50; Sls. Mgr.: LP. Connors

**LIBRASCOPE CORP.**, Loral Corp., 833 Sonora Ave., Glendale, CA 91201, Tel: 818-244-6541, TELEX: 674912, FAX: 818-502-8145; Empl: 1350

**LIGHT CONTROL SYSTEMS INC.**, M/A COM Inc., 6 Wentworth Dr., Hudson, NH 03051, Tel: 603-883-8300, FAX: 603-883-8134; Empl: 43; Sls. Mgr.: Karen A. Gentis

**LIGHTNING PROTECTION CORP.**, Box 6086, Santa Barbara, CA 93160, Tel: 805-967-5089/4577, FAX: 805-967-4320; FSC No.: 56618; Empl: 25; Sls. Mgr.: Chester J. Kawiecki

**LIGHTWAVE COMMUNICATIONS, INC.**, 84 Research Drive, Milford, CT 06460, Tel: 203-878-9838, FAX: 203-874-0157; FSC No.: 6008,6020,6025,6026,6099; Sls. Mgr.: Peter Henderson; Dist. Mgr.: Philip Franceschini

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| CA San Jose, Lovoco Sls.      | 408-436-8770 |
| MA Reading, The Landmark Grp. | 617-942-7829 |
| TX Dallas, Cain & Co.         | 214-247-3901 |

**LILLY-RAM INDUSTRIES**, 210 E. Alondra Blvd., Gardena, CA 90248, Tel: 213-321-0710; Empl: 100; Sls. Mgr.: Jerome J. Pajor; Dist. Mgr.: Jerome J. Pajor

**LINCOLN INSTRUMENTS**, 2720 Kimball Ave., Pomona, CA 91767, Tel: 714-626-3399, FAX: 714-625-6654; Empl: 13; Sls. Mgr.: Barbara J. Burchette

**LINCOLN LASER CO.**, 234 East Mohave, Phoenix, AZ 85004, Tel: 602-257-0407, FAX: 602-257-0728; Empl: 100; Sls. Mgr.: Robert S. Nehrbas, Jr.

**LINDGREN RF ENCLOSURES, INC.**, 400 High Grove Blvd., Glendale Hgts., IL 60139, Tel: 708-307-7200, TELEX: 297296LIND UR, FAX: 708-307-7517; FSC No.: 18234; Empl: 125; Sls. Mgr.: Michael Caruso

**LINEAR INSTRUMENTS**, Spectra Physics Analytical, 2325 Robb Dr., Reno, NV 89523, Tel: 702-746-2200, FAX: 702-746-2212; Empl: 90

**LINEAR INTEGRATED SYSTEMS**, 310 S. Milpitas Blvd., Milpitas, CA 95035, Tel: 408-263-8401, FAX: 408-263-7280; FSC No.: 0MJ08; Empl: 15

**LINEAR LABORATORIES**, SafetyTek Corp., 49050 Milmont Dr., Fremont, CA 94538, Tel: 510-226-0488, FAX: 510-226-1112; Empl: 12

**LINEAR MOTIONS CO.**, 17025 Dubesor St., Valinda, CA 91744, Tel: 818-918-7806, FAX: 818-918-7806; FSC No.: 5945; Empl: 6; Sls. Mgr.: L. Wolby

**LINEAR RESEARCH INC.**, 5231 Cushman Pl., Ste. 21, San Diego, CA 92110, Tel: 619-299-0719, TELEX: 6503322534 MCIUW, FAX: 619-299-0129; Empl: 8

**LINEAR TECHNOLOGY CORP.**, 1630 McCarthy Blvd., Milpitas, CA 95035-7487, Tel: 408-432-1900, TELEX: 499-3977, FAX: 408-434-0507; FSC No.: 64155; Empl: 600; Sls. Mgr.: Tim Cox; Dist. Mgr.: Lou Di Nardo

**LINE ELECTRIC PRODUCTS**, 122 Naubuc Ave., Glastonbury, CT 06033, Tel: 203-659-3573, 1-800-331-1137, FAX: 203-659-3576; FSC No.: 07065; Empl: 15; Sls. Mgr.: Bill Harris; Dist. Mgr.: Bill Harris

**LINEMASTER SWITCH**, 29 Plaine Hill Rd., P.O. Box 238, Woodstock, CT 06281-0238, Tel: 203-974-1000, FAX: 203-974-0691; FSC No.: 979180; Empl: 190

**LINSEIS, INC.**, P.O. Box 666, Princeton Junction, NJ 08550, Tel: 609-799-6282, 800-REORDER, FAX: 609-799-7739; Sls. Mgr.: Michael Bissell ..... **D-1414**

**LISK, G. W. Co.**, 2 South St., Clifton Springs, NY 14432, Tel: 315-462-2611, FAX: 315-462-7661; Empl: 300; Sls. Mgr.: D.J. Riggs; Dist. Mgr.: D.J. Riggs

**LITE-ON INC.**, 720 S. Hillview Dr., Milpitas, CA 95035, Tel: 408-946-4873, FAX: 408-942-1527; Empl: 1100; Sls. Mgr.: Michael Barnes; Dist. Mgr.: Melinda Ericsson

**LITTELFUSE, INC.**, 800 E. Northwest Hwy., Des Plaines, IL 60016, Tel: 708-824-1188, 708-824-0400, FAX: 708-824-3024; Empl: 1700; Sls. Mgr.: David Hanley; Dist. Mgr.: Michael Budde ..... **B-1366-1367**

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| AL Huntsville, Cartwright & Bean, Inc.   | 205-830-1540 |
| AZ Scottsdale, The Lindberg Co.          | 602-998-2944 |
| AR Little Rock, Erickson Sls. Inc.       | 501-455-0618 |
| CA Burlingame, Wm. J. Purdy Co.          | 415-347-7701 |
| CA Irvine, Gravley & Assocs.             | 714-852-9994 |
| CO Denver, The Lindberg Co.              | 303-758-9033 |
| CO Englewood, Purdy Co. Assoc.           | 303-790-2211 |
| CT Branford, Coakley, Boyd & Abbott Inc. |              |
|                                          | 203-481-2218 |

FL Clearwater, Hawkins-Frederickson Assoc. Inc.

FL Ft. Lauderdale, Hawkins-Frederickson Assoc. Inc.

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FL Maitland, Hawkins-Frederickson Assoc. Inc.

407-831-2474

FL Valrico, Hawkins-Frederickson

813-651-1063

GA Norcross, Cartwright & Bean Inc.

404-368-0160

IL Mt. Prospect, The Dombrow Co.

708-253-3631

IN Indianapolis, L. M. DeVoe Co.

317-842-3245

LA Cedar Rapids, T.L. Dowell Assoc.

319-393-7920

KS Overland Park, T. L. Dowell Assocs.

913-722-4242

LA Chalmette, Erickson Sls. Inc.

504-271-1976

MD Silver Spring, Mid-Atlantic Sls. Co.

301-593-7749

MA Framingham, Coakley, Boyd & Abbott, Inc.

508-820-0800

MA W. Bridgewater, Coakley, Boyd & Abbott, Inc.

508-559-6700

MI Farmington Hills, R. C. Merchant Co.

313-476-4600

MI St. Joseph, R. C. Merchant

616-983-7378

MN Edina, M. Foster Tech. Sls. Inc.

612-941-9790

MO St. Louis, T. L. Dowell & Assocs.

314-849-4234

NJ Englewood, MOS Mktg. Assoc.

201-569-2071

NM Albuquerque, The Lindberg Co.

505-881-1006

NY Batavia, R. W. Mitscher Co., Inc.

716-344-2035

NY Binghamton, R.W. Mitscher Co., Inc.

607-724-6561

NY Clarence, R. W. Mitscher Co., Inc.

717-259-2350

NY New York, MOS Mktg. Assoc.

516-487-3966

NY Pittsford, R. W. Mitscher Co., Inc.

716-586-4012

NC Charlotte, Cartwright & Bean, Inc.

704-536-0303

NC Raleigh, Cartwright & Bean, Inc.

919-876-4130

OH Centerville, Bear Mktg., Inc.

513-436-2061

OH Richfield, Bear Mktg., Inc.

216-659-3131

OR Portland, J. V. Belusko Co.

503-222-4279

PA Allison Pk., Bear Mktg., Inc.

412-492-1150

PA Narberth, Bresson Assocs., Inc.

215-664-6460

PA Stewartstown, Bresson Assocs.

717-993-6197

TN Knoxville, Cartwright & Bean, Inc.

615-693-7450

TX Dallas, Elcom Mktg., Inc.

214-241-2166

TX Dallas, Erickson Sls., Inc.

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TX Houston, Elcom Mktg.

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VA Charlottesville, Mid-Atlantic Sls. Co.

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Can Calgary, Alb., A.C. Simmonds & Sons

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**LITTON ELECTRON DEVICES**, 960 Industrial Rd., San Carlos, CA 94070, Tel: 415-591-8411, TWX: 910-376-4900, FAX: 415-591-5623; Empl: 800

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**LITTON POLY-SCIENTIFIC, Div. of Litton Industries**, 1213 N. Main St., Blacksburg, VA 24060-3100, Tel: 800-336-2112, 703-953-4751, TWX: 710-875-3694; Empl: 550 ..... **B-1218-1219, 1278-1292**

#### Local Sales Offices & Reps

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| AZ Phoenix, Dick Palmer            | 602-242-0911 |
| CA Cupertino, Sal DeGrande         | 408-996-7507 |
| CA Huntington Bch, Mike Baggetta   | 714-968-0434 |
| CA Huntington Beach, Mike Baggetta | 714-968-0434 |
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| KS | Lenexa, Midtec Assocs., Inc.         | 913-541-0505 |
| MA | W. Newton, Larcom Inc.               | 617-244-2053 |
| MI | Stockbridge, Erhart Engrg.           | 517-851-8770 |
| MI | Stockbridge, Rettig Engrd. Prod.     | 517-851-8770 |
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| MN | Bloomington, EMT Engrg.              | 612-888-1020 |
| MN | Eden Prairie, PWC, Inc.              | 612-934-1409 |
| KS | Olathe, Technical Sls. Assoc.        | 913-829-2800 |
| MO | St. Louis, Midtec Assoc. Inc.        | 314-275-8666 |
| NY | Mineola, Kahn Assocs.                | 516-742-1900 |
| OH | Fairborn, Clifton Precision          | 513-879-7100 |
| OH | Medina, Stress Analysis Svcs.        | 216-725-7733 |
| PA | Clifton Heights, Precision Dvcs.     | 215-284-9267 |
| TX | Dallas, Blair Engrg.                 | 214-241-5655 |
| TX | Garland, Carey, McMahon & Associates | 214-681-1414 |
| TX | Garland, GMA                         | 214-681-1414 |
| WA | Bellevue, Thorsen Co.                | 206-455-9180 |

**LIXI, INC.**, 1438 Brook Dr., Downers Grove, IL 60515, Tel: 708-620-4646, FAX: 708-620-7776; Empl: 17; Sls. Mgr.: Andy Xydakis; Dist. Mgr.: Oscar Lijap

**LJ TECHNICAL SYSTEMS**, 19 Power Drive, Hauppauge, NY 11788, Tel: 516-234-2100, FAX: 516-234-2656; Empl: 25; Sls. Mgr.: Christopher Rowe

**LMB HEEGER, INC.**, 6400 Fleet St., Commerce, CA 90040, Tel: 213-728-5108, 213-728-4729, FAX: 213-728-4740; Sls. Mgr.: Robert Heeger

**LMI CANADA**, 5778 Thimens, St. Laurent, Que., Canada H4R 2K9, Tel: 514-333-7288, 800-565-2811, FAX: 514-333-2881 C-1394-1399



**FAX: 407-994-5913**

**LMI CONNECTORS INC.**, 1181 S. Rogers Cir. 11, Boca Raton, FL 33487-2710, Tel: 407-994-5896, 800-247-0564; Sls. Mgr.: David Assef; Dist. Mgr.: David Assef C-1394-1399

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| <b>Local Sales Offices &amp; Reps</b> |                                       |              |
| AL                                    | Huntsville, Pinnacle Mktg.            | 919-848-0404 |
| CA                                    | Canyon Country, Interconn Tech. Mktg. | 805-298-3199 |
| CA                                    | Newbury Park, Interconn Tech. Mktg.   | 805-499-4024 |
| CA                                    | Trabuco Canyon, Interconn Tech. Mktg. | 714-589-3793 |
| CO                                    | Boulder, Component Products Sls.      | 303-530-2800 |
| CT                                    | Madison, Focus Sls.                   | 203-245-4314 |
| GA                                    | Alpharetta, Pinnacle Mktg.            | 404-101-9980 |
| IL                                    | Glensview, Prime Dvcs.                | 708-729-2550 |
| KS                                    | Overland Park, Acorn Elctms.          | 913-649-6402 |
| MA                                    | E. Taunton, Focus Sls.                | 508-842-3840 |
| MA                                    | W. Bridgewater, Focus Sls.            | 508-588-2367 |
| MI                                    | Warren, Burcaw Co.                    | 313-573-4605 |
| MN                                    | Minneapolis, D.A. Case Assocs.        | 612-831-6777 |
| MO                                    | St. Louis, Acorn Elctms.              | 314-421-1751 |
| NH                                    | Amherst, Focus Sls.                   | 603-672-2010 |
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| NJ                                    | Flanders, K & R Engrg. Sls.           | 201-584-5235 |
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| OH                                    | Mentor, Sls. Plus                     | 216-942-7811 |
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| AL                        | Huntsville, CRI                      | 205-533-2862 |
| AL                        | Madison, Gateway Megatech            | 205-464-9300 |
| AZ                        | Tempe, Control Design Supp.          | 602-829-7981 |
| CA                        | Anaheim, Control Design Supp.        | 714-821-6173 |
| CA                        | Fullerton, Interconnect Specs.       | 714-773-0411 |
| CA                        | San Carlos, Control Design Supp.     | 415-592-4806 |
| CA                        | San Diego, Control Design Supply     | 619-457-9822 |
| CA                        | Santa Ana, BDS Elctms.               | 714-662-1050 |
| CO                        | Denver, Control Design Supp.         | 303-296-1922 |
| CT                        | Wallingford, Control Design Supp.    | 203-269-9955 |
| FL                        | Altamonte, Control Design Supp.      | 305-788-3220 |
| FL                        | Pompano Beach, Control Design Supp.  | 305-782-1311 |
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| IL  | Schaumburg, Control Design Supp.       | 708-307-8900 |
| IN  | Indianapolis, Control Design Supp.     | 317-788-4559 |
| IN  | Indianapolis, Gateway Megatech         | 317-298-0111 |
| IA  | Marion, Control Design Supp.           | 319-379-2923 |
| KS  | Kansas City, Control Design Supp.      | 913-362-4248 |
| MD  | Gaithersburg, Axis Elctms.             | 301-840-9640 |
| MA  | Tewksbury, Armor Elctms.               | 508-640-1499 |
| MA  | Westborough, Pierce Assocs.            | 508-366-0002 |
| MA  | Woburn, Control Design Supp.           | 617-932-9404 |
| MI  | Ann Arbor, Gateway Megatech            | 313-761-2980 |
| MI  | Kentwood, Gateway Megatech             | 616-245-3210 |
| MN  | Minneapolis, Control Design Supp.      | 612-721-1628 |
| MO  | St. Louis, Control Design Supp.        | 314-426-3150 |
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| TX  | Dallas, Control Design Supp.           | 214-358-1441 |
| TX  | Dallas, Wofford Elctms.                | 214-320-0294 |
| TX  | Houston, Wofford Elctms., Inc.         | 713-847-3583 |
| UT  | Nephi, Control Design Supp.            | 801-623-2977 |
| VA  | Richmond, Gateway Megatech             | 804-282-1360 |
| WA  | Kent, Control Design Supply            | 206-251-6323 |
| WI  | Menomonee Falls, Cablemaster           | 414-783-3000 |
| WI  | Menomonee Falls, Cablemaster           | 414-255-9033 |
| WI  | New Berlin, Control Design Supp.       | 414-784-1015 |
| Can | Calgary, AB, Memco                     | 403-258-3399 |
| Can | Edmonton, AB, Wholesale Electronics    | 403-451-2180 |
| Can | Montreal, Que., Ferrotronic Components | 514-333-7288 |
| Can | Surrey, B.C., Memco                    | 604-590-1553 |

**LNP ENGINEERING PLASTICS**, 475 Creamery Way, Exton, PA 19341, Tel: 215-363-4500, TELEX: 4973041, TWX: 510-668-6728, FAX: 215-363-4749; Sls. Mgr.: William Shaker

**LNR COMMUNICATIONS, INC.**, 180 Marcus Blvd., Hauppauge, NY 11788, Tel: 516-273-7111, TELEX: 221620, TWX: 510-227-9871, FAX: 516-273-7119; FSC No.: 51049; Empl: 200; Sls. Mgr.: F. Kelly, Dir. Mktg.

**LOCKHEED SANDERS, INC.**, EMC Dept., 95 Canal St., Nashua, NH 03061-2004, Tel: 603-885-3602, TELEX: 94-3430, TWX: 710-228-1894, FAX: 603-885-2919; FSC No.: 94117; Sls. Mgr.: (EMC) R. Bossart

**LOCTITE LUMINESCENT SYS., INC., LocTite Corp.**, Etna Rd., Lebanon, NH 03766, Tel: 603-448-3444, FAX: 603-448-3452; Empl: 160; Sls. Mgr.: Michael R. Hartman B-1172

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| CA                                    | Irvine, Comp. Mktg. Assoc. | 714-727-0688 |
| NY                                    | Rochester, H.C. Johnson    | 716-586-0777 |
| WA                                    | Bothell, Temco Northwest   | 206-481-8150 |

**LOCUS, INC.**, Box 740, State College, PA 16804, Tel: 814-466-6275, FAX: 814-466-3341; Sls. Mgr.: Ellwood E. Brem

**LOCUS, Kaman**, PO Box 740, State College, PA 16804, Tel: 814-466-6275; Sls. Mgr.: Ellwood E. Brem

**LOCUS, INC.**, 1842 Hoffman Street, Madison, WI 53704, Tel: 608-244-0500, FAX: 608-244-0528; Empl: 18

**LODAN ELECTRONICS, INC.**, 220 W. Campus Dr., Arlington Hgts., IL 60004-7805, Tel: 708-398-5311, 800-323-5207, FAX: 708-398-5340; Empl: 130; Sls. Mgr.: Raymond A. Kedzior; Dist. Mgr.: Andrew D. Longhini

**LODESTONE PACIFIC**, 4065 E. La Palma Ave., Bldg. G, Anaheim, CA 92807, Tel: 714-630-1343; FSC No.: QJWU1; Empl: 15; Sls. Mgr.: Mark Soukup A-1244-1247

|                                       |                                  |              |
|---------------------------------------|----------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                  |              |
| IL                                    | Chicago, Charles Atwater Assoc.  | 708-668-2303 |
| MA                                    | Boston, Anchor Engrg. Corp.      | 508-898-2724 |
| NY                                    | Long Island, Kahgan Brody Assoc. | 516-538-2300 |
| PA                                    | Easton, Kendon Co.               | 215-253-3100 |
| VA                                    | Roanoke, A.B. Kreger Co.         | 703-989-4738 |
| Intl                                  | Frankfurt, Germany, BFI          | 06074 4098-0 |
| Intl                                  | Hong Kong, P. Leo & Co. Ltd.     | 5-413655     |
| Intl                                  | London, England, Clirkit         | 0992-444111  |
| Intl                                  | Milano, Italy, BFI               | 2-33100535   |

|      |                        |              |
|------|------------------------|--------------|
| Intl | Paris, France, BFI     | 145-330137   |
| Intl | Roskilde, Denmark, BFI | 488-828990   |
| Intl | Sollentun, Sweden, BFI | 488 828 9900 |

**LOGICAL DESIGN GROUP, INC.**, 6301 Chapel Hill Rd., Raleigh, NC 27607, Tel: 919-851-1101, FAX: 919-851-2844; Empl: 22; Sls. Mgr.: Charles Pugh; Dist. Mgr.: Charles Pugh

**LOGICAL DEVICES, INC.**, 1201 N.W. 65th Place, Fort Lauderdale 33309, Tel: 305-974-0967, FAX: 305-491-6956; Sls. Mgr.: Bob Sims

**LOGICAL SYSTEMS CORPORATION**, P.O. Box 6184, Syracuse, NY 13217-6184, Tel: 315-478-0722, FAX: 315-475-8460; Sls. Mgr.: Mitchell Burko

**LOGIC BEACH INC.**, 8033 Pasadena Ave., La Mesa, CA 91941, Tel: 619-698-3300, FAX: 619-469-8604; Empl: 15; Sls. Mgr.: David Parks; Dist. Mgr.: David Parks

**LOGIC DEVICES INC.**, 628 E. Evelyn Ave., Sunnyvale, CA 94086, Tel: 408-737-3300, TELEX: 172-387, FAX: 408-733-7690

**LOGICOMP ELCTRNS, INC.**, See Pres-Air-Trol Corp.

**LOGIC TECHNOLOGY, INC.**, 1080-B L'Avenida, Miami, View, CA 94043, Tel: 415-967-1007, FAX: 310-641-4691; FSC No.: 51019; Sls. Mgr.: Mel Morgan

**LOGIMETRICS**, 121-03 Dupont St., Plainview, NY 11803, Tel: 516-349-1700, TELEX: 7608152, FAX: 516-349-8552; FSC No.: 33013; Empl: 75; Sls. Mgr.: Sol Abrams

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**LOGITEK, INC.**, 101 Christopher St., Ronkonkoma, NY 11779, Tel: 516-467-4200, FAX No.: 15420; Empl: 50; Sls. Mgr.: Joe Churchill B-1556; D-1816-1817, 2130

|                                       |                                        |              |
|---------------------------------------|----------------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                        |              |
| CA                                    | Campbell, Shur Sls. Inc.               | 408-374-5577 |
| FL                                    | St. Petersburg, Jack McGirr            | 813-345-4012 |
| GA                                    | Norcross, R.O. Whitesell & Assocs.     | 404-449-9190 |
| IN                                    | Indianapolis, R.O. Whitesell & Assocs. | 317-876-9000 |
| KY                                    | Versailles, R.O. Whitesell & Assocs.   | 606-873-1182 |
| MI                                    | Southfield, R.O. Whitesell & Assocs.   | 313-352-5454 |
| MI                                    | Southfield, R.O. Whitesell & Assocs.   | 313-559-5454 |
| MN                                    | Brooklyn Center, White Sls. Co.        | 612-566-8694 |
| NH                                    | Hampden, Primary Source                | 603-926-8044 |
| NY                                    | Menton, Tech-Mark, Inc.                | 716-624-3840 |
| NY                                    | Ronkonkoma, Logitek                    | 516-467-4200 |
| NC                                    | Greensboro, R.O. Whitesell & Assocs.   | 919-273-1945 |
| OH                                    | Dayton, R.O. Whitesell & Assocs.       | 513-298-9546 |
| PA                                    | Glenside, Koebert Assocs.              | 215-887-2310 |
| NY                                    | Mendon, Tech Mark                      | 716-624-3840 |
| PA                                    | Pittsburgh, R.O. Whitesell & Assocs.   | 412-963-6161 |
| TX                                    | Richardson, Scientific Sls.            | 214-231-6541 |
| WA                                    | Kirkland, Skye-Tek                     | 206-828-2115 |
| WI                                    | White Sls. Co.                         | 612-566-8694 |
| Can                                   | Montreal, Que., S.D. Electronique      | 514-735-9673 |

**LONG ISLAND TRANSFORMER & INDUCTOR**, 882 Wallace Ave., Baldwin, NY 11510, Tel: 516-379-1465, FAX: 516-379-0167; Empl: 10

**LORAIN PRODUCTS**, Reliance Electric, 1122 F St., Lorain, OH 44052, Tel: 216-288-1122, TELEX: 98-0505, TWX: 196131; Empl: 1200; Sls. Mgr.: T. F. McFadden

**LORAL DATA SYSTEMS, P.O.**, Box 3041, Sarasota, FL 34230, Tel: 813-371-0811, FAX: 813-378-1893; FSC No.: 06141; Empl: 900; Sls. Mgr.: F. V. Bud Hinkel

**LORAL DATA SYSTEMS**, Data Recorders, P.O. Box 3041, Sarasota, FL 34230, Tel: 813-371-0811, FAX: 813-378-1893; FSC No.: GS-00K-8301-S0078; Empl: 750; Sls. Mgr.: Steve Hoff

**LORAL FAIRCHILD**, Imaging Sensors, 1801 McCarthy Blvd., Milpitas, CA 95035-7407, Tel: 408-433-2500, TWX: 910-373-2110, FAX: 408-433-2508; Sls. Mgr.: Jim Johnson; Dist. Mgr.: Jim Johnson

**LORAL MICROWAVE-FSI**, Semiconductor Div., 16 Maple Rd., Chelmsford, MA 01824, Tel: 508-256-4113/8101, TWX: 710-343-0404, FAX: 508-937-3748; FSC No.: 26629; Empl: 90; Sls. Mgr.: D. Langan



**LORAL MICROWAVE NARDA**, 435 Moreland Rd., Hauppauge, NY 11788, Tel: 516-231-1700, TWX: 510-221-1867, FAX: 516-231-1711; FSC No.: 99899; Empl.: 400; *Sls. Mgr.*: Robert Nopper

**LORAL MICROWAVE-NARDA WEST**, 11040 White Rock Rd. 200, Rancho Cordova, CA 95670-6001, Tel: 916-638-5500, FAX: 916-638-8682; Empl.: 115; *Sls. Mgr.*: Leon Becker

**LORAL MICROWAVE-WAVECOM**, 9036 Winnetka Ave., Northridge, CA 91324, Tel: 818-882-3010, TELEX: 6502408147; FSC No.: 28979; Empl.: 109

**LORAL TERRACOM**, Sub. of Loral Corp., 9020 Balboa Ave., San Diego, CA 92123-1595, Tel: 619-278-4100, TELEX: TERRACOM A SDG 18-2774, FAX: 619-292-1140; Empl.: 130; *Sls. Mgr.*: Michael A. Lapadula

**LORANGER INTL CORP.**, 817 Fourth Ave., Warren, PA 16365, Tel: 814-723-2250, FAX: 814-723-5391; Empl.: 55; *Sls. Mgr.*: J. Albert Loranger

**LORCH ELECTRONICS-DIV. OF VERNITRON CORP.**, 2801 - 72nd St., No. St. Petersburg, FL 33710, Tel: 813-347-2181, FAX: 813-347-3881; FSC No.: 29971; Empl.: 50; *Sls. Mgr.*: Carol McCoy

**LORLIN TEST SYSTEMS**, Axiam, Inc., 4 Precision Rd., Danbury, CT 06810, Tel: 203-744-0096, FAX: 203-744-6185; Empl.: 30; *Sls. Mgr.*: John Seacord

**LORTEC POWER SYSTEMS, INC.**, 145 Keep Court, Elyria, OH 44035-2214, Tel: 216-327-5050, FAX: 216-327-9628; Empl.: 45; *Sls. Mgr.*: Dale Lamirand

**LOVE CONTROLS DIVISION**, Dwyer Instruments, Inc., 1475 S. Wheeling Rd., Wheeling, IL 60090, Tel: 708-541-3232, TELEX: 297115, FAX: 708-541-7366; FSC No.: 8L919; Empl.: 72; *Sls. Mgr.*: James Nolan; *Dist. Mgr.*: Jim Clark

## low key

**FAX: 508-281-6321**

**LOW KEY CORPORATION, Strong Group**, 105 Maplewood Ave., P.O. Box 1195, Gloucester, MA 01930, Tel: 508-281-0448; Empl.: 25; *Sls. Mgr.*: Brian Hendricks  
**B-1842-1843**

*Local Sales Offices & Reps*

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|-----|-----------------------------------------------|--------------|
| AL  | Huntsville, MacKay Smith Assocs. ....         | 205-539-8005 |
| CO  | Englewood, Elctrm. Comp. Sls. ....            | 303-762-9576 |
| CT  | Plainville, Northeast Rep., Inc. ....         | 203-866-6030 |
| FL  | Orlando, MacKay Smith Assocs. ....            | 407-423-4353 |
| GA  | Tucker, MacKay Smith Assocs. ....             | 404-496-9913 |
| IL  | Skokie, Electro Tech Mktg. ....               | 312-676-3151 |
| IN  | Greenfield, France Entrs. ....                | 317-462-6098 |
| MD  | Baltimore, Hagy Assocs. ....                  | 301-529-3995 |
| MA  | Hingham, Northeast Rep., Inc. ....            | 617-749-8700 |
| NH  | Mt. Vernon, Northeast Rep. Inc. ....          | 603-673-1406 |
| NJ  | Lebanon, F.F. Sylvester Assocs. ....          | 201-735-2488 |
| NY  | Coram, F.F. Sylvester Assocs. ....            | 516-473-2018 |
| NC  | Raleigh, MacKay Smith Assocs. ....            | 919-847-2277 |
| PA  | Newtown Sq., Hagy Assocs. ....                | 215-459-0504 |
| UT  | Salt Lake City, Elctrm. Comp. Sls. ....       |              |
| Can | St. Lazare, Que., Atkinson & Ross Assoc. .... | 514-424-5679 |
| Can | Witby, Ont., Atkinson & Ross Assoc. ....      | 416-666-8359 |

**LSI COMPUTER SYSTEMS, INC.**, 1235 Walt Whitman Rd., Melville, NY 11747, Tel: 516-271-0400, FAX: 516-271-0405

**LSI LOGIC CORP.**, 1551 McCarthy Blvd., Milpitas, CA 95035, Tel: 408-433-8000, TELEX: 172153; *Dist. Mgr.*: John Mucciario

**LTI, INC.**, Autotech Technologies, LP, 363 St. Paul Blvd., Carol Stream, IL 60188, Tel: 708-668-8888, FAX: 708-668-9480; Empl.: 60; *Sls. Mgr.*: Ray Szydzik

**LTX CORPORATION**, LTX Pk. @ University Ave., Westwood, MA 02090, Tel: 617-461-1000, FAX: 617-461-0993; Empl.: 1,500; *Sls. Mgr.*: Roger Blethen, Sr. V.P. Sls.

**LUCAS CONTROL SYSTEMS PRODUCTS**, Lucas Industries PLC, 1000 Lucas Way, Hampton, VA 23666, Tel: 804-766-1500, FAX: 804-766-4258; Empl.: 375; *Sls. Mgr.*: Leroy Nopper, V.P. Sls.

**LUCAS DEECO**, Lucas Industries, 31047 Genstar Road, Hayward, CA 94544-7831, Tel: 510-471-4700, FAX: 510-489-3500; Empl.: 75; *Sls. Mgr.*: Bill Lepior, Natl; *Dist. Mgr.*: Harvey Goldman

**LUCAS EPSCO, INC.**, 99 South St., Hopkinton, MA 01748-2204, Tel: 508-435-2400, TELEX: 95-1110, FAX: 508-435-2022; FSC No.: 15894; Empl.: 240; *Sls. Mgr.*: John M. Shalhoub

**LUCAS LEDEX, Lucas Industries**, P.O. Box 427, 801 Scholz Dr., Vandalia, OH 45377-0427, Tel: 513-898-3621, FAX: 513-898-8624; FSC No.: 54-0840753; Empl.: 200; *Sls. Mgr.*: Leroy Nopper ..... **B-1647-1651, 1766, 1967**

**LUCAS NOVA SENSOR**, Lucas Industries, 1055 Mission Court, Fremont, CA 94539, Tel: 510-490-9100, FAX: 510-770-0645; Empl.: 80; *Sls. Mgr.*: Bill Michaels

**LUCAS SCHAEVITZ, INC.**, Lucas Industries PLC., 7905 N. Route 130, Pennsauken, NJ 08110-1489, Tel: 609-662-8000, FAX: 609-662-6281; FSC No.: 93190; Empl.: 175; *Sls. Mgr.*: Leroy Nopper

**LUCAS WEINSCHEL**, P.O. Box 6001, Gaithersburg, MD 20884-6001, Tel: 301-948-3434, FAX: 301-948-3625; FSC No.: 93459; *Sls. Mgr.*: Geoffrey D. Smith

**LUCAS WESTERN INC.**, Electro Systems Division, 610 Neptune Ave., Brea, CA 92621, Tel: 714-671-4500, TWX: 910-240-3603, FAX: 714-671-4503; Empl.: 210; *Sls. Mgr.*: Jerry Neumayer

**LUCAS ZETA**, Lucas Aerospace, Inc., 2811 Orchard Parkway, San Jose, CA 95134, Tel: 408-434-3600, FAX: 408-433-0205; FSC No.: 31260; Empl.: 150; *Sls. Mgr.*: Joe Rock

**LUFF RESEARCH, INC.**, 22 N. Tyson Ave., Floral Park, NY 11001, Tel: 516-358-2880, FAX: 516-358-2757

**LUFT INSTRUMENTS, INC.**, Hillside Rd., P.O. Box 214, Lincoln, MA 01773, Tel: 617-259-9215, FAX: 617-259-9215; Empl.: 12

**LUMBERG, INC.**, 11351 Business Ctr. Dr., Richmond, VA 23236, Tel: 804-379-2010, FAX: 804-379-3232; Empl.: 8; *Sls. Mgr.*: John R. Naudziunas

**LUMEX OPTO/COMPONENTS, INC.**, 290 E. Hellen Rd., Palatine, IL 60067-6955, Tel: 708-359-2790, FAX: 708-359-8904; Empl.: 150; *Sls. Mgr.*: Hank Zabawski; *Dist. Mgr.*: Tanya Bous

**LUMIDOR SAFTEY PRODUCTS**, SafteyTek Corp., 11221 Interchange Circle South, Miramar, FL 33025, Tel: 305-433-7000, FAX: 305-433-7730; Empl.: 50; *Sls. Mgr.*: Bryan Bates; *Dist. Mgr.*: Bryan Bates

**LUMINATOR AIRCRAFT PRODUCTS**, 1200 E. Plano Parkway, Plano, TX 75074, Tel: 214-424-6511, FAX: 214-423-8515; FSC No.: 22973; Empl.: 70; *Sls. Mgr.*: Gordy Treichler

*Local Sales Offices & Reps*

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Long Beach, Luminator Aircraft .... | 714-968-8748 |
| KS | Wichita, Lee Prods. ....            | 316-264-2172 |

*Local Distributors*

|    |                                     |              |
|----|-------------------------------------|--------------|
| GA | Smyrna, Electro Air ....            | 404-432-1900 |
| NY | Purchase, Aerotech World Trade .... | 716-428-3500 |

## LUMINTECH

**FAX: 201-374-2554**

**LUMINTECH INC.**, 171 Colt St., Irvington, NJ 07111, Tel: 201-374-1091; Empl.: 4; *Sls. Mgr.*: Subhash Goyal  
**A-2376**

## Lumitex<sup>®</sup>, Inc.

**FAX: 216-237-5483**

**LUMITEX, INC.**, 8443 Dow Circle, Strongsville, OH 44136, Tel: 800-969-5483; *Sls. Mgr.*: Bruce Baunach ... **B-1173**

### Local Sales Offices & Reps

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AL  | Guntersville, Tek-Rep Mktg. ....        | 205-582-7663 |
| AZ  | Phoenix, Van Dahl Engrg. ....           | 602-866-6988 |
| CA  | Mission Viejo, Champa Assocs. ....      | 714-581-3459 |
| CA  | Napa, Stewart-Fullerton Assoc. ....     | 707-258-1160 |
| CA  | Solana Bch., D2 Sls., Inc. ....         | 619-481-9310 |
| CA  | Tarzana, Tarco/Prime Source ....        | 818-708-8058 |
| CO  | Franktown, MRC ....                     | 303-660-8750 |
| FL  | Margate, EPM ....                       | 305-977-0331 |
| FL  | Orlando, EPM ....                       | 407-425-6149 |
| GA  | Dunwoody, Tek-Rep Mktg. ....            | 404-963-1600 |
| IL  | Glen Ellyn, Lincoln Hodges ....         | 708-469-6750 |
| IA  | Cedar Rapids, J. R. Sls. Engrg. ....    | 319-393-2232 |
| MA  | Swansea, Poisson Assocs. ....           | 508-677-3655 |
| MN  | Minneapolis, Holmgren Assocs. ....      | 612-574-9983 |
| MO  | St. Charles, Buckman & Assocs. ....     | 314-947-4727 |
| NJ  | E. Brunswick, Shepard Assocs. ....      | 908-254-5757 |
| NJ  | Totowa, Shepard Assocs. ....            | 201-256-1774 |
| NY  | Chester, Shepard Assocs. ....           | 914-469-2011 |
| NY  | Jericho, Shepard Assocs. ....           | 516-822-3700 |
| NC  | Raleigh, Eastern Elctms. ....           | 919-876-7591 |
| OH  | Columbus, The Bill Romine Co. ....      | 614-436-0565 |
| PA  | Dowington, Grasso Tech. Sls. ....       | 215-458-8967 |
| TX  | Austin, THT Sls. ....                   | 512-835-2794 |
| TX  | Dallas, THT Sls. ....                   | 214-783-1501 |
| TX  | Houston, THT Sls. ....                  | 713-981-4277 |
| VA  | Herndon, Eastern Elctms. ....           | 703-904-7272 |
| WA  | Redmond, VMI. ....                      | 206-882-2999 |
| WI  | Janesville, Antek Mktg. Corp. ....      | 608-754-4214 |
| Can | Toronto, RepTech ....                   | 416-863-9531 |
| Can | W. Vancouver, Leister Blake Entrp. .... | 604-926-6127 |

**LUMITRON**, PO Box 267, Summit, NJ 07902-0267, Tel: 908-273-8998, FAX: 908-273-0853; FSC No.: 51702; Empl.: 20; *Sls. Mgr.*: Gil Chassie

**LUNAIRE ENVIRONMENTAL, INC.**, Lunaire Limited, 4 Quality St., Williamsport, PA 17701, Tel: 717-326-1770, FAX: 717-326-7304; Empl.: 130; *Sls. Mgr.*: Stu Lunick

**LUNDAHL INSTRUMENTS, INC.**, Ezra C. Lundahl Inc., 429 South Main, Logan, UT 84321, Tel: 801-753-7300, FAX: 801-753-7490; Empl.: 17; *Sls. Mgr.*: Val Potter

**LUTRON ELECTRONICS CO.**, 7200 Suter Rd., Coopersburg, PA 18036, Tel: 215-282-3800, TELEX: 847475, TWX: 510-651-3755; Empl.: 378; *Sls. Mgr.*: John McKiernan; *Dist. Mgr.*: Robert Van Horne

**LUTZE, INC.**, 1911-A Associates Ln., Charlotte, NC 28217-9805, Tel: 704-357-8835, 800-447-2371, FAX: 704-357-8836; Empl.: 6

**LUXO CORPORATION**, P.O. Box 951, Port Chester, NY 10573, Tel: 914-937-4433, 800-222-5896, FAX: 914-937-7016; Empl.: 150; *Sls. Mgr.*: Robert H. Newton

**LUXTRON INC.**, 15 Hale St., Haverhill, MA 01830-4803, Tel: 508-372-5211, FAX: 508-372-7051; *Sls. Mgr.*: Bruce F. Morse



**FAX: 216-786-8711**

**LXD, INC.**, 7650 First Place, Cleveland, OH 44146, Tel: 216-786-8700; FSC No.: 66706; Empl.: 100; *Sls. Mgr.*: Patrick Bowen; *Dist. Mgr.*: Patrick Bowen ..... **B-1086-1087**

### Local Sales Offices & Reps

|    |                                            |              |
|----|--------------------------------------------|--------------|
| AL | Huntsville, Tronex Grp. ....               | 205-859-5609 |
| AZ | Phoenix, FP Sls. ....                      | 602-894-5303 |
| CA | Los Angeles, Universal Comps. ....         | 310-783-0220 |
| CA | Milpitas, Telesis Sls. ....                | 408-946-7300 |
| CA | San Diego, Universal Comps. ....           | 619-232-5163 |
| CO | Denver, Tri Tec Sls. ....                  | 303-440-7862 |
| CT | New Haven, Sturdy Corp. ....               | 203-888-1480 |
| CT | Newton, Sturdy Corp. ....                  | 203-426-4403 |
| FL | Plantation, Tronex Grp. ....               | 305-587-4797 |
| GA | Alpharetta, Tronex Grp. ....               | 404-751-0794 |
| IL | Coeur D'Alene, Matrex Mktg. ....           | 208-765-5810 |
| IL | Northbrook, Howard Benjamin Assoc. ....    |              |
| IN | Fort Wayne, RL Bontempo Assoc. ....        | 708-272-2900 |
| IN | Indianapolis, R. L. Bontempo Assocs. ....  | 219-478-1057 |
| IA | Cedar Rapids, KKB & Co. ....               | 319-373-1730 |
| MA | Wellesley Hills, Sturdy Corp. ....         | 617-235-2330 |
| MN | Minneapolis, George Russell & Assocs. .... | 612-854-1166 |
| MO | Kansas City, KKB & Co. ....                | 816-229-0001 |
| MO | St. Louis, KKB & Co. ....                  | 314-647-2400 |
| NH | Sturdy Corp. ....                          | 603-434-8440 |



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|-----|------------------------------------|--------------|
| NJ  | Haddon Field, Sunday O'Brein       | 609-429-4013 |
| NJ  | Tenafly, November Sls.             | 201-894-8964 |
| NY  | Rochester, J.G. Welch Assoc.       | 716-244-1100 |
| NC  | Raleigh, EEI Corp.                 | 919-876-7591 |
| NC  | Raleigh, Tronex Grp.               | 919-859-2117 |
| OH  | Cleveland, Electronics Mktg. Corp. | 216-442-3441 |
| OH  | Columbus, Electronics Mktg. Corp.  | 614-299-4161 |
| OH  | Dayton, Midwest Mktg.              | 513-433-2511 |
| OR  | Tigard, Matrex Mktg. & Sls.        | 503-245-8080 |
| TX  | Austin, THT Sls.                   | 512-835-2796 |
| TX  | Dallas, THT Sls.                   | 214-783-1501 |
| TX  | Houston, THT Sls.                  | 713-981-4277 |
| WA  | Bellevue, Matrex Mktg. & Sls.      | 206-643-0363 |
| Can | Concord, Ont., ITT Multicomponents | 416-736-1144 |

## Local Distributors

|    |                          |              |
|----|--------------------------|--------------|
| NC | Charlotte, EMC Inc.      | 704-394-6195 |
| OH | Columbus, EMC Inc.       | 614-299-4161 |
| OK | Tulsa, Merlin Elctms.    | 918-251-2084 |
| TX | Austin, Omnipro Elctms.  | 512-794-9200 |
| TX | Dallas, Omnipro Elctms.  | 214-233-0500 |
| TX | Houston, Omnipro Elctms. | 713-270-1700 |



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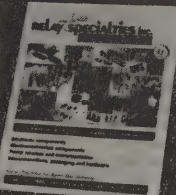
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LYNN ELECTRONICS, 915 Pennsylvania Blvd., Feasterville, PA 19053, Tel: 215-355-8200, 800-523-8075, FAX: 215-364-2944; FSC No: 19151; Empl: 70

LYNTRONICS, INC., 569 Acorn St, Unit 5, Deer Park, NY 11729, Tel: 516-243-6397, FAX: 516-243-0232; FSC No: OBSY 9; Empl: 20; Sls. Mgr: Gary L. Miller

LYN-TRON, INC., 3150 Damon Way, Burbank, CA 91505, Tel: 213-849-6211, 800-423-2734, FAX: 818-840-9581; FSC No: 05791; Empl: 85; Sls. Mgr: Kory L. Wardle; Dist. Mgr: Kory L. Wardle

LYON METAL PRODUCTS, INC., Box 671, Aurora, IL 60507, Tel: 708-892-8941, FAX: 1-800-367-6681; FSC No: 1-800-323-0082; Empl: 600; Sls. Mgr: J. L. Wiebusch

LYTRON INCORPORATED, Dragon Court, Woburn, MA 01801, Tel: 617-933-7300, TELEX: 951-934, FAX: 617-935-4529; Empl: 90

## LZRelectronics, inc.

**FAX: 301-921-0705**

LZR ELECTRONICS, INC., 8051 Cessna Ave., Gaithersburg, MD 20879, Tel: 301-921-4600; Empl: 35; Sls. Mgr: John Andreoli; Dist. Mgr: Greg Mazingo  
B\*1844; C\*1400-1414, 1758-1761; D\*1048-1050, 1818-1827, 2277

## Local Sales Offices &amp; Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Madison, Lamons Sls. Co.            | 205-461-7871 |
| AZ | Tempe, Elctm. Tech. Sls.            | 602-921-7122 |
| CA | Los Alamitos, Power Specialists     | 310-594-9418 |
| CA | San Jose, Bytec Sls.                | 408-435-8004 |
| CA | Simi Valley, Power Specialists      | 805-581-4785 |
| CO | Littleton, Megatronix               | 303-730-6262 |
| CT | Guilford, Data Mark, Inc.           | 203-453-0575 |
| FL | Boca Raton, Tech. Sls. Specialists  | 407-391-3718 |
| GA | Norcross, Lamons Sls. Co.           | 404-242-2610 |
| IL | Palatine, Vine Sls, Inc.            | 708-934-5476 |
| KS | Overland, Acorn Elctms.             | 913-649-6402 |
| MD | Lutherville, DGR                    | 410-583-1360 |
| MA | Norwood, JMG, Inc.                  | 617-762-5333 |
| MI | Warren, Burcaw Co.                  | 313-573-4605 |
| MO | St. Louis, Acorn Elctms.            | 314-421-1751 |
| NJ | Clifton, R.O.I. Sls.                | 201-340-1515 |
| NJ | Totowa, R.O.I. Sls.                 | 201-812-9606 |
| NM | Albuquerque, Nello Electronix       | 505-293-1399 |
| NC | Raleigh, Lamons Sls. Co.            | 919-846-1652 |
| OR | Beaverton, Blair Hirsch Co.         | 503-641-1875 |
| PA | Hatboro, AQS Electro                | 215-674-4421 |
| TN | Greenville, Lamons Sls.             | 615-639-8711 |
| TX | Plano, Connector Specs.             | 214-517-1207 |
| UT | Bountiful, Charles Fields & Assocs. | 801-299-8228 |
| WA | Lynnwood, Blair Hirsch Co.          | 206-774-8151 |
| WI | Genoa City, Vine Sales, Inc.        | 414-279-3871 |

## Local Distributors

|    |                               |              |
|----|-------------------------------|--------------|
| CA | Brea, J.I.T. Supp.            | 714-256-9100 |
| FL | Ft. Lauderdale, Stock Elctms. | 305-978-9875 |
| IL | Bensenville, Voyager Elctms.  | 708-860-1300 |
| MD | Gaithersburg, MS Elctms.      | 301-921-0200 |
| MN | Minneapolis, Voyager Elctms.  | 612-517-7761 |
| OR | Beaverton, Murphy Elctms.     | 503-642-2001 |
| WA | Redmond, Murphy Elctms.       | 206-881-1234 |

MABUCHI MOTOR AMERICA CORP., 475 Park Ave. South, New York, NY 10016, Tel: 212-686-3622, TELEX: 23-4374, TWX: MABU, FAX: 212-532-4263; Empl: 10,000  
B\*1293

PANAFAX: 212-532-4263

## Local Sales Offices &amp; Reps

|    |                                      |              |
|----|--------------------------------------|--------------|
| MI | Detroit, Mabuchi Motor America Corp. | 313-370-9090 |
|----|--------------------------------------|--------------|

MACCOR, INC., 2805 W. 40th Street, Tulsa, OK 74107, Tel: 918-446-1874, FAX: 918-445-1496; FSC No: 6625; Sls. Mgr: Andrew D. MacKay

MACHINE COMPONENTS CORP., 70 Newtown Rd., Plainview, NY 11803, Tel: 516-694-7222, FAX: 516-694-7252; FSC No: 15531; Empl: 46; Sls. Mgr: D. L. Dubov

MACOM, INC., 100 Chelmsford St., Lowell, MA 01851, Tel: 617-272-3000

M/A-COM, INC., Antenna & Cable Division, 110 Haverhill Rd., Amesbury, MA 01913, Tel: 508-388-5210, FAX: 508-388-9758; FSC No: 11556; Empl: 400; Sls. Mgr: H. Adjemian

M/A-COM LASER DIODE, INC., See Laser Diode, Inc., Div. of Morgan Crucible

M/A COM LTD., Humphrey Rd., Dunstable, Bedfordshire, England LU5 4SX, England, Tel: 44(582)471200, TELEX: 82295; Empl: 300

M/A-COM MICROELECTROINCS DIVISION, M/A-COM, 1011 Pawtucket Blvd., P.O. Box 3295, Lowell, MA 01853-3295, Tel: 508-442-5000, TELEX: 200155, TWX: 710-332-0258; FSC No: 96341; Empl: 2000; Sls. Mgr: Tom Rose; Dist. Mgr: Larry Ward

M/A-COM OMNI SPECTRA, INC., 140 Fourth Avenue, Waltham, MA 02254-9101, Tel: 617-890-4750, FAX: 617-890-2381; FSC No: 26805; Empl: 750

M/A-COM PHI, INC., M/A COM, Inc., 1742 Crenshaw Blvd., Torrance, CA 90501, Tel: 213-320-6160, TWX: 910-349-6651, Tel: 213-618-9191; FSC No: 50998; Empl: 260; Sls. Mgr: Charlie Hancock

MACROAMP INC., P.O. Box 1512, Ukiah, CA 95482, Tel: 800-458-8892, FAX: 707-462-3068; Empl: 25; Sls. Mgr: M. Allan Freebury

MACRODYNE INC., 4 Chelsea Pl., Box 376, Clifton Pk., NY 12065, Tel: 518-383-3800, FAX: 518-383-0049; Empl: 16; Sls. Mgr: J.C. Bailey

MACROLINK, 1500 N. Kellogg Drive, Anaheim, CA 92807, Tel: 714-777-8800, FAX: 714-777-8807; Empl: 40; Sls. Mgr: Bill Goodale

MACROMATIC DIVISION, Milwaukee Elctms. Corp., 5855 N. Glen Park Rd., Milwaukee, WI 53209, Tel: 414-228-5500, FAX: 414-228-5501; FSC No: 98664; Empl: 100-150; Sls. Mgr: J. Scholler

MACRONETICS, See Veeco Instrs. Inc.

MAG-CON, 1626 Terrace Dr., St. Paul, MN 55113, Tel: 612-633-8820, FAX: 612-633-1851; Empl: 40; Sls. Mgr: Mark Crellin

MAG-HEAD ENGINEERING CO., 686-Mendelssohn Ave., Minneapolis, MN 55427, Tel: 612-545-1321, FAX: 612-545-0335; FSC No: (Cage) ODU70; Empl: 30; Sls. Mgr: Gary Hoonsbeen

MAGNA-POWER ELECTRONICS, INC., 135 Route 10, Whippany, NJ 07981, Tel: 201-428-1197, FAX: 201-428-2853; FSC No: 7V550; Empl: 10; Sls. Mgr: Allen F. Hillman  
D\*1828-1830

## Local Sales Offices &amp; Reps

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|----|--------------------------------|--------------|
| AL | Huntsville, Jim Springer, Inc. | 205-883-4163 |
| CA | Sunnyvale, N-S Westronics      | 408-745-1102 |
| CA | Ventura, Power Partners        | 805-966-3309 |
| IL | Park Ridge, Elctm. Instr.      | 708-298-2290 |
| LA | Metairie, Data Mktg. Assoc.    | 504-883-3655 |
| MI | Ann Arbor, Tech. Sls. Assoc.   | 313-995-4082 |
| MN | Minnetonka, Elctm. Instr.      | 612-933-7793 |
| OH | Cleveland, Tech. Sls. Assoc.   | 216-461-0826 |
| OH | Dayton, Tech. Sls. Assoc.      | 513-298-2062 |
| OH | Piqua, Tech. Sls. Assoc.       | 513-778-0247 |
| TX | Austin, Data Mktg.             | 512-338-4701 |
| TX | Dallas, Data Mktg.             | 214-661-0300 |
| TX | Houston, Data Mktg.            | 713-579-2995 |
| TX | San Antonio, Data Mktg.        | 210-342-3031 |

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| CA | Jamul, Power Partners, Inc.       | 619-560-0099 |
| CA | Los Angeles, Power Partners, Inc. | 310-215-0800 |
| FL | Land O'Lakes, A.J.'s Power Source | 813-996-2583 |

MAGNATROL VALVE CORP., 67 Fifth Ave., Hawthorne, NJ 07057, Tel: 201-427-4341, FAX: 201-427-7611; Sls. Mgr: R. Kretschmer

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**FAX: 803-878-0507**

MAGNECOMP, INC., P.O. Box 625, Gravelly Rd., Pickens, SC 29671, Tel: 803-878-4700; Empl: 10; Sls. Mgr: T. Sullivan  
A\*2377



**MAGNECRAFT ELECTRIC CO.**, 1910 Techny Road, Northbrook, IL 60062-5376, Tel: 708-564-8800, FAX: 708-564-3027; FSC No.: 94696; Empl.: 400; Sls. Mgr.: G.W. Edwards



**FAX: 303-447-1588**

**MAGNELAB**, 7315 Red Deer Dr., Boulder, CO 80301-4696, Tel: 303-442-6700; FSC No.: 58439; Empl.: 25; Sls. Mgr.: Cheryl Junge **A•2378-2382**

**MAGNELINK, INC.**, 8891 S.W. Hillsboro Hwy., Hillsboro, OR 97123, Tel: 800-638-0801, FAX: 503-640-3825; Sls. Mgr.: Fred Hostetler

**MAGNETEK**, Transducer Products, 650 Easy St., Simi Valley, CA 93065, Tel: 805-581-3985, FAX: 805-583-1526; FSC No.: 65998; Empl.: 37; Sls. Mgr.: Dave Snyder

**MAGNETEK CONTROLS**, MagneTek Inc., 1080 N. Crooks, Clawson, MI 48017, Tel: 313-435-0700, TELEX: 23-5359, ESYLNK: 313-435-8120; Empl.: 214; Sls. Mgr.: Kurt R. Dreisbach

**MAGNETEK POWER CONVERSION SYSTEMS**, Teledyne, Inc., 901 E. Ball Rd., Anaheim, CA 92805, Tel: 714-956-9200, FAX: 714-956-5397; FSC No.: 90911; Sls. Mgr.: Fred Tamjidi

**MAGNETEK POWER TECHNOLOGY SYSTEMS**, MagneTek, Inc., 901 E. Ball Road, Anaheim, CA 92805, Tel: 714-956-9200, FAX: 714-956-5397; Empl.: 450; Sls. Mgr.: Robert Swette



**FAX: 219-356-0311**

**MAGNETEK TRIAD**, 1124 E. Franklin St., Huntington, IN 46750, Tel: 219-356-7100; Empl.: 963; Sls. Mgr.: Mike Dorton **A•1248-1249, 2383-2387**

**MAGNETIC CIRCUIT ELEMENTS**, 1540 Moffett St., Salinas, CA 93905, Tel: 408-757-8752, FAX: 408-757-5478; FSC No.: 09349; Empl.: 30; Sls. Mgr.: Sara Hambleton

**MAGNETIC COILS, INC.**, See MCI Transformer Corporation

**MAGNETIC COMPONENT ENGINEERING, INC.**, 213 N. Cedar Ave., Inglewood, CA 90301, Tel: 310-677-6600, FAX: 310-677-7100; FSC No.: 52634; Empl.: 15; Sls. Mgr.: C. Nanji **A•1251-1253, 1321**

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CO Boulder, Design Technig. Sls. .... 303-440-5121  
IL Hoffman, Astro/Tech. Elctms. .... 708-934-1538  
WI Watertown, Deaken Tech. Sls. .... 414-261-7600



**FAX: 317-549-0502**

**MAGNETIC INSTRUMENTATION, INC.**, 8350 E. 48TH ST., Indianapolis, IN 46226, Tel: 317-545-2102; Empl.: 45; Sls. Mgr.: Peter Stolpe **D•1295**

**MAGNETICO INC.**, 182 Morris Ave., Holtsville, NY 11742, Tel: 516-654-1166, FAX: 516-758-7408; FSC No.: 10581; Empl.: 65 **A•2389-2391**

**Local Sales Offices & Reps**  
AZ Phoenix, Toward Engr. Assocs. .... 602-955-3193  
CA Woodland Hills, Southern Calif. Sls. .... 818-704-9087

**MAGNETIC RADIATION LABS**, 690 Hilltop Drive, Itasca, IL 60143, Tel: 708-285-0800, FAX: 708-285-0807; Empl.: 43; Sls. Mgr.: Jack White



**FAX: 412-282-6955**

**MAGNETICS, Spang & Co.**, Box 391, Butler, PA 16003-0391, Tel: 412-282-8282; Empl.: 750; Sls. Mgr.: J. F. Huth **A•1316, 1322**

**Local Sales Offices & Reps**  
CA Morgan Hill, J. Nelson ..... 408-779-2090  
CA San Diego, R.N. Blair ..... 619-225-0780  
CA San Marino, L.H. Lutz ..... 818-799-2074  
CT Berlin, D.S. Miga ..... 203-828-7765  
FL Lake Worth, A. R. Opitz ..... 407-967-5929  
IL Elgin, R.J. Harris ..... 708-888-2175  
IN Martinsville, W.E. Heacock ..... 317-349-1254  
KS Lenexa, D. J. McCarl ..... 913-492-6719  
MA Acton, S. Feldhusen ..... 508-264-4850  
NJ Chatham, K. E. Murphy ..... 201-635-5793  
NY Huntington Sta., W.H. Stephan ..... 516-424-9330  
NY Rush, R.C. Moore ..... 716-533-9336  
NC Greensboro, E. A. Siebenaler ..... 919-288-3669  
OH Findlay, H. A. Beck ..... 419-424-0592  
PA Coopersburg, J.J. Whitney ..... 215-965-1150  
TX Garland, F. H. Hall ..... 214-475-8066  
VA Falls Church, BFI Int'l ..... 703-847-6815

**Local Distributors**  
IL Elk Grove Village, Dexter/MMD ..... 1-800-345-4082

**MAGNETIC SHIELD CORPORATION, Perfection Mica Co.**, 750 North Thomas Dr., Bensenville, IL 60106, Tel: 708-766-7800, FAX: 708-766-2813; FSC No.: 06682; Empl.: 43 **C•1696-1697**

**Local Sales Offices & Reps**  
CA Milpitas, Telesis Sls. Grp. .... 408-946-7300  
CA Woodland Hills, Cal-Ward Sls. Co. .... 818-883-2202  
FL Lakeland, Ludlum Assoc. Co. .... 813-683-0200  
GA Suwanee, Overton Assocs. .... 404-497-0166  
MD Baltimore, Bernard White & Co. .... 410-484-5400  
MA Brookline, Technl. Prods. Grp. .... 617-731-0858  
MI Livonia, Amtech Reps. .... 313-474-8300  
MN Minneapolis, Josco-Meluis & Assocs. .... 612-861-3343  
NM Albuquerque, IMEC ..... 505-275-0936  
NJ Morristown, Kenneth L. Love Assocs. .... 201-540-0204  
NY Plainview, Robert Smith Assoc. .... 516-932-3975  
NC Raleigh, Overton Assoc. .... 919-783-6565  
PA Hatboro, AQS Electro ..... 215-674-4421  
PA Sewickley, Teplitz-Byrne Assoc. .... 412-741-3628  
SC Walhalla, Overton Assoc. .... 803-638-7101  
TN New Tazewell, Overton Assoc. .... 615-626-6009  
TX Dallas, Southwest Elctm. Ind. .... 214-690-9881  
WA Olympia, Bergford & Assocs. .... 206-866-2001

**MAGNETIC TECHNOLOGIES CORP.**, 770 Linden Avenue, Rochester, NY 14625, Tel: 716-385-9010, FAX: 716-385-5625; Empl.: 80; Sls. Mgr.: Gordon H. McNeil

**MAGNETOELASTIC DEVICES**, 17 Downing Three, 2C, Pittsfield, MA 01201, Tel: 413-445-5608, FAX: 413-442-3750

**MAGNETROL INTERNATIONAL**, 5300 Belmont Rd., Downers Grove, IL 60515-4499, Tel: 708-969-4000, FAX: 708-969-9489; Sls. Mgr.: Roger T. Piegza, Natl. Sls. Mgr.

**MAGNET SALES & MFG., INC.**, 11248 Playa Court, Culver City, CA 90230-6162, Tel: 310-391-7213, 800-421-6692 (N. CA and out of state), FAX: 310-390-4357; FSC No.: 17853; Empl.: 50; Sls. Mgr.: Chuma Ho; Dist. Mgr.: Anil Nanji



**FAX: 708-789-0614**

**MAGNET SCHULTZ OF AMERICA**, 401 Plaza Drive, Westmont, IL 60559, Tel: 708-789-0600; FSC No.: 27190; Empl.: 100; Sls. Mgr.: Robert E. Kester **B•1652-1653**

**Local Sales Offices & Reps**  
AZ Phoenix, Wistech Controls ..... 602-243-4361  
CA San Jose, Ruppert Sls. & Engrg. .... 408-998-8717  
CA Valencia, DJM Elctms. Inc. .... 805-254-2677  
CO Denver, Neil Binge & Assocs. .... 303-698-1481

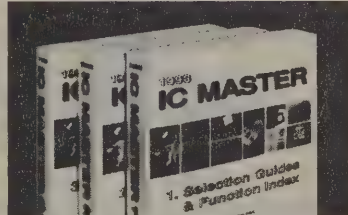
CT Woodbury, Mark-Rep Assocs. .... 203-263-3047  
GA Tucker, Hile Assocs. .... 404-939-9560  
IL Downers Grove, Richmar Elctms. Corp. .... 312-968-0118  
IL Westmont, Regdon Solenoid, Inc. .... 708-789-0600  
IN Indianapolis, Richmar Elctms. .... 317-577-9950  
IA Iowa City, Richmar Elctms. .... 319-354-8884  
MA Mattapoisett, Mark-Rep Assocs. .... 508-758-2318  
MI Ada, Erin Engrg. .... 616-676-0665  
MN Minneapolis, Holmgren ..... 612-574-9983  
NH Plaistow, Mark-Rep Assocs. .... 603-382-9563  
NJ Red Bank, Varrelman-Gorman Co. .... 201-219-0088  
NM Albuquerque, Wistech ..... 505-883-2552  
NC Greensboro, Hile Assocs. .... 919-288-1500  
OH Dayton, Electro. Mktg. Grp. .... 513-890-8322  
OR Portland, D.A. Sullivan Co. .... 503-292-2448  
PA Huntingdon Valley, Edwin Leiby & Assocs. .... 215-659-8938  
TX Plano, K & H Sales ..... 214-423-6520  
VA Alexandria, Edwin Leiby & Assocs. .... 703-360-9039  
WI Butler, Richmar Elctms. .... 414-781-1730  
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| NJ | Oakland, Relay Specialties     | 201-337-1000 |

**MAGNET WIRE CO.,** Weico Wire & Cable, Inc., 161 Rodeo Drive, Edgewood, NY 11717, Tel: 516-667-9315, FAX: 516-254-2099; Empl: 15

**MAGNOS,** 9 Bonazzoli Ave., Unit 17, Hudson, MA 01749, Tel: 508-562-1173, TELEX: 951417MAGN, FAX: 508-562-1175; Empl: 5 **D-1296**

**MAGNUM MICROWAVE CORP.,** 4575 Cushing Pkwy., Fremont, CA 94538, Tel: 510-657-9898, FAX: 510-490-3351; FSC No.: 59277; Empl: 80; Sls. Mgr.: Harry L. Fowler

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| AZ  | Mesa, Cole Tech. Sls.                 | 602-644-0370 |
| CA  | Granada Hills, S/S Technology         | 818-366-2866 |
| CA  | Mtn. View, Dismar & Bakner            | 415-969-3010 |
| CO  | Littleton, Detomasi & Grupp, Inc.     | 303-972-2543 |
| FL  | Orlando, Gentry Elctms. & Instrs.     | 407-859-4422 |
| IL  | Park Ridge, Probe                     | 708-696-2828 |
| IN  | Ft. Wayne, J & B Eng. Sls.            | 219-483-5873 |
| MA  | Chelmsford, Matrix Sls. Inc.          | 508-459-4000 |
| MN  | Minneapolis, Bill Deming & Associates | 612-888-5000 |
| MO  | Maryland Hts., KJS Mktg.              | 314-770-1412 |
| NY  | Clark Mills, KLM Garner, Inc.         | 315-853-6126 |
| NY  | Ryebrook, Tekmar Sls.                 | 914-632-2828 |
| PA  | Conshohocken, M. Lader Co.            | 215-825-3177 |
| TX  | Garland, Carey, McMahon Assoc.        | 214-681-1414 |
| WA  | Issaquah, Sea-Port Tech. Sls.         | 206-391-6714 |
| Can | Quebec, R F Microwave                 | 613-592-3379 |

**MAGNUM OPUS CUSTOM ELCTRN. ENGRG.,** 284 Kennedy St., Iselin, NJ 08830, Tel: 908-283-4925, FAX: 908-283-4925; Sls. Mgr.: R. Galanty **D-1142**

**MAGTECH CONTROLS,** Vernitron Corporation, 1601 Precision Park La., San Diego, CA 92173, Tel: 619-662-2235, FAX: 619-428-5090; FSC No.: 10112; Empl: 200; Sls. Mgr.: H. Cooperman

**MAG-TEK,** 20725 S. Annalee Ave., Carson, CA 90746, Tel: 213-631-8602, TWX: 510-600-0621 MAG TEK CRSN, FAX: 213-631-3956; Dist. Mgr.: Shelley Schira



FAX: 804-722-1194

**MAIDA DEVELOPMENT CO.,** 20 Libby St., Hampton, VA 23663, Tel: 804-723-0785; Empl: 299; Sls. Mgr.: Edward T. Maida, Frank Thompson

A-1096-1098, 1980-1983

## Local Sales Offices &amp; Reps

|    |                                     |              |
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| CA | Chatsworth, Cygnus Sls. & Engrg.    | 818-727-0312 |
| CA | Milpitas, Meridian Tech. Sls.       | 408-262-5474 |
| CT | Hartford, D.A. Crowley & Assocs.    | 203-956-9007 |
| CT | New Britain, D.A. Crowley & Assocs. | 203-223-8798 |
| FL | Coral Springs, Steve Bruegger       | 305-341-5102 |
| FL | Dade City, Marty Spahr              | 904-523-0996 |
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| IN | Huntington, Elctm. Reps.              | 219-356-3513 |
| IN | Indianapolis, Elctm. Reps.            | 317-894-1414 |
| KS | Lexington, Elctm. Reps.               | 806-277-0436 |
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| NC | Cary, F.B.D. Sls. Corp.               | 919-460-1900 |
| OH | Cleveland, RK Comps.                  | 216-642-9312 |
| OH | Hudson, L.D. Bruno Co.                | 513-434-1847 |
| OR | Beaverton, UniComp, Inc.              | 503-643-1645 |
| PA | Pittsburgh, R.K. Comps.               | 412-775-0747 |
| SC | Mauldin, Carl Hart                    | 803-288-2323 |
| VA | Danville, F.B.D. Sls.                 | 804-836-1499 |
| VA | Hampton, Maida Dev. Co.               | 804-723-0785 |
| VA | Manassas(Northern), F.B.D. Sls. Corp. | 703-369-7212 |

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| WA  | Snohomish, UniComp, Inc.       | 206-568-0511 |
| Can | Dundas, D. J. Hyslop & Co.     | 416-628-0266 |
| Can | Dundas, Ont., Donald J. Hyslop | 416-628-0266 |

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| IL | Franklin Park, Stetco                  | 708-671-4208 |
| NY | Rockville Centre, Archer Indl. Distrs. | 516-536-4242 |

**MAKK-O INDUSTRIES,** 761 Nepperhan Ave., Yonkers, NY 10703, Tel: 914-376-0160, 914-376-0161, FAX: 914-376-0162; Empl: 18; Sls. Mgr.: Vincent Passalacqua; Dist. Mgr.: Debbie Carroll **C-1543**

## Local Sales Offices &amp; Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Prescott, IMEC                    | 602-445-8727 |
| MA | Lee, Francis Biscin               | 413-243-0970 |
| NJ | Upper Montclair, McCarron Entprs. | 201-783-3112 |
| NM | Albuquerque, IMEC                 | 505-294-1124 |
| TX | Dallas, S & B Sls.                | 214-369-5936 |

**MALCO, DIV. OF MICRODOT, INC.,** See Microdot, Interconnect Sys. Div.

**MALLORY BATTERY,** See Duracell Intl.

**MALLORY CONTROLS, Emerson Electric Canada,** P.O. Box 210, 1079 Parkinson Rd., Woodstock, Ont., Canada N4S 7W8, Tel: 519-539-4891, TELEX: 23 MOY 001, FAX: 519-539-6684; FSC No.: 37942; 76055; Sls. Mgr.: Joe Labonte; Dist. Mgr.: Joe Labonte **A-1099, 2092-2093**

## Local Sales Offices &amp; Reps

|    |                                    |                                 |
|----|------------------------------------|---------------------------------|
| IL | Chicago, M & S Sls.                | 708-934-1200, FAX: 708-934-9169 |
| MN | St. Paul, Johnson Co.              | 612-641-1878, FAX: 612-641-0146 |
| NY | New York, Hebert Rude Assoc., Inc. | 212-721-1001, FAX: 212-721-1004 |
| OH | Cleveland, ESI                     | 216-831-9555, FAX: 216-831-8647 |
| TX | Dallas, Eltec Sls.                 | 817-268-2896, FAX: 817-282-3010 |

**MALLORY CONTROLS, Emerson Electric,** 2831 Waterfront Pkwy-E Drive, Indianapolis, IN 46214, Tel: 317-328-4010, FAX: 317-328-4244; Empl: 2,000; Sls. Mgr.: Lewis Jones **A-1099, 2092-2093**

MALLORY

**NORTH AMERICAN CAPACITOR CO.,** See North American Capacitor Co.

**MANAGE, INC.,** Fibre Optics Elctms. Sys. Grp., P.O. Box 158, 40 Nichols Rd., Chicopee, MA 01014, Tel: 413-592-9123, FAX: 413-594-4891; Empl: 33; Sls. Mgr.: David Menard

**MANGER ELECTRIC COMPANY, INC.,** W. Henry St., Stamford, CT 06902, Tel: 203-348-7761, FAX: 203-324-5447; FSC No.: 20262; Empl: 100; Sls. Mgr.: George Hubbard

**Manhattan**  
ELECTRIC CABLE CORPORATION

FAX: 914-967-1616

**MANHATTAN ELECTRIC CABLE CORPORATION,** Station Plaza, Rye, NY 10580, Tel: 914-967-8000, TELEX: 137-387; Empl: 50; Sls. Mgr.: Allan P. Marconi, VP Sls. & Mktg. **C-1763**

## Local Sales Offices &amp; Reps

|    |                                          |              |
|----|------------------------------------------|--------------|
| CA | Los Angeles, Manhattan Elec. Cable Corp. | 800-423-4040 |
| IN | Indianapolis, Roth-Mooney Elctrl. Agcy.  | 800-289-7684 |
| MA | Westboro, Manhattan Elec. Cable Corp.    | 800-831-1429 |
| MN | Maple grove, North Central Sls.          | 800-829-2885 |
| NJ | Bridgeton, Manhattan Elec. Cable Corp.   | 800-843-4454 |
| TX | Houston, Manhattan Elec. Cable Corp.     | 800-392-4928 |
| WA | Redmond, Elctm. Mktg. Grp., Inc.         | 206-882-0962 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Madison, Sea Wire & Cable           | 205-772-9616 |
| CA | El Monte, Marshall Elctms.          | 818-442-7204 |
| CA | El Toro, Sourcery Wire & Cable      | 714-380-0466 |
| CA | Long Bch, John B. Rudy Co.          | 213-636-6934 |
| CA | Oakland, Brill Elctms.              | 415-834-5888 |
| CA | San Jose, Compass Comps.            | 408-432-7575 |
| CA | Santa Clara, Trinity Elctms.        | 408-980-9011 |
| CO | Denver, CSID                        | 303-292-9594 |
| CT | Greenwich, Wise Comps.              | 203-531-4880 |
| FL | Orlando, Hammond Elctms.            | 407-849-6060 |
| FL | Pensacola, Elctm. Supp. Co.         | 904-432-6916 |
| FL | Tamarac, Pacer Elctms.              | 305-749-1910 |
| FL | Tampa, Dow Elctms.                  | 813-626-5195 |
| LA | Harahan, MG Elctms.                 | 504-733-0070 |
| MD | Owings Mill, Cameo Elctms.          | 800-227-7077 |
| MA | Burlington, QPL                     | 617-229-2424 |
| MA | Hudson, Metro Wire & Cable          | 508-562-6288 |
| MA | Woburn, Pacer                       | 617-935-8330 |
| MI | Madison Hgts., Quad Elctms.         | 800-969-9220 |
| NY | Johnson City, Help Elctms.          | 607-729-3528 |
| NY | Long Island City, H.L. Dalis        | 718-361-1100 |
| NY | Mt. Vernon, QAR/All American        | 914-699-2224 |
| NY | Rochester, Simcona Elctms.          | 800-274-6266 |
| NY | Syracuse, Newark Elctms.            | 315-437-6611 |
| OH | Cincinnati, Hughes Peters           | 800-543-4483 |
| OH | Columbus, Hughes Peters             | 800-282-1262 |
| OH | Strongsville, Calvert Wire & Cable  | 800-321-1203 |
| OH | Yellow Springs, Electroshield       | 800-662-1054 |
| PA | Allentown, P.A. Peters              | 800-322-9583 |
| PA | Harrisburg, Cumberland Elctms.      | 800-692-7425 |
| PA | Montgomeryville, Pytronic Inds.     | 800-562-5780 |
| TN | Memphis, Bluff City Elctms.         | 901-345-9500 |
| TX | Austin, Wholesale Elctm. Supp.      | 512-478-9568 |
| TX | Houston, Houston Wholesale Elctms.  | 713-644-8320 |
| TX | Houston, Kent Elctms.               | 713-780-7770 |
| UT | Salt Lake City, Kimball Elctms.     | 801-328-2075 |
| VT | Bethel, Clifford of Vermont         | 802-234-9921 |
| WA | Seattle, Radar Elec. Co.            | 206-282-2511 |
| WA | Woodinville, Northwest Wire & Cable | 206-486-8342 |

**MANIX MFG. INC.,** 50 Ash Circle, Warminster, PA 18974, Tel: 215-957-6565, FAX: 215-957-6599; Empl: 20; Sls. Mgr.: Ira Schafer

**MANNOCORP,** Box 8, Huntingdon Valley, PA 19006, Tel: 215-364-6100, FAX: 215-364-6110; Empl: 15; Dist. Mgr.: Mickey Hoffer

**MANSFIELD & GREEN DIVISION, A Subsidiary of Ametek Inc.,** 8600 Somerset Dr., Largo, FL 34643, Tel: 813-536-7831, FAX: 813-539-6882; Empl: 120; Sls. Mgr.: Gary Queensberry

**MANTEX CORP.,** 1800 Metamora Rd., P.O. Box 15, Oxford, MI 48371, Tel: 313-628-8210, FAX: 313-628-1520; Empl: 100; Sls. Mgr.: Dave Wm. Rice

**MANU-TRONICS, INC.,** 8701-100th St., Lakeview Corporate Pk., Kenosha, WI 53142-7799, Tel: 414-947-7700, FAX: 414-947-7729; Empl: 250; Sls. Mgr.: Frank Montabana

**MARATHON POWER TECHNOLOGIES, P.O. Box 8233, Waco, TX 76714-8233, Tel: 817-776-0650, TWX: 910-894-5203 MARATHON WAC**

**MARATHON SPECIAL PRODS.,** Marathon Electric, 13300 Van Camp Rd., Bowling Green, OH 43402, Tel: 419-352-8441, FAX: 419-352-0875; FSC No.: 26405; Empl: 150; Sls. Mgr.: J. Campisi

**MARC ENTERPRISES,** 27762 Forbes Rd., #17, Laguna Niguel, CA 92677, Tel: 714-249-0302, FAX: 714-249-0302; Empl: 10; Sls. Mgr.: Brian Marovich

**MARCO MANUFACTURING CO., INC.,** 2021-43 So. 29th St., Philadelphia, PA 19145, Tel: 215-463-2332, FAX: 215-334-4990; Empl: 35-40

**MARCON AMERICA CORP.,** 998 Forest Edge Dr., Vernon Hills, IL 60061, Tel: 708-913-9980, FAX: 708-913-1150; Empl: 14; Sls. Mgr.: Tony Olita; Dist. Mgr.: Mary Lou Just



**MARCONI INSTRUMENTS**, 3 Pearl Court, Allendale, NJ 07401, Tel: 201-934-9050, FAX: 201-934-9229; Sls. Mgr.: Carl Pepple, Gen. Mgr. **D-1297**

|                                       |                                          |              |
|---------------------------------------|------------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                          |              |
| AZ                                    | Mesa, Scientific Dvcs. West              | 602-730-9774 |
| CA                                    | Santa Fe Springs, Wallace & Wallace      |              |
|                                       |                                          | 213-945-2908 |
| CA                                    | Shingle Springs, LK Allen Comms.         | 916-676-2533 |
| CO                                    | Scientific Dvcs. West                    | 303-665-8089 |
| CO                                    | Broomfield, Scientific Dvcs. West        | 303-469-5145 |
| CO                                    | Littleton, K. C. Marketers, Inc.         | 303-972-8411 |
| FL                                    | Clearwater, Beacon Microwave             | 813-796-2378 |
| GA                                    | Alpharetta, Panterra Sls.                | 404-772-9944 |
| GA                                    | Marietta, Comm. Mktg. S.E.               | 404-424-9097 |
| IL                                    | Schaumburg, K.W. Meyers                  | 708-882-4808 |
| IN                                    | Columbus, Tom Fittenhouse                | 812-378-0866 |
| KS                                    | Pomona, Comms. Equip. Specs.             | 913-566-8387 |
| MD                                    | Laurel, Elctm. Mktg. Assocs.             | 301-953-7800 |
| MA                                    | Westford, ICS Assocs.                    | 508-765-5131 |
| MI                                    | Houghton Lake, W.E. Price & Co.          | 517-366-8702 |
| MN                                    | Minneapolis, Baltz Assocs.               | 612-546-8520 |
| MO                                    | Maryland Hgts, Comms. Equip. Specialties |              |
|                                       |                                          | 314-291-7841 |
| NJ                                    | Allendale, Allan Mowat                   | 201-934-9050 |
| NM                                    | Albuquerque, Scientific Dvcs.            | 505-883-3668 |
| OH                                    | St. Mary's, Thomas Shelby & Co.          | 419-394-3377 |
| OR                                    | Oregon City, Proctor Sls. & Mktg.        | 503-657-7583 |
| TX                                    | Richardson, Engrg. Equip. Sls.           | 214-578-1146 |
| TX                                    | Richardson, EES                          | 214-644-8881 |



**FAX: 201-471-2811**

**MARINE ELECTRIC SYSTEMS**, 2 Bridewell St., Clifton, NJ 07014-1135, Tel: 201-471-6800; FSC No.: 00062; Empl: 65; Sls. Mgr.: G. V. Mandell; Dist. Mgr.: G. V. Mandell **D-1015**

|                                       |                                 |              |
|---------------------------------------|---------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                 |              |
| PA                                    | Sewickley, Teplitz-Byrne Assoc. | 412-741-3628 |
| WA                                    | Bothell, D. Bartholomew         | 206-483-8617 |
| WI                                    | Green Bay, Winn Agency          | 414-336-7476 |
| Can                                   | Montreal, Metrone               | 514-483-2323 |

## WILD OATS

**FAX: 803-249-5191**

**MARKAT DIV.**, Wild Oats Corp., 1432 Fox Hollow Way, N. Myrtle Bch., SC 29582-2514, Tel: 803-249-5191; Empl: 211; Sls. Mgr.: K. L. Campbell; Dist. Mgr.: W. B. Heather



**FAX: 215-270-3138**

**MARKEL CORP.**, P.O. Box 752, Norristown, PA 19404, Tel: 215-272-8960; FSC No.: 03890; Empl: 228; Sls. Mgr.: Allan R. Soldwisch; Dist. Mgr.: L. J. Clemente **C-1666**

|                                       |                                      |              |
|---------------------------------------|--------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                      |              |
| AL                                    | Montgomery, MYA, Inc.                | 205-284-1948 |
| AZ                                    | Scottsdale, Mid/West Co.             | 602-991-0427 |
| CA                                    | Montrose, Signal Enterprises         | 818-957-0640 |
| CA                                    | Santa Cruz, WestCal Sls.             | 408-423-9344 |
| CO                                    | Evergreen, Mid/West Co.              | 303-374-4829 |
| FL                                    | Fl. Lauderdale, Hawkins Frederickson |              |
|                                       |                                      | 305-321-6702 |
| FL                                    | Maitland, Hawkins Frederickson       | 407-831-2474 |
| IL                                    | Schiller Pk., Wm. R. Bolles          | 312-678-7888 |
| MD                                    | Glen Burnie, C.W. Boss Co.           | 301-744-4611 |
| MA                                    | Hopedale, D.M.A. Mktg.               | 508-473-9994 |
| MI                                    | Northville, L. George & Assoc.       | 313-380-6300 |
| MN                                    | Brooklyn Park, Technical Comps. Grp. |              |
|                                       |                                      | 612-561-5556 |
| MO                                    | Florissant, Mid/West Co.             | 314-837-3361 |
| NJ                                    | Colonia, Heft & Ficarra              | 201-381-5193 |
| NY                                    | Lynbrook, Heft & Ficarra             | 516-599-3351 |
| NY                                    | Rochester, Ontec                     | 716-464-8636 |
| OH                                    | Chagrin Falls, Electrolock           | 216-543-6626 |

|     |                                        |              |
|-----|----------------------------------------|--------------|
| OR  | Hillsboro, Temco NW                    | 503-645-2030 |
| PA  | Flourtown, CGM Inc.                    | 215-233-0333 |
| SC  | Greenville, Electrolock Inc.           | 803-297-9830 |
| TN  | Murfreesboro, Alpha Mktg.              | 615-896-6102 |
| WA  | Bothell, Temco NW                      | 206-481-6150 |
| WI  | Mequon, Wm. R. Bolles                  | 414-241-3320 |
| EXP | Plymouth Meeting, PA, Ballagh & Thrall |              |
|     |                                        | 215-825-5710 |
| Can | Rexdale, Ont, True North Technology    |              |
|     |                                        | 416-744-2233 |

### Local Distributors

|     |                                        |              |
|-----|----------------------------------------|--------------|
| CA  | Los Angeles, Natl. Wire & Cable        | 213-225-5611 |
| CA  | Santa Clara, Amax Wire & Cable         | 408-727-3234 |
| CO  | Denver, Brownell Elctms.               | 303-333-3541 |
| CT  | Hartford, Wes-Garde                    | 203-527-7705 |
| FL  | Davie, Arco Distrs.                    | 305-473-2550 |
| FL  | Lakeland, Switch Controls              | 800-282-7619 |
| GA  | Atlanta, Accu-Tech Cable               | 404-455-6422 |
| IL  | Chicago, Fay Electric Wire             | 708-267-9222 |
| IL  | West Chicago, J.J. Glenn               | 708-293-7800 |
| IN  | Indianapolis, Marian Rubber            | 317-638-6525 |
| KS  | Wichita, Midwest Aircraft Supp.        | 316-267-3318 |
| LA  | New Orleans, Radio Parts               | 504-581-5959 |
| MD  | Rockville, Read Plastics               | 301-881-7900 |
| MI  | St. Clair Shores, Spemco               | 313-771-2700 |
| MN  | Bloomington, K.L. Tannenill            | 612-881-6700 |
| MO  | St. Louis, Midwest Switch              | 314-567-7164 |
| NY  | Rochester, Simcona Elctms.             | 716-328-3230 |
| OH  | Chagrin Falls, Electrolock             | 216-543-6626 |
| OR  | Wilsonville, O.T.S. Wire               | 503-682-7050 |
| SC  | Greenville, Electrolock, Inc.          | 803-297-9830 |
| AR  | Little Rock, Hisco                     | 501-568-3105 |
| CT  | Manchester, IMS Inc.                   | 203-288-7005 |
| VA  | Roanoke, Control Distrib.              | 703-774-4586 |
| Can | Mississauga, Ont, Marflex-Barrett Ltd. |              |
|     |                                        | 416-828-0220 |

**MARKEM CORP.**, 150 Congress St., Keene, NH 03431, Tel: 603-352-1130, TELEX: 710-366-1800, FAX: 603-357-5871; FSC No.: 38360; Empl: 1400; Sls. Mgr.: Rich Howsen

**MARKETECH, INC.**, 11061 173rd Ave., N.W., Elk River, MN 55330-7034, Tel: 612-441-8664, FAX: 612-441-8692; FSC No.: 1505; Empl: 13; Sls. Mgr.: Richard Duggan

**MARK EYELET INC., AMP, Inc.**, 63 Wakelee Rd., Wolcott, CT 06716, Tel: 203-756-8847, TELEX: 69-6191, FAX: 203-755-9410; Empl: 90; Dist. Mgr.: Andrew Babiak

**MARKING METHODS, INC.**, 301 South Raymond Ave., Alhambra, CA 91803-1531, Tel: 818-282-8823, FAX: 818-576-7564; Empl: 37; Sls. Mgr.: Ralph Gallella

**MARKS POLARIZED CORP.**, 275-D Marcus Blvd., Hauppauge, NY 11788, Tel: 516-273-8900, FAX: 516-273-1190; FSC No.: 1240,1270,5895; Empl: 10; Sls. Mgr.: Ronald M. Miller

**MARKTECH INTERNATIONAL CORP.**, 5 Hemlock St., Latham, NY 12110, Tel: 518-786-6591, FAX: 518-786-6599; Empl: 42

**MARLEE SWITCH CO.**, 933-D N. Central Ave., Upland, CA 91786, Tel: 714-982-8988, FAX: 714-982-8989; Empl: 10; Sls. Mgr.: LeRoy Tichy



**marlow industries, inc.**

**FAX: 214-341-5212**

**MARLOW INDUSTRIES, INC.**, 10451 Vista Park Rd., Dallas, TX 75238-1645, Tel: 214-340-4900; FSC No.: 55686; Empl: 160; Sls. Mgr.: John Nelson; Dist. Mgr.: David Marlow **C-1602-1605**

**MARQUARDT SWITCHES INC.**, 2711 Rte. 20 East, Cazenovia, NY 13035, Tel: 315-655-8050, TELEX: 703-287-UD, FAX: 315-655-8042; Sls. Mgr.: R. A. Philipchik, V.P. Mktg.; Dist. Mgr.: P. D'Addario

**MARSH-MCBIRNEY, INC.**, 4539 Metropolitan Court, Frederick, MD 21701, Tel: 800-368-2723, 301-874-5599, TWX: 710-828-0083, FAX: 301-874-2172; Empl: 105; Sls. Mgr.: Fred McKinney; Dist. Mgr.: Jan L. Pillar

**MARSH PRODUCTS, INC.**, Spectrum Companies, Intl., 336 McKee St., Batavia, IL 60510, Tel: 708-879-8008, FAX: 708-879-8072

**MARTEL ELECTRONICS**, 90 Indian Rock Rd., Windham, NH 03087, Tel: 603-893-0886, FAX: 603-898-6820; Sls. Mgr.: David DeVries

**MARTIN SOUND PRODS. INC.**, 28 Alpha Park, Cleveland, OH 44143-2297, Tel: 216-442-2286, FAX: 216-442-7713; Empl: 4; Sls. Mgr.: Christopher Martin; Dist. Mgr.: Christopher Martin

## MARWAY PRODUCTS INC.

**FAX: 714-973-2931**

**MARWAY PRODS. INC.**, 311 N. Clara St., Santa Ana, CA 92703, Tel: 714-973-1800; FSC No.: 60955; Empl: 28; Sls. Mgr.: Jose Molina **D-2278-2281**

### Local Sales Offices & Reps

|    |                                          |              |
|----|------------------------------------------|--------------|
| AZ | Glendale, Sunbird Inds, Inc.             | 602-439-0134 |
| CA | Milpitas, Ward Elctm. Packaging Sls.     | 408-945-0420 |
| CA | Santa Ana, Marway Prods., Inc.           | 714-973-1800 |
| CO | Monument, Sunbird Inds., Inc.            | 719-481-2900 |
| CT | Meriden, PCS-Power Conversion Sys.       |              |
|    |                                          | 203-235-4886 |
| FL | Land O' Lakes, A.J.'s Power Source, Inc. |              |
|    |                                          | 813-996-2583 |
| MD | Landover, Sel-Tronics, Inc.              | 301-341-2700 |
| NH | Londonerry, PCS- Power Conversion Sys.   |              |
|    |                                          | 603-434-2371 |
| OR | Portland, Underwood Assocs.              | 503-224-0583 |
| TX | Richardson, BP Sls.                      | 214-234-8438 |
| WA | Seattle, Underwood Assocs.               | 206-870-7475 |
| WA | Vancouver, Underwood Assocs.             | 206-695-2311 |

**MASTECH, INC.**, Lorlin Test Systems, Precision Rd., Danbury, CT 06810, Tel: 203-744-0096, FAX: 203-744-6185; Empl: 42; Sls. Mgr.: John M. Seacord

**MASTER APPLIANCE CORP.**, 2420 18th St., Box 68, Racine, WI 53403, Tel: 414-633-7791, TELEX: 269-505; FSC No.: 83284; Empl: 54; Sls. Mgr.: Don Royer, Natl. Sls. Mgr.; Dist. Mgr.: Scott Radwill, Intl. Sls. Mgr.

## CAL SWITCH

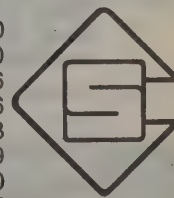
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| [408] | 279-8848 |
| [510] | 452-1009 |
| [916] | 448-6370 |
| [209] | 441-1725 |



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**MASTER BOND**, 154 Hobart St., Hackensack, NJ 07601,  
Tel: 201-343-8983, FAX: 201-343-2132; FSC No.: 59504;  
Empl: 16; Sls. Mgr.: James Brenner

**MASTER CIRCUITS INC.**, 424 Apperson Way North,  
Kokomo, IN 46901, Tel: 317-457-6605, FAX: 317-452-  
3584; Empl: 20; Sls. Mgr.: Felicia Abdon

**MASTER DISTRIBUTORS**, P.O. Box 25662, Los  
Angeles, CA 90025, Tel: 213-452-1229  
..... **A-1250, 2424; B-1375, 1382, 1406, 1416, 1488,**  
..... **1508, 1512, 1521, 1557, 1686, 1757; C-1439, 1626,**  
..... **1542**

**MASTER ELECTRONIC CONTROLS**, P.O. Box  
25905, Los Angeles, CA 90025, Tel: 310-452-1336, TELEX:  
182041 MASTER SNM, FAX: 310-399-8600; Empl: 74;  
Sls. Mgr.: Jamil Nizam; Dist. Mgr.: Belinda Valle  
..... **B-1558-1561**

*Local Sales Offices & Reps*  
CA Los Angeles, Master Dists. .... 310-829-4656  
CA Santa Monica, Master Dists. .... 310-452-1229

*Local Distributors*  
AZ Phoenix, Master Dists. .... 602-267-1111  
CA Los Angeles, Brill Elctms. .... 310-452-8002  
CA Oakland, Brill Elctms. .... 510-834-5888  
CA Oakland, Master Dists. .... 510-835-1500  
CA Santa Monica, Master Dists. .... 310-452-1336

**MASTER MAGNETICS INC., The Magnet Source**,  
607 S. Gilbert St., Castle Rock, CO 80104, Tel: 800-525-  
3536, FAX: 303-688-5303; FSC No.: 5999; Empl: 47; Sls.  
Mgr.: Jennifer Brown; Dist. Mgr.: Ed J. Hocks ... **A-1319**

*Local Sales Offices & Reps*  
CA Placentia, A-L-L Magnetics .... 714-632-1754  
CO Castle Rock, The Magnet Source .... 303-688-3966  
FL Miami, Miami Magnet Co., Inc. .... 305-823-1603

**MATEC INSTRUMENTS, INC.**, 75 South St., Hopkinton,  
MA 01748, Tel: 508-435-9039, FAX: 508-435-5311; Empl:  
55; Sls. Mgr.: Ken Bishop

**MATERIALS RESEARCH CORPORATION**, 560 Rte.  
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359-3454; Empl: 780; Sls. Mgr.: Edward Erny



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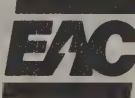
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NY Orangeburg, Materials Rsch. Corp. .... 914-359-4200  
TX Dallas ..... 214-235-9008

**MATH ASSOCS. INC.**, General Microwave Corp., 5500  
New Horizons Blvd., Amityville, NY 11701, Tel: 516-226-  
8950, FAX: 516-226-8966; Sls. Mgr.: Bruce Bernan

**MATHEMATICAL SYSTEMS DESIGN, INC.**, 11835 W.  
Olympic Blvd., Suite 745, Los Angeles, CA 90064, Tel: 310-  
479-7180, FAX: 310-479-0942; Sls. Mgr.: Lorr Kramer

**THE MATHWORKS, INC.**, Cochituate Pl., 24 Prime Park  
Way, Natick, MA 01760, Tel: 508-653-1415, FAX: 508-653-  
2997

**MATRIX CORP.**, 2260 Distributors-Dr., Indianapolis, IN  
46241, Tel: 317-248-2036, FAX: 317-248-8369; Empl: 10  
..... **D-1195**

**MATRIX CORP.**, 1203 New Hope Rd., Raleigh, NC 27610,  
Tel: 919-231-8000, FAX: 919-231-8001; Empl: 65; Sls.  
Mgr.: Sheldon Shapiro

**MATRIX SYSTEMS CORP.**, 5177 N. Douglas Fir Rd.,  
Calabasas, CA 91302, Tel: 818-222-2301, FAX: 818-222-  
2304; FSC No.: 33281; Empl: 47; Sls. Mgr.: Randy Sue  
Rabideau ..... **B-1562-1565**

*Local Sales Offices & Reps*  
AL Huntsville, Reynolds Assoc., Inc. .... 800-255-1965  
AZ Scottsdale, Faser Techn. Sls. .... 602-948-4404  
CA Los Alamitos, Tritex Solutions, Inc. .... 714-236-1190  
CA San Diego, Tritex Solutions, Inc. .... 619-455-1911  
CA San Jose, Tritex Solutions, Inc. .... 408-554-0455  
CO Louisville, Mountain States Reps. .... 303-665-8089  
CT Meriden, Polytek Assocs. .... 800-358-7348  
FL Melbourne, Reynolds Assocs., Inc. .... 800-251-1965  
FL Newport Richey, Reynolds Assocs. .... 800-255-1965  
GA Duluth, Reynolds Assoc., Inc. .... 800-255-1965  
IL Arlington Hgts., Cortel Midwest .... 708-392-4040  
IN Indianapolis, Cortel Midwest .... 317-253-1681  
KS Shawnee Mission, Cortel Midwest .... 913-268-0762  
ME Polytek Assocs. .... 800-358-7348  
MA Ashland, Polytek Assocs. .... 800-358-7348  
MA Falmouth Hgts., RJC Assocs. .... 508-540-8832  
MI Southfield, Cortel Instr. .... 313-358-2505  
MN Wayzata, Cortel Midwest .... 612-476-1551  
MO Manchester, Cortel Midwest .... 314-227-7220  
MT Weston, Inc. .... 800-547-4515  
NH Polytek Assocs. .... 800-358-7348  
NY Polytek Assocs. .... 800-358-7348  
NC Raleigh, Polytek Assocs. .... 800-255-1965  
OH Cleveland, Cortel Instr. .... 216-442-8080  
OH Columbus, Cortel Instr. .... 614-876-8305  
OH Dayton, Cortel Instr. .... 513-426-5310  
OR Portland, Weston, Inc. .... 800-547-4515  
PA Polytek Assocs. .... 800-358-7348  
PA Pittsburgh, Cortel Instr. .... 412-922-5720  
SC Reynolds & Assocs. .... 800-255-1965  
TN Reynolds Assocs., Inc. .... 800-255-1965  
TX Carrollton, Seaton Corp. .... 214-980-9860  
UT Mountain States Reps. .... 303-665-8089  
VT Polytek Assocs. .... 800-358-7348  
VA Fairfax, Schibley Assocs. .... 703-591-3008  
WA Kent, Weston, Inc. .... 800-547-4515  
WI New Berlin, Cortel Midwest .... 414-544-6042  
Can St. Laurent, Que., Electrodesign Ltd. .... 514-331-3202

**MATROX ELECTRONIC SYSTEMS, LTD.**, 1055 St.  
Regis Blvd., Dorval, Que., Canada H9P 2T4, Tel: 514-685-  
2630, TELEX: 05-822798, FAX: 514-685-2853; Empl: 400;  
Sls. Mgr.: Ed Dwyer, VP Sls.



**FAX: 714-960-6492**

**MATSUO ELECTRONICS**, 2134 Main Street, Suite 200,  
Huntington Beach, CA 92648, Tel: 714-969-2491; Empl:  
654; Sls. Mgr.: Ted Wiltse/John Carpenter  
..... **A-1100-1105**

*Local Sales Offices & Reps*  
AL Huntsville, South Tech. Sls. .... 205-880-8200  
CA Los Altos, Recht Assocs. .... 415-964-6231  
CA Mission Viejo, Angle Assocs. .... 714-582-8858  
FL Plantation, Gallagher .... 305-473-2101  
GA Lilburn, South Tech. Sls. .... 404-381-2088  
IL Des Plaines, ESCO Assocs. .... 708-298-5310  
IN Crawfordsville, Ed Mar Rep Assocs. .... 317-364-1871

MD Randallstown, Chesapeake Mktg. .... 301-922-5997  
MA Randolph, Hatch Assocs. .... 617-963-3306  
MI Madison Hgts., D.E.M. Sls. .... 313-583-1500  
MN St. Paul, Proud Inds. .... 612-646-9428  
NJ Medford, Champion Elctm. Sls. .... 609-983-0932  
NM Albuquerque, FP Sls. .... 505-345-5553  
NY Plainview, Neptune Elctms. .... 516-349-1600  
NC Raleigh, South Tech. Sls. .... 919-573-1313  
OH Columbus, Ed Mar Rep Assocs. .... 614-431-5151  
OR Beaverton, Elctm. Sources, Inc. .... 503-627-0838  
TX Plano, RAM Elctms. .... 214-578-5400  
WA Bellevue, Elctm. Sources, Inc. .... 206-451-3500  
Can Scarborough, Ont., Bach-Simpson .... 416-288-9932

*Local Distributors*  
CA Garden Grove, Capacitor Supp. .... 714-638-0510  
CA Garden Grove, National Elctms. .... 714-892-7749  
CA San Jose, Passive Technlg. .... 408-435-5566  
CA Santa Maria, Garrett Instrs. .... 805-922-0594  
CA W. Covina, CSI .... 818-960-4761  
CA Yorba Linda, Corona Elctms. .... 714-283-8185  
FL Boca Raton, NRC Elctms. .... 407-241-8600  
GA Norcross, NRC-Jaro .... 404-729-0411  
GA Norcross, Spectrum Elctms. .... 404-448-1516  
IL Arlington Heights, Mar/Lyn .... 312-364-0444  
IN Indianapolis, Mar Elctms. .... 317-633-6699  
MD Gaithersburg, Axis Elctms. .... 301-840-9640  
MA Billerica, A. W. Mayer Co. .... 617-229-2255  
MA Billerica, Baldwin Comps. .... 617-667-6710  
MA Wilmington, Aved Elctms. .... 617-657-1310  
MI Farmington Hills, Key Elctms. .... 313-489-5455  
MN New Brighton, Parts 1 .... 612-633-8079  
NJ Fairfield, C.H.P.S., Inc. .... 201-882-0997  
NJ Kenilworth, Ventrionics .... 201-272-9262  
NY Buffalo, Summit .... 716-887-2800  
NY Ronkonkoma, Baldwin Comps. .... 516-588-5700  
OH Cleveland, Repco .... 216-248-8900  
PA McKean, Advacom .... 814-476-7774  
PA Norristown, Century Elctm. Comps. .... 215-631-5400  
TN Knoxville, Venture Elctms. Sls. .... 615-544-0723  
TX Dallas, Omni-Pro .... 214-233-0500  
VA Charlottesville, Virginia Elctms. .... 804-296-4184  
Can Willowdale, Ont., Electro Sonic .... 416-494-1666

**MAUELL CORP.**, 31 Old Cabin Hollow Rd., P.O. Box 339,  
Dillsburg, PA 17019-0339, Tel: 717-432-8686, FAX: 717-  
432-8688; Empl: 25; Sls. Mgr.: Frank A. Ulrich; Dist. Mgr.:  
Frank A. Ulrich

**MAUREY INSTRUMENT CORP.**, 4555 W. 60th St.,  
Chicago, IL 60629, Tel: 312-581-4555, FAX: 312-581-  
2576; FSC No.: 03942; Empl: 50; Sls. Mgr.: E. Maurey;  
Dist. Mgr.: Louis Derdzinski ..... **A-2095-2103**

*Local Sales Offices & Reps*  
CT Killingworth, Gallagher Assocs. .... 203-663-2338  
MA Framingham, Gallagher Assocs. .... 617-626-2346  
TX Dallas, THT Sls. Co. .... 214-783-1501

*Local Distributors*  
CA Garden Grove, Allied Elctms. .... 714-554-0731  
CA Santa Clara, Allied Elctms. .... 408-727-1690  
CO Wheatridge, Allied Elctms. .... 303-425-7144  
FL Margate, Allied Elctms. .... 305-973-3070  
LA Lafayette, Ralphs Elctms. Supply .... 800-825-4507  
MA Wilmington, Allied Elctms. .... 617-942-0150  
MI Battle Creek, Great Lakes Elctms. .... 616-963-6282  
MI Grand Rapids, SF Elctm. Supp. .... 616-459-0216  
MI Westland, Allied Elctms. .... 313-595-6565  
MO St. Louis, Allied Elctms. .... 314-878-1229  
NJ Montville, Servo Sys. Co. .... 800-922-1103  
NY Mineola, Allied Elctms. .... 516-248-2360  
NC Raleigh, Allied Elctms. .... 919-821-0415  
OH Akron, Stotts-Friedman .... 216-253-7000  
OH Cincinnati, Stotts-Friedman .... 513-574-7701  
OH Dayton, Stotts-Friedman .... 513-298-5555  
OH Willoughby, Allied Elctms. .... 216-951-0908  
OK Tulsa, Allied Elctms. .... 918-663-7630  
PA Bala Cynwyd, Allied Elctms. .... 215-267-6940  
TN Knoxville, Shields Elctms. .... 615-588-2421  
TX Ft. Worth, Allied Elctms. .... 817-336-5401  
TX Houston, Allied Elctms. .... 713-932-7321  
VA Alexandria, Allied Elctms. .... 703-836-5002  
WA Seattle, Allied Elctms. .... 206-767-5772  
WI Appleton, Appleton Elctms. .... 414-734-5767

**MAURY MICROWAVE CORP.**, 2900 Inland Empire Blvd.,  
Ontario, CA 91764, Tel: 909-987-4715, FAX: 909-987-  
1112; FSC No.: 13047; Empl: 75; Sls. Mgr.: M. A. Maury, Jr.

**MAXELL CORP. OF AMERICA**, 22-08 Rte. 208 S., Fair  
Lawn, NJ 07410, Tel: 201-794-5900, FAX: 201-796-8790;  
Sls. Mgr.: Ian D. Irving

**MAXIM INTEGRATED PRODUCTS**, 120 San Gabriel  
Dr., Sunnyvale, CA 94086, Tel: 408-737-7600, FAX: 408-  
737-7194



**MAX LEVY AUTOGRAPH, INC.**, 220 West Roberts Ave., Philadelphia, PA 19144-4298, Tel: 215-842-3675, FAX: 215-842-3637; FSC No.: 35885; Empl: 20; Sls. Mgr.: Gary Cohen

**MAXMAR CONTROLS INC.**, 99 Castleton St., Pleasantville, NY 10570, Tel: 914-747-3540, FAX: 914-747-3567; Sls. Mgr.: Max Birrer; Dist. Mgr.: Max Birrer

**MAXON PRECISION MOTORS, INC.**, 838 Mitten Rd., Burlingame, CA 94010, Tel: 415-697-9614, FAX: 415-697-2887; Sls. Mgr.: Sam Robinson

**MAXUS ELECTRONIC CORP.**, 2760 29th St, Boulder, CO 80301, Tel: 303-447-1226, FAX: 303-447-1446; Empl: 6; Sls. Mgr.: Cory J. Gates

**MAXWELL LABORATORIES, INC.**, 8888 Balboa Avenue, San Diego, CA 92123-1506, Tel: 619-279-5100, FAX: 619-279-1554; Empl: 600; Sls. Mgr.: Michael M. Plum, V.P. Mktg.

**MBD INTERNATIONAL**, P.O. Box 870577, Dallas, TX 75287-0577, Tel: 214-788-5277, FAX: 214-404-0471; Empl: 5; Sls. Mgr.: Robert McLeod; Dist. Mgr.: Robert McLeod

**MB DYNAMICS INC.**, 25865 Richmond Rd., Cleveland, OH 44146-1483, Tel: 216-292-5850, TELEX: 510-601, FAX: 216-292-5614; Empl: 45; Sls. Mgr.: Ed Peterson

**MCCOY/OVANAIRE/SPECTRUM, A Sub. of Oak Industries**, 100 Watts St., P.O. Box B, Mt. Holly Springs, PA 17065, Tel: 717-486-3411, TWX: 510-650-3548, FAX: 717-486-5920; FSC No.: 00136; Empl: 450

**A•1412-1417**

## Local Sales Offices & Reps

|     |                                          |                                |
|-----|------------------------------------------|--------------------------------|
| AL  | Madison, Arthur, Harris, Assocs.         | 205-461-9896, FAX:205-461-9897 |
| AZ  | Mesa, Sedco Sls.                         | 602-461-9069, FAX:602-461-1695 |
| CA  | Chatsworth, Wes-K/Raltech, Inc.          | 818-700-0933, FAX:818-709-9832 |
| CA  | Goleta, Thorson Co.                      | 805-964-8751, FAX:805-964-8753 |
| CA  | San Diego, Thorson Co.                   | 619-292-8525, FAX:619-292-9052 |
| CA  | San Mateo, Melvin Sls.                   | 415-349-7445, FAX:415-349-6340 |
| CA  | Signal Hill, Thorson Co.                 | 310-595-0361, FAX:310-595-1389 |
| CO  | Grand Function, Krebill Comp. Sls.       | 303-243-8220, FAX:303-243-7939 |
| CO  | Littleton, Advanced Tech Mktg.           | 303-798-4200                   |
| FL  | Longwood, Seprer & Assocs, Inc.          | 407-774-3161, FAX:407-774-2585 |
| FL  | Oviedo, Conley & Assocs.                 | 407-365-3283, FAX:407-365-3727 |
| GA  | Marietta, Arthur, Harris, Assocs.        | 404-565-5506, FAX:404-971-9778 |
| IL  | Glendale Heights, Beta Technl. Sls, Inc. | 312-790-9886                   |
| IL  | Northfield, Feller Assoc.                | 708-446-8065                   |
| IN  | Ft. Wayne, Skyline Sls. & Assocs, Inc.   | 219-489-4992, FAX:219-489-6194 |
| IN  | Kokomo, Skyline Sls. & Assocs, Inc.      | 317-452-6500, FAX:317-452-6006 |
| IA  | Cedar Rapids, Jack L. Tucker & Assoc.    | 319-395-7616, FAX:319-395-7873 |
| KEY | Lexington, Skyline Sls. & Assocs, Inc.   | 606-276-5061, FAX:606-276-5142 |
| MD  | Towson, Dickison Sls.                    | 410-823-0923, FAX:410-321-9664 |
| MA  | Norwood, Naton Assoc.                    | 617-762-3224, FAX:617-769-4849 |
| MN  | Minneapolis, Dunlop Consils.             | 612-557-1076                   |
| MM  | Albuquerque, Sunwest Mktg.               | 505-898-6471                   |
| NY  | East Amherst, Foster & Wager, Inc.       | 716-688-7864                   |
| NY  | Endicott, Foster & Wager, Inc.           | 607-748-5963, FAX:607-748-5965 |
| NY  | Liverpool, Foster & Wager, Inc.          | 315-457-7954, FAX:315-457-7076 |
| NY  | New Rochelle, Ascor Elctms.              | 914-235-8838, FAX:914-235-2690 |
| NY  | Rochester, Foster & Wager, Inc.          | 716-385-7744, FAX:716-586-1359 |
| NC  | Greensboro, Arthur, Harris, Assocs.      | 919-275-3030, FAX:919-275-3877 |
| NC  | Matthews, Arthur, Harris, Assocs.        | 704-845-1085, FAX:704-845-1086 |
| OR  | Tigard, Eltech Incorp.                   | 503-684-3458, FAX:503-684-6043 |
| PA  | Ft. Washington, Beta Sls.                | 215-643-6650, FAX:215-643-6651 |
| TX  | Austin, R. F. Kimball Co.                | 512-443-5284                   |
| TX  | Richardson, R. F. Kimball Co.            | 214-231-3447, FAX:214-231-8314 |

|     |                                             |                                |
|-----|---------------------------------------------|--------------------------------|
| VA  | Charlottesville, PDQ Sls.                   | 804-979-7085, FAX:804-979-2155 |
| WA  | Bellevue, Eltech Incorp.                    | 206-643-4330, FAX:206-643-0525 |
| EXP | NJ, Oradell, Sylvan Ginsbury Ltd.           | 201-261-3200                   |
| EXP | Oradell, NJ, Sylvan Ginsbury                | 201-261-3200, FAX:201-261-2729 |
| Can | Brampton, Ont., Elctms. Sls. Prof. (ESP)    | 416-458-1103, FAX:416-458-4469 |
| Can | Chateaugay, Que., Elctms. Sls. Prof. (ESP)  | 514-227-2639, FAX:514-227-1518 |
| Can | Ottawa, Ont., Elctms. Sls. Prof. (ESP)      | 613-567-8547, FAX:613-567-8548 |
| Can | Scarborough, Ont., Elctms. Sls. Prof. (ESP) | 416-321-9693, FAX:416-321-9794 |

**MCE SEMICONDUCTOR, INC.**, 1111 Fairfield Dr, West Palm Beach, FL 33407, Tel: 407-845-2837, TELEX: 44105 (MCE UI), FAX: 407-863-8275; Empl: 58; Sls. Mgr.: Thomas Munn

**MCFADDEN SYSTEMS, INC.**, 11835 E. Smith Ave., Santa Fe Springs, CA 90670, Tel: 310-948-4414, FAX: 310-948-1291; FSC No.: 25750; Empl: 30

**MCG ELCTRNS.**, 12 Burt Dr., Deer Park, NY 11729, Tel: 516-586-5125, FAX: 516-586-5120; FSC No.: 29779; Empl: 45; Sls. Mgr.: Don Worden **B•1368**

## Local Sales Offices & Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| CA | Jamul, Power Partners            | 619-669-0354 |
| CA | Los Angeles, Power Partners      | 310-215-0800 |
| CA | San Bruno, Gateway Elctrl. Sls.  | 415-875-1600 |
| CA | Ventura, Power Partners          | 805-659-5356 |
| CO | Denver, Computer Power & Air     | 303-534-4235 |
| FL | Vero Bch., E.J. Ruth Assoc.      | 407-234-5460 |
| IL | Crystal Lake, Carzoli Engr. Sls. | 815-459-4397 |
| IN | Fort Wayne, Progressive Controls | 219-482-1409 |
| LA | New Orleans, Indcom Sys.         | 504-486-4455 |
| MA | Woburn, EMS                      | 617-229-6686 |
| MN | St. Louis Pk., Electro Midwest   | 612-922-7017 |
| NJ | Oakland, Midlantic Mktg.         | 201-848-1144 |
| OK | Oklahoma City, Circa Inc.        | 405-236-2606 |
| OK | Tulsa, Allan & Assoc.            | 918-451-2962 |
| TN | Ramona, Powerforce Sys.          | 615-681-6255 |
| TX | Houston, Koenig & Assoc.         | 713-453-8844 |
| TX | Richardson, Devices, Inc.        | 214-250-2093 |
| UT | Salt Lake City, S&T Mktg.        | 801-268-8183 |
| WV | Huntington, Seco, Inc.           | 304-522-9732 |

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**MCGILL ELECTRICAL PRODUCT GROUP, 1002 North Campbell Street, Valparaiso, IN 46383, Tel: 219-465-2200; Empl: 295 **B•1767-1769****

## Local Sales Offices & Reps

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AL  | Huntsville, James E. Heusser Ag.        | 205-836-3896 |
| CA  | Cotati, Joseph Foster                   | 707-792-4392 |
| CA  | Downey, Sierra Indl. Eng. Co.           | 310-803-6330 |
| CO  | Northglenn, Dan Ryall                   | 303-452-8185 |
| CT  | Bristol, Eric Peterson                  | 203-297-7464 |
| IN  | Bremen, Jan Richard Stahly              | 219-282-3592 |
| IA  | Des Moines, Jerry Bunch Electrical Sls. | 515-287-7057 |
| MI  | Chelsea, Rick Mayday                    | 313-995-2965 |
| MN  | Eagan, Stan Lock                        | 612-890-9347 |
| MS  | Brandon, Service Electrical Sls.        | 601-992-9122 |
| MO  | St. Peters, Neil Klocke                 | 314-947-2259 |
| NJ  | Plainfield, Don MacGillivray            | 908-753-4890 |
| NM  | Albuquerque, Paul Atkinson              | 505-292-1222 |
| NY  | Rochester, Integra Sls., Inc.           | 716-328-2110 |
| OH  | Euclid, Joe Ciulla                      | 216-574-7164 |
| PA  | Coatesville, Emmett Ferra               | 215-380-8289 |
| SC  | Columbia, Harold Heaton                 | 803-733-0941 |
| TN  | Nashville, Richard Hardy                | 615-748-1150 |
| TX  | Dallas, Raley Sls. Co.                  | 214-368-1683 |
| UT  | Salt Lake City, Kev Paul                | 801-484-9941 |
| VA  | Richmond, Wynn Meredith                 | 804-275-7970 |
| WI  | Kenosha, Wally Coats                    | 312-299-2354 |
| Can | Mississauga, Ont., Marr Elec. Ltd.      | 416-277-9481 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Birmingham, Control Comps, Inc.     | 205-942-3760 |
| AZ | Tempe, Locomp                       | 602-730-1633 |
| CA | Gardena, California Switch & Signal | 213-770-2330 |
| CA | Tustin, Western Switches            | 714-259-8144 |
| CT | Wallingford, Cronin Elctms.         | 203-624-3134 |
| FL | Pompano Beach, Peerless Radio Corp. | 305-973-4141 |
| FL | Tampa, Raybro Elec. Supplies, Inc.  | 813-228-8571 |

|    |                                 |              |
|----|---------------------------------|--------------|
| IL | Wheeling, Hawk Elctms.          | 708-459-4050 |
| IL | Wood Dale, Hawk Elctms.         | 708-595-8500 |
| IN | Indianapolis, Bell Inds.        | 317-875-8200 |
| MA | Needham, Cronin Elctms.         | 617-449-5000 |
| MI | Livonia, RS Elctms.             | 313-525-1155 |
| MI | St. Clair Shores, SPEMCO        | 313-771-2700 |
| MN | Minneapolis, Bergquist Co.      | 612-835-2322 |
| MO | Maryland Heights, Olive Elctms. | 314-997-7709 |
| NJ | Oakland, Relay Specialties Inc. | 201-337-1000 |
| NY | Rochester, Simcona Elctms.      | 716-328-3230 |
| NY | Woodside, Switches Unltd., Inc. | 718-478-5000 |
| NC | Charlotte, Southeastern Elctms. | 704-523-1122 |
| OH | Maumee, RS Elctms.              | 419-893-0721 |
| OR | Portland, Dunn Elctms.          | 503-285-0214 |
| PA | Erie, Seaway Elec. Supp.        | 814-455-1304 |
| WA | Renton, Dunn Elctms.            | 206-271-6213 |
| WI | Milwaukee, Marsh Elctms.        | 414-475-6000 |

**MCGUIRK ELECTRONICS CO. INC.**, 212 So. Main St. P. O. Box 853, Middleton, MA 01949, Tel: 617-933-3500; FSC No.: 55902; Empl: 10; Sls. Mgr.: R. O'Neill



**FAX: 516-587-0624**

**MCI TRANSFORMER CORPORATION**, 411 Manhattan Ave., Babylon, NY 11704, Tel: 516-587-0510; Empl: 50; Sls. Mgr.: Timothy J. Williams **A•2392-2403**

## Local Sales Offices & Reps

|    |                                       |              |
|----|---------------------------------------|--------------|
| MA | Orange, MCI Transformer               | 508-544-8272 |
| NH | Nashua, Key Sls. of New England, Inc. | 603-888-8742 |

# MCKENZIE

TECHNOLOGY

**FAX: 510-651-1020**

**MCKENZIE TECHNOLOGY**, 910 Page Ave., Fremont, CA 94538, Tel: 510-651-2700; FSC No.: 5938; Empl: 175; Sls. Mgr.: Karl Trautman; Dist. Mgr.: Vicky Woodopiano **C•1415**

## Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Cartwright & Bean, Inc. | 205-830-1540 |
| AZ | Scottsdale, Thom Luke Sls.          | 602-451-5400 |
| CA | Pleasanton (N), Moulthrop Sls.      | 510-463-0450 |
| CA | San Marcos, Falcon                  | 619-591-0504 |
| CO | Aurora, Interconnect Sls.           | 303-751-8777 |
| CT | Waterbury, Compak, Inc.             | 203-753-6431 |
| FL | Apopka, Cartwright & Bean, Inc.     | 407-889-9100 |
| FL | Deerfield, Cartwright & Bean, Inc.  | 305-429-3400 |
| GA | Norcross, Cartwright & Bean, Inc.   | 404-368-0160 |
| IL | Woodbridge, Gotten Assocs, Inc.     | 708-985-5100 |
| IN | Fishers, Connect 21                 | 317-578-2121 |
| MD | Ellicott City, Tech. Sls.           | 410-461-2400 |
| MA | Hudson, Compak Inc.                 | 508-568-0331 |
| MI | Brighton, Elctm. Sources            | 313-227-3598 |
| MN | Edina, GP Sls. Inc.                 | 612-831-2362 |
| NJ | Medford, The McCoy Grp.             | 609-953-0770 |

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1026 6th. AVENUE  
OAKLAND, CA 94606



|     |                                    |              |
|-----|------------------------------------|--------------|
| NY  | Bellmore, Compar New York, Inc.    | 516-227-7300 |
| NY  | Manlius, Lamtec                    | 315-682-4780 |
| NC  | Charlotte, Cartwright & Bean, Inc. | 704-536-0303 |
| NC  | Raleigh, Cartwright & Bean, Inc.   | 919-876-4130 |
| OH  | Loveland, Centruy Tech. Sls.       | 513-677-5088 |
| OR  | Beaverton, Westmark Elctms.        | 503-641-8780 |
| TN  | Knoxville, Cartwright & Bean, Inc. | 615-693-7450 |
| TX  | Dallas, JYSO                       | 214-349-1650 |
| WA  | Bellevue, Westmark Elctms.         | 206-454-1944 |
| Can | Ontario, Cana Rep Grp.             | 613-692-4682 |

## Local Distributors

|    |                                        |              |
|----|----------------------------------------|--------------|
| AZ | Phoenix, Force Elctms.                 | 602-437-1060 |
| AZ | Tempe, D.C. Elctms.                    | 602-438-1234 |
| AZ | Tempe, TTI                             | 602-431-1191 |
| CA | El Segundo, Force Elctms.              | 213-772-1324 |
| CA | Fountain Valley, Comps Ctr., Inc.      | 714-979-0433 |
| CA | Milpitas, R&D Elctms.                  | 408-262-5300 |
| CA | Milpitas, R&D Elctm. Parts             | 408-262-7144 |
| CA | Milpitas, TTI                          | 408-946-5577 |
| CA | Mission Hills, TTI                     | 818-891-8885 |
| CA | San Diego, Force Elctms.               | 619-569-9661 |
| CA | San Diego, Kent Elctms.                | 619-453-7133 |
| CA | San Diego, TTI                         | 619-748-2025 |
| CA | San Jose, D.C. Elctms.                 | 408-453-2400 |
| CA | Santa Ana, TTI                         | 714-641-9393 |
| CA | Sunnyvale, Abacus Elctms.              | 408-732-2000 |
| CA | Torrance, Kent Elctms.                 | 714-773-0781 |
| CA | Tustin, D.C. Elctms.                   | 714-259-9066 |
| CO | Denver, Alliance Elctms.               | 303-433-1648 |
| CO | Englewood, Kent Elctms.                | 303-762-0670 |
| CT | South Bay, Heiland Elctms.             | 203-262-1700 |
| CT | Wallingford, TTI                       | 203-284-7474 |
| FL | Largo, Electronic Precepts of FL, Inc. | 813-544-3636 |
| FL | Largo, Kent Elctms.                    | 813-545-0057 |
| FL | Longwood, RM Elctms.                   | 407-767-8005 |
| FL | Orlando, TTI                           | 407-859-1000 |
| GA | Norcross, TTI                          | 404-662-0911 |
| IL | Elk Grove Vlg, Kent Elctms.            | 708-529-9977 |
| IL | Schaumburg, TTI                        | 708-884-6500 |
| IN | Indianapolis, RM Elctms.               | 317-843-9403 |
| IA | Cedar Rapids, Kent Elctms.             | 319-373-0525 |
| MD | Columbia, Kent Elctms.                 | 301-720-6000 |
| MD | Columbia, TTI                          | 410-995-1331 |
| MA | Chelmsford, Kent Elctms.               | 508-250-9666 |
| MA | Tewksbury, TTI                         | 508-857-2000 |
| MA | Wilmington, Heiland Elctms.            | 800-800-1666 |
| MI | Grand Rapids, RM Elctms.               | 616-531-9300 |
| MN | Duluth, Parts 1                        | 218-624-0651 |
| MN | Minnetonka, TTI                        | 612-933-8555 |
| MN | Roseville, Parts 1                     | 612-633-8079 |
| MN | St. Paul, Kent Elctms.                 | 612-642-2828 |
| MN | Stillwater, Elctm. Depot Supp. Co.     | 612-439-9409 |
| MO | Hazelwood, Kent Elctms.                | 314-895-1515 |
| MO | Independence, Kent Elctms.             | 816-254-3410 |
| NH | Atkinson, Astrum Elctms.               | 603-898-3399 |
| NJ | Mt. Laurel, TTI                        | 609-234-6400 |
| NY | Rochester, Cam RPC Elctms.             | 800-827-2650 |
| NY | Ronkonoma, TTI                         | 516-737-2000 |
| NC | Raleigh, Century Elctms.               | 919-596-2220 |
| OH | Dayton, TTI                            | 513-898-8330 |
| OH | Independence, TTI                      | 216-328-9755 |
| OR | Beaverton, Comp. Resources, Inc.       | 503-641-8488 |
| OR | Beaverton, Kent Elctms.                | 503-626-8300 |
| PA | Pittsburgh, CAM RPC Elctms.            | 412-782-3770 |
| TX | Austin, Kent Elctms.                   | 512-834-1900 |
| TX | Farmers Branch, Force Elctms.          | 214-247-9955 |
| TX | Ft. Worth, Allied Elctms.              | 817-595-3500 |
| TX | Ft. Worth, TTI                         | 817-834-2202 |
| TX | Houston, Force Elctms.                 | 713-561-8644 |
| TX | Houston, Kent Elctms.                  | 713-780-7770 |
| TX | Houston, TTI                           | 713-879-5800 |
| TX | Richardson, Kent                       | 214-669-2600 |
| WA | Redmond, TTI                           | 206-882-0291 |
| WA | Kent, Comp. Resources, Inc.            | 206-340-1646 |

MCL, INC., 501 S. Woodcreek Rd., Bolingbrook, IL 60440-4999, Tel: 708-759-9500, TWX: 910-683-1899, FAX: 708-759-5018 FSC No.: 16469; Empl: 127; Sls. Mgr.: Ron Adamson



FAX: 609-799-1081

MCLEAN ENGINEERING, Zero Corporation, 70 Washington Rd., Princeton Junction, NJ 08550, Tel: 609-799-0100, TWX: 510-685-2543; FSC No.: 03522; Empl: 118; Sls. Mgr.: Craig A. Reed; Dist. Mgr.: Craig A. Reed C\*1606-1607

## Local Sales Offices &amp; Reps

|     |                                 |              |
|-----|---------------------------------|--------------|
| AL  | Huntsville, Raycom              | 205-895-9264 |
| AZ  | Fountain Hills, Halbar Assocs.  | 602-837-2464 |
| CA  | San Mateo, Halbar Assocs.       | 415-349-4700 |
| CA  | Van Nuys, Halbar Assocs.        | 818-906-3941 |
| CO  | Boulder, Comps. Prods. Sls.     | 303-530-2800 |
| FL  | Orlando, Raycom                 | 407-859-5504 |
| IL  | Elmhurst, Scott Assocs.         | 708-279-5681 |
| MD  | Rockville, Marktron             | 301-251-8990 |
| MA  | Chelmsford, JEBCO               | 508-256-5800 |
| MI  | Farmington, Marlow Assocs.      | 313-478-2240 |
| MN  | Minneapolis, Scott Elctm. Sls.  | 612-929-2985 |
| MO  | Grandview, Harris-Hanson        | 816-763-6200 |
| MO  | St. Louis, Harris-Hanson        | 314-432-3611 |
| NJ  | Lebanon, Sylvester Sls. Assocs. | 201-735-2488 |
| NM  | Albuquerque, S & S Technlgs.    | 505-298-7177 |
| NY  | Rochester, Talty Assocs.        | 716-323-1210 |
| NC  | Raleigh, Raycom                 | 919-266-9827 |
| OH  | Cleveland, Marlow Assoc.        | 216-831-8232 |
| OH  | Dayton, Marlow Assoc.           | 513-274-9666 |
| OR  | Tigard, Halbar-RTS              | 503-624-5741 |
| PA  | Allison Park, Marlow Assoc.     | 412-487-0664 |
| PA  | Huntingdon Valley, Inacker Sls. | 215-947-5660 |
| TX  | Dallas, REM-AIR                 | 214-234-1069 |
| WA  | Redmond, Halbar-RTS             | 206-882-0990 |
| Can | Guelph, Ont., Hammond Mfg. Co.  | 519-822-2960 |

## Local Distributors

|     |                                       |              |
|-----|---------------------------------------|--------------|
| FL  | FL Lauderdale, Component Distrs.      | 305-971-4950 |
| GA  | Norcross, Component Distrs.           | 404-441-3320 |
| MI  | Ann Arbor, Wedemeyer Elctm. Supp. Co. | 313-665-8611 |
| NC  | Raleigh, Component Distrs.            | 919-834-9465 |
| TX  | Dallas, Component Distrs.             | 214-644-0373 |
| Can | Guelph, Ontario, Hammond Mfg. Co.     | 519-822-2960 |



McCLEAN MIDWEST  
SUBSIDIARY OF ZERO CORPORATION

FAX: 612-569-0533

MCLEAN MIDWEST, Sub. of Zero Corporation, 4000 83rd Ave. N., Brooklyn Pk., MN 55443, Tel: 612-561-9400; Sls. Mgr.: J. Buyse; Dist. Mgr.: D. Walker, Distr. Sls. Dir. C\*1608-1609

## Local Sales Offices &amp; Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AZ | Tempe, Border States Tech. Assocs. Inc. | 602-839-0248 |
| CA | Laguna Hills, Western Automation        | 714-859-6988 |
| CA | Oakland, Powermatic Assocs.             | 510-635-6825 |
| CO | Boulder, Comp. Prod. Sls. Co.           | 303-530-2800 |
| FL | Winter Pk., Southland Comps. Inc.       | 407-629-5550 |
| GA | Norcross, F & J Squared Assocs.         | 404-368-9191 |
| IL | Elmhurst, Scott Assocs., Inc.           | 708-279-5681 |
| MD | Rockville, Marktron                     | 301-251-8990 |
| MA | Chelmsford, John E. Boeing Co.          | 508-256-5800 |
| MN | Sterling Hgts., Alliance Sls. Co.       | 313-726-8670 |
| MN | Minneapolis, Scott Elctm. Sls.          | 612-929-2985 |
| MO | St. Louis, Harris-Hanson Co.            | 314-432-3611 |
| NJ | Totowa, R.O.I. Sls. Co.                 | 201-812-9606 |
| NY | Endwell, Reagan/Compar, Inc.            | 607-754-2171 |
| NC | Charlotte, F & J Squared Assocs.        | 803-548-2133 |
| OH | Cleveland, Marlow Assocs.               | 216-831-8232 |
| PA | Huntingdon Valley, Inacker Sls. Inc.    | 215-947-5660 |
| PA | Pittsburgh, Marlow Assocs., Inc.        | 412-487-0664 |
| TX | Dallas, The Power Connection            | 214-401-3490 |
| WA | Redmond, HALBAR-RTS, Inc.               | 206-882-0990 |

MCSI, 2598-G Fortune Way, Vista, CA 92083, Tel: 619-598-2177, FAX: 619-598-2450; Empl: 25; Sls. Mgr.: Jim Edwards

## Local Sales Offices &amp; Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Laguna Hills, Computech Assocs.         | 714-837-8421 |
| CA | Sunnyvale, Qualtech Assocs.             | 408-732-4800 |
| CT | Orange, Isdale Assocs.                  | 203-387-2704 |
| CA | Duluth, Dixie Tech. Mktg.               | 404-381-5592 |
| IL | Arlington Heights, Coombs Assocs., Inc. | 708-439-9892 |

3M AUDIO AND VIDEO MARKETS DIVISION, 223-5N-01, St. Paul, MN 55144-1000, Tel: 612-733-7644, FAX: 612-737-5583; Empl: 38,351

In any city, 1-800-752-0732 In area code 703, Call 1-800-831-8726

3M DYNATEL SYSTEMS DIVISION, See 3M Telecom Markets Division



FAX: 512-984-2211

3M ELECTRICAL SPECIALTIES DIVISION, 6801 River Place Blvd., Bldg. 130-3N-56, Austin, TX 78726-9000, Tel: 800-328-1368; Sls. Mgr.: Mike Martin C\*1667; D\*2311

## Local Sales Offices &amp; Reps

|    |              |              |
|----|--------------|--------------|
| CA | Los Angeles  | 213-726-6563 |
| GA | Atlanta      | 404-447-7000 |
| MN | St. Paul     | 612-736-3269 |
| PA | Philadelphia | 215-638-6300 |

3M PHOTODYNE PRODUCTS, See 3M Telecom Markets Division

3M-ELECTRONIC PRODUCTS DIVISION, 6801

River Place Blvd., Austin, TX 78726, Tel: 1-800-225-5373 Sls. & Prod. Info, TELEX: 29-7023, FAX: 512-984-6972; Sls. Mgr.: Joe Bruzzzone C\*1667; D\*2311

## Local Sales Offices &amp; Reps

|    |                                          |              |
|----|------------------------------------------|--------------|
| CA | Campbell, Olsheski & Assoc.              | 408-378-6003 |
| CA | Danville, Olsheski & Assoc.              | 415-820-9144 |
| CA | Valencia, Cessing Assocs.                | 805-295-0225 |
| CO | Wheatridge, Cluff & Assoc.               | 303-425-6604 |
| CT | Cheshire, The Macinnis Co.               | 203-372-3797 |
| FL | Apopka, Cartwright & Bean, Inc.          | 407-889-2168 |
| FL | Deerfield Beach, Cartwright & Bean, Inc. | 305-429-3400 |

|     |                                      |              |
|-----|--------------------------------------|--------------|
| GA  | Atlanta, Wallace Elctm. Sls.         | 800-334-3518 |
| IL  | Lombard, RMP/McBride Corp.           | 312-932-9090 |
| IN  | Indianapolis, M & L Elctm. Sls.      | 317-359-4742 |
| IA  | Cedar Rapids, T. Dowell & Assoc.     | 319-364-3880 |
| KS  | Overland Park, T. Dowell & Assoc.    | 913-599-1100 |
| LA  | Sidell, Wallace Elctm. Sls.          | 504-643-4751 |
| MD  | Lisbon, S.K. MacDonald, Inc.         | 301-442-1590 |
| MA  | Norwood, The Macinnis Co.            | 617-762-8090 |
| MI  | Warren, Burcaw Co.                   | 313-573-6048 |
| MI  | Wyoming, Burcaw Co.                  | 313-573-4605 |
| MN  | Edina, Reastronics, Inc.             | 612-941-9135 |
| MO  | St. Louis, T. Dowell & Assoc.        | 314-849-4334 |
| NJ  | Cherry Hill, S.K. MacDonald, Inc.    | 609-482-2666 |
| NY  | Hauppauge, Aurora-Schmitt Assoc.     | 315-464-1572 |
| NY  | Syracuse, T-Squared Elctms., Co.     | 315-463-8592 |
| NY  | Victor, T-Squared Elctms. Co.        | 716-924-9101 |
| NC  | Kernersville, Wallace Elctm. Sls.    | 919-996-2742 |
| OH  | Beachwood, Elctms. Salemasters       | 216-831-9555 |
| OR  | Beaverton, Pacific Mktg. Specialists | 503-641-9373 |
| PA  | Monroeville, S.K. MacDonald, Inc.    | 412-373-1723 |
| TN  | Tullahoma, Wallace Elctm. Sls.       | 800-334-3518 |
| TX  | Dallas, Elcom Mktg.                  | 214-241-2166 |
| TX  | Houston, Elcom Mktg.                 | 713-350-8064 |
| WA  | Redmond, Pacific Mktg. Specialists   | 206-882-3144 |
| Can | London, Ont., David Allen            |              |

## Local Distributors

|    |                                        |              |
|----|----------------------------------------|--------------|
| AL | Huntsville, Hall-Mark                  | 205-837-8700 |
| AL | Huntsville, Powell Elctms.             | 205-539-2731 |
| AZ | Phoenix, Arizona Comps. Co.            | 602-269-5655 |
| AZ | Phoenix, Hall-Mark                     | 602-437-1200 |
| AZ | Tempe, Acacia/Deanco, Inc.             | 602-894-2874 |
|    |                                        | 602-882-9054 |
| AZ | Tempe, Shelley-Ragon, Inc.             | 602-894-2058 |
| CA | Chatsworth, Hall-Mark                  | 818-773-4500 |
| CA | Chatsworth, Shelley-Ragon, Inc.        | 818-998-3333 |
| CA | Costa Mesa, Powell Elctms.             | 714-754-1717 |
| CA | Fremont, Acacia/Deanco, Inc.           | 415-623-7500 |
| CA | Garden Grove, Richey/Impact Elctms.    |              |
|    |                                        | 714-895-0060 |
| CA | Irvine, Acacia/Deanco, Inc.            | 714-660-0834 |
|    |                                        | 213-971-2428 |
| CA | Rocklin, Hall-Mark                     | 916-624-9718 |
| CA | San Diego, Acacia/Deanco, Inc.         | 619-565-4365 |
| CA | San Diego, Hall-Mark                   | 619-268-1201 |
| CA | San Diego, Richey/Impact Elctms., Inc. |              |
|    |                                        | 619-271-4511 |
| CA | San Diego, Shelley-Ragon, Inc.         | 619-453-7133 |
| CA | San Jose, Hall-Mark                    | 408-432-0900 |
| CA | San Jose, Powell Elctms., Inc.         | 408-943-9020 |
| CA | San Jose, Richey/Impact Elctms., Inc.  |              |
|    |                                        | 408-432-7100 |

|    |                                     |                            |
|----|-------------------------------------|----------------------------|
| CA | San Jose, Shelley/Ragon             | 408-432-0600               |
| CA | Santa Clara, DC Elctm. Supp.        | 408-980-1199               |
| CA | Torrance, Kent Elctms.              | 213-320-2700               |
| CA | Tustin, DC Elctms.                  | 714-259-9066               |
| CA | Tustin, Hall-Mark                   | 714-669-4700               |
| CO | Denver, CSID/Integrated Fastr. Inc. | 303-292-9594               |
| CO | Englewood, Hall-Mark                | 303-790-1662, 303-790-4991 |
| CO | Englewood, Shelley-Ragon, Inc.      | 303-762-0670               |
| CO | Englewood, Shelley/Ragon            | 303-762-0670               |



|    |                                       |              |
|----|---------------------------------------|--------------|
| CT | Cheshire, Hall-Mark                   | 203-271-1704 |
| CT | East Haven, Jv Elctms                 | 203-469-2321 |
| CT | Yalesville, Schaal Assocs, Inc.       | 203-269-3779 |
| FL | Casselberry, Hall-Mark                | 407-830-5855 |
| FL | Ft. Lauderdale, Powell Elctms         | 305-484-8377 |
| FL | Largo, Hall-Mark                      | 813-541-7440 |
| FL | Pompano Beach, Hall-Mark              | 305-971-9280 |
| FL | Tampa, Shelley-Ragon, Inc.            | 813-623-6560 |
| FL | Winter Park, Deanco                   | 305-671-5100 |
| GA | Marietta, Deanco                      | 404-429-0126 |
| GA | Norcross, Hall-Mark                   | 404-447-8000 |
| IL | Bensenville, Magnuson Elctms          | 312-595-7575 |
| IL | Wood Dale, Hall-Mark                  | 312-860-3800 |
| IL | Wood Dale, NEP Elctms, Inc.           | 312-595-8500 |
| IN | Ft. Wayne, Bell Inds, Inc.            | 219-423-3422 |
| IN | Indianapolis, Bell Inds, Inc.         | 317-875-8200 |
| IN | Indianapolis, Hall-Mark               | 800-622-4814 |
| IN | Indianapolis, Magnuson Elctms, Inc.   | 317-872-8875 |
| IN | Cedar Rapids, Shelley-Ragon, Inc.     | 317-247-5108 |
| KS | Lenexa, Hall-Mark                     | 319-373-0525 |
| MD | Annapolis Jct, Powell Elctms, Inc.    | 913-888-4747 |
| MD | Columbia, Aztech Elctms               | 301-880-3255 |
| MD | Columbia, Hall-Mark                   | 301-953-3435 |
| MD | Columbia, Aztech Elctms               | 301-995-6800 |
| MD | Columbia, Hall-Mark                   | 800-777-5977 |
| MD | Gaithersburg, Deanco                  | 301-998-9800 |
| MA | Billerica, Hall-Mark                  | 301-948-5444 |
| MA | Burlington, Schaal Assocs./Deanco     | 508-667-0902 |
| MA | Canton, Richey/Impact Elctms          | 617-272-1506 |
| MA | Westboro, Powell Elctms               | 617-821-1500 |
| MI | Grand Rapids, RM Elctms               | 508-366-6100 |
| MI | Livonia, Hall-Mark                    | 516-531-9300 |
| MI | Southfield, Michigan Lectrols         | 313-462-1205 |
| MI | Eden Prairie, Hall-Mark               | 313-353-1350 |
| MI | St. Paul, Shelley/Ragon Elctms        | 612-941-2600 |
| MI | Earth City, Hall-Mark                 | 612-642-2828 |
| MO | Hazelwood, Shelley-Ragon, Inc.        | 314-291-5350 |
| MO | Independence, Shelley/Ragon Inc.      | 314-895-1515 |
| MO | St. Charles, Lectronix, Inc.          | 816-254-3410 |
| MO | St. Charles, Lectronix, Inc.          | 314-946-6424 |
| NJ | Englewood, Powell Elctms              | 800-325-3348 |
| NJ | Fairfield, Deanco                     | 201-894-0800 |
| NJ | Parsippany, Hall-Mark                 | 201-575-7960 |
| NJ | Teterboro, EAC                        | 201-515-4475 |
| NJ | Mt. Laurel, Hall-Mark                 | 201-772-6400 |
| NY | Fairport, Hall-Mark                   | 201-288-4477 |
| NY | Farmingdale, Addem Distrs.            | 609-235-1900 |
| NY | Hauapauge, Schaal Assocs, Inc.        | 716-425-3300 |
| NY | Ithaca, Deanco                        | 516-752-9303 |
| NY | Medford, Shelley-Ragon, Inc.          | 516-434-7100 |
| NY | Ronkonkoma, Hall-Mark                 | 607-257-4444 |
| NC | Cary, Powell Elctms                   | 516-447-2000 |
| NC | Charlotte, Elctms. Mktg. Corp.        | 516-737-0600 |
| NC | Raleigh, Deanco, Inc.                 | 919-467-1212 |
| NC | Raleigh, Hall-Mark                    | 704-394-6195 |
| NC | Raleigh, Hall-Mark                    | 919-851-2065 |
| OH | Columbus, Elctms. Mktg. Corp.         | 919-872-0712 |
| OH | Dayton, Elctms. Mktg. Corp.           | 614-299-4161 |
| OH | Dayton, Elctms. Mktg. Corp.           | 513-439-4711 |
| OH | Highland Heights, Elctms. Mktg. Corp. | 513-298-5555 |
| OH | Solon, Hall-Mark                      | 216-442-3441 |
| OH | Worthington, Hall-Mark                | 216-349-4632 |
| OK | Tulsa, Hall-Mark                      | 614-888-3313 |
| OK | Tulsa, Norvell Elctms                 | 918-254-6110 |
| OR | Beaverton, Acacia/Deanco, Inc.        | 918-663-1247 |
| OR | Beaverton, Shelley/Ragon              | 503-646-3377 |
| OR | Tualatin, Moore Elctms, Inc.          | 503-641-1691 |
| TX | Houston, Hall-Mark                    | 503-692-5333 |
| PA | Philadelphia, Powell Elctms           | 713-781-6100 |
| TX | Richardson, Kent Elctms               | 215-365-1900 |
| TX | Austin, Hall-Mark                     | 214-669-2600 |
| TX | Austin, Kent Elctms                   | 512-258-8948 |
| TX | Austin, Norvell Elctms, Inc.          | 512-837-5555 |
| TX | Dallas, Hall-Mark                     | 214-553-4300 |
| TX | Dallas, Norvell Elctms                | 214-233-0020 |
| TX | El Paso, ERA Elctms                   | 915-855-3600 |
| TX | Houston, Kent Elctms                  | 713-780-7770 |
| TX | Houston, Norvell Elctms               | 713-777-1666 |
| TX | Plano, Tactic Elctms                  | 214-422-0777 |
| UT | W. Valley City, Hall-Mark             | 801-972-1008 |
| WA | Redmond, Acacia/Deanco, Inc.          | 206-881-5566 |
| WA | Redmond, Shelley/Ragon Elctms         | 206-883-2220 |
| WA | Seattle, Hall-Mark                    | 206-547-0415 |
| WA | Tukwila, Carlyle Inc.                 | 206-251-0700 |
| WI | Milwaukee, Elctm. Expeditors, Inc.    | 414-228-8100 |
| WI | New Berlin, Hall-Mark                 | 414-797-7844 |

3M PRIVATE NETWORK PRODUCTS, 3M, 6801 River Place Blvd., Austin, TX 78726, Tel: 512-984-3400, 800-426-8626, FAX: 512-984-6628; Empl: 50; Sls. Mgr: R.C. Ware

3M TELECOM MARKETS DIVISION, 6801 River Place, Austin, TX 78726, Tel: 512-984-3400, 800-426-8626, FAX: 512-984-3408; Sls. Mgr: W.E. Metzler

MDF PRODUCTS INC., 7 Johnson Dr., Danbury, CT 06811, Tel: 203-743-3579, TELEX: 499-8051, FAX: 203-744-2704; FSC No.: 60628

MDM, INC., 9601 Irondale Ave., Chatsworth, CA 91311, Tel: 818-700-8400, FAX: 818-700-1938; FSC No.: 60994; Empl: 150; Sls. Mgr: Steven J. LaLonde

MDS CALIBRATION LAB. INC., 437-H Mary Esther Cutoff, Ft. Walton Beach, FL 32548, Tel: 904-664-1234, FAX: 904-664-6789; Sls. Mgr: Gerry Doiron

MEA DIV., See Mechanized Elctm. Assembly Div., Universal Instrs. Corp.

MEASUREMENTS GROUP, INC., Box 27777, Raleigh, NC 27611, Tel: 919-365-3800, TELEX: 62919594, FAX: 919-365-3945

MEASUREMENT SYSTEMS, INC., 777 Commerce Dr., Fairfield, CT 06430, Tel: 203-336-4590, FAX: 203-336-5945; Empl: 97; Sls. Mgr: Gerard M. Lacroque, Nat'l. Sls. Mgr. D-1163

|                                       |                                 |
|---------------------------------------|---------------------------------|
| <i>Local Sales Offices &amp; Reps</i> |                                 |
| AZ                                    | Scottsdale, Advent Comps.       |
| CA                                    | Anaheim, Gabriel & Assoc.       |
| IA                                    | Cedar Rapids, S & O Sls.        |
| MD                                    | Columbia, Robert Elctm. Sls.    |
| MA                                    | Hudson, Data Rep                |
| MO                                    | Edina, Elctm. Sls, Inc.         |
| MI                                    | St. Louis, J. S. DeWeese Co.    |
| OH                                    | Medina, J. C. Hofstetter Co.    |
| PA                                    | Hickory, J. C. Hofstetter Co.   |
| TX                                    | Richardson, Scientific Sls. Co. |
| VA                                    | Richmond, Robert Elctm. Sls.    |

MEC A/S, Industriparken 23, Ballerup, Denmark DK-2750, Tel: 011-45-44973366, FAX: 011-45-44681514; Empl: 50

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| <i>Local Sales Offices &amp; Reps</i> |                                       |
| CA                                    | San Rafael, Wright Assocs.            |
| AZ                                    | Scottsdale, Advent Comps. Corp.       |
| CA                                    | Tustin, Schoenbacher-Dobson           |
| FL                                    | Tampa, Florida Comps. Sls.            |
| IL                                    | Schiller Park, W.R.B. Inc.            |
| IN                                    | Ft. Wayne, Menze Sls.                 |
| KS                                    | Overland Park, M.I.N.K. Assocs, Inc.  |
| MD                                    | Gaithersburg, Naudian Assoc. Southern |

|    |                                  |
|----|----------------------------------|
| MA | Hopkinton, Berkshire Elctms      |
| MI | Dearborn, Pitcher-Poulin         |
| MN | Minneapolis, Tech. Comps. Grp.   |
| MO | Bridgeton, M.I.N.K. Assocs, Inc. |
| NY | Great Neck, Pacent Engrg.        |
| NJ | Union, Pacent Engrg.             |
| NJ | Burlington, VDE Elctms           |
| NC | Silver City, Crossroads Elctms.  |
| TX | Richardson, R.F. Kimball Co.     |
| WI | Mequon, W M Bolles Assoc. Inc.   |

|                           |                                     |
|---------------------------|-------------------------------------|
| <i>Local Distributors</i> |                                     |
| CA                        | Gardena, California Switch & Signal |
| CA                        | Los Angeles, Electric Switch        |
| CA                        | Sunnyvale, Target Elctms.           |
| CA                        | Van Nuys, Wes-Garde Comp. Grp.      |
| CT                        | Hartford, Wes-Garde Comp. Grp.      |
| FL                        | Lakeland, Switch Controls, Inc.     |
| IL                        | Carol Stream, Wes-Garde Comps.      |
| KS                        | Overland Park, Wes-Garde Comps.     |
| MA                        | Canton, Xenell                      |
| MI                        | St. Clair Shores, Spemco Inc.       |
| MN                        | Minneapolis, Carl Bergquist Co.     |
| MO                        | St. Louis, Wes-Garde Comp.          |
| NH                        | Nashua, Wes-Garde Comp.             |
| NJ                        | Mt. Laurel, Wes-Garde Comps.        |
| OH                        | Westerville, Wes-Garde Comps.       |
| TX                        | Dallas, Wes-Garde Comps.            |
| WI                        | Milwaukee, Progressive Image        |



FAX: 517-782-2810

MECHANICAL PRODUCTS INC., 1824 River St. P. O. Box 729E, Jackson, MI 49204, Tel: 517-782-0391, TWX: 610-253-0827; Sls. Mgr: Dave Olson B-1369-1374

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| <i>Local Sales Offices &amp; Reps</i> |                                       |
| AL                                    | Decatur, Tenn Tech.                   |
| AZ                                    | Scottsdale, Advent Comps. Corp.       |
| CA                                    | Los Angeles, Universal Components Co. |

|     |                                      |              |
|-----|--------------------------------------|--------------|
| CA  | Sunnyvale, Pass Associates           | 408-735-9040 |
| CO  | Denver, Advent Comps. Corp.          | 303-455-1985 |
| FL  | Tampa, Florida Comp. Sls, Inc.       | 813-873-3622 |
| GA  | Marietta, Tenn Tech.                 | 404-971-1419 |
| IL  | Barrington, Perhats Assocs.          | 708-381-6360 |
| IN  | Indianapolis, Rockford Controls Ohio |              |
| KS  | Prairie Village, C. Logsdon & Assoc. | 317-251-2866 |
| MD  | Pikesville, Muncy Sls.               | 913-381-3833 |
| MA  | Danvers, Global Technical Sales      | 301-484-6376 |
| MA  | Danvers, Global Technical Sales      | 508-774-0111 |
| MN  | St. Paul, Mackubin Grp.              | 612-636-5686 |
| MO  | St. Louis, C. Logsdon & Assoc.       | 314-849-5125 |
| NJ  | Pitman, Colrud Corp.                 | 609-589-5866 |
| NY  | Port Washington, Ashtec, Inc.        | 516-267-0981 |
| NC  | Gamer, Tenn Tech.                    | 919-779-3309 |
| OH  | Medina, Rockford Controls Ohio, Inc. |              |
| OK  | Barrington, Global Technical Sales   | 216-725-3705 |
| OR  | Hillsboro, Doran Sales Assoc.        | 603-664-5780 |
| RI  | Lincoln, Global Technical Sales      | 503-640-4500 |
| TX  | Dallas, Control Comps. Corp.         | 401-334-3830 |
| WA  | Redmond, Doran Sales Assoc.          | 214-458-8877 |
| Can | Downsview, Ont, Har Tech             | 206-448-1200 |
| Can | Pointe Claire, Que, Har Tech         | 416-665-7773 |
| Can | Pointe Claire, Que, Har Tech         | 514-694-6110 |

|                           |                                     |
|---------------------------|-------------------------------------|
| <i>Local Distributors</i> |                                     |
| CA                        | Gardena, Cal Switch                 |
| CA                        | San Carlos, Campbell & George Co.   |
| CO                        | Denver, Consolidated Parts          |
| FL                        | Ft. Lauderdale, Zelcon, Inc.        |
| FL                        | Lakeland, Wes-Garde Comps. Grp.     |
| IL                        | Carol Stream, Wes-Garde Comps. Grp. |

|     |                                        |              |
|-----|----------------------------------------|--------------|
| IL  | Chicago, Nep Elctms.                   | 800-323-9431 |
| MA  | Danvers, RCI                           | 708-625-8400 |
| MI  | St. Clair Shore, Spemco Switch, Inc.   | 617-777-4441 |
| MN  | Minneapolis, Berquist                  | 313-771-2700 |
| NY  | Bohemia, Genelco                       | 612-835-2322 |
| NY  | Plainville, Linrose Elctms.            | 800-645-9802 |
| NY  | Woodside, Switches Unlimited           | 516-293-2520 |
| OH  | Euclid, Rockford Controls Ohio, Inc.   | 800-221-0487 |
| TX  | Arlington, Bell Components Sls, Inc.   | 216-731-5250 |
| Can | Scarborough, Ont, Carsten Elctms. Ltd. | 416-461-5303 |
| Can | St. Laurent, Que, Tara Inds. Corp.     | 416-495-9999 |
| Can | St. Laurent, Que, Tara Inds. Corp.     | 514-331-6550 |

MECHANIZED ELCTRN. ASSEMBLY DIV., UNIVERSAL INSTRS. CORP., See Dover Electronics Manufacturing

MECHATRONICS INC., 2835 82nd Ave. S.E., P.O. Box 20, Mercer Island, WA 98040, Tel: 206-232-4800, FAX: 206-236-5480; Empl: 40; Sls. Mgr: Jim Innes C-1610-1611

|                                       |                                  |
|---------------------------------------|----------------------------------|
| <i>Local Sales Offices &amp; Reps</i> |                                  |
| WA                                    | Mercer Island, Mechatronics Inc. |

MECH-TRONICS, 100 Campus Dr., RR 30, Mount Holly, NJ 08060, Tel: 609-267-0680, FAX: 609-267-7621; Sls. Mgr: Peter Reed

MECO PRECISION/INDS. INC., 955 Connecticut Ave., Bridgeport, CT 06607, Tel: 203-333-4900, FAX: 203-333-4519; FSC No.: OSBCI; Empl: 10

MEDA, INC., Macintyre Electronics Design Assocs., 485 Spring Pk. Pl., Ste 350, Herndon, VA 22070, Tel: 703-471-1445, FAX: 703-471-9130; Empl: 6; Sls. Mgr: Barbara Vayda

|                           |                                   |
|---------------------------|-----------------------------------|
| <i>Local Distributors</i> |                                   |
| CA                        | Carlsbad, ASC Scientific          |
| MA                        | Worcester, Walker Scientific Inc. |
| PA                        | Media, Phase Two Technlgs, Inc.   |

**BRILL ELECTRONICS**  
(510) 834-5888  
810 E. 10th St., Oakland, CA 94608

**MEC** MASTER ELECTRONIC CONTROLS  
(310) 452-8002  
1220 Olympic Dr., Santa Monica CA 90404



**MEDIA RECOVERY INC.**, Box 1407, Graham, TX 76450,  
Tel: 800-527-9497, 817-549-5462 (Texas), TELEX: 73-  
2561; Empl: 130; *Sls. Mgr.*: J. Ricciardi

**MEDICAM TECHNOLOGIES INC.**, 35 Sagamore Park  
Dr., Hudson, NH 03051, Tel: 603-886-9460, FAX: 603-886-  
0372; Empl: 4; *Sls. Mgr.*: Robert C. Rush

**MEGA CIRCUIT, INC.**, 1040 S. Westgate, Addison, IL  
60101, Tel: 708-629-1800, FAX: 708-629-1800; Empl: 45;  
*Sls. Mgr.*: Jim Malavia

**MEGADATA CORP.**, 35 Orville Dr., Bohemia, NY 11716,  
Tel: 516-589-6800, FAX: 516-589-6858; FSC No.: 53436;  
Empl: 40; *Sls. Mgr.*: Steve Sloan

**MEGA SYSTEMS & CHEMICALS**, 4828 S. 40th St.,  
Phoenix, AZ 85040, Tel: 602-437-9105, FAX: 602-437-  
2613; Empl: 15

*Local Sales Offices & Reps*  
OR Portland, Mega Sys. & Chemicals ..... 503-228-4773  
EXP Milano, Italy, High Purity Tech. .... 02-26821604  
EXP Swindon, England, Wessex Semicon ..... 602-437-9105

**(MEI) MARPET ENTERPRISES, INC.**, 107 Audubon Rd.,  
Wakefield, MA 01880, Tel: 617-246-2040, FAX: 617-246-  
0603; Empl: 30; *Sls. Mgr.*: John A. Pope

**MEISSNER INDUSTRIES**, 551 Rte. 10, Dover, NJ 08071,  
Tel: 201-366-1700; Empl: 10

**MEKTRONIX TECHNOLOGY, INC.**, 507 N. Milwaukee  
Ave., Libertyville, IL 60048-2000, Tel: 708-680-3300, FAX:  
708-680-1868; Empl: 5; *Sls. Mgr.*: Gregory Mayworm



**Tel: 800-828-9712**

**MELCHER, INC., Melcher AG**, 187 Billerica Rd.,  
Chelmsford, MA 01824, FAX: 508-256-4642; *Empl*: 280;  
*Sls. Mgr.*: Rob Sinclair **D-2131-2135**

| <i>Local Sales Offices &amp; Reps</i>      |              |
|--------------------------------------------|--------------|
| AL Huntsville, Currie, Peak & Frazier      | 205-536-1506 |
| AZ Scottsdale, Power Up Elctms.            | 602-955-1105 |
| CA Cupertino, PEI Assocs.                  | 408-253-1960 |
| CA La Habra, West Coast Reps.              | 213-690-9960 |
| CO Parker, TMA                             | 303-841-3435 |
| FL Orlando, Currie, Peak & Frazier         | 407-855-0843 |
| GA Duluth, Currie, Peak & Frazier          | 404-497-9404 |
| IL Arlington Hgts., Coombs Assocs., Inc.   | 708-439-9810 |
| IA Cedar Rapids, Tech. Sls. Assoc.         | 319-373-0686 |
| KS Olathe, Tech. Sls. Assocs.              | 913-829-2800 |
| MA Chelmsford, Melcher, Inc.               | 800-828-9712 |
| MA Whitinsville, Power Factor Assoc.       | 508-234-6415 |
| MI Troy, CB Jensen & Assocs.               | 313-643-0506 |
| MN Wayzata, Cardinal Sls.                  | 612-475-0042 |
| MO St. Louis, Tech. Sls. Assocs.           | 314-521-2044 |
| NY Wantagh, Bytec Reps.                    | 516-781-7400 |
| NC Greensboro, Currie, Peak & Frazier      | 919-373-0380 |
| OH Centerville, EMA, Inc.                  | 513-433-2800 |
| PA Nottingham, Excel Tech                  | 717-529-6059 |
| TX Richardson, Jim D. Gray & Assocs., Inc. | 214-699-9976 |
| WA Bellevue, Advanced Power Comps.         | 206-747-9127 |
| WA Spokane, APC                            | 509-922-7959 |
| WI Brookfield, McMahon Inc.                | 414-782-3335 |
| Can Ontario, Melcher Corp.                 | 416-727-9341 |



**FAX: 609-393-9461**

**MELCOR/MATERIALS ELCTRN. PRODS.**, 1040  
Spruce St., Trenton, NJ 08648, Tel: 609-393-4178; FSC  
No.: 32333; Empl: 275; *Sls. Mgr.*: M.A. Levine

| <i>Local Sales Offices &amp; Reps</i> |              |
|---------------------------------------|--------------|
| CA San Jose, Shaw Tech, Inc.          | 408-866-6628 |
| CO Fort Collins, Rep Sls., Inc.       | 303-226-1504 |
| NY W. Henrietta, Exogray Tech. Sls.   | 716-334-1340 |

**PERIPHERAL RESOURCES**, 9911 W. Pico Blvd., Ste. B-  
215, Los Angeles, CA 90035, Tel: 310-552-3888, 800-533-  
2297, FAX: 310-552-2806; Empl: 11; *Sls. Mgr.*: Bill Dwyer

**MELFESS FIVE INC.**, See Peripheral Resources

**MEL-RAIN CONTROLS**, 42974 M-43 Hwy., Paw Paw, MI  
49079, Tel: 616-657-2527, FAX: 616-657-2528; FSC No.:  
639; Empl: 20; *Sls. Mgr.*: Howard F. Walter



**MEMCOR-TRUOHM INC.**

**FAX: 219-356-7376**

**MEMCOR-TRUOHM, INC.**, 1320 Flaxmill Rd.,  
Huntington, IN 46750, Tel: 219-356-4300; FSC No.: 24681;  
Empl: 250; *Sls. Mgr.*: Ray Vanderspool

**A-1984, 2105**

| <i>Local Sales Offices &amp; Reps</i> |              |
|---------------------------------------|--------------|
| AL Huntsville, Murcota                | 205-539-8476 |
| CA American Canyon, Jacobson & Assoc. | 707-552-4412 |
| CA Huntington Bch., Mil-Com Sls.      | 714-840-2424 |
| FL Indiantic, Raycom                  | 305-727-8860 |
| GA Atlanta, Murcota                   | 404-875-2525 |
| IL Chicago, D. Dolin Sls.             | 312-286-6200 |
| IN Ft. Wayne, Menze Sls.              | 219-747-5616 |
| MI St. Clair Shores, J.M. Thorpe      | 313-779-6363 |
| MO St. Charles, Hayes Elec. Sls. Co.  | 314-946-6677 |
| NH Atkinson, Mark Rep Assoc.          | 603-382-9563 |
| NJ Englewood Cliffs, Masin Esco       | 201-569-8868 |
| NY Hauppauge, Masin Esco              | 516-273-3500 |
| NY Marcellus, Mullahy Sls. Inc.       | 315-685-6280 |
| NC Burlington, Murcota                | 919-585-1577 |
| NC Winston-Salem, Murcota             | 919-723-1001 |
| OH Cleveland, Glover Sls.             | 216-842-4520 |
| PA Newtown Square, G.M. Conneen       | 215-353-2241 |
| TX Dallas, SW Elctm. Ind.             | 214-233-9816 |
| TX Houston, SW Elctm. Ind.            | 713-729-1670 |

**MEMODYNE**, 20 Ossipee Rd., Newton, MA 02164, Tel: 617-  
964-6556 (in MA), 800-255-1510, FAX: 617-964-2444;  
Empl: 40; *Sls. Mgr.*: Leonard Sacon

**MEMORY PROTECTION DEVICES, INC.**, 320 Broad  
Hollow Rd., Farmingdale, NY 11735, Tel: 516-293-5891,  
FAX: 516-752-1971; *Sls. Mgr.*: Thomas Blaha

**D-1455**

| <i>Local Sales Offices &amp; Reps</i>               |              |
|-----------------------------------------------------|--------------|
| CA Irvine, English/Damco Sls. Co., Inc.             | 714-753-1950 |
| CA Mountain View, Griffith, Nunley & Assocs.        | 415-961-6740 |
| FL Tampa, SRT Mktg.                                 | 813-884-4805 |
| IL Downers Grove, Mornak Sls.                       | 708-963-6400 |
| MD Lisbon, S.K. MacDonald, Inc.                     | 301-982-1088 |
| MI Brighton, AP Assocs., Inc.                       | 313-229-6550 |
| MN Eden Prairie, Electro Mark, Inc.                 | 612-944-5850 |
| NH Hampton, Primary Source                          | 603-926-8044 |
| NJ Cherry Hill, S.K. MacDonald, Inc.                | 609-482-2666 |
| NJ New Brunswick, Synergy Sls.                      | 908-828-5090 |
| OR Beaverton, Advanced Power Prods., Inc.           | 503-646-0994 |
| OR Monroeville, S.K. MacDonald, Inc.                | 412-373-1723 |
| WI Fontana, Mornak Sls.                             | 414-363-7744 |
| <i>Local Distributors</i>                           |              |
| AL Huntsville, Cypress Elctms.                      | 205-533-0783 |
| AL Huntsville, Powell Elctms.                       | 205-837-5300 |
| AL Huntsville, Resistacop, Inc.                     | 205-883-4270 |
| AZ Phoenix, Lynntronics                             | 602-841-3900 |
| CA Costa Mesa, Battery Specialties                  | 800-854-5759 |
| CA Costa Mesa, Cypress Elctms.                      | 714-549-2424 |
| CA Huntington Beach, House of Batteries             | 714-642-8222 |
| CA Irvine, Powell Elctms.                           | 714-263-9363 |
| CA San Diego, Tauber Elctms.                        | 619-274-7242 |
| CA San Jose, Powell Elctms.                         | 408-943-6438 |
| CA San Jose, Rose Elctms.                           | 408-263-9700 |
| CA Santa Clara, Cypress Elctms.                     | 408-980-2500 |
| CA Van Nuys, Nesco Battery Sys.                     | 818-781-0505 |
| CO Arvada, Denver Beta Wintronics                   | 303-431-7161 |
| CO Englewood, AVT, Inc.                             | 303-779-8056 |
| CO Englewood, Cypress Elctms.                       | 303-792-5829 |
| FL Fort Lauderdale, Powell Elctms.                  | 305-484-8377 |
| FL St. Petersburg, Engrd. Assemblies & Comps. Corp. | 813-328-1970 |
| GA Norcross, Applied Power                          | 404-263-0421 |
| GA Norcross, Engrd. Assemblies & Comps. Corp.       | 404-446-3135 |
| IL Morton Grove, Power Pak                          | 312-966-6000 |
| MD Annapolis Junction, Powell Elctms.               | 301-880-3255 |

|                                               |              |
|-----------------------------------------------|--------------|
| MA Methuen, Generation Elctms.                | 508-683-1177 |
| MA Sutton, Engrd. Assemblies and Comp. Corp.  | 508-865-0722 |
| MA Westborough, Powell Elctms.                | 508-366-6100 |
| MI Brighton, Applied Power                    | 313-227-3604 |
| MN Eden Prairie, Cypress Elctms.              | 612-934-2104 |
| MN Minneapolis, Stark Elctms.                 | 612-332-1325 |
| MN Thief River Falls, Digi Key Corp.          | 218-681-6674 |
| NJ Little Falls, Powell Elctms.               | 201-890-0010 |
| NJ Mountainside, Mars Elctms.                 | 908-233-0044 |
| NJ Teterboro, Engrd. Assemblies & Comp. Corp. | 201-288-4477 |
| NY Buffalo, Summit Distrs.                    | 716-887-2800 |
| NC Cary, Powell Elctms.                       | 919-467-1212 |
| NC Raleigh, Engrd. Assemblies & Comps. Corp.  | 919-790-9700 |
| OH Columbus, Promark Elctms.                  | 614-351-2191 |
| OR Beaverton, Micro Power                     | 503-626-7086 |
| PA Philadelphia, Powell Elctms.               | 215-365-1900 |
| TX Dallas, Cypress Elctms.                    | 214-255-0065 |
| TX Ft. Worth, Tandy Natl. Parts               | 817-870-5600 |
| TX Irving, Powell Elctms.                     | 214-550-0457 |
| UT W. Valley City, Denver Beta Wintronics     | 801-966-0378 |
| WA Bothell, Cypress Elctms.                   | 206-483-1144 |
| WA Seattle, Powell Elctms.                    | 206-439-8550 |
| WI Milwaukee, Taylor Elctms.                  | 414-241-4321 |
| Can Calgary, Alberta, Electro Sonic, Inc.     | 403-255-9550 |
| Can Ottawa, Ont., Electro Sonic, Inc.         | 613-728-8333 |
| Can Richmond, B.C., Electro Sonic, Inc.       | 604-273-2911 |
| Can Willow Dale, Ont., Electro Sonic, Inc.    | 416-494-1666 |
| Can Winnipeg, Man., Electro Sonic, Inc.       | 204-783-3105 |

**MEMTEC CORP.**, 19-B Keewaydin Dr., Salem, NH 03079,  
Tel: 603-893-8080, FAX: 603-893-8699; Empl: 35



**FAX: 517-652-2659**

**MEMTRON TECHNOLOGIES, INC.**, 530 N. Franklin,  
Frankenmuth, MI 48734, Tel: 517-652-2656, 800-234-  
7525; FSC No.: 6 V 417; Empl: 130; *Sls. Mgr.*: Daniel T.  
Ortner **B-1845**

| <i>Local Sales Offices &amp; Reps</i> |              |
|---------------------------------------|--------------|
| AZ Tucson, Multi-Innovations          | 602-326-8997 |
| CA San Diego, Champa Assocs.          | 714-581-3459 |
| CA Saratoga, Edward King & Assocs.    | 408-741-0434 |
| CO Westminster, Glennmar              | 303-423-1572 |
| FL Mount Dora, Hedrick, Walker        | 904-735-2600 |
| GA Lawrenceville, Tek-Rep Mktg., Inc. | 404-804-0358 |
| IL Wheaton, CS Tech. Sls.             | 312-653-8126 |
| IN Noblesville, Phoenix Mktg.         | 317-776-1871 |
| MA Framingham, Stone Comp. Sls. Corp. | 508-875-3266 |
| MN Oakdale, Complete Sls.             | 612-731-2923 |
| MO Saint Charles, Buckman & Assocs.   | 314-946-6201 |
| NY Islip, Cogent Tech.                | 516-277-7101 |
| NY Liverpool, Alfred Lee Sls.         | 315-451-0968 |
| NY Victor, Net Sls.                   | 716-924-1844 |
| OH Delaware, Bill Romine Co.          | 614-363-1600 |
| PA Southampton, Campbell Assocs.      | 215-322-6630 |
| TX Richardson, Zonk & Assocs.         | 214-233-7651 |
| WA Renton, K. R. Jensen Sls.          | 206-277-2772 |
| EXP Corpus Christi, TX, Radesa Co.    | 512-993-4528 |
| Can Toronto, Ont., Reptech            | 416-863-9510 |

**MENSOR CORPORATION**, 2230 IH-35 South, San  
Marcos, TX 78666, Tel: 512-396-4200, FAX: 512-396-1820

**MEPCO/CENTRALAB CORP.**, See Philips  
Components Discrete Products Division

**MEP CONTROLS**, Rising Sun Rd., Bordentown, NJ 08505,  
Tel: 609-298-7300, FAX: 609-298-1982; Empl: 25



**FAX: 619-481-1123**

**MEPCOPAL COMPANY**, 11525 Sorrento Valley Rd., San  
Diego, CA 92121-1307, Tel: 619-481-0210; Empl: 160  
**A-2106-2107; B-1770-1771**

Potentiometers (Cermet, Carbon) Industrial & Military



## Local Sales Offices & Reps

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AL  | Huntsville, Over & Over, Inc.        | 205-837-7105 |
| AZ  | Tempe, Phillips Comps.               | 602-820-2225 |
| CA  | Irvine, Harper & Strong              | 714-261-7233 |
| CA  | Sacramento, TSI                      | 916-451-9068 |
| CA  | San Diego, Harper & Strong           | 619-549-5360 |
| CA  | Santa Clara, Technlg. Sls.           | 408-727-7200 |
| CO  | Englewood, Phillips Comps.           | 303-779-9696 |
| FL  | Altamonte Springs, Over & Over       | 407-339-5073 |
| FL  | Ft. Lauderdale, Over & Over          | 305-485-0113 |
| GA  | Norcross, Over & Over Inc.           | 404-449-6205 |
| GA  | Roswell, Phillips Comps.             | 404-992-0150 |
| IL  | Rolling Meadows, Phillips Comps.     | 708-670-9494 |
| IN  | Ft. Wayne, Corrao Marsh              | 219-482-2725 |
| IN  | Green Field, Corrao Marsh, Inc.      | 317-462-4446 |
| IA  | Cedar Rapids, Lorenz Sls. Inc.       | 319-377-4666 |
| KS  | Overland Pk, Lorenz Sls. Inc.        | 913-469-1312 |
| KS  | Wichita, Lorenz Sls. Inc.            | 316-721-0500 |
| MD  | Columbia, Delta III Assocs.          | 301-730-4700 |
| MA  | Woburn, Phillips Comps.              | 617-932-4748 |
| MI  | Farmington Hills, Phillips Comps.    | 313-553-6010 |
| MN  | Minneapolis, Elec. Comps. Sls., Inc. | 612-933-2594 |
| MO  | St. Louis, Lorenz Sls. Inc.          | 314-997-4558 |
| NE  | Lincoln, Lorenz Sls. Inc.            | 402-475-4660 |
| NJ  | Englewood Cliff, Ed Glass Assoc.     | 201-952-0200 |
| NY  | E. Rochester, Empire Tech. Assocs.   | 716-381-8500 |
| NY  | Endwell, Empire Tech. Assocs., Inc.  | 607-754-8756 |
| NY  | Skaneateles, Empire Tech. Assocs.    | 315-885-5703 |
| NC  | Charlotte, Over & Over Inc.          | 704-542-9111 |
| NC  | Raleigh, Over & Over, Inc.           | 919-876-7338 |
| OH  | Dayton, Phillips Comps.              | 513-436-0066 |
| OH  | Wickliffe, Phillips Comps.           | 216-731-7721 |
| OR  | Beaverton, Eclipse Mktg. Grp.        | 503-642-1661 |
| PA  | Willow Grove, Phillips Comps.        | 215-659-6096 |
| TX  | Austin, Phillips Comps.              | 512-832-9819 |
| TX  | Houston, Phillips Comps.             | 713-272-8086 |
| TX  | Richardson, Phillips Comps.          | 214-231-8274 |
| WA  | Redmond, Eclipse Mktg. Grp.          | 206-885-6991 |
| WA  | Spokane, Eclipse Mktg. Grp.          | 509-922-3972 |
| WI  | New Berlin, Phillips Comps.          | 414-785-6509 |
| Can | Alberta, Phillips Comps.             | 403-239-7075 |
| Can | Scarborough, Ont., Phillips Comps.   | 416-292-5161 |

## Local Distributors

|     |                                |              |
|-----|--------------------------------|--------------|
| AL  | Huntsville, Hall-Mark Elctms.  | 205-837-8700 |
| AZ  | Tempe, TTI, Inc.               | 602-431-1191 |
| CA  | Sunnyvale, Hamilton/Avnet      | 408-743-3300 |
| CO  | Englewood, Kent, Shelley-Ragon | 303-762-0670 |
| CT  | Wallingford, Marshall Inds.    | 203-265-3822 |
| FL  | Orlando, TTI, Inc.             | 407-859-1000 |
| GA  | Norcross, TTI, Inc.            | 404-662-0911 |
| IL  | Chicago, Nep Elctms.           | 708-595-8500 |
| IN  | Indianapolis, Marshall Inds.   | 317-297-0483 |
| MD  | Columbia, TTI, Inc.            | 301-995-1331 |
| MA  | Peabody, Hamilton/Avnet        | 508-532-3701 |
| MI  | Livonia, Marshall Inds.        | 313-525-5850 |
| MN  | St. Paul, Kent, Shelley-Ragon  | 612-642-2828 |
| NE  | Omaha, Scott Elctms.           | 402-734-6750 |
| NJ  | ML Laurel, TTI, Inc.           | 609-234-6400 |
| NY  | Ronkonkoma, TTI, Inc.          | 516-737-2000 |
| NC  | Raleigh, Hall-Mark             | 919-872-0712 |
| OK  | Independence, TTI, Inc.        | 216-328-9755 |
| OK  | Tulsa, Hamilton/Avnet          | 918-252-7297 |
| OR  | Beaverton, Kent, Shelley-Ragon | 503-641-1691 |
| PA  | Mars, Hamilton/Avnet           | 412-772-1881 |
| TX  | Ft. Worth, TTI, Inc.           | 817-595-3100 |
| WA  | Redmond, Hamilton/Avnet        | 206-881-6697 |
| WI  | New Berlin, Nep Electronics    | 414-785-9131 |
| Can | Nepean, Ont., Hamilton/Avnet   | 613-226-1700 |

**MERCOTAC INC.**, 6195 Corte del Cedro E, Carlsbad, CA 92009, Tel: 619-431-7723, FAX: 619-431-0905; Empl: 19; Sls. Mgr.: Bruce Enigenburg; Dist. Mgr.: Bruce Enigenburg

**MERCURY COMPUTER SYSTEMS, INC.**, 199 Rivemeck Rd., Chelmsford, MA 01824, Tel: 508-256-1300, FAX: 508-256-3599; Empl: 160; Sls. Mgr.: Ed Hennessy

**MERCURY PLASTICS, A UNIT OF ZERO CORP.**, See Zero Plastics, A Unit of Zero Corp.

**MERECO PRODUCTS DIV.**, Metachem Resins Corp., 1505 Main St., West Warwick, RI 02893, Tel: 401-822-9300, FAX: 401-822-9311; Empl: 25; Sls. Mgr.: John E. Powell, Jr.

**MERET OPTICAL COMMUNICATIONS, INC.**, An Amoco Co., 1800 Stewart St., Santa Monica, CA 90404-4998, Tel: 310-828-7496, FAX: 310-828-7567; FSC No.: 53071; Empl: 85

For all states not listed call Meret MN. Ofc. 310-828-7496

**MERIAM INSTRUMENT**, Scott Fetzler, 10920 Madison Ave., Cleveland, OH 44102, Tel: 216-281-1100, FAX: 216-281-0228; Empl: 85; Sls. Mgr.: Russ Arslanian; Dist. Mgr.: Russ Arslanian

**MERITEC**, Associated Enterprises, 1359 W. Jackson St., P.O. Box 8003, Painesville, OH 44077, Tel: 216-354-3148, FAX: 216-354-0509; Empl: 200; Sls. Mgr.: Richard Wilkinson; Dist. Mgr.: Craig Fosnaght

**MERIX CHEMICAL CO.**, 2234 East 75th St., Chicago, IL 60649, Tel: 312-221-8242, FAX: 312-221-3047; Empl: 15; Sls. Mgr.: E. O. Sonneman; Dist. Mgr.: E. O. Sonneman

**MERRILL, INC.**, P.O. Box 2751, Bonita Springs, FL 33959, Tel: 813-591-1626, FAX: 813-947-1821; FSC No.: 58624; Empl: 10; Sls. Mgr.: J. Fournier

**MERRIMAC INDUSTRIES**, 41 Fairfield Pl., West Caldwell, NJ 07006, Tel: 201-575-1300, FAX: 201-575-0531; FSC No.: 12457; Empl: 150; Sls. Mgr.: Tom Cox

**J. R. MERRITT CONTROLS, INC.**, 320 Martin Luther King Dr., Norwalk, CT 06854, Tel: 203-855-9100, 800-333-5762, FAX: 203-855-1038; Sls. Mgr.: Douglas Holzwarth

**MESA POWER SYSTEMS**, 2350 Meyers Ave., Escondido, CA 92029, Tel: 619-489-8162, FAX: 619-489-5718; FSC No.: 46937; Empl: 20

**MESA TECHNOLOGY**, Peak Technologies, 8990 Old Annapolis Road, Columbia, MD 21045, Tel: 410-992-0516, 410-992-0517, FAX: 410-290-9171; Empl: 364; Sls. Mgr.: Howard Parker

**MES INDUSTRIES CO., LTD.**, Fl. No. 93 Lo-Li Rd., Taipei, Tel: 886-2-2180302, FAX: 886-2-2181480; Empl: 25

**MESUR-MATIC ELCTRNS.**, 309 Lowell St., Peabody, MA 01960, Tel: 508-745-7000; Empl: 18; Sls. Mgr.: Kosma L. Evangelidis

**METALINK CORPORATION**, P.O. Box 1329, Chandler, AZ 85244, Tel: 602-926-0797, TELEX: 4998050, FAX: 602-926-1198

**METCAL, INC.**, 1530 O'Brien Dr., Menlo Park, CA 94025, Tel: 800-776-1778, FAX: 415-325-5932; Empl: 100; Sls. Mgr.: Bob Simpson; Dist. Mgr.: Bob Simpson

**METERMASTER**, 2507 W. Erie Dr., Tempe, AZ 85282, Tel: 602-431-0015, FAX: 602-431-1836; Sls. Mgr.: Steve Alexander

**METHODE ELECTRONICS, INC.**, 7444 W. Wilson Ave., Chicago, IL 60656, Tel: 708-867-9600, FAX: 708-867-9130; Empl: 2000; Sls. Mgr.: S. Landeene; Dist. Mgr.: Suzi Landeene

**METHODE ELECTRONICS, INC.**, Interconnect Prods Div., 1700 Hicks Rd., Rolling Meadows, IL 60008, Tel: 708-392-3500, FAX: 708-392-9404; FSC No.: 95354; Empl: 250; Sls. Mgr.: Suzi Landeene; Dist. Mgr.: Suzi Landeene

**METRA CORPORATION**, 1874 Lundy Ave., San Jose, CA 95131, Tel: 408-432-1110, FAX: 408-432-9644; Empl: 24

**METRAPLEX CORP.**, 5305 Spectrum Dr., Frederick, MD 21701, Tel: 301-662-8000, TELEX: 697-4248 MPX CORP, FAX: 301-695-8099; Empl: 105; Sls. Mgr.: Charles Weaver

**METRICOR, INC.**, 18800 - 142nd Ave. NE, Woodinville, WA 98072, Tel: 206-483-5577, FAX: 206-485-2592; Empl: 42

**METRIC SYSTEMS**, 645 Anchors St., Ft. Walton Beach, FL 32548-9990, Tel: 904-244-9600, FAX: 904-863-6371; FSC No.: 12339; Empl: 700

**METRIX INSTRUMENT CO.**, 1711 Townhurst, Houston, TX 77043, Tel: 713-461-2131, TELEX: 77-5486, FAX: 713-461-8223; Empl: 60; Sls. Mgr.: W. B. Brown

**METRO CIRCUITS**, PJC Technologies, Inc., 205 LaGrange Ave., Rochester, NY 14613, Tel: 716-254-2980, FAX: 716-254-4614; Empl: 36; Sls. Mgr.: Burhan Capar

**METROLAB INSTRUMENTS SA**, 110, Chemin du Pont-du-Centenaire, Geneva, Switzerland CH-1228, Tel: 041(22)7941121, FAX: 041(22)7941120

**METRO-MARK INC.**, 11574 Encore Circle, Minnetonka, MN 55343, Tel: 612-935-8844, FAX: 612-935-5718

B-1846

**METRON OPTICS INC.**, P.O. Box 690, Solana Beach, CA 92075-0690, Tel: 619-755-4477, FAX: 619-755-4752; Empl: 10

**METROPOLE PRODUCTS INC.**, P. O. Box 309, Stafford, VA 22554, Tel: 703-659-2132, FAX: 703-659-2133; FSC No.: 55908; Sls. Mgr.: John Tarsia

**METROSONICS, INC.**, Box 23075, Rochester, NY 14692-3075, Tel: 716-334-7300, TELEX: 853348, FAX: 716-334-2635; FSC No.: 55381; Empl: 80; Sls. Mgr.: R. Ginsberg; Dist. Mgr.: R. Brauch

**METRUM**, P.O. Box 5227, Denver, CO 80217-5227, Tel: 303-773-4700, FAX: 303-773-4762; Empl: 350; Sls. Mgr.: J. Smith



**FAX: 908-679-3222**

**METUCHEN CAPACITORS, INC.**, 139 White Oak Ln., P.O. Box 499, Old Bridge, NJ 08857, Tel: 908-679-3366, TWX: 710-998-0892; FSC No.: 55969; Empl: 25; Sls. Mgr.: George Wolter

A-1106-1114, 1651-1653; C-1416-1419, 1617

## Local Sales Offices & Reps

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|----|---------------------------------|--------------|
| AL | Huntsville, Elctm. Prods.       | 205-880-1156 |
| CA | Pleasanton, CFMC                | 510-417-0450 |
| MD | Rockville, C.E. Tech. Elctms.   | 301-666-0315 |
| MD | Rockville, Metuchen Capacitors  | 301-590-0094 |
| MA | Lowell, Underwood Sls.          | 617-256-8191 |
| MO | Grandview, R. R. Burton Assocs. | 816-763-5385 |
| PA | Saegertown, Multi-Phase Comps.  | 814-763-3640 |

**MEXITRONIX (WOMAN OWNED)**, 2651 Airway Ave., Ste. A, Kingman, AZ 86401, Tel: 602-757-9798, FAX: 602-757-8741; Empl: 5

**MEYER WIRE & CABLE CO.**, Div. of Cole Hersee Co., 1072 Sherman Avenue, Hamden, CT 06514, Tel: 203-281-0817, FAX: 203-281-9648; Empl: 25; Sls. Mgr.: Brian Meyer

**MEYLAN CORPORATION**, 543 Valley Rd., Upper Montclair, NJ 07043-1844, Tel: 201-744-6400, FAX: 201-744-1011; Empl: 8; Sls. Mgr.: Stanley Mills

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**MFE INSTRUMENTS, Stocker & Yale, Inc.**, 133 Brimbal Ave., PO Box 490, Beverly, MA 01915-0490, Tel: 508-921-9104, 800-472-4633, ESYLNK: 953145, FAX: 508-921-9110; FSC No.: 6640,6685,6625,6660; Sls. Mgr.: John Lepore; Dist. Mgr.: John Lepore

**Local Distributors**  
CA Los Angeles, ELL Instrs. .... 213-685-7020  
MD Baltimore, ELL Instrs. .... 410-584-7400

**MF ELCTRNS. CORP.**, 10 Commerce Dr., New Rochelle, NY 10801, Tel: 914-576-6570, FAX: 914-576-6570; FSC No.: 08111; Empl: 100; Sls. Mgr.: Zaw Nawadav ..... **A-1419**

**Local Sales Offices & Reps**  
CA Carlsbad, Mkt. Resource Network .... 619-721-6717  
CA San Jose, Mac Tron .... 408-446-8224  
AL Madison, Benchmark Tech. Sls. .... 205-464-0033  
CT Southington, Orion Group .... 203-621-8371  
GA Norcross, Benchmark Tech. Sls. .... 404-446-1711  
MA Peabody, The Orion Group .... 508-532-6266  
MD Annapolis, Rymone Assocs. .... 301-263-0794  
NY Smithtown, T & K Sls. .... 516-724-3456  
MN Minneapolis, Ferrian Sls. & Assocs. .... 612-721-8915  
NC Raleigh, Benchmark Tech. Sls. .... 919-850-0633  
OR Beaverton, Core II Mktg. .... 503-649-0877  
OR Portland, Core II .... 503-649-0871  
PA Prospect Park, Elf Sls. Co. .... 215-534-3340  
PA Prospect Park, ELF Sls. .... 215-534-3340  
TX Austin, Matthews & Assocs. .... 512-346-2969  
TX Dallas, Matthews & Assocs. .... 214-248-7881  
UT Salt Lake City, R 2 Mktg. Inc. .... 801-595-0631

**Local Distributors**  
CA Burbank, Atwater Elctms. .... 818-841-9050  
CA San Jose, Turbo Elctms. .... 408-441-6616  
CA Sunnyvale, PSC Elctms. .... 408-737-1333  
NJ Bellmawr, Mid Atlantic .... 609-931-5303  
NY Bohemia, RBD Elec. .... 516-589-7717  
NY Mt. Vernon, Janesway Elec. .... 914-699-6710

**MFG, Parabam Div.**, 1130 Watsoncenter Rd., Carson, CA 90745, Tel: 213-549-5044; Empl: 85

**MFI**, 12304 Santa Monica Blvd., Ste. 121, Los Angeles, CA 90025, Tel: 310-447-6633, 800-533-2297, FAX: 310-820-8958



**FAX: 516-467-5176**

**MFM TECHNOLOGY, INC., Affiliate of Unitrode Corp.**, 200 Thirteenth Ave., Ronkonkoma, NY 11779, Tel: 516-467-5151; Empl: 25 ..... **B-1298**

**Local Sales Offices & Reps**  
MI Troy, Kinetic Technigs. .... 313-828-9700  
TX Dallas, Automated Motion Ctrl. Inc. .... 214-340-4192  
WI Brookfield, Automation Prods. Co. .... 414-785-6668  
Can Downsview, Ont., Newsonian Mechnronics, Inc. .... 416-663-2516  
CA San Jose, Motion Control-North .... 408-997-0544



**FAX: 516-582-3229**

**MG ELECTRONICS**, 32 Ranick Rd., Hauppauge, NY 11788, Tel: 516-582-3400; Empl: 14; Sls. Mgr.: John Kibbit; Dist. Mgr.: Stan Grey ..... **D-1051**

**MGR INDUSTRIES INC.**, 450B Industrial Dr., Ft. Collins, CO 80524, Tel: 303-221-2201, FAX: 303-484-4078; Empl: 2; Sls. Mgr.: R. Vangermeersch

**MHOTRONICS, INC.**, 960 Corporate Woods Plkwy., Vernon Hills, IL 60061, Tel: 708-913-9566, FAX: 708-913-9587; Empl: 45; Sls. Mgr.: David McFadden

**MIAMI MAGNET CO., INC., The Magnet Source**, 6073 Bldg. C 26 N.W. 167th St., Miami, FL 33015, Tel: 800-222-7846, FAX: 305-823-1603; FSC No.: 5999; Empl: 38; Sls. Mgr.: Gale Peregrin; Dist. Mgr.: C. Peregrin ..... **A-1319**

**Local Sales Offices & Reps**  
CA Placentia, A-L-L Magnetics Inc. .... 714-632-1754  
CO Castle Rock, Master Magnetics .... 303-688-3966  
FL Miami, The Magnet Source .... 305-823-0641

**MICHIGAN MAGNETICS**, 203 W. Third St., Vermontville, MI 49096, Tel: 517-726-0590, FAX: 517-726-0078; Empl: 50; Sls. Mgr.: Tom Krul

**MICREL SEMICONDUCTOR**, 1849 Fortune Dr., San Jose, CA 95131, Tel: 408-944-0800, FAX: 408-944-0970; FSC No.: 60496; Empl: 135; Sls. Mgr.: Mike O'Neal; Dist. Mgr.: Mike O'Neal

**MICRO ALLIANCE, INC.**, 1384-A Poinsettia Dr., Vista, CA 92083, Tel: 619-598-1900; Empl: 10; Sls. Mgr.: Ed Larson

**MICROAVIONICS CORP.**, 3198-K Airport Loop Dr., Costa Mesa, CA 92626, Tel: 714-957-6904, FAX: 714-957-1614; Empl: 15; Sls. Mgr.: B. H. Corzine

**MICROBAR SYSTEMS, INC.**, 3350 Scott Blvd. 3902, Santa Clara, CA 95054-3119, Tel: 408-748-2920, FAX: 408-748-2924

**MICRO-CERAMX TECHNOLOGY, A MicroSemi Company**, 501 South Andreasen Dr., Escondido, CA 92029, Tel: 619-480-1906, FAX: 619-480-6741; Empl: 65; Sls. Mgr.: Ken Miller, Sls. Mgr.

**MICROCHIP TECHNOLOGY INC.**, 2355 W. Chandler Blvd., Chandler, AZ 85224, Tel: 602-963-7373, FAX: 602-345-3390; Empl: 1500; Sls. Mgr.: Lanny Flessas; Dist. Mgr.: Lanny Flessas

**MICRO-CIRCUIT ENGRG.**, See MCE Semiconductor

**MICRO-COAX**, Box 993, Collegeville, PA 19426, Tel: 215-489-3700, FAX: 215-489-1103; Empl: 50; Sls. Mgr.: Bruce Ash

**MICROCOMPATIBLES INC.**, 301 Prelude Drive, Silver Springs, MD 20901, Tel: 301-593-0683, FAX: 301-593-5151; Empl: 4; Sls. Mgr.: Linda Esterling

**MICRO-COMP INDUSTRIES**, 3350 Scott Blvd., Bldg.57, Santa Clara, CA 95054, Tel: 408-727-3000, FAX: 408-970-0548



**MICRO CRYSTAL DIVISION / SMH**

**FAX: 708-593-5062**

**MICRO CRYSTAL/DIVISION SMH**, 702 West Algonquin Rd., Arlington Heights, IL 60005, Tel: 708-806-1485; Sls. Mgr.: William Kaczmarek; Dist. Mgr.: William Kaczmarek ..... **A-1420-1423**

**Local Sales Offices & Reps**  
AZ Scottsdale, E D P & Assoc. .... 602-991-6119  
CA Huntington Beach, Force 1 Sls. .... 714-963-3949  
CA San Jose, Circuit Sls. .... 408-441-6441  
FL Pompano Bch., H H P Assocs. .... 407-740-0320  
FL Winter Park, HHP Assocs. .... 407-740-0320  
IL Arlington Heights, Greenslade Sls. .... 708-593-3450  
IN Fort Wayne, M/S Sls. and Assocs, Inc. .... 219-436-3023  
IN Greenwood, M/S Sls. and Assocs, Inc. .... 317-881-0110  
MD Kensington, Koebert Assocs., Inc. .... 301-493-8924  
MN Afton, Real Elctms. Sls. Assocs. .... 612-436-1950  
NH Nashua, Bell Controls .... 603-882-6984  
OK Broken Arrow, Merlin Elctms. .... 918-251-2084  
PA Glenside, Koebert Assocs. .... 215-887-2310  
TX Fort Worth, Merlin Elctms. .... 817-429-4420  
TX Grapevine, Merlin Elctms. .... 817-329-8922

**MICRO DATA SYSTEMS**, P.O. Box 3278, Thomasville, GA 31799, Tel: 912-226-1709, TELEX: 6503406939 MCI CW; Empl: 5; Sls. Mgr.: Sid Davis; Dist. Mgr.: Sid Davis

**MICRODIMENSIONS, INC.**, 7345 Production Dr., Mentor, OH 44060, Tel: 216-974-8070, FAX: 216-974-1648; Empl: 40

**MICRODOT, INTERCONNECT SYSTEMS DIVISION**, 201 Progress Dr., Montgomeryville, PA 18936, Tel: 215-699-5373, FAX: 215-699-5536; FSC No.: 91886; Sls. Mgr.: K. A. Neumuller

**MICRODRY, INC.**, 7450 Hwy. 329, Crestwood, Kentucky 40014, Tel: 502-241-8933, FAX: 502-241-8648; Empl: 18; Sls. Mgr.: Mark Arsenault, Tech. Sls. Engr.

**MICRO ELECTRONIC BUSINESS**, 4315 N. Elston, Chicago, IL 60641, Tel: 312-539-2994 ..... **D-1099**

**MICRO ELECTRONIC SYSTEMS, INC.**, 119 Northrup St., Bridgewater, CT 06752, Tel: 203-350-5004, FAX: 203-350-6966; Empl: 3; Sls. Mgr.: L.M. Green

**MICRO ELECTRONIC TECHNOLOGIES**, 35 South St., Hopkinton, MA 01748, Tel: 508-435-9057, FAX: 508-435-6481; Empl: 53; Sls. Mgr.: Mike Levangie; Dist. Mgr.: Ed Begley

**MICRO-ETCH PRODUCTS, INC.**, 94 Dodge Ave., P.O. Box 9712, Stratford, CT 06497, Tel: 203-378-8610, FAX: 203-375-6276; FSC No.: 24846; Empl: 42; Sls. Mgr.: Frank Dichiaro; Dist. Mgr.: Frank Dichiaro

**MICROFLECT CO., INC.**, 3575 25th St. S.E., P.O. Box 12985, Salem, OR 97309-0985, Tel: 503-363-9287, TWX: 510-599-0107, FAX: 503-363-4613; Empl: 160; Sls. Mgr.: John J. Kranitz

**MICRO HYBRIDS, INC.**, 2864 Route 112, Medford, NJ 11763, Tel: 516-732-3448, FAX: 516-732-3393; FSC No.: 5962; Empl: 7; Sls. Mgr.: Bruce Richardson



**FAX: 614-548-6184**

**MICRO INDUSTRIES**, 8399 Green Meadows Dr., N., Westerville, OH 43081-9486, Tel: 614-548-7878; Empl: 75; Sls. Mgr.: William Jackson ..... **D-1143**

**MICRO INSTRUMENT COMPANY**, 2250 Micro Pl., Escondido, CA 92029, Tel: 619-746-2010, FAX: 619-746-0433; FSC No.: FSCM 24836; Empl: 40; Sls. Mgr.: C.Marks(East), C. Haas(West)

**MICRO-INTEGRATION CORP.**, 215 Paca St., Cumberland, MD 21502, Tel: 800-832-4526, TELEX: 961-134, FAX: 301-777-3307; Sls. Mgr.: Janine Filion; Dist. Mgr.: P. Edward Fisher

**MICROLAB/FXR**, 10 Microlab Rd., Livingston, NJ 07039, Tel: 201-992-7700, FAX: 201-992-0513; FSC No.: 00929; Empl: 40



**FAX: 708-879-0126**

**MICRO LAMPS, INC.**, 1530 Hubbard Ave., Batavia, IL 60510-1488, Tel: 708-879-0900; Empl: 12; Sls. Mgr.: Edward R. Beutler ..... **B-1174**

**MICRO-LINK PRODS.**, Sea-ILAN Inc., 14602 N. U.S. 31, Carmel, IN 46032, Tel: 317-846-1721, FAX: 317-848-2254; Empl: 20; Sls. Mgr.: Jan Collins

**MICROLOGIC, INC.**, 108 Water St., Watertown, MA 02172, Tel: 617-923-1700, FAX: 617-923-4316; Sls. Mgr.: Barry J. Sanders

**MICROLOGIC, INC.**, 108 Water St., Watertown, MA 02172, Tel: 617-923-1700, FAX: 617-923-4316; Sls. Mgr.: Barry J. Sanders

**MICROMATH, INC.**, 2469 E. Fort Union Blvd., Salt Lake City, UT 84121, Tel: 801-943-0290, FAX: 801-943-0299; Empl: 8

**MICROMETALS**, 1190 N. Hawk, Anaheim, CA 92807, Tel: 714-630-7420, 800-356-5977, FAX: 714-630-4562; FSC No.: 12856; Empl: 80; Sls. Mgr.: Walt Lewis

**MICRO MODE PRODS.**, 1870 John Towers Ave., El Cajon, CA 92020, Tel: 619-449-3844, FAX: 619-258-8701; FSC No.: 15907; Empl: 55; Sls. Mgr.: Gerald Himaka



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**MICRO MO ELECTRONICS, INC.**, 742 2nd Ave. S., St. Petersburg, FL 33701, Tel: 813-822-2529, TELEX: 807-982; Empl: 50; *Sls. Mgr.*: S. J. O'Neil  
..... **B•1230, 1294-1297, 1968; D•1164-1165, 2316**

**MICRO-MOUNTING DEVICES**, 4092 Keith Dr., Campbell, CA 95008, Tel: 408-866-4626; FSC No.: 59058

**MICRON ELECTRIC CO., R.G. Allen Co.**, 7267 Coldwater Canyon, N. Hollywood, CA 91605, Tel: 818-765-8300


**FAX: 619-727-4436**

**MICRONEL U.S.**, 1280 Liberty Way, Vista, CA 92083, Tel: 619-727-7400; FSC No.: 61655; Empl: 10; *Sls. Mgr.*: N. Linko  
..... **C•1556, 1618-1625**

**MICRONETICS**, 26 Hampshire Dr., Hudson, NH 03051, Tel: 603-883-2900, FAX: 603-882-8987; FSC No.: 54487; Empl: 40; *Sls. Mgr.*: Peter Gale

**MICRO NETWORKS**, Unitrode Corporation, 324 Clark St., Worcester, MA 01606, Tel: 508-852-5400, FAX: 508-853-8296; FSC No.: 50507; Empl: 200; *Sls. Mgr.*: Skip Osgood

**MICRONICS TECHNOLOGY INC.**, See Continental Microwave Technology Inc.

**MICRON INDUSTRIES**, 4250 Madison St., Hillside, IL 60162, Tel: 708-547-0900, FAX: 708-547-0998; FSC No.: 30882; Empl: 115; *Sls. Mgr.*: Michael Kitun; *Dist. Mgr.*: Mike Kitun

**MICRO-NOW INSTR. CO., INC.**, 8260 N. Elmwood St., P. O. Box 1488, Skokie, IL 60076, Tel: 708-677-4700, FAX: 708-677-0394; FSC No.: 33288; Empl: 25; *Sls. Mgr.*: C. Amow

**MICRON SEMICONDUCTOR, INC.**, 2805 E. Columbia Rd., Boise, ID 83706, Tel: 208-368-3950, FAX: 208-343-2536

**MICRO-OHM CORP.**, 1088 Hamilton Rd., Duarte, CA 91010, Tel: 818-3575377, FAX: 818-358-6478; FSC No.: 20940; Empl: 109; *Sls. Mgr.*: Chas. Schwab; *Dist. Mgr.*: Chas. Schwab  
..... **A•1985**

## Local Sales Offices & Reps

CA San Juan Capistrano, Craven & Assocs.

|                                        |              |
|----------------------------------------|--------------|
| IL Hoffman Estates, Astro/Tech         | 714-240-7242 |
| KS Overland Pk., Q.D.C. Inds.          | 708-934-1538 |
| MA Bedford, Vector Assoc.              | 913-341-2214 |
| MN Maple Grove, Elctm. Prods. For Ind. | 617-271-0000 |
| TN Nashville, Strategic Mktg. Inc.     | 612-784-5554 |
|                                        | 615-883-7882 |

## Local Distributors

|                                                        |              |
|--------------------------------------------------------|--------------|
| CA Costa Mesa, Orange County Comps.                    | 714-979-3597 |
| CA Huntington Bch., Wyle Labs                          | 714-891-8008 |
| CA San Diego, Neumann Elctms.                          | 619-695-3005 |
| CA San Diego, Shelley-Ragon                            | 619-453-7133 |
| CA San Jose, Rose Elctms.                              | 408-943-0255 |
| CO Englewood, Arrow Elctms.                            | 303-790-4444 |
| IL Carol Stream, American Precision Elec.              | 708-510-8080 |
| NH Hampstead, Astrum Elctms.                           | 603-329-5656 |
| NY Oceanside, Tritech                                  | 516-678-6222 |
| PA McKean, Advacom                                     | 814-476-7774 |
| TX Ft. Worth, Industrial Elect.                        | 817-731-7321 |
| UT Provo, Central Utah Elctms. Supp.                   | 801-373-7522 |
| UT Salt Lake City, Kimball Elctms.                     | 801-328-2075 |
| EXP Basle, Switzerland, Siabaco W. Siegrist & Co. AG   | 845-962851   |
| EXP Huntingdale, Australia, Stewart Elctm. Comps. Pty. | 790-AA36908  |

**MICROPAC INDS., INC.**, 905 E. Walnut St., Garland, TX 75040, Tel: 214-272-3571, FAX: 214-494-2281; Empl: 200; *Sls. Mgr.*: Richard Schluter

**MICROPHASE**, 587 Connecticut Ave., Norwalk, CT 06856, Tel: 203-866-8000, FAX: 203-866-6727; Empl: 230; *Sls. Mgr.*: F. S. Parin

**MICROPLEX, INC.**, 1977 State College Blvd., Anaheim, CA 92806, Tel: 714-634-1535, FAX: 714-634-8375; Empl: 30

**MICROPLOT SYSTEMS**, 1897 Red Fern Dr., Ste. 200, Columbus, OH 43229, Tel: 614-882-4786, FAX: 614-882-3399; Empl: 5; *Sls. Mgr.*: Steve Bean

**MICRO PNEUMATIC LOGIC, INC.**, 2890 N. W. 62nd Street, Fort Lauderdale, FL 33309-1786, Tel: 305-973-6166, TELEX: 522316, FAX: 305-973-6339; Empl: 100; *Sls. Mgr.*: Ed Gillilan

**MICRO POWER INTL., INC.**, 10770 Black Mountain Rd., Ste. 248, San Diego, CA 92126, Tel: 619-271-0831, 619-271-5942; Empl: 58

**MICRO POWER SYS. INC.**, 3100 Alfred St., Santa Clara, CA 95056, Tel: 408-727-5350, TWX: 910-338-0154; FSC No.: 54186; Empl: 110; *Sls. Mgr.*: Tom Hardy; *Dist. Mgr.*: Chuck Sweet

**MICRO-PRECISION TECHNOLOGIES, INC.**, 12B Manor Pkwy., Salem, NH 03079, Tel: 603-893-7600, FAX: 603-893-9110; FSC No.: 0F962; Empl: 20; *Sls. Mgr.*: Jack Bird  
..... **A•1703**

## Local Sales Offices & Reps

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| AL Huntsville, Summit Mktg.   | 205-721-1701 |
| AZ Tempe, Cimarron Mktg.      | 602-962-4216 |
| CA San Jose, Loroco Sls.      | 408-436-8770 |
| CO Boulder, Al Steinberg      | 303-442-6018 |
| CA Norcross, Summit Mktg.     | 404-498-4530 |
| MD Laurel, CSDS               | 301-792-9850 |
| NH Salem, MPT                 | 603-893-7600 |
| NC Cary, Summit Mktg.         | 919-233-1836 |
| OH Dayton, Q-Mark             | 513-438-1129 |
| PA Clenside, Wyncote Instrmn. | 215-572-6500 |
| VA Fairfax, CSDS              | 703-385-0139 |

**MICROPUMP CORP.**, 1402 NE 136th Ave., Vancouver, WA 98668-8975, Tel: 206-253-2008, FAX: 206-253-2401; Empl: 140; *Sls. Mgr.*: Ron August

**MICRO QUALITY SEMICONDUCTOR, INC.**, Microsemi Corp., 1000 N. Shiloh Rd., Garland, TX 75042, Tel: 214-272-7811, FAX: 214-487-0406; Empl: 55; *Sls. Mgr.*: Bill Vandagriff; *Dist. Mgr.*: Bill Vandagriff

**MICROSEMI CORP.**, 2830 S. Fairview St., P.O. Box 26890, Santa Ana, CA 92799-6890, Tel: 714-979-8220, TELEX: 4720306, FAX: 714-557-5989; FSC No.: 14552; Empl: 1200; *Sls. Mgr.*: Al Calligaro; *Dist. Mgr.*: G. Avila

**MICROSEMI CORP. COLORADO**, Microsemi Corp., 800 Hoyt St., Broomfield, CO 80020, Tel: 303-469-2161, FAX: 303-466-3775; Empl: 180; *Sls. Mgr.*: Virginia Shatto; *Dist. Mgr.*: George Avila

**MICROSEMI CORPORATION**, Power Technology Components, 23201 S. Normandie Ave., Torrance, CA 90501, Tel: 310-534-3737, FAX: 310-530-5609; *Sls. Mgr.*: Robert Veeck

**MICROSEMI CORP. - SCOTTSDALE**, Microsemi Corporation, 8700 E. Thomas Rd., P.O. Box 1390, Scottsdale, AZ 85252-1390, Tel: 602-941-6300, TELEX: 4995412 MICROAZ, FAX: 602-947-1503; FSC No.: 860434040; Empl: 300; *Sls. Mgr.*: Curt Olsen; *Dist. Mgr.*: George Avila

**MICROSIGNALS INC.**, 38-42 9th St., L.I.C., NY 11101, Tel: 718-937-7955, 718-937-0391, 800-648-2252, FAX: 718-729-9140; Empl: 40; *Sls. Mgr.*: Mr. Greg Villafana

**MICROSONICS, INC.**, 60 Winter St., Weymouth, MA 02188, Tel: 617-337-4200; FSC No.: 11869; Empl: 76; *Sls. Mgr.*: Ken Lambert

**MICROSTAR LABORATORIES, INC.**, 2265 116th Ave. N.E., Bellevue, WA 98004, Tel: 206-453-2345, FAX: 206-453-3199; Empl: 30

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## Local Sales Offices & Reps

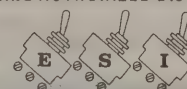
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| NC Charlotte         | 704-362-6948 |
| OH Dayton            | 513-237-4075 |
| PA Philadelphia      | 215-666-8341 |
| TX Dallas            | 214-701-2876 |
| TX Houston           | 713-978-4576 |
| WA Seattle           | 206-453-7591 |
| WI Milwaukee         | 414-797-6345 |
| Can Edmonton         | 403-483-4727 |
| Can Montreal         | 514-382-4423 |
| Can North York, Ont. | 416-499-6111 |
| Can Ottawa           | 613-722-6636 |
| Can Scarborough      | 416-293-8111 |
| Can Toronto          | 416-491-1300 |
| Can Vancouver        | 604-654-5601 |
| Can Winnipeg         | 204-784-3506 |

MICRO/SYS, 3447 Ocean View Blvd., Glendale, CA 91208,  
Tel: 818-244-4600, FAX: 818-244-4246

MICRO SYSTEMS ENGINEERING, INC., 6024 S.W.  
Jean Rd., Lake Oswego, OR 97035, Tel: 503-635-4016,  
TELEX: 151-538, FAX: 503-635-9610; FSC No.: 75800;  
Empl: 200; Sls. Mgr: Dennis McCal

MICRO SYSTEMS, INC., 65 Hill Ave., Ft. Walton Beach, FL  
32548-3858, Tel: 904-244-2332, FAX: 904-243-1378; FSC  
No.: 5895,7025; Empl: 65; Sls. Mgr: Cort Proctor

MICROTECH, 1420 Conchester Hwy., Boothwyn, PA 19061,  
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Mgr: Joe A. Duarte; Dist. Mgr: Joe A. Duarte

MICROTEC RESEARCH, INC., 2350 Mission College  
Blvd., Santa Clara, CA 95054, Tel: 408-980-1300, FAX:  
408-982-8266; Empl: 100; Sls. Mgr: Derek Taylor; Dist.  
Mgr: Derek Taylor

MICROTEK, INC., 63 1/2 Main St., Chicopee, MA 01020,  
Tel: 413-594-5116, FAX: 413-592-9736; Empl: 35; Sls.  
Mgr: Ann Paradis

MICROTEK INTERNATIONAL/DEV. SYS. DIV., 3300  
N.W. 211th Terrace, Hillsboro, OR 97124, Tel: 503-645-  
7333, FAX: 503-629-8460; Empl: 120; Sls. Mgr: Chris  
Bednarek

MICROTOUCH SYSTEMS, INC., 300 Griffin Park,  
Methuen, MA 01844, Tel: 508-659-9000, FAX: 508-659-  
9100; FSC No.: 935-0133; Empl: 200; Sls. Mgr: Alison  
Forsythe; Dist. Mgr: Janet Pannier



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MICROTRAN CO. INC., 145 E. Mineola Ave., P. O. Box  
236, Valley Stream, NY 11582-0236, Tel: 516-561-6050;  
FSC No.: 00348; Empl: 75; Sls. Mgr: John Eisenberg  
A-1254, 2228, 2404-2423

### Local Sales Offices & Reps

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| AL Madison, Arthur-Harris & Assoc.      | 205-461-9896 |
| AZ Scottsdale, F. Schoeffler Assoc.     | 602-948-1004 |
| CA San Jose, Kottmeier Assocs.          | 408-371-8700 |
| CA Torrance, Universal Comp. Co.        | 310-783-0220 |
| CO Englewood, Omega, Ltd.               | 303-762-1921 |
| FL Winter Pk, HPP Assoc. Inc.           | 407-740-0320 |
| IL Wheaton, CS Tech. Sls.               | 708-653-8126 |
| IN Fishers, R & D Elctm. Sls.           | 317-849-2026 |
| IA Marion, AEM, Inc.                    | 319-377-1129 |
| KS Lenexa, AEM, Inc.                    | 913-888-0022 |
| MD Baltimore, Burgin-Kreh Assocs.       | 301-265-8500 |
| MA Wellesley, Logan Sls.                | 617-235-6868 |
| MN Minneapolis, RK Sales                | 612-571-1001 |
| MO St. Louis, AEM, Inc.                 | 314-298-9900 |
| NJ Englewood Cliffs, E. Glass Assocs.   | 201-592-0200 |
| NM Albuquerque, C.T. Carlberg & Assocs. |              |
| NY Marcellus, Mullaly-Welch Sls.        | 505-899-2155 |
| NY Rochester, Mullaly-Welch Sls.        | 716-673-3891 |
| NC Cary, Arthur, Harris & Assoc.        | 716-244-1100 |
| OH Cleveland, J.O. Olsen Co.            | 919-460-8660 |
| OH Goshen, J.O. Olsen Co.               | 216-838-0510 |
| PA Pittsburgh, J.O. Olsen Co.           | 513-722-3320 |
| PA Wynnewood, Metz-Benham Assoc.        | 412-381-4254 |
| TX Houston, Spectra Sls. Corp.          | 215-896-7300 |
| TX Richardson, Spectra Sls. Corp.       | 713-270-8212 |
| Can Brampton, Ont, Reemco Inc.          | 214-234-3600 |
|                                         | 416-624-2730 |

### Local Distributors

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|----------------------------------------|--------------|
| AL Birmingham, MG Elctms. & Equip.     | 205-328-4525 |
| CA Milpitas, Sierra West Elctms.       | 408-945-1050 |
| CA Oakland, Brill Elctms.              | 510-834-5888 |
| CA San Diego, Kent Electronics         | 619-471-9561 |
| CA Santa Clara, Kent Elctms.           | 408-727-9810 |
| CA Santa Monica, Master Distrib.       | 310-452-1229 |
| CA Torrance, Kent Elctms.              | 310-320-2700 |
| CO Englewood, Kent/Shelley-Ragon       | 303-762-0670 |
| FL Largo, Elctm. Precepts of Florida   | 813-544-3636 |
| FL Pompano Beach, Peerless Radio Corp. |              |
|                                        | 800-327-4993 |
| IL Northbrook, Classic Comp. Supp.     | 708-272-9650 |
| IA Cedar Rapids, Dee Elctms.           | 319-365-7551 |
| MD Columbia, Sager                     | 410-995-4900 |
| MA Hingham, Sager Elec. Supp.          | 617-749-6700 |
| MN Minneapolis, Berquist               | 612-835-2322 |
| MN Thief River Falls, Digi-Key Corp.   | 800-344-4539 |
| NJ Oakland, Relay Specialties          | 800-526-5376 |
| NM Albuquerque, Walker Elctm. Supp.    | 505-883-2992 |
| NY Buffalo, Summit Distrib.            | 716-887-2800 |
| NY Hauppauge, Sager                    | 516-348-1300 |
| NY Johnson City, Help Elctms.          | 607-729-3528 |
| NY Lynbrook, Peerless Radio            | 516-593-2121 |
| NY Rochester, Summit Distrib.          | 716-334-8111 |
| NC Raleigh, Southeastern Elctms.       | 919-828-2311 |
| OH Dayton, J.A. Becker Co.             | 513-226-1341 |
| PA Philadelphia, Shap Elctms.          | 215-969-3300 |
| PA Pittsburgh, Sager                   | 412-772-2233 |
| TX Houston, Kent Elctms.               | 713-780-7770 |

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| TX Houston, Lenert Co.       | 713-225-1465 |
| WA Redmond, Priebe Elctms.   | 206-881-2363 |
| WI New Berlin, Classic Comp. | 414-786-5300 |

MICROVISION CORP., 180 Knowles Dr. Ste. 100, Los  
Gatos, CA 95008, Tel: 408-374-3158, FAX: 408-374-9394;  
Empl: 15; Sls. Mgr: Stan Buckstad

MICROWAVE APPLICATIONS GROUP, 3030 Industrial  
Pkwy., Santa Maria, CA 93455, Tel: 805-928-5711, TWX:  
910-351-5808, FAX: 805-925-5903; FSC No.: 26357;  
Empl: 51; Sls. Mgr: T. Janzen

MICROWAVE COMMUNICATIONS CORP., 26007  
Huntington Lane, Bldg. 11, Valencia, CA 91355, Tel: 805-  
257-1948, FAX: 805-257-0557; FSC No.: 57757; Empl: 10;  
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Cutoff, Ft. Walton Beach, FL 32548, Tel: 904-664-1234,  
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Michigan Dr., Natick, MA 01760, Tel: 508-655-0060, FAX:  
508-655-6972; Empl: 180; Sls. Mgr: R. Tucker

MICROWAVE DEVICE TECH., 4 Liberty Way, Westford,  
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Mgr: Dave Headley A-1655-1659

### Local Sales Offices & Reps

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| CA Oceanside, The House of Reps.   | 619-967-2712 |
| MA Randolph, Bengal Assocs.        | 617-961-3120 |
| OH Bellbrook, Tom Herman & Assocs. | 513-372-5707 |
| VA Fairfax, Schibley Assocs., Inc. | 703-591-3008 |

### Local Distributors

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| AZ Mesa, Antenna Techlg. Corp.              | 602-898-7667 |
| CA Campbell, Signal Sources                 | 408-866-0600 |
| CA Downey, Montero Intl, Inc.               | 310-862-0116 |
| CA Sacramento, Audiobal Elctms.             | 800-624-1903 |
| CA Torrance, Western CATV                   | 213-539-8030 |
| CO Englewood, Midwest CATV                  | 303-799-4343 |
| FL Boca Raton, Passive Dvcs, Inc.           | 407-998-0600 |
| FL Hialeah, Hero Comm.                      | 305-887-3203 |
| FL Miami, Centennial So.                    | 800-468-5465 |
| FL Miami, Gendra Intl.                      | 305-372-8845 |
| FL Mt. Dora, FM Technlg. Assoc. Inc.        | 904-383-3682 |
| FL Ocala, Broadcasters Gen. Store           | 904-622-9058 |
| FL Panama City, Bay Elctms. Supp.           | 904-785-7258 |
| GA Lawrenceville, John Weeks Enrtprs.       | 404-963-7870 |
| IL Rolling Meadows, Antec Comm.             | 708-677-2600 |
| IN Richmond, Allied Broadcast Equip.        | 317-962-8596 |
| LA Mamou, Satellite Earth Stas.             | 318-468-2203 |
| MI Bloomfield Hills, Nat. Satellite Corp.   | 313-644-4052 |
| MS Raymond, Broadcast Equip. Engrg. Sls.    |              |
|                                             | 601-857-8578 |
| NE Dakota City, ATV Research, Inc.          | 402-987-3771 |
| NH Bow, Earth Terminal, Inc.                | 603-224-5166 |
| NJ Union, Avanti Elctms.                    | 201-964-0333 |
| NY New York, Universal Elctms. Tech. Corp.  |              |
|                                             | 212-262-7200 |
| NC Pineville, S.C.M.S., Inc.                | 704-889-4508 |
| OR Beaver Creek, Northwest Comms.           | 503-266-7266 |
| PA Horsham, Toner Cable                     | 215-675-2053 |
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| TX Bedford, Spectrum Megahertz              | 817-267-2288 |
| TX Houston, Elctm. Comps. Dist.             | 713-529-8806 |
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| WA Seattle, RF Specialties of Wash.         | 206-546-6546 |
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| WV Plymouth, Hi-Tech.                       | 414-892-6210 |
| Can Boucherville, Que., Planon Telexpertise |              |
|                                             | 514-449-6481 |
| Can Calgary, Alberta, AVR Comms. Ltd.       | 403-251-0707 |
| Can Laval, Que., Inspecop Elctms.           | 514-686-0033 |
| Can Markham, Ont., Cabeltel Comms.          | 416-475-1030 |
| Can Markham, Ont., Deskin Sls.              | 416-475-1412 |
| Can Montreal, Que., Comega Technlg.         | 514-355-3105 |
| Can Oshawa, Ont., Comink Sys.               | 416-436-1075 |
| Can St. Leonard, Que., Trispec Comms.       | 514-328-2025 |



**MICROWAVE SOLUTIONS, INC.**, 3200 Highland Ave., Ste 3A, National City, CA 91950, Tel: 800-967-4267, FAX: 619-744-7003; FSC No.: 65151; Empl: 12; Sls. Mgr.: Edward M. Teysier

**MICROWAVE TECHNOLOGY DIV., JHP Industrial**, 405 West Taylor St, Syracuse, NY 13202-3442, Tel: 315-422-0050, FAX: 315-422-3331; FSC No.: 0G5J9; Empl: 8; Sls. Mgr.: Emanuel Henderson, Jr.

**MICROWAY INC. RESEARCH PARK**, Research Park, P.O. Box 79, Kingston, MA 02364, Tel: 508-746-7341, FAX: 508-746-4678; Empl: 35; Sls. Mgr.: Maryann Strassel; Dist. Mgr.: Maryann Strassel

**MIDAMERICA DESIGN SERVICE**, Spirit of America Corp., 10206 Lima Rd, Fort Wayne, IN 46818, Tel: 219-489-2511, FAX: 219-489-2295; Empl: 350; Sls. Mgr.: Bob Group

**MIDCOM, INC.**, 121 Airport Dr., Watertown, SD 57201, Tel: 605-886-4385, FAX: 605-886-4486; FSC No.: 0GP22; Empl: 300; Sls. Mgr.: Dean Ward **A-2425-2431**

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|    |                                      | 305-783-9214 |
| FL | Valrico, Richmar Elctms. Corp.       | 813-854-8032 |
| IL | Downers Grove, Richmar Elctms. Corp. |              |
|    |                                      | 708-968-0118 |
| IN | Indianapolis, Richmar Elctms. Corp.  | 317-577-9950 |
| IA | Iowa City, Richmar Elctms. Corp.     | 319-354-8894 |
| MD | Hunt Valley, Eagle Sls. Corp.        | 410-666-3930 |
| MN | N. Mankato, E.I. Sls.                | 507-345-5786 |
| TX | Plano, Richmar Elctms. Corp.         | 214-424-8388 |
| TX | Round Rock, Richmar Elctms. Corp.    | 512-255-2551 |
| VA | Powhatan, Eagle Sls. Corp.           | 804-492-9027 |
| WI | Butler, Richmar Elctms. Corp.        | 414-781-1730 |

**MID-EASTERN INDUSTRIES, Technology Dynamics Inc.**, 100 School Street, Bergenfield, NJ 07621-2915, Tel: 201-385-0500, FAX: 201-385-0702; FSC No.: 06179; Empl: 15; Sls. Mgr.: Daniel Ellenback **D-1832-1835**

*Local Sales Offices & Reps*

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| AL | Huntsville, BCI                       | 205-539-4411 |
| FL | Clearwater, Tech-Rep Assocs.          | 813-872-9900 |
| GA | Lawrenceville, BCI                    | 404-962-6826 |
| IL | Arlington Hgts., Greenslade Sls. Inc. | 708-593-3450 |
| MD | Columbia, Delta III Assocs.           | 410-730-4700 |
| MA | Topsfield, Whitehead Assocs., Inc.    | 508-887-8050 |
| MN | Minneapolis, Tecteam Sls. Inc.        | 612-854-6616 |
| NM | Albuquerque, IMEC                     | 505-275-0936 |
| NY | Elmont, Crane & Eger                  | 516-872-0800 |
| OH | Chagrin, J.J. Bair & Co.              | 216-543-8617 |
| TX | Dallas, Tesco Elctm. Sls. Co.         | 214-553-1200 |
| UT | Midvale, Christec                     | 801-566-3694 |
| WI | Wauwatosa, Greenslade Sls. Inc.       | 414-258-2727 |

**MIDGET LOUVER**, 800 Main Ave., Norwalk, CT 06851, Tel: 203-866-2342, FAX: 203-847-7147; Empl: 10; Sls. Mgr.: Helen Monroe; Dist. Mgr.: Helen Monroe

**MIDLAND-ROSS CORP., NEL UNIT**, See NEL Frequency Controls, Inc.

**MIDORI**

**FAX: 714-449-0139**

**MIDORI AMERICA CORP.**, 2555 E. Chapman Ave., Ste. 400, Fullerton, CA 92631, Tel: 714-449-0997; Empl: 3 **A-2109**

**MIDSTATES MARKETING, INC.**, 1122 E. Washington St., Ste 100, Indianapolis, IN 46202, Tel: 317-639-9999; Empl: 3

**MIDTEX RELAYS, INC.**, 982 Butterfield Trail, El Paso, TX 79906, Tel: 915-772-1061, 1-800-MIDTEX1, FAX: 915-772-1116; Empl: 275; Sls. Mgr.: Craig Law; Dist. Mgr.: Bob Walasiak

**MIDWEST COMPONENTS, INC.**, See Therm-O-Disc, Div. Midwest Component Product Group

**MIDWEST CONTAINER SYSTEMS**, 5604 Intl. Pkwy., Minneapolis, MN 55428, Tel: 612-533-4532, FAX: 612-533-9260; Empl: 3; Sls. Mgr.: John Poyer

**MIDWEST MICROWAVE**, 6564 South State Rd, Saline, MI 48176-9569, Tel: 313-429-4773, 800-521-4410, FAX: 313-429-1415; FSC No.: 34078; Empl: 120; Sls. Mgr.: William H. Lavery

**MIKRON INSTRUMENT COMPANY, INC.**, 445 W. Main St, Wyckoff, NJ 07481, Tel: 201-891-7330, FAX: 201-891-1205; Empl: 50; Sls. Mgr.: John Merchant

**MIL-COMM DISTRIBUTORS, INC.**, 9400 Lurline Ave. #C, Chatsworth, CA 91311, Tel: 818-998-3111

**MIL ELECTRONICS, INC.**, One Chestnut St, Nashua, NH 03060, Tel: 603-882-3200, FAX: 603-881-8661; FSC No.: 07862; Empl: 40

**MILES PLATTS INC.**, 901 Touhy Ave., Elk Grove Village, IL 60007, Tel: 1-708-364-0363, FAX: 708-364-0614; Empl: 7; Sls. Mgr.: J. L. Packwood

**JAMES MILLEN ELCTRNS.**, Caywood Elec. Inc., 87 Belmont St., No. Andover, MA 01845, Tel: 508-975-2711, FAX: 508-474-8949; Empl: 6; Sls. Mgr.: R. Jannini

**MILLER DIAL CORP.**, 4400 N. Temple City Blvd., El Monte, CA 91731, Tel: 818-444-4555, FAX: 818-443-3267; FSC No.: 91345; Empl: 200; Sls. Mgr.: P. J. Wener, V.P. Membrane

**MILLER, J.W., CO.**, See Bell Inds.

**MILLER, L.C., CO.**, 717 Monterey Pass Rd, Monterey Pk., CA 91754, Tel: 213-268-3611, FAX: 213-264-3203; Empl: 45

**MILLER, SANFORD, CORP.**, See Sanford-Miller Corp.

**MILLER, W. A., CO.**, Mingo Loop, P.O. Box 337, Oquossoc, ME 04964-0337, Tel: 207-864-3344, 800-227-1415, FAX: 207-864-3344; Empl: 8

**MILLER-STEPHENSON CHEM. CO., INC.**, George Washington Hwy., Danbury, CT 06810-0950, Tel: 203-743-4447; Sls. Mgr.: Mrs. Fran Bounar

**MILLIFLECT**, 37444 Sycamore St, Bldg. A, Newark, CA 94560, Tel: 510-791-5188, TELEX: 466465, FAX: 510-791-5237; FSC No.: 52426; Empl: 42; Sls. Mgr.: Philip Hamad; Dist. Mgr.: Philip Hamad

**MILLIVAX INSTRUMENTS, INC.**, Box 997, Curry Rd. Ext., Schenectady, NY 12301, Tel: 518-355-8300, FAX: 518-356-5161; FSC No.: 85711; Empl: 30; Sls. Mgr.: Jan B. Metzger **D-1299**

*Local Sales Offices & Reps*

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| CA  | San Diego, Advanced Prods. Sls.         | 619-530-0200 |
| CA  | Westlake VI, Advanced Prods. Sls.       | 818-706-8351 |
| MD  | Laurel, CSDS Inc.                       | 301-490-3800 |
| MA  | Needham, Addeco Corp.                   | 617-444-4754 |
| NY  | Fayetteville, Martin P. Andrews         | 315-637-5291 |
| TX  | Houston, Scientific Sls.                | 713-645-6218 |
| TX  | Richardson, Scientific Sls. Co.         | 214-231-6541 |
| VA  | Fairfax, CSDS Inc.                      | 703-385-0139 |
| Can | Downsview, Ont., Tradeport Elctms. Grp. | 416-736-0866 |

**MILL-MAX MANUFACTURING CORP.**, P.O. Box 300, Oyster Bay, NY 11771-0300, Tel: 516-922-6000, FAX: 516-922-9253; FSC No.: 3N087; Empl: 200; Sls. Mgr.: Richard M. Weiner **C-1421**

*Local Sales Offices & Reps*

|    |                                    |                                 |
|----|------------------------------------|---------------------------------|
| AL | Huntsville, DHR Mktg., Inc.        | 205-536-9775, FAX: 205-539-8313 |
| AZ | Scottsdale, Trinity Sls.           | 602-483-1943, FAX: 602-483-2038 |
| AR | Mabelvale, Erickson Sls., Inc.     | 501-455-0618                    |
| CA | Campbell, PCA                      | 408-559-2866, FAX: 408-559-8277 |
| CA | Dana Point, PCA                    | 714-493-9822, FAX: 714-240-1894 |
| CO | Englewood, Omega Ltd.              | 303-762-1921, FAX: 303-762-1928 |
| CT | Hartford, D.A. Crowley & Assocs.   | 203-956-9007, FAX: 203-956-5351 |
| FL | Boca Raton, Tech Sls. Specialists  | 407-391-3718, FAX: 407-750-1178 |
| GA | Duluth, DHR Mktg., Inc.            | 404-564-0529, FAX: 404-564-1127 |
| MA | Roswell, Contact Factory           | 516-922-6000, FAX: 516-922-9253 |
| IL | Elk Grove Village, Control Sls.    | 708-595-2110, FAX: 708-595-9592 |
| IN | Indianapolis, M & L Sls., Inc.     | 317-359-4742, FAX: 317-359-0320 |
| IN | Valparaiso, Catalyst Sls.          | 219-477-4004, FAX: 219-477-4355 |
| KS | Overland Park, Acorn Elctms., Inc. | 913-649-6402, FAX: 913-649-8005 |

|     |                                     |                                 |
|-----|-------------------------------------|---------------------------------|
| LA  | Chalmette, Erickson Sls., Inc.      | 504-271-1976                    |
| MN  | St. Paul, Johnson Co.               | 612-429-2544, FAX: 612-429-3104 |
| MO  | St. Louis, Acorn Elctms., Inc.      | 314-421-1751, FAX: 314-421-1752 |
| NH  | Amherst, D.A. Crowley & Assocs.     | 603-673-7050, FAX: 603-672-0817 |
| NJ  | Ft. Lee, Nexus Technlg.             | 201-947-0151, FAX: 201-947-0163 |
| NY  | Fairport, Senntec                   | 716-425-3954, FAX: 716-425-7933 |
| NC  | Raleigh, Contact Factory            | 516-922-6000, FAX: 516-922-9253 |
| OH  | Dayton, Catalyst Sls. Co.           | 513-256-3344, FAX: 513-256-1173 |
| OR  | Tigard, Halbar-RTS, Inc.            | 503-624-5741, FAX: 503-684-1803 |
| PA  | Doylestown, G. A. Recentio Assocs.  | 215-348-7577, FAX: 215-348-8458 |
| PA  | Pittsburgh, Catalyst Sls. Co.       | 412-826-3434, FAX: 412-826-3436 |
| TX  | Dallas, Erickson Sls., Inc.         | 214-739-5833, FAX: 214-739-2329 |
| WA  | Redmond, Halbar-RTS, Inc.           | 206-882-0920, FAX: 206-881-3323 |
| WI  | Brookfield, Control Sls.            | 414-797-9500, FAX: 414-797-0784 |
| Can | Mississauga, True North Technlg.    | 416-677-9788, FAX: 416-677-8048 |
| Can | Montreal, Que., True North Technlg. | 514-343-9393, FAX: 514-343-9390 |
| Can | Ottawa, True North Technlg.         | 613-564-0629                    |

*Local Distributors*

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Huntsville, Electronic Fasteners     | 205-430-0400 |
| AL | Huntsville, Nu Horizons              | 205-722-9330 |
| AZ | Phoenix, Aero-Space Southwest        | 602-582-2779 |
| AZ | Phoenix, Arizona Comps.              | 602-269-5655 |
| AZ | Phoenix, Force Elctms.               | 602-437-1060 |
| AZ | Tempe, Acacia/Deanco                 | 602-894-2874 |
| AZ | Tucson, Pioneer Screw & Nut          | 602-623-9800 |
| AR | Little Rock, Carlton-Bates           | 501-562-9100 |
| CA | Anaheim, Bisco                       | 714-635-0380 |
| CA | Chatsworth, Alatec Prods.            | 818-727-7800 |
| CA | Costa Mesa, Eric Elctms.             | 714-751-1185 |
| CA | El Segundo, Force Elctms.            | 213-772-1324 |
| CA | Fremont, Acacia/Deanco               | 510-623-7500 |
| CA | Fremont, Alatec Prods.               | 510-567-7701 |
| CA | Irvine, Acacia/Deanco                | 714-660-0834 |
| CA | Los Gatos, Gourmet Elctms.           | 408-374-0552 |
| CA | North Hollywood, Electronic Hardware | 818-982-6100 |
| CA | San Diego, Acacia/Deanco             | 619-597-0577 |
| CA | San Diego, Force Elctms.             | 619-569-9661 |
| CA | San Jose, Bisco                      | 408-435-8980 |
| CA | San Jose, Eric Elctms.               | 408-432-1111 |
| CA | San Jose, Pro-Fasteners              | 408-943-9177 |
| CA | Santa Ana, BDS Elctms.               | 714-662-1050 |
| CA | Santa Clara, Force Elctms.           | 408-748-1324 |
| CA | Sunnyvale, PSC                       | 408-737-1333 |
| CO | Denver, Hardware Specialty           | 303-371-8553 |
| CO | Wheatridge, Acacia/Deanco            | 303-421-7004 |
| CT | Southbury, Hellind Elctms            | 203-262-1700 |
| CT | Wallingford, Cronin Elctms.          | 203-265-3134 |
| FL | Ft. Lauderdale, Nu Horizons          | 305-735-2555 |
| FL | Sanford, Elctm Fasteners             | 407-321-4000 |
| FL | Sunrise, All American                | 305-572-7999 |
| FL | Tampa, Century Fasteners             | 813-886-5770 |
| GA | Norcross, Atlanta Hardware Specialty | 404-449-8000 |
| GA | Norcross, Nu Horizons                | 404-416-8666 |
| IL | Addison, Belford Elctms.             | 708-691-1100 |

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**(510) 835-1500**  
1026 6th AVENUE  
OAKLAND, CA 94606



|    |                                   |              |
|----|-----------------------------------|--------------|
| IL | Chicago, El/Mech                  | 312-794-9100 |
| IL | Franklin Park, Bisco Inds.        | 708-451-1230 |
| IN | Indianapolis, Meunier Elctns.     | 317-635-3511 |
| IN | Indianapolis, PEI/Genesis Elctns. | 317-329-7700 |
| IN | South Bend, PEI/Genesis Elctns.   | 800-348-2996 |
| LA | Shreveport, Carlton-Bates         | 318-636-9975 |
| MD | Columbia, Nu Horizons             | 301-995-6330 |
| MD | Gaithersburg, Capitol Fasteners   | 301-948-9310 |
| MD | Gaithersburg, MS Elctns.          | 301-921-0200 |
| MD | Hunt Valley, Alatec Prods.        | 301-667-0063 |
| MD | Ijamsville, Hardware Specialty    | 301-831-1212 |
| MA | Marlborough, Hardware Specialty   | 508-481-8622 |
| MA | Needham, Cronin Elctns.           | 617-449-5000 |
| MA | Wakefield, Nu Horizons            | 617-246-4442 |
| MA | Wilmington, Heiland Elctns.       | 508-657-4870 |
| MI | Wyoming, North Coast Comps.       | 616-452-0800 |
| MN | Minneapolis, Aero-Space Computer  | 612-884-4725 |
| MN | Roseville, Chris Elctns.          | 612-631-2647 |
| MO | Kansas City, Aero-Space Computer  | 913-432-8508 |
| MO | Springfield, Carlton-Bates        | 417-862-1699 |
| NH | Atkinson, Astrum Elctns.          | 603-898-3399 |
| NJ | Blackwood, Hardware Specialty     | 609-228-6800 |
| NJ | Mt. Laurel, Nu Horizons           | 609-231-0900 |
| NJ | Pine Brook, Nu Horizons           | 201-882-8300 |
| NJ | Union, Meridian Supply            | 908-687-6220 |
| NM | Albuquerque, Bestech Sls.         | 505-298-0034 |
| NY | Amityville, Nu Horizons           | 516-226-6000 |
| NY | Bohemia, Car-Lac                  | 516-567-4200 |
| NY | Bohemia, Edge Elctns.             | 516-567-6300 |
| NY | Buffalo, Rome Elctns.             | 716-626-1602 |
| NY | Johnson City, Help Elctns.        | 607-729-3528 |
| NY | Minneapolis, Hardware Specialty   | 516-741-7101 |
| NY | Penn Yan, Advacom                 | 315-536-2201 |
| NY | Rochester, Help Elctns.           | 716-475-0850 |
| NY | Rochester, Nu Horizons            | 716-292-0777 |
| NY | Rochester, Rome Elctns.           | 716-248-0160 |
| NY | Rochester, Simcona Elctns.        | 716-328-3230 |
| NY | Rome, Rome Elctns.                | 315-337-5400 |
| NY | Ronkonkoma, All American          | 516-981-3935 |
| NY | Ronkonkoma, Jet Comps.            | 516-471-3124 |
| NY | Syracuse, Hardware Specialty      | 315-434-9093 |
| NC | Raleigh, Century Fasteners        | 919-787-1800 |
| OH | Akron, Aesco Elctns.              | 216-762-8818 |
| OH | Columbus, Aesco Elctns.           | 614-882-6762 |
| OH | Dayton, Advacom                   | 513-274-5900 |
| OH | Warren, REM Elctns.               | 216-373-1300 |
| OK | Oklahoma City, Carlton-Bates      | 405-681-4446 |
| OK | Tulsa, Carlton-Bates              | 918-250-1626 |
| OR | Beaverton, Acacia/Deanco          | 503-646-3377 |
| OR | Beaverton, Comp. Resources        | 503-641-8488 |
| PA | Erie, REM Elctns.                 | 814-453-5626 |
| PA | Export, Advacom                   | 412-325-7551 |
| PA | Harrisburg, Ad-Tech               | 717-561-9905 |
| PA | McKean, Advacom                   | 814-476-7774 |
| PA | North Huntingdon, REM Elctns.     | 412-864-7423 |
| PA | Philadelphia, PEI/Genesis         | 800-523-0727 |
| TN | Memphis, Carlton-Bates            | 901-365-3539 |
| TX | Allen, Prime Distbg.              | 214-231-0170 |
| TX | Austin, Wofford Elctns.           | 512-339-1131 |
| TX | Dallas, Wofford Elctns.           | 214-340-8555 |
| TX | El Paso, McNicol Elctns.          | 915-566-2936 |
| TX | Farmers Branch, Force Elctns.     | 214-247-9955 |
| TX | Houston, Carlton-Bates            | 713-956-2244 |
| TX | Houston, Force Elctns.            | 713-561-8644 |
| TX | Houston, Wofford Elctns.          | 713-351-2255 |
| TX | Richardson, Off The Shelf Comp.   | 214-238-0808 |
| UT | Salt Lake City, Standard Supply   | 801-486-3371 |
| WA | Kent, Comp. Resources             | 206-340-1646 |
| WA | Redmond, Acacia/Deanco            | 206-881-5566 |
| WI | Brookfield, Bisco Inds.           | 414-789-7325 |
| WI | Milwaukee, Progressive Image      | 414-321-4722 |



**FAX: 310-430-8309**

**MILLS RESISTOR CO.**, 3840 Catalina St., Los Alamitos, CA 90702, Tel: 310-598-2454; FSC No: 24328; Empl: 50; Sls. Mgr.: S. Kistner; Dist. Mgr.: C. Brown ... **A-1987**

| Local Sales Offices & Reps |                                            |              |
|----------------------------|--------------------------------------------|--------------|
| CA                         | Los Altos, Frauman Assocs.                 | 415-941-0660 |
| CA                         | Sacramento, Mills Resistor Co.             | 916-422-5461 |
| CT                         | Rocky Hill, Jim McPhail                    | 203-721-1802 |
| MA                         | Waltham, Dynasel Assocs.                   | 617-890-6777 |
| MI                         | Milford, Elctm. Comp. Sls., Inc.           | 313-360-3790 |
| OR                         | Gaston, SPS Elctns.                        | 206-323-4140 |
| PA                         | Montgomeryville, Quick Response Tech. Sls. | 215-362-9225 |
| TX                         | Houston, Ev Smith Co.                      | 713-649-5756 |
| WA                         | Seattle, SPS Elctns.                       | 206-323-4140 |

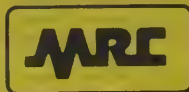
#### Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| FL | Fl. Lauderdale, Jaro Elctms. | 800-327-5551 |
| PA | Harrisburg, ADTECH           | 717-939-8337 |
| PA | McKean, Advacom              | 814-476-7774 |

**MILTON ROSS CO.**, 262 Valley Rd., Warrington, PA 18976, Tel: 215-491-0600, FAX: 215-491-9479; FSC No: 07047; Empl: 100; Sls. Mgr.: Marianne Skukowski

**MILTOPE BUSINESS PRODUCTS**, Miltope Grp., 1770 Walt Whitman Rd., Melville, NY 11747, Tel: 516-420-0200, 516-756-7650, TWX: 510-221-1803, FAX: 516-756-7606; Empl: 650; Sls. Mgr.: Robert Ceonzo

**MILTOPE CORP.**, 1770 Walt Whitman Rd., Melville, NY 11747, Tel: 516-420-0200, TWX: 510-221-1803; Empl: 750; Sls. Mgr.: Frederick S. Korb; Dist. Mgr.: William Jennings



**FAX: 414-271-9876**

**MILWAUKEE RESISTOR CORP.**, 700 W. Virginia St., Milwaukee, WI 53204, Tel: 414-271-9900; FSC No: 82807; 15109; Empl: 75; Sls. Mgr.: John Dorsha ... **A-1988-1992**

#### Local Sales Offices & Reps

|    |                                          |              |
|----|------------------------------------------|--------------|
| CA | San Carlos, Electro Pacific              | 415-441-5541 |
| IL | Arlington Heights, Kettner & Assocs.     | 708-364-0830 |
| NC | Kernersville, Heritage Elctrl. Sls.      | 919-996-4484 |
| MA | Stoughton, EECSS-Mel Botsian             | 617-344-5139 |
| MN | Plymouth, Kettner & Assocs.              | 612-559-5150 |
| NY | Rochester, Gislason Sls.                 | 716-328-7400 |
| NY | Whitestone, M. H. Lynn co.               | 718-352-9233 |
| NC | Kernersville, Heritage Electrical Assoc. | 800-877-4372 |
| OH | Westlake, Assoc. Elctrl. Comps.          | 216-835-9960 |
| WI | Mequon, Kettner & Assocs.                | 414-241-4697 |

**MIMIC, INC.**, P.O. Box 705, Islingson, MA 02090-0705, Tel: 617-329-9593; Empl: 5; Sls. Mgr.: S. Thurston

**MINC INCORPORATED**, 6755 Earl Dr., Colorado Springs, CO 80918, Tel: 719-590-1155, FAX: 719-590-7330; Sls. Mgr.: David Niehaus

**MINCO PRODUCTS**, 7300 Commerce La., Minneapolis, MN 55432, Tel: 612-571-3121, FAX: 612-571-0927; FSC No: 09359; Empl: 575; Sls. Mgr.: J. Anderson

**MIN-E-CON**, 3160 Pullman, Costa Mesa, CA 92626, Tel: 714-434-7312, FAX: 714-434-7431; FSC No: 54455



**FAX: 203-283-6527**

**MINELCO INC. - A TALLEY IND.**, 135 S. Main St., Thomaston, CT 06787-0459, Tel: 203-283-8261; FSC No: 07479; Empl: 70; Sls. Mgr.: James A. Myles ... **B-1175**

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, L & D Inc.              | 205-837-1469 |
| AZ | Phoenix, James Gerry Co.            | 213-283-7694 |
| CA | Alhambra, James Gerry Co.           | 213-283-7694 |
| CO | Centerville, West Inc.              | 208-888-6227 |
| CO | Denver, West Inc.                   | 303-477-8180 |
| CT | Old Saybrook, FJS Assocs.           | 203-388-5374 |
| FL | Longwood, Delmac                    | 407-831-0040 |
| GA | Atlanta, L & D, Inc.                | 404-395-7079 |
| IA | Cedar Rapids, J.R. Sls. Engrg.      | 319-393-2232 |
| KS | Wichita, Magna Eng. Sls. Co.        | 316-744-0851 |
| MD | North East, Magna Eng. Sls. Co.     | 410-398-4215 |
| MA | Burlington, F.J.S. Assocs.          | 617-273-5959 |
| MO | St. Louis, Magna Eng. Sls. Co. Inc. | 314-849-6590 |
| NJ | Hasbrouck Hgts, Comp-Tech Sls.      | 201-288-7400 |
| NY | New Hyde Park, Comp-Tech Sls.       | 516-593-2628 |
| NC | Raleigh, L & D, Inc.                | 919-876-5301 |
| OH | Dayton, Electro Mktg. Grp.          | 513-890-8322 |
| OR | Lake Oswego, Caruso & Assocs.       | 503-635-5282 |
| TX | Dallas, Kravand Assoc., Inc.        | 214-437-3355 |
| WA | Bellevue, Caruso & Co.              | 206-455-8811 |

**MINGSTON ELECTRONICS, INC.**, MEC Inc. (Taiwan), 14145 Proctor Ave. Unit 8, City of Industry, CA 91746, Tel: 818-330-2086, FAX: 818-330-9988; Empl: 3; Sls. Mgr.: Johnny Chao



**FAX: 718-332-4661**

**MINI-CIRCUITS LAB.**, 13 Neptune Avenue, P.O. Box 350166, Brooklyn, NY 11235-0003, Tel: 718-934-4500, TELEX: 125460, 620156 (Intl.); FSC No: 15542 ... **A-1724-1845**

#### Local Sales Offices & Reps

|     |                                               |                                 |
|-----|-----------------------------------------------|---------------------------------|
| AZ  | Scottsdale, Thorson Desert States, Inc.       | 602-998-2444                    |
| CA  | Los Altos, Cain-White & Co.                   | 415-948-6533                    |
| CA  | Tustin, Youngewirth & Olenick Assocs.         | 714-838-5144                    |
| CO  | Parker, W. Howard Assocs.                     | 303-841-5755                    |
| FL  | Clearwater, Beacon Microwave & Instrmn., Inc. | 813-796-2378                    |
| FL  | Longwood, Beacon Microwave & Instrns.         | 407-332-1940                    |
| GA  | Atlanta, Beacon Microwave & Instrmn., Inc.    | 404-256-9640                    |
| IL  | Mundelein, Cain-Forlaw, Inc.                  | 708-540-9962                    |
| IN  | Wolcottville, Cain-Forlaw Co., Inc.           | 219-854-2632                    |
| MD  | Columbia, M. Lader Co.                        | 800-442-3177                    |
| MA  | Chelmsford, Advanced Technlg. Mktg., Inc.     | 508-458-0200                    |
| MO  | Mini-Circuits                                 | 417-335-5935; FAX: 417-335-5945 |
| NM  | Albuquerque, Thorson Desert States, Inc.      | 505-883-4343                    |
| NY  | Bklyn (Distn. Ctr.), Mini-Circuits            | 800-654-7949                    |
| NY  | Hartsdale, Spectrum Sls., Inc.                | 914-472-8600                    |
| NY  | Skaneateles, Robtron, Inc.                    | 315-685-5731                    |
| NC  | Greensboro, M. Lader Co.                      | 800-442-3177                    |
| OH  | Worthington, Cain-Forlaw Co., Inc.            | 614-436-3004                    |
| OR  | Aloha, Cain-Sweet Co.                         | 503-591-0647                    |
| PA  | Conshohocken, M. Lader Co.                    | 215-825-3177                    |
| TX  | Richardson, Beacon Microwave & Instrmn., Inc. | 214-437-1505                    |
| TX  | Round Rock, Beacon Microwave & Instrmn., Inc. | 512-244-6675                    |
| VA  | Strasburg, M. Lader Co.                       | 800-442-3177                    |
| WA  | Bellevue, Cain-Sweet Co.                      | 206-462-2118                    |
| Can | Burnaby, B.C., Giga-Tron Assocs. Ltd.         | 604-299-4244                    |
| Can | Burnaby, BC, Cain-Sweet Co.                   | 604-420-6886                    |
| Can | Ottawa, Ont., Giga-Tron Assocs., Ltd.         | 613-225-4090                    |

#### Local Distributors

|    |                                    |                            |
|----|------------------------------------|----------------------------|
| AL | Huntsville, Component Dists., Inc. | 205-851-7800               |
| AZ | Arizona/New Mexico, Mini-Circuits  | 800-888-0331               |
| CA | Los Altos, Mini-Circuits           | 415-948-6533               |
| CA | Tustin, Mini-Circuits              | 714-838-5144; 800-654-7949 |
| FL | Palm Bay, Component Dists., Inc.   | 407-724-9910               |
| GA | Norcross, Component Dists., Inc.   | 404-441-3320               |
| IL | Mundelein, CFC Dists., Inc.        | 800-874-7209               |
| MD | Columbia, MLC Dists.               | 708-540-9962               |
| MO | Mini-Circuits                      | 417-335-5935               |
| NM | Mini-Circuits                      | 800-654-7949               |
| NC | Greensboro, MLC Dists.             | 800-442-3177               |
| PA | Conshohocken, MLC Dists.           | 215-825-3177               |
| TX | Dallas, Comp. Dists., Inc.         | 214-644-0373               |
| WA | Bellevue, Mini-Circuits            | 206-462-2118; 800-654-7949 |



**FAX: 508-695-8758**

**MINI-SYSTEMS, INC.**, Electronic Package Div., 168 E. Bacon St., P.O. Box 1597, Plainville, MA 02762, Tel: 508-695-2000; Sls. Mgr.: Heather Edwards ... **A-1710, 1993**



Local Sales Offices & Reps  
CA L.S. Engrg. .... 415-967-5880,FAX:415-967-5884  
CA S. California Tech. Sls. .... 818-704-9087,  
FAX:818-704-8632  
FL JDM Assocs. .... 407-725-2823,FAX:407-725-7861  
IL ABC Elctn. Sls. .... 708-924-9974,FAX:708-924-9975  
MN InterTec Associates .... 612-921-8443,  
FAX:612-929-4488  
NH Shain Assocs. .... 603-881-4881,FAX:603-880-8924  
NY LFG Micro .... 516-399-3199,FAX:516-399-3182  
VA Glasscock Assocs. .... 804-798-2125,  
FAX:804-798-2109  
WA Bellevue, Advanced Power Comps. .... 206-641-9127,  
FAX:206-641-8655  
Can Ontario, ON, Intrade Canada .... 613-727-1272,  
FAX:613-727-0246



**FAX: 508-695-6076**  
**MINI-SYSTEMS, INC., Thick/Thin Film Division,**  
20 David Rd, North Attleboro, MA 02761, Tel: 508-695-  
0203, TWX: 710-348-0564; FSC No.: 50316; Empl: 163  
A-1993

Local Sales Offices & Reps  
AZ Scottsdale, IMA Sls, Inc. .... 602-946-4940,  
FAX:602-947-7638  
CA Brea, S.C.T.S. .... 213-691-1114,FAX:213-690-0504  
CA Mountain View, L.S. Engrg. .... 415-967-5880,  
FAX:415-967-5884  
CA Woodland Hills, S.C.T.S. .... 818-704-9087,  
FAX:818-704-8632  
FL Palm Bay, JDM Assocs. .... 407-725-2823,  
FAX:407-725-7861  
FL Pompano Beach, J.P. Elctns. .... 305-782-6830,  
FAX:305-782-1640  
IL Elk Grove, ABC Elctns. .... 708-228-1204,  
FAX:708-228-1249  
ME Bethel, Shain Assocs, Inc. .... 207-836-3200  
MA Norwell, Shain Assocs, Inc. .... 617-982-1474,  
FAX:617-740-2680  
MN Minneapolis, Intertec Assocs. .... 612-921-8443,  
FAX:612-929-4488  
NH Nashua, Shain Assocs, Inc. .... 603-881-4881,  
FAX:603-880-8924  
NJ Princeton, Wexler-Court Sls. Co. .... 609-452-8670,  
FAX:609-452-9213  
NY Mastic Beach, LFG Micro .... 516-399-3199,  
FAX:516-399-3182  
NY Rochester, Phase Two Sls. .... 716-235-3889,  
FAX:716-235-1351  
NY Rockville Centre, Milano Bros. Intl. .... 516-764-2200,  
FAX:516-764-4006  
TX Richardson, Barry Sls. .... 214-234-0255,  
FAX:214-235-0271  
VA Ashland, Glasscock Assoc. .... 804-798-2125,  
FAX:804-798-2109  
WA Bellevue, Advanced Power Comps. .... 206-747-9127,  
FAX:206-641-8655  
Can Nepean, Ont, Intrade Canada .... 613-727-1272,  
FAX:613-727-0246

**MINI-SYSTEMS, INC., Sunbelt Microelectronic Division,**  
237 Enterprise Rd, Deltona, FL 32725, Tel: 407-  
574-0208, FAX: 407-574-8262 A-1993

**MINNESOTA WIRE & CABLE CO.,** 1835 Energy Park  
Drive, St. Paul, MN 55108-2721, Tel: 612-642-1800 , 1-  
800-258-6922(MWCC), FAX: 612-642-9201; Empl: 165;  
Sls. Mgr: Paul Wagner

**MINOR RUBBER CO., INC.,** Ackerman St, Bloomfield, NJ  
07003, Tel: 201-338-6800, 800-433-6886, FAX: 201-893-  
1399; Sls. Mgr: Tom Fitzhenry

**MINT SYSTEMS CORPORATION,** 1633 South Main  
Street, Milpitas, CA 95035-6262, Tel: 408-262-7171, FAX:  
408-262-5387; Sls. Mgr: Rudy Juang  
D-1300-1301, 2283

**MIRAGE/KLM,** 16890 Church St, P.O. Box 1000, Morgan  
Hill, CA 95037, Tel: 408-779-7363, FAX: 408-779-8845;  
Empl: 50; Sls. Mgr: Nancy Nykaza

**FAX: 612-825-7010**  
**MISCO/MINNEAPOLIS SPEAKER CO., INC.,** 3806  
Grand Avenue, Minneapolis, MN 55409, Tel: 612-825-  
1010; FSC No: 14208; Sls. Mgr: Tad Thompson  
D-1052

Local Sales Offices & Reps  
CA Newport Bch, Spa Elctn. Sls. .... 714-863-1193  
FL Longwood, M & H Assocs. .... 407-332-7912  
OH Brecksville, Audio Mktg. Assocs. .... 216-526-2426  
TX Arlington, Electronic Prod. Reps. .... 817-467-0377  
WA Lynnwood, Pacnor Mktg, Inc. .... 206-771-6016

**MITCHELL ELECTRONICS CORP.,** 84 West Grand  
Street, Mt. Vernon, NY 10552, Tel: 914-699-3800, TELEX:  
914-699-1022; Empl: 25; Sls. Mgr: Jonathan Lerner  
A-2433

**MITEC ELECTRONICS,** 104 Gun Avenue, Pointe Claire,  
Quebec, Canada H9R 3K3, Tel: 514-694-6666, 800-724-  
3911, FAX: 514-694-3814; FSC No: FSCM 38494; Empl:  
115; Sls. Mgr: J. Robinson

**MITECH ELECTRONICS CORP.,** 411 Washington St,  
Otsego, MI 49078, Tel: 616-694-9471, FAX: 616-692-2651;  
Empl: 78; Sls. Mgr: Kendall Meyer

**MITEL SEMICONDUCTOR DIV. OF MITEL CORP.,**  
360 Leggett Dr., P.O. Box 13089, Kanata, Ont, Canada K2K  
1X3, Tel: 613-592-2122, TELEX: 053-3221, TWX: 613-  
562-8529; Empl: 1000; Sls. Mgr: Ron Chon

**MITEQ INC.,** 100 Davids Drive, Hauppauge, NY 11788, Tel:  
516-436-7400, TELEX: 6718148, FAX: 516-436-7430;  
Empl: 350

**MITRONICS, P.O. Box 2129, Rolling Hills, CA 90274, Tel:**  
310-377-2022

**MITSUBISHI ELECTRONICS,** 991 Knox Street, Torrance,  
CA 90502, Tel: 213-515-3993, TELEX: 06-4703-M USA  
LSA, TWX: 66-4787-MELA TRNC; Empl: 423; Sls. Mgr:  
Bob Crooks, V.P. Sls; Dist. Mgr: Bob Crooks, V.P. Sls.

**MITSUBISHI ELCTRNS. AMERICA, INC.,** Elctn.  
Device Grp., 1050 East Arques Ave, Sunnyvale, CA  
94086, Tel: 408-730-5900, TELEX: 172296, TWX: 910-  
339-9549, FAX: 408-730-4972; Empl: 200; Sls. Mgr: Mike  
Bocian; Dist. Mgr: Tom Zellman

Local Sales Offices & Reps  
CA Cypress, Mitsubishi Elctns. Sls. Reg. Off. .... 714-236-6270  
CA San Diego, Mitsubishi Elctns. Reg. Sls. Off. .... 619-451-9618  
CA Sunnyvale, Mitsubishi Elctns.-Reg. Sls. Off. .... 408-730-5900  
CA Torrance, Mitsubishi Elctns. (Southwest) .... 213-515-3993

CO Denver, Mitsubishi Elctns. (Rocky Mtn.) .... 303-740-6775  
CO Englewood, Mitsubishi Elctns. Reg. Sls. Off. .... 303-220-0744  
FL Boca Raton, Mitsubishi Elctns. .... 407-487-7747  
GA Mitsubishi Elctns. (S. Atlantic) .... 404-368-4850  
GA Norcross, Mitsubishi Elctns. Reg. Sls. Off. .... 404-448-1263

IL Mt. Prospect, Mitsubishi Elctns.-Reg. Sls. Off. .... 708-298-9223

MA Woburn, Mitsubishi Elctns. (Northeast) .... 617-932-5700

MA Woburn, Mitsubishi Elctns. Sls. Reg. Off. .... 617-937-4300

MN Minnetonka, Mitsubishi Elctns.-Reg. Sls. Off. .... 612-938-7779

NJ Somerset, Mitsubishi Elctns.-Reg. Sls. Off. .... 201-469-8833

NY Fishkill, Mitsubishi Elctns. Reg. Sls. Off. .... 914-896-0896

NC Cary, Mitsubishi Elctns. Reg. Sls. Off. .... 919-460-0404

TX Carrollton, Mitsubishi Elctns. Reg. Sls. Off. .... 214-245-0047

TX Carrollton, Mitsubishi Elctns.-Reg. Sls. Off. .... 214-484-1919

TX Irving, Mitsubishi Elctns. Sls. Reg. Off. .... 214-929-0046

Can Kanata, Ont, Mitsubishi Elec. Sls. Canada, Inc. .... 613-591-3348

Can Mississauga, Mitsubishi Elctns.Reg. Sls. Off. .... 416-670-8711

**MKC ELECTRONICS CORP.,** 9205 Quivira Road,  
Overland Park, KS 66215, Tel: 913-894-9711, FAX: 913-  
894-9713; Empl: 26

**MKS INSTRUMENTS, INC.,** Six Shattuck Road, Andover,  
MA 01810, Tel: 508-975-2350, 800-227-8766, TELEX: 94-  
9375, FAX: 508-975-0094; Empl: 500

**MLT/MICRO-LITE TECHNOLOGY,** 1811 S. 39th St,  
Ste. 99, Mesa, AZ 85206, Tel: 602-545-1113, FAX: 602-  
545-0072; Sls. Mgr: R.L. Dohanian, Dir. Sls. Dev.

**MLT/MICRO-LITE TECHNOLOGY,** 1811 S. 39th St, Ste  
99, Mesa, AZ 85206, Tel: 602-545-1113, FAX: 602-545-  
0072; Sls. Mgr: R. L. Dohanian, Dir. Sls. Dev.

**MMG-NORTH AMERICA,** 126 Pennsylvania Ave,  
Paterson, NJ 07509, Tel: 201-345-8900, FAX: 201-345-  
1172; Empl: 150

**MOBILE-TRONICS CO., INC.,** Box 1147, San Clemente,  
CA 92674, Tel: 714-361-4305, FAX: 714-361-4356; Empl:  
2

**MODOR TECHNICAL PRODUCTS INC.,** 13400 Wright  
Cir., Tampa, FL 33626, Tel: 813-855-5736, FAX: 813-855-  
7942; Empl: 13; Sls. Mgr: S. James Bottone

**MODULAR AUDIO PRODUCTS,** Modular Devices,  
Inc., Brookhaven R & D Plaza, One Roned Road, Shirley,  
NY 11967, Tel: 516-345-3100, FAX: 516-345-3106; Sls.  
Mgr: C. Liptman

**MODULAR DEVICES,** Brookhaven R & D Plaza, 1 Roned  
Rd, Shirley, NY 11967, Tel: 516-345-3100, FAX: 516-345-  
3106; FSC No: 52202; Empl: 65; Sls. Mgr: C. Liptman  
D-1837-1844, 2136

Local Sales Offices & Reps  
CA Murrieta, MIL-COM Sls, Inc. .... 714-677-2097  
CA Santa Clara, Integrated Tech Sls. .... 408-727-3406  
CT Bloomfield, Zaslow Sls. Co. .... 203-242-7781  
FL Clearwater, CM Mktg. .... 813-443-6390  
KS Prairie Village, Thunderbird Tech. Sls. .... 913-642-7220  
KS Wichita, Thunderbird Tech. Sls. .... 316-636-5777  
MD Towson, Advanced Tech. Sls, Inc. .... 410-296-9360  
MN St. Paul, K-Rep .... 612-681-9510  
MO Maryland Heights, Thunderbird Tech. Sls. .... 314-298-8940  
NY Great Neck, F & F Metro Inc. .... 516-482-4080  
NY Williamsville, NV Elect Assoc. .... 716-632-1347  
OH Dover, A-J Assocs. .... 216-343-2224  
PA Norristown, Rivco January Inc. .... 215-631-1414  
TX Dallas, M-Rep Co. .... 214-484-5711

**MODULAR DEVICES INC.,** 4115 Spencer St, Torrance,  
CA 90503, Tel: 310-542-8561, FAX: 310-371-6331; Empl:  
250; Sls. Mgr: Tom Miller

**MODULAR MINING SYSTEMS, INC.,** 3289 E  
Hemisphere Loop, Tucson, AZ 85706, Tel: 602-746-9127,  
FAX: 602-889-5790; Empl: 60; Sls. Mgr: J.Michael Cauty

**MODULAR SYSTEMS, INC.,** 905 Albemarle St,  
Charlottesville, VA 22901, Tel: 804-295-7882; Empl: 5;  
Sls. Mgr: H. N. Patel



**MODUPOWER, INC.,** See Semtech Corporation

**MOHAWK/CDT,** 9 Mohawk Dr., Leominster, MA 01453, Tel:  
508-537-9961, 800-422-9961, FAX: 508-537-4358; Empl:  
140

**MOISTURE REGISTER PRODUCTS DIV.,** Aqua  
Measure Instrument Co., P.O. Box 369, LaVerne, CA  
91750-0369, Tel: 909-392-5833, FAX: 909-392-5838;  
Empl: 25; Sls. Mgr: Gabriel Cote, Jr.

**MOLDCON DIV. OF CONTEX ELECTRONICS,** 221  
Interstate Dr, W. Springfield, MA 01089, Tel: 413-736-0371,  
FAX: 413-736-9716; Empl: 158; Sls. Mgr: Chris Stone

**MOLDTRONICS, INC.,** 703 Rogers St, Downers Grove, IL  
60515, Tel: 708-968-7000, FAX: 708-968-5068; Empl:  
100; Sls. Mgr: J.D. Wilson



MOLECU-WIRE, P.O. Box 495, Farmingdale, NJ 07727, Tel: 908-938-9473, TWX: 710-723-6943; Empl: 125

MOLEX, INC., 2222 Wellington Ct, Lisle, IL 60532, Tel: 708-969-4550, TELEX: 25-4069, FAX: 708-969-1352; Empl: 7,483; Sls. Mgr.: Bill Cox; Dist. Mgr.: Bill Hickey

MOLI ENERGY LIMITED, 20000 Stewart Crescent, Maple Ridge, B.C., Canada V2X 9E7, Tel: 604-465-7911/1-800-663-MOLI, TELEX: 04-356708, FAX: 604-465-4398; FSC No.: 6140; Empl: 160; Sls. Mgr.: Mary Connolly; Dist. Mgr.: Mary Connolly

MOLON MOTOR & COIL CORPORATION, 3737 Industrial Avenue, Rolling Meadows, IL 60008, Tel: 708-253-6000, FAX: 708-259-5491; Sls. Mgr.: Timothy Wiener

MONARCH INSTRUMENT, Monarch International Inc., 11 Columbia Drive, Amherst, NH 03031, Tel: 603-883-3390, 800-999-3390, FAX: 603-886-3300; FSC No.: Cage Code 12500; Empl: 26; Sls. Mgr.: Richard Peters, Paul Coughlin, Prod. Mgrs.; Dist. Mgr.: Myron Kasok

MONICOR ELECTRONIC CORP., 2964 N.W. 60th St. Ft. Lauderdale, FL 33309, Tel: 305-979-1907, FAX: 305-979-2611; Empl: 6



FAX: 619-434-0255

MONITOR PRODUCTS CO., INC., 502 Via Del Monte, Oceanside, CA 92054, Tel: 619-433-4510; FSC No.: Cage Number 54331; Sls. Mgr.: Pat Courington, East Reg. Mgr.; Dist. Mgr.: Robert Blasler, West Reg. Sls. Mgr. A-1324, 1424-1429

#### Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| AL | Huntsville, CSR Elctms.            | 205-533-2444 |
| AZ | Phoenix, Eltron                    | 602-266-2164 |
| CA | Mountain View, Straube Assocs.     | 415-969-6060 |
| CA | Oceanside, Monitor Prods. Co.      | 619-433-4510 |
| CO | Westminster, Straube Assocs.       | 303-426-0890 |
| FL | Coral Springs, Graham Assocs.      | 305-341-5102 |
| FL | Jacksonville, Monitor Prods. Co.   | 904-725-4384 |
| FL | Largo, Graham Assocs.              | 904-523-0996 |
| FL | Melbourne, Graham Assocs.          | 407-773-6631 |
| FL | Palm Beach, Graham Assocs.         | 407-622-4049 |
| FL | Winter Garden, Graham Assocs.      | 407-656-9369 |
| GA | Atlanta, CSR Elctms.               | 404-396-3720 |
| ID | Boise, Jas. J. Backer Co.          | 208-378-4680 |
| IL | Northbrook, Howard Benjamin Assoc. | 708-272-2900 |
| KS | Overland Park, Markline Tech.      | 913-681-8880 |
| MD | Baltimore, Muncy Sls. Assocs.      | 410-484-6376 |
| MA | Chelmsford, Technlg. Reps.         | 508-250-4762 |
| MN | Anoka, Technical Solutions, Inc.   | 612-785-9303 |
| NH | Technlg. Reps.                     | 603-774-6323 |
| NC | Matthews, CSR Elctms.              | 704-847-5806 |
| NC | Raleigh, CSR Elctms.               | 919-878-9200 |
| OR | Beaverton, Jas. J. Backer Co.      | 503-627-0168 |
| RI | Technlg. Reps.                     | 401-789-7530 |
| TN | Knoxville, CSR Elctms.             | 615-637-0293 |
| TX | Austin, Mil-Rep Assocs.            | 512-346-6331 |
| TX | Houston, Mil-Rep Assocs.           | 713-444-2557 |
| TX | Richardson, Mil-Rep Assocs.        | 214-644-6731 |
| UT | Salt Lake City, Straube Assocs.    | 801-263-2640 |
| WA | Seattle, Jas. J. Backer Co.        | 206-285-1300 |

#### Local Distributors

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Huntsville, Component Distr.     | 205-851-7800 |
| AL | Huntsville, Resistcap, Inc.      | 205-883-4270 |
| AL | Huntsville, Time Elctms.         | 205-721-1134 |
| AZ | Phoenix, Force Elctms.           | 602-437-1060 |
| AZ | Scottsdale, Added Value Elec.    | 602-951-9788 |
| AZ | Tempe, Timer                     | 602-967-2000 |
| CA | Agoura Hills, Time Elctms.       | 818-707-6223 |
| CA | Chatsworth, Passive Technlg.     | 818-882-2277 |
| CA | Chatsworth, Time Elctms.         | 818-998-7200 |
| CA | Culver City, Combined Services   | 213-558-2859 |
| CA | Culver City, Time Elctms.        | 213-558-2859 |
| CA | El Segundo, Force Elctms.        | 213-522-1324 |
| CA | San Diego, Added Value Elec.     | 619-558-8890 |
| CA | San Diego, Force Elctms.         | 619-569-9661 |
| CA | San Diego, Neumann Elctms.       | 619-695-3005 |
| CA | San Diego, Time Elctms.          | 619-674-2800 |
| CA | San Jose, Passive Technlg.       | 408-435-5566 |
| CA | Santa Clara, Force Elctms.       | 408-748-1324 |
| CA | Sherman Oaks, Delay Line Distrs. | 818-986-9455 |
| CA | Sunnyvale, PSC Elctms.           | 408-737-1333 |
| CA | Sunnyvale, Time Elctms.          | 408-734-9888 |
| CA | Torrance, Time Elctms.           | 310-320-0880 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Tustin, Added Value Elctms.         | 714-259-7986 |
| CA | Tustin, Time Elctms.                | 714-669-8719 |
| CA | Westlake Village, Added Value Elec. | 818-889-2861 |
| CO | Colorado Springs, Time Elctms.      | 719-637-0055 |
| CO | Engelwood, Component Distrib.       | 303-770-6214 |
| CO | Engelwood, Time Elctms.             | 303-721-8882 |
| CO | Wheatridge, Added Value Elctm.      | 303-422-1701 |
| CT | Bridgeport, Park Distrs.            | 203-366-7200 |
| FL | Boca Raton, NRC Elctms.             | 507-241-8600 |
| FL | Clearwater, Component Distrib.      | 813-796-0466 |
| FL | Ft. Lauderdale, Component Distrib.  | 305-973-6175 |
| FL | Ft. Lauderdale, Time Elctms.        | 305-484-1778 |
| FL | Melbourne, Comp. Dist.              | 407-724-9910 |
| FL | Melbourne, Rome Elctms.             | 407-242-8151 |
| FL | Orlando, Time Elctms.               | 407-841-6565 |
| GA | Atlanta, Time Elctms.               | 404-984-0126 |
| GA | Norcross, Component Distrib.        | 404-441-3320 |
| GA | Norcross, Time Elctms.              | 404-368-0969 |
| IL | Franklin Park, Stetco, Inc.         | 708-671-4208 |
| IL | Schaumburg, Time Elctms.            | 708-303-3000 |
| MD | Columbia, Time Elctms.              | 301-964-3090 |
| MA | Pepperell, DSC, Inc.                | 508-433-9524 |
| MN | Edina, Time Elctms.                 | 612-830-1252 |
| MN | Fridley, Voyager Elctms.            | 612-571-7766 |
| MO | Manchester, Time Elctms.            | 314-391-6444 |
| MO | St. Louis, Rictronics, Inc.         | 314-997-4707 |
| NH | Salem, Diamond Elect.               | 603-894-4420 |
| NJ | Edison, Dove Elctms.                | 908-738-0321 |
| NJ | Marlton, Time Elctms.               | 609-596-6700 |
| NJ | Wayne, Time Elctms.                 | 201-685-8250 |
| NY | Deer Park, Brookdale Elec.          | 516-242-8033 |
| NY | E. Setauket, Dove Elctms.           | 516-689-7733 |
| NY | Hauppauge, Time Elctms.             | 516-434-3344 |

|     |                                   |              |
|-----|-----------------------------------|--------------|
| NY  | Johnson City, Help Elctms.        | 516-273-0100 |
| NY  | Rome, Rome Elctms.                | 607-729-3528 |
| NY  | Syracuse, Time Elctms.            | 315-337-5400 |
| NC  | Oxford, Time Elctms.              | 919-432-0355 |
| NC  | Raleigh, Time Elctms.             | 919-693-5166 |
| NC  | Raleigh, Time Elctms.             | 919-847-9650 |
| OH  | Columbus, Time Elctms.            | 614-794-3301 |
| OK  | Tulsa, Carlton-Bates              | 918-250-1626 |
| OR  | Portland, Time Elctms.            | 503-626-2979 |
| PA  | Levittown, Aim Elctms.            | 215-946-3900 |
| TX  | Allen, Sunbelt Elctms.            | 214-235-0587 |
| TX  | Austin, Carlton-Bates             | 512-837-9098 |
| TX  | Austin, Time Elctms.              | 512-346-7346 |
| TX  | Dallas, Component Distrs., Inc.   | 214-644-0373 |
| TX  | Farmers Branch, Force Elctms.     | 214-247-9955 |
| TX  | FL Worth, Carlton-Bates           | 817-831-0395 |
| TX  | Richardson, Time Elctms.          | 214-644-4644 |
| UT  | W. Valley City, Added Value Elec. | 801-975-9500 |
| UT  | W. Valley City, Time Elctms.      | 801-973-8494 |
| WA  | Kirkland, Time Elctms.            | 206-820-1525 |
| Can | Time Elctms.                      | 416-672-5300 |

MONOLITHIC SYS. CORP., 7050 South Tuscan Way, Englewood, CO 80112, Tel: 303-790-7400, FAX: 303-790-7118; Empl: 50; Sls. Mgr.: C. Edward O'Neal; Dist. Mgr.: C. Edward O'Neal

MONROE ELECTRONICS, INC., 100 Housel Ave., Lyndonville, NY 14098, Tel: 716-765-2254, FAX: 716-765-9330; Empl: 50; Sls. Mgr.: Steven D. Kelly

MONSANTO CO., 800 N. Lindbergh Blvd., St. Louis, MO 63167, Tel: 314-694-1000, TELEX: 650-397-7820, FAX: 314-694-7625; Empl: 39,281

MONTROSE/CDT, Cable Design Technologies, 28 Sword Street, Auburn, MA 01501, Tel: 508-791-3161, FAX: 508-793-9862; Empl: 250; Sls. Mgr.: Michael McLaughlin, OEM Sls. Mgr.; Dist. Mgr.: Bill Wilmot

MOODY TOOLS, INC., 43 Crompton Ave., E. Greenwich, RI 02818-0230, Tel: 401-885-0911, FAX: 401-885-4565; FSC No.: 51205180; Empl: 11; Sls. Mgr.: J. H. Moody; Dist. Mgr.: D. H. Moody

MOORE PRODUCTS CO., Summerytown Pike, Spring House, PA 19477, Tel: 215-646-7400, FAX: 215-283-6358; Empl: 10000; Sls. Mgr.: E.M. Coll

MOORE REED & CO. LTD., Southway Walworth, Andover, Hampshire SP 105AB, Tel: 0264-324155, TELEX: 47654, FAX: 0264-356561; Empl: 150; Sls. Mgr.: W. North

MORGAN-MATROC, Electro Ceramics Division, 232 Forbes Rd., Bedford, OH 44146-5478, Tel: 216-232-8600, FAX: 216-232-8731; Empl: 100; Sls. Mgr.: D.W. Bacso B-1974

#### Local Sales Offices & Reps

|    |                              |              |
|----|------------------------------|--------------|
| CA | El Toro, Morgan Matroc, Inc. | 714-768-8672 |
|----|------------------------------|--------------|

MORRIS, J. I. CO., 372 Elm St., Southbridge, MA 01550, Tel: 508-764-4394, FAX: 508-764-7350; FSC No.: 95548; Empl: 25

MORRIS ENTERPRISES, 16799 Schoenborn St., Sepulveda, CA 91343, Tel: 818-894-9103, TELEX: 6-74681, TWX: 910-496-1525, FAX: 818-894-5791; FSC No.: 54659; Empl: 40; Sls. Mgr.: Mike Palmerino



FAX: 617-245-4531

MORS COMPONENTS, 134 Water St., PO Box 544, Wakefield, MA 01880-4444, Tel: 617-246-1007; FSC No.: 54659; Empl: 40; Sls. Mgr.: Mike Palmerino B-1778-1781; C-1532

#### Local Sales Offices & Reps

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AZ  | Phoenix, Mors Sls., Inc.            | 602-331-8115 |
| AR  | Van Buren, Hightower Ind. Sls.      | 501-471-8116 |
| CA  | Arcadia, HMC, Inc.                  | 818-447-0958 |
| CA  | San Jose, Vernexx                   | 408-972-9072 |
| CO  | Boulder, Stratford Grp.             | 303-530-3194 |
| FL  | Lighthouse Point, Krutek & Assocs.  | 305-783-2501 |
| GA  | Norcross, Mountain Electro Mktg.    | 404-448-5594 |
| IL  | Wheaton, CS Technical Sls.          | 708-653-8126 |
| IN  | Fort Wayne, Nationwide Comps., Inc. | 219-436-6095 |
| IA  | Marion, MSB Assocs.                 | 319-377-6261 |
| KS  | Roeland Park, MSB Assocs.           | 913-432-2131 |
| MD  | Frederick, Glasscock Assoc. Inc.    | 301-694-5048 |
| MA  | Andover, Crawford Assocs.           | 508-470-2122 |
| MI  | Brighton, W. R. Hummon              | 313-486-5333 |
| MO  | St. Paul, Countryman Assocs. Co.    | 612-645-9151 |
| MN  | St. Charles, MSB Assocs.            | 314-946-5577 |
| NJ  | Edison, R.E. Breuer Co., Inc.       | 908-561-6161 |
| NY  | Rochester, Lamb Comps.              | 716-328-6350 |
| OH  | Willoughby, Nationwide Comps.       | 216-946-3226 |
| OR  | Portland, Elctm. Solutions          | 503-292-8204 |
| PA  | Trevose, PSA, Inc.                  | 215-245-0513 |
| TX  | Houston, Aticus                     | 713-466-9994 |
| TX  | Plano, Aticus                       | 214-964-0663 |
| VA  | Ashland, Glasscock Assoc.           | 804-798-2125 |
| WA  | Bellevue, E2                        | 206-637-0302 |
| WV  | New Town, Nationwide Comps., Inc.   | 304-343-3161 |
| EXP | Singapore, JFL Elctms. Pte. Ltd.    | 65-382-5551  |
| Can | Mississauga, ONT, INTELTECH         | 416-629-0882 |

#### Local Distributors

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Phoenix, Control Design Supp.     | 602-829-7981 |
| AR | Little Rock, Carlton-Bates Co.    | 800-482-9313 |
| CA | Burbank, Switching Devices        | 213-849-3211 |
| CA | Fremont, KEA Elctms.              | 510-651-2691 |
| CA | Hayward, Electro Comps.           | 415-783-5800 |
| CA | Los Angeles, Elec. Switches       | 213-660-1310 |
| CA | Milpitas, Sierra West             | 408-945-1050 |
| CA | Milpitas, Zack Elctms.            | 408-942-5432 |
| CA | Santa Monica, Master Distrs.      | 213-452-1229 |
| CA | Tustin, Western Switches          | 714-259-8144 |
| CO | Denver, Control Design            | 303-296-2010 |
| CO | Littleton, Indelco                | 303-795-3431 |
| CT | Wallington, Control Design        | 203-269-9955 |
| FL | Ft. Lauderdale, Brothers Elctms.  | 305-561-6700 |
| FL | Largo, Electronic Precepts        | 813-544-3636 |
| GA | Atlanta, Motion Elctms.           | 404-455-8262 |
| GA | Roswell, Gateway Megatech         | 404-642-8787 |
| IL | Bensenville, Voyager Elctms.      | 708-860-1300 |
| IL | Chicago, Leeds Elctms.            | 312-625-3800 |
| IL | Wheeling, Hawk Elctms.            | 708-459-4030 |
| IL | Wood Dale, Nep Elctms.            | 708-595-8500 |
| IN | Carmel, Alltex Elctms.            | 317-848-1323 |
| IA | Des Moines, Mid-State Distrib.    | 515-244-7231 |
| IA | W. Des Moines, Ramco Co.          | 515-225-6933 |
| KS | Wichita, Radio, Inc.              | 316-264-2798 |
| MD | Beltsville, PSI/Petrico Sls.      | 301-937-4960 |
| MD | Kensington, Marine Air Supp.      | 301-949-5960 |
| MA | Marlboro, Hardware Specialty Co.  | 508-481-8622 |
| MA | Westborough, In Stock Prods.      | 508-707-5750 |
| MA | Wilmington, North Star Elec.      | 508-657-5155 |
| MA | Woburn, Control Design            | 617-932-9404 |
| MI | Battle Creek, Great Lakes Elctms. | 616-963-6282 |
| MI | St. Clair Shores, Spermo          | 313-771-2700 |
| MN | Fridley, Voyager Elctms.          | 612-571-7766 |
| MN | Hibbing, MinnTech Elctms.         | 218-262-5228 |
| MN | Minneapolis, Tortec Corp.         | 612-866-8662 |
| MO | St. Louis, Wes-Garde Comps.       | 314-567-7776 |
| NJ | E. Brunswick, Brothers Elctms.    | 908-238-2200 |
| NJ | Oakland, Relay Specialties        | 201-337-1000 |
| NY | Rochester, Masline Elctms.        | 716-546-5373 |
| NY | Woodside, Switches Unltd.         | 718-478-5000 |
| NC | Raleigh, Century Elctms           | 919-596-2220 |
| NC | Winston-Salem, Kirkman Elctms.    | 919-722-9131 |
| OH | Willoughby, Gateway Megatech      | 216-953-0333 |
| OK | Tulsa, Radio Inc.                 | 918-587-9123 |
| OR | Portland, Radac Elctms.           | 503-232-3404 |
| PA | McKean, Advacom                   | 814-476-7724 |



PA Norristown, Century Elctms. .... 215-631-5404  
 PA Philadelphia, Shap Elctms. .... 215-969-3300  
 RI Pawtucket, Major/Edwards .... 401-725-7400  
 TX Carrollton, LCD Elctms. .... 214-245-0600  
 TX Carrollton, North Star Elctms. .... 214-800-2999  
 TX Dallas, Omni Pro Elctms. .... 214-233-0500  
 TX Houston, Wofford Elctms. .... 713-351-2255  
 UT Nephi, Control Design Supply .... 801-530-4845  
 WA Seattle, Radar Elec. Co. .... 206-282-2511  
 WI Milwaukee, Progressive Image .... 414-321-4722  
 WI New Berlin, Nep Elctms. .... 414-785-9100  
 WI Waukesha, Hawk Elctms. .... 414-547-4457  
 Can Mississauga, Ont, INTELATECH .... 416-629-0082

**MORS TECHNOLOGIES INC.**, Mors Group-France,  
 225 Industrielle, Delson, Quebec, Canada J0L 1G0, Tel:  
 514-638-4150, FAX: 514-638-2270

**MOSAIC SEMICONDUCTOR INC.**, Implex Inc., 7420  
 Carroll Rd., San Diego, CA 92121, Tel: 619-271-4565, FAX:  
 619-271-6058; Empl: 45; *Sls. Mgr.*: Steve Fallaize, Bob  
 Lindskog; *Dist. Mgr.*: Ron Larose

**MOSEL-VITELIC**, 3910 N. First St., San Jose, CA 95134-  
 1501, Tel: 408-433-6000, FAX: 408-433-0331

**MOTION ENGINEERING, INC.**, 520 E. Montecito St.,  
 Santa Barbara, CA 93103, Tel: 805-962-5409, FAX: 805-  
 962-8001; Empl: 6; *Sls. Mgr.*: Matt Chersesh

**MOTION SCIENCE INC.**, 830-6 Jury Ct., San Jose, CA  
 95112, Tel: 408-993-0300, FAX: 408-993-0123; Empl: 27

**MOTION SENSORS, INC.**, 12 Park Street, Cranford, NJ  
 07701, Tel: 908-709-0025, FAX: 908-709-1144; Empl: 6;  
*Sls. Mgr.*: Arthur Bergman

**MOTOR CAPACITORS, INC.**, 6655 N. Avondale Ave.,  
 Chicago, IL 60631, Tel: 312-631-0713, FAX: 312-774-  
 8778; Empl: 14 ..... **A-1116**

*Local Sales Offices & Reps*  
 CA Santa Clarita, T & C Engrg. .... 805-254-8778  
 NY Garden City, Maximum Sls. .... 516-294-5029  
 OH Cincinnati, Technical Engrg. .... 513-851-8549  
 PA Pittsburgh, EJ Sls. Co. .... 412-967-0360  
 WI Milwaukee, KMA Sls. Co. .... 414-259-1771

**MOTOROLA CERAMIC PRODUCTS**, Components  
 Division, 4800 Alameda Blvd. NE, Albuquerque, NM  
 87113, Tel: 505-822-8801, FAX: 505-822-8812; Empl:  
 600; *Sls. Mgr.*: Tom Gilder

**MOTOROLA INC.**, Auto. & Indl. Elctms., Elctn. Sys.  
 Comps. Div., 4000 Commercial Ave., Northbrook, IL  
 60062, Tel: 708-205-2867, TELEX: 671-5420 MOT APD;  
 Empl: 2500

**MOTOROLA SEMICONDUCTOR PRODS. SECTOR**,  
 2100 East Elliot, Tempe, AZ 85284, Tel: 602-244-6900,  
 TWX: 910-951-1334; FSC No.: 04713; *Sls. Mgr.*: Ted  
 Jaros; *Dist. Mgr.*: Brian Hilton

**MOTOR TECHNOLOGY, INC.**, 2798 Culver Ave.,  
 Dayton, OH 45429, Tel: 513-294-1041, FAX: 513-294-  
 8336; Empl: 35 ..... **B-1299-1301**

*Local Sales Offices & Reps*  
 OH Dayton, Motor Technology, Inc. .... 513-294-1041

**MOTORTEST, INC.**, PO Box 292633, Columbus, OH  
 43229, Tel: 614-882-7821, FAX: 614-841-9007

**MOTOR-TRONICS, INC.**, 1280 Liberty Way, Vista, CA  
 92083, Tel: 619-727-7425, FAX: 619-727-4436; *Sls. Mgr.*:  
 Bill Linko

**MOUSER ELECTRONICS**, 11433 Woodside Ave.,  
 Santee, CA 92071, Tel: 800-346-6873, FAX: 619-449-  
 6041; Empl: 300; *Sls. Mgr.*: G. Rye; *Dist. Mgr.*: C. Degurse

**MOUSER ELECTRONICS**, 2401 Hwy. 287 North,  
 Mansfield, TX 76063, Tel: 800-346-6873, FAX: 817-483-  
 0931; Empl: 300; *Sls. Mgr.*: G. Rye; *Dist. Mgr.*: K. Jenkins

**MOUSER ELECTRONICS**, 370 Tomkins Court, Gilroy, CA  
 95020, Tel: 800-346-6873, FAX: 408-842-7375; Empl:  
 300; *Sls. Mgr.*: G. Rye; *Dist. Mgr.*: J. Treadway

**MOUSER ELECTRONICS**, 12 Emery Ave., Randolph, NJ  
 07869, Tel: 800-346-6873, FAX: 201-328-7120; Empl: 300

**MOXNESS PRODUCTS, INC.**, Versa Technologies,  
 1914 Indiana St., Racine, WI 53405, Tel: 414-554-5050,  
 800-558-5706, FAX: 414-554-2321; Empl: 250

**MPB CORP.**, Miniature Precision Bearings Div.,  
 Precision Park, Keene, NH 03431, Tel: 603-352-0310,  
 TWX: 710-366-1801; FSC No.: 40920; Empl: 1900; *Sls.*  
*Mgr.*: T. A. Rudzinsky; *Dist. Mgr.*: R. F. Chantier

**MPC, Div. of Consulting Systems**, 638 Main St.,  
 Danville, NH 03819, Tel: 603-642-5913, 1-800-238-8380,  
 FAX: 603-642-5913; *Sls. Mgr.*: W. Morse ..... **D-1846**

*Local Distributors*  
 TN Knoxville, Indl. Elctms. .... 615-573-7135

**MP/CAPAR**, Multi Products International, 250  
 Lackawanna Ave., P.O. Box 737, West Paterson, NJ 07424,  
 Tel: 201-890-1344, FAX: 201-890-1677; *Sls. Mgr.*: Irwin  
 Wolberg, VP Sls. & Mktg.

**MSC AUTOMATION**, Miller Sales Co., 1111 Old Rand  
 Rd., Wauconda, IL 60084, Tel: 708-526-9200, 800-323-  
 5294, FAX: 708-526-9206; Empl: 23; *Sls. Mgr.*: Paula  
 Bilinski; *Dist. Mgr.*: Dan de Ramos

*Local Sales Offices & Reps*  
 MN Golden Valley, MSC Minn. .... 612-544-1045

**MSD, INC.**, Magnecraft, 700 Orange St., Darlington, SC  
 29532, Tel: 803-393-5421, FAX: 803-393-4123; Empl:  
 210; *Sls. Mgr.*: Bob Forbes

**MSD3**, 365 Woodview Ave., Ste. 700, Morgan Hill, CA 95037,  
 Tel: 800-541-3526, 408-778-7267, FAX: 408-778-2597;  
*Sls. Mgr.*: Bill White



**FAX: 408-778-2597**

**MSD3**, 365 Woodview Ave., Morgan Hill, CA 95037, Tel: 800-  
 541-3526, 408-778-7267; *Sls. Mgr.*: Bill White  
**A-1696-1697; D-1087**

**MSI ELECTRONICS, INC.**, 34-32 57th St., Woodside, NY  
 11377, Tel: 718-672-6500, FAX: 718-397-0972; FSC No.:  
 18518; Empl: 18; *Sls. Mgr.*: A. Lederman

*Local Sales Offices & Reps*  
 AL Huntsville, Murcota ..... 205-539-8476  
 AZ Phoenix, Toward Engr. Assocs. .... 602-955-3193  
 CA Los Angeles, RF Assocs. .... 213-478-1586  
 CA Redwood City, Tri-Rep ..... 415-364-2550  
 FL Casselberry, Perrott Assoc. .... 407-830-0094  
 FL Tampa, Perrott Assoc. .... 813-985-1900  
 IL Chicago, Technical Sls. .... 312-237-7210  
 IN Ft. Wayne, Menze Sls. .... 219-747-5616  
 MD Laurel, CSDS Inc. .... 301-792-9850  
 MA Chelmsford, BBC ..... 508-937-3400  
 NC Winston-Salem, Murcota ..... 919-722-9445  
 WA Bellevue, Caruso & Camelleri Assocs. .... 206-455-8811

**MSI MICRO-MACHINING SYSTEMS INC.**, P. O. Box  
 242, Santa Clara, CA 95052, Tel: 408-727-0100, FAX: 408-  
 496-0117; Empl: 4; *Sls. Mgr.*: Frank J. Andezzone

**M. SYSTEM TECHNOLOGY, INC.**, 15028 Beltway Dr.,  
 Dallas, TX 75244, Tel: 800-544-3181, FAX: 214-385-2299;  
 Empl: 10; *Sls. Mgr.*: Jeff Blair

**MTE CORP.**, W147 N 9525 Held Dr., Menomonee Falls, WI  
 53051, Tel: 414-253-8200, TELEX: 62939600, ESYLNK:  
 414-253-8222; FSC No.: 5950; Empl: 120; *Sls. Mgr.*: John  
 Houdek; *Dist. Mgr.*: John Houdek

**M-TEK**, 2419 Smallman St., Pittsburgh, PA 15222, Tel: 800-  
 245-5101, 412-261-9030, FAX: 412-261-7220; FSC No.:  
 56452; Empl: 20; *Sls. Mgr.*: John Hartnett

**MTI INTERNATIONAL INC.**, W133 N5139 Campbell Dr.,  
 Menomonee Falls, WI 53051, Tel: 414-789-6080, FAX:  
 414-783-4959; Empl: 210

**M-TRON INDUSTRIES**, P.O. Box 630, E. Hwy. 50,  
 Yankton, SD 57078, Tel: 605-665-9321, TWX: 910-668-  
 3603, FAX: 605-665-1709; FSC No.: 23875; Empl: 200;  
*Sls. Mgr.*: Larry Barbary; *Dist. Mgr.*: Les Jensen  
**A-1431**

*Local Sales Offices & Reps*  
 AZ Phoenix, Howe & Howe Sls., Inc. .... 602-264-7971  
 CA Mountain View, Bridge Mktg. .... 415-965-8045  
 CO Denver, Promotech Sls. .... 303-692-8484  
 CT Middletown, Gerber Sls. Corp. .... 203-347-3000

FL Altomonte Springs, Ram Elctms. Sls. Inc. .... 407-260-0904  
 IL Arlington Hgts, KMA Sales .... 708-398-5300  
 IN Ft. Wayne, Arete Sls., Inc. .... 219-423-1478  
 IN Greenwood, Arete Sls., Inc. .... 317-882-4407  
 MA Burlington, Gerber Sls., Inc. .... 617-229-1150  
 MA Everett, Gerber Sls. .... 617-389-1957  
 MA Marlboro, Gerber Sls., Inc. .... 508-460-9588  
 MA Waltham, Gerber Sls. Corp. .... 617-893-1009  
 MA Woburn, Gerber Sls., Inc. .... 617-893-8797  
 MI Farmington Hills, Tritech Sales, Inc. .... 313-442-1200  
 MN Edina, OHMS Technology Inc. .... 612-932-2920  
 NH Hudson, Gerber Sls., Inc. .... 603-595-6568  
 NJ E. Brunswick, Winch Sales Associates .... 201-613-1515  
 NJ Medford, McCoy Grp. Inc. .... 609-953-0770  
 NJ Mountain Lakes, Ergodyne Corp. .... 201-263-4585  
 NY Pittsford, James E. Zimmerman Sales .... 716-381-3186

NY Plainville, Winch Sales Associates .... 516-681-3163  
 NC Raleigh, Tingen Tecn. Sls., Inc. .... 919-870-6670  
 OH Dayton, Lyons Corporation .... 513-278-0714  
 OH Richfield, Lyons Corporation .... 216-859-9224  
 OH Westerville, Lyons Corporation .... 614-895-1447  
 OR Portland, K-Tek Intl. Inc. .... 503-624-0315  
 TX Austin, Ram Electronics Sales, Inc. .... 512-250-5082  
 TX Houston, Ram Electronics Sales, Inc. .... 713-580-7394  
 TX Plano, Ram Electronic Sales, Inc. .... 214-578-5400  
 UT Midvale, Component Sales, Inc. .... 801-561-5099  
 WA Redmond, S.E.A. .... 206-883-4999  
 WA Vancouver, S.E.A. .... 503-643-3093  
 WI Milwaukee, KMA Sales .... 414-259-1771  
 Can Burnaby, BC, Kaytronics .... 604-294-2000  
 Can Concord, Ont, Kaytronics .... 416-669-2262  
 Can Kantata, Ont, Kaytronics .... 613-564-0080  
 Can Ville St. Laurent, Que, Kaytronics .... 514-745-5800  
 Can Vit Laurent, Que, Kaytronics .... 514-745-5800

*Local Distributors*  
 AZ Phoenix, Sterling Electronics .... 602-437-5565  
 CA Fremont, Acacia .... 510-623-7500  
 CA Los Angeles, Bell Industries .... 310-447-6340  
 CA Santa Clara, Kent, Shelly-Ragon Inc. .... 619-471-9561  
 CA Sunnyvale, Bell Industries .... 408-745-0400  
 CO Lakewood, Acacia .... 303-232-2882  
 FL Miami, All American .... 305-621-8282  
 GA Duluth, Pioneer Electronics .... 404-623-1003  
 IL Elk Grove VI, Bell Industries .... 708-640-1910  
 IN Indianapolis, Pioneer Electronics .... 317-573-0880  
 MD Columbia, Sterling .... 301-251-1205  
 MA Andover, Bell Industries .... 508-474-8880  
 MN Eden Prairie, Pioneer .... 612-944-3355  
 MN Minneapolis, Stark Electronics .... 612-332-1325  
 MO St. Louis, Ric-tronics' .... 314-997-4707  
 NY W. Berlin, GCI .... 609-768-6767  
 NJ Ronkonoma, M-tron Components .... 516-467-5100  
 OH Dayton, Pioneer Electronics .... 513-236-9900  
 OH Lake Oswego, Bell Industries .... 503-644-1500  
 NM Betatron, Albuquerque .... 505-821-1122  
 TX Houston, Kent, Shelly-Ragon Inc. .... 713-780-7770  
 TX Houston, Sterling .... 713-627-9800  
 WA Redmond, Kent, Shelly-Ragon Inc. .... 206-883-7200  
 WA Redmond, Priebe Electronics .... 800-426-9911  
 Can Mississauga, Ont, Zentronics .... 416-564-9600

**MTS SENSORS DIVISION**, MTS Sys. Corp., P.O. Box  
 13218, Research Triangle Park, NC 27709, Tel: 919-677-  
 0100, FAX: 919-677-0200

**MTS SYSTEMS**, 14000 Technology Dr., Eden Prairie, MN  
 55344, Tel: 612-937-4000, TELEX: 163548 MULM DL, FAX:  
 612-937-4515; Empl: 1300; *Sls. Mgr.*: Ted Beardon

**MTX OAKTRON**, 700-30th St, Monroe, WI 53566, Tel: 608-  
 328-5560, FAX: 608-328-5575; FSC No.: 07109; Empl:  
 120; *Sls. Mgr.*: J. F. Disch

**MUELLER ELEC. CO.**, 1583 E. 31st St., Cleveland, OH  
 44114, Tel: 216-771-5225, FAX: 216-771-3068; Empl:  
 100; *Sls. Mgr.*: J. E. Wisneski

**MULTICOMP, INC.**, 3005 S.W. 154th No. 3, Beaverton,  
 OR 97006, Tel: 503-626-4200, FAX: 503-643-4889; Empl:  
 150 ..... **A-1255, 2434-2435**

*Local Sales Offices & Reps*  
 OR Portland, Intertech Sls. .... 503-775-7885



**FAX: 707-575-7573**

**MULTI-CONTACT USA**, 5560 Skylane Blvd., Santa Rosa,  
 CA 95403, Tel: 707-575-7575; *Sls. Mgr.*: Herbie Gander,  
 West Coast Sls.; *Dist. Mgr.*: Walter Roberts, Genl. Mgr.  
**C-1422-1424**



**Local Sales Offices & Reps**  
**IL** Chicago, Multi-Contact ..... 312-286-1666  
**MA** Woburn, Multi-Contact ..... 617-935-4104  
**TX** Arlington, Multi-Contact ..... 817-943-0031

**MULTICORE SOLDERS, INC.**, 1751 Jay Ell Drive,  
 Richardson, TX 75081, Tel: 214-238-1224, FAX: 214-437-  
 0288; Empl: 1000

**MULTINATIONAL RESOURCES, INC.**, 19 Harvey  
 Rd, Ste. 17, Bedford, NH 03110, Tel: 603-622-3550, FAX:  
 603-641-6991 ... **B-1044, 1853-1854; C-1545; D-1850**

**MULTIPOWER, INC., Spectrum Electronics Corp.**, 3005 S.W. 154th Terrace No. 1, Beaverton, OR  
 97006, Tel: 503-646-4700, FAX: 503-643-4889; FSC No.:  
 75498; Empl: 33 ... **D-1847**

**MULTI PRODUCTS INTERNATIONAL** 250  
 Lackawanna Ave., West Paterson, NJ 07424, Tel: 201-890-  
 1344, FAX: 201-890-1677; Empl: 28; *Sls. Mgr.*: Irv Wolberg  
 ... **A-2436; D-1848**

**Local Sales Offices & Reps**  
**AZ** Phoenix, JBS Assocs. .... 602-893-2382  
**CA** Santa Clara, Nova Tronix ..... 408-727-9530  
**CO** Denver, Comp. Prods. Sls. .... 303-530-2800  
**FL** Melbourne, Phoenix Comps. .... 407-723-4414  
**GA** Lawrenceville, Tek Rep Mktg. .... 404-963-1600  
**IL** Des Plaines, Esco Assocs. .... 312-298-5310  
**IN** Frankfort, C-S Elctms. Sls. .... 317-659-1874  
**KS** Lenexa, Midtec Assocs. .... 913-514-0505  
**MD** Sterling, Beacon North ..... 703-478-2480  
**MA** Harvard, Cycle Sls. .... 508-456-6868  
**MI** Lathrup Vt. R. C. Nordstrom & Co. .... 313-559-7373  
**MN** St. Paul, Proud Inds. .... 612-646-9428  
**NY** Rochester, Ontec Elctms. .... 714-464-8636  
**OH** Dayton, K.W. Elctm. .... 513-890-2150  
**PA** Langhorne, Beacon North ..... 703-478-2480  
**PA** Pittsburgh, KW Elctms. .... 412-366-9396  
**TX** Dallas, AID Elctms. .... 214-790-4761  
**WA** Bellevue, Eltech ..... 206-643-4330  
**Can** Burlington, Ont, White Radio Ltd. .... 416-632-6894

**MULTISENS INC.**, 2633 Biv. Le Corbusier, Laval, Que,  
 Canada H7S 2E8, Tel: 514-973-8228, FAX: 514-973-1966;  
 Empl: 20; *Sls. Mgr.*: Jean-Francois Olivier; *Dist. Mgr.*: Alain  
 Saint-Louis

**MULTI-TECH INDUSTRIES, INC.**, 64 S. Main St, P.O.  
 Box 4, Marlboro, NJ 07746, Tel: 908-462-6100, TELEX:  
 908-409-6695; FSC No.: 74217; Empl: 40; *Sls. Mgr.*: J.L.  
 Bernard

**MULTI-TECH SYSTEMS, INC.**, 2205 Woodale Dr.,  
 Mounds View, MN 55112, Tel: 612-785-3500, 800-328-  
 9717, FAX: 612-785-9874; Empl: 235; *Sls. Mgr.*: Thomas  
 Heimermann; *Dist. Mgr.*: Peter Hanlon/Jan Hubbard/Jim  
 Stacklie

**MUPAC CORP.**, Carlo Gavazzi Co., 10 Mupac Dr.,  
 Brockton, MA 02401, Tel: 508-588-6110, FAX: 508-588-  
 0498; FSC No.: 51398; Empl: 180; *Sls. Mgr.*: Ted Brewster



MURATA ERIE NORTH AMERICA

**FAX: 404-436-3030**

**MURATA ERIE NORTH AMERICA, INC.**, 2200 Lake  
 Park Dr., Smyrna, GA 30080, Tel: 404-436-1300, TELEX:  
 26-1301; Empl: 1250; *Sls. Mgr.*: Jack Driscoll; *Dist. Mgr.*:  
 Barbara Buckalew, Dist. Mktg. Mgr.  
 ... **A-1117-1121, 1256-1257, 1432-1436, 1571,**  
**1660-1663, 1708-1709, 1847, 1995, 2110-2112;**  
**B-1326, 1885, 1976-1977; C-1425; D-1053-1055**

**Local Sales Offices & Reps**  
**AL** Huntsville, Jack Harvey & Assoc., Inc. .... 205-461-8591  
**AZ** Scottsdale, Thom Luke Sls. .... 602-451-5400  
**CA** Fountain Valley, Bager Elctms., Inc. .... 714-957-3367  
**CA** Long Beach, Murata Erie ..... 310-436-8700  
**CA** Los Altos, Recht Assocs. .... 415-964-6321  
**CA** San Diego, CK Assocs. .... 619-279-0420  
**CA** Woodland Hills, Bager Elctms., Inc. .... 818-712-0011  
**CO** Englewood, Thom Luke Sls. .... 303-649-9717  
**FL** Deerfield Beach, Glen White Assocs. .... 305-570-8545  
**FL** Palm Harbor, Glen White Assoc. .... 813-787-8503

**FL** Sanford, Glen White Assoc. .... 407-322-4875  
**GA** Alpharetta, Jack Harvey & Assocs. .... 404-475-2654  
**GA** Smyrna, Murata Erie ..... 404-433-7867  
**IL** Park Ridge, Metcom Assoc. Corp. .... 708-696-1490  
**IN** Carmel, Jack Harvey & Assocs., Inc. .... 317-575-4600  
**IN** Kokomo, Jack Harvey & Assoc., Inc. .... 317-453-4260  
**IA** Cedar Rapids, Stan Clothier Co., Inc. .... 319-393-1576  
**KS** Lenexa, Stan Clothier Co., Inc. .... 913-492-2124  
**KY** Prospect, Jack Harvey & Assoc., Inc. .... 502-228-4100  
**MD** Bowie, Glen White Assoc. .... 301-805-1989  
**MD** Glen Arm, Glen White Assoc. .... 410-592-9105  
**MD** Towson, Glen White Assoc. .... 301-337-7008  
**MA** Braintree, Murata Erie ..... 617-356-4155  
**MA** Needham, Apex Assocs. .... 617-444-8070  
**MI** Hudsonville, Jack Harvey & Assoc., Inc. .... 616-669-7980  
**MI** W. Bloomfield, Jack Harvey & Assoc., Inc. .... 313-737-9122  
**MN** Eden Prairie, Stan Clothier Co., Inc. .... 612-944-3456  
**MO** St. Charles, Stan Clothier Co., Inc. .... 314-928-8078  
**NJ** Springfield, Radco, Inc. .... 201-467-4970  
**NY** Fairport, Technology Sls., Inc. .... 716-223-7500  
**NY** Ithaca, Technlg. Sls., Inc. .... 607-257-7070  
**NY** Pleasant Valley, Jack Harvey & Assoc., Inc. .... 914-635-2711  
**NC** Huntersville, Glen White Assoc. .... 704-875-3777  
**NC** Raleigh, Glen White Assoc. .... 919-848-1931  
**OH** Dayton, KW Elctm. Sls., Inc. .... 513-890-2150  
**OH** Shaker Hgts, KW Elctm. Sls., Inc. .... 216-491-9177  
**OR** Beaverton, Murata Erie ..... 503-646-4973  
**OR** Beaverton, Westmark Elec., Inc. .... 503-641-8780  
**PA** Allison Park, KW Elctm. Sls., Inc. .... 412-492-0777  
**TN** Gray, Glen White Assoc. .... 615-477-8850  
**TN** Knoxville, Jack Harvey & Assoc., Inc. .... 615-694-7541  
**TX** Austin, RAM Elec. Sls., Inc. .... 512-250-5082  
**TX** Houston, RAM Elec. Sls., Inc. .... 713-580-7394  
**TX** Plano, RAM Elec. Sls., Inc. .... 214-578-5400  
**VA** Lynchburg, Glen White Assocs. .... 804-385-6110  
**WA** Bellevue, Westmark Elect., Inc. .... 206-454-1944  
**WI** West Allis, Metcom Assoc. Corp. .... 414-476-1300  
**PR** Hato Rey, Semtronic Assocs., Inc. .... 809-766-0700  
**Can** Mississauga, Ont, Gidden Morton Assocs. .... 416-671-8111  
**Can** Nepean, Ont, Gidden Morton Assocs. .... 613-820-3822  
**Can** St. Laurent, Que., Gidden Morton Assocs. .... 514-335-9572

**Local Distributors**  
**AL** Huntsville, Future Elctms. .... 205-830-2322  
**AL** Huntsville, Time Elctms. .... 205-721-1133  
**AZ** Phoenix, Future Elctms. .... 602-968-7140  
**AZ** Phoenix, Sterling Elctms. .... 602-437-5565  
**AZ** Phoenix, Time Elctms. .... 602-967-2000  
**AZ** Phoenix, TTI, Inc. .... 602-861-0222  
**AZ** Tempe, Acacia Sls./Deanco ..... 602-894-2874,  
 602-882-9054  
**AZ** Tempe, Time Elctms. .... 602-967-2000  
**AZ** Tempe, TTI, Inc. .... 602-431-1191  
**CA** Agoura Hills, Time Elctms. .... 818-707-2890  
**CA** Camarillo, Milgray Elctms. .... 805-484-4055  
**CA** Chatsworth, Future Elctms. .... 818-772-6240  
**CA** Chatsworth, Sterling Elctms. .... 818-407-8850  
**CA** Culver City, Avnet, Inc. .... 310-558-2973  
**CA** Fremont, Acacia/Deanco ..... 510-623-7500  
**CA** Garden Grove, Natl. Elctms. Corp. .... 800-854-2451  
**CA** Inglewood, Newark Elctms., Inc. .... 310-672-8548  
**CA** Irvine, Acacia/Deanco ..... 213-971-2428, 714-660-0834  
**CA** Irvine, Future Elctms. .... 714-250-4141  
**CA** Irvine, Milgray Elctms. .... 714-753-1282  
**CA** Milpitas, TTI, Inc. .... 408-946-5577  
**CA** Mission Hills, TTI, Inc. .... 818-891-8885  
**CA** San Diego, Acacia/Deanco ..... 619-597-0577  
**CA** San Diego, Future Elctms. .... 619-625-2800  
**CA** San Diego, Sterling Elctms. .... 619-560-8097  
**CA** San Diego, Time Elctms. .... 619-674-2800  
**CA** San Diego, TTI, Inc. .... 619-748-2025  
**CA** San Jose, Compass Comps. .... 408-432-7575  
**CA** San Jose, Future Elctms. .... 408-434-1122,  
 408-434-1114  
**CA** San Jose, Passive Technlg. .... 408-435-5566  
**CA** San Jose, TTI, Inc. .... 408-946-5577  
**CA** Santa Ana, TTI, Inc. .... 714-641-9393  
**CA** Sunnyvale, Capco Sls., Inc. .... 408-734-3020  
**CA** Sunnyvale, Time Elctms. .... 408-734-9888  
**CA** Tustin, Sterling Elctms. .... 714-259-0900  
**CA** Tustin, Time Elctms. .... 714-669-0100  
**CA** Woodland Hills, Time Elctms. .... 310-320-6372  
**CO** Denver, Newark Elctms. .... 303-757-3351  
**CO** Englewood, Sterling Elctms. .... 303-792-3939  
**CO** Englewood, Time Elctms. .... 303-721-8882  
**CO** Lakewood, Future Elctms. .... 303-232-2008  
**CO** Westminster, TTI, Inc. .... 303-429-6806  
**CO** Wheatridge, Acacia/Deanco ..... 303-421-7004  
**CT** Bethel, Future Elctms. .... 203-743-9594  
**CT** Milford, Milgray Elctms. .... 203-878-5538  
**CT** Wallingford, Sterling Elctms. .... 203-265-9535  
**CT** Wallingford, TTI, Inc. .... 203-284-7474

**DC** D.C. Area, TTI, Inc. .... 301-621-5335  
**FL** Altamonte Springs, Future Elctms. .... 800-950-0168  
**FL** Lake Mary, Milgray Elctms. .... 407-321-2555  
**FL** Largo, Future Elctms. .... 813-530-1222  
**FL** Orlando, Time Elctms. .... 407-841-6565  
**FL** Orlando, TTI, Inc. .... 407-859-1000  
**GA** Athens, Dixie Elctms. .... 706-613-7755  
**GA** Norcross, Future Elctms. .... 404-441-7676  
**GA** Norcross, Milgray Elctms. .... 404-446-9777  
**GA** Norcross, TTI, Inc. .... 404-662-0911  
**IL** Chicago, Newark Elctms. .... 312-784-5100  
**IL** Hoffman Estates, Future Elctms. .... 708-882-1255  
**IL** Palatine, Milgray Elctms. .... 708-202-1900  
**IL** Rosemont, Advent Elctms., Inc. .... 708-297-6200  
**IL** Schaumburg, Sterling Elctms. .... 708-303-9900  
**IL** Schaumburg, Time Elctms. .... 708-303-3000  
**IL** Schaumburg, TTI, Inc. .... 708-884-6500  
**IN** Time Elctms. .... 800-331-5114  
**IN** Indianapolis, Advent Elctms., Inc. .... 317-872-4910  
**IA** Time Elctms. .... 800-325-9085  
**IA** Cedar Rapids, Advent Elctms., Inc. .... 319-363-0221  
**KS** Time Elctms. .... 800-325-9085  
**KS** Lenexa, Sterling Elctms. .... 913-492-5406  
**KS** Overland Park, Milgray Elctms. .... 913-236-8800  
**KY** Time Elctms. .... 800-331-5114  
**MD** Baltimore, Resco (Baltimore) .... 410-931-8200  
**MD** Beltsville, Resco (Washington) .... 301-937-9100  
**MD** Columbia, Future Elctms. .... 301-290-0600  
**MD** Columbia, Milgray Elctms. .... 410-995-6169  
**MD** Columbia, Sterling Elctms. .... 301-290-3800  
**MD** Columbia, Time Elctms. .... 301-964-3090  
**MD** Columbia, TTI, Inc. .... 410-995-1331  
**MD** Bolton, Future Elctms. .... 508-799-3000  
**MA** Hopkinton, Interface Elctms. Corp. .... 508-435-0100  
**MA** Peabody, Time Elctms. .... 508-532-9900  
**MA** Wilmington, Milgray Elctms. .... 508-567-2500  
**MA** Wilmington, TTI, Inc. .... 508-658-4700  
**MA** Woburn, Sterling Elctms. .... 617-938-6200  
**MI** Time Elctms. .... 800-331-5114  
**MI** Farmington Hills, Advent Elctms., Inc. .... 313-477-1650  
**MI** Livonia, Future Elctms. .... 313-261-5270  
**MI** Oak Park, Newark Elctms. .... 313-967-1570  
**MN** Eden Prairie, Future Elctms. .... 612-944-2200  
**MN** Edina, Time Elctms. .... 612-943-2433  
**MN** Minneapolis, Newark Elctms. .... 612-331-6350  
**MN** Minneapolis, Sterling Elctms. .... 612-831-2666  
**MN** Minnetonka, TTI, Inc. .... 612-933-8555  
**MO** Manchester, Time Elctms. .... 314-230-7500  
**MO** St. Louis, Future Elctms. .... 314-469-6805  
**NE** Time Elctms. .... 800-325-9085  
**NJ** Edison, Sterling Elctms. .... 201-417-1000  
**NJ** Marlton, Future Elctms. .... 609-566-4080  
**NJ** Marlton, Interface Elctms. .... 609-988-5448  
**NJ** Marlton, Milgray Elctms. .... 609-983-5010  
**NJ** Marlton, Time Elctms. .... 609-596-6700  
**NJ** Mt. Laurel, TTI, Inc. .... 609-234-6400  
**NJ** Parsippany, Future Elctms. .... 201-299-0400  
**NJ** Parsippany, Milgray Elctms. .... 201-335-1766  
**NJ** Rockaway, Tonar Inds. .... 201-586-9000  
**NM** Albuquerque, Sterling Elctms. .... 505-884-1900  
**NY** Farmingdale, Milgray Elctms. .... 516-420-9800  
**NY** Hauppauge, Future Elctms. .... 516-234-4000  
**NY** Hauppauge, Time Elctms. .... 516-273-0100  
**NY** Pittsford, Milgray Elctms. .... 716-381-9700  
**NY** Rochester, Future Elctms. .... 716-272-1120  
**NY** Rochester, Time Elctms. .... 716-383-8853  
**NY** Ronkonkoma, TTI, Inc. .... 516-737-2000  
**NY** Syracuse, Future Elctms. .... 315-451-2371  
**NY** Syracuse, Time Elctms. .... 315-432-0355  
**NC** Charlotte, Dixie Elctms. .... 704-377-5413  
**NC** Charlotte, Elctm. Mktg. Corp. .... 704-394-6195  
**NC** Concord, Future Elctms. .... 704-455-9030  
**NC** Hickory, Dixie Elctms. .... 704-328-1130  
**NC** Raleigh, Future Elctms. .... 919-790-7111  
**NC** Raleigh, Milgray Elctms. .... 800-562-3118,  
 919-790-8094  
**NC** Raleigh, Sterling Elctms. .... 818-790-8634  
**NC** Raleigh, Time Elctms. .... 800-638-1812  
**NC** Winston Salem, Dixie Elctms. .... 919-724-5961  
**OH** Centerville, Elctm. Mktg. Corp. .... 513-439-4711  
**OH** Cleveland, Milgray Elctms. .... 216-447-1520  
**OH** Cleveland, Newark Elctms. .... 216-391-9300  
**OH** Cleveland, Newark Elctms. .... 216-886-6463  
**OH** Columbus, Elctm. Mktg. Corp. .... 614-299-4161  
**OH** Columbus, Time Elctms. .... 614-794-3301  
**OH** Columbus, Time Elctms. .... 800-331-5114  
**OH** Dayton, TTI, Inc. .... 513-898-8330  
**OH** Highland Hgts, Elctm. Mktg. Corp. .... 216-442-3441  
**OH** Independence, TTI, Inc. .... 216-328-9755  
**OH** Mayfield Heights, Future Elctms. .... 216-449-6996  
**OH** Solon, Sterling Elctms. .... 216-248-1122  
**OK** Tulsa, Sterling Elctms. .... 918-663-2410  
**OR** Beaverton, Acacia/Deanco ..... 503-646-3377  
**OR** Beaverton, Future Elctms. .... 503-645-9454  
**OR** Portland, Time Elctms. .... 503-684-3780  
**OR** Tualatin, Moore Elctms. .... 503-692-5333  
**PA** Time Elctms. .... 215-337-0900



|     |                                    |              |
|-----|------------------------------------|--------------|
| SC  | Columbia, Dixie Elctms.            | 803-779-5332 |
| SC  | Gaffney, Newark Elctms.            | 803-487-1982 |
| SC  | Greenville, Dixie Elctms.          | 803-297-1430 |
| SC  | N. Charleston, Dixie Elctms.       | 803-552-2671 |
| SD  | Time Elctms.                       | 800-331-5114 |
| TN  | Gray, Dixie Elctms.                | 615-477-2131 |
| TN  | Oak Ridge, Dixie Elctms.           | 615-481-3393 |
| TX  | Austin, Sterling Elctms.           | 512-836-1341 |
| TX  | Austin, Time Elctms.               | 512-346-7346 |
| TX  | Carrollton, Sterling Elctms.       | 214-243-1600 |
| TX  | Dallas, Milgray Elctms.            | 214-248-1603 |
| TX  | Ft. Worth, TTI, Inc.               | 817-595-3100 |
| TX  | Ft. Worth, TTI, Inc.               | 817-740-9000 |
| TX  | Ft. Worth, TTI, Inc.               | 817-834-2202 |
| TX  | Ft. Worth, TTI, Inc. Intl.         | 817-740-9191 |
| TX  | Garland, Newark Elctms.            | 214-494-5911 |
| TX  | Houston, Future Elctms.            | 713-556-8696 |
| TX  | Houston, Newark Elctms.            | 713-270-4800 |
| TX  | Houston, Sterling Elctms.          | 713-627-9800 |
| TX  | Houston, Time Elctms.              | 713-530-0800 |
| TX  | Richardson, Future Elctms.         | 214-437-2437 |
| TX  | Richardson, Time Elctms.           | 214-644-6668 |
| TX  | Stafford, Milgray Elctms.          | 713-240-5360 |
| UT  | Murray, Milgray Elctms.            | 801-261-2999 |
| UT  | Salt Lake City, Future Elctms.     | 801-972-8489 |
| UT  | Salt Lake City, Sterling Elctms.   | 801-972-5444 |
| UT  | W. Valley City, Time Elctms.       | 801-973-8494 |
| VA  | Richmond, Sterling Elctms.         | 804-323-5510 |
| WA  | Bothell, Future Elctms.            | 206-489-3400 |
| WA  | Kirkland, Time Elctms.             | 206-820-1525 |
| WA  | Redmond, Acacia/Deanco             | 206-881-5566 |
| WA  | Redmond, TTI, Inc.                 | 206-882-0291 |
| WI  | Time Elctms.                       | 800-331-5114 |
| WI  | Mequon, Taylor Elec. Co., Inc.     | 414-241-4321 |
| WI  | Yaukesha, Future Elctms.           | 414-786-1884 |
| Can | Calgary, Alberta, Future Elctms.   | 403-250-5555 |
| Can | Edmonton, Alb., Future Elctms.     | 403-438-2858 |
| Can | Mississauga, Ont., Future Elctms.  | 416-612-9200 |
| Can | Mississauga, Ont., Milgray Elctms. | 416-678-0958 |
| Can | Mississauga, Ont., Time Elctms.    | 416-601-4368 |
| Can | Montreal, Que., Future Elctms.     | 514-694-7710 |
| Can | Ottawa, Ont., Future Elctms.       | 613-820-8313 |
| Can | Pointe Claire, Que., Tonar Inds.   | 514-964-5293 |
| Can | Pointe-Claire, PQ, Milgray Elctms. | 514-426-5900 |
| Can | Quebec, PQ, Future Elctms.         | 418-877-6666 |
| Can | Vancouver, BC, Future Elctms.      | 604-294-1166 |
| Can | Winnipeg, Man., Future Elctms.     | 204-786-7711 |

**MURATA MANUFACTURING CO., LTD.**, 26-10, Tenjin 2 Chome, Nagaoka-Kyo-Shi, Kyoto, Japan 617, Tel: 075-951-9111, TELEX: MURATA J 64270, FAX: 075-955-6526; Empl: 21,696; Sls. Mgr.: O. Otaka



**FAX: 714-458-1166**

**MUSASHINO CORPORATION**, 22612 Albares, Mission Viejo, CA 92691, Tel: 714-458-1155, A•1437-1439; C•1649-1651

**THE MUSHIELD CO. INC.**, P.O. Box 439, 5 Springfield Rd., Goffstown, NH 03045, Tel: 603-666-4433, TELEX: 95-5439, FAX: 603-666-4013; FSC No.: 57284; Empl: 8 C•1698

**MUTUAL INDUSTRIES, INC.**, 707 West Grange Street, Philadelphia, PA 19120, Tel: 215-927-6000, FAX: 215-927-3388



**FAX: 818-706-0911**

**MWS WIRE INDUSTRIES**, 31200 Cedar Valley Dr., Westlake Village, CA 91362, Tel: 818-991-8553; FSC No.: 51668; Empl: 65; Sls. Mgr.: Greg Fancon C•1764-1767

**NAMCO CONTROLS CORPORATION**, 7567 Tyler Blvd., Mentor, OH 44060, Tel: 216-946-9900, TELEX: 24-1566, FAX: 216-946-1228; Empl: 200; Sls. Mgr.: Jon Slaybaugh, Pres.; Dist. Mgr.: Bill Carson, Bill O'Brien

**NAMIKI**, Precision of America, Inc., 201 West Passaic St., Rochelle Park, NJ 07662, Tel: 201-368-0123, FAX: 201-368-2244

**NANONICS CORPORATION**, 21636 N. 14th Ave., Phoenix, AZ 85027, Tel: 602-581-6188, FAX: 602-581-8242; Empl: 15



**FAX: 805-584-4357**

**NATEL ENGINEERING CO., INC.**, 4550 Runway St., Simi Valley, CA 93063-3449, Tel: 805-581-3950, TWX: 910-494-1959; Empl: 171; Sls. Mgr.: Tom Guerriere D•1196-1197

| Local Sales Offices & Reps |                                       |              |
|----------------------------|---------------------------------------|--------------|
| AL                         | Huntsville, Saber Assocs.             | 800-327-0853 |
| CA                         | Newbury Park, Natel Engrg. Co., Inc.  | 805-376-5500 |
| CA                         | Simi Valley, Natel Engrg. Co., Inc.   | 805-581-3950 |
| CO                         | Grand Junction, Krebill Comp. Sls.    | 303-243-8220 |
| FL                         | Melbourne, Saber Assocs.              | 800-432-6288 |
| MA                         | Topsfield, Natel Engrg. Co., Inc.     | 508-887-7939 |
| NY                         | Bohemia, Natel Engrg. Co., Inc.       | 516-563-4911 |
| OH                         | Dayton, Rixan Assocs., Inc.           | 513-222-0011 |
| OH                         | Stow, Rixan Assocs., Inc.             | 216-686-2909 |
| TX                         | Houston, Lear Assocs.                 | 713-488-7893 |
| TX                         | Richardson, Lear Assocs.              | 214-231-5388 |
| UT                         | Salt Lake City, Krebill Comp. Sls.    | 801-943-5311 |
| WA                         | Mercer Island, Eagle Entprs., Inc.    | 206-232-7401 |
| Local Distributors         |                                       |              |
| FL                         | Orlando, Florida Electro Comps.       | 407-282-3454 |
| MO                         | Floissant, Central Tech Sls.          | 314-831-4069 |
| UT                         | Sandy, Krebill Comp. Sls.             | 801-943-5311 |
| WA                         | Bellevue, Advanced Power Comps., Inc. | 206-747-9217 |

**NATIONAL CONTROLS CORP.**, 1725 Western Dr. W., Chicago, IL 60185, Tel: 708-231-5900, FAX: 708-231-1377; Empl: 250; Dist. Mgr.: Cy Pfeifer

**NATIONAL ELECTRONICS CORP.**, 11731 Markon Dr., Garden Grove, CA 92641, Tel: 714-892-7749, 800-854-2451, FAX: 714-898-6769; Empl: 50

**NATIONAL INFORMATION SYSTEMS, INC.**, 4040 Moorpark Ave., San Jose, CA 95117-1852, Tel: 408-985-7100, 800-441-5758, FAX: 408-246-3127; Empl: 50

**NATIONAL INSTRUMENTS**, 6504 Bridge Point Pkwy., Austin, TX 78730-5039, Tel: 512-794-0100, TELEX: 756737 Nat Inst Aus, FAX: 512-794-8411; Empl: 7000; Sls. Mgr.: Don Nadon, VP Sls. D•1147, 1198, 1302

| Local Sales Offices & Reps |                                    |              |
|----------------------------|------------------------------------|--------------|
| CA                         | Manhattan Beach, Natl. Instrs.     | 310-546-8591 |
| CA                         | Milpitas, Natl. Instrs.            | 408-453-3120 |
| CA                         | Ontario, Natl. Instrs.             | 714-360-3565 |
| CA                         | Riverside, Natl. Instrs.           | 714-275-0655 |
| CO                         | Colorado Springs, Natl. Instrs.    | 719-542-3036 |
| CT                         | Southington, Natl. Instrs.         | 203-276-8176 |
| FL                         | Orlando, Natl. Instrs.             | 407-438-8700 |
| GA                         | Kennesaw, Natl. Instrs.            | 404-499-0505 |
| IL                         | Plainfield, Natl. Instrs.          | 815-436-7775 |
| MD                         | Rockville, Natl. Instrs.           | 301-258-0125 |
| MA                         | Norwell, Natl. Instrs.             | 617-659-9444 |
| MA                         | Woburn, Natl. Instrs.              | 617-938-8508 |
| MI                         | Brighton, Natl. Instrs.            | 313-227-9773 |
| MI                         | Minneapolis, Natl. Instrs.         | 612-374-5488 |
| NJ                         | Rutherford, Natl. Instrs.          | 201-460-7883 |
| NY                         | Bayshore, Natl. Instrs.            | 516-666-0062 |
| NY                         | Rochester, Natl. Instrs.           | 716-227-7530 |
| OH                         | Mogadore, Natl. Instrs.            | 216-325-3156 |
| TX                         | Austin, Natl. Instrs.              | 512-261-6338 |
| TX                         | Richardson, Natl. Instrs.          | 214-699-7474 |
| WA                         | Bellevue, Natl. Instrs.            | 206-451-9161 |
| Can                        | Cambridge, Ont., Natl. Instrs.     | 519-622-9310 |
| Can                        | Pointe-Claire, Que., Natl. Instrs. | 514-694-8521 |

| Local Distributors |                                           |              |
|--------------------|-------------------------------------------|--------------|
| Can                | Mississauga, Ont., Allan Crawford Assocs. | 416-890-2010 |
| Can                | N. Vancouver, BC, Allan Crawford Assocs.  | 604-988-2195 |
| Can                | Ottawa, Ont., Allan Crawford Assocs.      | 613-596-9300 |
| Can                | Pointe-Claire, PQ, Allan Crawford Assocs. | 514-697-3333 |

**NATIONAL LAMINATION CO.**, National Material Ltd., 555 Santa Rosa Dr., Des Plaines, IL 60018, Tel: 708-298-7676, FAX: 708-635-8624; Empl: 225; Sls. Mgr.: J. Timothy Bross

**NATIONAL MANUFACTURING CO., INC.**, 12 River Rd., Chatham, NJ 07928, Tel: 201-635-8846, FAX: 201-635-7810; Empl: 150; Sls. Mgr.: Otto Stahl, Jr.

**NATIONAL POWER TECHNOLG.**, See Intelligence Power Technology

**NATIONAL SEMICONDUCTOR**, 2900 Semiconductor Dr., Santa Clara, CA 95052-8090, Tel: 800-272-9959, FAX: 800-432-9673; Empl: 26,000

**NATIONAL SEMICONDUCTORS, LTD.**, See Silonex Inc.

**NATIONAL TELEPHONE & ELECTRONICS INC.**, 2350 N.W. 96 Avenue, Miami, FL 33172, Tel: 305-592-0551, FAX: 305-599-0948; Empl: 50



**FAX: 213-225-4630**

**NATIONAL WIRE & CABLE CORP.**, 136 San Fernando Rd., Los Angeles, CA 90031-1780, Tel: 213-225-5611; FSC No.: 04569; Empl: 225 C•1768-1790

| Local Sales Offices & Reps |                                      |              |
|----------------------------|--------------------------------------|--------------|
| AZ                         | Mesa, System Sls.                    | 602-464-9989 |
| AR                         | Met. Home, P.M.I. Sls. Co.           | 501-425-4101 |
| CA                         | San Diego, C.K. Sales                | 619-279-0420 |
| CA                         | Santa Clara, Ross Mktg.              | 408-988-8111 |
| CO                         | Arvada, Arrowhead Sls. Co.           | 303-423-5597 |
| CT                         | Avon, Tom Maguire Assoc.             | 203-673-3019 |
| GA                         | Lawrenceville, Tek-Rep Mktg.         | 404-963-1600 |
| IL                         | Northfield, H. S. Tollaksen          | 708-441-6644 |
| MD                         | Glen Burnie, Faion Lott              | 410-744-4611 |
| MA                         | Norwood, Tom Maguire Assocs., Inc.   | 617-551-0500 |
| MI                         | Brighton, W.R. Hummon & Assocs.      | 313-486-5333 |
| NH                         | Windham, Tom Maguire Assocs.         | 603-437-1245 |
| NJ                         | Wayne, GT Assoc.                     | 201-694-6040 |
| NM                         | Albuquerque, Sys. Sls. of New Mexico | 505-889-2901 |
| NY                         | Sodus, S.T. Woolard                  | 315-655-8145 |
| OH                         | Cincinnati, Century Tech. Sls., Inc. | 513-677-1788 |
| OH                         | Cleveland, Century Tech. Sls., Inc.  | 216-871-2854 |
| PA                         | Hatboro, Jacobsen Assocs.            | 215-674-2937 |
| TX                         | Austin, Tesco, Inc.                  | 512-834-8374 |
| TX                         | Dallas, Tesco, Inc.                  | 214-553-1200 |
| TX                         | Houston, Tesco, Inc.                 | 713-690-4909 |
| UT                         | Odgen, Summit Mktg.                  | 801-479-7151 |
| WA                         | Redmond, Halbar Assocs.              | 206-882-0990 |

**NATIONWIDE ELECTRONIC SYSTEMS**, See Weschler Instruments, Hughes Corp.

**NAVAN CORPORATION**, P.O. Box 1329, Media, PA 19063, Tel: 215-352-8464; FSC No.: 7042; Empl: 6; Sls. Mgr.: Howland St. Clair

**NCE: NATIONAL CUSTOM ENTERPRISES, INC.**, 400 Gateway Blvd., Burnsville, MN 55337-2559, Tel: 612-890-1360, FAX: 612-890-1014; FSC No.: 25441; Empl: 25; Sls. Mgr.: J. A. Carlson

**NCGI/STRUTHERS-DUNN, INC.**, INDUSTRIAL/COMMERCIAL RELAYS, See MSD, Div. of Magnecraft

**NCI**, 6438 University Drive, Huntsville, AL 35806, Tel: 205-837-6667, FAX: 205-837-5221; Empl: 8; Sls. Mgr.: Hal Newcomb; Dist. Mgr.: David Newcomb

**NCR COMTEN, INC.**, NCR Corp., 2700 Snelling Avenue N., St. Paul, MN 55113, Tel: 612-638-7777, TELEX: 6879018 Comten, FAX: 612-638-8573; FSC No.: 7025-0010; Empl: 1000; Sls. Mgr.: Gerry Fisher; Dist. Mgr.: Gerry Fisher

**NCR CORPORATION**, Microelectronics Products Division, 2001 Danfield Court, Fort Collins, CO 80525, Tel: 303-226-9500, FAX: 303-226-9556



**FAX: 415-623-6590**

**NDK AMERICA, INC.**, 47671 Westinghouse Dr., Fremont, CA 94539, Tel: 415-623-6500; Empl: 28; Sls. Mgr.: Mike Kurihara, VP A•1440-1441



| <i>Local Sales Offices &amp; Reps</i> |                                       |              |
|---------------------------------------|---------------------------------------|--------------|
| AL                                    | Huntsville, Elctm. Mktg. Assoc.       | 205-880-8050 |
| AZ                                    | Scottsdale, Carefree                  | 602-951-9121 |
| CA                                    | Irvine, Quad-Rep South, Inc.          | 714-727-4222 |
| CA                                    | Orangevale, I Square, Inc.            | 916-989-0843 |
| CA                                    | San Diego, Quad-Rep                   | 619-560-8330 |
| CA                                    | Santa Clara, I Square, Inc.           | 408-988-3400 |
| CO                                    | Englewood, CSI                        | 303-779-8060 |
| CT                                    | Woodbury, Anacon                      | 203-266-0707 |
| GA                                    | Atlanta, Elctm. Mktg. Assoc.          | 404-448-1215 |
| ID                                    | Boise, Intermountain Tech.            | 208-888-6071 |
| IL                                    | Chicago, M. Gottlieb & Assocs.        | 312-775-1151 |
| IN                                    | Carmel, Fred A. Dorsey & Assocs.      | 317-844-4842 |
| IA                                    | Davenport, Rush & West Assocs.        | 319-388-9494 |
| KS                                    | Olathe, Rush & West Assocs.           | 913-764-2700 |
| MD                                    | Annapolis, E.E.S. Assoc.              | 301-269-4234 |
| MA                                    | Burlington, Anacon Sls. Assocs., Inc. | 617-272-9080 |
| MI                                    | Grand Rapids, Millmore Sls.           | 616-942-9121 |
| MI                                    | Novi, Millmore Sls.                   | 313-349-0260 |
| MO                                    | St. Louis, Rush & West Assocs.        | 314-965-3322 |
| MT                                    | Boise, Inter-Mtn. Tech.               | 208-888-6071 |
| NE                                    | Davenport, Rush & West                | 319-388-9494 |
| NV                                    | Santa Clara, I Squared                | 408-988-3400 |
| NY                                    | Syracuse, Rep Tech, Inc.              | 315-437-2845 |
| NJ                                    | Fairfield, Tech. Applications & Mktg. | 201-575-4130 |
| NY                                    | Fairfield, TAM                        | 201-575-4130 |
| NC                                    | Raleigh, Elctm. Mktg. Assoc.          | 919-847-8800 |
| OH                                    | Cincinnati, Makin Assocs.             | 513-871-2424 |
| OH                                    | Columbus, Makin Assocs.               | 614-848-5452 |
| OH                                    | Solon, Makin Assocs.                  | 216-248-7370 |
| OR                                    | Tigard, Comps. West                   | 503-684-1671 |
| PA                                    | Solon, Makin Assocs.                  | 216-248-7370 |
| SC                                    | Greenville, Elctm. Mktg. Assoc.       | 803-233-4637 |
| TX                                    | Dallas, T.L. Mktg.                    | 214-490-9300 |
| UT                                    | Boise, Inter-Mtn Tech.                | 208-888-6071 |
| VT                                    | Wilmington, Anacon                    | 617-270-3712 |
| WA                                    | Redmond, Comps. West                  | 206-885-5880 |
| WI                                    | Chicago, M. Gottlieb Assocs.          | 312-775-1151 |

| <i>Local Distributors</i> |                                |              |
|---------------------------|--------------------------------|--------------|
| AL                        | Huntsville, Time Elctms.       | 214-721-1134 |
| AZ                        | Tempe, Time Elctms.            | 602-967-2000 |
| CA                        | Chatsworth, Time Elctms.       | 818-988-7200 |
| CA                        | Orange, Capstone Elctms.       | 714-730-0349 |
| CA                        | San Diego, Time Elctms.        | 619-986-0129 |
| CA                        | San Jose, Capstone Elctms.     | 408-453-9824 |
| CA                        | Sunnyvale, Time Elctms.        | 408-734-9888 |
| CA                        | Torrance, Time Elctms.         | 213-320-0880 |
| CO                        | Aurora, Capstone Elctms.       | 303-375-1300 |
| CO                        | Englewood, Time Elctms.        | 303-721-8882 |
| FL                        | Fl. Lauderdale, Time Elctms.   | 305-484-7778 |
| GA                        | Norcross, Time Elctms.         | 404-448-4488 |
| IL                        | Chicago, Capstone Elctms.      | 708-250-0300 |
| MD                        | Columbia, Time Elctms.         | 301-964-3090 |
| MA                        | Boston, Capstone Elctms.       | 508-657-5874 |
| MA                        | Peabody, Time Elctms.          | 508-532-9900 |
| MN                        | Edina, Time Elctms.            | 612-943-2433 |
| MO                        | St. Louis, Time Elctms.        | 314-391-6444 |
| NJ                        | Marlton, Capstone Elctms.      | 609-596-7500 |
| NJ                        | Marlton, Time Elctms.          | 609-996-6700 |
| NY                        | Los Alamos, Capstone Elctms.   | 505-662-0745 |
| NY                        | E. Syracuse, Time Elctms.      | 315-432-0355 |
| NY                        | Hauppauge, Time Elctms.        | 516-434-3344 |
| NC                        | Raleigh, Capstone Elctms.      | 919-954-0600 |
| OH                        | Columbus, Time Elctms.         | 614-794-3309 |
| OR                        | Portland, Time Elctms.         | 503-684-3782 |
| TX                        | Austin, Time Elctms.           | 512-346-7346 |
| TX                        | Dallas, Capstone Elctms.       | 214-380-9049 |
| UT                        | West Valley City, Time Elctms. | 801-973-8494 |
| WA                        | Kirkland, Time Elctms.         | 206-820-1525 |
| Can                       | Ontario, Capstone Elctms.      | 416-670-2010 |
| Can                       | Ontario, Time Elctms.          | 416-672-5300 |

**NEARFIELD SYSTEMS, INC.**, 1330 E. 223rd St. 524, Carson, CA 90745, Tel: 310-518-4277, FAX: 310-518-4279; Empl: 6



**FAX: 1-800-729-9288**

**NEC ELECTRONICS, INC.**, 475 Ellis Street, Mountain View, CA 94039-7241, Tel: 1-800-366-9782, TWX: 910-379-6985; Empl: 1650; Sls. Mgr.: Mike Desportes, Sls. VP: Dist. Mgr.: Richard Calogero A-1122-1129; B-1088-1090, 1327-1335, 1566-1570

| <i>Local Sales Offices &amp; Reps</i> |                                |                  |
|---------------------------------------|--------------------------------|------------------|
| AL                                    | Huntsville, 20th Century Mktg. | 205-772-9999     |
|                                       |                                | FAX:205-464-0895 |
| AZ                                    | Phoenix, Oasis Sls., Inc.      | 602-277-2714     |
|                                       |                                | FAX:602-263-9352 |

|    |                                                |              |                  |
|----|------------------------------------------------|--------------|------------------|
| CA | Encino, NEC Elctms., Inc.                      | 818-342-3112 | FAX:818-342-0842 |
| CA | San Diego, Mission Technlg.                    | 619-674-6191 | FAX:619-674-6196 |
| CA | San Jose, Exis                                 | 408-456-1650 | FAX:408-433-0450 |
| CA | Santa Ana, NEC Elctms.                         | 714-546-0501 | FAX:714-432-8793 |
| CA | Santa Clara, NEC Elctms.                       | 408-986-1020 | FAX:408-988-4165 |
| CO | Aurora, NEC Elctms.                            | 303-755-6353 | FAX:303-755-6728 |
| CO | Englewood, Compass Mktg. & Sls., Inc. of Colo. | 303-721-9663 | FAX:303-721-0195 |
| CT | Cheshire, Datatrack Engrg., Inc.               | 203-271-1311 | FAX:203-272-7672 |
| FL | Altamonte Springs, V.G. Sls., Inc.             | 407-831-8688 | FAX:407-830-0627 |
| FL | Cooper City, NEC Elctms., Inc.                 | 305-436-8114 | FAX:305-436-8116 |
| FL | Fl. Lauderdale, V.G. Sls., Inc.                | 305-938-4333 | FAX:305-938-4331 |
| FL | Largo, V.G. Sls. Co., Inc.                     | 813-536-7787 | FAX:813-530-9126 |
| FL | Maitland, NEC Elctms.                          | 407-875-1145 | FAX:407-875-0962 |
| GA | Norcross, NEC Elctms.                          | 404-447-4409 | FAX:404-447-8228 |
| GA | Norcross, 20th Century Mktg. Inc.              | 404-446-1999 | FAX:404-662-8128 |
| IL | Arlington Hgts., NEC Elctms.                   | 708-577-9090 | FAX:708-577-2147 |
| IL | Schaumburg, Martan Inc.                        | 708-303-5660 | FAX:708-303-5745 |
| IN | Carmel, Technlg. Mktg. Corp.                   | 317-844-8462 | FAX:317-573-5472 |
| IN | Fl. Wayne, Technlg. Mktg. Corp.                | 219-432-5553 | FAX:219-432-5555 |
| IN | Kokomo, Technlg. Mktg. Corp.                   | 317-459-5152 | FAX:317-457-3822 |
| IA | Cedar Rapids, Stan Clothier Co.                | 319-393-1576 | FAX:319-393-7317 |
| KS | Overland Pk., AME Sls.                         | 913-492-3971 | FAX:913-492-4002 |
| KY | Louisville, Technlg. Mktg. Corp.               | 502-245-7411 | FAX:502-245-4818 |
| MD | Glen Burnie, TRI-MARK Inc.                     | 301-761-6000 | FAX:301-761-6006 |
| MA | Natick, NEC Elctms.                            | 508-650-4100 | FAX:508-655-1605 |
| MA | Woburn, Compass Technlg.                       | 617-933-3336 | FAX:617-932-3354 |
| MI | Dearborn, NEC Elctms., Inc.                    | 313-336-5225 | FAX:313-336-7922 |
| MI | Kentwood, Millmore Sls.                        | 616-554-9292 | FAX:616-554-9210 |
| MI | Novi, Millmore Sls.                            | 313-349-0260 | FAX:313-349-0756 |
| MI | Troy, NEC Elctms.                              | 313-680-0506 | FAX:313-680-1015 |
| MN | Eden Prairie, Stan Clothier Co.                | 612-944-3456 | FAX:612-944-6904 |
| MN | Minneapolis, NEC Elctms.                       | 612-844-0209 | FAX:612-844-0509 |
| MO | St. Charles, AME Sls.                          | 314-928-2599 | FAX:314-447-8797 |
| NJ | Fairfield, Metro Logic Corp.                   | 201-575-5585 | FAX:201-575-8023 |
| NJ | Moorestown, TAI Corp.                          | 609-778-5353 | FAX:609-778-7828 |
| NY | Fairport, NEC Elctms.                          | 716-425-4590 | FAX:716-425-4594 |
| NY | Fishkill, NEC Elctms.                          | 914-897-2101 | FAX:914-897-2215 |
| NY | Pittsford, Elcom Sls.                          | 716-385-1400 | FAX:716-248-8531 |
| NY | Skaneateles, Elcom Sls.                        | 315-685-8245 | FAX:315-685-6273 |
| NC | Cary, NEC Elctms.                              | 919-460-1890 | FAX:919-469-5926 |
| NC | Charlotte, Quantum Mktg. Inc.                  | 704-523-8822 | FAX:704-527-3222 |
| NC | Raleigh, Quantum Mktg. Inc.                    | 919-846-5728 | FAX:919-847-8271 |
| OH | Centerville, TMC of Ohio                       | 513-898-8867 | FAX:513-271-6321 |
| OH | Cincinnati, TMC of Ohio                        | 513-271-3860 | FAX:513-271-6321 |
| OH | Columbus, NEC Elctms.                          | 614-436-1778 | FAX:614-436-1769 |
| OH | Middleburg Hgts., TMC of Ohio                  | 216-885-5544 | FAX:216-885-5011 |
| OH | Pepper Pike, NEC Elctms.                       | 216-831-0067 | FAX:216-831-0758 |
| OR | Portland, Venture Elctms.                      | 503-624-0617 | FAX:503-620-4682 |
| OR | Tigard, NEC Elctms.                            | 503-671-0177 | FAX:503-643-5911 |

|     |                                            |              |                  |
|-----|--------------------------------------------|--------------|------------------|
| PA  | Allentown, NEC Elctms.                     | 215-391-9094 | FAX:215-391-9107 |
| PA  | Trevose, NEC Elctms., Inc.                 | 215-244-8196 | FAX:215-244-9071 |
| TN  | Erwin, 20th Century Mktg.                  | 615-531-6854 | FAX:615-539-0676 |
| TX  | Austin, TL Mktg., Inc.                     | 512-837-7272 | FAX:512-837-6886 |
| TX  | Dallas, NEC Elctms.                        | 214-831-0641 | FAX:214-831-1182 |
| TX  | Dallas, TL Mktg., Inc.                     | 214-490-9300 | FAX:214-960-6075 |
| TX  | Houston, NEC Elctms.                       | 713-320-0524 | FAX:713-320-0574 |
| TX  | Houston, TL Mktg., Inc.                    | 713-587-8100 | FAX:713-580-7517 |
| UT  | Salt Lake City, Compass Mktg. & Sls., Inc. | 801-355-9663 | FAX:801-264-6607 |
| WA  | Bellevue, Venture Elctms.                  | 206-454-4594 | FAX:206-454-9003 |
| WI  | Mequon, Martan Inc.                        | 414-241-4955 | FAX:414-241-8365 |
| PR  | Mayaguez, V. G. Sls. Co., Inc.             | 809-831-4150 | FAX:809-831-4050 |
| Can | Burnaby, BC, Kaytronics Western            | 604-294-2000 | FAX:604-294-4585 |
| Can | Calgary, B.C., Kaytronics                  | 403-275-7000 | FAX:403-295-0732 |
| Can | Kanata, Ont., Kaytronics                   | 613-592-6606 | FAX:613-592-0303 |
| Can | Mississauga, Ont., Kaytronics              | 416-507-6400 | FAX:416-507-6444 |
| Can | Ville St-Laurent, Que., Kaytronics         | 514-745-5800 | FAX:514-745-5858 |

| Local Distributors |                                       |                                   |
|--------------------|---------------------------------------|-----------------------------------|
| AL                 | Huntsville, Marshall Inds.            | 205-881-9235,<br>FAX:205-881-1490 |
| AL                 | Huntsville, Repton Elctms.            | 205-722-9500,<br>FAX:205-722-9565 |
| AZ                 | Phoenix, Marshall Inds.               | 602-496-0290,<br>FAX:602-893-9029 |
| AZ                 | Phoenix, Sterling Elctms.             | 602-437-5565,<br>FAX:602-437-5588 |
| AZ                 | Tempe, Insight Elctms.                | 602-829-1800,<br>FAX:602-967-2658 |
| CA                 | Agoura Hills, Western Microtechnology | 818-707-0731,FAX:818-706-7651     |
| CA                 | Calabasas, Marshall Inds.             | 818-878-7000,<br>FAX:818-880-6846 |
| CA                 | Camarillo, Milgray Elctms.            | 805-484-4055,<br>FAX:805-388-8169 |
| CA                 | Chatsworth, Sterling Elctms.          | 818-407-8850,<br>FAX:818-407-1837 |
| CA                 | Costa Mesa, Eric Elctms.              | 714-751-1185,<br>FAX:714-432-7365 |
| CA                 | El Monte, Marshall Inds. Corp.        | 818-307-6000,<br>FAX:818-307-6297 |
| CA                 | Fountain Valley, Bell Microproducts   | 714-963-0667,<br>FAX:714-968-3195 |
| CA                 | Irvine, Insight Elctms.               | 714-727-3291,<br>FAX:714-727-1804 |
| CA                 | Irvine, Marshall Inds.                | 714-859-5050,<br>FAX:714-581-5255 |
| CA                 | Irvine, Milgray Elctms.               | 714-753-1282,<br>FAX:714-753-1682 |
| CA                 | Milpitas, Bell Micro Corp.            | 408-434-1150,<br>FAX:408-942-4600 |
| CA                 | Milpitas, Marshall Inds.              | 408-942-4600,<br>FAX:408-262-1224 |
| CA                 | Orange, Western Microtechnology       | 714-637-0200,<br>FAX:714-998-1883 |
| CA                 | Rancho Cordova, Marshall Inds.        | 916-635-9700,<br>FAX:916-635-6044 |
| CA                 | San Diego, Insight Elctms. Corp.      | 619-587-9757,<br>FAX:619-587-1380 |
| CA                 | San Diego, Marshall Inds.             | 619-578-9600,<br>FAX:619-586-0469 |
| CA                 | San Diego, Western Microtechnology    | 619-453-8430,FAX:619-453-1465     |
| CA                 | San Jose, Bell Microproducts          | 408-451-9400,<br>FAX:408-451-1600 |
| CA                 | San Jose, Eric Elctms. Corp.          | 408-432-1111,<br>FAX:408-434-0309 |
| CA                 | San Jose, Merit Elctms. Corp.         | 408-434-0800,<br>FAX:408-434-0935 |
| CA                 | San Jose, Milgray Elctms.             | 408-456-0900,<br>FAX:408-456-0300 |
| CA                 | San Jose, Sterling Elctms.            | 408-435-0835,<br>FAX:408-428-0108 |
| CA                 | Saratoga, Western Microtechnlg. Corp. | 408-725-1660,FAX:408-255-6491     |
| CA                 | Sunnyvale, Insight Elctms.            | 408-720-9222,<br>FAX:408-720-8390 |
| CA                 | Tustin, Sterling Elctms.              | 714-259-0900,<br>FAX:714-259-0946 |
| CA                 | Westgate Vlg, Bell Microproducts      | 805-496-2606,<br>FAX:805-496-6119 |
| CA                 | Westlake, Insight Elctms.             | 818-707-2101,<br>FAX:818-707-0321 |



|                                                                              |                                                                                |                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO Englewood, Sterling Elctms. .... 303-792-3939,<br>FAX:303-792-3433        | NY Farmingdale, Milgray Elctms. .... 516-420-9800,<br>FAX:516-752-9870         | FAX:604-590-5008                                                                                                                                                                                                |
| CO Thornton, Marshall Inds. .... 303-451-8383,<br>FAX:303-457-2899           | NY Pittsford, Milgray Elctms. .... 716-381-9700,<br>FAX:716-381-9495           | Can Victoria, B.C., MEMCO ..... 604-383-2400,<br>FAX:604-590-5008                                                                                                                                               |
| CT Milford, Milgray Elctms. .... 203-878-5538,<br>FAX:203-878-6970           | NY Rochester, Marshall Inds. .... 716-235-7620,<br>FAX:716-235-0052            | Can Winnipeg, Manitoba, ITT Multicomps. .... 204-697-2330,FAX:204-697-2293                                                                                                                                      |
| CT Wallingford, Marshall Inds. .... 203-265-3822,<br>FAX:203-284-9285        | NY Smithtown, Vantage Comps. .... 516-543-2000,<br>FAX:516-543-2030            | Can Winnipeg, Manitoba, MEMCO ..... 403-258-3399,<br>FAX:403-258-3454                                                                                                                                           |
| CT Wallingford, Sterling Elctms. .... 203-265-9535,<br>FAX:203-269-9742      | NC Raleigh, Marshall Inds. .... 919-878-9882,<br>FAX:919-872-2431              | NECOA, INC., Nittoku Engineering Group, 9321A<br>Philadelphia Rd, Baltimore, MD 21237, Tel: 410-574-4960,<br>FAX: 410-574-7083; Empl: 20; Sls. Mgr: Larry Whyte                                                 |
| FL Altamonte Springs, Marshall Inds. .... 407-767-8585,<br>FAX:407-767-8676  | NC Raleigh, Milgray Elctms. .... 919-790-8094,<br>FAX:919-872-8851             | NEC TECHNOLOGIES, INC., 1414 Massachusetts Ave,<br>Boxborough, MA 01719, Tel: 508-264-8000, TELEX: 910-<br>997-0594, FAX: 508-264-8673; Empl: 2100; Sls. Mgr: Robert Byrnes, V.P. Sls.                          |
| FL Ft Lauderdale, Marshall Inds. .... 305-977-4880,<br>FAX:305-977-4887      | NC Raleigh, Repton Elctms. .... 919-870-5189,<br>FAX:919-870-5210              | NEDAP N.V., P.O. Box 6, Groenlo, Holland 7140 AA, Tel:<br>031-5440-71111, TELEX: 44253, FAX: 031.5440.62745;<br>Empl: 420; Sls. Mgr: W. Bonnemeier                                                              |
| FL Ft Lauderdale, Repton Elctms. .... 305-735-1112,<br>FAX:305-735-1121      | OH Columbus, EMC (Elctn. Mktg.) Corp. .... 614-299-4161,<br>FAX:614-299-4121   | NEDCO ELECTRONICS, INC., 8246 LeHigh, Morton<br>Grove, IL 60053, Tel: 708-967-0500, FAX: 708-967-0505;<br>Empl: 10                                                                                              |
| FL Lake Mary, Milgray Elctms. .... 407-321-2555,<br>FAX:407-322-4225         | OH Dayton, Marshall Inds. .... 513-898-4480,<br>FAX:513-898-9363               | NEFF INSTR., 700 S. Myrtle Ave., Monrovia, CA 91016, Tel:<br>618-357-2281, TWX: 910-585-1833, FAX: 618-303-2286;<br>Empl: 52; Sls. Mgr: Louis P. Lang                                                           |
| FL St Petersburg, Marshall Inds. .... 813-573-1399,<br>FAX:813-573-0069      | OH Highland Heights, Electronic Mktg. .... 216-442-3441,<br>FAX:216-442-8122   | NEL FREQUENCY CONTROLS, INC., 357 Beloit St,<br>Burlington, WI 53105, Tel: 414-763-3591, FAX: 414-763-<br>2881; FSC No: 00815; Empl: 160; Sls. Mgr: Dick Griebel,<br>VP Sls. & Mktg.; Dist. Mgr: Boyd Recknagel |
| FL Tampa, Repton Elctms. Corp. .... 813-854-2351,<br>FAX:813-855-0942        | OH Independence, Milgray Elctms. .... 216-447-1520,<br>FAX:216-447-1761        | DIRK A. NELSON, P.E.-CONSULTING ENGINEER,<br>0882 County Rd. 130, Glenwood Springs, CO 81601, Tel:<br>303-945-7005, FAX: 303-945-7005; Empl: 1                                                                  |
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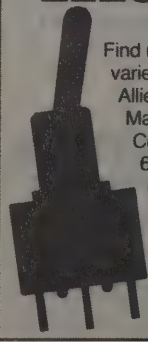
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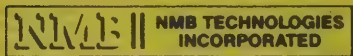
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| OH | Cleveland, CAM-RPC Elctns.                  | 216-461-4700 |
| OH | Columbus, CAM-RPC Elctns.                   | 614-895-5449 |
| OH | Dayton, Bell Inds.-Commercial               | 513-439-8660 |
| OH | Dayton, CAM-RPC Elctns.                     | 513-439-5551 |
| OH | Dayton, Stotts-Friedman                     | 513-298-5555 |
| OH | Worthington, Repron Elctns.                 | 614-436-4285 |
| OK | Tulsa, Sterling Elctns.                     | 918-663-2410 |
| OR | Lake Oswego, Bell Inds.                     | 503-635-6500 |
| PA | Braddock, Leff Elctns.                      | 412-351-5000 |
| PA | McKean, Advacom Inc.                        | 814-476-7774 |
| PA | Montgomeryville, Pytronic Inds.             | 215-643-2850 |
| PA | Pittsburgh, CAM-RPC Elctns.                 | 412-782-3770 |
| PA | Reading, Barbey Elctns.                     | 215-376-6116 |
| SC | Greenville, Hammond Elctns.                 | 803-233-4121 |
| TX | Austin, Sterling Elctns.                    | 512-836-1341 |
| TX | Dallas, Sterling Elctns.                    | 214-243-1600 |
| TX | El Paso, International Elctns.              | 915-598-3406 |
| TX | Grapevine, Mechatronics                     | 817-488-6634 |
| TX | Houston, Newark Elctns.                     | 713-270-4800 |
| TX | Houston, Sterling Elctns.                   | 713-623-6600 |
| TX | Richardson, Bell Inds.                      | 214-690-0466 |
| UT | Midvale, Bell Inds.                         | 801-255-9611 |
| UT | Salt Lake City, Sterling Elctns.            | 801-972-5444 |
| UT | West Valley City, Denver Beta Wintronic Co. | 801-966-0378 |
| VA | Herndon, Sterling Elctns.                   | 703-742-8400 |
| VA | Richmond, Sterling Elctns.                  | 804-226-2190 |
| WA | Bellevue, Newark Elctns.                    | 206-641-9800 |
| WA | Merced Island, Mechatronics SAB, Inc.       | 206-232-4800 |
| WA | Redmond, Bell Inds.                         | 206-885-9963 |
| WI | Milwaukee, Marsh Elctns.                    | 414-475-6000 |
| WI | New Berlin, Classic Comps.                  | 414-786-5300 |

|     |                                     |              |
|-----|-------------------------------------|--------------|
| WI  | Waukesha, Bell Inds.                | 414-547-8879 |
| Can | Pointe Claire, Que., Future Elctns. | 514-694-7710 |

**NMC FASTENING SYSTEMS, Nylon Molding Corp., 1617 S. California, Monrovia, CA 91016, Tel: 818-357-0901, FAX: 818-303-6085; Empl: 45; Sls. Mgr.: Gary Frazee**

**NOBLE U.S.A., INC., 5450 Meadowbrook Ct, Rolling Meadows, IL 60008, Tel: 708-364-6038, TELEX: 206745, FAX: 1-708-364-6045; Sls. Mgr.: Robert K. Burdick**

**A-2113**

|                                       |                                      |              |
|---------------------------------------|--------------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                      |              |
| AL                                    | Huntsville, Electro Mech Sls.        | 205-880-0592 |
| CA                                    | Los Angeles, Landa & Assoc.          | 213-879-0770 |
| CA                                    | Los Gatos, Stewart-Fullerton Assocs. | 408-376-0368 |
| CA                                    | Napa, Stewart-Fullerton Assoc.       | 707-258-1160 |
| CA                                    | San Diego, Legend Elctns.            | 619-689-0233 |
| CO                                    | Westminster, Glenn Mar               | 303-423-1572 |
| FL                                    | Plantation, Gallagher & Assocs.      | 305-473-2101 |
| GA                                    | Norcross, Electro Mech Sls.          | 404-447-6478 |
| IL                                    | Chicago, BNI Elctns.                 | 708-595-9210 |
| IN                                    | Indianapolis, Fred A. Dorsey Assoc.  | 317-872-6780 |
| KS                                    | Prairie Village, Spectrum Sls.       | 913-648-6811 |
| KY                                    | Frankfort, Fred A. Dorsey Assoc.     | 502-695-2250 |
| MA                                    | Randolph, Hatch Assoc.               | 617-963-3306 |
| MI                                    | Plymouth, M Rep                      | 313-420-2233 |
| MN                                    | Minneapolis, Holmgren Assoc.         | 612-574-9983 |
| MO                                    | Florissant, Spectrum Sls.            | 314-921-1313 |
| NY                                    | Hilton, ST Sls.                      | 716-392-9242 |
| NY                                    | Manhasset, Win-Cor                   | 516-627-9474 |
| NY                                    | Rochester, CAM/RPC Elctns.           | 716-427-9999 |
| NC                                    | Raleigh, Electro Mech Sls.           | 919-790-9300 |
| OH                                    | Cincinnati, PMR - Privett Mir's.     | 513-825-0022 |
| OH                                    | Cleveland, Century Sls.              | 216-871-2854 |
| OK                                    | Bethany, Design Mktg.                | 405-789-5911 |
| OR                                    | Beaverton, Quest Mktg.               | 503-641-7377 |
| PA                                    | Flourtown, C.G.M. Inc.               | 215-233-0333 |
| TX                                    | Austin, Design Mktg.                 | 512-263-9151 |
| TX                                    | Dallas, Design Mktg.                 | 214-247-4745 |
| WA                                    | Bellevue, Quest Mktg.                | 206-747-9424 |
| WI                                    | Brookfield, DTS Assocs.              | 414-781-4475 |
| Can                                   | Calgary, Alb., Current Corp.         | 403-680-2452 |
| Can                                   | Dorval, Que., Current Corp.          | 514-631-7193 |
| Can                                   | Pickering, Ont., Current Corp.       | 416-428-3413 |
| Can                                   | Port Moody, BC, Current Corp.        | 604-937-5559 |
| <b>Local Distributors</b>             |                                      |              |
| CA                                    | Irvine, ITT Multicomps.              | 714-727-4001 |
| CA                                    | San Jose, ITT Multicomps.            | 408-453-1404 |
| IL                                    | Addison, Belford Elctns.             | 708-691-1100 |
| MI                                    | Grand Rapids, RM Elctns.             | 616-531-9300 |
| MO                                    | St. Louis, Franklin Elctns.          | 314-429-3111 |
| OH                                    | Cleveland, CAM/RPC Elctns.           | 216-461-4700 |

**NOETIC TECHNOLOGIES, 4031 NE 17 Terr, Pompano Beach, FL 33064, Tel: 305-941-6343, 800-780-6343, FAX: 305-941-9413; FSC No.: 6625 SIC:3357; Sls. Mgr.: Philip S. Lipofsky**

**NOHAU CORPORATION, 51 E. Campbell Ave., Campbell, CA 95008, Tel: 408-866-1820, 408-866-4493, FAX: 408-378-7869 D-1304-1309**

|                                       |                                           |              |
|---------------------------------------|-------------------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                           |              |
| CA                                    | San Diego, Microwave Technlg. Inc.        | 619-693-4280 |
| CT                                    | Old Saybrook, AD Elctns.                  | 203-388-2204 |
| FL                                    | West Melbourne, Trilogic Sunforce         | 407-722-1324 |
| MI                                    | Farmington Hills, The Dearborn Grp., Inc. | 313-932-1850 |
| NY                                    | Glen Cove, J. Kunze Co.                   | 516-671-2376 |
| PA                                    | Hatboro, Delta Tech. Sls.                 | 215-957-0600 |
| VA                                    | Herndon, Embedded Technlgy.               | 703-742-0040 |
| WA                                    | Bothell, Electronics                      | 206-947-2115 |
| Can                                   | Laval/Que., Technatron, Inc.              | 514-689-5889 |

**NOISE COM INC., E. 49 Midland Ave, Paramus, NJ 07652, Tel: 201-261-8797, FAX: 201-261-8339; FSC No.: 65185; Empl: 28; Sls. Mgr.: Gary Simonyan A-1848; D-1298, 1311**

|                                       |                                    |              |
|---------------------------------------|------------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                    |              |
| CA                                    | Los Angeles, McDougall/Mc Laughlin | 213-477-8556 |
| CA                                    | San Jose, Allis Assocs., Inc.      | 408-252-2883 |
| FL                                    | Clearwater, Beacon Microwave       | 813-796-2378 |
| MD                                    | Columbia, Creative Mktg. Assoc.    | 301-880-4161 |
| MA                                    | Reading, Geder Assoc.              | 617-944-3105 |
| WA                                    | Kirkland, Allis Northwest          | 206-828-0444 |
| EXP                                   | Palo Alto, Ca, Radar Systems       | 415-322-7448 |

**NOLATRON, P.O. Box 4042, Harrisburg, PA 17111, Tel: 717-564-3398, FAX: 717-939-5831; Empl: 5**

**NOLL, J. A. CO., P.O. Box 312, Monroeville, PA 15146, Tel: 412-856-7566, FAX: 412-372-1752; Sls. Mgr.: P. Carson; Dist. Mgr.: P. Carson**



**NON-LINEAR SYSTEMS**, 4174 Sorrento Valley Blvd., San Diego, CA 92121, Tel: 619-535-2161, FAX: 619-535-2169; FSC No.: 03626; Empl: 25; *Sls. Mgr.*: Charlotte Gresham; *Dist. Mgr.*: Charlotte Gresham

**NORDION INTERNATIONAL**, 447 March Rd., Kanata, Ontario, Canada K2K 1X8, Tel: 613-592-2790, TELEX: 053-4162, FAX: 613-592-6937

**NOREN PRODUCTS INC.**, 1010 O'Brien Drive, Menlo Pk., CA 94025, Tel: 415-322-9500, TELEX: 17-1410 Noren MNPK, FAX: 415-324-1348; *Sls. Mgr.*: Dennis Fleming

**NORGREN**, 5400 South Delaware, Littleton, CO 80120-1663, Tel: 303-794-2611, FAX: 303-795-9487; Empl: 661; *Sls. Mgr.*: James Smith; *Dist. Mgr.*: James Smith

**NORITAKE CO., INC.**, Electronics Division, LA Branch, 2050 E. Vista Bella Way, Compton, CA 90220, Tel: 310-603-9770, FAX: 310-603-9810; FSC No.: 213-772-3918; Empl: 200; *Sls. Mgr.*: Ted Suzuki

*Noritake*

**FAX: 708-593-2285**

**NORITAKE CO., INC.**, 2635 Clearbrook Dr., Arlington Heights, IL 60005, Tel: 708-439-9020; Empl: 2000; *Sls. Mgr.*: Albert Smith **A•1711; B•1094-1095**

*Local Sales Offices & Reps*  
CA Compton, Noritake Co., Inc. .... 310-603-9770  
IL Arlington Heights, Noritake Co., Inc. .... 708-439-9020  
MA Burlington, Noritake Co., Inc. .... 617-270-0360  
NJ Secaucus, Noritake Co., Inc. .... 201-319-0600  
TX Dallas, Noritake Co., Inc. .... 214-742-9389

**NORPLEX OAK INC.**, P.O. Box 1448, La Crosse, WI 54602-1448, Tel: 608-784-6070, TELEX: 59-2257; Empl: 2,200

**NORTH AMERICAN CAPACITOR CO.**, 7545 Rockville Rd., Indianapolis, IN 46224, Tel: 317-273-0090, FAX: 317-273-2400; Empl: 200; *Dist. Mgr.*: Tom Green, V.P. *Sls. & Mktg.* **A•1130-1135**

*Local Sales Offices & Reps*  
AL Huntsville, Mtn. Electro Mktg. .... 205-461-8420  
CA Phoenix, C.T. Carlberg & Assocs., Inc. .... 602-468-0750  
CA Huntington Bch., West Elect. Sls. Co. .... 714-375-6500  
CA Mountain View, Straube Assocs., Inc. .... 415-969-6060  
CA San Diego, West Elect. Sls. Co. .... 619-566-8430  
CO Englewood, Delltron Co. .... 303-741-2122  
FL Orlando, Comp. Design Mktg. .... 407-240-3903  
IL Mount Prospect, The Dombrow Co. .... 708-253-3326  
GA Norcross, Mtn. Electro Mktg. .... 404-448-5594  
IN Indianapolis, D-M Assocs. .... 317-842-4424  
IA Cedar Rapids, KKB & Co. .... 319-373-1730  
MA Wellesly, Logan Sls. .... 617-235-6868  
MN S. St. Paul, Northport Engrg. .... 612-457-8000  
MO Blue Springs, KKB & Co. .... 816-229-0001  
MO St. Louis, KKB & Co. .... 314-647-2400  
NM Albuquerque, C.T. Carlberg & Assocs., Inc. .... 505-899-2155

NY Fairport, LamTec Sls. Corp. .... 716-377-1210  
NY Hauppauge, Aurora Mktg., Inc. .... 516-434-1313  
NY Manlius, LamTec Sls. Corp. .... 315-682-4780  
NC Wendell, Mtn. Electro Mktg. .... 919-365-5674  
OH Beachwood, Elctm. Salesmasters, Inc. .... 216-831-9555

TX Hurst, Pro-Comp Sls. Co. .... 817-589-0336  
TX Richardson, Pro-Comp Sls. Co. .... 214-689-1500  
Can Pickering, Ont., A. C. Simmonds & Sons .... 416-839-8041

*Local Distributors*  
NJ Lawrenceville, DVS Co. .... 609-896-1112  
OR Beaverton, Jas. J. Backer .... 503-627-0775  
WA Seattle, Jas. J. Backer .... 206-285-1300

**NORTH AMERICAN PHILIPS CONTROLS CORP.**, See Airpax Corporation, Cheshire Div.

*NPA*

**FAX: 516-567-1823**

**NORTH ATLANTIC INSTRUMENTS, INC.**, 170 Wilbur Place, Bohemia, NY 11716-2416, Tel: 516-567-1100; FSC No.: 0VUGU1; Empl: 30; *Sls. Mgr.*: William Cullum **D•1312**

#### Local Sales Offices & Reps

AL Huntsville, Teqspec, Inc. .... 205-883-6699  
AZ Mesa, SDW Mountain States .... 602-839-6626  
CA Los Alamitos, Tritek-SDW Inc. .... 714-236-1190  
CA San Diego, Tritek-SDW, Inc. .... 619-455-1911  
CA Santa Clara, Tritek-SDW, Inc. .... 408-554-0455  
CO Louisville, SDW Mountain States .... 303-665-8089  
FL Cape Canaveral, TeqSpec .... 407-783-3444  
FL Palm Harbor, Teqspec .... 813-942-6006  
GA Snellville, Teqspec .... 404-972-7955  
IL Chicago, Pat Lind Elctms. .... 312-726-3513  
IN Indianapolis, Pat Lind Elctms. .... 317-632-7444  
KS Lenexa, Midtec Assocs., Inc. .... 913-541-0505  
MI Madison Heights, WKM Assoc. .... 313-588-2300  
MI Troy, WKM Assocs., Inc. .... 313-588-2300  
MN Circle Pines, Pat Lind Elctms. .... 612-786-5770  
MO St. Louis, Midtec Assocs., Inc. .... 613-875-8666  
NH Nashua, Intersell .... 603-880-6500  
NM Albuquerque, SDW Mountain States .... 505-883-3668  
NC Winston-Salem, Teqspec III .... 919-765-5553  
OH Dayton, WKM Assoc. .... 513-434-7500  
OH Independence, WKM Assocs., Inc. .... 216-524-5930  
OR Wilsonville, Syntek .... 503-682-2750  
PA Pittsburgh, WKM Assocs., Inc. .... 412-892-2953  
PA Southampton, Eastern Instrmn. of PA .... 215-355-3469  
TX Austin, Testech, Inc. .... 512-338-9246  
TX Euless, Testech, Inc. .... 817-540-1944  
TX Houston, Testech, Inc. .... 713-893-9661  
TX Richardson, Testech, Inc. .... 214-644-5010  
VA Fairfax, Scientific Assocs., Inc. .... 703-385-0600  
WA Bellevue, Syntek, Inc. .... 206-462-7700  
WI Milwaukee, Pat Lind Elctms. .... 414-224-0146

**NORTHEAST INNOVATIONS, INC.**, PO Box 1214, Concord, NH 03302, Tel: 603-736-8260, FAX: 603-736-4506; Empl: 15; *Sls. Mgr.*: Robert Shipione

**NORTHERN AMPOWER CORP.**, 47087 Grand River, Novi, MI 48374, Tel: 313-349-4860, FAX: 313-349-5892; Empl: 30; *Sls. Mgr.*: Ronald Kirsch

**NORTHERN MAGNETICS INC.**, 16124 Wyandotte, Van Nuys, CA 91406, Tel: 818-997-8675, FAX: 818-997-3935; Empl: 12

**NORTHERN PRECISION LABS.**, 11 Madison Rd., Fairfield, NJ 07006, Tel: 201-227-4800, FAX: 201-575-5973; Empl: 95; *Sls. Mgr.*: P. Pytal

**NORTHERN TECHNOLOGIES INC.**, 35 Rivera Dr., Unit No. 5, Markham, Ont., CAN L3R 8N4, Tel: 416-475-9320, 1-800-456-1875, FAX: 416-475-5719; Empl: 95; *Sls. Mgr.*: Mark A. Finlay

*North Hills*  
A Porta Systems Company

**FAX: 516-682-7704**

**NORTH HILLS SIGNAL PROCESSING**, 575 Underhill Blvd., Syosset, NY 11791, Tel: 516-682-7740; FSC No.: 98821; Empl: 40; *Sls. Mgr.*: Steve Muth **A•2438-2441**

*Local Sales Offices & Reps*  
AZ Phoenix, Mercury Eng. Sls. .... 602-265-0344  
CA Campbell, Sedillo Co., Inc. .... 408-374-5222  
CA North Palo Alto, Tri-Rep .... 415-965-1822  
CA Palo Alto, Tri Rep .... 415-965-1822  
CA South El Toro, Par Mktg. .... 714-768-6021  
CO Littleton, Mercier & Assoc. .... 303-770-0666  
CT Wethersfield, Underwood Sls. Corp. .... 203-563-3046  
FL Clearwater, Brennan Assocs. .... 813-446-5006  
IL Wheaton, Vine Tech. Sls. .... 913-642-7220  
IA Cedar Rapids, Tech Alliance .... 319-373-0686  
MD Baltimore, Stermer Assocs. Inc. .... 410-944-8080  
MD Laurel, CSDS .... 301-953-7884  
MA Lowell, Underwood Sls. Corp. .... 617-256-8191  
MI Farmington Hills, Rathsburg Assoc. Inc. .... 313-489-1500

MN Eden Prairie, COM-TEK Sls. .... 612-941-7181  
MN Minneapolis, Hei-Lite Sls. .... 612-861-6051  
MO St. Louis, Alpha Tech. Sls. .... 314-537-2647  
MO St. Louis, Thunderbird Tech. Sls. .... 314-298-8984  
NJ Kenilve, CFE Gray .... 201-927-6662  
NY Whitney Point, T.A.E. Reps. .... 607-692-3705  
PA Philadelphia, Paragon Sls. .... 215-778-6328  
TX Argyle, Milestok, Inc. .... 817-455-7444  
TX Boerne, Max Lipscomb & Assoc. .... 512-981-8708  
TX Dallas, C.J. Tellier .... 214-231-6348  
TX Houston, Ocean Electric .... 713-441-1481

WI Genoa City, Vine Tech. Sls. .... 414-279-3871  
Can Montreal, Componetics Ltd. .... 514-331-9930

*Local Distributors*  
MD Laurel, Rayma .... 1-800-447-2962  
TX Argyle, Miles Tek, Inc. .... 817-455-7444

**NORTH IOWA ELECTRONICS, INC.**, Winnebago Industries, Inc., 325 N. State St., Garner, IA 50438, Tel: 515-923-3751, FAX: 515-923-2325; Empl: 90

**NORTHLAKE ENGINEERING, INC.**, 8320 193 Rd., Bristol, WI 53104-0370, Tel: 414-857-9600, FAX: 414-857-6819; FSC No.: 50638; Empl: 120; *Sls. Mgr.*: W. A. Hardt

**NORTH TEXAS CIRCUIT BOARD**, 1501 W. Shady Grove Rd., Grand Prairie, TX 75050, Tel: 214-790-7610, FAX: 214-986-2381; FSC No.: 5S424; Empl: 70; *Sls. Mgr.*: Keith Larson; *Dist. Mgr.*: Keith Larson

**NORTHWEST ANALYTICAL INC.**, 520 N. W. Davis St., Portland, OR 97209, Tel: 503-224-7727, FAX: 503-224-5236; Empl: 26; *Sls. Mgr.*: Lynn Theis; *Dist. Mgr.*: Kathryn Botsford

**NORTHWEST ETCH TECHNOLOGY**, 2601 So. Hood St., Tacoma, WA 98409, Tel: 206-572-2401, 1-800-343-2401, FAX: 206-383-8325; Empl: 30

*Nw*

**FAX: 503-929-6428**

**NORTHWEST MICROCIRCUITS, INC.**, 211 S. 9th - P.O. Box 1479, Philomath, OR 97370, Tel: 503-929-6424; Empl: 15; *Sls. Mgr.*: Matt Graham **A•1712**

**NORTON ASSOCIATES, INC.**, 9 Endo Blvd., Garden City, NY 11530, Tel: 516-745-1411, FAX: 516-745-1412; FSC No.: 08739

**NORWESCO, INC.**, See Norwesco Interconnect Devices

**NORWESCO INTERCONNECT DEVICES**, 2633 Plastics Drive, Gastonia, NC 28053, Tel: 704-868-3581, FAX: 704-867-0577; Empl: 80; *Sls. Mgr.*: Gary Munn

**NOVA ELECTRIC CORP., Technology Dynamics, Inc.**, 100 School St., Bergenfield, NJ 07621-2915, Tel: 201-385-0500, FAX: 201-385-0702; FSC No.: 29019; Empl: 50; *Sls. Mgr.*: Kenneth Novitch **D•2284-2285**

*Local Sales Offices & Reps*  
CO Englewood, Odyssey 1 .... 303-773-8176  
CT W. Hartford, Power Factor Assoc. .... 203-233-0600  
FL Orlando, Truex Assoc. .... 407-859-2160  
KS Kansas City, Harris-Hansen Co. .... 816-763-6200  
MD Columbia, Delta III Assoc. .... 410-730-4700  
MA Whitinsville, Power Factor Assoc. .... 508-234-6415  
MI Detroit, Comtel .... 313-358-2505  
OH Cleveland, Comtel Assoc. .... 216-442-8080  
PA Philadelphia, Rabal Assoc. .... 215-922-6914  
TX Dallas, Carey McMahon Assoc. .... 214-681-1414  
UT Odyssey 1 .... 801-485-4728  
WA Bellevue, Topp .... 206-747-5400  
Can Ottawa, Ont., Subtec .... 613-723-7720

**NOVOTECHNIK U.S., INC.**, 237 Cedar Hill St., Marlborough, MA 01752, Tel: 508-485-2244, FAX: 508-485-2430; FSC No.: MULTIPLE; Empl: 8 **A•2114**

**NRD INC.**, Subsidiary of Mark IV Inds., Inc., 2937 Alt Blvd. N., Grand Island, NY 14072, Tel: 716-773-7634, FAX: 716-773-7744; Empl: 100; *Sls. Mgr.*: James Curtis; *Dist. Mgr.*: Larry Keating

**NTE ELECTRONICS, INC.**, 44 Farrand St., Bloomfield, NJ 07003, Tel: 201-748-5089, FAX: 201-748-6224; FSC No.: T7184; Empl: 60; *Sls. Mgr.*: Cindy Habick; *Dist. Mgr.*: Mary Damiano **A•2149; B•1572-1576**

*NTK*  
TECHNICAL CERAMICS

**FAX: 708-390-6482**

**NTK TECHNICAL CERAMICS, NGK Spark Plugs (USA)**, 1200 Business Ctr. Dr., Suite 300, Mt. Prospect, IL 60056, Tel: 708-824-1133; FSC No.: 95-246-1286; *Sls. Mgr.*: Ted Kato, *Sls. Mgr.*: *Dist. Mgr.*: Manabu Sato **A•1664-1667, 1849**



| Local Sales Offices & Reps |                                  |              |
|----------------------------|----------------------------------|--------------|
| AZ                         | Mesa, NTK Tech. Ceramics         | 602-820-4900 |
| CA                         | San Jose, NTK Tech. Ceramics     | 408-727-5180 |
| FL                         | Longwood, D-Associates           | 407-321-9594 |
| IN                         | Mt. Prospect, NTK Tech. Ceramics | 708-824-1133 |
| IL                         | Ft. Wayne, T.X. Sls.             | 219-489-4447 |
| MA                         | Farmingham, NTK Tech. Ceramics   | 508-820-0220 |
| MI                         | Detroit, NTK Tech. Ceramics      | 313-489-0123 |
| NJ                         | Millburn, NTK Tech. Ceramics     | 201-376-6070 |
| TX                         | Dallas, NTK Tech. Ceramics       | 214-404-1173 |
| Can                        | Ontario, NGK Spark Plugs Canada  | 416-291-9746 |

**NUCLEAR MEASUREMENTS GROUP**, Oxford Instruments, Inc., PO Box 2560, Oak Ridge, TN 37831-2560, Tel: 615-483-8405, TELEX: 557482, TWX: 810-572-1018, FAX: 615-483-5891; Empl: 120; Sls. Mgr: Roger Stevens

**NUCLEAR RESEARCH CORP.**, 125 Titus Ave., Box H, Warrington, PA 18976, Tel: 215-343-5900, TELEX: 510-665-8525 NRC WNTN, FAX: 215-343-4670; FSC No.: 96696; Empl: 130; Sls. Mgr: Tom O'Malley; Dist. Mgr: Tom O'Malley

**NUCLEONIC PRODS.**, See Thomson Electron Tube & Devices Corp. Thomson CSF

**NU-CONCEPT SYSTEMS**, 2725 Advance La., P.O. Box 587, Colmar, PA 18915, Tel: 215-822-8400, 800-762-4278, FAX: 215-822-1427; FSC No.: 58561; Empl: 10; Sls. Mgr: Robert F. Scheuerle

**NU DATA, INC.**, 32 Fairview Ave., Little Silver, NJ 07739, Tel: 908-842-5757, FAX: 908-842-1161; Empl: 20; Sls. Mgr: Mark Leiberman; Dist. Mgr: George Serbe

**NWL CAPACITORS**, **NWL Transformers**, 1 Industrial Drive, Snow Hill, NC 28580, Tel: 919-747-5943, FAX: 919-747-8979; Empl: 39; Sls. Mgr: Gary W. Greiser

| Local Sales Offices & Reps |                                         |              |
|----------------------------|-----------------------------------------|--------------|
| CA                         | Los Gatos, Estronics Co.                | 408-356-2968 |
| CA                         | Marrieta, Mil-Corn Sls.                 | 714-677-2097 |
| CT                         | Darien, C.W. Assocs.                    | 203-656-2339 |
| FL                         | Tampa, SRT Mktg.                        | 813-884-4805 |
| IL                         | Arlington Heights, Berndt Assocs., Inc. | 708-632-0900 |

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|----|-------------------------------------|--------------|
| MI | Livonia, Amtech Reps., Inc.         | 313-474-8300 |
| NJ | Haddonfield, M&S Mesa Inc.          | 609-429-7055 |
| NM | Albuquerque, TMMI Westfahl          | 505-268-1433 |
| NY | Nassau, Jones Suds                  | 518-766-9575 |
| OH | Maineville, George Barnett & Co.    | 513-677-0922 |
| OR | Lake Oswego, Salestech Assocs.      | 503-636-9559 |
| TX | Euleess, Fralia Co. & Assocs.       | 817-354-1144 |
| VT | White River Jct., Cornerstone Inds. | 802-295-5260 |
| WA | Redmond, Salestech Assocs.          | 206-869-5412 |
| WI | Milwaukee, Berndt Assocs., Inc.     | 414-545-8400 |

**NWL TRANSFORMERS**, Rising Sun Rd., P.O. Box 358, Bordentown, NJ 08505, Tel: 609-298-7300, FAX: 609-298-1982; Empl: 225; Sls. Mgr: Helmut Herder

| Local Sales Offices & Reps |                                 |              |
|----------------------------|---------------------------------|--------------|
| CA                         | Los Gatos, Estronics Co.        | 408-356-2968 |
| CA                         | Marrieta, Mil-Corn Sls.         | 714-677-2097 |
| NJ                         | Princeton, Mutronics Assocs.    | 609-394-3737 |
| NM                         | Albuquerque, Westfahl & Assocs. | 505-268-1433 |
| WA                         | Redmond, Salestech Assocs.      | 206-869-5412 |

**WILLIAM F. NYE, INC.**, P.O. Box 8927, New Bedford, MA 02742-8927, Tel: 508-996-6721, TELEX: 940807, FAX: 508-997-5285; Empl: 36; Sls. Mgr: Donald R. Fairbanks

| Local Sales Offices & Reps |                                 |              |
|----------------------------|---------------------------------|--------------|
| IL                         | Elgin, Mark C. Biteler          | 708-697-5446 |
| MI                         | Pleasant Ridge, Brian C. Holley | 313-542-2720 |

**NY-GLASS PLASTICS INC.**, Calnetics Corp., 1255 Railroad St., Corona, CA 91720, Tel: 909-737-9110, FAX: 909-737-9815; Empl: 90; Sls. Mgr: Chris Ward

**NYTRON INDUCTORS, INC. (VSD, INC.)**, Offered by: Dale Electronics, Inc., E. Hwy. 50, P.O. Box 180, Yankton, SD 57078-0180, Tel: 605-665-9301, FAX: 605-665-1627; FSC No.: 83125; Empl: 450; Sls. Mgr: Mike Husman

## OAK GRIGSBY

FAX: 708-556-4216

**OAKGRIGSBY INC.**, 88 N. Dugan Rd., Sugar Grove, IL 60054, Tel: 708-556-4200; FSC No.: 76854; Empl: 300; Sls. Mgr: Lou Falco

| Local Sales Offices & Reps |                                          |              |
|----------------------------|------------------------------------------|--------------|
| AL                         | Huntsville, New Age Elctns.              | 205-895-9400 |
| AZ                         | Scottsdale, Carefree Elctns. Sls.        | 602-951-9121 |
| CA                         | Laguna Hills, Fitch Assocs.              | 714-951-0196 |
| CA                         | San Jose, Vernex & Assocs.               | 408-972-9072 |
| FL                         | Longwood, Sepler & Assocs.               | 407-774-3161 |
| GA                         | Duluth, New Age Elctns.                  | 404-476-0079 |
| IL                         | Rolling Meadows, Sumner, Inc.            | 708-991-8500 |
| IL                         | Sugar Grove, OakGrigsby, Inc.            | 708-556-4200 |
| IN                         | Indianapolis, Hi-Tek Sls.                | 317-887-2564 |
| IA                         | Cedar Rapids, Pattison Sls.              | 319-395-9866 |
| KS                         | Parker, S.W. Wollard Assocs.             | 913-898-6552 |
| MA                         | Acton, James Inds. East                  | 508-264-4456 |
| MN                         | Bloomington, Murnco & Assocs.            | 612-854-4161 |
| NY                         | Fairport, A.C.S.                         | 716-223-2430 |
| OH                         | Beachwood, Elctn. Sls. Masters, Inc.     | 216-831-8647 |
| PA                         | Plymouth Meeting, CMS Sls. & Mktg., Inc. | 215-834-6840 |

|     |                                   |              |
|-----|-----------------------------------|--------------|
| TX  | Dallas, Dal/Tex Rep., Inc.        | 214-991-7799 |
| Can | Mississauga, Ont., GMA (Toronto)  | 416-671-8111 |
| Can | Nepean, Ont., GMA (Ottawa)        | 613-820-3822 |
| Can | St. Laurent, Que., GMA (Montreal) | 514-335-9572 |

| Local Distributors |                                      |              |
|--------------------|--------------------------------------|--------------|
| AZ                 | Tempe, L-Comp                        | 602-730-1633 |
| CA                 | Fremont, KEA Elctns.                 | 510-651-2600 |
| CA                 | Gardena, Cal Switch                  | 310-538-9830 |
| FL                 | Pompano, Peerless                    | 305-973-4141 |
| FL                 | W. Palm Bch., Wings Electro Sls. Co. | 407-798-6606 |

|    |                               |              |
|----|-------------------------------|--------------|
| GA | Atlanta, Peerless             | 404-612-9090 |
| ID | Boise, Radar                  | 208-336-2227 |
| IL | Addison, L Comp               | 708-628-1400 |
| IL | Chicago, Newark               | 312-907-5453 |
| IL | Crystal Lake, Sub Sem         | 815-459-4139 |
| IL | Crystal Lake, Sub-Sem, Inc.   | 815-459-4139 |
| IL | Rosemont, Advent Elctns.      | 708-297-6200 |
| IA | Cedar Rapids, Advent Elctns.  | 319-363-0221 |
| IN | Indianapolis, Advent Elctns.  | 317-872-4910 |
| MD | Columbia, Peerless            | 410-997-1717 |
| MA | Canton, Richey/Impact Elctns. | 617-821-1500 |
| MA | Walpole, Richey Impact        | 508-668-8200 |
| MA | Westborough, In-Stock Prods.  | 508-870-5750 |
| MA | Wilmington, North Star        | 508-657-5155 |

|    |                                  |                                 |
|----|----------------------------------|---------------------------------|
| MA | Wilmington, North Star Elctns.   | 508-657-5155                    |
| MI | Farmington Hills, Advent Elctns. | 313-477-1650                    |
| MN | Minneapolis, Berquist            | 800-328-3882                    |
| MO | Kansas City, L-Comp              | 816-241-0111, FAX: 816-241-7373 |
| MO | Maryland, L-Comp                 | 314-291-6200, FAX: 314-298-7231 |
| NY | Hauppauge, Fairmont Elec.        | 516-231-3313                    |
| NY | Lynbrook, Peerless Radio Corp.   | 516-593-2121, FAX: 516-593-2179 |

|    |                                     |                                 |
|----|-------------------------------------|---------------------------------|
| NY | Rockville Centre, Advantage Elctns. | 516-678-6956, FAX: 516-678-7966 |
| NC | Raleigh, Component Distr.           | 919-877-7311                    |
| OH | Centerville, IPD                    | 513-435-2086                    |
| OR | Portland, Radar Electric Co., Inc.  | 503-232-3404, FAX: 503-235-0428 |

|    |                               |                                 |
|----|-------------------------------|---------------------------------|
| TX | Austin, Wofford Elctns., Inc. | 512-339-1131, FAX: 512-835-7351 |
| TX | Carrollton, Northstar Elctns. | 214-980-2999, FAX: 214-980-2997 |
| TX | Dallas, Component Distr.      | 214-644-0373                    |
| TX | Dallas, Wofford Elctns., Inc. | 214-340-8555, FAX: 214-340-9555 |

|    |                                |                                 |
|----|--------------------------------|---------------------------------|
| TX | El Paso, Ideal Indl. Elctns.   | 915-779-6647, FAX: 915-779-0617 |
| TX | El Paso, Ideal Indl. Elec.     | 915-779-6647                    |
| TX | Houston, Wofford Elctns., Inc. | 713-351-2255, FAX: 713-351-2722 |

|    |                                    |                                 |
|----|------------------------------------|---------------------------------|
| WI | Milwaukee, Progressive Image, Inc. | 414-321-4722                    |
| WA | Richland, Radar Electric Co., Inc. | 509-943-8336, FAX: 509-943-6790 |
| WA | Seattle, Radar Electric Co., Inc.  | 206-282-2511, FAX: 206-282-1598 |
| WA | Spokane, Radar Electric Co., Inc.  | 509-747-3053, FAX: 509-456-8069 |

|     |                                        |                                 |
|-----|----------------------------------------|---------------------------------|
| WI  | Milwaukee, Progressive Image           | 414-321-4722, FAX: 414-321-4665 |
| Can | Downsview, Ont., Westburne Elctns.     | 416-635-2980, FAX: 416-635-0019 |
| Can | Downsview, Ont., Westburne Elec. Supp. | 416-635-2980                    |

|    |                               |              |
|----|-------------------------------|--------------|
| AZ | Tucson, Carefree Elctns. Sls. | 602-882-8642 |
|----|-------------------------------|--------------|

**OAK SWITCH SYSTEMS**, See OakGrigsby, Inc.

**OAL ASSOCIATES, INC.**, 16744 W. Bernardo Dr., Rancho Bernardo, CA 92127-1904, Tel: 619-451-1799, FAX: 619-451-2799; Empl: 18; Sls. Mgr: Dave Dorfman

**OAS INC.**, See Optimum Applied Systems

**OCEAN MOTIONS CO.**, P.O. Box 130, Barrington, RI 02806, Tel: 401-246-1394, FAX: 401-246-0075; FSC No.: 64654; Sls. Mgr: C. Thorp

| Local Sales Offices & Reps |                               |                                 |
|----------------------------|-------------------------------|---------------------------------|
| CO                         | Denver, Control Agcy., Inc.   | 303-694-9214                    |
| UT                         | Salt Lake City, Control Agcy. | 801-268-9880, FAX: 801-268-9924 |

**OCE GRAPHICS USA, INC.**, 385 Ravendale Dr., Mountain View, CA 94039-7169, Tel: 415-964-7900, FAX: 415-961-6152; Sls. Mgr: Gary Gedeon; Dist. Mgr: Gary Gedeon

**OCTAGON SYSTEMS**, 6510 W. 91st Ave., Westminster, CO 80030, Tel: 303-430-1500, FAX: 303-426-8126

**OCULAR INC.**, 746 Lingco Dr., Richardson, TX 75081, Tel: 214-437-3888, FAX: 214-437-2562; Empl: 110; Sls. Mgr: Marvin Smith

| Local Sales Offices & Reps |                                   |              |
|----------------------------|-----------------------------------|--------------|
| AL                         | Madison, Southern Elctn. Reps.    | 205-461-8925 |
| AZ                         | Phoenix, JBS Assocs., Inc.        | 602-244-1212 |
| CA                         | Huntington Beach, Solutech, Inc.  | 714-374-0130 |
| CA                         | San Jose, Kottmeier Assocs.       | 408-371-8700 |
| CO                         | Anvada, Arrowhead Sls.            | 303-429-5556 |
| FL                         | Hollywood, Advantage Comp.        | 305-962-2255 |
| FL                         | Hollywood, Advantage Comps.       | 305-962-2255 |
| GA                         | Atlanta, Southern Elctn. Reps.    | 404-458-3577 |
| IL                         | Arlington Hgts., Coombs & Assocs. | 708-439-9810 |
| IN                         | Fort Wayne, Menze Sls.            | 219-747-5616 |
| KS                         | Kansas City, EPI, Inc.            | 913-432-1792 |
| MD                         | Hunt Valley, Eagle Sls. Corp.     | 410-666-3930 |
| MA                         | Swansea, Wm. Poisson & Assocs.    | 508-677-3655 |
| MN                         | Hopkins, Pathway Sls.             | 612-891-4841 |
| NJ                         | Sacramento, Kottmeier Assocs.     | 408-371-8700 |
| NV                         | Wayne, Breen Assocs.              | 201-696-8683 |
| NM                         | Albuquerque, Nelco Electronix     | 505-293-1399 |
| PA                         | Newtown, Industrial Sls. Assocs.  | 215-860-2076 |
| TX                         | Dallas, Component Technlg.        | 214-789-8831 |
| WA                         | Renton, K.R. Jensen Sls. Co.      | 206-277-2772 |
| WI                         | Milwaukee, Coombs & Assocs.       | 414-351-6123 |
| Can                        | Montreal, A.R. Greg & Assocs.     | 514-694-6378 |

**ODU-USA, INC.**, ODU-Kontakt GmbH, Germany, 4620 Calle Quetzal, Camarillo, CA 93012, Tel: 805-484-0540, FAX: 805-484-7458; Empl: 5; Sls. Mgr: Ona Collins; Dist. Mgr: Kenneth E. Rhines

**CAL SWITCH**  
CALIFORNIA SWITCH AND SIGNAL, INC.

**THE SOURCE FOR**

**OAK GRIGSBY**

[310] 538-9830  
[213] 770-2330  
[714] 525-6606  
[415] 621-7386  
[408] 279-8848  
[510] 452-1009  
[916] 448-6370  
[209] 441-1725

**[800] CAL-SWCH**



**OECO CORP.**, 4607 S.E. International Way, Milwaukie, OR 97222, Tel: 503-659-7932, TELEX: 36-0350, FAX: 503-653-6310; FSC No.: 95266; Empl: 700; Sls. Mgr.: Dave Fuller, VP Sls.

**OFTI**, 2 Liberty Way, Westford, MA 01886, Tel: 508-692-6606, FAX: 508-692-6620; Empl: 72

**OGALLALA ELCTRNS.**, Div. Arnold Engrg. Co., Box 59, Ogallala, NE 69153, Tel: 308-284-4093, FAX: 308-284-4740; Empl: 51; Sls. Mgr.: Doug Groteluschen

**OGDEN MANUFACTURING CO.**, 48 W. Seegers Road, Arlington Heights, IL 60005, Tel: 708-593-8050, FAX: 708-593-8062; Empl: 250; Dist. Mgr.: Gordon D. Hollander



**FAX: 614-486-0743**

**OHIO SEMITRONICS, INC.**, 1205 Chesapeake Ave., Columbus, OH 43212, Tel: 614-486-9561; FSC No.: 12066; Empl: 47; Sls. Mgr.: G. Claggett • B-1982-2003; D-1313

| Local Sales Offices & Reps                   |              |
|----------------------------------------------|--------------|
| AL Huntsville, Datarep Inc.                  | 205-881-0361 |
| CA Costa Mesa, FLW of Northern CA            | 510-651-6511 |
| CA Fremont, FLW of Southern CA               | 714-751-7512 |
| CO Denver, MC Squared Inc.                   | 303-286-1414 |
| FL Margate, Datarep                          | 305-968-6568 |
| FL Orlando, Datarep                          | 407-843-5224 |
| GA Marietta, FLW                             | 404-424-1731 |
| IL Columbia, R.L. Weisheimer & Assocs.       |              |
|                                              | 314-487-7328 |
| IL Park Ridge, Elctrm. Instr. Assocs.        | 708-298-2290 |
| KS Kansas City, R.L. Weisheimer & Assocs.    |              |
|                                              | 816-561-1711 |
| MD Mt. Airy, Strayton Assocs., Inc.          | 301-831-7007 |
| MI Livonia, TMS Inc.                         | 313-462-2100 |
| MN Minneapolis, The Mark Co.                 | 612-933-3026 |
| NJ Garwood, E.R. Mertz, Inc.                 | 201-232-4643 |
| NJ Haddonfield, G.L. Williams & Assoc.       | 609-428-6060 |
| NY Latham, L-Tron Corp.                      | 518-785-5032 |
| OH Columbus, Ohio Semitronics Inc.           | 614-486-9561 |
| OH Dayton, Mohawk Intronic                   | 513-434-8873 |
| OH No. Ridgeville, TMS, Inc.                 | 216-327-3527 |
| OK Stillwater, Acudata Inc.                  | 405-743-1886 |
| PA Pittsburg, TMS                            | 412-221-2338 |
| RI Narragansett, Pat Assocs.                 | 401-783-9598 |
| SC Marion, Zelco Assocs.                     | 803-423-0299 |
| TX Austin, Acudata Inc.                      | 214-424-3561 |
| TX Houston, Acudata Inc.                     | 713-580-2451 |
| TX Plano, Acudata Inc.                       | 512-478-1018 |
| WA Bellevue, Syntek                          | 206-462-7700 |
| WA Nine Mile Falls, Syntek                   | 509-466-0451 |
| WA Vancouver, Syntek                         | 206-737-2957 |
| Can Brossard, Ont., CTH Industrial Controls. |              |
|                                              | 514-671-2181 |
| Can Edmonton, Alb., CTH Instrs.              | 403-466-2900 |
| Can Samia, Ont., Armatek Controls            | 519-332-0100 |
| Can Toronto, Ont., Armatek Controls          | 416-251-3111 |

|                                         |              |
|-----------------------------------------|--------------|
| NY Manhasset, Win-Cor Sls.              | 516-627-9474 |
| NY Victor, Net Sls.                     | 716-924-1844 |
| NC Charlotte, Over & Over               | 704-542-9111 |
| NC Raleigh, Over & Over                 | 919-876-7338 |
| OH Westlake, Baehr Greenleaf & Assoc.   | 216-892-1770 |
| OR Portland, Caruso & Camelleri Assoc.  | 503-246-5439 |
| PA Narbeth, Bresson Assocs.             | 215-664-6460 |
| PA Warrendale, Baehr Greenleaf & Assoc. |              |

|                                           |              |
|-------------------------------------------|--------------|
| TX Richardson, Pro-Comp Sls.              | 412-934-3088 |
| WA Bellevue, Caruso & Camelleri Assoc.    | 214-669-1500 |
|                                           | 206-455-8811 |
| EXP Skokie, IL, Ohmite Mfg. Co.           | 708-675-2600 |
| Can Pickering, Ont., A.C. Simmonds & Sons |              |
|                                           | 416-839-8041 |

## Local Distributors

|                                     |              |
|-------------------------------------|--------------|
| AR Ft. Smith, Carlton Bates         | 501-646-8201 |
| CA El Monte, Kimball & Stark        | 818-444-2594 |
| CA Fountain Valley, Component Ctr.  | 800-879-3550 |
| CA Oakland, Brill Elctms.           | 415-834-5888 |
| FL Orlando, Hammond Elctms.         | 407-849-6060 |
| IL Chicago, Newark Elctms.          | 312-784-5100 |
| IL Palatine, Ohm Elctms.            | 708-359-5500 |
| IN Indianapolis, Bell Inds.         | 317-875-8200 |
| MA Hingham, Sager Elctms.           | 617-749-6700 |
| MI Livonia, RS Elctms.              | 313-525-1155 |
| MN St. Paul, Gopher Elctms.         | 612-490-4900 |
| NJ Camden, GRN Elctms.              | 609-964-8560 |
| NY Buffalo, Summit Distrs.          | 716-887-2800 |
| NY Lynbrook, Peerless Radio Corp.   | 516-593-2121 |
| NY Rome, Rome Elctms.               | 515-337-5400 |
| OH Akron, AESCO Elctms.             | 216-762-8818 |
| OH Dayton, Stotts-Friedman Co.      | 513-298-5555 |
| OH Warren, REM Elctms. Supp.        | 216-373-1300 |
| SC Columbia, Dixie Elctms.          | 803-779-5332 |
| TX Richardson, Altair Co.           | 214-231-5166 |
| TX Stafford, Harrison Equip.        | 713-879-2600 |
| WA Richland, Radar Elec.            | 509-943-8336 |
| WI Milwaukee, Marsh Elctms.         | 414-475-6000 |
| Can Don Mills, Ont., Saynor Varah   | 416-445-2340 |
| Can Willowdale, Ont., Electro-Sonic | 416-494-1666 |

**OHMTEK INC., Vishay**, 2160 Liberty Dr., Niagara Falls, NY 14304, Tel: 716-283-4025, FAX: 716-283-5932; FSC No.: 57489; Empl: 205; Sls. Mgr.: William Cuvellio

**A-2001-2004**

## Local Sales Offices & Reps

|                                               |              |
|-----------------------------------------------|--------------|
| AL Huntsville, JWL Assocs.                    | 205-883-1712 |
| CA Glendale, Mission Mktg. Grp.               | 818-247-9110 |
| CA Redwood City, James S. Heaton Co.          | 415-367-9000 |
| CA San Diego, V.E.C.                          | 619-535-9080 |
| CA Tustin, V.E.C.-Los Angeles                 | 714-544-7024 |
| CO Loveland, V.E.C.-Rocky Mtn.                | 303-667-7500 |
| GA Roswell, JWL Assocs.                       | 404-518-8500 |
| IL Skokie, IRI-Illinois                       | 708-967-8430 |
| IN Ft. Wayne, Scott Elctms.                   | 219-489-5690 |
| IN Indianapolis, Scott Elctms.                | 317-841-0010 |
| MA Sterling, Computable Comps. Inc.           | 508-422-7641 |
| MI Plymouth, Jay Mktg. Assoc.                 | 313-459-1200 |
| MN Bloomington, IRI of MN.                    | 612-854-8027 |
| NJ Flanders, K & R Eng. Sls., Inc.            | 201-584-5235 |
| NY Fairport, L-Mar Assocs.                    | 716-425-9103 |
| NC Charlotte, JWL Assocs.                     | 704-541-5750 |
| NC Raleigh, JWL Assocs.                       | 919-787-4826 |
| OH Cincinnati, Scott Elctms.                  | 513-791-2513 |
| OH Cleveland, Scott Elctms.                   | 216-713-5050 |
| OH Dayton, Scott Elctms.                      | 513-294-0539 |
| OR Beaverton, Unicom, Inc.                    | 503-643-1645 |
| PA Horsham, TMI, Inc.                         | 215-441-4300 |
| TX Austin, BPA, Inc.                          | 512-346-9186 |
| TX Richardson, BPA, Inc.                      | 214-234-8438 |
| WA Snohomish, UniComp                         | 206-568-0511 |
| WI Brookfield, IRI-Wisconsin                  | 414-789-9393 |
| Can Burnaby, B.C., Kaytronics                 | 604-294-2000 |
| Can Calgary, Alberta, Kaytronics              | 403-275-7000 |
| Can Kanata, Ont., Kaytronics, Inc.            | 613-564-0080 |
| Can Mississauga, Kaytronics, Inc.             | 416-669-2262 |
| Can Ville St. Laurent, Que., Kaytronics, Inc. |              |
|                                               | 514-745-5800 |

| Local Sales Offices & Reps             |                                |
|----------------------------------------|--------------------------------|
| AL Huntsville, Hughes Assoc., Inc.     | 205-533-9108, FAX:205-533-4667 |
| AZ Scottsdale, Lindberg Co.            | 602-998-2944, FAX:602-998-2356 |
| CA Huntington Beach, Regan-Munro Sls.  | 714-841-1411, FAX:714-841-3598 |
| CO Denver, Lindberg Co.                | 303-758-9033, FAX:303-758-5863 |
| IL Highland Park, Bransky Sls.         | 708-433-2375, FAX:708-433-2377 |
| IA Cedar Rapids, Advanced Technical    | 319-393-8280, FAX:319-393-8273 |
| KS Olathe, Advanced Technical          | 913-782-8702, FAX:913-782-8641 |
| MD Cazenovia, St. Woolard Co., Inc.    | 301-371-4500, FAX:301-371-7353 |
| MA Milford, AFM Grp.                   | 508-478-3355, FAX:508-478-4084 |
| MI Southfield, R.C. Nordstrom          | 313-559-7373, FAX:313-559-0075 |
| MN Minneapolis, Electro-Serv           | 612-338-3475, FAX:612-338-6048 |
| MO Bridgeton, Advanced Technical       | 314-291-5003, FAX:314-291-7958 |
| NM Albuquerque, Lindberg Co.           | 505-881-1006, FAX:505-881-1007 |
| NY Islip, Cogent Technlg. Assoc.       | 516-277-7101, FAX:516-277-7614 |
| NC Raleigh, Vantage Mktg.              | 919-870-7123, FAX:919-870-7762 |
| OH Cincinnati, Stegman Blaine          | 513-729-1969, FAX:513-729-1984 |
| OH Cleveland, Stegman Blaine           | 216-572-0003, FAX:216-238-3229 |
| OH Vandalia, Stegman Blaine            | 513-890-7975, FAX:513-890-5191 |
| OH Westerville, Stegman Blaine         | 614-523-1300, FAX:614-523-1333 |
| OK Tulsa, Delta Comps.                 | 918-592-7711, FAX:918-587-9437 |
| PA Harleysville, Thomas Jackson Assoc. | 215-256-8877, FAX:215-256-9255 |
| TX Seagoville, Delta Comps.            | 214-287-6333, FAX:214-287-1453 |
| UT Salt Lake City, Lindberg Co.        | 801-484-8689, FAX:801-484-9691 |
| WA Seattle, J.J. Assocs.               | 206-246-6619, FAX:206-241-8120 |
| Can Calgary, Alberta, Cana Rep. Grp.   | 403-255-0294, FAX:403-255-4902 |
| Can Montreal, Quebec, Cana Rep. Grp.   | 514-276-4477, FAX:514-276-3646 |
| Can Surrey, BC, Cana Rep. Grp.         | 604-599-1232, FAX:604-599-3616 |
| Can Willowdale, Ont., Cana Rep. Grp.   | 416-250-6683, FAX:416-250-6684 |

## Local Distributors

|                                        |                                |
|----------------------------------------|--------------------------------|
| CA Chatsworth, E W Elctms.             | 818-718-2500, FAX:818-718-9007 |
| CA Huntington Bch, Capacitor Assocs.   | 714-843-1815, FAX:714-843-0947 |
| CA Manhattan Bch, Prime Electro Prods. | 310-379-3642, FAX:310-379-7768 |
| CA Santa Ana, BDS Elctms.              | 714-662-1050, FAX:714-662-3929 |
| CA Santa Clara, Bravo Elctms.          | 408-980-8500, FAX:408-980-0299 |
| CO Arvada, Denver Beta Wintronic Co.   | 303-431-7161, FAX:303-431-4964 |
| CO Littleton, Indelco, Inc.            | 303-795-3431, FAX:303-795-8298 |



**FAX: 708-675-1505**

**OHMITE MANUFACTURING CO.**, 3601 W. Howard St., Skokie, IL 60076, Tel: 708-675-2600, TELEX: 72-4433; FSC No.: 44655; Sls. Mgr.: Kirk Schwiebert, Dist. Mgr.: Ed Kason • A-1259, 1996-2000, 2442; D-1056

| Local Sales Offices & Reps             |              |
|----------------------------------------|--------------|
| AL Huntsville, Over & Over             | 205-837-7105 |
| AZ Tempe, Elctrm. Dev. Sls.            | 602-438-1547 |
| CA Los Angeles, Wiley Co.              | 213-666-1611 |
| CA Santa Clara, Ross Mktg.             | 408-988-8111 |
| CO Denver, West, Inc.                  | 303-477-8180 |
| FL Altamonte Spgs., Over & Over        | 407-332-1222 |
| GA Norcross, Over & Over               | 404-449-6205 |
| IL Mt. Prospect, Dombrow Co.           | 708-253-3326 |
| IN Indianapolis, Leslie M. DeVoe Co.   | 317-842-3245 |
| IA Cedar Rapids, Spectrum Sls.         | 319-366-0576 |
| KS Overland Pk., Spectrum Sls.         | 913-648-6811 |
| MA Norwood, MacInnis Co.               | 617-762-8090 |
| MI Farmington Hills, R.C. Merchant Co. | 313-476-4600 |
| MN Minneapolis, Elec. Comp. Sls.       | 612-933-2594 |
| MO Florissant, Spectrum Sls.           | 314-921-1313 |



**OKAYA ELECTRIC AMERICA**

**FAX: 219-477-4856**

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FAX: 708-544-9684  
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OKI SEMICONDUCTOR, INC., 785 N. Mary Ave.,  
Sunnyvale, CA 94086, Tel: 408-720-1900, 800-TEAM-OKI,  
TELEX: 296687 OKI SNTA, FAX: 408-720-1918

OLDFLEX WIRE & CABLE, INC., 30 Plymouth Street,  
Fairfield, NJ 07004, Tel: 201-575-1101, FAX: 201-575-  
7178; Empl: 40; Sls. Mgr: Dick Kopp

OLYMPIC WIRE & CABLE, 1 Madison Rd., Fairfield, NJ  
07004, Tel: 201-227-7996, FAX: 201-227-1606; FSC No.:  
63830; Empl: 35; Dist. Mgr: Robert T. Mello

OLYMPUS CORPORATION, Industrial Fiber optics  
Division, 4 Nevada Dr., Lake Success, NY 11042-1179,  
Tel: 516-488-3880, FAX: 516-488-3973

OMATION INC., 801 Presidential Dr., Richardson, TX 75081,  
Tel: 214-231-5167, 800-553-9119, FAX: 214-783-9072;  
Empl: 15; Sls. Mgr: Nancy James



FAX: 203-359-7990

OMEGA ENGINEERING, Box 4047, Stamford, CT 06907,  
Tel: 800-826-6342; Empl: 500; Sls. Mgr: Peter Cagraghi  
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Pkwy N, Houston, TX 77043, Tel: 713-464-2990, TELEX:  
285801, FAX: 713-827-7540; Empl: 40

OMNIBYTE CORP., 245 W. Roosevelt Rd., Bldg. 1, West  
Chicago, IL 60185-3790, Tel: 708-231-6880, FAX: 708-  
231-7042; Empl: 24; Sls. Mgr: Greg Urban

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FAX: 714-457-9016

OMNIPRINT, INC., 6A Vanderbilt, Irvine, CA 92718, Tel:  
714-457-0229, 800-878-6880; Empl: 15; Sls. Mgr:  
Stephen Bergeron; Dist. Mgr: Rita Bell ... D-1102-1104

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FAX: 602-582-0665

OMNI SWITCH USA, INC., 21620 N. 19th Ave., Ste. A  
103, Phoenix, AZ 85027, Tel: 602-582-0629; Empl: 100;  
Sls. Mgr: Peggy Ann Wenzel, V.P. .... C-1137

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FAX: 708-893-9991

OMNI VISION INC., 168 N. Brandon Dr., Glendale Heights,  
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..... B-1101

OMRON ELECTRONICS, INC., Control Components  
Division, 1 East Commerce Dr., Schaumburg, IL 60173,  
Tel: 708-843-7900, 1-800-626-6766, FAX: 708-843-7787;  
Empl: 300; Dist. Mgr: Mac Rowell

OMRON ELECTRONICS, INC., F A Systems Div., One  
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Scafidi

ONAN POWER/ELECTRONICS, 9713 Valley View Rd.,  
Minneapolis, MN 55344-3577, Tel: 612-943-4600, FAX:  
612-943-4627; FSC No.: 3Z577; Empl: 500; Sls. Mgr: Jim  
Vogt

ONEAC CORPORATION, 27944 N. Bradley Rd.,  
Libertyville, IL 60048, Tel: 708-816-6000, 800-327-8801,  
TWX: 757024 ONEAC USA; Empl: 150; Sls. Mgr: Byron  
Brooks

ONSET COMPUTER CORP., 536 MacArthur Blvd., P.O.  
Box 3450, Pocasset, MA 02559-3450, Tel: 508-563-9000,  
FAX: 508-563-9477; Empl: 12; Sls. Mgr: Lon Hocker

ONSHORE TECHNOLOGY, 1917 W. 3rd St., Tempe, AZ  
85281, Tel: 602-921-3000; Empl: 200; Sls. Mgr: R.  
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Computer Systems, Inc., 6321 Bury Drive, Ste. 15-19,  
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937-5750

OPAMP LABS, INC., 1033 N. Sycamore Ave., Los  
Angeles, CA 90038, Tel: 213-934-3566, FAX: 213-462-  
6490; FSC No.: 24699; Empl: 18 ... D-1017

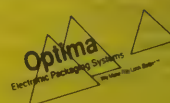
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Carrollton, TX 75006, Tel: 214-323-2200, FAX: 214-323-  
2396; Empl: 2000; Sls. Mgr: Cornelius Clark, Dist. Mgr:  
Wayne Davis

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20877, Tel: 301-840-2121, FAX: 301-948-6357; FSC No.:  
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OPTICAL CABLE CORP., P.O. Box 11967, Roanoke, VA  
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J. Huybrechts, VP/Sls.; Dist. Mgr: Chuck Surat, Natl. Accts.  
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OPTICAL ELECTRONICS, INC., P.O. Box 11140, Tucson,  
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OPTICS FOR RESEARCH, INC., P.O. Box 82, Caldwell,  
NJ 07006, Tel: 201-228-4480, TELEX: 497-4643, FAX:  
201-228-0915; Empl: 33; Sls. Mgr: Diane M. Fiore



FAX: 404-496-4041

OPTIMA ELECTRONIC PACKAGING SYSTEMS,  
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OPTIMA PRECISION, INC., 775 SW Long Farm Rd., West  
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OPTIMIZED DEVICES, INC., 220 Marble Ave.,  
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OPTIMUM APPLIED SYSTEMS, 145 Palisade St., Dobbs  
Ferry, NY 10522-1696, Tel: 914-693-9001, FAX: 914-693-  
8733; Empl: 30; Sls. Mgr: H. Joseph Brakl

OPT INDUSTRIES, INC., 300 Red School Lane,  
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| CO Franktown, MRC ....                   | 303-660-8750 |



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OPTO DIODE CORP., 750 Mitchell Rd., Newbury Park, CA 91320, Tel: 805-499-0335, FAX: 805-499-8108; FSC No.: 67109; Empl: 12

OPTOELECTRONICS, INC., 5821 N.E. 14th Ave., Ft. Lauderdale, FL 33334, Tel: 305-771-2050, FAX: 305-771-2052; Empl: 30; Sls. Mgr: L. R. Hufft; Dist. Mgr: L. R. Hufft

OPTOELECTRONICS TEXTRON, 1309 Dynamic St., P.O. Box 750039, Petaluma, CA 94975-0039, Tel: 707-763-5900, FAX: 707-762-7383; Empl: 100

OPTO PLUS ò INC., 23382 Madero, Unit A, Mission Viejo, California, CA 92691, Tel: 714-380-8654, 800-554-6786, FAX: 714-380-0761; Empl: 7

OPTO TECHNOLOGY, INC., 562 Chaddick Dr., Wheeling, IL 60090, Tel: 708-537-4277, FAX: 708-537-4785; Empl: 25; Sls. Mgr: Thomas W. Hegberg, Sls. Mgr.

OPTOTEK LIMITED, 62 Steacie Dr., Kanata, Ont., Canada K2K 2A9, Tel: 613-591-0336, FAX: 613-591-0584; FSC No.: 38183; Empl: 30

OPTO 22, 43044 Business Park Dr., Terrecula, CA 92590, Tel: 714-695-9299, FAX: 714-695-2712

OPTREX, Asahi Glass, 23399 Commerce B-8, Farmington Hills, MI 48335, Tel: 313-471-6220; Empl: 25



**FAX: 310-214-1721**  
OPTREX/SATORI, 3830 Del Amo Blvd. Ste. 101, Torrance, CA 90503, Tel: 310-214-1791; Empl: 12; Sls. Mgr: David Liu; Dist. Mgr: Dave Liu B-1102-1103

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| CO                         | Denver, Aki Entprs.        | 303-388-4488 |
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| OR                         | Portland, Venture Elex     | 503-624-0617 |
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| TX                         | Dallas, Satori Elec.       | 214-518-1946 |
| WA                         | Bellevue, Venture Elex     | 206-454-4594 |
| WA                         | Belvue, Venture Elex       | 206-454-4594 |

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| CA                 | San Diego, Cypress Elctms.  | 619-535-0011 |

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| CO | Englewood, Cypress Elctms.   | 303-792-5829 |
| OR | Beaverton, Cypress Elctms.   | 503-641-2233 |
| OR | Beaverton, I E C             | 503-641-1690 |
| OR | Beaverton, IEC               | 503-641-1690 |
| WA | Bellevue, I.E.C.             | 206-455-2727 |
| WA | Bothell, Cypress Elctms.     | 206-483-1144 |
| WA | Bothwell, Cypress Elctms.    | 206-483-1144 |

OPTRONIC LABORATORIES, INC., 4470 35th St, Orlando, FL 32811, Tel: 407-422-3171, 800-899-3171, TELEX: 910-240-5263, FAX: 407-648-5412; FSC No.: 59938; Empl: 36; Sls. Mgr: William A. Schneider, VP of Sls. & Opers.



**FAX: 409-258-5555**  
ORAM HIGH VOLTAGE, Klerp Road, P.O. Box 1176, Dayton, TX 77535, Tel: 409-258-5553; Empl: 27; Sls. Mgr: M. Su D-1852-1853

ORBIT ADVANCED TECHNOLOGIES, 905 Sheehy Dr. Bldg, Horsham, PA 19044, Tel: 215-674-4220, FAX: 215-674-1102; Empl: 140; Sls. Mgr: Gerard Matyas

ORBIT INDUSTRIES, Countis Industries, - 2670 Lockheed Way, Carson City, NV 89706, Tel: 702-882-6123; Empl: 11; Sls. Mgr: James T. Countis

ORBIT INSTRUMENT CORP., 80 Cabot Ct., Hauppauge, NY 11788, Tel: 516-435-8300, TWX: 510-221-2122, FAX: 516-435-8458; FSC No.: 11263; Sls. Mgr: Jeanne Szabodas B-1849; D-1167

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| MA                         | Tweksbury, Delcon Sls. | 508-851-9911 |

ORBIT INSTRUMENT OF CAL., Orbit Instrument Corp., 5606 Corporate Ave., Cypress, CA 90630, Tel: 714-527-0561, FAX: 714-527-7552; FSC No.: 11263; Sls. Mgr: Graham Vernon B-1849; D-1167

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**FAX: 503-690-9891**  
ORCAD, 3175 N.W. Alciek Dr., Hillsboro, OR 97124-7135, Tel: 503-690-9881; Empl: 70; Sls. Mgr: Stephen Holmes D-1148

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| CA                 | San Diego, Insight Elctms.          | 619-587-1100 |
| CA                 | Sunnyvale, Avcom EDA                | 408-733-5000 |
| FL                 | W. Melbourne, Trilogic Sunforce     | 407-722-1324 |
| MA                 | Wilmington, Trilogic Inc.           | 508-658-3800 |
| MI                 | Bloomfield Hills, MacKellar Assocs. | 313-335-4440 |
| NJ                 | Freehold, Bita Lambda, Inc.         | 908-294-9500 |
| NC                 | Raleigh, Trilogic Sunforce          | 919-755-1700 |
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| TX                 | Houston, Abcor, Inc.                | 713-486-9251 |
| WA                 | Kirkland, Avcom EDA                 | 206-828-2725 |

ORCUS, Box 16022, Kansas City, MO 64112, Tel: 913-897-5128, TELEX: 4994037, FAX: 913-897-5468; Sls. Mgr: Manford Eaton

OREGON MICRO SYSTEMS, INC., 1800 N.W. 169th Pl, C100, Beaverton, OR 97006, Tel: 503-644-4999, 503-629-8081, FAX: 503-629-0688; Empl: 12; Sls. Mgr: Wayne Hunter

ORIEL CORP., 250 Long Beach Blvd., Stratford, CT 06497-0872, Tel: 203-377-8282, FAX: 203-378-2457; Empl: 120; Sls. Mgr: Thom Connolly

ORIENTAL MOTOR USA CORP., 2580 W. 237th Street, Torrance, CA 90505-5217, Tel: 310-515-2264, FAX: 310-515-2879; Empl: 60; Sls. Mgr: 4; Dist. Mgr: Greg Johnston

ORIGINAL ELECTRIC MFG. CO., INC., 123 Lincoln Blvd, Middlesex, NJ 08846, Tel: 908-271-5770, FAX: 908-271-5774

ORION DEVELOPMENT CORP., P.O. Box 2323, Merrifield, VA 22116-2323, Tel: 703-698-8126, 800-992-8170, FAX: 703-698-0857; Empl: 2; Sls. Mgr: Richard A. Long

ORION INSTRUMENTS, INC., 180 Independence Dr., Menlo Park, CA 94025, Tel: 415-327-8800, 800-767-4666, TELEX: 530942, FAX: 415-327-9881; Sls. Mgr: Eric Mudama

ORLANDO DEVELOPMENT CENTER, Micro Energy Inc., 745 W. State Rd. 434, Longwood, FL 32750-4909, Tel: 407-831-2000, FAX: 407-831-1100; Empl: 250; Sls. Mgr: Bill Maxwell

ORMEC SYSTEMS CORP., 19 Linden Park, Rochester, NY 14625, Tel: 716-385-3520, FAX: 716-385-5999; Empl: 50; Sls. Mgr: Gregory Woods

ORTEL CORP., 2015 W. Chestnut St, Alhambra, CA 91803, Tel: 818-281-3636, TELEX: 752434, FAX: 818-281-8231; Empl: 130; Sls. Mgr: Bill Moore, V.P. of Sls.



**FAX: 913-829-3505**  
OSCILLATEK, A Dover Technologies Company, 620 North Lindenwood Dr., Olathe, KS 66062, Tel: 913-829-1777; FSC No.: 57693; Empl: 80; Sls. Mgr: William J. Beck A-1442-1448

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| CA                         | Fahner-Miller                       | 408-727-9800 |
| CA                         | Santa Clara, Fahner Miller Assoc.   | 916-677-5838 |
| CA                         | Van Nuys, Cain Technlg.             | 818-904-9392 |
| CO                         | Englewood, Cain Technlg.            | 303-220-8118 |
| CT                         | Adelco                              | 617-444-4754 |
| FL                         | Clearwater, Beacon Elctms.          | 813-796-2378 |
| GA                         | Atlanta, Beacon Elctms.             | 404-449-8464 |
| IL                         | RK Elctms.                          | 708-695-8552 |
| IA                         | Cedar Rapids, Midwest Tech. Sls.    | 319-377-1688 |
| KS                         | Goodard, Midwest Tech. Sls.         | 316-794-8565 |
| KS                         | Lenexa, Midwest Tech. Sls.          | 913-888-5100 |
| MA                         | Needham, Addeco Corp.               | 617-444-4754 |
| MN                         | Chanhassen, Barnes Sls.             | 612-934-2907 |
| MO                         | MTS                                 | 314-298-8787 |
| NJ                         | Spectrum                            | 914-472-8600 |
| NY                         | Advanced                            | 315-437-6700 |
| NY                         | Advanced                            | 607-785-3191 |
| NY                         | Hartsdale, Spectrum Sls.            | 914-472-8600 |
| NY                         | Syracuse, Advanced Comps. Corp.     | 315-437-6700 |
| OR                         | Thorson NW                          | 503-293-9001 |
| OR                         | Portland, Thorson Co. Northwest     | 503-293-9001 |
| PA                         | Southampton, Eastern Instrmn. of PA | 215-355-7700 |
| TX                         | Rep-Tec                             | 214-956-8700 |
| TX                         | Dallas, Rep-Tec                     | 214-956-8700 |
| VA                         | Alexandria, Mid States Mktg.        | 703-370-2600 |
| WA                         | Thorson NW                          | 206-455-9180 |
| WA                         | Bellevue, Thorson Co. Northwest     | 206-455-9180 |
| Can                        | Mississauga, BBD                    | 416-821-7800 |

OSCILLOQUARTZ, B & J Marketing, 17074 Dearborn St, Northridge, CA 91325, Tel: 818-993-0048, TELEX: 650 2068183, FAX: 818-993-5758; Empl: 125; Sls. Mgr: Alain Jendly



**FAX: 03-3450-3939**  
OSHINO LAMPS LIMITED, 5-2, Minami-Shinagawa 2-chome, Shinagawa-Ku, Tokyo, Japan 140, Tel: 03-3471-8548, TELEX: 0242-2117; Empl: 300; Sls. Mgr: T. Koyama B-1176-1177



# OSLO CONTROLS

**FAX: 203-272-3492**

**OSLO CONTROLS**, 328 Industrial Ave., Cheshire, CT  
06410-1511, Tel: 203-272-2794; Sls. Mgr: J. J. Martinez  
**B\*1797**

#### Local Sales Offices & Reps

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AZ  | Scottsdale, Vikeland Sls.               | 602-948-7921 |
| AZ  | Tempe, Vikeland Sls.                    | 602-839-9370 |
| CA  | Mountain View, Frauman Assoc.           | 415-964-9464 |
| CA  | Trabuco Canyon, Interconn               | 714-589-4655 |
| CO  | Englewood, CompuTech Mktg.              | 303-773-3981 |
| CT  | Glastonbury, Pace Assocs.               | 203-659-2266 |
| FL  | Maitland, Hawkins-Fredrickson           | 407-831-2474 |
| GA  | Atlanta, Overton Assoc.                 | 404-497-0166 |
| IL  | Lisle, W-G Controls                     | 708-963-5954 |
| IA  | Cedar Rapids, W-G Controls              | 319-373-1009 |
| MN  | St. Paul, Vikeland Sls.                 | 612-645-4647 |
| MO  | Creve Coeur, Hill & Co.                 | 314-432-1136 |
| NJ  | Englewood, Gray Assocs.                 | 201-894-0894 |
| NJ  | Kenvil, Gray Assoc.                     | 201-927-6662 |
| NY  | Syracuse, Canavan-Scanlon Assocs., Inc. |              |
|     |                                         | 315-437-1271 |
| NY  | Yaphank, Gray Assoc.                    | 516-924-2471 |
| OH  | Cincinnati, O. H. Bromberg & Assocs.    |              |
|     |                                         | 513-771-9333 |
| OR  | Lake Oswego, Luscombe Engr.             | 503-636-6664 |
| PA  | Pittsburgh, Catalyst Sls.               | 412-733-5450 |
| PA  | West Chester, All Tech. Mktg.           | 215-344-0134 |
| TN  | New Tazewell, Overton Assoc.            | 615-626-6009 |
| TX  | Dallas, Glidden Electro Equip.          | 214-341-0610 |
| WA  | Bellevue, Luscombe Engr.                | 206-223-1541 |
| Can | Scarborough, Ont., Banke Elctms.        | 416-292-5152 |

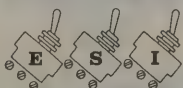
#### Local Distributors

|    |                                           |                |
|----|-------------------------------------------|----------------|
| AZ | Phoenix, Beswitched                       | 602-275-4805   |
| AZ | Tempe, LCOMP, Inc.                        | 602-730-1633   |
| CA | Anaheim, Deco Elctms., Inc.               | 714-630-8252   |
| CA | Gardena, California Switch & Signal       |                |
|    |                                           | 1-800-421-2471 |
| CA | Los Angeles, Master Distrs.               | 213-452-1229   |
| CA | Redwood City, HdB                         | 415-368-1388   |
| CA | San Diego, Deco Elctms., Inc.             | 619-693-1595   |
| CA | San Jose, Spectra Elctms.                 | 408-452-1590   |
| CA | Tustin, Western Switches & Controls, Inc. |                |
|    |                                           | 714-259-8144   |
| CA | Van Nuys, Wes Garde Components            | 213-873-4802   |
| CO | Aurora, Jet Elctm. Supp., Co., Inc.       | 303-364-1000   |
| CT | West Hartford, Wes Garde Components       |                |
|    |                                           | 203-527-7705   |
| FL | Lakeland, A A Elec.                       | 800-237-8274   |
| FL | Lakeland, Wes Garde Components            | 813-644-7564   |
| IL | Addison, LCOMP, Inc.                      | 312-628-1400   |
| IL | Carol Stream, Wes Garde Components        |                |
|    |                                           | 1-800-323-9431 |
| IN | Crystal Lake, Sub Sem                     | 815-459-4139   |
| IL | Indianapolis, Mar Elctms., Inc.           | 317-633-6699   |
| IA | Cedar Rapids, Dee Elctms.                 | 319-365-7551   |
| KS | Overland Park, Wes-Garde                  | 913-262-2718   |
| KS | Wichita, LCOMP, Inc.                      | 316-265-5100   |
| MD | Kensington, Marine Air Supp.              | 301-949-9560   |
| MA | Walpole, Richey Impact                    | 508-668-8200   |
| MI | St. Clair Shores, SPENCO, Inc.            | 313-771-2700   |
| MN | Minneapolis, Dot Elctms.                  | 612-926-9505   |
| MN | Minneapolis, Elctm. Center, Inc.          | 612-371-5200   |
| MO | Maryland Hgts., LCOMP, Inc.               | 800-325-1393   |

# OTTO Controls

MILITARY SPECIFICATION  
INDUSTRIAL AND COMMERCIAL

FULL LINE AUTHORIZED DISTRIBUTOR



# ELECTRIC SWITCHES

INCORPORATED

2478 Fletcher Dr., Los Angeles, California 90039-2897

**213-660-1310 800-421-8855**

**FAX: 213-660-5130**

SEE COMPLETE PRODUCT LINE UNDER SWITCHES  
SECTION 5100. FREE CATALOG 40EM on REQUEST

|     |                                    |              |
|-----|------------------------------------|--------------|
| MO  | St. Louis, Wes-Garde Comps.        | 314-567-7776 |
| NJ  | Mt. Laurel, Wes Garde Components   | 609-778-8190 |
| NJ  | Oakland, Relay Specialties, Inc.   | 201-337-1000 |
| NY  | Johnson City, Help Elctms.         | 807-729-3528 |
| NY  | Woodside, Switches Unltd., Inc.    | 718-478-5000 |
| OH  | Shandon, Carlessa Corp.            | 513-738-4477 |
| OH  | Westerville, Wes Garde Components  |              |
|     |                                    | 614-885-0319 |
| OR  | Wilsonville, Wes Garde Comp.       | 503-682-1333 |
| PA  | Exton, USH Elctms.                 | 215-363-2250 |
| PA  | McKean, Advacom                    | 814-476-7774 |
| TX  | Dallas, GEECO Sls. Co.             | 214-341-0610 |
| TX  | Dallas, Wes Garde Components       | 214-357-1768 |
| WI  | Grafton, Lakeview Elctms.          | 414-377-8250 |
| Can | Downsview, Ont., Westburne Elctms. |              |
|     |                                    | 416-635-2950 |

**OSRAM SYLVANIA**, 275 West Main St., Hillsboro, NH  
03244, Tel: 603-464-5533, 603-464-5538

**B\*1190-1194**

**OSTBY-BARTON TEST PROBES**, 487 Jefferson Blvd.,  
Warwick, RI 02886, Tel: 401-739-7310, TELEX: 927573,  
TWX: 401-732-4937; Empl: 75; Sls. Mgr: Joe Burns

# OTTO CONTROLS

**FAX: 708-428-1956**

**OTTO CONTROLS, Otto Engineering**, 2 E. Main St.,  
Carpentersville, IL 60110, Tel: 708-428-7171; FSC No.:  
21649; Empl: 160; Sls. Mgr: R. E. Sparks

**B\*1798-1799**

#### Local Sales Offices & Reps

|    |                                              |                                 |
|----|----------------------------------------------|---------------------------------|
| AZ | Scottsdale, Advent Comps. Corp.              | 602-481-0044,                   |
|    |                                              | FAX: 602-481-0072               |
| CA | Anaheim, Gabriel & Assocs.                   | 714-666-0660,                   |
|    |                                              | FAX: 714-666-0753               |
| CA | San Jose, Westron Assocs.                    | 408-264-4070,                   |
|    |                                              | FAX: 408-264-1808               |
| CO | Denver, Advent Comps. Corp.                  | 303-455-1985,                   |
|    |                                              | FAX: 303-455-0900               |
| FL | Orlando, S. Atlantic Comp. Sls.              | 407-857-3650,                   |
|    |                                              | FAX: 407-857-3298               |
| GA | Alpharetta, Pinnacle Marketing Inc.          | 404-410-9980,                   |
|    |                                              | FAX: 404-410-9981               |
| IL | Itasca, LTD Technlgs., Inc.                  | 708-773-2900,                   |
|    |                                              | FAX: 708-773-0358               |
| IN | Ft. Wayne, Menze Sls., Inc.                  | 219-747-5616,                   |
|    |                                              | FAX: 219-747-3561               |
| KS | Prairie Vlg., Spectrum Sls.                  | 913-648-6811,                   |
|    |                                              | FAX: 913-648-6823               |
| MD | Gaithersburg, Naudain Assocs. Southern, Inc. |                                 |
|    |                                              | 301-258-5040, FAX: 301-258-5146 |
| MA | Norwell, Norris & Assocs.                    | 617-659-7988,                   |
|    |                                              | FAX: 617-659-8172               |
| MI | Royal Oak, Hilltronics Inc.                  | 313-435-0920,                   |
|    |                                              | FAX: 313-435-3215               |
| MN | Minneapolis, Josco Melius Inc.               | 612-861-3343,                   |
|    |                                              | FAX: 612-861-3046               |
| MO | Florissant, Spectrum Sls.                    | 314-921-1313,                   |
|    |                                              | FAX: 314-921-0701               |

|    |                                    |                                 |
|----|------------------------------------|---------------------------------|
| NJ | Hackensack, Coakley, Boyd & Abbott | 201-440-4114, FAX: 201-440-4623 |
| NJ | Marlton, Naudain Assocs., Inc.     | 609-983-5300,                   |
|    |                                    | FAX: 609-596-5367               |

|    |                                       |                                 |
|----|---------------------------------------|---------------------------------|
| NY | Skaneateles, Empire Technical Assocs. |                                 |
|    |                                       | 315-685-5703, FAX: 315-685-5979 |
| NC | Raleigh, Pinnacle Mktg., Inc.         | 919-848-0404,                   |
|    |                                       | FAX: 919-848-0101               |

|    |                                           |                                 |
|----|-------------------------------------------|---------------------------------|
| OH | Beavercreek, Electro Com (U.S. Gov't Sls) |                                 |
|    |                                           | 513-427-2696, FAX: 513-427-2697 |
| TX | Dallas, Control Comps. Corp.              | 214-458-8877,                   |
|    |                                           | FAX: 214-788-1259               |

|    |                             |                   |
|----|-----------------------------|-------------------|
| WA | Kirkland, James Findlay Co. | 206-822-1510,     |
|    |                             | FAX: 206-822-0359 |

|    |                       |                   |
|----|-----------------------|-------------------|
| WI | Mequon, Badgery, Inc. | 414-241-9200,     |
|    |                       | FAX: 414-241-8300 |

|     |                                   |              |
|-----|-----------------------------------|--------------|
| Can | Etobicoke, Ont., Millennium Mktg. | 416-798-3044 |
|-----|-----------------------------------|--------------|

#### Local Distributors

|    |                       |                                 |
|----|-----------------------|---------------------------------|
| AZ | Phoenix, Beswitched   | 602-275-4805,                   |
|    |                       | FAX: 602-275-4807               |
| AZ | Tempe, LCOMP          | 602-730-1633, FAX: 602-831-8757 |
| AZ | Tucson, Beswitched    | 602-792-2554                    |
| CA | Cupertino, Cal Switch | 408-973-7800,                   |
|    |                       | FAX: 408-725-8885               |
| CA | Gardena, Cal Switch   | 310-770-2330,                   |
|    |                       | FAX: 310-327-2741               |
| CA | Hayward, TPS Aviation | 510-475-1010,                   |
|    |                       | FAX: 510-475-8817               |

|    |                                      |                                 |
|----|--------------------------------------|---------------------------------|
| CA | Los Angeles, Electric Switches, Inc. | 213-660-1310,                   |
|    |                                      | FAX: 213-660-5130               |
| CA | Santa Ana, Norstan Elctms.           | 714-540-4165,                   |
|    |                                      | FAX: 714-250-0135               |
| CO | Aurora, Jet Elctm. Supply Co., Inc.  | 303-364-1000,                   |
|    |                                      | FAX: 303-364-0800               |
| CT | Wallingford, Sager Elctrl. Supp.     | 203-265-4600                    |
| FL | Lakeland, Wes-Garde Comps.           | 813-644-7564,                   |
|    |                                      | FAX: 813-644-1722               |
| FL | Orlando, Sager Elctms.               | 407-354-1130,                   |
|    |                                      | FAX: 407-354-1137               |
| FL | Pompano Beach, Peerless Radio Corp.  |                                 |
|    |                                      | 305-973-4141, FAX: 305-977-4273 |
| GA | Atlanta, Peerless Radio              | 404-612-9090,                   |
|    |                                      | FAX: 404-612-0242               |
| GA | Norcross, Sager Elctms.              | 404-446-0085                    |
| IL | Addison, LCOMP                       | 708-628-1400,                   |
|    |                                      | FAX: 708-628-1400               |

|    |                                     |                                 |
|----|-------------------------------------|---------------------------------|
| IL | Carol Stream, Wes-Garde Comps. Grp. |                                 |
|    |                                     | 708-653-1460, FAX: 708-653-1491 |
| KS | Wichita, Airtechnics, Inc.          | 316-267-2849,                   |
|    |                                     | FAX: 316-267-1482               |

|    |                                |                   |
|----|--------------------------------|-------------------|
| MD | Columbia, Peerless Radio Corp. | 800-225-0709      |
| MD | Columbia, Sager Elctms.        | 301-995-4900,     |
|    |                                | FAX: 301-381-9380 |

|    |                              |                   |
|----|------------------------------|-------------------|
| MD | Kensington, Marine Air Supp. | 301-949-9560,     |
|    |                              | FAX: 301-942-1536 |

|    |                               |                   |
|----|-------------------------------|-------------------|
| MD | Owings Mills, Miltech Elctms. | 410-356-3200,     |
|    |                               | FAX: 410-356-0967 |

|    |                            |                   |
|----|----------------------------|-------------------|
| MA | Hingham, Sager Elec. Supp. | 617-749-6700,     |
|    |                            | FAX: 617-749-3842 |

|    |                          |                   |
|----|--------------------------|-------------------|
| MI | Grand Rapids, RM Elctms. | 616-531-9300,     |
|    |                          | FAX: 616-531-2990 |

|    |                          |                   |
|----|--------------------------|-------------------|
| MI | St. Clair Shores, Spermo | 313-771-2700,     |
|    |                          | FAX: 313-771-3491 |

|    |                    |                   |
|----|--------------------|-------------------|
| MO | Kansas City, LCOMP | 816-241-0111,     |
|    |                    | FAX: 816-241-7373 |

|    |                         |                   |
|----|-------------------------|-------------------|
| MO | Maryland Heights, LCOMP | 314-291-6200,     |
|    |                         | FAX: 314-298-7231 |

|    |                             |                   |
|----|-----------------------------|-------------------|
| NH | Salem, Sager Electr. Supply | 603-898-1348      |
| NY | Hempstead, Sager Elctms.    | 516-348-1300,     |
|    |                             | FAX: 516-348-1006 |

|    |                                |                   |
|----|--------------------------------|-------------------|
| NY | Lynbrook, Peerless Radio Corp. | 516-593-2121,     |
|    |                                | FAX: 516-593-2179 |

|    |                                     |                                 |
|----|-------------------------------------|---------------------------------|
| NY | Rockville Centre, Advantage Elctms. |                                 |
|    |                                     | 516-678-6956, FAX: 516-678-7966 |

|    |                                 |                   |
|----|---------------------------------|-------------------|
| NC | Raleigh, Sager Elctms.          | 919-850-9550      |
| OH | Dayton, Stotts Friedman / Sager | 513-298-5555,     |
|    |                                 | FAX: 513-298-3046 |

|    |                             |                   |
|----|-----------------------------|-------------------|
| PA | Mars, Sager Elctms.         | 412-772-2233      |
| PA | Philadelphia, Sager Elctms. | 215-464-4336,     |
|    |                             | FAX: 215-464-4079 |

|    |                                   |                   |
|----|-----------------------------------|-------------------|
| TX | Dallas, Associated Aircraft Supp. | 214-331-4381,     |
|    |                                   | FAX: 214-339-9840 |

|    |                                   |                   |
|----|-----------------------------------|-------------------|
| WI | Milwaukee, Progressive Image Inc. | 414-321-4722,     |
|    |                                   | FAX: 414-321-4665 |

|     |                                            |                                 |
|-----|--------------------------------------------|---------------------------------|
| Can | St. Laurent, Que., Ferrotronic Comps. Inc. |                                 |
|     |                                            | 514-333-7288, FAX: 514-333-2881 |


**FAX: 602-790-2808**

**OTTOTEK, IMC**, 4016 E Tennessee St., Tucson, AZ  
85714, Tel: 602-748-7900; Sls. Mgr: Otto H. Fest, Jr.  
**D\*1364-1367**

#### Local Sales Offices & Reps

|     |                                  |              |
|-----|----------------------------------|--------------|
| AZ  | Tucson, IMC-OTTOTEK              | 602-748-7900 |
| MA  | Wilbraham, NEDT                  | 413-596-8823 |
| MI  | Warren, Burdett Co.              | 313-573-4605 |
| MI  | Wyoming, Burdett Co.             | 616-532-2756 |
| EXP | Tucson, AZ, OTTOTEK, Div. of IMC | 602-748-7900 |

#### Local Distributors

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AL | Birmingham, Brownell Electro, Inc.      | 205-332-3375 |
| AL | Mobile, Brownell Electro, Inc.          | 205-479-5406 |
| CO | Aurora, R&R Instrmn.                    | 303-340-8728 |
| CO | Denver, Brownell Electro, Inc.          | 303-393-3541 |
| FL | Miami, Brownell Electro, Inc.           | 305-884-3197 |
| FL | Orlando, Brownell Electro, Inc.         | 407-843-6771 |
| GA | Forest Pk., Brownell Electro, Inc.      | 404-362-9009 |
| IL | Chicago, Data Elctms.                   | 312-283-0674 |
| IL | Wood Dale, Brownell Electro, Inc.       | 708-616-8770 |
| MA | Woburn, Brownell Electro, Inc.          | 617-935-7820 |
| MN | Edina, Brownell Electro, Inc.           | 612-942-8172 |
| MO | Manchester, Universal Precision Instrs. |              |
|    |                                         | 314-394-4693 |
| NJ | Edison, Brownell Electro, Inc.          | 908-287-2030 |
| NY | New York, Brownell Electro, Inc.        | 212-924-6000 |
| NY | Rochester, Masline Elctms.              | 716-546-5373 |
| NC | Charlotte, Brownell Electro, Inc.       | 704-597-1270 |
| NC | Raleigh, Brownell Electro, Inc.         | 919-876-6524 |



OR Portland, Brownell Electro, Inc. .... 503-226-3286  
 PA Bridgeville, Brownell Electro, Inc. .... 412-221-0075  
 PA Trevoise, Brownell Electro, Inc. .... 215-364-1401  
 SC Columbia, Brownell Electro, Inc. .... 803-772-6111  
 TN Knoxville, Brownell Electro, Inc. .... 615-966-3441  
 TN Nashville, Brownell Electro, Inc. .... 615-885-1302  
 TX Grand Prairie, Brownell Electro, Inc. .... 214-988-0821  
 TX Lubbock, Brownell Electro, Inc. .... 806-747-0211  
 UT Salt Lake City, Brownell Electro, Inc. .... 801-262-8498  
 VA Bluefield, Brownell Electro, Inc. .... 703-322-3402  
 VA Norfolk, Brownell Electro, Inc. .... 804-855-2400  
 EXP Tucson, AZ, OTTOTEK Div. of IMC .... 602-748-7900  
 Can Brampton, Ont, Mod-Tronic Inst. Ltd. .... 416-457-6322  
 Can Burlington, Ont, Tempotech Controls .... 416-336-3400  
 Can Langley, B.C., Valax Ltd. .... 604-530-3189  
 Can Scarborough, Ont, Banke Elctms. .... 416-292-5152

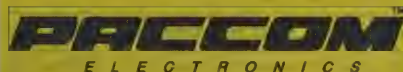
OUPINI AMERICA, INC., 65 W. Easy Street 201, Simi Valley, CA 93065, Tel: 805-520-0862, FAX: 805-520-0864; Sls. Mgr: Randy Ryan

OUTLAND TECHNOLOGY INC., 1808-B Faith Pl, Gretna, LA 70056, Tel: 504-367-0104, FAX: 504-367-6754; Eml: 4; Sls. Mgr: George J. Mayfield; Dist. Mgr: George J. Mayfield

OVENAIRE-AUDIO-CARPENTER, Oak Crystal Inc., 706 Forrest St, Charlottesville, VA 22901, Tel: 804-977-8050, TWX: 910-997-8053, FAX: 804-295-7265; FSC No: 12020; Empl: 190; Sls. Mgr: Robert J. Mete

OVEN INDUSTRIES, 207 Hempt Rd, P.O. Box 290, Mechanicsburg, PA 17055, Tel: 717-766-0721, FAX: 717-766-4786; FSC No: 21302; Empl: 48; Sls. Mgr: T. M. Nolan

OXLEY INC., 25 Business Pk Dr, P.O. Box 814, Branford, CT 06405, Tel: 203-488-1033, FAX: 203-481-6971; FSC No: 3R006; Sls. Mgr: Carol Carr



**FAX: 206-881-0508**

**PACCOM ELECTRONICS**, 3928 148th NE, Redmond, WA 98052-5350, Tel: 206-883-9200, 800-426-6254, TWX: 910-498-2973; Empl: 30; Sls. Mgr: Bill Corr; Dist. Mgr: Bob Rudd ..... **A-1142-1143, 2005**

**Local Sales Offices & Reps**  
 CT Wallingford, Com Sls. .... 203-269-8252  
 MA Needham, Com Sls. .... 617-444-8071

**Local Distributors**  
 CT Danbury, Pilgrim .... 203-792-7274  
 FL Melbourne, T. C. Pridmore .... 305-727-2491  
 IL Hillside, Schuten Elctms. .... 312-449-5430  
 IL Rosemont, Advent Elctms. .... 312-297-6200  
 IL Wood Dale, NEP Elctms. .... 708-595-8500  
 IN Indianapolis, Advent Elctms. .... 317-872-4910  
 IN Indianapolis, M.A.R. Elctms. .... 317-633-6699  
 IA Cedar Rapids, Advent Elctms. .... 319-363-0221  
 MI Farmington Hills, Advent Elctms. .... 313-477-1650  
 NH Atkinson, Astrum Elctms. .... 603-898-3399  
 NH Salem, Diamond Elctms. .... 603-894-4420  
 TX Richardson, CTCV .... 214-437-2211  
 WI Neguon, Lakeridge .... 414-377-8250  
 WA Redmond, Priebe Elctms. .... 800-426-9911

**PACE, INC.**, 9893 Brewers Ct, Laurel, MD 20723-1990, Tel: 301-490-9860, TELEX: 198296, FAX: 301-498-3252; Sls. Mgr: James K. Bausell

**PACER INDUSTRIES, INC.**, 1450 First Ave, Chippewa Falls, WI 54729, Tel: 715-723-1141, FAX: 715-723-7890; FSC No: 60162; Empl: 7; Sls. Mgr: Patrick Brennan; Dist. Mgr: Patrick Brennan

**PACER SYSTEMS, INC.**, 900 Technology Park Dr, Billerica, MA 01821, Tel: 508-667-8800, FAX: 508-663-5155; Empl: 325; Sls. Mgr: E. Childress

**PACIFIC ATLANTIC ELCTRNS**, Patronix, Inc., Box 754, El Cerrito, CA 94530, Tel: 510-237-5837, FAX: 510-524-9267; Empl: 4; Sls. Mgr: P. Yen; Dist. Mgr: P. Yen

**PACIFIC COAST CIRCUITS, INC.**, 189 Granada Dr, San Luis Obispo, CA 93401, Tel: 805-544-4881, FAX: 805-544-6475; FSC No: 66107; Empl: 18; Sls. Mgr: Chris Cofor

**PACIFIC ELECTRICORD**, 747 W. Redondo Bch, Blvd, Gardena, CA 90247, Tel: 310-532-6600, FAX: 310-532-5044; Empl: 1000; Sls. Mgr: Alan Manzo; Dist. Mgr: Alan Manzo

**PACIFIC ELECTRO DYNAMICS, INC.**, 11465 Willows Rd, N.E., Redmond, WA 98073-9745, Tel: 206-881-1700, TWX: 910-449-2977; Empl: 420

**PACIFIC INDUSTRIAL COMPONENTS CORP.**, See Altair Exchange Corp.

**PACIFIC INDUSTRIAL COMPONENTS CORP.**, 24907 Avenue Tibbets Unit-C, Valencia, CA 91355, Tel: 805-257-7901, FAX: 805-257-6490; Sls. Mgr: Ray Press ..... **B-1104**

**Local Sales Offices & Reps**  
 IL Elk Grove Village, Pacific Comps. .... 708-228-0030

**PACIFIC INSTRUMENTS INC.**, 215 Mason Circle, Concord, CA 94520, Tel: 510-827-9010, FAX: 510-827-9023; Empl: 30

**PACIFIC MICROCOMPUTERS**, Fairway Optical Data Sys., Inc., 2440 Grand Ave. Ste. C, Vista, CA 92083, Tel: 619-727-9494, FAX: 619-727-9499; Empl: 15; Sls. Mgr: Guy Halac

**PACIFIC MICROTRONICS CORP.**, 435 E. 79th St, New York, NY 10021, Tel: 212-517-5622, FAX: 212-517-5516; Sls. Mgr: S. Miliziano; Dist. Mgr: E. Dietz

**PACIFIC POWER SOURCE CORP.**, 15122 Bolsa Chica St, Huntington Bch, CA 92649, Tel: 714-898-2691, 800-854-2433, FAX: 714-891-1928; FSC No: 57148; Empl: 50; Sls. Mgr: Russ Engle ..... **D-2286-2290**

**Local Sales Offices & Reps**  
 AZ Zeus Elctms, Inc. .... 602-285-9126  
 AL Huntsville, W A Brown Instrs. .... 205-830-9224  
 AZ Phoenix, Zeus Elctms. Inc. .... 602-263-6022  
 CA Santa Clara, Amasco Corp. .... 408-987-7760  
 CA Torrance, Amasco Corp. .... 310-781-9494  
 CO Wheatridge, Zeus Elctms, Inc. .... 303-321-4246  
 CT Mt. Carmel, Sci. Dvcs. .... 203-248-9361  
 FL Melbourne, W.A. Brown Instrs. .... 407-723-0766  
 FL Orlando, W.A. Brown Instrs. .... 407-648-9660  
 GA Norcross, W.A. Brown Instrs. .... 404-449-7160  
 ID East, Zeus Elctms, Inc. .... 800-528-4512  
 ID West, Westcon Inc. .... 800-547-4515  
 IL Elmhurst (N), Sector Eng. Sls. Inc. .... 708-530-7850  
 IN Indianapolis, Sector Eng. Sls. Inc. .... 317-253-9221  
 KS Merriam, TecRep Corp. .... 913-262-9500  
 MA Waltham, Sci. Dvcs. .... 617-890-2252  
 MI Plymouth, EQS Sys. .... 313-455-7920  
 MN Minnetonka, Elctm. Instrs. .... 612-933-7793  
 MO St. Louis, TecRep Corp. .... 314-454-9110  
 MT Zeus Elctms, Inc. .... 800-528-4512  
 NV Zeus Elctms, Inc. .... 800-528-4512  
 NY Liverpool, Northern Tech. Sls. Assocs, Inc. .... 315-451-1091

NY Wantagh, Bytec Reps. .... 516-781-7400  
 NC Cary, W.A. Brown Instrs. .... 919-460-1120  
 OH Chesterland, EQS Sys. .... 216-729-2222  
 OH Dayton, EQS Sys. .... 513-236-7676  
 OR Portland, Westcon .... 503-283-0132  
 PA Huntingdon Valley, Sci-Rep Inc. .... 215-322-6500  
 PA Wexford, EQS Sys. .... 412-935-0455  
 TX Richardson, Beacon Microwave .... 214-437-1505  
 TX Round Rock, Beacon Microwave .... 512-244-6675  
 UT Salt Lake City, Zeus Elctms. Inc. .... 801-534-0500  
 VA Fairfax, Sci-Rep, Inc. .... 703-385-0600  
 WA Kent, Westcon, Inc. .... 206-824-8922  
 WI Milwaukee, Sector Eng. Sls. Inc. .... 414-352-8280  
 WY Zeus Elctms, Inc. .... 800-528-4512

**PACIFIC RESISTOR CO.**, 18300 Oxnard St, Tarzana, CA 91356, Tel: 818-345-7811, FAX: 818-345-1507; FSC No: 06416; Sls. Mgr: Douglas Trehwitt ..... **A-2006-2009**

**Local Sales Offices & Reps**  
 CA San Jose, Comtech Mktg. .... 408-294-5448

**Local Distributors**  
 CA San Jose, Comtech Mktg. .... 408-294-5448

**PACIFIC SCIENTIFIC CO.**, 4301 Kishwaukee, Rockford, IL 61109, Tel: 815-226-3100, TELEX: 386743, FAX: 815-226-3122; Empl: 350; Dist. Mgr: Robert E. Burke

**PACIFIC SCIENTIFIC**, Electro Kinetics Division, 402 E. Gutierrez St, Santa Barbara, CA 93101, Tel: 805-963-2055, TWX: 910-334-1177; Empl: 210; Sls. Mgr: Robert E. Lynch

**PACIFIC TRANSDUCER CORP.**, 2301 Federal, Los Angeles, CA 90064-1482, Tel: 310-478-1134, FAX: 310-312-0826; Empl: 22; Sls. Mgr: Laura Barba

**PACIFIC TRANSFORMER CORP.**, 4729 E. Wesley Dr, Anaheim, CA 92807, Tel: 714-779-0450, 1-800-325-0501, FAX: 714-779-0718; FSC No: 66827; Empl: 85; Sls. Mgr: Bill Chidester

**PACKAGING PLUS, INC.**, 5800 Main Steet NE, Minneapolis, MN 55432, Tel: 612-574-9909, FAX: 612-574-1441; Empl: 25; Sls. Mgr: Mike Hickman

**PACKARD ELECTRIC**, General Motors, P.O. Box 431, Warren, OH 44486, Tel: 216-373-2121, 1-800-PACKARD, FAX: 216-759-6195; Empl: 64,000; Sls. Mgr: George A. Kralovich, Dir. Sls. Engrg.

**PACITEC®**  
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**PACTEC CORP., LAFRANCE CORP.**, 8425 Executive Ave, Philadelphia, PA 19153, Tel: 215-365-8400; Empl: 250; Sls. Mgr: Brian McHenry; Dist. Mgr: Edward Fitzpatrick ..... **C-1002, 1062-1068**

**Local Sales Offices & Reps**  
 AL Madison, Scott Ray .... 205-464-0370  
 CA Anaheim, Jonathan Winters .... 714-779-8092  
 CA San Jose, Michael Bennett .... 510-625-6068  
 FL Palm Harbor, Roger Hauck .... 813-784-7895  
 IL Bolingbrook, John Nelson .... 708-852-9908  
 MA South Easton, Maurice Raymond .... 508-238-9283  
 EXP Philadelphia, PA, PacTec Export Sls. Dept.

215-365-8400  
 NC Thomasville, Keith Pierce .... 919-869-0130  
 OH Perrysburg, Bruce Brown .... 419-874-1110  
 PA Philadelphia, Jim Bowdler .... 215-365-8400  
 TX Dallas, Craig Ladue .... 214-340-6288  
 WA Seattle, Mike Werthenberger .... 206-481-0998  
 WI Appleton, Ed Sabish .... 414-731-7212

**Local Distributors**  
 AL Birmingham, American Elctms. Supp. .... 205-942-4656  
 AZ Phoenix, Tri-Tek .... 602-371-0860  
 AZ Tucson, Elctm. City .... 602-662-1173  
 CA El Segundo, Foros Elctms. .... 213-772-1324  
 CA Gardena, California Switch & Signal .... 800-225-7824  
 CA Milpitas, Zack Elctms. .... 408-942-5432  
 CA San Jose, Quement Elctms. .... 408-998-5355  
 CA San Jose, Rose Elctms. .... 408-943-0200  
 CA Santa Clara, Force Elctms. .... 408-748-1342  
 CA Sunnyvale, Fry's Elctms. .... 408-733-1770  
 CO Aurora, Jet Elctms. .... 303-364-1000  
 CO Littleton, Display's Plus .... 303-730-7333  
 CT Wallingford, Midstate Elctms. .... 203-265-9900  
 CT Wallingford, Sager Elec. Supp. .... 203-265-6865  
 FL Largo, Electronic Precepts of FL .... 800-367-4649  
 FL Orlando, Sager Elec. Supp. .... 407-354-1130  
 GA Norcross, American Elctm. Supp. .... 800-562-8740  
 GA Norcross, Sager Elec. Supp. .... 404-446-0085  
 IL Champaign, Klaus Radio .... 217-356-1896  
 IL Chicago, Newark Elctms. .... 312-784-5100  
 IL Elk Grove, Martec Assocs. .... 708-956-8090  
 IL Mt. Prospect, Tri State Elctms. .... 708-255-0600  
 IL Northbrook, Classic Comps. .... 708-291-0019  
 IL Rosemont, Advent Elctms. .... 312-298-4210  
 IN Indianapolis, Advent Elctms. .... 317-872-4910  
 IN Indianapolis, Meunier Elctms. .... 317-635-3511  
 KS Overland Park, Olive Elctms. .... 913-362-1923  
 MD Beltsville, P.S.I. .... 800-333-5292  
 MD Columbia, Sager Elec. Supp. .... 410-995-4900  
 MA Hingham, Sager Elec. Supp. .... 617-749-6700  
 MA Westborough, In-Stock Products Co. .... 800-225-3018  
 MI Grand Rapids, S. F. Elctms. .... 616-459-0216  
 MI Livonia, RS Elctms. .... 313-525-1155  
 MN Minneapolis, Berquist .... 612-835-2322  
 MN Roseville, Parts I. .... 612-633-8079  
 MO Kansas City, Walters Indl. Elctms. .... 816-531-7015  
 MO Maryland Hts., Olive Elctms. .... 314-997-7709  
 MO St. Charles, Finnigan Elctms. .... 314-946-6201  
 NE Lincoln, Scott Elctms. .... 402-466-8221  
 NJ Salem, Sager Elctrl. Supp. .... 603-898-1348  
 NJ Rockaway, Toner Inds, Inc. .... 201-586-9000  
 NY Buffalo, Summit Distr. .... 716-887-2899  
 NY Farmingdale, Pride Elctms. .... 516-293-4020  
 NY Hauppauge, Sager Elec. Supp. .... 516-348-1300  
 NY Rochester, Masline Elctms, Inc. .... 716-546-5373  
 NY Rochester, Summit Distr. .... 716-334-8110  
 NC Raleigh, Sager Elec. Supp. .... 919-850-9550  
 OH Cincinnati, Hughes-Peters .... 513-351-2000  
 OH Cleveland, Roberts Elctms. .... 216-238-1711  
 OH Columbus, Hughes-Peters .... 614-294-5351  
 OK Tulsa, Radio Inc. .... 918-587-9123  
 OR Portland, Radar Elec. .... 503-232-3404





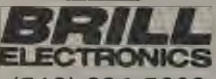
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| PA  | Philadelphia, Sager Elec. Supp.         | 215-464-4336 |
| TX  | Dallas, Force Elctms.                   | 214-247-9955 |
| TX  | Ft. Worth, Allied Elctms.               | 800-433-5700 |
| TX  | Ft. Worth, Tandy Natl. Pts.             | 800-322-3690 |
| TX  | Richardson, Off-the-Shelf Comps.        | 214-238-0808 |
| TX  | Richardson, Off-the-Shelf Comps.        | 214-247-0052 |
| TX  | Tomball, Wofford Elctms.                | 713-351-2255 |
| UT  | Salt Lake City, Standard Supp.          | 801-486-3371 |
| VA  | Charlottesville, Virginia Elctm. Comps. | 804-296-4184 |
| WA  | Seattle, Radar Elec.                    | 206-282-2511 |
| WI  | Milwaukee, Marsh Elctms.                | 414-475-6000 |
| Can | Burnaby, BC, Intek Elctms.              | 604-294-8100 |
| Can | Kingston, Ont, Elctm. Packaging Sys.    | 613-384-1142 |
| Can | Pointe Claire, Que., Future Elctms.     | 514-694-7710 |
| Can | Vancouver, BC, Future Elctms.           | 604-294-1166 |

**PADS SOFTWARE, INC.**, 119 Russell St., Littleton, MA 01460, Tel: 508-486-9521, FAX: 508-486-8217; Empl: 46; Sls. Mgr: Donna Andersson, Telesls. Mgr.; Dist. Mgr: Sandra Jarry, Dir. of Sls, NA.

**PAINE CORPORATION**, 2401 S. Bayview St., Seattle, WA 98144, Tel: 206-329-8600, 800-426-0366, FAX: 206-329-1615; FSC No.: 13624; Empl: 96; Sls. Mgr: John Sagvold, Steve Evans

**PAKTRON**, See ITW Paktron

**PAKTRONICS CONTROLS, INC.**, P.O. Box 185669, Ft. Worth, TX 76181, Tel: 817-284-5241, FAX: 817-284-1712; Empl: 30; Sls. Mgr: Arthur B. Vega

**PALOMAR ENGINEERS**, Box 462222, Escondido, CA 92046, Tel: 619-747-3343, FAX: 619-747-3346; Empl: 9

**PAMRAN INC.**, 1900 Williams St., Young Ind. Pk., Racine, WI 53404, Tel: 414-637-7999, FAX: 414-637-2303; FSC No.: K 8-67203; Empl: 28; Sls. Mgr: R. C. Pfeil

**PANAMETRICS**, 221 Cresent St., Waltham, MA 02154-3497, Tel: 617-899-2719, TELEX: 6817337, TWX: 951006, FAX: 617-899-1552; Empl: 200; Sls. Mgr: Bob Mel

**PANASONIC FACTORY AUTOMATION CO.**, Matsushita Elect. Corp. of America, 9377 W. Grand Ave., Franklin Park, IL 60131, Tel: 708-288-4471, FAX: 708-288-4430

# Panasonic Industrial Company

**FAX: 201-392-4782**

**PANASONIC INDUSTRIAL CO., Battery Sales GP.**, Box 1511, Secaucus, NJ 07096-1511, Tel: 201-348-5266; Empl: 25 ..... **D-1457**

|                                       |                                     |              |
|---------------------------------------|-------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                     |              |
| CA                                    | Glendale, Halbar Assocs. Inc.       | 818-906-3941 |
| CA                                    | San Diego, Tauber & Assocs.         | 619-274-7242 |
| MN                                    | Eden Prairie, Electro Mark Inc.     | 612-944-5850 |
| OH                                    | Beachwood, Elctm. Salesmasters Inc. | 216-831-9555 |

|                           |                                       |              |
|---------------------------|---------------------------------------|--------------|
| <i>Local Distributors</i> |                                       |              |
| AL                        | Huntsville, Resistacap Inc.           | 205-883-4270 |
| AZ                        | Scottsdale, Electro Mktg.             | 602-991-0110 |
| CA                        | San Diego, Tauber Elctms. Inc.        | 619-274-7242 |
| CA                        | San Jose, Rose Elec. Distrib. Co.     | 408-943-0440 |
| CA                        | Santa Clara, Cypress Elctms. Inc.     | 408-980-2500 |
| CA                        | Van Nuys, NESCO                       | 818-781-0505 |
| CO                        | Littleton, AVT                        | 303-798-1958 |
| FL                        | St. Petersburg, Micro Precision       | 813-854-2861 |
| GA                        | Norcross, Applied Power, Inc.         | 404-263-0421 |
| IL                        | Morton Grove, Power Pak Inc.          | 708-966-6000 |
| IL                        | Palatine, Ohm Elctms.                 | 708-359-5500 |
| MD                        | Beltville, Mark Elctms.               | 301-792-0072 |
| MA                        | Canton, Impact Sls. Co. Inc.          | 508-668-8200 |
| MI                        | Danvers, Generation Elctms. Inc.      | 508-683-1177 |
| MA                        | Sutton, Engrd. Assemblies, Inc.       | 508-865-0722 |
| MI                        | Brighton, Applied Power Inc.          | 313-227-3604 |
| MN                        | Thief River Falls, Digi-Key           | 800-344-4539 |
| MN                        | Minneapolis, Stark Elctms. Supp. Inc. | 612-332-1325 |

|    |                                 |              |
|----|---------------------------------|--------------|
| NJ | Clifton, Engineered Assem.      | 201-288-4477 |
| NC | Raleigh, Engrd. Assemblies Inc. | 919-790-9700 |
| OH | Columbus, Hughes-Peters         | 614-294-5351 |
| OH | Columbus, Promark Elctms. Inc.  | 614-351-2191 |
| OR | Beaverton, Micro Power          | 503-626-7086 |

|    |                                 |              |
|----|---------------------------------|--------------|
| PA | McKean, Advacom, Inc.           | 814-476-7774 |
| TX | Dallas, Computer Comps. Corp.   | 214-239-0271 |
| TX | Dallas, Norvell Elctms. Inc.    | 214-233-0020 |
| TX | Fort Worth, Allied Elctms.      | 817-595-3500 |
| WI | Fond Du Lac, Fedco Elctms. Inc. | 414-922-6490 |
| WI | Mequon, Taylor Elec. Co.        | 414-241-4321 |

**PANASONIC INDUSTRIAL COMPANY**, Custom Peripheral Dept., Two Panasonic Way, Secaucus, NJ 07094, Tel: 201-392-6313, FAX: 201-348-7849; Dist. Mgr: Edmund Silvia Jr., Prod. Mgr.

**PANASONIC INDUSTRIAL CO.**, 1616 McCandless Dr., Milpitas, CA 95035, Tel: 408-946-7200, FAX: 408-946-3753

**PANASONIC INDL. CO. STANDARD COMPS. SECTOR**, Matsushita Elec. Corp. of America, Two Panasonic Way Panazip: 7H-4, Secaucus, NJ 07094, Tel: 201-392-4818, FAX: 201-392-6263; FSC No.: 54473; Empl: 60; Sls. Mgr: Hank Miyai; Dist. Mgr: Dick Robert

**PANAVISE PRODUCTS, INC.**, 1485 Southern Way, Sparks, NV 89431, Tel: 702-353-2900, FAX: 702-353-2929; Empl: 35; Sls. Mgr: Mark Thorsell; Dist. Mgr: Mark Thorsell

**PANDUIT CORP.**, 17301 Ridgeland Ave., Tinley Park, IL 60477-0981, Tel: 800-777-3300, FAX: 708-532-1811; FSC No.: 06383; Empl: 2000



**FAX: 800-645-5360**

**PANEL COMPONENTS CORP.**, 100 Interpower Ave., Oskaloosa, IA 52577, Tel: 515-673-0097; Empl: 30  
..... **A-2443; B-1376-1377; C-1426-1438, 1793-1801; D-2291**

|                                       |                                     |              |
|---------------------------------------|-------------------------------------|--------------|
| <i>Local Sales Offices &amp; Reps</i> |                                     |              |
| AL                                    | Huntsville, DHR Mktg. Inc.          | 205-536-9775 |
| AZ                                    | Phoenix, C.T. Carlberg & Assoc.     | 602-468-0750 |
| CA                                    | Santa Clara, Ross Mktg. Assoc.      | 408-988-8111 |
| CA                                    | Tustin, Schoenbacher-Dobson Co.     | 714-544-1888 |
| CO                                    | Englewood, Omega Ltd.               | 303-762-1921 |
| FL                                    | Altamonte Springs, DHR Mktg. Inc.   | 407-331-1199 |
| GA                                    | Duluth, DHR Mktg. Inc.              | 404-564-0529 |
| IL                                    | Northbrook, Raines & Assocs.        | 708-498-0890 |
| IN                                    | Indianapolis, Rockford Controls     | 317-846-7415 |
| IA                                    | Marion, M-S-B Assocs. Inc.          | 319-377-6261 |
| KS                                    | Roeland Park, M-S-B Assocs. Inc.    | 913-432-2131 |
| MD                                    | Frederick, Glasscock Assoc.         | 301-694-5048 |
| MA                                    | Scituate, Olsen Tech. Sls.          | 617-545-5101 |
| MN                                    | St. Paul, Arko Sls.                 | 612-777-7454 |
| MO                                    | St. Louis, M-S-B Assocs. Inc.       | 314-946-5577 |
| NJ                                    | Kenvil, CFE/Gray                    | 201-927-6662 |
| NM                                    | Albuquerque, C.T. Carlberg & Assoc. | 505-899-2155 |
| NY                                    | Victor, Net Sls.                    | 716-924-1844 |
| NC                                    | Raleigh, DHR Mktg. Inc.             | 919-829-1970 |
| OH                                    | Medina, Rockford Controls           | 216-725-3705 |
| OR                                    | McMinville, Electro-Design          | 503-472-0481 |
| PA                                    | Philadelphia, Eastern Sci. Mktg.    | 215-368-4570 |
| PA                                    | Pittsburg, Rockford Controls Ohio   | 412-331-0306 |
| SC                                    | Greenville, DHR Mktg. Inc.          | 803-235-3594 |
| TN                                    | Nashville, DHR Mktg.                | 615-331-2745 |
| TX                                    | Lewisville, Jim Hughes Co.          | 214-221-1536 |
| VA                                    | Ashland, Glasscock Assoc.           | 804-798-2125 |
| WA                                    | Redmond, Electro-Design             | 206-867-9300 |
| EXP                                   | Burnaby, B.C. Darmac Agencies, Ltd. | 604-520-7121 |
| Can                                   | Ottawa, Ont, Ellam & Assoc.         | 613-727-3892 |

**PANELTEC**, 3307 Edward Ave., Santa Clara, CA 95054, Tel: 408-496-1175, FAX: 408-970-1277; Empl: 105; Sls. Mgr: Daniel Johnston

**PAN INTERNATIONAL (USA), INC.**, 9477 E. Archibald Ave., Rancho Cucamonga, CA 91730, Tel: 909-945-1365, FAX: 909-989-9935; Empl: 24; Sls. Mgr: Barry Park; Dist. Mgr: Barry Park, Natl. Sls. Mgr.

**PAN-MAGNETICS**, See Tamura Corp. of America



PAPST MECHATRONIC CORPORATION

**FAX: 401-849-4640**

**PAPST MECHATRONIC CORP.**, Aquidneck Indl. Pk., Newport, RI 02840, Tel: 401-849-8810; Empl: 30  
..... **C-1633-1637**



## Local Sales Offices &amp; Reps

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| AL | Huntsville, Over & Over, Inc.                   | 205-837-7105 |
| AZ | Phoenix, O'Donnell Assocs. SW                   | 602-944-9542 |
| CA | Dana Point, Papst Mechatronic Corp.             | 714-661-1447 |
| CA | Los Gatos, Luscombe Engrg. Co. of San Francisco | 408-370-2020 |
| CA | Monterey, Luscombe Engrg. Co. of So. Calif.     | 818-249-9000 |
| CA | Mountain View, Papst Mechatronic Corp.          | 415-903-9311 |
| CA | San Diego, Luscombe Engrg. Co. of So. Calif.    | 619-689-0018 |
| CO | Englewood, Quorum 3                             | 303-799-8100 |
| CT | Meriden, Delta Conn                             | 203-634-8558 |
| FL | Altamonte Springs, Over & Over, Inc.            | 407-332-1222 |
| GA | Norcross, Over & Over, Inc.                     | 404-449-6205 |
| IL | Arlington Heights, Brainard-Nielsen Mktg.       | 708-437-2700 |
| IL | Arlington Heights, Papst Mechatronic Corp.      | 708-981-1404 |
| IL | Arlington Hgts, Brainard-Nielsen Mktg.          | 708-437-2700 |
| IA | Marion, MSB Assocs. Inc.                        | 319-377-6261 |
| KS | Shawnee Mission, MSB Assocs., Inc.              | 913-432-2131 |
| MA | Frammingham, Papst Mechatronic Corp.            | 508-875-8986 |
| MA | Needham, Sturgeon Tech. Sls.                    | 617-444-6603 |
| MN | Edina, Mel Foster Tech. Sls., Inc.              | 612-941-9790 |
| MO | St. Charles, MSB Assocs.                        | 314-946-5577 |
| NJ | Cherry Hill, Trinkle Sls., Inc.                 | 609-795-4200 |
| NJ | Kenvil, C.F.E. Gray Assocs., Inc.               | 201-927-6662 |
| NM | Albuquerque, Reprtronix, Ltd.                   | 505-292-1718 |
| NY | Syracuse, Leonard D. Allen, Inc.                | 315-437-8387 |
| NY | Yaphank, C.F.E. Gray Assocs., Inc.              | 516-924-2471 |
| NC | Charlotte, Over & Over, Inc.                    | 704-542-9111 |
| OH | Beachwood, Elctm. Salesmasters, Inc.            | 216-831-9555 |
| OR | Portland, Venture Elctms.                       | 503-624-0617 |
| PA | Knoxville, Trinkle Sls., Inc.                   | 215-922-2080 |
| RI | Newport, Papst Mechatronic Corp. Hq.            | 401-849-8810 |
| TX | Dallas, JYSCO/Comps., Inc. (except El Paso)     | 214-349-1650 |
| WA | Bellevue, Venture Elctms.                       | 206-454-4594 |
| WI | Manitowoc, Brainard-Nielsen Mktg.               | 414-682-1201 |

**PARADIGM TECHNOLOGY, INC.**, 71 Vista Montana, San Jose, CA 95134, Tel: 408-954-0500, FAX: 408-954-8913

**PARAGON ELECTRIC CO., INC.**, 606 Parkway Blvd., Two Rivers, WI 54241, Tel: 414-793-1161, TELEX: 26-3450, FAX: 414-793-3736; Empl: 500; Sls. Mgr.: Don Karman

**PARA-LINE TRANSFORMER CO., INC.**, 511 South Palm Ave., Alhambra, CA 91803, Tel: 818-281-0222, FAX: 818-281-5867; FSC No.: 59465 A-2444

**PARKER HANNIFIN CORP.**, 17325 Euclid Ave., Cleveland, OH 44112-1290, Tel: 800-272-7537, 800-C-PARKER, TELEX: 980636; Empl: 26,669

**PARKER HANNIFIN CORPORATION**, Compumotor Division, 5500 Business Park Drive, Rohnert Park, CA 94928, Tel: 707-584-7558, FAX: 707-584-8015

**PARKER HANNIFIN CORP.**, Daedal Div., P.O. Box 500, Sandy Hill Road, Harrison City, PA 15636, Tel: 412-744-4451, FAX: 412-744-7626; Sls. Mgr.: R. Mitchell; Dist. Mgr.: R. Mitchell

**PARKER HANNIFIN CORP.**, Hose Products Division, 30240 Lakeland Blvd., Wickliffe, OH 44092, Tel: 216-943-5700, FAX: 216-943-7088

**PARKER HANNIFIN CORPORATION**, Hydraulic Valve Division, 520 Temes Ave., Elyria, OH 44036-2026, Tel: 216-366-5200, FAX: 216-366-5253

**PARKER HANNIFIN CORP.**, Instrumentation Connectors Div., 9400 S. Memorial Pkwy., Huntsville, AL 35802, Tel: 205-881-2040, FAX: 205-881-5730

**PARKER HANNIFIN CORP.**, Parflex Div., 1300 N. Freedom Street, Ravenna, OH 44266, Tel: 216-296-2871, FAX: 216-296-8433

**PARKER HANNIFIN CORP.**, Pneumatic Division, 8676 E M-89, Richland, MI 49083, Tel: 616-629-5000, FAX: 616-629-5385

**PARKER HANNIFIN CORP.**, Refrigerating Specialties Division, 2445 South 25th Ave., Broadview, IL 60153, Tel: 708-681-6300, FAX: 708-681-6306

**PARKER HANNIFIN CORPORATION**, Rotary Actuator Division, 135 Quadral Dr., Wadsworth, OH 44281-0450, Tel: 216-336-3511, TELEX: 216-334-3335

**PARKER HANNIFIN CORP.**, Schrader Bellows Division, 257 Huddleston Avenue, Cuyahoga Falls, OH 44221, Tel: 216-923-5202, FAX: 1-800-426-3259

**PARKER HANNIFIN CORPORATION**, Seal Grp., 18321 Jamboree Rd., Irvine, CA 92715, Tel: 714-833-3000, FAX: 714-851-2127

**PARKER HANNIFIN CORP.**, Tube Fittings, 3885 Gateway Blvd., Columbus, OH 43228, Tel: 614-279-7070, FAX: 614-279-7685

**PARLEX CORPORATION**, 145 Milk St., Methuen, MA 01844, Tel: 508-685-4341, FAX: 508-685-8809; FSC No.: 18377; Empl: 375; Sls. Mgr.: Robert D. Cyr

SINCE 1922



FAX: 718-774-0583

**PAR METAL PRODUCTS, INC.**, Par Industrial Complex, 1246 Atlantic Ave., Brooklyn, NY 11216, Tel: 718-774-5900, TELEX: 424 823 SNDS UI ATTN:PAR; FSC No.: 3449;3469; Empl: 100; Sls. Mgr.: J. Troiano C-1069

**PARSONS MANUFACTURING**, 1055 O'Brien Dr., Menlo Park, CA 94025-1476, Tel: 415-324-4726, FAX: 415-324-3051; Empl: 45; Sls. Mgr.: S. Wurzer

**PARSYTEC INC.**, Bldg. 9, Unit60, 245 W. Roosevelt Rd., West Chicago, IL 60185, Tel: 708-293-9500, FAX: 708-293-9525; Empl: 7; Sls. Mgr.: Reinhard Rinn

**PARVEX SERVO SYSTEMS**, GEC Alsthom International, Inc., 4 Skyline Dr., Hawthorne, NY 10532, Tel: 914-345-5150, FAX: 914-345-5295

**PASO SOUND PRODUCTS**, 14 First St., Pelham, NY 10803, Tel: 914-738-4800, FAX: 914-738-3954; Empl: 18; Sls. Mgr.: Ken O'Brien

**PASS & SEYMOUR CANADA, INC.**, Legrand, 448 North Rivermede Rd., Concord, Ont L4K 3M9, Tel: 416-738-9195, FAX: 416-738-9721; Empl: 40; Sls. Mgr.: Dennis Conard

**PASS & SEYMOUR/LEGRAND**, Pass & Seymour/Inc., P.O. Box 4822, Syracuse, NY 13221, Tel: 315-468-6211, TELEX: 93-7232, FAX: 315-468-6305; Empl: 1700; Sls. Mgr.: Sergio Palluci, Sls. Mgr./Kristin Northrop, Prod. Mgr.

**PASTERNAK ENTERPRISES**, P.O. Box 16759, Irvine, CA 92713, Tel: 714-261-1920, FAX: 714-261-7451; FSC No.: 53919; Sls. Mgr.: Elaine Wilson

**PATTON-MACGUYER INC.**, 17 Virginia Ave., Providence, RI 02905, Tel: 401-941-6000, FAX: 401-941-5290; FSC No.: 77147; Empl: 45; Sls. Mgr.: F. Spunzo

**PAVE TECHNOLOGY CO., INC.**, 2751 Thunderhawk Ct., Dayton, OH 45414-3445, Tel: 513-890-1100, FAX: 513-890-5165; Empl: 35

**PAYNE ENGINEERING**, Box 70, Scott Depot, WV 25560, Tel: 304-757-7353, TELEX: 88-5452, FAX: 304-757-7305; Empl: 40; Sls. Mgr.: R. B. Vogelbach

**PCA ELECTRONICS**, 16799 Schoenborn St., Sepulveda, CA 91343, Tel: 818-892-0761, TWX: 910-496-1525, FAX: 818-894-5791; FSC No.: 97722; Empl: 45; Sls. Mgr.: Nand Aggarwal A-1572-1575, 1668-1671; D-1854-1856

## Local Sales Offices &amp; Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Southeast Tech. Grp.    | 205-534-2376 |
| AZ | Phoenix, Toward Engrg. Assocs.      | 602-955-3193 |
| CA | Mission Viejo, Ramsey & Assocs.     | 714-380-7757 |
| CA | San Diego, Ramsey & Assocs.         | 619-451-8865 |
| CA | San Jose, Arnold Techn. Sls.        | 408-954-0400 |
| FL | Clearwater, Sunland Assocs.         | 813-536-2955 |
| FL | Goldenrod, Sunland Assocs.          | 305-365-9533 |
| FL | Lauderhill, Sunland Assoc.          | 305-561-1303 |
| GA | Lawrenceville, Southeast Tech. Grp. | 404-979-2055 |
| IL | Elk Grove, W.G. Brouillette         | 708-290-1313 |
| MA | Sudbury, KSA of New England         | 508-443-5881 |

|    |                                      |              |
|----|--------------------------------------|--------------|
| MN | Bloomington, Bill Deming and Assocs. | 612-888-5000 |
| MS | Meridian, Southeast Tech. Grp.       | 601-485-7055 |
| NC | Zebulon, Southeast Tech. Grp.        | 919-269-5589 |
| OH | Beavercreek, Electro-Corn            | 513-427-2696 |
| OH | Mansfield, Electro-Corn              | 419-756-5846 |
| OR | Beaverton, Elctm. Comp. Sls.         | 503-245-2342 |
| PA | Exton, Linear Sls.                   | 215-524-8080 |
| TX | Richardson, Blackburn Assocs.        | 214-238-8181 |
| UT | Salt Lake City, Luscombe Engrg.      | 801-268-3434 |
| WA | Mercer Island, Elctm. Comp. Sls.     | 206-232-9301 |

## Local Distributors

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | San Jose, Spectra Elctms.               | 408-452-1590 |
| CA | Sherman Oaks, DLDI-Delay Lines Distrib. | 818-986-9455 |
| MA | Sudbury, ASK Elctms.                    | 508-443-5881 |
| PA | Exton, VSH Elctms.                      | 215-363-2250 |

**P.C. BOARDS, INC.**, 210 West Main, Chanute, KS 66720, Tel: 316-431-0406, FAX: 316-431-2013; Empl: 73; Sls. Mgr.: Greg Bilyeu

**PCB PIEZOTRONICS**, 3425 Walden Ave., Depew, NY 14043-2495, Tel: 716-684-0001, TWX: 710-263-1371, FAX: 716-684-0987; Empl: 210

**PCD**, 2 Technology Dr., Peabody, MA 01960, Tel: 508-532-8800, FAX: 508-532-6800; FSC No.: 58982; Sls. Mgr.: A. Arcisz

## Local Sales Offices &amp; Reps

|    |                                                   |              |
|----|---------------------------------------------------|--------------|
| AL | Huntsville, REP, Inc.                             | 205-881-9270 |
| AZ | Tempe, Elctm. Dev. & Sls.                         | 602-848-1571 |
| CA | San Diego, Qualtronics, Inc.                      | 619-695-0118 |
| CA | San Jose, Kottmeier Assocs., Inc.                 | 408-371-8700 |
| CA | Woodland Hills, Precision Connector Designs, Inc. | 818-884-7171 |
| FL | Tampa, APM Assocs.                                | 813-886-2457 |
| GA | Tucker, REP, Inc.                                 | 404-938-4358 |
| IL | Elk Grove Vlg, Control Sls.                       | 708-595-2110 |
| MA | Sharon, S & Y Elctms., Inc.                       | 617-784-6437 |
| MN | Minneapolis, Electro-Tech Assocs., Inc.           | 612-853-0242 |
| MO | St. Louis, Harris Hanson                          | 314-432-3611 |
| NC | Morrisville, REP, Inc.                            | 919-469-9997 |
| OH | Miamisburg, Elctm. Comps., Inc.                   | 513-866-3340 |
| PA | Harrisburg, All-Tech Mktg., Inc.                  | 717-540-1204 |
| PA | West Chester, All-Tech Mktg., Inc.                | 215-344-0134 |
| TN | Jefferson City, REP, Inc.                         | 615-475-9012 |
| TX | Irving, AID Elctms.                               | 214-790-4761 |
| WI | Brookfield, Control Sls.                          | 414-797-9500 |

**P C EXPRESS, INC.**, 15103 U.S. Hwy. 19, Hudson, FL 34667, Tel: 813-863-6114; Empl: 15

**PCI LTD.**, 1530 Parkmoor Ave.-Ste. A, San Jose, CA 95128, Tel: 408-282-0200, FAX: 408-282-0216; Empl: 2500; Sls. Mgr.: Mike Clarke; Dist. Mgr.: Jane Campbell

**PCK ELASTOMERICS, INC.**, See Elastomeric Technologies, Inc.

**PC TRANSFORMER CORP.**, 64 D Nancy St., West Babylon, NY 11704, Tel: 516-491-3300, FAX: 516-491-3689; FSC No.: 62281; Empl: 15; Sls. Mgr.: Stanley L. Goldstein A-2445-2453

**PDS TECHNOLOGIES**, See Power-Pac

**PEARL TECHNOLOGY**, 2988-A Scott Blvd., Santa Clara, CA 95054, Tel: 408-996-9823, FAX: 408-253-2287

**PEARSON ELECTRONICS, INC.**, 1860 Embarcadero Rd., Palo Alto, CA 94303, Tel: 415-494-6444, TELEX: 171-412, FAX: 415-494-6716; FSC No.: 05280; Empl: 16; Sls. Mgr.: Stacey Evensen A-2454

**PECA, INC.**, 592 Winks Lane, Bensalem, PA 19020, Tel: 215-245-1550, FAX: 215-639-3545; Empl: 30; Sls. Mgr.: Joanne Fields

**THE PEDRO COMPANIES**, 104 E. 10th St., St. Paul, MN 55101, Tel: 612-224-9491, FAX: 612-224-8674; Empl: 1000; Sls. Mgr.: Douglas Bieniek

**PENBERTHY, INC.**, 320 Locust St., Prophetstown, IL 61277, Tel: 815-537-2311, TWX: 257-339 PMCO PRWN, FAX: 815-537-5764; Empl: 160

**PENN ENGINEERING & MANUFACTURING CORP.**, 5190 Old Easton Rd. PO Box 1000, Danboro, PA 18916, Tel: 215-766-8853, 800-237-4736, FAX: 215-766-0143; FSC No.: CAGE 46384; Empl: 950; Sls. Mgr.: John E. O'Brien; Dist. Mgr.: Ed Soorkian

**PENN KEYSTONE CORP.**, 30 N. Plains Ind. Ste.13, Wallingford, CT 06492, Tel: 203-294-0537, FAX: 203-294-0361; FSC No.: 03034; Sls. Mgr.: Robert Ginter



**PENN-TRAN CORP., SUB. OF SPECTRUM ELCTRNS. INC.**, Box 1321, Rte. 144N, Wingate, PA 16880, Tel: 814-355-1521, FAX: 814-355-1524; FSC No.: 50783; Empl: 80; Sls. Mgr: Jeffrey Krauss  
**A•1260-1261; D•1857**

*Local Sales Offices & Reps*  
CA Los Altos, Cain-White & Co. .... 415-948-6533  
CA Pasadena, A-F Sls. Engrg, Inc. .... 909-599-4412  
MA Medfield, Nortech ..... 508-359-6063  
MN Minneapolis, International Sls. Co. .... 612-831-8423  
NC Raleigh, Arthur Harris ..... 919-460-8660  
OR Portland, Intertech Sls. .... 503-775-7885  
PA Glenside, Koebert Assocs, Inc. .... 215-887-2310  
TX Dallas, Seaton Corp. .... 214-980-9860

**PENNY & GILES**, 1640 Fifth Street, Suite 224, Santa Monica, CA 90401, Tel: 310-393-1497, FAX: 310-393-6040; Dist. Mgr: Rose Riedel Prod. Mgr.



**FAX: 508-226-5208**

**PENNY & GILES CONTROLS, INC.**, 163 Pleasant St, Attleboro, MA 02703, Tel: 508-226-3008; Empl: 10; Sls. Mgr: Dean T. Bushy ..... **A•2115**

**PENNY & GILES DATA SYSTEMS, INC.**, 1250 Northmeadow Pkwy, Ste. 114, Roswell, GA 30076, Tel: 404-740-0415, FAX: 404-740-0420

**PENNY TECHNOLOGIES, INC.**, 78 Kingsland Ave, Greenpoint, NY 11222, Tel: 718-782-4149, FAX: 718-963-2930; Empl: 54; Sls. Mgr: Jack Russell

**PENRIL DATACOMM NETWORKS**, 1300 Quince Orchard Blvd, Gaithersburg, MD 20878, Tel: 301-921-8600, FAX: 301-921-8376; Empl: 240

**PENSTOCK ENGINEERING LABS.**, Penstock, Inc., 520 Mercury Dr., Sunnyvale, CA 94086-4018, Tel: 408-730-0300, 800-PENSTOCK, FAX: 408-730-4782; Empl: 60; Sls. Mgr: Ken Wadors; Dist. Mgr: Ken Wadors

*Local Distributors*  
CA Penstock Southern CA ..... 1-800-PENSTOCK  
CA Sunnyvale, Penstock, Inc. .... 408-730-0300  
CO Penstock Rocky Mtn. Desert States ..... 1-800-PENSTOCK  
DE Penstock Mid-Atlantic ..... 1-800-PENSTOCK  
FL Penstock Florida ..... 1-800-PENSTOCK  
GA Penstock South ..... 1-800-PENSTOCK  
IL Penstock Midwest ..... 1-800-PENSTOCK  
MA Penstock New England ..... 1-800-PENSTOCK  
NJ Penstock East ..... 1-800-PENSTOCK  
TX Penstock Texas ..... 1-800-PENSTOCK  
WA Penstock Northwest ..... 1-800-PENSTOCK  
Can Penstock Canada ..... 1-800-736-7862

**PENTA LABORATORIES, INC.**, 21113 Superior St, Chatsworth, CA 91311, Tel: 818-882-3872, 800-421-4213, TELEX: 95-4295 798, FAX: 818-882-3368; Empl: 50; Sls. Mgr: Richard Sanett

**PENTICA SYSTEMS, INC.**, 19A Crosby Dr, Bedford, MA 01730, Tel: 617-275-4419, FAX: 617-275-6514; FSC No.: 04-2978461; Empl: 6; Sls. Mgr: Pete Kurpis

**PERCON, INC.**, 1720 Willow Creek Circle, Ste. 530, Eugene, OR 97402-9153, Tel: 1-800-8-PERCON, 503-344-1189, FAX: 503-344-1399; Empl: 32; Sls. Mgr: Sls. Dept.; Dist. Mgr: Doug Wilson, Dir. Mktg./Sls.

**PERFECT GEAR & INSTRUMENT**, Designatronics, Inc., 2101 Jericho Tpke, Box 5416, New Hyde Park, NY 11042-5416, Tel: 516-328-3300, TWX: 510-223-0642, FAX: 516-326-8827; Empl: 210; Sls. Mgr: Murray Ores

**PERFECTION MICA CO.**, See Magnetic Shield Corp.

**PERFORMANCE CONTROLS, INC.**, 433 Caredean Drive, Horsham, PA 19044, Tel: 215-675-6500, TELEX: 88-1478, FAX: 215-674-8714; FSC No.: 61773; Empl: 40

**PERFORMANCE ELECTRONIC PACKAGING SERVICES**, 6354-B Corte Del Abeto, Carlsbad, CA 92009, Tel: 619-931-7824

**PERFORMANCE MOTION DEVICES**, 11 Carriage Dr, Chelmsford, MA 01824, Tel: 508-256-1913, FAX: 508-256-0206; Empl: 6; Sls. Mgr: Erik Valeur; Dist. Mgr: Erik Valeur

**PERFORMANCE SEMICONDUCTOR CORP.**, 610 E. Weddell Dr, Sunnyvale, CA 94089, Tel: 408-734-8200

**PERIPHERAL RESOURCES**, 9911 W. Pico Blvd., Ste. B-215, Los Angeles, CA 90035, Tel: 310-552-3888, 800-533-2297, FAX: 310-552-2806; Empl: 11; Sls. Mgr: Bill Dwyer

**PERIPHERALS**, 1363 Logan Ave., Costa Mesa, CA 92626, Tel: 714-540-4925, 800-468-6888, FAX: 714-540-2026; Empl: 20; Sls. Mgr: Sandra Weller

**PERMALUSTER, INC.**, 1844 N. Keystone St, Burbank, CA 91504, Tel: 213-849-4543, 213-849-6454, FAX: 818-566-4232; Empl: 6; Sls. Mgr: J. Ross

**PERMA POWER ELCTRNS.**, 5601 W. Howard Ave., Niles, IL 60714, Tel: 312-763-0763, FAX: 312-763-8330; Empl: 80/100; Sls. Mgr: Michael Shatz; Dist. Mgr: Michael Shatz

**PERRY AMPLIFIER**, 138 Fuller St, Brookline, MA 02146, Tel: 617-734-0844, FAX: 617-734-0844; Empl: 14; Sls. Mgr: N. Geskos

**PERX, INC.**, 525 Tamal Plaza, Corte Madera, CA 94925, Tel: 415-927-0155, FAX: 415-927-0159; Empl: 5

**PETER PARTS & ASSOCS.**, 82 E. Main St, Webster, NY 14580, Tel: 716-265-2540, FAX: 716-265-2542; Sls. Mgr: Peter Parts

**PFC**, See Southern Elctns. Co. Inc.

**P.G. ELECTRONICS LTD.**, 800 Arrow Rd., 8, Weston, Ont., Canada M9M2Z8, Tel: 416-741-7682, FAX: 416-741-9927; FSC No.: 38243

**PHASETRONICS INC./MOTORTRONICS INC.**, 13214-38th St North, Clearwater, FL 34622, Tel: 813-573-1900, FAX: 813-573-1803; Empl: 400; Sls. Mgr: Karen Alberts

**PHELPS DODGE MAGNET WIRE**, P.O. Box 600, Ft. Wayne, IN 46801, Tel: 219-458-4444, 800-255-CLIC (2542), FAX: 219-422-1667; Empl: 1,000; Sls. Mgr: D.R. Disque, Mktg. VP

**PHENIX TECHNOLOGIES**, Central Garrett Ind'l Pk, Accident, MD 21520, Tel: 301-748-8118, FAX: 301-895-5570; Empl: 45; Sls. Mgr: Bill Robeson

**PHILADELPHIA INSULATED WIRE CO. INC.**, General Cable Corporation, 4 Tessenor Drive, Highland Heights, KY 40176, Tel: 606-572-8306, 800-257-8357, FAX: 800-547-8249; Empl: 140; Sls. Mgr: Michael F. Wells

**PHILIPS AUDIO VIDEO SYS. CORP.**, See AKG Acoustics

**PHILIPS CIRCUIT ASSEMBLIES**, 3602 W. Waters Avenue, Tampa, FL 33614-2797, Tel: 813-933-5113, TELEX: 3727509, FAX: 813-932-1373; Sls. Mgr: Keith Weil

**Philips Components Discrete Products Division**  
A North American Philips Company

**FAX: 407-881-3300**

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIVISION, A North American Philips Company**, 2001 W. Blue Heron Blvd, Riviera Beach, FL 33404, Tel: 407-881-3200, TELEX: 136461, TWX: 810-848-0228, Dist. Mgr: Jess Hall  
**A•1144-1148, 2010-2012, 2150-2170; B•1015, 1336-1338, 1888-1889; D•1403**

*Local Sales Offices & Reps*  
AL Huntsville, Over & Over Inc. .... 205-837-7105  
AZ Tempe, Philips Comps. .... 602-820-2225  
CA Santa Clara, Technlg. Sls. Inc. .... 408-727-7200  
CA Signal Hill, Harper & Strong, Inc. .... 310-424-3030  
CA Sunnyvale, Philips Comps. .... 408-991-2294  
CO Englewood, Philips Comps. .... 303-779-9696  
FL Altamonte Springs, Over & Over, Inc. .... 407-339-5073  
FL Ft. Lauderdale, Over & Over, Inc. .... 305-485-0115  
GA Norcross, Over & Over, Inc. .... 404-449-6205  
GA Roswell, Philips Comps. .... 404-992-0150  
IL Libertyville, GMR Sls, Inc. .... 708-367-8440

IL Rolling Meadows, Philips Comps. .... 708-670-9494  
IN Fort Wayne, Corrao Marsh, Inc. .... 219-482-2725  
IN Green Field, Corrao Marsh, Inc. .... 317-462-4446  
IN Kokomo, Philips Comps. .... 317-456-1615  
IA Cedar Rapids, Lorenz Sls, Inc. .... 319-377-4666  
KS Overland Pk, Lorenz Sls. Inc. .... 913-469-1312  
KS Wichita, Lorenz Sls, Inc. .... 316-721-0500  
MA Woburn, Philips Comps. .... 617-932-4748  
MI Farmington Hills, Philips Comps. .... 313-553-6010  
MN Minneapolis, Electric Comp. Sls, Inc. .... 612-933-2594  
MO St. Louis, Lorenz Sls, Inc. .... 314-997-4558  
NE Lincoln, Lorenz Sls, Inc. .... 402-475-4660  
NJ Englewood Cliffs, ED Glass Assocs. .... 201-592-0200  
NJ Parsippany, Philips Comps. .... 201-455-1507  
NY East Rochester, Empire Tech. Assoc., Inc. .... 716-381-8500  
NY Edwell, Empire Tech. Assocs., Inc. .... 607-754-8756  
NY Skaneateles, Empire Tech. Assoc., Inc. .... 315-685-5703  
NC Charlotte, Over & Over, Inc. .... 704-542-9111  
NC Raleigh, Over & Over, Inc. .... 919-876-7338  
NC Raleigh, Philips Comps. .... 919-782-3334  
OH Dayton, Philips Comps. .... 513-436-0066  
OH Wickliffe, Philips Comps. .... 216-731-7721  
OR Beaverton, Eclipse Mktg. Grp. .... 503-642-1661  
PA Willow Grove, Philips Comps. .... 215-659-6096  
TN Greenville, Philips Comps. .... 615-639-0251  
TX Austin, Philips Comps. .... 512-331-8828  
TX Houston, Philips Comps. .... 713-272-8086  
TX Richardson, Philips Comps. .... 214-231-8274  
WA Redmond, Eclipse Mktg. Grp. .... 206-885-6991  
WA Spokane, Eclipse Mktg. Grp. .... 509-922-3972  
WI New Berlin, Philips Comps. .... 414-785-6509  
PR Caparra Hgts., M. Anderson Co. Inc. .... 809-793-6544  
CA Scarborough, Ont, Philips Comps. .... 416-292-5161

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIV., A North American Philips Co.**, 1033 Kings Hwy., Saugerties, NY 12477, Tel: 914-246-2811, TWX: 510-247-5410, FAX: 914-247-0486, 914-246-0487; FSC No.: 02114; Sls. Mgr: B. Grindle

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIV., A North American Philips Co.**, 1440 W. Indiantown Rd, Jupiter, FL 33458, Tel: 407-744-4200, FAX: 407-863-1811; Sls. Mgr: Bill Winther  
**A•1144, 1147-1148; B•1015**

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIV., A North American Philips Co.**, 6071 St. Andrews Rd, Columbia, SC 29212-3198, Tel: 803-772-2500, TELEX: 805024, FAX: 803-772-2445; Sls. Mgr: Bill Cvirko  
**A•1145-1146**

**DC Aluminum Electrolytic Capacitors** (Computer Grade, Radial) Indl. & Consumer AC Motor Starts, Film Capacitors (Film/Foil, Metallized) Tantalum Capacitors (Foil) Film Trimmer Capacitors

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIVISION**, Airport Road, P.O. Box 760, Mineral Wells, TX 76067, Tel: 817-325-7871, FAX: 817-325-1052; Sls. Mgr: Richard Swingen  
**A•2010-2012; B•1888-1889**

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIV., Professional Components Grp.**, 100 Providence Pike, Slatersville, RI 02876, Tel: 401-762-3800, FAX: 401-767-4493; FSC No.: 73445; Dist. Mgr: Jeff Brooke-Stewart  
**A•2150-2170**

**PHILIPS COMPONENTS DISCRETE PRODUCTS DIV., Discrete Semiconductor Group**, 100 Providence Pike, Slatersville, RI 02876-2078, Tel: 401-762-3800, FAX: 401-767-4493  
**A•2150-2170; B•1336-1338**

**Philips ECG**

A North American Philips Company

**FAX: 717-323-4691**

**PHILIPS ECG, North American Philips Co.**, 1025 Westminster Dr., Williamsport, PA 17701, Tel: 717-323-4691; Sls. Mgr: L.R. Brophy, Gen. Mgr. Mktg.; Dist. Mgr: E. H. Frost  
**A•2172-2173**

*Local Sales Offices & Reps*  
CA Byron, Philips ECG ..... 510-634-9879  
CA Gardena, Bidwell Schwartz Assoc. .... 213-770-0300  
FL Ft. Lauderdale, Hawkins Frederickson Assoc. .... 305-321-6702



|     |                                       |              |
|-----|---------------------------------------|--------------|
| FL  | Maitland, Hawkins Frederickson Assoc. | 407-831-2474 |
| GA  | Atlanta, Millar Elctns.               | 404-634-3350 |
| MA  | Woburn, Philips ECG                   | 617-932-4748 |
| MI  | Farmington Hills, R.C. Merchant & Co. | 313-476-4600 |
| MO  | Kansas City, Philips ECG              | 816-741-4019 |
| NY  | Seneca Falls, Philips ECG             | 315-568-5875 |
| OH  | Dayton, Philips ECG                   | 919-828-8840 |
| PA  | Emporium, JSH Sls. Co.                | 513-436-0066 |
| TX  | Richardson, Philips ECG               | 814-486-1311 |
| Can | Dorval, Que., ECG Canada Inc.         | 214-231-8274 |
|     |                                       | 514-685-5800 |

**PHILIPS SEMICONDUCTORS, Philips Electronics**, 811 E. Arques Ave., P.O. Box 3409, Sunnyvale, CA 94088-3409, Tel: 408-991-2000, FAX: 408-991-2311; FSC No.: 1CH66; Empl: 20,000; Sls. Mgr.: Jim Feijoo; Dist. Mgr.: Vinnie Bonanno

### Philips Technologies

A Philips Electronics North America Company



**PHILIPS**

**FAX: 203-271-6522**

**PHILIPS TECHNOLOGIES, North American Philips Corporation**, 7 McKee Place, Cheshire, CT 06410, Tel: 203-271-6525; Empl: 4000; Sls. Mgr.: R.F. Kamm

**PHILIPS TECHNOLOGIES, Airpax Mechatronics Group**, 604 West Johnson Ave., Cheshire, CT 06410, Tel: 203-271-6000, FAX: 203-271-6400; Empl: 350; Sls. Mgr.: Ron Barbieri

**PHILIPS TECHNOLOGIES, Airpax Protector Group**, 807 Woods Road, Cambridge, MD 21613, Tel: 410-228-4600, FAX: 410-228-8910; FSC No.: 81541; Empl: 1100; Sls. Mgr.: S. Monaghan (CBS)/C. Tinley (MCPS) **B-1378**

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, BCI                     | 205-539-4411 |
| AZ | Tempe, Westrep                      | 602-820-9932 |
| CA | Anaheim, Westrep                    | 714-527-2822 |
| CA | San Diego, Westrep                  | 619-566-6580 |
| CA | San Jose, Philips Technlgs.         | 408-453-5129 |
| CO | Littleton, Lange Sls.               | 303-795-3600 |
| GA | Lawrenceville, BCI                  | 404-962-6826 |
| ID | Boise, Lange Sls., Inc.             | 208-323-0713 |
| IL | Lake Zurich, Somers-Stanton, Inc.   | 708-438-2999 |
| IN | Indianapolis, Philips Technlgs.     | 317-573-9911 |
| IA | Cedar Rapids, Rep Assocs.           | 319-373-0152 |
| MA | Westborough, Philips Technlgs.      | 508-366-7313 |
| MI | Farmington Hills, Philips Technlgs. | 313-553-6030 |
| MN | Eagan, Philips Technlgs.            | 612-683-9007 |
| NY | Rochester, Philips Technlgs.        | 716-654-7470 |
| NY | Syosset, Philips Technlgs.          | 516-364-1217 |
| OH | Dayton, Baehr, Greenleaf & Assocs.  | 513-439-0724 |
| OH | Westlake, Baehr, Greenleaf          | 216-892-1770 |
| OR | Beaverton, Philips Technlgs.        | 503-641-6130 |
| PA | Pittsburgh, Russell F. Clark        | 412-242-9500 |
| TX | Dallas, Philips Technlgs.           | 214-851-7433 |
| UT | Salt Lake City, Lange Sls.          | 801-487-0843 |
| WI | Wauwatosa, Larson Assocs.           | 414-258-0529 |

**PHILIPS TECHNOLOGIES, Airpax Protector Group**, Husky Park, Frederick, MD 21701, Tel: 301-663-5141, FAX: 301-698-0624; Empl: 600; Sls. Mgr.: Fred Dietzel **B-1891**

#### Local Sales Offices & Reps

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|----|--------------------------------------|--------------|
| AL | Huntsville, B.C.I.                   | 205-539-4411 |
| AZ | Tempe, Westrep                       | 602-820-9932 |
| CA | Anaheim, Westrep                     | 714-527-2822 |
| CA | San Diego, Westrep                   | 619-566-6580 |
| CA | San Jose, Philips Technlgs.          | 408-453-5129 |
| CO | Littleton, Lange Sls.                | 303-795-3600 |
| GA | Lawrenceville, B.C.I.                | 404-962-6826 |
| ID | Boise, Lange Sls., Inc.              | 208-323-0713 |
| IL | Lake Zurich, Somers-Stanton Inc.     | 708-438-2999 |
| IN | Indianapolis, Philips Technlgs.      | 317-573-9911 |
| IA | Cedar Rapids, Rep Assocs., Inc.      | 319-373-0152 |
| MA | Westborough, Philips Technlgs.       | 508-366-7313 |
| MI | Farmington Hills, Philips Technlgs.  | 313-553-6030 |
| MN | Eagan, Philips Technlgs.             | 612-683-9007 |
| NY | Rochester, Philips Technlgs.         | 716-654-7470 |
| NY | Syosset, Philips Technlgs.           | 516-364-1217 |
| OH | Dayton, Baehr, Greenleaf & Assocs.   | 513-439-0724 |
| OH | Westlake, Baehr, Greenleaf & Assocs. | 216-892-1770 |
| OR | Beaverton, Philips Technlgs.         | 503-641-6130 |
| PA | Pittsburgh, Russell F. Clark Co.     | 412-242-9500 |
| TX | Dallas, Philips Technlgs.            | 214-851-7433 |

|    |                            |              |
|----|----------------------------|--------------|
| UT | Salt Lake City, Lange Sls. | 801-487-0843 |
| WI | Wauwatosa, Larson Assocs.  | 414-258-0529 |

**PHILIPS TECHNOLOGIES, Airpax Instruments**, 150 Knottor Drive, Cheshire, CT 06410, Tel: 203-271-6000, TELEX: 962421, TWX: 710-455-4048, FAX: 203-271-6100; Empl: 200; Sls. Mgr.: Ron Cimino **D-1168**

#### Local Sales Offices & Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| AZ | Tempe, Westrep                         | 602-820-9932 |
| CA | Anaheim, Westrep                       | 714-527-2822 |
| CA | San Diego, Westrep                     | 619-566-6580 |
| CA | San Jose, Philips Technlgs.            | 408-453-5129 |
| CO | Littleton, Lange Sls., Inc.            | 303-795-3600 |
| ID | Boise, Lange Sls., Inc.                | 208-323-0713 |
| IL | Lake Zurich, Somers-Stanton Inc.       | 708-438-2999 |
| IN | Indianapolis, Philips Technlgs.        | 317-573-9911 |
| IA | Cedar Rapids, Rep Assocs.              | 319-373-0152 |
| MA | Westborough, Philips Technlgs.         | 508-366-7313 |
| MI | Farmington Hills, Philips Technlgs.    | 313-553-6030 |
| MN | Eagan, Philips Technlgs.               | 612-683-9007 |
| NY | Rochester, Philips Technlgs.           | 716-654-7470 |
| NY | Syosset, Philips Technlgs.             | 516-364-1217 |
| OH | Dayton, Baehr, Greenleaf & Assocs.     | 513-439-0724 |
| OH | Westlake, Baehr, Greenleaf, & Assocs.  | 216-892-1770 |
| OR | Beaverton, Philips Technlgs.           | 503-641-6130 |
| PA | Warrendale, Baehr, Greenleaf & Assocs. | 412-934-3088 |
| TX | Dallas, Philips Technlgs.              | 214-851-7433 |
| UT | Salt Lake City, Lange Sls.             | 801-487-0843 |
| WI | Wauwatosa, Larsen Assocs.              | 414-258-0529 |

#### Local Distributors

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AL | Birmingham, Dwight D. Prouty              | 205-988-8110 |
| AL | Mobile, Dwight D. Prouty                  | 205-476-5056 |
| CA | Costa Mesa, FLW Inc.                      | 714-751-7512 |
| CA | San Jose, MANCO                           | 408-496-6611 |
| CO | Denver, Q.E.D., Inc.                      | 303-825-5011 |
| CT | Milford, Motors & Drives, Inc.            | 203-877-6509 |
| FL | St. Lauderdale, Indl. Instrs.             | 305-971-0209 |
| FL | Tampa, Wacco Inc.                         | 813-621-6441 |
| GA | Marietta, Control Equip. Co.              | 404-427-8776 |
| ID | Boise, Radar Elec. Co., Inc.              | 208-336-2227 |
| IL | Countryside, Chicago Chain & Transmission | 708-482-9000 |

|     |                                        |              |
|-----|----------------------------------------|--------------|
| IN  | Mishawaka, Power Comps. of Midwest     | 219-256-6630 |
| IA  | Cedar Rapids, Van Meter Co.            | 319-366-5301 |
| IA  | Des Moines, Kim Controls               | 515-274-9194 |
| KY  | Louisville, Automatic Controls         | 502-426-4666 |
| LA  | Baton Rouge, D & W Sys. Sls.           | 504-753-0992 |
| LA  | Kenner, D & W Sys. Sls.                | 504-466-1692 |
| MA  | Hingham, Hingham Bay Corp.             | 617-740-1900 |
| MI  | Detroit, Automatic Controls            | 313-533-8890 |
| MN  | Minneapolis, Kim Controls              | 612-780-2991 |
| MO  | Fenton, Hi-Tech Elec.                  | 314-343-6060 |
| NH  | Manchester, Industrial Control Sys.    | 603-625-2900 |
| NY  | Amherst, N.E. Controls of Buffalo      | 716-691-0081 |
| NY  | Clifton Park, N.E. Controls of Buffalo | 518-371-4413 |
| NY  | New Hyde Park, I/O Corp.               | 516-355-0130 |
| NY  | Thompson Ridge, Vespo Mktg.            | 914-361-2800 |
| NC  | Charlotte, McGuire & Crawford          | 704-366-3454 |
| OH  | Brunswick, Automatic Controls          | 216-273-1117 |
| OH  | Cleves, ATR Distrs.                    | 513-353-1800 |
| OR  | Portland, Radar Elec. Co., Inc.        | 503-232-3404 |
| PA  | Fl. Washington, I/O Corp.              | 215-641-1870 |
| PA  | Pittsburgh, Friday Engrg.              | 412-341-1444 |
| PA  | Pittsburgh, Gilson Engrg. Sls.         | 412-369-0100 |
| TX  | Dallas, Automatic Sys.                 | 214-688-1810 |
| TX  | Houston, The Haltom Co.                | 713-782-5625 |
| VA  | Richmond, Process Specialties          | 804-794-2511 |
| VA  | Salem, Process Specialties             | 703-563-0707 |
| WA  | Richland, Radar Elec. Co., Inc.        | 509-943-8336 |
| WA  | Seattle, Radar Elec. Co., Inc.         | 206-282-2511 |
| WA  | Spokane, Radar Elec. Co., Inc.         | 509-747-3053 |
| WV  | Charleston, Gilson Engrg Sls.          | 304-342-0012 |
| WI  | New Berlin, Electric Sales & Engrg.    | 414-782-2400 |
| Can | Ontario, Leonard Elec. Ltd.            | 416-829-1200 |
| Can | Vancouver, Southwell Controls, Ltd.    | 604-980-3688 |

**PHILIPS TECHNOLOGIES, Automotive Electronics Group**, Cheshire Indl. Pk., Box E, Cheshire, CT 06410, Tel: 203-271-6000, TWX: 710-455-4048, FAX: 203-271-6100; Empl: 800; Sls. Mgr.: Jim Richford

**PHILIPS TECHNOLOGIES, Philips Key Modules Group**, 2001 Gateway Place, Ste. 650 West, San Jose, CA 95110, Tel: 408-453-7373, FAX: 408-453-6444; Empl: 10; Sls. Mgr.: Arend Verweij

**PHILMORE MANUFACTURING**, 2240 15th St. P.O. Box 6386, Rockford, IL 61125-1386, Tel: 815-229-7773, FAX: 815-229-7785; Empl: 18

**PHI TECHNOLOGIES, INC.**, 4605 North Stiles, Oklahoma City, OK 73105, Tel: 405-521-9000, TWX: 910-831-3286, FAX: 405-524-4254; Empl: 40; Sls. Mgr.: Robert P. Gelemter

**PHOENIX CONTACT INC.**, P.O. Box 4100, Harrisburg, PA 17111, Tel: 717-944-1300, FAX: 717-944-1625; Sls. Mgr.: Howard C. Minnick, Jr.; Dist. Mgr.: Mark F. Gilliford

**PHOENIX MICROSYSTEMS**, 991 Discovery Dr., Huntsville, AL 35806, Tel: 205-922-1200, TELEX: 752592, FAX: 205-837-1256; Empl: 100

**PHOENIX MICROWAVE**, 100 Emlen Way, Telford, PA 18969, Tel: 215-723-6011, FAX: 215-723-6015; Empl: 53; Sls. Mgr.: Joseph Diesso, VP Sls. & Mktg.



**PHOENIX WIRE, INC.**, 100 Teflon Ave., S. Hero, VT 05486, Tel: 802-372-4561; Empl: 25; Sls. Mgr.: Ohmer Corbin; Dist. Mgr.: Ohmer Corbin **C-1802**

**PHONON CORPORATION**, 7 Herman Drive, P.O. Box 549, Simsbury, CT 06070, Tel: 203-651-0211, TELEX: 294705, FAX: 203-651-8618; FSC No.: 6Y858; Empl: 20

**PHOTON, INC.**, 1115 Space Park Dr., Santa Clara, CA 95054-3432, Tel: 408-492-9449, FAX: 408-492-9659; Sls. Mgr.: J. M. Darchuk

**PHOTO RESEARCH/KOLLMORGEN**, 9330 DeSoto Ave./PO Box 2192, Chatsworth, CA 91313-2192, Tel: 818-341-5151, FAX: 818-341-7070; FSC No.: 92434; Empl: 66; Sls. Mgr.: M. L. Woolsey

**PHYSICS INTERNATIONAL CO.**, Olin Defense Systems Grp., 2700 Merced St., San Leandro, CA 94577, Tel: 415-577-7236, TWX: 910-366-7033; Empl: 360

**PIC DESIGN, Remington Technologies, Inc.**, P.O. Box 1004, Middlebury, CT 06762, Tel: 203-758-8272, TWX: 910-997-0989, FAX: 203-758-8271; FSC No.: 00141; Empl: 100; Sls. Mgr.: Gary Hampton

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# PICO Electronics, Inc.

**FAX: 914-699-5565**

**PICO ELECTRONICS, INC.**, 453 North MacQuesten Pkwy., Mt. Vernon, NY 10552, Tel: 914-699-5514, 800-431-1064; FSC No.: 31669; Sls. Mgr.: Joe Sweeney  
**A-1263-1273, 2455-2505; D-1859-1873, 2137-2185**

## Local Sales Offices & Reps

CA Santa Clara, Fisher Assocs. .... 408-733-7350  
 IN Ft. Wayne, Denton Mktg., Inc. .... 219-486-0665/1264  
 WA Seattle, W. Spaulding Co. .... 206-282-9173

**PICONICS, INCORPORATED**, 26 Cummings Road, Tyngsboro, MA 01879, Tel: 508-649-7501, FAX: 508-649-9643; FSC No.: 26618; Empl: 48; Sls. Mgr.: Virgilius Di Biase  
**A-1274-1275, 2013**

## Local Sales Offices & Reps

AL Huntsville, Murco Corp. .... 205-539-8476  
 AZ Tempe, Semper-Fi Sls. .... 602-730-9553  
 CA Cupertino, Alpha Inds., Inc. .... 408-446-5333  
 CA N. Hollywood, Jewett Co. .... 818-789-8103  
 CA North, Alpha Ind., Inc. .... 408-446-5628  
 CO Parker, Mikro Sls. Co. .... 303-841-4131  
 FL Lighthouse Point, R.C. Simon & Co. .... 305-941-2757  
 IL No. IL & WI, R.H.I. Sls. .... 708-888-0099  
 IN Huntington, Rixan Assoc. .... 513-278-1233  
 MD Kensington, Koebert Assocs. .... 301-493-8924  
 MA Chelmsford, Advanced Tech. Mktg. .... 508-458-0200  
 MN Minneapolis, Peterson Sls. Assocs. .... 612-835-5281  
 MO Grandview, Harris-Hanson Co. .... 816-763-6200  
 MO St. Louis, Harris-Hanson Co. .... 314-432-3611  
 NY Rochester, J.G. Welch .... 716-244-1100  
 NC Winston-Salem, Murco Corp. .... 919-722-9445  
 OH Cincinnati, Rixan Assoc. .... 513-278-1233  
 OH Dayton, Rixan .... 513-222-0011  
 OK Bethany, El-Tec Sls. .... 405-789-5911  
 PA Bedford, NJ Koebert Assocs. .... 215-576-1329  
 PA Glenside, Koebert Assocs. Inc. .... 215-887-2310  
 TX Ft. Worth, El-Tec Sls. .... 817-268-2896  
 VA Alexandria, Koebert .... 703-461-3655

# CAL SWITCH

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 [213] 770-2330  
 [714] 525-6606  
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 [408] 279-8848  
 [510] 452-1009  
 [916] 448-6370  
 [209] 441-1725


**[800] CAL-SWCH**

WA Bellevue, Call Factory ..... 508-649-7501  
 WV Inwood, Koebert & Assocs., Inc. .... 304-229-8401

**PICOSECOND ATE INC.**, P.O. Box 1080, Beaverton, OR 97075, Tel: 503-641-3295, FAX: 503-646-3778; Empl: 2

## Local Sales Offices & Reps

OR Beaverton, picosecond ATE Inc. .... 503-641-3295

**PICOSECOND PULSE LABS, INC.**, P.O. Box 44, Boulder, CO 80306, Tel: 303-443-1249, FAX: 303-447-2236; Empl: 7; Sls. Mgr.: J.R. Andrews; Dist. Mgr.: J.R. Andrews

**PIEZO CRYSTAL CO.**, 100 K St., Box 619, Carlisle, PA 17013, Tel: 717-249-2151, FAX: 717-249-7861; FSC No.: 74306; Empl: 250; Sls. Mgr.: Glenn R. Kurzenknabe

**PIEZO ELECTRIC PRODUCTS, INC.**, 212 Durham Ave., Metuchen, NJ 08840, Tel: 908-548-2800, FAX: 908-548-3625; Empl: 75; Sls. Mgr.: M.R. Scarillo

**PIEZO KINETICS INC.**, P.O. Box 756, Pine and Mill Streets, Bellefonte, PA 16823, Tel: 814-355-1593, FAX: 814-355-4342; FSC No.: 5Y690; Empl: 28; Sls. Mgr.: Harry D. Shirey

**PIEZO TECHNOLOGY INC.**, 2525 Shader Rd., Orlando, FL 32804, Tel: 407-298-2000, FAX: 407-293-2979; FSC No.: 25120; Sls. Mgr.: Paul Dechen

**PIHER INTERNATIONAL CORP., NACESA**, 903 Feehanville Dr., Mt. Prospect, IL 60056, Tel: 708-390-6680, 800-323-6693, FAX: 708-390-9866; FSC No.: 54869; Empl: 13; Sls. Mgr.: Kimberly Mack, Sls. Supp. Mgr.



# PILLAR INDUSTRIES

**FAX: 818-358-0398**

**PILLAR INDUSTRIES, INC.**, 1780 Evergreen Street, Duarte, CA 91010, Tel: 818-358-1337; Empl: 3  
**D-1874-1877**

## Local Sales Offices & Reps

CA Los Angeles, Power Partner, Inc. .... 310-215-0800  
 CA Oxnard, Power Partner .... 805-659-5356  
 CA Santa Clara, Foresight .... 408-980-9700  
 WA Lynnwood, Blair Hirsh .... 206-775-8151

**PIND TESTERS INC.**, 13805 Alton Parkway, Ste. B, Irvine, CA 92718, Tel: 714-457-1090, FAX: 714-457-1378; FSC No.: 66; Empl: 15; Sls. Mgr.: C. Ditten

**PINE INSTRUMENT CO.**, 101 Industrial Dr., Grove City, PA 16127, Tel: 412-458-6391, FAX: 412-458-4648; Empl: 60

**PIONEER COMPONENTS**, 2352 E. 66th St., Brooklyn, NY 11234, Tel: 718-444-3880; Empl: 3; Sls. Mgr.: Michael R. Verter; Dist. Mgr.: Michael R. Verter

**PIONEER MAGNETICS**, 1745 Berkeley St., Santa Monica, CA 90404, Tel: 310-829-6751, FAX: 310-453-3929; FSC No.: 08676; Empl: 310; Sls. Mgr.: Michael B. MacKrell  
**D-1879-1881**

## Local Sales Offices & Reps

AL Huntsville, Pen-Tech Assocs. .... 205-881-9298  
 AZ Scottsdale, Williams Assocs. .... 602-947-4297  
 CA Signal Hill, Thorson Co. .... 310-595-0361  
 CO Commerce City, Williams Assocs. .... 303-289-5647  
 FL West Palm Beach, Pen-Tech Assocs. .... 407-640-0800  
 GA Roswell, Pen-Tech Assocs. .... 404-642-4110  
 IL Arlington Hgts., Hill Sales .... 708-255-4400  
 MD Columbia, Stein Instrmn. .... 301-596-3748  
 MN St. Paul, Cahill, Schmitz & Cahill .... 612-646-7217  
 NJ Lee's Summit, Omni Tech. Sls. .... 816-578-4221  
 MO Glen Gardner, Daner-Hayes Inc. .... 201-537-4534  
 NM Albuquerque, Williams Assocs. .... 505-255-1368  
 NY Vestal, D. H. Technigs. .... 716-359-4652  
 NC Greensboro, Pen-Tech Assocs. .... 919-852-6000  
 OH Dublin, KRW Sls. Inc. .... 614-885-2598  
 OH Westlake, KRW Sales .... 216-871-7521  
 PA Cheltenham, Stein Instrmn. .... 215-379-1990  
 TX Dallas, Kruvand .... 214-437-3355  
 UT Salt Lake City, Williams Assocs. .... 801-485-6511  
 WA Redmond, Halbar-RTS .... 206-882-0990

**PIONEER RESEARCH, INC.**, 1745 Berkeley St., Santa Monica, CA 90404, Tel: 310-829-6751, FAX: 310-453-3929; Empl: 450; Sls. Mgr.: F. Heath

**PIRELLI CABLE CORP.**, See Specialty Cable Corp.

# PITTMAN

**FAX: 215-256-1338**

**PITTMAN, Penn Engrg. & Mfg. Corp.**, 343 Godshall Dr., Harleysville, PA 19438, Tel: 215-256-6601; FSC No.: 98938; Empl: 180  
**B-1304-1305**

## Local Sales Offices & Reps

AZ Fountain Hills, Halbar Assocs. .... 602-837-2464  
 CA Leucadia, Halbar Assocs. .... 619-942-4075  
 CA San Mateo, Halbar North, Inc. .... 415-349-4700  
 CA Van Nuys, Halbar Assocs. .... 818-906-3941  
 CO Englewood, Integrated Motion Sys. .... 303-792-5516  
 CT Bristol, M. L. Assocs., Inc. .... 203-589-2856  
 FL Fort Lauderdale, Motion Controls, Inc. .... 305-434-4197  
 GA Suwanee, Overton Assocs. Inc. .... 404-497-0166  
 IL Mount Prospect, K-W Assocs. .... 708-253-6680  
 IN Elkhart, Shaum Mfg., Inc. .... 219-264-0771  
 MA Wayland, M. L. Assocs. .... 508-358-5540  
 NY Glen Head, Marcus Sls. Assocs., Inc. .... 516-671-6820  
 NY Rochester, Application Spec. .... 716-586-6226  
 NC Raleigh, Overton Assocs. Inc. .... 919-469-5190  
 OH Cleveland, Servo-Mark .... 216-871-2353  
 OK Edmond, Motion Reps, Inc. .... 405-340-8100  
 OR Tigard, Halbar-RTS, Inc. .... 503-624-5741  
 PA Exton, Kiley Elect. Co., Inc. .... 215-363-8550  
 SC Walhalla, Overton Assocs. Inc. .... 803-638-7101  
 TN New Tazewell, Overton Assocs. Inc. .... 615-626-6009  
 TX Austin, Motion Reps, Inc. .... 512-288-5758  
 TX Carrollton, Motion Reps Inc. .... 214-492-0106  
 TX Denton, Motion Reps, Inc. .... 817-382-4159  
 TX Houston, Motion Reps, Inc. .... 713-981-8700  
 WA Redmond, Halbar-RTS, Inc. .... 206-882-0990  
 Can Woodbridge, Ont., Electomate Indl. Sls. Ltd. .... 416-850-7447

**PIXELOGIC INC.**, 1200 N.E. Keyes Rd., Vancouver, WA 98684, Tel: 206-253-5033, FAX: 206-253-5033; Empl: 5

**PIXELWORKS, INC.**, 7 Park Ave., Hudson, NH 03051, Tel: 603-880-1322, FAX: 603-880-6558; Empl: 15; Sls. Mgr.: Michael Jannery; Dist. Mgr.: A. Straume

**PLAINVIEW BATTERIES, INC.**, 23 Newtown Rd., Plainview, NY 11803, Tel: 800-642-2354, FAX: 516-249-2876; Sls. Mgr.: B. Erde  
**D-1459-1461**

**PLAINVIEW ELECTRONICS**, See Plainview Batteries, Inc.

**PLANAR SYSTEMS, INC.**, 1400 N.W. Compton Dr., Beaverton, OR 97006-1992, Tel: 503-690-1100, FAX: 503-690-1244; FSC No.: 5Z179; Empl: 121; Sls. Mgr.: Gary Baughn

**PLANT SPECIALTIES, INC.**, P.O. Box 110537, Carrollton, TX 75011-0537, Tel: 214-245-9673, FAX: 214-245-9673; Sls. Mgr.: J. E. Bryer

**PLASTIC CAPACITORS, INC.**, 2623 N. Pulaski Rd., Chicago, IL 60639, Tel: 312-489-2229, FAX: 312-489-0496; FSC No.: 99120; Empl: 60; Sls. Mgr.: Thomas J. Brown; Dist. Mgr.: Thomas J. Brown

**PLASTICORP**, 24105 S. Frampton Ave., Harbor City, CA 90710, Tel: 310-539-9530, FAX: 310-539-8325; Empl: 120; Sls. Mgr.: Thomas Salken

**PLASTIC SYSTEMS INC.**, 261 Cedar Hill St., Marlboro, MA 01752-3004, Tel: 508-485-7390, FAX: 508-480-0257; Sls. Mgr.: Jim Novak; Dist. Mgr.: Jim Novak

**PLASTIMATIC, INC.**, 11 Danco Rd., Putnam, CT 06260, Tel: 203-928-7911, FAX: 201-575-8748; Empl: 85; Sls. Mgr.: Christopher Brooks

**PLASTRON CORP.**, 429 S. Evergreen St., Bensenville, IL 60106, Tel: 708-595-2212, FAX: 708-595-2599; Empl: 245; Sls. Mgr.: Ian Graham

**PLATO PRODUCTS, INC.**, 18731 Railroad St., Industry, CA 91748, Tel: 818-965-8044, 800-423-4510, FAX: 818-965-8960; FSC No.: 32399; Empl: 75; Sls. Mgr.: Walter Schaub

## Local Distributors

AL Muscle Shoals, Jones Elctms. .... 205-383-1241  
 AZ Phoenix, Scottsdale Tool & Supply .... 602-273-7376



|     |                                         |              |
|-----|-----------------------------------------|--------------|
| CA  | Fullerton, Bertech                      | 714-526-3700 |
| CA  | Poway, Wassco                           | 619-679-8787 |
| CA  | Sunnyvale, COM-KYL                      | 408-734-9660 |
| CO  | Denver, Solder Tec                      | 303-623-5000 |
| FL  | Clearwater, Your Production Cupb'd      | 813-447-2581 |
| FL  | Winter PK, Deanco, Inc.                 | 407-671-5100 |
| GA  | Marietta, Deanco                        | 404-429-0126 |
| IL  | Chicago, E M F                          | 312-889-8323 |
| MD  | Gaithersburg, Deanco                    | 301-948-5444 |
| MA  | N. Andover, Contact East                | 508-682-2000 |
| MI  | Blomfield Hills, Murray Percival Co.    | 313-333-1700 |
| MN  | Minneapolis, Warner Indtl. Supp.        | 612-378-7300 |
| NJ  | Fairfield, Deanco, Inc.                 | 201-575-7960 |
| NY  | Ithaca, Deanco, Inc.                    | 607-257-4444 |
| NY  | W. Babylon, Iv Morse Sls.               | 516-491-7800 |
| NC  | Raleigh, Cameron & Barkley              | 919-834-6010 |
| OR  | Portland, Gen. Tool & Supp.             | 503-226-3411 |
| TX  | Dallas, Briggs-Weaver                   | 214-631-3600 |
| TX  | McAllen, McAllen Bolt & Screw, Inc.     | 512-687-8596 |
| TX  | Pflugerville, Briggs-Weaver             | 512-244-3343 |
| UT  | Salt Lake City, Techn. Devices          | 801-972-5935 |
| WA  | Seattle, Gen. Tool & Supp.              | 206-762-1500 |
| PR  | EMF                                     | 800-621-0080 |
| Can | Edmonton, Alb., Cardinal Indtl. Elctms. | 403-483-6266 |
| Can | Montreal, Que., Adtool Corp.            | 514-482-2548 |

**PLESSEY ELECTRIC SYSTEMS CORP.**, See GEC-Marconi

**PLETRONICS, INC.**, 19015 36th Ave. West, Ste. H, Lynnwood, WA 98036, Tel: 206-776-1880, FAX: 206-776-2760; Empl: 11; Sls. Mgr.: Les Podgorny; Dist. Mgr.: Les Podgorny  
**A-1449-1455**

#### Local Sales Offices & Reps

|     |                                   |              |
|-----|-----------------------------------|--------------|
| AL  | Huntsville, Strategic Mktg.       | 205-464-0490 |
| AZ  | Phoenix, Sanford Sls. Assocs.     | 602-957-3570 |
| CA  | Mission Viejo, Jay Mktg. Assocs.  | 714-768-7519 |
| CA  | Pleasanton, Mouthrop Sls.         | 415-463-0450 |
| CT  | N. Haven, Radix                   | 203-239-3611 |
| FL  | St. Petersburg, QXI               | 813-894-4556 |
| IL  | Downers Grove, Goltens Assocs.    | 708-512-0093 |
| MA  | Randolph, Bengel                  | 617-961-4120 |
| MI  | Farmington, Bergin Assoc.         | 313-471-7940 |
| MN  | St. Paul, Countryman              | 612-645-9151 |
| NJ  | Springfield, Radix                | 201-467-4970 |
| NY  | Skaneateles, Empire Tech. Assocs. | 315-685-5703 |
| NC  | Raleigh, Strategic Mktg.          | 919-847-7972 |
| OH  | Centerville, Omega                | 513-434-5507 |
| OH  | Cleveland, Omega Sls.             | 216-360-9400 |
| OR  | Oregon City, Halbar PNW, Inc.     | 503-656-3714 |
| TN  | Nashville, Strategic Mktg.        | 615-883-7882 |
| TX  | Austin, Sage Mktg.                | 512-335-0300 |
| TX  | Dallas, Sage Mktg.                | 512-335-0300 |
| WA  | Redmond, Halbar                   | 206-882-0990 |
| Can | Mississauga, Ont., Intellatech    | 416-629-0082 |

#### Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| AZ | Phoenix, Arizona Comps       | 602-269-5655 |
| AZ | Scottsdale, Kent             | 602-998-0399 |
| CA | El Segundo, Force            | 213-772-1324 |
| CA | Milpitas, Kent               | 408-262-5300 |
| CA | San Diego, Kent Elctms.      | 619-453-7133 |
| CA | Santa Clara, Force           | 408-748-1324 |
| CA | Sunnyvale, Capsco            | 408-734-3020 |
| CA | Sunnyvale, Target            | 408-733-0384 |
| CA | Torrance, All American       | 800-831-8300 |
| CA | Torrance, Kent Elctms.       | 310-320-2700 |
| CA | Yorba Linda, Target Elctms.  | 714-692-1630 |
| CT | Norwalk, Cobra Comps.        | 203-847-6442 |
| FL | Largo, Kent                  | 813-545-0057 |
| GA | Norcross, Century Elctms.    | 404-729-2522 |
| FL | Sunrise, All American        | 800-432-6838 |
| IL | Woodridge, Goltens Assocs.   | 708-985-5100 |
| MD | Beltsville, PSI              | 301-937-4960 |
| MD | Columbia, Kent               | 301-720-6200 |
| MD | Gaithersburg, Axis Elctms.   | 301-840-9640 |
| MA | Chelmsford, Kent             | 508-250-9666 |
| MA | Norwood, Gerber Elctms.      | 617-769-6000 |
| MA | Wakefield, All American      | 617-246-2300 |
| MA | Wilmington, North Star       | 508-657-5155 |
| MA | Worcester, Coghill           | 508-791-7861 |
| MN | Eden Prairie, All American   | 612-944-2151 |
| MN | Fridley, Voyager             | 612-571-7766 |
| MN | St. Paul, Kent               | 612-642-2868 |
| NJ | Edison, Dove Elctms.         | 908-738-0321 |
| NY | East Setauket, Dove Elctms.  | 516-689-7733 |
| NY | Mt. Vernon, All American     | 800-926-6668 |
| NY | Rome, Rome Elctms.           | 315-337-5400 |
| NC | Raleigh, Century Elctms.     | 919-596-2220 |
| OH | Cincinnati, Schuster Elctms. | 513-489-1400 |
| OH | Twinsburg, Schuster Elctms.  | 216-425-8134 |
| PA | Norristown, Century Elctms.  | 215-631-5404 |
| TX | Austin, Kent Elctms.         | 512-834-1900 |
| TX | Carrollton, North Star       | 800-882-6418 |
| TX | Houston, Kent Elctms.        | 713-780-7770 |
| TX | Richardson, All American     | 214-231-5300 |
| TX | Richardson, Kent Elctms.     | 214-669-2600 |

|     |                                |              |
|-----|--------------------------------|--------------|
| WA  | Redmond, Capsco                | 206-869-7400 |
| WA  | Redmond, Kent Elctms.          | 206-883-7200 |
| WA  | Redmond, Priebe                | 206-881-2363 |
| Can | Mississauga, Ont., Intellatech | 416-629-0082 |

**PLITRON MANUFACTURING, INC.**, 250 Wildcat Rd, Downsview, Ont., Can M3J 2N5, Tel: 416-667-9914, FAX: 416-667-8928; Empl: 42; Sls. Mgr.: Brad Jolly  
**A-2506-2507**

#### Local Sales Offices & Reps

|     |                                |              |
|-----|--------------------------------|--------------|
| AZ  | Phoenix, Saguaro Sls.          | 602-870-9242 |
| CA  | Burbank, Darco                 | 818-504-2425 |
| FL  | Orlando, Richmar Elctms. Corp. | 407-352-3755 |
| IL  | Schaumburg, McNulty & Assocs.  | 708-980-9868 |
| MO  | St. Louis, Harris Hanson Co.   | 314-432-3611 |
| NJ  | Edison, R.E. Breuer Co. Inc.   | 908-561-6161 |
| NC  | Raleigh, Eastern Elctms.       | 919-876-7581 |
| OR  | Mc Minnville, Electro-Design   | 503-472-0481 |
| TX  | Piano, Richmar Elctms. Corp.   | 214-424-8388 |
| WA  | Redmond, Electro-Design        | 206-867-9300 |
| Can | Toronto, Plitron               | 416-667-9914 |

**PLUMBER PRECISION OPTICS**, 601 Montgomery Ave., Pennsburg, PA 18073, Tel: 215-679-6272, FAX: 215-679-2277; Empl: 180; Sls. Mgr.: Lynanne Schaeffer

**PMC/BETA LTD. PARTNERSHIP**, 4 Tech Circle, Natick, MA 01760, Tel: 617-237-6920, FAX: 508-651-9762; Empl: 25; Sls. Mgr.: Jack Newton

**PMI MOTION TECHNOLOGIES**, Kollmorgen Corporation, 49 Mall Dr., Commack, NY 11725-5703, Tel: 516-864-1000, FAX: 516-864-2084; Empl: 175; Sls. Mgr.: Peter Dougherty

**PMT DIVISION**, A Subsidiary of Ametek, Inc., 820 Pennsylvania Blvd., Feasterville, PA 19053, Tel: 215-355-6900, FAX: 215-355-2937; Empl: 125; Sls. Mgr.: James Snyder

**POCO SLS.**, Porter Co., 8925 Fullbright St., Chatsworth, CA 91311, Tel: 818-700-8727, FAX: 818-700-8453; FSC No.: 69-1603; Empl: 8

**POINT 4 DATA CORP.**, 15442 Del Amo Ave., Tustin, CA 92680, Tel: 714-259-0777, FAX: 714-259-0921; Empl: 50; Sls. Mgr.: Mr. Ted Cooper; Dist. Mgr.: Mr. Ted Cooper

**POLARA ENGINEERING INC.**, 4115 W. Artesia Ave., Fullerton, CA 92633, Tel: 714-521-0900, TELEX: 688489, FAX: 714-522-8001; Empl: 62  
**A-1576**

**POLAROID CORP.**, 119 Windsor St. B, Cambridge, MA 02139, Tel: 800-225-1618, FAX: 617-577-3213; Empl: 8,000; Sls. Mgr.: Jack O'Brien

**POLESTAR PLASTICS, INC.**, 3110 Research Dr., State College, PA 16801, Tel: 814-238-2400, FAX: 814-238-2634; Sls. Mgr.: Edward J. Uberti

**POLE/ZERO CORPORATION**, 5530 Union Centre Dr., West Chester, OH 45069, Tel: 513-870-9060, FAX: 513-870-9064; Sls. Mgr.: Joseph J. Janning, Vice Pres.

**POLYCASE PRODS., ECP Corp.**, 4726 Superior Ave., Cleveland, OH 44103, Tel: 216-391-0444, 800-248-1233, FAX: 216-391-2891; Empl: 22  
**C-1070**

#### Local Distributors

|    |                               |                |
|----|-------------------------------|----------------|
| AZ | Huntsville, Allied Elctms.    | 205-721-3500   |
| AL | Phoenix, Allied Elctms.       | 602-437-9080   |
| CA | Fremont, Allied Elctms.       | 415-770-0590   |
| CA | Torrance, Allied Elctms.      | 213-373-8828   |
| CO | Englewood, Allied Elctms.     | 303-790-1664   |
| CT | Cheshire, Allied Elctms.      | 203-272-7730   |
| FL | Casselberry, Allied Elctms.   | 407-831-3331   |
| FL | Pompano Beach, Allied Elctms. | 305-978-3008   |
| GA | Norcross, Allied Elctms.      | 414-446-8595   |
| IL | Des Plaines, Allied Elctms.   | 312-803-1040   |
| IN | Indianapolis, Allied Elctms.  | 317-875-0448   |
| MD | Columbia, Allied Elctms.      | 301-381-1560   |
| MA | Billerica, Allied Elctms.     | 508-667-7921   |
| MI | Livonia, Allied Elctms.       | 313-462-0190   |
| MN | Eden Prairie, Allied Elctms.  | 612-829-7554   |
| NJ | Fairfield, Allied Elctms.     | 201-227-8776   |
| NJ | Mt. Laurel, Allied Elctms.    | 609-234-7769   |
| NY | Mineola, Allied Elctms.       | 516-248-2360   |
| NC | Raleigh, Allied Elctms.       | 919-876-5845   |
| OH | Worthington, Allied Elctms.   | 614-785-1270   |
| PA | Pittsburgh, Allied Elctms.    | 412-367-4124   |
| TX | Fort Worth, Allied Elctms.    | 1-800-433-5700 |
| TX | Fort Worth, Allied Elctms.    | 817-336-5401   |
| WA | Seattle, Allied Elctms.       | 206-547-2827   |
| WI | New Berlin, Allied Elctms.    | 414-796-1280   |

**POLYFET RF DEVICES**, 1090 Lawrence Dr., Newbury Park, CA 91320, Tel: 805-498-4552, FAX: 805-498-2230; Empl: 9; Sls. Mgr.: Ed Greenbaum

**POLYFLON COMPANY**, Crane Co., 35 River Street, New Rochelle, NY 10801, Tel: 914-636-7222, FAX: 914-633-3664; Empl: 32; Sls. Mgr.: Joseph A. Seminoro

**POLYGENEX INTERNATIONAL INC.**, P.O. Box 1487, Cary, NC 27512-1487, Tel: 919-380-8100, FAX: 919-380-8115; Sls. Mgr.: J.D. McGarry

**POLYPHASE INSTRUMENT**, 175 Commerce Dr., Ft. Washington, PA 19034, Tel: 215-643-6950, FAX: 1-215-643-5237; FSC No.: 98330; Empl: 160; Sls. Mgr.: Paul Stevens

**POLYPHASE CORPORATION**, 2225 Park Place, P.O. Box 9000, Minden, NV 89423-9000, Tel: 702-782-2511, 800-325-7170, TELEX: 272718 Polyphaser, FAX: 702-782-4476; FSC No.: 61114; Empl: 65; Sls. Mgr.: James J. Renwick; Dist. Mgr.: James J. Renwick  
**B-1379**

#### Local Sales Offices & Reps

|    |                                       |                                 |
|----|---------------------------------------|---------------------------------|
| CO | Aurora, Electro-Tek Sls. Inc.         | 303-343-8020, FAX: 303-343-8018 |
| FL | Fl. Lauderdale, Mac Com, Inc.         | 305-772-3025, FAX: 305-772-1919 |
| KS | Lenexa, Maury E. Bettis Co.           | 913-541-9552, FAX: 913-541-9566 |
| MN | Stillwater, Ned Gordon & Assoc., Inc. | 612-430-1572, FAX: 612-430-0027 |
| NV | Minden, PolyPhaser Corp.              | 702-782-2511                    |
| NH | Manchester, Assoc. Sys.               | 603-472-2297, FAX: 603-472-3464 |
| NJ | Somerset, PMC Assoc.                  | 908-563-0366                    |
| NC | Black Mountain, PolyPhaser Corp.      | 704-669-4700, FAX: 704-669-0470 |
| TX | Rowlett, Horizon Comm. Sls. Co.       | 214-475-1179, FAX: 214-475-1293 |
| WA | Kirkland, Manon Engrg.                | 206-827-7449, FAX: 206-827-7099 |
| WI | Hartland, Elctm. Prods., Inc.         | 414-367-2929, FAX: 414-367-8302 |

#### Local Distributors

|     |                                         |                                 |
|-----|-----------------------------------------|---------------------------------|
| CA  | Hayward, Talley Elctms.                 | 510-783-2111, FAX: 510-783-2118 |
| CO  | Aurora, Electro-Comm Dists.             | 303-343-8937, FAX: 303-343-8019 |
| FL  | Melbourne, Technical Equip. Dist., Inc. | 407-259-2711, FAX: 407-242-3109 |
| GA  | Norcross, Alltel Supp., Inc.            | 404-448-5210, FAX: 404-446-0427 |
| HI  | Honolulu, Honolulu Elctms.              | 808-949-5564, FAX: 808-949-1209 |
| IL  | Joliet, Primus Elctms. Corp.            | 815-436-8945, FAX: 800-767-7605 |
| IL  | Mundelein, Harger Lightning Protection  | 708-362-4848, FAX: 708-362-3519 |
| KS  | Lenexa, Sante Fe Distrib., Inc.         | 913-492-8288, FAX: 913-894-2136 |
| MD  | Sparks, Tessco                          | 410-472-7000, FAX: 410-472-7575 |
| MN  | St. Paul, Pulstar Dist., Inc.           | 612-645-3411, FAX: 612-645-3511 |
| NV  | Minden, PolyPhaser Corp.                | 702-782-2511, FAX: 702-782-4476 |
| NJ  | Clarksboro, W.R. Block & Assocs.        | 609-423-2255, FAX: 609-423-0891 |
| OH  | Cincinnati, Cartwright Comms. Co.       | 513-489-1755, FAX: 513-489-1449 |
| TX  | Rowlett, Horizon Comm. Sls. Co.         | 214-475-1179, FAX: 214-475-1293 |
| WA  | Bellevue, Arpac, Ltd.                   | 206-453-2132, FAX: 206-453-1558 |
| EXP | Minden, PolyPhaser Corp.                | 702-782-2511, FAX: 702-782-4476 |
| Can | Aurora, Ont., Sinclabs, Inc.            | 416-841-0624, FAX: 416-841-6255 |

**POLY-PLANAR INC.**, 1800 Mearns Rd., Unit J - P.O. Box 2578, Warrminster, PA 18974, Tel: 215-675-7805, FAX: 215-675-7920; Empl: 12

**POLYPOLY INC./CONDUCTIVES SYSTEMS, INC.**, Rd. No. 1, Route 5 South, Amsterdam, NY 12010, Tel: 518-843-3900, FAX: 518-843-5829; Sls. Mgr.: W.G. Bruce

**POLYSWITCH PRODUCTS**, See Raychem Corporation



**POLYTRON DEVICES, INC.**

**FAX: 201-345-1264**

**POLYTRON DEVICES, INC.**, Box 398 - River St. Sta., Paterson, NJ 07544, Tel: 201-345-5885; Empl: 26  
**D-1882-1884, 2292-2296**



| Local Sales Offices & Reps |                                       |              |  |
|----------------------------|---------------------------------------|--------------|--|
| CA                         | San Jose, P & M Elctms.               | 408-287-0402 |  |
| GA                         | Duluth, Stelmack                      | 404-441-7927 |  |
| MA                         | Shrewsbury, Advanced Comp. Grp.       | 508-845-2023 |  |
| NC                         | Raleigh, Stelmack Power Specialists   | 919-881-0677 |  |
| OH                         | Dayton, Technical Dvcs.               | 513-890-6811 |  |
| OR                         | Oregon, Power Factors & Assoc., Inc.  |              |  |
|                            |                                       | 503-657-6969 |  |
| PA                         | Collegeville, HB Sys.                 | 215-489-3256 |  |
| PA                         | Pittsburgh, KT Mktg.                  | 412-367-1011 |  |
| Local Distributors         |                                       |              |  |
| AZ                         | Phoenix, J. Smith & Assoc.            | 602-267-0981 |  |
| CO                         | Colorado Springs, J. Smith & Assoc.   | 719-597-5343 |  |
| GA                         | Norcross, Applied Power               | 404-263-0421 |  |
| MA                         | Wellesley Hills, Target Elctms., Inc. | 617-235-1079 |  |
| MI                         | Brighton, Applied Power               | 313-227-3684 |  |
| MN                         | Fridley, Voyager Elctms.              | 612-571-7766 |  |
| NM                         | New Mexico, J. Smith & Assoc., Inc.   |              |  |
|                            |                                       | 505-345-6501 |  |

**POLYTRONIX, INC.**, 805 Alpha Dr., Richardson, TX 75081, Tel: 214-238-7045, FAX: 214-644-0805; Empl: 65  
B-1106


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**POMFRET RESEARCH OPTICS**, P. O. Box 1265, Orange, VA 22960, Tel: 703-854-4350, FAX: 703-854-6726; Empl: 5

**PORRASOL**, Oglesby and Botler Ltd, 7422 Carmel Executive Park, Charlotte, NC 28226, Tel: 704-543-6239, FAX: 704-543-6839; Empl: 100; *Sls. Mgr.*: Tom Carbutt; *Dist. Mgr.*: Tom Carbutt

**PORTESCAP U.S., INC.**, 36 Central Ave., Hauppauge, NY 11788, Tel: 516-234-3900, FAX: 516-234-3986; Empl: 16

**POSITRONIC INDUSTRIES, INC.**, 423 N. Campbell St., P.O. Box 8247, Springfield, MO 65801, Tel: 417-866-2322, TELEX: 436445, FAX: 417-866-4115; FSC No: 28198; Empl: 500

**POTRANS INTERNATIONAL INC.**, Potrans Electrical Corp., Ltd., 17935 Sky Park Circle No. H, Irvine, CA 92714, Tel: 714-975-1222, TELEX: 244319, FAX: 714-975-1390; Empl: 300; *Sls. Mgr.*: Jason Mc Kinstry



**FAX: 812-386-2072**

**POTTER & BRUMFIELD, A Siemens Co.**, 200 S. Richland Creek Dr., Princeton, IN 47671-0001, Tel: 812-386-1000, TELEX: 27-8451; Empl: 3000; *Sls. Mgr.*: Don Patton; *Dist. Mgr.*: Sherry Colborn  
B-1380-1381, 1577-1590

| Local Sales Offices & Reps |                                          |              |
|----------------------------|------------------------------------------|--------------|
| AL                         | Huntsville, Cartwright & Bean            | 205-830-1540 |
| AZ                         | Phoenix, C.T. Carlberg & Assoc.          | 602-468-0750 |
| CA                         | Los Altos, Recht Assoc.                  | 415-964-6321 |
| CA                         | Newport Beach, Jones & McGeoy Sls., Inc. |              |
|                            |                                          | 714-724-8080 |
| CA                         | San Diego, CERCO                         | 619-693-7500 |
| CO                         | Littleton, Simpson Assoc.                | 303-794-8381 |
| CT                         | Wallingford, John E. Boeing Co.          | 203-265-1318 |
| FL                         | Apopka, Cartwright & Bean                | 407-889-9100 |
| FL                         | Deerfield Beach, Cartwright & Bean       | 305-429-3400 |

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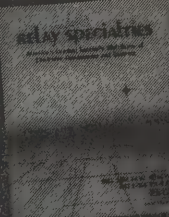
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|-----|------------------------------------------|--------------|
| GA  | Norcross, Cartwright & Bean              | 404-368-0160 |
| IL  | Rolling Meadows, Sumer, Inc.             | 708-991-8500 |
| IN  | Fort Wayne, R. O. Whitesell & Assoc.     | 219-489-0588 |
| IN  | Indianapolis, R. O. Whitesell & Assoc.   |              |
|     |                                          | 317-876-9000 |
| IN  | Kokomo, R. O. Whitesell & Assoc.         | 317-457-9127 |
| IN  | Princeton, Potter & Brumfield-N & E U.S. | 812-386-2007 |
| IN  | Princeton, Potter & Brumfield-S & W      | 812-386-2211 |
| IA  | Cedar Rapids, R.W. Kunz & Assoc.         | 319-396-5386 |
| KS  | Prairie Village, R.W. Kunz & Assoc.      | 913-648-3535 |
| KS  | Wichita, R.W. Kunz & Assoc.              | 316-686-3436 |
| KY  | Versailles, R. O. Whitesell & Assoc.     | 606-873-1182 |
| LA  | Covington, Cartwright & Bean             | 504-892-1780 |
| MD  | Burtonsville, Mechronics Sls., Inc.      | 301-421-4200 |
| MA  | Chelmsford, John E. Boeing Co.           | 508-256-5800 |
| MI  | Grand Blanc, R. O. Whitesell & Assoc.    |              |
|     |                                          | 313-695-0770 |
| MI  | Grand Rapids, R. O. Whitesell & Assoc.   | 616-942-5420 |
| MI  | Southfield, R. O. Whitesell & Assoc.     | 313-352-5454 |
| MI  | St. Joseph, R. O. Whitesell & Assoc.     |              |
|     |                                          | 616-983-7337 |
| MN  | Edina, Mel Foster Tech. Sls.             | 612-941-9790 |
| MS  | Jackson, Cartwright & Bean               | 601-981-1170 |
| MO  | St. Louis, R.W. Kunz & Assoc.            | 314-966-4977 |
| NJ  | Medford, The McCoy Grp., Inc.            | 609-953-0770 |
| NM  | Albuquerque, C. T. Carlberg & Assoc.     |              |
|     |                                          | 505-899-2155 |
| NY  | Rochester, Micro-Tech Mktg. Inc.         | 716-426-0806 |
| NY  | Ronkonkoma, Comtronic Assoc.             | 516-737-2400 |
| NC  | Charlotte, Cartwright & Bean             | 704-536-0303 |
| NC  | Raleigh, Cartwright & Bean               | 919-876-4130 |
| OH  | Cincinnati, R. O. Whitesell & Assoc.     | 513-528-5644 |
| OH  | Cleveland, R. O. Whitesell & Assoc.      | 216-447-9020 |
| OH  | Columbus, R. O. Whitesell & Assoc.       |              |
|     |                                          | 614-888-9396 |
| OH  | Dayton, R. O. Whitesell & Assoc.         | 513-298-9546 |
| OK  | Tulsa, Components, Inc.                  | 918-583-9149 |
| PA  | Pittsburgh, R. O. Whitesell & Assoc.     |              |
|     |                                          | 412-963-6161 |
| TN  | Germantown, Cartwright & Bean            | 901-758-8113 |
| TN  | Knoxville, Cartwright & Bean             | 615-693-7450 |
| TX  | Austin, Ammon & Rizos Co.                | 512-454-5131 |
| TX  | Houston, Ammon & Rizos Co.               | 713-781-6240 |
| TX  | Richardson, Ammon & Rizos Co.            | 214-644-5591 |
| UT  | Midvale, Simpson Assoc.                  | 801-566-3691 |
| WA  | Seattle, Northram, Inc.                  | 206-524-5170 |
| WI  | Brookfield, Sumer, Inc.                  | 414-784-6641 |
| PR  | San Juan, Electronic Tech. Sls.          | 809-798-1300 |
| Can | Mississauga, Ont, Siemens Elec. Ltd.     |              |
|     |                                          | 416-564-1995 |
| Can | Montreal, Que, Siemens Elec. Ltd.        | 514-695-7300 |

**POTTER INSTRUMENT**, (PSI-Peripheral Support), 345 Kansas St., P.O. Box 892, El Segundo, CA 90245, Tel: 213-322-9370, TELEX: 317928, FAX: 213-322-9190; FSC No.: 95-2800481; Empl: 20; *Sls. Mgr.*: T. O. McMahon

**POWELL ELECTRONICS INC.**, P.O. Box 8765, Philadelphia, PA 19101, Tel: 215-365-1900, FAX: 215-365-7245; Empl: 330

**POWERBOX INC.**, 1720 14th Street, Boulder, CO 80302, Tel: 303-444-1461, 800-444-1461, FAX: 303-444-3135; *Sls. Mgr.*: Scott Selm  
C-1071

| Local Sales Offices & Reps |                                     |              |
|----------------------------|-------------------------------------|--------------|
| MN                         | St. Paul, Heyda/Hanks Assoc.        | 612-484-8531 |
| Can                        | Mississauga, Ont, HI-Pac Enclosures |              |
|                            |                                     | 416-279-4860 |

**POWERCARD CORP.**, 393 Totten Pond Rd., Waltham, MA 02159, Tel: 617-890-6789, FAX: 617-890-1390; *Sls. Mgr.*: Fredric Cohen

**POWER COMPONENTS CO.**, Vanguard Electronics Co., 1480 W. 178th St., Gardena, CA 90248, Tel: 213-323-8120, TWX: 910-346-7067, FAX: 213-329-8427; FSC No.: 213-329-8427; *Sls. Mgr.*: Avi Kandola

**POWER CONVERSION AMERICA**, See Computer Products/Power Conversion America

**POWER CONVERSION, INC.**, BTR, 495 Boulevard, Elmwood Park, NJ 07407, Tel: 201-796-4800, FAX: 201-796-6243; Empl: 900; *Sls. Mgr.*: James Sullivan, V.P. Sls.; *Dist. Mgr.*: Alan Bradbury, Natl. Sls. Mgr.

| Local Sales Offices & Reps |                            |                                 |
|----------------------------|----------------------------|---------------------------------|
| AZ                         | Phoenix, More Sls., Inc.   | 602-331-8115                    |
|                            |                            | FAX: 602-331-8120               |
| CA                         | Mountain View, Broge Mktg. | 415-965-8045                    |
|                            |                            | FAX: 415-965-9085               |
| CO                         | Parker, High Plains Mktg.  | 303-841-6464, FAX: 303-841-6262 |



|                                     |                                   |
|-------------------------------------|-----------------------------------|
| FL Tampa, SRT Mktg.                 | 813-884-4805,<br>FAX:813-882-9149 |
| GA Atlanta, Naylor Assocs., Inc.    | 404-373-5036,<br>FAX:404-373-5052 |
| MN Minnetonka, Mill-Tech Sls., Inc. | 612-933-8090,<br>FAX:612-933-2353 |
| NJ Haddonfield, M & S Assocs., Inc. | 609-429-7055,<br>FAX:609-795-1493 |
| NY Great Neck, F & F Metro, Inc.    | 516-482-4080,<br>FAX:516-482-4589 |
| NY Newark, W-L Sls.                 | 315-331-1645,<br>FAX:315-331-2143 |
| NC Cornelius, Naylor Assocs., Inc.  | 704-892-1366,<br>FAX:704-892-9758 |
| NC Durham, Naylor Assocs., Inc.     | 919-544-6630,<br>FAX:919-544-7211 |
| OH Dayton, Five Star Elctms., Inc.  | 513-299-1718,<br>FAX:513-299-1345 |
| OH Solon, Five Star Elctms., Inc.   | 216-349-1611,<br>FAX:216-349-0381 |
| OR Albany, Henry Sharpe             | 503-928-9221,<br>FAX:503-928-5604 |
| TX Austin, Comptech Sls.            | 512-343-0300,<br>FAX:512-345-2530 |
| TX Brownsville, Comptech Sls.       | 512-542-7474,<br>FAX:512-542-8254 |
| TX Houston, Comptech Sls.           | 713-492-0005,<br>FAX:713-492-6116 |
| TX Irving, Comptech Sls.            | 214-751-1181,<br>FAX:214-550-8113 |
| WA Redmond, Projects Intl.          | 206-883-8212                      |

## Local Distributors

|                                         |                                   |
|-----------------------------------------|-----------------------------------|
| CA Costa Mesa, Battery Specialties      | 714-755-0888,<br>FAX:714-755-0889 |
| CA Mountainview, Energy Sls., Inc.      | 415-969-0800,<br>FAX:415-961-2000 |
| CA San Diego, Tauber Elctms.            | 619-274-7242,<br>FAX:619-274-2220 |
| CO Denver, Cargo Batteries              | 303-296-8763,<br>FAX:303-295-7125 |
| MD Beltsville, Mark Elctms. Supp.       | 301-595-5040,<br>FAX:301-937-0491 |
| MN Minneapolis, Stark Elctms.           | 612-333-3361,<br>FAX:612-332-1783 |
| NJ Bellmawr, Mid-Atlantic Elctms. Corp. | 609-931-5303,F,609-931-4928       |
| NY Bohemia, Lamp Technlg., Inc.         | 516-567-1800,<br>FAX:516-567-1806 |
| NY Farmingdale, Delta Concepts          | 516-454-6300,<br>FAX:516-454-6978 |
| NY Plainview, Plainview Batteries       | 516-249-2873,<br>FAX:516-249-2876 |
| WA Redmond, Energy Sls.                 | 206-883-2343,<br>FAX:206-867-0606 |
| WI Fond-Du-Lac, Fedco Elctms.           | 414-922-6490,<br>FAX:414-922-6750 |

POWER CONVERSION PRODUCTS, 42 East St. Box 380, Crystal Lake, IL 60014, Tel: 815-459-9100, FAX: 815-459-9118; FSC No.: 31751; Empl: 150; Sls. Mgr.: C. Seyer



FAX: 1-602-628-1602

POWER CONVERTIBLES, A BURR-BROWN COMPANY, 3450 S. Broadmont, #128, Tucson, AZ 85713, Tel: 1-800-548-6132; Sls. Mgr.: Bob Filiault

D-2077-2081

## Local Sales Offices &amp; Reps

|                                        |                                   |
|----------------------------------------|-----------------------------------|
| AL Huntsville, Rep. Inc.               | 205-881-9270,<br>FAX:205-882-6692 |
| AZ Scottsdale, Summit                  | 602-998-4850,<br>FAX:602-998-5274 |
| CA Agoura Hills, Burr-Brown Corp.      | 818-991-7872,<br>FAX:818-991-7872 |
| CA Santa Ana, Burr-Brown Corp.         | 714-835-0712,<br>FAX:714-541-5621 |
| CA Santa Clara, Burr-Brown Corp.       | 408-982-8900,<br>FAX:408-982-8907 |
| CA Santa Clara, I-Squared              | 408-988-3400,<br>FAX:408-988-2079 |
| CO Ft. Collins, Sls. Technlg., Inc.    | 303-530-9409,<br>FAX:303-663-0809 |
| FL Ft. Lauderdale, V.G. Sls. Co., Inc. | 305-938-4333,<br>FAX:305-938-4331 |
| FL Largo, V.G. Sls. Co., Inc.          | 813-536-7787,<br>FAX:813-530-9126 |
| GA Tucker, Rep. Inc.                   | 404-938-4358,FAX:404-938-0194     |
| IL Arlington Hgts., Burr-Brown Corp.   | 708-437-2877,<br>FAX:708-437-2996 |

|                                          |                                   |
|------------------------------------------|-----------------------------------|
| IL Rolling Meadows, Sumer                | 708-991-8500,<br>FAX:708-991-0474 |
| IA Cedar Rapids, Rep Assocs., Corp.      | 319-373-0152,<br>FAX:319-373-0217 |
| MD Rockville, Marktron, Inc.             | 301-251-8990,<br>FAX:301-424-0766 |
| MA Burlington, Burr-Brown Corp.          | 617-229-0300,<br>FAX:617-229-2120 |
| MI Milford, Electronic Comp. Sls., Inc.  | 313-360-3790,<br>FAX:313-360-4052 |
| MN Bloomington, Elctm. Sls. Agcy.        | 612-884-8291,<br>FAX:612-884-8294 |
| NY Pittsford, El Corn Sls.               | 716-385-1400,<br>FAX:716-248-8531 |
| NY Yonkers, Burr-Brown Corp.             | 914-964-5252,<br>FAX:914-964-0655 |
| NC Morrisville, Rep. Inc.                | 919-469-8997,<br>FAX:919-481-3879 |
| OH Willoughby Hills, Versatron           | 216-944-0082,<br>FAX:216-944-0084 |
| PA Hatboro, Delta Tech Sls.              | 215-957-0600,<br>FAX:215-957-0920 |
| TN Jefferson City, Rep. Inc.             | 615-475-9012,<br>FAX:615-475-6340 |
| TX Dallas, Burr-Brown Corp.              | 214-783-4555,<br>FAX:214-783-2717 |
| TX Houston, Development Tech. Sls., Inc. | 713-988-6546,FAX:713-988-6548     |
| UT Murray, Front Range Mktg.             | 801-288-2500,<br>FAX:801-288-2505 |

|                                                |                                   |
|------------------------------------------------|-----------------------------------|
| WA Federal Way, Wilson Elctm. Sls. Team        | 206-946-8016,FAX:206-946-1821     |
| Can Mississauga, Ont, Allen Crawford Assoc.    | 416-890-2010,FAX:416-890-1959     |
| Can Ottawa, Ont, Allen Crawford Assoc.         | 613-596-9300,<br>FAX:613-596-3081 |
| Can Pointe Claire, Que., Allen Crawford Assoc. | 514-697-3333,FAX:514-697-4642     |
| Can Vancouver, B.C., Allen Crawford Assoc.     | 604-988-2195,FAX:604-980-5892     |

## Local Distributors

|                                   |                                   |
|-----------------------------------|-----------------------------------|
| CA Brea, J.I.T. Supply            | 714-256-9100,<br>FAX:714-256-9111 |
| MA Wilmington, North Star Elctms. | 508-657-5155,<br>FAX:508-657-6559 |
| TX Carrollton, North Star Elctms. | 214-980-2999,<br>FAX:214-980-2997 |

POWERCUBE CORP., Sub. Unitrode Corp., 8 Suburban Pk. Dr., Billerica, MA 01821, Tel: 508-667-9500, FAX: 508-667-6280; FSC No.: 31557; Empl: 150; Sls. Mgr.: Roy Allman D-2186-2197

## Local Sales Offices &amp; Reps

|                                             |              |
|---------------------------------------------|--------------|
| AL Huntsville, Elctm. Mfr's Agts.           | 205-830-4030 |
| AZ Scottsdale, Detomasi & Grupp, Inc.       | 602-947-3724 |
| CA Fountain Valley, Detomasi & Grupp Inc.   | 714-434-2988 |
| CA Irvine, Powercube                        | 714-261-6137 |
| CA Mission Hills, Detomasi & Grupp Inc.     | 818-365-8285 |
| CO Littleton, Detomasi & Grupp, Inc.        | 303-972-2543 |
| FL Orlando, Richmar Elctms. Corp.           | 407-352-3755 |
| GA Roswell, Elctm. Mfr's Agts.              | 404-992-7240 |
| IL Downers Grove, Richmar Elctms. Corp.     | 708-968-0118 |
| IA Iowa City, Richmar Elctms. Corp.         | 319-354-8894 |
| ME Bethel, Shain Assoc., Inc. (Military)    | 207-836-3200 |
| MA Billerica, Powercube Corp.               | 617-667-9500 |
| MA Norwell, Shain Assoc., Inc. (Military)   | 617-982-1474 |
| MN Bloomington, Elct. Sls. Agency           | 612-884-8291 |
| NH Nashua, Bell Controls, Inc. (Industrial) | 603-882-6984 |
| NH Nashua, Shain Assocs., Inc. (Military)   | 603-881-4881 |
| NJ Mt. Laurel, S-J Assocs., Inc.            | 609-866-1234 |
| NY Canandaigua, S-J Assocs., Inc.           | 716-394-3281 |
| NY Yonkers, Sonkin Assocs.                  | 914-968-8282 |
| NC Charlotte, Elctm. Mfr's Agts.            | 704-365-0547 |
| OH Columbus, S-J Assocs., Inc.              | 614-885-6700 |
| TX Garland, Carey, McMahon & Assocs., Inc.  | 214-681-1414 |
| VA Falls Church, S-J Assocs., Inc.          | 703-533-2233 |
| WI Butler, Richmar Elctms. Corp.            | 414-781-1730 |
| Can Toronto, Ont., Norgay Entprs.           | 416-234-8966 |

POWER DESIGNS, INC., 1700 Shames Dr., Westbury, NY 11590, Tel: 516-333-6200, TWX: 510-222-6561, FAX: 516-333-6512; Empl: 48; Sls. Mgr.: Mary Loop

POWER DEVICES INC., 27071 Cabot Rd., Bldg. 114, Laguna Hills, CA 92653, Tel: 714-582-6712, FAX: 714-582-6722; Empl: 10; Sls. Mgr.: G. E. Flynn

POWER DYNAMICS INC., 59 Lakeside Ave., P.O. Box 539, West Orange, NJ 07052, Tel: 201-736-5722, FAX: 201-736-8930; FSC No.: 60046; Sls. Mgr.: James Papianni; Dist. Mgr.: Lyle Scott

POWER ELECTRONIC COMPONENTS, INC., PEC, Inc. 6333 Old Lagrange Rd., Crestwood, KY 40014, Tel: 502-241-5970, 800-245-0193, FAX: 502-241-5970; Empl: 4; Dist. Mgr.: Carl Cloud



FAX: 412-925-4393

POWEREX, INC., 200 Hillis St., Youngwood, PA 15697-1800, Tel: 412-925-7272, TWX: 510-468-2840; Empl: 400; Dist. Mgr.: Kathy Cullen A-2175

## Local Sales Offices &amp; Reps

|                                               |              |
|-----------------------------------------------|--------------|
| AZ Scottsdale, Lindberg Co.                   | 602-998-2944 |
| CA Laguna Hills, Westpower Co.                | 714-582-6716 |
| CA Santa Clara, Engineering Assocs. Corp.     | 408-988-5001 |
| CO Denver, Lindberg Co.                       | 303-758-9033 |
| CT Southington, The Orion Grp.                | 203-621-8371 |
| FL Maitland, EIR, Inc.                        | 407-660-9600 |
| GA Alpharetta, Southeast Power Comps.         | 404-587-4851 |
| GA Alpharetta, Southeast Power Comps.         | 404-664-5460 |
| GA Norcross, Southeast Power Comps.           | 404-448-2458 |
| IL Chicago, L&W Power Corp.                   | 708-416-8838 |
| IN Carmel, Giesting & Assocs.                 | 317-844-5222 |
| IA Cedar Rapids, Dy-Tronix, Inc.              | 319-377-8275 |
| KS Leawood, Dy-Tronix, Inc.                   | 913-339-6333 |
| KS Wichita, Dy-Tronix, Inc.                   | 316-838-0884 |
| KY Lexington, Giesting & Assocs.              | 606-873-2330 |
| MA Peabody, The Orion Grp.                    | 508-532-6266 |
| MI Detroit, L&W Power Corp.                   | 313-451-1150 |
| MN Bloomington, PSI Co.                       | 612-944-8545 |
| MO Bridgeton, Dy-Tronix, Inc.                 | 314-291-4777 |
| NM Albuquerque, Lindberg Co.                  | 505-881-1006 |
| NY Ithaca, Bob Dean, Inc.                     | 607-257-1111 |
| NY Smithtown, J&L Sls. Assocs., Inc.          | 516-864-1701 |
| NY Wappinger Falls, Bob Dean, Inc.            | 914-297-6406 |
| NC Charlotte, Southeast Power Comps.          | 704-846-8532 |
| NC Greensboro, Southeast Power Comps.         | 919-854-9410 |
| NC Henderson, Southeast Power Comps.          | 919-438-4450 |
| OH Cincinnati, Giesting & Assocs.             | 513-385-1105 |
| OH Cleveland, Giesting & Assocs.              | 216-261-9705 |
| OH Columbus, Giesting & Assocs.               | 614-459-4800 |
| OK Tulsa, NOVA Mktg.                          | 918-660-5105 |
| OR Tigard, Vantage Corp.                      | 503-620-3280 |
| PA Hatboro, Delta Tech Sls., Inc.             | 215-957-0600 |
| PA Pittsburgh, Bear Mktg.                     | 412-492-1150 |
| TX Austin, NOVA Mktg., Inc.                   | 512-343-2321 |
| TX Dallas, NOVA Mktg., Inc.                   | 214-750-6082 |
| TX Houston, NOVA Mktg., Inc.                  | 713-988-6082 |
| UT Salt Lake City, Lindberg Co.               | 801-484-8689 |
| WA Bellevue, Vantage Corp.                    | 206-455-3460 |
| WI Milwaukee, L&W Power Corp.                 | 414-782-0799 |
| Can Burnaby, B.C., Blakewood Elec. Sys., Inc. | 604-444-3344 |
| Can Montreal, Que., GMA Assocs.               | 514-335-9572 |
| Can Ottawa, Ont., GMA Assocs.                 | 613-820-3822 |
| Can Toronto, Ont., GMA Assocs.                | 416-671-8111 |

## Local Distributors

|                                           |              |
|-------------------------------------------|--------------|
| AL Birmingham, Industrial Elec. Supp. Co. | 205-951-4601 |
| AL Huntsville, Time Elctms.               | 205-721-1133 |
| AZ Tempe, Bell Inds.                      | 602-966-7800 |
| AZ Tempe, Time Elctms.                    | 602-967-2000 |
| CA Agoura Hills, Bell Inds.               | 818-979-9494 |
| CA Agoura Hills, Time Elctms.             | 818-707-2890 |
| CA Cypress, Bell Inds.                    | 714-895-7801 |
| CA Los Angeles, Bell Inds.                | 310-826-6778 |
| CA Rocklin, Bell Inds.                    | 916-652-0414 |
| CA San Diego, All American                | 619-458-5850 |
| CA San Diego, Bell Inds.                  | 619-268-1277 |
| CA San Diego, Time Elctms.                | 619-674-2800 |
| CA San Jose, All American                 | 408-943-1200 |
| CA Sunnyvale, Bell Inds.                  | 408-734-8570 |
| CA Sunnyvale, Time Elctms.                | 408-734-9888 |
| CA Torrance, All American                 | 310-320-0240 |
| CA Torrance, Time Elctms.                 | 310-320-0880 |
| CA Tustin, Time Elctms.                   | 714-669-0100 |
| CA Walnut, ACI Elctms.                    | 714-594-1731 |
| CA West Lake Village, Semtex, Inc.        | 805-373-6850 |
| CA Woodland Hills, Time Elctms.           | 818-998-7200 |
| CO Denver, Bell Inds.                     | 303-691-9270 |
| CO Englewood, Time Elctms.                | 303-721-8882 |
| CT Southbury, Time Elctms.                | 203-271-3200 |
| CT Wallingford, GRS Midan Elctms.         | 203-265-2077 |
| FL Ft. Lauderdale, Time Elctms.           | 305-484-7778 |
| FL Miami, All American                    | 305-621-8282 |



FL Orlando, Time Elctms. .... 407-841-6565  
 GA Sunrise, All American ..... 305-572-7999  
 FL Norcross, Time Elctms. .... 404-448-4448  
 IL Chicago, Newark Elctms. .... 312-784-5100  
 IL Elmhurst, Semiconductor Specialists

708-279-1000  
 IL La Fox, Richardson Elctms. Ltd. .... 800-348-5580  
 IL Schaumburg, Time Elctms. .... 708-308-3000  
 IL Schaumburg, QPS Elctms., Inc. .... 708-884-6620  
 IL Schaumburg, Time Elctms. .... 708-303-3000  
 IN Indianapolis, Bell Inds. .... 317-875-8200  
 IN Indianapolis, Time Elctms. .... 800-331-5114  
 IA Cedar Rapids, Time Elctms. .... 800-325-9085  
 KS Lenexa, Time Elctms. .... 800-325-9085  
 KY Lexington, Time Elctms. .... 800-331-5114  
 MD Columbia, GRS Elctms. .... 301-995-6744  
 MD Columbia, Time Elctms. .... 410-964-3090  
 MA Norwood, Gerber Elctms. .... 617-769-6000  
 MA Peabody, Time Elctms. .... 508-532-9900  
 MA Woburn, ACI Elctms. .... 617-935-7230  
 MI Madison Heights, Galco Elctms. .... 313-542-9090  
 MI Novi, Time Elctms. .... 800-331-5114  
 MN Edina, Time Elctms. .... 612-835-1250  
 MO Manchester, Time Elctms. .... 314-391-6444  
 NJ Camden, GRS Elctms. .... 609-964-8560  
 NJ East Hanover, Delburn Elctms., Inc. .... 201-884-0800  
 NJ Marlton, Time Elctms. .... 609-596-6700  
 NJ Wayne, Time Elctms. .... 201-882-4611  
 NM Albuquerque, Bell Inds. .... 505-292-2700  
 NM Albuquerque, Harrison Equip. Co. .... 505-291-9951  
 NY Freeport, Semtex, Inc. .... 516-223-0200  
 NY Hauppauge, Time Elctms. .... 516-273-0100  
 NY Plainview, ACI Elctms. .... 516-293-6630  
 NY Rochester, Time Elctms. .... 716-383-8853  
 NY Rome, Rome Elctms. .... 315-337-5400  
 NC Asheville, Cameron & Barkley .... 800-222-3517  
 NC Charlotte, Cameron & Barkley .... 800-532-0331  
 NC Charlotte, Electronics Mktg. Corp. .... 704-394-6195  
 NC Charlotte, Time Elctms. .... 800-638-1812  
 NC Fayetteville, Cameron & Barkley .... 800-346-0632  
 NC Greensboro, Cameron & Barkley .... 800-632-1303  
 NC Greenville, Cameron & Barkley .... 800-331-4620  
 NC Raleigh, Cameron & Barkley .... 800-662-7654  
 NC Wilmington, Cameron & Barkley .... 800-672-4035  
 OH Cincinnati, Hughes Peters .... 513-351-2000  
 OH Cleveland, CAM/RPC Elctms. .... 216-461-4700  
 OH Cleveland, Darrah Elec. .... 216-631-0912  
 OH Columbus, Electronics Mktg. Corp. .... 614-299-4161  
 OH Columbus, Hughes Peters .... 614-294-5351  
 OH Columbus, Time Elctms. .... 800-331-5114  
 OH Dayton, Electronics Mktg. Corp. .... 513-439-4711  
 OH Highland Heights, Electronics Mktg. Corp.

216-442-3441  
 OK Tulsa, Altair Co. .... 918-252-5781  
 OR Lake Oswego, Bell Inds. .... 503-635-6500  
 OR Portland, Dunn Elctms. .... 503-285-0214  
 OR Portland, Time Elctms. .... 503-684-3780  
 PA Philadelphia, Time Elctms. .... 215-337-0900  
 PA Pittsburgh, CAM/RPC Elctms. .... 412-782-3770  
 PA Pittsburgh, Time Elctms. .... 800-331-5114  
 TN Columbia, Cameron & Barkley .... 615-881-8000  
 TX Austin, Harrison Equip. Co. .... 512-258-1320  
 TX Austin, Time Elctms. .... 512-339-3051  
 TX Brownsville, Harrison Equip. Co. .... 512-548-2376  
 TX Dallas, Harrison Equip. Co. .... 214-239-2750  
 TX Houston, Altair Co. .... 713-462-3029  
 TX Houston, Time Elctms. .... 713-530-0800  
 TX Richardson, Altair Co. .... 214-231-5166  
 TX Richardson, Time Elctms. .... 214-644-4644  
 TX Stafford, Harrison Equip. Co. .... 713-879-2750  
 UT Midvale, Bell Inds. .... 801-255-9611  
 UT West Valley, Time Elctms. .... 801-973-8181  
 VA Charlottesville, Virginia Elec. Comps. .... 804-296-4184  
 WA Bothell, Dunn Elctms. .... 206-382-0379  
 WA Redmond, Bell Inds. .... 206-867-5410  
 WA Redmond, Time Elctms. .... 206-882-1525  
 WI Milwaukee, Marsh Elctms. .... 414-475-6000  
 WI Milwaukee, Time Elctms. .... 800-331-5114  
 WY Gillette, WESCO .... 307-687-0014

Can Brampton, Ont., Richardson Elctms., Ltd. .... 416-458-5333  
 Can Calgary, Alberta, Electro Sonic, Inc. .... 403-255-9550  
 Can Mississauga, Ont., Time Elctms. .... 416-601-4368  
 Can Ottawa, Ont., Electro Sonic, Inc. .... 613-728-8333  
 Can Richmond, BC, Electro Sonic, Inc. .... 604-273-2911  
 Can Stoney Creek, Ont., Westinghouse Canada, Inc. .... 416-528-8911  
 Can Willowdale, Ont., Electro Sonic, Inc. .... 416-494-1666  
 Can Winnipeg, Manitoba, Electro Sonic, Inc. .... 204-783-3105

**POWER FUNCTIONS ENGINEERING**, 3831 Cavalier Dr., Garland, TX 75042, Tel: 214-278-0996; Empl: 9

**POWER GENERAL**, Nidec Corp., 152 Will Dr., Canton, MA 02021, Tel: 617-828-6216, FAX: 617-828-3215; Empl: 300; Sls. Mgr.: EV. Lauria, VP-Sls. & Mktg.; Dist. Mgr.: Richard Bagg, Distrib. Sls. Mgr.

**POWER INTEGRITY CORP.**, 1834 Pembroke Rd., Greensboro, NC 27408, Tel: 910-379-9773, 800-237-6260, FAX: 910-379-1301; Sls. Mgr.: James T. Fesmire

**POWERLINE, INC.**, 1360 S. Clarkson St., Denver, CO 80210, Tel: 303-698-7883, FAX: 303-777-7573; Empl: 9; Sls. Mgr.: Matt Breneman

**POWER MAGNE-TECH CORPORATION**, 441 High Street, Perth Amboy, NJ 08861, Tel: 908-826-4700, FAX: 908-826-4706; Empl: 65; Sls. Mgr.: Arthur Zuckerman; Dist. Mgr.: Arthur Zuckerman

**POWERMARK**, See Square D Co. Power Protection Sys.

**POWER/MATE CORPORATION**, 2727 Kurtz St., San Diego, CA 92110, Tel: 800-843-8544, 619-299-3800, FAX: 619-296-8039 (sls); Empl: 175

**POWER MEASUREMENT LTD.**, 6703 Rajpur Place, Victoria, BC, Canada V8X 3X1, Tel: 604-652-5118, FAX: 604-652-0411; Empl: 50; Sls. Mgr.: Bradford Forth, Mktg. Mgr.

**POWERNETICS LTD.**, Clarence St. Loughborough, Leics, ENG LE11 1DX, Tel: 0509 214153, TELEX: 34306, FAX: 0509 262460; Empl: 66; Sls. Mgr.: Margaret A. Foggon, Export Sls. Mgr.

  
**Power-one**  
**D.C. POWER SUPPLIES**  
**FAX: 805-388-0476**  
**POWER-ONE, INC.**, 740 Calle Plano, Camarillo, CA 93012, Tel: 805-987-8741; FSC No: 54407; Empl: 320; Dist. Mgr.: Julius Hirsch, V.P. Sls. .... **D-1886-1895**

**Local Sales Offices & Reps**  
 AL Huntsville, M-Squared, Inc. .... 205-830-0498  
 AZ MESA, Sys. Sls. of AZ .... 602-464-9989  
 CA Escondido, Eagle Tech. Sls. .... 619-743-6550  
 CA Santa Clara, Nova-Tronix, Inc. .... 408-727-9530  
 CA Woodland Hills, Varigon, Inc. .... 818-594-5080  
 CO Englewood, Quorum 3 .... 303-799-8100  
 CT Hamden, Datcom .... 203-288-7005  
 FL Boca Raton, Electrocraft .... 407-394-9686  
 FL Largo, Electrocraft .... 813-544-1766  
 FL Longwood, Electrocraft .... 407-682-7832  
 GA Norcross, M-Squared, Inc. .... 404-447-6124  
 IL Chicago, M. Gottlieb & Assocs. .... 312-775-1151  
 IN Indianapolis, Rathsburg Assoc. Inc. .... 313-489-1500  
 IA Cedar Rapids, Midwest Tech. Sls. .... 319-377-1688  
 KS Goddard, Midwest Tech. Sls. .... 316-794-8565  
 KS Lenexa, Midwest Tech. Sls. .... 913-888-5100  
 MD Baltimore, Eastern Comps. Sls. .... 410-788-7050  
 MA Waltham, Datcom, Inc. .... 617-891-4600  
 MI Farmington Hills, Rathsburg Assocs. Inc. .... 313-489-1500

313-489-1500  
 MN Edina, G.P. Sls., Inc. .... 613-831-2362  
 MO Earth City, Midwest Tech. Sls. .... 314-298-8787  
 MN Albuquerque, Sys. Sls. of AZ .... 505-889-2901  
 NY ESyracuse, Nycorn, Inc. .... 315-437-8343  
 NY Fairport, Nycorn, Inc. .... 716-425-5120  
 NY Great Neck, Trionic Assocs. .... 516-466-2300  
 NC Cary, M-Squared, Inc. .... 919-467-6319  
 NC Raleigh, M-Squared, Inc. .... 919-851-0010  
 OH Columbus, Rathsburg Assocs. Inc. .... 614-457-2242  
 OR Beaverton, Pacific Mktg. Specialist .... 503-641-9373  
 PA Norristown, Eastern Comp. Sls. .... 215-270-9535  
 VA Redmond, Pacific Mktg. Specialist .... 206-882-3144  
 WI Milwaukee, M. Gottlieb & Assocs. .... 414-546-4466

**Local Distributors**  
 AL Huntsville, Pioneer Elctms.-Tech. .... 205-837-9300  
 AL Huntsville, RS Elctms. .... 205-721-9999  
 AZ Phoenix, Sterling Elctms. .... 602-437-5565  
 AZ Tempe, Bell Inds. .... 602-966-7800  
 AR Ft. Smith, Carlton-Bates .... 501-646-8201  
 AR Little Rock, Carlton-Bates .... 501-562-9100  
 AR Pine Bluff, Carlton-Bates .... 501-535-1354  
 AR Springdale, Carlton-Bates .... 501-756-5012  
 CA Agoura, Bell Inds. .... 818-879-9494  
 CA Carlsbad, FLW .... 619-434-5251  
 CA Costa Mesa, FLW .... 714-751-7512  
 CA Cypress, Bell Inds. .... 714-895-7801  
 CA Del Mar, Compumech Elctms. .... 619-792-7800  
 CA Milpitas, Compumech Elctms. .... 408-945-9395  
 CA Oxnard, FLW .... 1-800-553-8558  
 CA Rocklin, Bell Inds. .... 916-652-0418  
 CA San Diego, Bell Inds. .... 619-268-1277

CA San Diego, Sterling Elctm. .... 619-560-8948  
 CA San Jose, Capstone Elctms. .... 408-453-9804  
 CA Sunnyvale, Bell Inds. .... 408-734-8875  
 CA Tustin, Capstone Elctms. .... 714-587-0638  
 CO Aurora, Capstone Elctms. .... 303-375-1300  
 CO Denver, Bell Inds. .... 303-691-2460  
 CO Englewood, Sterling Elctms. .... 303-792-3939  
 CT Shelton, Pioneer Elctms.-Stand. .... 203-929-5600  
 CT Wallingford, Bell Inds. .... 203-269-6801  
 CT Wallingford, Greene-Shaw Co. .... 203-265-3333  
 CT Wallingford, Sterling Elctms. .... 203-265-9535  
 FL Altamonte Springs, Bell Inds. .... 407-339-0078  
 FL Altamonte Springs, Pioneer Elctms.-Tech. .... 407-834-9090

FL Deerfield Bch, Pioneer Elctms.-Tech. .... 305-428-8877  
 FL Maintland, Elctm. Equip. .... 407-539-0888  
 FL Maintland/Pompano Bch, Elctm. Equip. .... 305-960-1200  
 FL Miami, Elctm. Equip. Co. .... 305-526-6000  
 FL Tampa, Elctm. Equip. .... 813-988-0810  
 GA Duluth, Pioneer Elctms.-Tech. .... 404-623-1003  
 GA Norcross, Bell Inds. .... 404-446-7167  
 GA Norcross, RS Elctms. .... 404-242-0520  
 ID Boise, Pioneer Elctms.-Tech. .... 208-336-2227  
 IL Addison, Pioneer Elctms. .... 312-495-9680  
 IL Arlington Hts., C.W. Elctms. .... 708-439-9880  
 IL Bensenville, Voyager Elctms. .... 312-860-1300  
 IL Elk Grove Village, Bell Inds. .... 312-640-1910  
 IL Itasca, Capstone Elctms. .... 708-250-0300  
 IL Northbrook, Classic Comps. .... 708-272-9650  
 IL Schaumburg, Sterling .... 708-303-9900  
 IN Ft. Wayne, Bell Inds. .... 219-422-4300  
 IN Indianapolis, Bell Inds. .... 317-875-8200  
 IN Indianapolis, Pioneer Elctms. .... 317-573-0880  
 IN Indianapolis, RS Elctms. .... 317-253-9065  
 IA Cedar Rapids, Dee Elctms. .... 319-365-7551  
 KS Lenexa, RS Elctms. .... 913-362-1923  
 KS Lenexa, Sterling Elctms. .... 913-492-5406  
 LA Shreveport, Carlton-Bates .... 318-636-9975  
 LA Westwego, Sterling Elctms. .... 504-436-1481  
 MD Columbia, Bell Inds. .... 410-290-5100  
 MD Columbia, Sterling Elctms. .... 301-290-3800  
 MD Gaithersburg, Pioneer Elctms.-Tech. .... 301-921-0660  
 MA Andover, Bell Inds. .... 508-474-8880  
 MA Binghamton, Pioneer Elctms. .... 617-748-8211  
 MA Lexington, Pioneer Elctms. .... 617-861-9200  
 MA Newton, Greene-Shaw Co. .... 617-969-8900  
 MA Wilmington, Capstone Elctms. .... 508-657-5874  
 MA Woburn, Sterling Elctms. .... 617-938-6200  
 MI Grand Rapids, Pioneer .... 616-698-1800  
 MI Grand Rapids, RS Elctms. .... 616-241-3483  
 MI Livonia, Pioneer Elctms. .... 313-525-1800  
 MI Livonia, RS Elect. .... 313-525-1155  
 MN Eden Prairie, Pioneer .... 612-944-3355  
 MN Fridley, Voyager .... 612-571-7766  
 MN Minneapolis, Sterling .... 612-831-2666  
 MO Maryland Heights, RS Elctms. .... 314-997-7709  
 MO Springfield, Carlton-Bates .... 417-862-1699  
 MO St. Louis, Pioneer .... 314-432-4350  
 NE Lincoln, Scott Elctms. .... 402-466-8221  
 NE Omaha, Scott Elctms. .... 402-734-6750  
 NJ Edison, Sterling Elctms. .... 908-417-1000  
 NJ Fairfield, Bell Inds. .... 201-227-6060  
 NJ Fairfield, Pioneer Elctms. .... 201-575-3510  
 NJ Marlton, Capstone Elctms. .... 609-596-7500  
 NM Albuquerque, Bell Inds. .... 505-292-2700  
 NM Albuquerque, Sterling Elctms. .... 505-884-1900  
 NY Binghamton, Pioneer Elctms. .... 607-722-9300  
 NY Buffalo, Zeller Elctms. .... 716-873-1300  
 NY Fairport, Pioneer Elctms. .... 716-381-7070  
 NY Hauppauge, RS Elctms. .... 516-231-6372  
 NY Rochester, CAM/RPC Elctms., Inc. .... 716-427-9999  
 NY Rochester, Zeller Elctms. .... 716-254-8840  
 NY Woodbury, Pioneer Elctms. .... 516-921-8700  
 NC Morrisville, Pioneer Elctms.-Tech. .... 919-460-1530  
 NC Raleigh, Capstone Elctms. .... 919-954-0600  
 NC Raleigh, Sterling Elctms. .... 919-790-8634  
 OH Cleveland, CAM/RPC Elctms. .... 216-461-4700  
 OH Cleveland, Pioneer Elctms. .... 216-587-3600  
 OH Dayton, Bell Inds. .... 513-435-5922  
 OH Dayton, Bell Inds. (Military) .... 513-434-8231  
 OH Dayton, Pioneer Elctms. .... 513-236-9900  
 OH Maumee, RS Elctms. .... 419-893-0721  
 OH Solon, CAM/RPC/First Connection .... 216-248-6181  
 OH Solon, Sterling Elctms. .... 216-248-1122  
 OK Oklahoma City, Carlton-Bates .... 405-681-4446  
 OK Tulsa, Carlton-Bates .... 918-250-1626  
 OK Tulsa, Sterling Elctms. .... 918-663-2410  
 OR Beaverton, Bell Inds. .... 503-644-3444  
 OR Portland, Radar Elec. .... 503-232-3404  
 PA Horsham, Pioneer Elctms.-Tech. .... 215-674-4000  
 PA Pittsburgh, CAM/RPC Elctms. .... 412-963-6202  
 PA Pittsburgh, Pioneer Elctms. .... 412-782-2300  
 PA Trevoise, Bell Inds. .... 215-953-2899  
 TN Jackson, Carlton-Bates .... 901-664-2714  
 TN Memphis, Carlton-Bates .... 901-365-3539  
 TN Nashville, Carlton-Bates .... 615-885-3232



|     |                                  |                                 |
|-----|----------------------------------|---------------------------------|
| TX  | Austin, Carlton-Bates            | 512-837-9098                    |
| TX  | Austin, Norcom, Inc.             | 512-451-2757                    |
| TX  | Austin, Pioneer Elctms.          | 512-835-4000                    |
| TX  | Austin, Sterling                 | 512-836-1341                    |
| TX  | Carrollton, Capstone Elctms.     | 214-380-9049,<br>1-800-388-6757 |
| TX  | Carrollton, Sterling Elctms.     | 214-243-1600                    |
| TX  | Dallas, Norcom, Inc.             | 214-386-4888                    |
| TX  | Dallas, Pioneer Elctms.          | 214-386-7300                    |
| TX  | Fl. Worth, Carlton-Bates         | 817-293-5588                    |
| TX  | Houston, Norcom, Inc.            | 713-778-0392                    |
| TX  | Houston, Pioneer Elctms.         | 713-495-4700                    |
| TX  | Houston, Sterling Elctms.        | 713-623-6600                    |
| TX  | Richardson, Bell Inds.           | 214-690-0468                    |
| TX  | San Antonio, Carlton-Bates       | 512-805-8300                    |
| TX  | Texarkana, Carlton-Bates         | 214-792-6923                    |
| UT  | Midvale, Bell Inds.              | 801-661-9691                    |
| UT  | Salt Lake City, Sterling Elctms. | 801-972-5444                    |
| VA  | Richmond, Sterling Elctms.       | 804-226-2190                    |
| WA  | Redmond, Bell Inds.              | 206-881-2140                    |
| WA  | Richardson, Radar Elec.          | 509-747-3053                    |
| WA  | Richland, Radar Elec.            | 509-943-8836                    |
| WA  | Seattle, Radar Electric          | 206-282-2511                    |
| WA  | Spokane, Radar Elec.             | 509-747-3053                    |
| WI  | Brookfield, Pioneer Elctms.      | 414-784-3480                    |
| WI  | New Berlin, Classic Comps.       | 414-786-5300                    |
| WI  | Waukesha, Bell Inds.             | 414-547-8879                    |
| EXP | CA, Los Angeles, Hanex, Inc.     | 213-556-3807                    |

**POWER-PAK, INC.**, 6216 Oakton St., Morton Grove, IL 60053, Tel: 708-966-6000, FAX: 708-966-6009; Empl: 35; *Sls. Mgr.*: Robert Villari

**POWER PRODUCTS DIV., COMPUTER PRODS./POWER PRODS.**, See Computer Prods. Inc., Fremont, CA

**POWER SOLUTIONS INC.**, 4699 N. Federal Hwy., Pompano Bch., FL 33064, Tel: 305-943-4110, FAX: 305-943-6068

**POWER-SONIC**, Box 5242, 3106 Spring St., Redwood City, CA 94063, Tel: 415-364-5001, FAX: 415-366-3662; Empl: 50; *Sls. Mgr.*: Carl E. Fischetti; *Dist. Mgr.*: Carl E. Fischetti; **D-1464**

#### Local Sales Offices & Reps

|    |                                |              |
|----|--------------------------------|--------------|
| CA | Redwood City, Andrew Ryan      | 415-364-5001 |
| CO | Denver, Richard Moody          | 303-893-3771 |
| FL | Tampa, SRT Mktg.               | 813-884-4805 |
| IL | Chicago, Rendell Sls. Co.      | 312-539-1820 |
| KY | Lexington, Donald Keil         | 606-272-6960 |
| MA | Norwood, Assoc. Power Prods.   | 617-769-7516 |
| MI | Chelsea, Sean T Sls.           | 313-475-2021 |
| MS | Jackson, Doby Assocs.          | 601-981-1138 |
| NJ | Northvale, John Hart           | 201-767-9654 |
| MN | Bloomington, J.L.K. Tech. Sls. | 612-884-0009 |
| OH | Willoughby, Nationwide Comps.  | 216-946-3226 |
| TX | Dallas, The Power Connection   | 214-401-3490 |

#### Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Birmingham, Forbes Distrib.         | 205-251-4104 |
| AK | Anchorage, Fridg North              | 907-561-4633 |
| AZ | Phoenix, Lynntronics                | 602-841-3900 |
| AR | Little Rock, Carlton Bates          | 501-562-9100 |
| CA | Costa Mesa, Battery Specialties     | 800-352-3706 |
| CO | Denver, Cargo Battery               | 303-296-8763 |
| CT | Waterbury, Jasco Batteries          | 203-597-9220 |
| DE | National Distr., Allied Elctms.     | 800-433-5700 |
| FL | Altamonte Springs, TNR Tech.        | 800-346-0601 |
| GA | Decatur, Emergency Lighting Svc.    | 404-981-2288 |
| HI | Honolulu, I.C. Supp.                | 808-839-1966 |
| ID | Boise, Kimball Elctms.              | 208-232-2201 |
| IL | National Distr., Allied Elctms.     | 800-433-5700 |
| IN | Evansville, Hutch & Sons            | 812-425-7201 |
| IA | Des Moines, Radio Trade Supp.       | 515-288-7237 |
| KS | Kansas City, North Supply           | 913-791-7000 |
| KY | Louisville, P.I. Burks              | 502-589-3960 |
| LA | New Orleans, Southern Radio Supp.   | 800-447-0444 |
| ME | National Distr., Allied Elctms.     | 800-433-5700 |
| MD | Aberdeen, Harco Elctms.             | 301-838-7990 |
| MA | Billerica, Mayer Elctms.            | 401-724-7100 |
| MI | Livonia, R.S. Elctms.               | 313-525-1155 |
| MN | Minneapolis, Burns Sls.             | 800-728-4761 |
| MO | Kansas City, Elctm. Supp.           | 816-931-3383 |
| NE | National Distr., Allied Elctms.     | 800-433-5700 |
| NV | Las Vegas, Kiesub                   | 702-733-0024 |
| NH | National Distr., Allied Elctms.     | 800-433-5700 |
| NJ | Randolph, Mouser Elctms.            | 201-328-3232 |
| NM | Albuquerque, Betatron               | 505-821-1122 |
| NY | Ridgewood, J.A. McDermott Corp.     | 718-456-3606 |
| NC | Winston Salem, Kirkman Elctms.      | 919-722-9131 |
| ND | National Distr., Allied Elctms.     | 800-433-5700 |
| OH | Millbury, Dynalite                  | 419-837-6837 |
| OK | Oklahoma City, Radio Supp.          | 405-232-6127 |
| OR | Beaverton, Micro Power              | 503-626-7086 |
| PA | National Distr., Allied Elctms.     | 800-433-5700 |
| SC | Charleston, Wholesale Indl. Elctms. | 803-722-2634 |
| TN | Memphis, Carlton Bates              | 901-365-3539 |

|     |                            |              |
|-----|----------------------------|--------------|
| TX  | Fl. Worth, Allied Elctms.  | 800-433-5700 |
| VA  | Chesapeake, Battery Outlet | 804-545-4442 |
| WA  | Redmond, Energy Sls.       | 206-883-2343 |
| Can | Fort Erie, The Battery Co. | 800-695-9482 |

**POWER STAR, INC.**, P.O. Box 18701, Irvine, CA 92713, Tel: 714-261-5377, 800-854-9420, FAX: 714-261-5381; Empl: 11

**POWER SUPPLY CONCEPTS INC.**, 840 Jupiter Park Dr., Units 103-104, Jupiter, FL 33458-8947, Tel: 407-746-1800, FAX: 407-746-1805; **D-1896-1897**



**FAX: 201-478-8201**

**POWER SWITCH CORPORATION**, 17 Vreeland St., Lodi, NJ 07644, Tel: 201-478-5788; Empl: 33; *Sls. Mgr.*: Ken Schnitzer; **D-1899-1905**

#### Local Sales Offices & Reps

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AL  | Madison, Benchmark Tech. Sls.        | 205-464-9909 |
| AZ  | Tempe, Gassner & Clack               | 602-968-9037 |
| CA  | Camarillo, The Tricamo Co.           | 805-388-0039 |
| CO  | Franktown, MRC                       | 303-660-8750 |
| FL  | Palm Bay, VM2 Mktg.                  | 407-984-1918 |
| GA  | Atlanta, Benchmark Tech. Sls.        | 404-446-1711 |
| IL  | Wood Dale, BNI                       | 708-595-9210 |
| IN  | Indianapolis, Wilson Tech. Sls. Inc. | 317-872-2513 |
| IA  | Cedar Rapids, Midtec Assoc., Inc.    | 319-395-0028 |
| KS  | Lenexa, Midtec Assoc., Inc.          | 913-541-0505 |
| MA  | Tyngsboro, CompTech                  | 508-649-3030 |
| MI  | Clarkson, Bradcor Elctms.            | 313-625-7644 |
| MN  | Minneapolis, Electro-Serv            | 612-338-3475 |
| MO  | St. Louis, Midtec Assoc., Inc.       | 314-275-8666 |
| NJ  | Haddonfield, M & S Assoc.            | 609-429-7055 |
| NY  | Endwell, Micheal Foldes, Inc.        | 607-786-4962 |
| NC  | Raleigh, Benchmark Tech. Sls.        | 919-850-0633 |
| OH  | Cleveland, Bradcor Elctms.           | 216-671-1200 |
| OH  | Dayton, Bradcor Elctms.              | 216-671-1200 |
| TX  | Dallas, Tycom                        | 214-960-7368 |
| WA  | Edmonds, Power Sources Unltd.        | 206-743-6641 |
| WI  | Brookville, BNI                      | 414-781-4775 |
| Can | Mississauga, Andy Baumen Assoc. Ltd. | 416-828-2600 |

**POWER SYSTEMS, INC.**, 45 Griffin Rd., South, Bloomfield, CT 06002, Tel: 203-726-1300, FAX: 203-726-1495; FSC No: 50463; Empl: 310; *Sls. Mgr.*: Kerry D. Smith

**POWER SYSTEMS & CONTROLS, INC.**, 3206 Lanvale Ave., Richmond, VA 23230, Tel: 804-355-2803, FAX: 804-358-0498; Empl: 55

**POWER SYS. GRP.**, Rantec Div., Emerson Elec. Co., 9401 Oso Ave., Chatsworth, CA 91311, Tel: 818-885-8223, TWX: 910-493-1247; FSC No: 04971; Empl: 265; *Sls. Mgr.*: Fred Silver

**POWERTEC INDUSTRIAL CORP.**, 3958 Airway Drive, Rock Hill, SC 29732, Tel: 803-328-1888, FAX: 803-328-1870; Empl: 110; *Sls. Mgr.*: Ed Lee; *Dist. Mgr.*: Dale Norman

**POWERTEC POWER SUPPLIES, INC., DIV. OF ASTEC AMERICA**, See Astec America

**POWERTECH, INC.**, Fair Lawn Ave., Fair Lawn, NJ 07410, Tel: 201-791-5050, TELEX: 353970; FSC No: 32953; Empl: 49

**POWER TECHNOLOGY, INC.**, P.O. Box 191117, Little Rock, AR 72219-1117, Tel: 501-568-1995, FAX: 501-568-1994; Empl: 85; *Sls. Mgr.*: John Webb

**POWER TEN, INC.**, 486 Mercury Dr., Sunnyvale, CA 94086, Tel: 408-738-5959, FAX: 408-738-4326; FSC No: 61987; *Sls. Mgr.*: Vince Mutascio; **D-1907**

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, TEQSPEC                 | 205-883-6699 |
| AZ | Phoenix, Jayson Co., Inc.           | 602-867-1964 |
| CA | Los Alamitos, Power Specialists     | 213-594-9418 |
| CA | San Diego, Power Specialists        | 619-726-4799 |
| CO | Louisville, SDW                     | 303-665-8089 |
| CT | Guilford, HG Assocs.                | 203-459-5424 |
| FL | Palm Harbor, TEQSPEC                | 813-942-6006 |
| GA | Snellville, TEQSPEC                 | 404-972-7955 |
| IL | Arlington Hgts., Comtel Midwest Co. | 708-392-4040 |
| IN | Indianapolis, Comtel Midwest Co.    | 317-253-1681 |

|    |                                            |              |
|----|--------------------------------------------|--------------|
| KS | Shawnee Mission, Comtel Midwest Co.        | 913-268-0762 |
| MA | Stow, HG Assocs.                           | 508-897-3190 |
| MI | Framington Hill, Carter, McCormic & Pierce | 313-477-7700 |
| MN | Wayzata, Comtel Midwest Co.                | 612-476-1551 |
| MO | Manchester, Comtel Midwest Co.             | 314-227-7220 |
| NM | Albuquerque, SDW                           | 505-883-3668 |
| NY | Great Neck, RTI                            | 516-829-3770 |
| NC | Winston-Salem, TEQSPEC                     | 919-765-5553 |
| OH | Marfa, Carter, McCormic & Pierce           | 216-398-0400 |
| OK | Tulsa, Acudata                             | 918-743-1875 |
| PA | Pittsburgh, Carter, McCormic & Pierce      | 412-826-3800 |

|     |                                    |              |
|-----|------------------------------------|--------------|
| TX  | Austin, Acudata                    | 512-478-1018 |
| TX  | Houston, Acudata                   | 713-580-2451 |
| TX  | Plano, Acudata                     | 214-424-3567 |
| VT  | Graniteville, HG Assocs.           | 802-476-4223 |
| VA  | Fairfax, SCI-REP                   | 703-385-0600 |
| WA  | Bellevue, A. J. Smith Co.          | 206-746-6770 |
| WI  | New Berlin, Comtel Midwest Co.     | 414-544-6042 |
| Can | N. Vancouver, BC, Jerome & Francis | 604-986-1286 |
| Can | Rexdale, Ont., Interfax            | 416-674-8970 |

**POWERTREND, INC.**, 515 E. Pershing Blvd., Sta. 1001, Cheyenne, WY 82001, Tel: 307-635-9221, FAX: 307-635-8116; *Sls. Mgr.*: W. Rumsey

**POWER TRENDS, INC.**, 1101 N. Raddant Rd., Batavia, IL 60510, Tel: 708-406-0900, FAX: 708-406-0901; Empl: 45; *Sls. Mgr.*: Don Matthiesen

All Locations call Hamilton/Vnet 800-442-6458

**Powertron**

**FAX: 516-883-7155**

**POWERTRON CORPORATION, Industrial Test Equipment Co., Inc.**, 21 Yenniock Ave., Port Wash., NY 11050, Tel: 516-883-1700; Empl: 6; *Sls. Mgr.*: Barbara Assa; **D-1012, 2268-2271**

**POWERTRON**, Contraves Goerz Corp., 3821 Barranger Dr., Charlotte, NC 28210, Tel: 704-525-8962, TELEX: 572-444

**POWERTRONIX**

**FAX: 415-345-7240**

**POWERTRONIX CORP.**, 703 Cayman Ln., Foster City, CA 94404, Tel: 415-345-6800; Empl: 94; *Sls. Mgr.*: Carl A. Svensson; **A-2509-2511**

#### Local Sales Offices & Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| AZ | Phoenix, Chaparral Elctms.             | 602-996-5909 |
| AR | Little Rock, Doby Assocs.              | 501-221-0326 |
| CA | Foster City, Powertronix Corp.         | 415-345-6800 |
| CA | Mission Viejo, Champa Assocs.          | 714-581-3459 |
| CA | Sherman Oaks, Champa Assocs.           | 818-769-9456 |
| CO | Littleton, Taylor Mktg.                | 303-850-0207 |
| FL | Delray Beach, Phelps Assocs.           | 407-276-7591 |
| IL | Arlington Hgts., MJ Petersen & Assocs. | 708-577-8200 |
| MD | Baltimore, Chesapeake Indl.            | 410-653-0476 |
| MA | Bellingham, OEM Mktg. & Sls.           | 508-528-4983 |
| NV | Las Vegas, Chaparral Nevada            | 702-433-5486 |
| NH | Salem, OEM Mktg. & Sls.                | 603-893-0009 |
| NJ | Wayne, Apogee Mktg.                    | 201-305-3735 |
| NM | Albuquerque, Chaparral Elctms.         | 505-271-2266 |
| NY | Hempstead, Sticom                      | 516-366-4221 |
| NY | Rochester, H.C. Johnson Agencies       | 716-586-0777 |
| OH | Mainville, G.A. Barnett and Co.        | 513-677-0922 |
| PA | Glenshaw, Hollen Sls. Inc.             | 412-487-1246 |
| PA | Plymouth Meeting, CMS Sls. & Mktg.     | 215-834-6840 |
| TN | Collierville, Doby Assocs.             | 901-854-5482 |
| TX | Richardson, Jim D. Gray & Assocs.      | 214-699-9976 |
| UT | Ogden, Taylor Mktg.                    | 801-546-9590 |




**FAX: 708-816-8988**

**POWERVAR, INC.**, 28457 N. Ballard Dr., Ste. C, Lake Forest, IL 60045, Tel: 816-816-8585, 800-369-7179; Sls. Mgr.: Tom Gornick; Dist. Mgr.: Tom Gornick

**D•2297-2299**

#### Local Sales Offices & Reps

|     |                                            |                                 |
|-----|--------------------------------------------|---------------------------------|
| AZ  | Glendale, Desert Canyon Sls.               | 602-938-1804, FAX: 602-938-5026 |
| CA  | Concord, Competent Tech. Svcs.             | 510-827-9501, FAX: 510-676-2904 |
| CA  | Inglewood, Ezra Mintz Assocs., Inc.        | 310-677-6790, FAX: 310-677-7160 |
| CA  | Los Alamitos, Power Dynamics Co., Inc.     | 714-527-6567, FAX: 714-827-7832 |
| CA  | Redondo Bch, Intelligent Power Solution    | 310-798-1946, FAX: 310-379-1077 |
| CA  | Santa Ana, Powervar West                   | 714-544-9940                    |
| CA  | Santa Barbara, Powercom                    | 805-963-4864, FAX: 805-962-0104 |
| CA  | Woodside, Radical Two                      | 415-363-0267, FAX: 415-364-9504 |
| CO  | Boulder, Carebase Technlgs., Inc.          | 303-444-9399, FAX: 303-444-6467 |
| FL  | Boca Raton, Business Svc. Mgt., Inc.       | 407-750-6802, FAX: 407-750-9823 |
| HI  | Waipahu, Computer Power Specialists, Inc.  | 808-676-3700, FAX: 808-676-5700 |
| IL  | Barrington, Integrated Power Solutions     | 708-991-9424, FAX: 708-991-9425 |
| IN  | Zionsville, Elctrl Power Protection Specs. | 317-873-5027, FAX: 317-873-4047 |
| IA  | Honeycreek, Integrated Elctrl Svcs.        | 712-545-9394, FAX: 712-545-3572 |
| IA  | Urbandale, Precision Power Sys.            | 515-276-4312, FAX: 515-276-5058 |
| MN  | Edina, Dytec                               | 612-831-7169, FAX: 612-831-5114 |
| MN  | Lakeville, MESA Dislbn.                    | 612-469-1991, FAX: 612-469-2273 |
| MN  | Minneapolis, T.G. Power Sys.               | 612-781-2722, FAX: 612-781-7545 |
| NY  | N. Syracuse, Lachut Elctrl Sls.            | 315-458-6486, FAX: 315-458-6147 |
| PA  | Feasterville, Spectrum Power Prods.        | 215-357-6562, FAX: 215-357-5871 |
| TX  | Dickinson, Power Unltd.                    | 713-337-6804, FAX: 713-337-5504 |
| WA  | Redmond, AC Power Technlg.                 | 206-868-3632, FAX: 206-868-3730 |
| WA  | Seattle, Quality Power Sys.                | 206-524-7016, FAX: 206-524-7016 |
| Can | Bedford, NS, Powervar Canada               | 902-835-0497, FAX: 902-835-4530 |
| Can | Vancouver, BC, Fisher Power Corp.          | 604-684-7383, FAX: 604-684-0401 |

**POWER-UPS CORP.**, Brookhaven R&D Plaza, 1 Roned Rd., Shirley, NY 11967, Tel: 516-345-5700, 1-800-333-POWER, FAX: 516-345-3106; Empl: 50; Sls. Mgr.: Veronica Harney

**PPC PRODUCTS CORPORATION**, 7516 Central Industrial Dr., Riviera Beach, FL 33404, Tel: 407-848-9606, TWX: 510-952-7611; FSC No.: 33178; Empl: 75; Sls. Mgr.: Kathy Anderson


**FAX: 919-781-4980**

**PPD, INC.**, 6001 Resco Ct., Raleigh, NC 27613, Tel: 919-781-3955; Empl: 25; **A•1150-1155; B•1383**

#### Local Sales Offices & Reps

|                            |                                                                                                                             |               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------|
| NC                         | Raleigh, Godwin Assocs.                                                                                                     | 919-878-8000  |
| PPM, INC.                  | 23500 Mercantile Rd., Unit I, Cleveland, OH 44122, Tel: 1-800-899-4776; FSC No.: 29504; Empl: 20; Sls. Mgr.: A. L. Bletcher | <b>D•1315</b> |
| Local Sales Offices & Reps |                                                                                                                             |               |
| AL                         | Huntsville, Jim Springer, Inc.                                                                                              | 205-883-4163  |
| AZ                         | Phoenix, J. Smith & Assocs.                                                                                                 | 602-267-0981  |
| CA                         | Camarillo, Brevo                                                                                                            | 805-491-2943  |
| CO                         | Colorado Springs, J. Smith & Assocs.                                                                                        | 719-597-5343  |

|    |                                 |              |
|----|---------------------------------|--------------|
| MI | Ferdale, Tiby Co.               | 313-547-3550 |
| NM | Albuquerque, J. Smith & Assocs. | 505-345-6501 |
| OH | Cleveland, Tiby Co.             | 216-371-5335 |
| OH | Dayton, Tiby Co.                | 513-277-3822 |

**PRACTICAL AUTOMATION, INC.**, 2 Research Dr., Shelton, CT 06484, Tel: 203-929-5381, FAX: 203-929-9941; Empl: 150; Sls. Mgr.: R. M. Banzaca

**PRECICONTACT, INC.**, 835 Wheeler Way, Langhorne, PA 19047, Tel: 215-757-1202, FAX: 215-757-8025; FSC No.: 60197; Empl: 50; Sls. Mgr.: Paul F. Ruo

**PRECIDIP**, See Mill-Max Mfg. Corp.

**PRECISE SENSORS, INC.**, 235 West Chestnut Ave., Monrovia, CA 91016, Tel: 818-358-4578, FAX: 818-358-3546; Empl: 35

**PRECISION COMPONENTS, INC.**, 400 W. Davy Ln., Wilmington, IL 60481, Tel: 708-543-6448, FAX: 708-543-6484

**PRECISION CONTROL MANUFACTURING, INC.**, 1509-B Queen Anne Ave. N., Seattle, WA 98109, Tel: 206-281-9380; FSC No.: 64782; Empl: 5; Sls. Mgr.: Steve L. Deters **A•2116**

#### Local Sales Offices & Reps

WA Seattle, Precision Control Mfg., Inc. 206-281-9380

#### Local Distributors

CA Granada Hills, Lion Elctrn, Inc. 818-363-0993

**PRECISION DIGITAL CORP.**, 15 Mercer Road, Natick, MA 01760, Tel: 508-655-7300, FAX: 508-655-8990; Sls. Mgr.: Jeffrey Peters

**PRECISION ELECTRONIC HARDWARE, INC.**, 987 Woodtick Road, Waterbury, CT 01703, Tel: 203-754-0779, FAX: 203-755-7996; Empl: 25; Sls. Mgr.: Jeffrey A. Balko

**PRECISION ELECTRONICS, INC.**, 9101 King Ave., Franklin Park, IL 60131, Tel: 708-678-5350, FAX: 708-678-0511; Empl: 25; Sls. Mgr.: Jeff Franzen

**PRECISION ELECTRONICS INC.**, One DiFormas Ct., Copiague, NY 11726, Tel: 516-842-4900, FAX: 516-842-4904 **A•2526**

**PRECISION ELECTRO-OPTICS, INC.**, 30 Commerce St., Box 1039, Chatham, NJ 07928, Tel: 201-635-8811, FAX: 201-635-0437; FSC No.: OG1WB-Cage Code; Empl: 8; Sls. Mgr.: Jim Ingram

**PRECISION EXTRUSIONS, INC.**, Box 120, Bensenville, IL 60106, Tel: 708-766-0340, FAX: 708-766-0495; Empl: 135; Sls. Mgr.: Richard Ziehm


**FAX: 219-253-6570**

**PRECISION FABRICATION TECHNOLOGIES, INC.**, 219-253-6666; Empl: 100; Sls. Mgr.: Joseph Rogers; Dist. Mgr.: Duane Nagel **C•1073-1079**

#### Local Sales Offices & Reps

|    |                                 |              |
|----|---------------------------------|--------------|
| AL | Mobile, Allied Elctrms.         | 800-433-5700 |
| AZ | Phoenix, Allied Elctrms.        | 800-433-5700 |
| AZ | Phoenix, TeQni-Rep. Assoc.      | 602-242-9449 |
| CA | Saratoga, Edward King & Assocs. | 408-741-0434 |
| CA | Sun Valley, TeQni-Rep. Assoc.   | 818-768-4223 |
| CO | Englewood, Techtel Mktg.        | 303-721-9626 |
| CT | Old Saybrook, FJS Assocs.       | 203-388-5374 |
| FL | Orlando, Aurora-Schmitt Assoc.  | 800-232-9005 |
| IL | Cary, Bob Burns & Assocs.       | 708-516-3322 |
| IL | Monroe, C.R. Co.                | 708-534-7940 |
| MA | Burlington, FJS Assocs.         | 617-273-5959 |
| MI | Livonia, Amtech Rep.            | 313-474-8300 |
| NJ | Medford, Champion Elctrn. Sls.  | 609-983-0932 |
| NY | Hauppauge, Schmitt Mktg. Corp.  | 516-434-1313 |
| OH | Rocky Hill, Oak Hill Mktg. Inc. | 216-333-0000 |
| OR | Portland, Caruso & Co.          | 503-246-5439 |
| TX | Austin, S.W. Mktg. Assoc.       | 512-255-8010 |
| TX | Dallas, S.W. Mktg. Assocs.      | 214-341-8631 |
| TX | Houston, S.W. Mktg. Assocs.     | 713-537-8166 |
| WA | Bellevue, Caruso & Co.          | 206-455-8811 |
| WI | Colgate, Rep One & Assocs.      | 414-628-4016 |
| WI | Madison, Rep One & Assoc.       | 608-246-8889 |

#### Local Distributors

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Birmingham, ACK Radio Supply         | 205-322-0588 |
| AL | Huntsville, Allied Elctrms.          | 800-433-5700 |
| AL | Huntsville, Marshall Inds.           | 205-881-9235 |
| AL | Mobile, Allied Elctrms.              | 800-433-5700 |
| AZ | Phoenix, Allied Elctrms.             | 800-433-5700 |
| AZ | Phoenix, Marshall Inds.              | 602-496-0290 |
| AZ | Tucson, Elctrn. City                 | 602-622-1173 |
| CA | Calabasas, Marshall Inds.            | 818-878-7021 |
| CA | Canoga Park, Sandy's Elctrms.        | 818-346-0510 |
| CA | Chatsworth, Allied Elctrms.          | 800-433-5700 |
| CA | Chatsworth, ITC Elctrms.             | 818-700-0900 |
| CA | Costa Mesa, Marvac Elctrms.          | 714-540-3280 |
| CA | El Toro, R-Vac Elctrms.              | 714-586-1210 |
| CA | Fremont, Allied Elctrms.             | 800-433-5700 |
| CA | Goleta, DOW Elctrms.                 | 805-968-7272 |
| CA | Hawaiian Gardens, Dow Radio          | 213-421-3781 |
| CA | Irvine, Allied Elctrms.              | 800-433-5700 |
| CA | Irvine, Marshall Inds.               | 714-458-5394 |
| CA | Los Angeles, ITC Elctrms.            | 213-388-0621 |
| CA | Los Angeles, Pacific Radio           | 213-462-1393 |
| CA | Milpitas, Marshall Inds.             | 408-942-4000 |
| CA | Milpitas, Zack Elctrms.              | 408-942-5432 |
| CA | North Hollywood, Sandy's Elctrms.    | 818-983-2550 |
| CA | Oxnard, Dow Radio                    | 805-486-6353 |
| CA | Oxnard, ITC Elctrms.                 | 805-983-4115 |
| CA | Pamona, DOW-Radio                    | 818-966-8461 |
| CA | Pasadena, DOW-Radio                  | 818-793-1195 |
| CA | Rancho Cordova, Marshall Inds.       | 916-635-9700 |
| CA | Rocklin, Allied Elctrms.             | 800-433-5700 |
| CA | Sacramento, Allied Elctrms.          | 800-433-5700 |
| CA | Sacramento, Zack Elctrms.            | 916-369-1786 |
| CA | San Diego, Allied Elctrms.           | 800-433-5700 |
| CA | San Diego, Marshall Inds.            | 619-578-9600 |
| CA | San Jose, Quement Elctrms.           | 408-998-5900 |
| CA | San Jose, Rose Elctrms.              | 408-943-0255 |
| CA | San Rafael, Elctrms. Plus            | 415-457-0466 |
| CA | Santa Clara, Context Engrg.          | 408-748-8676 |
| CA | South San Francisco, Allied Elctrms. | 800-433-5700 |
| CA | Thousand Oaks, Pace Elctrms.         | 805-379-9631 |
| CO | Denver, Gateway Elctrms.             | 303-458-5444 |
| CO | Englewood, Allied Elctrms.           | 800-433-5700 |
| CO | Thornton, Marshall Inds.             | 303-451-8444 |
| CT | Bridgeport, Park Dist.               | 203-366-7200 |
| CT | Cheshire, Allied Elctrms.            | 800-433-5700 |
| CT | Wallingford, Marshall Inds.          | 203-265-3822 |
| FL | Altamonte Springs, Marshall Inds.    | 407-767-8585 |
| FL | Casselberry, Allied Elctrms.         | 800-433-5700 |
| FL | Fort Lauderdale, Marshall Inds.      | 305-977-4880 |
| FL | Jacksonville, Allied Elctrms.        | 800-433-5700 |
| FL | Largo, Allied Elctrms.               | 800-433-5700 |
| FL | Miami Lakes, Allied Elctrms.         | 800-433-5700 |
| FL | Pompano Beach, Allied Elctrms.       | 800-433-5700 |
| FL | St. Petersburg, Marshall Inds.       | 813-573-1399 |
| GA | Atlanta, Allied Elctrms.             | 800-433-5700 |
| GA | Atlanta, ACK Radio                   | 404-351-6340 |
| GA | Duluth, Allied Elctrms.              | 800-433-5700 |
| GA | Norcross, Marshall Inds.             | 404-923-5750 |
| ID | Boise, Radar Etc.                    | 208-336-2227 |
| IL | Berwin, B-B & W Inc.                 | 708-749-1710 |
| IL | Champaign, Klaus Radio               | 217-356-1896 |
| IL | LaSalle, Klaus Radio                 | 815-223-7400 |
| IL | Libertyville, Allied Elctrms.        | 800-433-5700 |
| IL | Mt. Prospect, Tri-State Elctrms.     | 708-255-0600 |
| IL | Niles, Joseph Elctrms.               | 708-297-4240 |
| IL | Oak Forest, Allied Elctrms.          | 800-433-5700 |
| IL | Peoria, Klaus Radio                  | 309-691-4840 |
| IL | Quincy, Klaus Radio                  | 217-223-7560 |
| IL | Schaumburg, Marshall Inds.           | 708-490-0755 |
| IL | Wood Dale, Allied Elctrms.           | 800-433-5700 |
| IL | Wood Dale, NEP Elctrms.              | 708-595-8500 |
| IN | Evansville, Ohio Valley Sound        | 812-425-6173 |
| IN | Fort Wayne, Bell Inds.               | 219-423-3422 |
| IN | Indianapolis, Allied Elctrms.        | 800-433-5700 |
| IN | Indianapolis, Bell Inds.             | 317-634-8202 |
| IN | Indianapolis, Marshall Inds.         | 317-297-0483 |
| IN | Indianapolis, PEI-Genesis            | 317-879-0700 |
| IN | Terre Haute, Ohio Valley Sound       | 812-235-6025 |
| IA | Des Moines, Allied Elctrms.          | 800-433-5700 |
| KS | Lenexa, Allied Elctrms.              | 800-433-5700 |
| KS | Lenexa, Marshall Inds.               | 913-492-3121 |
| KY | Louisville, Allied Elctrms.          | 800-433-5700 |
| KY | Owensboro, Ohio Valley Sound         | 502-683-6727 |
| LA | Metairie, Allied Elctrms.            | 800-433-5700 |
| MD | Beltsville, Mark Elctrms.            | 301-595-5040 |
| MD | Columbia, Allied Elctrms.            | 800-433-5700 |
| MD | Gaithersburg, Capitol Radio          | 301-840-5700 |
| MD | Silver Spring, Marshall Inds.        | 301-622-1411 |
| MA | Billerica, Allied Elctrms.           | 800-433-5700 |
| MA | Northboro, Papi Supp.                | 508-393-8564 |
| MA | Norwood, Allied Elctrms.             | 800-433-5700 |
| MA | Wilmington, Marshall Inds.           | 508-658-0810 |
| MI | Grand Rapids, Allied Elctrms.        | 800-433-5700 |
| MI | Grand Rapids, S F Elctrn. Supp.      | 616-459-0216 |
| MI | Livonia, LWC Distributors            | 313-464-7700 |
| MI | Livonia, Marshall Inds.              | 313-525-5850 |
| MI | Plymouth, Allied Elctrms.            | 800-433-5700 |
| MN | Bloomington, Allied Elctrms.         | 800-433-5700 |



|     |                                |              |
|-----|--------------------------------|--------------|
| MI  | Minneapolis, Torte Corp.       | 612-866-3662 |
| MI  | Plymouth, Marshall Inds.       | 612-559-2255 |
| MO  | Bridgeton, Marshall Inds.      | 314-291-4650 |
| MO  | Earth City, Allied Elctms.     | 800-433-5700 |
| NE  | Omaha, Allied Elctms.          | 800-433-5700 |
| NH  | Nashua, Allied Elctms.         | 800-433-5700 |
| NJ  | Edison, Allied Elctms.         | 800-433-5700 |
| NJ  | Fairfield, Marshall Inds.      | 201-882-0320 |
| NJ  | Lodi, Nidisco                  | 201-773-1771 |
| NJ  | Moorestown, Allied Elctms.     | 800-433-5700 |
| NJ  | Mount Laurel, Marshall Inds.   | 609-234-9100 |
| NJ  | Parsippany, Allied Elctms.     | 800-433-5700 |
| NJ  | Pine Brook, Allied Elctms.     | 800-433-5700 |
| NM  | Albuquerque, Bestech           | 505-298-0034 |
| NM  | Albuquerque, TMA, Inc.         | 505-345-8921 |
| NY  | Endicott, Marshall Inds.       | 607-785-2345 |
| NY  | Fairport, Allied Elctms.       | 800-433-5700 |
| NY  | Hauapauge, Broadline Elctms.   | 516-273-2695 |
| NY  | Hauapauge, Marshall Inds.      | 516-273-1515 |
| NY  | Lagrangeville, Allied Elctms.  | 800-433-5700 |
| NY  | Liverpool, WEI Inc.            | 315-652-8111 |
| NY  | Mineola, Allied Elctms.        | 800-433-5700 |
| NY  | New York City, Audiotechniques | 212-586-5989 |
| NY  | Rochester, Marshall Inds.      | 716-235-7620 |
| NY  | Syracuse, Allied Elctms.       | 800-433-5700 |
| NC  | Charlotte, United Elctm. Supp. | 704-372-2650 |
| NC  | Raleigh, Allied Elctms.        | 800-433-5700 |
| NC  | Raleigh, Marshall Inds.        | 919-878-9882 |
| OH  | Beachwood, Allied Elctms.      | 800-433-5700 |
| OH  | Cincinnati, Allied Elctms.     | 800-433-5700 |
| OH  | Columbus, Marshall Inds.       | 614-891-7580 |
| OH  | Dayton, Bell Inds.             | 513-435-8660 |
| OH  | Dayton, Consolidated Elctms.   | 513-435-5662 |
| OH  | Dayton, Marshall Inds.         | 513-898-4480 |
| OH  | Solon, Marshall Inds.          | 216-248-1788 |
| OK  | Worthington, Allied Elctms.    | 800-433-5700 |
| OK  | Salt Lake City, Allied Elctms. | 800-433-5700 |
| OR  | Beaverton, Marshall Inds.      | 503-644-5050 |
| OR  | Portland, Allied Elctms.       | 800-433-5700 |
| OR  | Portland, Radar Elec.          | 503-232-8353 |
| PA  | Bethlehem, P.A. Peters         | 215-861-4850 |
| PA  | Camp Hill, Allied Elctms.      | 800-433-5700 |
| PA  | Pittsburgh, Allied Elctms.     | 800-433-5700 |
| PA  | Pittsburgh, Marshall Inds.     | 412-788-0441 |
| RI  | Cranston, Jabbour Elctms.      | 401-944-2570 |
| RI  | Pawtucket, Jabbour Elctms.     | 401-728-4600 |
| SC  | Greenville, Allied Elctms.     | 800-433-5700 |
| TN  | Memphis, Allied Elctms.        | 800-433-5700 |
| TX  | Austin, Allied Elctms.         | 800-433-5700 |
| TX  | Austin, Altex Elctms.          | 512-832-9131 |
| TX  | Austin, Marshall Inds.         | 512-837-1991 |
| TX  | Brownsville, Marshall Inds.    | 512-542-4589 |
| TX  | Carrollton, Marshall Inds.     | 214-233-5200 |
| TX  | Dallas, Allied Elctms.         | 800-433-5700 |
| TX  | El Paso, Allied Elctms.        | 800-433-5700 |
| TX  | El Paso, Marshall Inds.        | 915-593-0706 |
| TX  | Fort Worth, Allied Elctms.     | 800-433-5700 |
| TX  | Houston, Allied Elctms.        | 800-433-5700 |
| TX  | Houston, Marshall Inds.        | 713-467-1666 |
| TX  | Humble, Allied Elctms.         | 800-433-5700 |
| TX  | Midland, GDL Elctms.           | 915-687-3876 |
| TX  | San Antonio, Altex Elctms.     | 512-828-0503 |
| UT  | Salt Lake City, Allied Elctms. | 800-433-5700 |
| UT  | Salt Lake City, Marshall Inds. | 801-973-2268 |
| VA  | Alexandria, Arcade Elctms.     | 703-256-4610 |
| VA  | Richmond, Norfolk Wire         | 804-355-1100 |
| VA  | Springfield, Allied Elctms.    | 800-433-5700 |
| VA  | Virginia Beach, Allied Elctms. | 800-433-5700 |
| VA  | Virginia Beach, Norfolk Wire   | 804-449-1100 |
| WA  | Bothell, Marshall Inds.        | 206-486-5747 |
| WA  | Richland, Radar Elec.          | 509-943-8336 |
| WA  | Seattle, Allied Elctms.        | 800-433-5700 |
| WA  | Seattle, Radar Elec.           | 206-282-2511 |
| WA  | Spokane, Radar Elec.           | 509-747-3053 |
| WA  | Tacoma, Allied Elctms.         | 800-433-5700 |
| WI  | Madison, Satterfield Elctms.   | 608-222-3400 |
| WI  | Milwaukee, Ind. Elctms.        | 414-276-1212 |
| WI  | Milwaukee, Marsh Elctms.       | 414-475-6000 |
| WI  | New Berlin, Allied Elctms.     | 800-433-5700 |
| WI  | New Berlin, NEP Elctms.        | 414-785-9100 |
| WI  | Waukesha, Marshall Inds.       | 414-797-8400 |
| Can | Ontario, Marshall Inds.        | 416-458-8046 |
| Can | Quebec, Marshall Ind.          | 514-694-8142 |

## Local Sales Offices &amp; Reps

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AZ | Tempe, Hannah-Hill                        | 602-431-1772 |
| CA | Chatsworth, Technologies West             | 818-700-6426 |
| IL | Matteson, Instrumentation Sls. Inc.       | 708-720-0705 |
| CA | San Jose, Dugan Technlgs.                 | 408-268-1766 |
| CO | Denver, Hannah-Hill, Inc.                 | 303-252-1154 |
| FL | Orlando, Microspec                        | 407-898-3504 |
| GA | Lilburn, Microspec                        | 404-921-3840 |
| IL | Matteson, Instrumentation Sales, Inc.     | 708-720-0705 |
| KS | Merriam, TECREP Corp.                     | 913-262-9500 |
| IN | Indianapolis, RDP Corp.                   | 317-243-8789 |
| MD | W. Friendship, Gans & Pugh Assocs.        | 410-442-2189 |
| MA | Boston, Ellis Assocs.                     | 617-585-6750 |
| MI | St. Louis, TECREP Corp.                   | 314-454-9110 |
| MI | Farmington Hills, RDP Corp.               | 313-471-0685 |
| NH | Manchester, Ellis Assocs.                 | 603-623-0185 |
| NM | Albuquerque, Hannah-Hill, Inc.            | 505-268-0950 |
| NY | Amherst, Reliable Measurement             | 716-862-9484 |
| NY | Port Chester, Radiation Elctms.           | 914-937-2300 |
| OH | Dayton, RDP Corp.                         | 513-253-6175 |
| OH | Richfield, RDP Corp.                      | 216-659-3138 |
| OK | Tulsa, Abcor, Inc.                        | 918-279-1468 |
| PA | North Wales, Gans & Pugh Associates, Inc. | 215-699-6655 |
| PA | Pittsburg, RDP Corp.                      | 412-487-2217 |
| SC | Rock Hill, Microspec                      | 803-366-3015 |
| TN | Nashville, Microspec                      | 615-383-4064 |
| TX | Houston, ABCOR, Inc.                      | 713-486-9251 |
| UT | Salt Lake City, Hannah-Hill, Inc.         | 801-943-9918 |
| VA | Hemdon, Gans & Pugh Assocs.               | 703-709-0305 |
| WA | Bellevue, Syntek                          | 206-462-7700 |

PRECISION GRAPHICS INC., 59 La Grange St, Raritan, NJ 08869, Tel: 908-707-8880, FAX: 908-707-8884; Empl: 39; Sls. Mgr.: David K. Weissman

## Local Sales Offices &amp; Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| NJ | West Orange, Rizzo Assocs.         | 201-731-0974 |
| OH | Twinsburg, Protocol Sls.           | 216-425-2569 |
| PA | New Hope & Norristown, Intek, Inc. | 215-723-0433 |

PRECISION IMAGE CORPORATION, 501 Chesapeake Dr., Redwood City, CA 94063, Tel: 415-366-8900, 1-800-338-3377, FAX: 415-366-2149; Empl: 70; Sls. Mgr.: Mr. Rene Carillo; Dist. Mgr.: Mr. Rene Carillo

PRECISION INTERCONNECT, Subsidiary of AMP Incorporated, 16640 SW 72nd Ave., Portland, OR 97224, Tel: 503-620-9400; FSC No.: 60381; Empl: 500; Sls. Mgr.: Alex Guletsky

PRECISION LAMP, INC., 720 Portal St., Cotati, CA 94931, Tel: 707-792-0333, FAX: 707-792-2738; FSC No.: FSCM 58451; Empl: 80

PRECISION MECHANISMS, 50 Bond St., Westbury, NY 11590, Tel: 516-ED3-5955, FAX: 516-333-5956; FSC No.: 08127; Empl: 19; Sls. Mgr.: Leon N. Canick

PRECISION METAL PRODUCTS CO., Centennial Indl. Pk., Peabody, MA 01960, Tel: 508-532-5500, FAX: 508-532-9403; FSC No.: 86577; Empl: 54; Sls. Mgr.: Robert A. Degnan

PRECISION MICROCONTROL, 8122 Engineer Rd., San Diego, CA 92111, Tel: 619-565-1500, FAX: 619-565-1511; Sls. Mgr.: Ian M. Clark

PRECISION PAPER TUBE CO., 1033 South Noel Ave., Wheeling, IL 60090, Tel: 708-537-4250, FAX: 708-537-5777; Empl: 250

PRECISION PRODUCTS GROUP, INC., 4903 E. State St., Rockford, IL 61108, Tel: 815-395-2155, FAX: 815-395-2151; Empl: 500; Sls. Mgr.: Douglas W. Franklin

PRECISION PROTOTYPES, INC., 255 Midland Ave., Garfield, NJ 07026, Tel: 201-546-6737, FAX: 201-546-8872; Sls. Mgr.: Rick Caporino



FAX: 607-277-4466

PRECISION FILTERS, INC., 240 Cherry St, Ithaca, NY 14850, Tel: 607-277-3550, TELEX: 646846; FSC No.: 66-II-F & 66-II-I; Empl: 80; Sls. Mgr.: D. F. Chandler  
A-1616, 1673-1675; D-1018, 1200-1202

FAX: 319-394-9280

PRECISION RESISTIVE PRODUCTS, INC., P.O. Box 189, Highway 61 South, Mediapolis, IA 52637, Tel: 319-394-9131; Empl: 65; Sls. Mgr.: Oscar Cline; Dist. Mgr.: Oscar Cline  
A-2014-2015

## Local Sales Offices &amp; Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| AZ | Tempe, Advanced Comp. S/S AZ           | 602-731-9711 |
| CA | Mountain View, Frauman Assoc.          | 415-964-9464 |
| CA | Seal Beach, Texel                      | 310-596-9411 |
| CO | Grand Junction, Krebill Comp. Sls.     | 303-243-8220 |
| FL | Melbourne, Phoenix Comps.              | 407-723-4414 |
| GA | Duluth, Dixie Tech. Mktg.              | 404-381-5592 |
| IL | Arlington Heights, Russell Elctm. Sale | 708-394-5580 |
| IN | Greenwood, Valentine & Associates      | 317-888-2260 |
| KS | Prairie Village, Crosslink Elctms.     | 913-649-7100 |
| MD | Baltimore, Advanced Tech. Sls.         | 301-323-3140 |
| MA | Lexington, Jesco, Inc.                 | 617-863-1598 |
| MN | Minneapolis, Intl. Sls. Co.            | 612-831-8423 |
| NJ | Ridgewood, Bailou Inc.                 | 201-444-6990 |
| OH | Kettering, K.B. Smith Inc.             | 513-299-0033 |
| TX | Dallas, Kay Todd Assocs.               | 214-458-8833 |
| WA | Edmonds, ACDC                          | 206-745-5445 |



FAX: 813-546-9515

PRECISION RESISTOR CO., INC., 10601 75 St. N., Largo, FL 34647-1421, Tel: 813-541-5771, TELEX: 821788; FSC No.: 48615; Empl: 45; Sls. Mgr.: Arleen Reid  
A-2016-2017

PRECISION SPECIALTIES, INC., 8740 Shirley Ave., Northridge, CA 91324, Tel: 818-349-9774, FAX: 818-349-4367; FSC No.: 66785; Empl: 10

PRECISION TECH. SEWING, 921 E. Charleston Rd., Palo Alto, CA 94303, Tel: 415-856-2128, FAX: 415-856-1638

PRECISION THIN METAL (LP), 112 Mary Ann Road, Beaver Dam, WI 53916, Tel: 414-885-9000, FAX: 414-885-5078; Empl: 12; Sls. Mgr.: Philip F. Lauf

PRECISION TUBE, 287 Wissahickon Ave., N. Wales, PA 19454, Tel: 215-699-5801, FAX: 215-699-0761; FSC No.: 82413; Empl: 240; Sls. Mgr.: William J. McNeil

PRECISION TUBE CO., Coaxitube Div., 245 Naylor Mill Rd., Salisbury, MD 21801, Tel: 410-546-3911, FAX: 410-546-3913; FSC No.: OBV02; Empl: 18; Sls. Mgr.: Douglas McNeil

PREFERRED ELECTRONICS, INC., Main Line Dr., P.O. Box 248, Westfield, MA 01086, Tel: 413-568-2301, 1-800-553-6374, FAX: 413-562-7275; Empl: 160; Sls. Mgr.: Andree Buscemi

PREH ELECTRONIC INDUSTRIES, INC., 470 E. Main St., Lake Zurich, IL 60047-2578, Tel: 708-438-4000, FAX: 708-438-5522; FSC No.: 36-3193682; Empl: 10; Sls. Mgr.: Pat Jones; Dist. Mgr.: Bob Van Orden

PREMA PRECISION ELECTRONICS, INC., 4650 Arrow Hwy., Suite E-5, Montclair, CA 91763, Tel: 714-621-7292, FAX: 714-625-2098



Premier Magnetics Inc.

FAX: 714-362-4212

PREMIER MAGNETICS INC., 27111 Aliso Creek Rd., Ste. 175, Aliso Viejo, CA 92656, Tel: 714-362-4211; Empl: 10; Sls. Mgr.: Jim Earley  
A-2508

## Local Sales Offices &amp; Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| CA | Northern CA, Silicon Valley Sls.  | 408-432-1967 |
| FL | Tampa, APM Assocs.                | 813-886-2457 |
| GA | B.T. Funderburk, Inc.             | 404-963-9495 |
| MD | Arco Assocs.                      | 410-638-1134 |
| MA | Advanced Comp. Grp.               | 508-845-2023 |
| NJ | Unirep                            | 908-940-1851 |
| NJ | W. Milford, Dynamic Sls. Assoc.   | 201-728-1044 |
| NJ | West Milford, Dynamic Sls. Assoc. | 201-728-1044 |
| NC | B.T. Funderburk, Inc.             | 919-846-2373 |
| OR | Northwest Comp. Sls.              | 503-620-3285 |
| WA | Kirkland, Northwest Comp. Sls.    | 206-828-2104 |

PREMIER METAL PRODS. CO., 381 Canal Pl., Bronx, NY 10451, Tel: 718-993-9200, FAX: 718-993-9211; Empl: 75; Sls. Mgr.: Anthony E. Bozza  
C-1080



## Local Sales Offices &amp; Reps

|    |                                      |              |
|----|--------------------------------------|--------------|
| CA | Campbell, Shur Sls.                  | 408-374-5577 |
| CA | Fontana, Premier Metal               | 714-829-3089 |
| CO | Denver, AKI Enterprises              | 303-338-4488 |
| CT | East Haven, Eagle Assocs.            | 203-467-6542 |
| GA | Marietta, Adams & Assocs.            | 404-973-0853 |
| IL | Carmel, Current Elctms.              | 317-844-1770 |
| IL | St. Charles, May Assocs.             | 708-293-0662 |
| KS | Kansas City, Delltron Co.            | 816-436-6445 |
| MD | Burtonsville, Eastern Instrmn.       | 301-384-8500 |
| MA | Needham, Eagle Assocs.               | 617-444-3446 |
| MI | Brighton, Electronic Sources         | 313-227-3598 |
| MN | Anoka, Tech. Solutions               | 612-785-9303 |
| MO | Florissant, Delltron Co.             | 314-839-0033 |
| NY | New Hyde Park, Harris & Aldrich Sls. |              |
|    |                                      | 516-488-2622 |
| NY | Rochester, MicroTech Mktg.           | 716-426-0806 |
| NY | Yonkers, Sonkin Assocs.              | 914-968-8282 |
| NC | Greenboro, Adams & Assocs.           | 919-272-6838 |
| OH | Dayton, Thompson & Assocs.           | 513-435-7733 |
| PA | Penndel, Delta Mktg.                 | 215-353-6639 |
| TX | Richardson, Spectra Sls. Corp.       | 214-234-3600 |
| WA | Redmond, Scientific Dvcs             | 206-885-0004 |
| WP | FL, Ft. Lauderdale, GM Intl.         | 305-434-6617 |

## Local Distributors

|    |                                        |              |
|----|----------------------------------------|--------------|
| AZ | Phoenix, Dalis Elctms.                 | 602-275-2885 |
| CA | San Diego, Sigma Elctms.               | 619-585-2000 |
| CA | San Jose, Quement Elctms.              | 408-998-5900 |
| CA | San Jose, Rose Elctms.                 | 408-943-0255 |
| ID | Boise, Radar Elec.                     | 208-336-2227 |
| IL | Skokie, Anixter                        | 708-677-2600 |
| LA | Baton Rouge, Menard Elctms.            | 504-355-0323 |
| MI | Ann Arbor, Purchase Radio Supp.        | 313-668-8696 |
| MO | St. Louis, Gateway Elctm. Supp.        | 314-427-6116 |
| NJ | Cranford, Garden State Indl. Elec.     | 201-272-6400 |
| NJ | Englewood, Datanet                     | 201-599-2353 |
| NY | Buffalo, Summit Distrs.                | 716-884-3450 |
| NY | Great Neck, Avon Datacom               | 516-466-1690 |
| NY | Hempstead, Broadline Elec. Dist.       | 516-231-4100 |
| NY | LIC, H. L. Dalis Inc.                  | 212-361-1100 |
| NY | New York, Audio Techniques             | 212-586-5989 |
| NY | Portchester, Wise Comps.               | 914-939-8600 |
| NY | Rochester, Simcona Elctm. Corp.        | 716-328-3230 |
| NY | Rochester, Summit Elctms.              | 716-334-8110 |
| NC | Raleigh, Southeastern Radio            | 919-828-2311 |
| OH | Warren, Rem Elctms.                    | 216-248-1636 |
| OR | Portland, Radar Elec.                  | 503-232-3404 |
| PA | Shorsam, Toner Cable Equip.            | 215-675-2053 |
| PA | West Chester, West Chester Elec. Supp. |              |
|    |                                        | 215-696-7500 |
| SC | Charleston, Wholesale Indl. Elec.      | 803-722-2634 |
| TN | Clarksville, Randolph Hale & Matthews  |              |
|    |                                        | 615-647-2325 |
| TN | Cookeville, Randolph & Parks           | 615-526-6184 |
| TN | Nashville, Randolph & Rice             | 615-255-5601 |
| TN | Tullahoma, Randolph Rice & Williams    |              |
|    |                                        | 615-455-4531 |
| TX | Ft. Worth, Swico Inc.                  | 817-335-6521 |
| TX | Houston, Lenert Co.                    | 713-225-1465 |
| VA | Arlington, Arlington Elctms.           | 703-524-2412 |
| WA | Richland, Radar Elec.                  | 509-943-8336 |
| WA | Seattle, Radar Elec. Co.               | 206-282-2511 |

PREMIER MICROWAVE, 35 New Broad St, Port Chester, NY 10573, Tel: 914-939-8900, FAX: 914-939-9239; FSC No.: 15870; Empl.: 43; Sls. Mgr.: Mel Radner

# PREM<sup>®</sup>

## FAX: 815-385-8578

PREM MAGNETICS, INC., 3521 N. Chapel Hill Rd., McHenry, IL 60050, Tel: 815-385-2700; FSC No.: 20462; Empl.: 180; Sls. Mgr.: D. Hertel

A•1277-1281, 2512-2525

PRES-AIR-TROL CORP., 1009 Boston Post Rd., Mamaroneck, NY 10543, Tel: 914-698-2026, 800-431-2625, FAX: 914-698-9456; Empl.: 25; Sls. Mgr.: Gilbert Bassin

B•1800

PRESICO, INC., 8 Lunar Drive, Woodbridge, CT 06525, Tel: 203-397-8722, FAX: 203-389-1129; Empl.: 8

PRESIDIO COMPONENTS, INC., 7169 Construction Ct., San Diego, CA 92121, Tel: 619-578-9390, FAX: 619-578-6225; FSC No.: 60212

PRESS-ON PRODUCTS, 21 Factory Rd., Addison, IL 60101, Tel: 708-628-2255, FAX: 708-628-8025; Empl.: 25; Sls. Mgr.: T. Cummins

PRESSURE CONTROLS, INC., 406 Cortlandt St., Belleville, NJ 07109, Tel: 201-751-5002, FAX: 201-751-9653; FSC No.: 52193; Empl.: 15; Sls. Mgr.: P. Emmarco

PRESSURE SYSTEMS, INC., 34 Research Dr., Hampton, VA 23666, Tel: 804-865-1243, TELEX: 901406, FAX: 804-766-2644; Empl.: 98; Sls. Mgr.: J. S. Yakshe

PRIMELINE, Soltec Corporation, P. O. Box 670, San Fernando, CA 91341-0670, Tel: 818-365-0101, TELEX: 494-3094 SOLTEC U, FAX: 818-365-7839; Sls. Mgr.: Byron McIntire



## FAX: 203-481-8937

PRIME TECHNOLOGY, INC., Twin Lakes Rd., P.O. Box 185, N. Branford, CT 06471, Tel: 203-481-5721, TWX: 710-452-3092; Empl.: 60; Sls. Mgr.: James L. Jamieson, Mktg. VP

PRIMO COMPANY LIMITED, 25-1, 6-Chome, Mure, Mitakashi, Tokyo, Japan 181, Tel: 0422-43-3121; FSC No.: 0422 49 8865; Empl.: 391; Sls. Mgr.: H. Ikoma; Dist. Mgr.: S. Mizutani

PRINCETON CASE CO., INC., 667 Lehigh Ave., Union, NJ 07083, Tel: 908-687-1750, FAX: 908-687-1755; Empl.: 60; Sls. Mgr.: S. E. Parker

PRINCETON ELECTRONIC PRODUCTS, 2549 U.S. Highway 1, North Brunswick, NJ 08902, Tel: 908-297-4448, FAX: 908-297-5641; Empl.: 29; Sls. Mgr.: H.R. Center; Dist. Mgr.: H.R. Center

PRINCO INSTRUMENTS, INC., 1020 Industrial Hwy., Southampton, PA 18966, Tel: 215-355-1500, FAX: 215-355-7766; FSC No.: 48620; Empl.: 70; Sls. Mgr.: G. G. Pfaff

PRINTER PRODUCTS, 25 Denby Road, Boston, MA 02134, Tel: 617-254-1200, FAX: 617-254-6848; Empl.: 100; Sls. Mgr.: Joe Grimaldi; Dist. Mgr.: Bruce Burgess

PRINT PRODUCTS INTL., 8931 Brookville Rd., Silver Spring, MD 20910, Tel: 301-587-7824, 800-638-2020, FAX: 800-545-0058; Empl.: 6; Sls. Mgr.: Scott MacDonald; Dist. Mgr.: Scott MacDonald



## FAX: 404-449-5457

PRO BATTERY, INC., 3941 Oakcliff Indl. Ct., Atlanta, GA 30340, Tel: 800-451-7171; Empl.: 35; Sls. Mgr.: Neal A. Zucker

B•1178; D•1465

PROBE MASTER, INC., 4898 Ronson Ct., San Diego, CA 92111, Tel: 619-560-9676, 800-772-1519, FAX: 619-560-7354; Sls. Mgr.: Dick Press

PROBE-RITE, INC., P.O. Box 242, Santa Clara, CA 95052, Tel: 408-727-0100, FAX: 408-496-0117; Sls. Mgr.: Frank J. Ardezzone

PROCESS & ANALYTICAL INSTRUMENTS DIV., A Subsidiary of Ametek Inc., 1500 Freeport Rd., Pittsburgh, PA 15238, Tel: 412-828-9040, FAX: 412-828-0399; Empl.: 110; Sls. Mgr.: Jerry Barth

PRO-COMM, INC., 1105 Industrial Pkwy., Brick, NJ 08724, Tel: 908-206-0660, FAX: 908-458-1919; FSC No.: OUTX6; Empl.: 10; Sls. Mgr.: Robert L. Sepulveda

PRO COM TECHNOLOGY INC., 29 Newton Rd., Plainville, NY 11803, Tel: 516-293-4443, 800-762-3785, FAX: 516-293-4456; FSC No.: 0K887; Empl.: 11; Sls. Mgr.: Alan Spiegel

PRODELIN CORPORATION, P.O. Box 368, Conover, NC 28613, Tel: 704-464-4141, FAX: 704-464-5725; Empl.: 130; Sls. Mgr.: Dan Johnson

PRODIGIT ELECTRONICS, 69 Moreland Rd., Simi Valley, CA 93065, Tel: 805-527-0888; Empl.: 100; Sls. Mgr.: Daniel Erb

PRODUCTION AUTOMATION, INC., 2558 Seaboard Ave., San Jose, CA 95131-1026, Tel: 408-894-9064, FAX: 408-894-9083; Empl.: 4; Sls. Mgr.: Bill Minnick; Dist. Mgr.: Bill Minnick

PRODUCTRONICS INC., 7616 Disalle Blvd., Fort Wayne, IN 46825, Tel: 219-489-8201, FAX: 219-489-6573; Empl.: 4; Sls. Mgr.: Bernard James

PRODUCTS ENGRG. CORP., 503 S. Vincent Ave., Azusa, CA 91702-5131, Tel: 818-969-5879, TELEX: 910-587-1559, FAX: 818-969-9381; FSC No.: CAGE 35621; Empl.: 30; Sls. Mgr.: Richard Mitchell

PRODUCTS FOR RESEARCH, 88 Holten St., Danvers, MA 01923, Tel: 508-774-3250, FAX: 617-245-1628; Empl.: 16

PRODUCT TECHNOLOGY, INC., 2811-B McGaw Avenue, Irvine, CA 92714, Tel: 714-474-8998, FAX: 714-474-1340; FSC No.: 1Z295; Empl.: 85; Sls. Mgr.: Diane Weston

C•1673

PROFESSIONAL ENGINEERING SYSTEMS, 425 Parkway Dr., Erie, PA 16511-1051, Tel: 814-453-5452

PROGRAMMABLE DEVICES, INC., 205 Main St., North Reading, MA 01864, Tel: 508-664-6447, FAX: 508-664-9977; Empl.: 10



## FAX: 508-486-4495

PROGRAMMED TEST SOURCES, 9 Beaver Brook Road, P.O. Box 517, Littleton, MA 01460, Tel: 508-486-3008; FSC No.: 66381; Empl.: 30

D•1316

PROJECTIONS UNLIMITED, 14831 Myford Rd., Tustin, CA 92680, Tel: 714-544-2700, FAX: 714-544-8711; Sls. Mgr.: Robert C. Gau

PROJECTOR RECORDER BELT CORP., Route 3 Highway 59 P.O. Box 176, Whitewater, WI 53190, Tel: 1-800-533-9654, FAX: 1-800-635-8101; Empl.: 30; Sls. Mgr.: Ed Wetzel; Dist. Mgr.: Nancy Smith

PROJECT PRO, 1710 Enterprise Pkwy., Twinsburg, OH 44087, Tel: 216-425-8888

PROJECT RESOURCES INC., 16 Kendrick Rd., Wareham, MA 02571, Tel: 508-295-7444, FAX: 508-295-7497; FSC No.: OEF11; Empl.: 18; Sls. Mgr.: T.R. Egan

PROJECTS UNLIMITED, 3680 Wyse Rd., Dayton, OH 45414, Tel: 513-890-1918, FAX: 513-890-4911; Empl.: 61; Sls. Mgr.: Greg Kimpton

D•1057

## Local Sales Offices &amp; Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| AZ | Scottsdale, Williams Assocs.           | 602-494-0790 |
| CA | Irvine, Cal Rep Inc.                   |              |
| CA | San Jose, Comtech Mktg.                | 408-249-3330 |
| CO | Commerce City, Williams Assocs.        | 303-289-5647 |
| CT | Seymour, Sturdy Corp.                  | 203-888-1480 |
| FL | Lakeland, Munday Sls. Co.              | 813-858-5606 |
| GA | Alpharetta, R.A. Sls.                  | 404-442-6749 |
| IL | Woodridge, Goltan Assocs. Inc.         | 708-985-5100 |
| IN | Indianapolis, The J. C. Hofstetter Co. | 317-897-7914 |
| IA | Cedar Rapids, Thomas Dowell            | 319-393-7920 |
| KS | Overland Park, Thomas L. Dowell        | 913-722-4242 |
| MA | Westwood, Sturdy Corp.                 | 617-326-8300 |
| MN | Edina, G.P. Sls.                       | 612-831-2362 |
| MO | St. Louis, Thomas L. Dowell            | 314-849-4234 |
| NH | Derry, Sturdy Corp.                    | 603-434-8440 |
| NM | Albuquerque, Williams Assocs.          | 505-255-1638 |
| NY | Bohemia, Optimum Metro Sls. Inc.       | 516-244-5744 |
| NY | Penn Yan, Ecco New York                | 315-536-5033 |
| NC | New Bern, R A Sales                    | 919-244-2672 |
| OH | Dayton, J.C. Hofstetter Co.            | 513-296-1010 |
| OH | Medina, J. C. Hofstetter Co.           | 216-241-4880 |
| OR | Hillsboro, Doran Sls. Assoc.           | 503-640-4500 |
| PA | Hickory, J. C. Hofstetter Co.          | 412-356-2305 |
| PA | Valley Forge, Providence Mktg.         | 215-935-3300 |
| SC | Easley, R A Sales                      | 803-859-1859 |
| TN | Rutherford Rd., R.A. Sls.              | 901-665-6301 |
| TX | Austin, Kruvand Assocs. Inc.           | 512-219-9443 |
| TX | Dallas, Kruvand Assoc.                 | 214-437-3355 |



WA Bothell, Doran Sls. Assocs., Inc. .... 206-488-1200  
 Can Islington, Ont., D.T. Shaw Co. Ltd. .... 416-231-3494  
 Can Montreal, Que., D.T. Shaw Co. Ltd. .... 514-332-1163

## Local Distributors

AR Ft. Smith, Carlton Bates ..... 501-646-8201  
 AR Little Rock, Carlton Bates ..... 501-562-9100  
 AR Pine Bluff, Carlton Bates ..... 501-535-1354  
 AR Springdale, Carlton Bates ..... 501-756-5012  
 CA Milpitas, Kent Elctms. .... 408-262-5300  
 CA San Jose, Speakers Unlimited ..... 408-453-5698  
 CA Torrance, Kent Elctms. .... 310-320-2700  
 CO Commerce City, Waco Elctms. .... 303-289-4743  
 CT Newtown, Target Elctms. .... 203-426-4403  
 FL Clearwater, Atlantic Elctms. .... 813-531-5900  
 FL Lakeland, A-A Elec. .... 813-665-6941  
 FL Lakeland, Atlantic Elctms. .... 813-687-0200  
 FL West Palm Beach, Atlantic Elctms. .... 407-686-8553  
 GA Lawrenceville, A-A Elec. .... 404-822-4960  
 IL Bensenville, Voyager Elctms. Corp. .... 708-860-1300  
 IA Cedar Rapids, Dee Elctms. .... 319-365-5751  
 LA Shreveport, Carlton Bates ..... 318-636-9975  
 MD Gaithersburg, Axis Elctms. .... 800-368-2815  
 MA Hingham, Hingham Bay ..... 617-740-1900  
 MA Westwood, Target Elctms. .... 617-329-2700  
 MN Fridley, Voyager Elctms. Corp. .... 612-571-7766  
 MO Springfield, Carlton-Bates Co. .... 417-862-1699  
 MO St. Louis, Beckwith Elctms. .... 314-343-6463  
 NY Penn Yan, Advacom Technol., Inc. .... 515-536-2221  
 NY Rochester, Ray Baker Elctms. .... 716-586-9164  
 OH Dayton, Electro Supp. .... 513-299-5020  
 OK Oklahoma City, Carlton Bates ..... 405-681-4446  
 OK Tulsa, Carlton Bates ..... 918-250-1626  
 OR Beaverton, Kent Elctms. .... 503-626-8300  
 PA Levittown, Aim Elctms. .... 215-946-3900  
 PA McKean, Advacom ..... 814-476-7774  
 TN Jackson, Carlton Bates ..... 901-664-2714  
 TN Memphis, Carlton Bates ..... 901-365-3539  
 TN Nashville, Carlton Bates ..... 615-885-3232  
 TX Austin, Carlton-Bates Co. .... 512-837-9098  
 TX Austin, Southwest Elctms. .... 512-837-8971  
 TX Dallas, Off The Shelf Comps. .... 214-247-0052  
 TX Ft. Worth, Carlton Bates ..... 817-293-5558  
 TX Houston, Kent Elctms. .... 713-780-7770  
 TX Richardson, Off the Shelf Comps. .... 214-238-0808  
 TX Richardson, Southwest Elctms. .... 214-234-3050  
 TX San Antonio, Carlton Bates ..... 512-805-8300  
 TX Stafford, Southwest Elctms. .... 713-240-4000  
 TX Texarkana, Carlton Bates ..... 903-792-6923  
 WA Redmond, Kent Elctms. .... 206-883-7200  
 WI Milwaukee, Electronic Expeditors ..... 414-228-8100  
 Can Willowdale, Ont., Electro Sonic ..... 416-494-1555

PRO-LOG CORP., 2555 Garden Road, Monterey, CA 93940, Tel: 408-372-4593, TWX: 910-360-7082; Empl: 120; Sls. Mgr.: Pat Laughlin; Dist. Mgr.: Pat Laughlin

PROLOGIC SYSTEMS, 557-P Burbank St., Broomfield, CO 80020, Tel: 303-460-0103, FAX: 303-469-5565; Empl: 5

PROMAC, United Exporters Company, 1095 Market St., Ste. 701, San Francisco, CA 94013-1630, Tel: 415-255-9393, FAX: 415-255-9392; Sls. Mgr.: Brian Tench

PROMAX-JOINTON ELECTRONIC CORP., 1555-B McGaw Ave., Irvine, CA 92714, Tel: 714-975-1245, FAX: 714-975-1202; Empl: 12; Sls. Mgr.: Kathy De Yesso; Dist. Mgr.: Kathy De Yesso

PROTEK DEVICES, 2001 W. Tenth Pl., Tempe, AZ 85281, Tel: 602-968-6060, FAX: 602-921-3760; Empl: 50

PROTO SYSTEMS, 625 Sims Industrial Blvd., Alpharetta, GA 30021, Tel: 404-475-1330, 800-331-1797, FAX: 404-442-9751; FSC No: 7U 718; Empl: 155; Sls. Mgr.: Keith Koehle

PROTEK, INC., 25 Standen Dr., Hamilton, OH 45015, Tel: 513-874-5094, FAX: 513-874-2252; FSC No: 60813; Empl: 45; Sls. Mgr.: Ron Nabors

PTC TRANSFORMERS, P.O. Box 397, Rising Sun Road, Bordentown, NJ 08505, Tel: 609-298-8200, FAX: 609-298-8235; FSC No: 05853; Empl: 30; Sls. Mgr.: C. W. Harrison

PTS CORPORATION, Box 272, Bloomington, IN 47401, Tel: 812-824-9331; Empl: 350; Sls. Mgr.: Jeff Hamilton; Dist. Mgr.: David Melwid

PTX-PENTRONIX INC., 1737 Cicotte, Lincoln Park, MI 48146, Tel: 313-388-3100, TELEX: 23-0398, FAX: 313-388-9171; Empl: 21; Sls. Mgr.: J. Schultz



FAX: 714-641-9062

PULIZZI ENGINEERING, INC., 3260 S. Susan St., Santa Ana, CA 92704-6865, Tel: 714-540-4229; FSC No: 70513; Empl: 28 ..... D•2300-2304

## Local Sales Offices &amp; Reps

CA Anaheim, Alpha Elctm. Sls. .... 714-665-6580  
 CA Garden Grove, Elctm. Packaging Solutions ..... 714-638-4455  
 CA Los Gatos, Norwest Elctms. .... 408-395-1190  
 CA Santa Ana, Pulizzi Engrg., Inc. .... 714-540-4229  
 CO Golden, J.F. Hurlbut Co. .... 303-279-7796  
 FL Oldsmar, Temco Sls. Inc. .... 813-855-7566  
 IL Bensenville, E.S.I. .... 708-766-3667  
 MD Columbia, L.G. White & Co., Inc. .... 410-290-8880  
 MA Stow, H.G. Assocs. .... 508-897-3190  
 MN St. Paul, Heyda-Hanks Assocs. .... 612-484-8531  
 NY Babylon, The Jette Grp. .... 516-669-6788  
 NY Fayetteville, Martin P. Andrews ..... 315-637-5291  
 OH Cleveland, Tech. Sls. Assoc. .... 216-461-0826  
 OR Beaverton, Temper Tech. Mktg. .... 503-292-8201  
 TX Dallas, Kruvand Assocs. .... 214-437-3355  
 PA Valley Forge, J.E. Cuesta & Co. .... 215-935-0400

PULNIX AMERICA, INC., 770 Lucerne Dr., Sunnyvale, CA 94086, Tel: 408-733-1560, FAX: 408-737-2966; Empl: 80; Sls. Mgr.: Richard Hofmeister

PULSE ENGINEERING, INC., 12220 World Trade Dr., San Diego, CA 92128, Tel: 619-674-8100, FAX: 619-674-8262; Empl: 3000; Sls. Mgr.: Dan Jackson; Dist. Mgr.: Rich Backman

PULSE INSTRUMENTS CO., 1234 Francisco, Torrance, CA 90502, Tel: 310-515-5330, FAX: 310-515-0068; Empl: 30; Sls. Mgr.: Ron Perry

PUREDATA, 180 West Beaver Creek Rd., Richmond Hill, Ont., Canada L4B 1B4, Tel: 416-731-6444, FAX: 416-731-7017; Empl: 150; Sls. Mgr.: Alex Kosarow, VP of Sls.; Dist. Mgr.: Sal Cataldo, US Sls.

PURULOTOR PRODUCTS, INC., Formerly Facet Enterprises, 3 Miracle Mile, P.O. Box 1502, Elmhurst, NY 14902, Tel: 607-737-8011, TELEX: 6854130, FAX: 607-737-8335; FSC No: 72850; Empl: 300

PYCO, INC., 600 E. Lincoln Hwy., Penndel, PA 19047, Tel: 215-757-3704, FAX: 215-757-3780; Empl: 48; Sls. Mgr.: John Savage

PYLE INDUSTRIES, INC., 501 Center St., P.O. Box 620, Huntington, IN 46750, Tel: 219-356-1200, FAX: 219-356-2830; Empl: 375; Sls. Mgr.: Tom Pyle; Dist. Mgr.: Mark Pyle, Natl. Sls. Mgr.

PYLE-NATIONAL, 1334 N. Kostner Ave., Chicago, IL 60651, Tel: 312-342-6300 x210, TELEX: 25251, TWX: 910-21-0335, FAX: 312-342-0872; FSC No: 49367; Empl: 400

PYLON CO., See Augat/Pylon Corp., Inc.

PYLON ELECTRONICS INC., 2300 Victoria, Lachine, PQ, Canada H8S 1Z3, Tel: 514-637-1186, FAX: 514-636-1970; Empl: 50; Sls. Mgr.: J. Guay

PYROCOM CO., 924 N. 143rd St., Seattle, WA 98133, Tel: 206-365-3535, FAX: 206-365-0402; Sls. Mgr.: Bill Kurtz

PYROFERRIC INTERNATIONAL, INC., P. O. Box 159, Toledo, IL 62468-0159, Tel: 217-849-3300, FAX: 217-849-2544; Empl: 50; Sls. Mgr.: S. John Horner

PYROFILM RESISTOR CO., See KDI/Triangle Electronics

Q-CARD, INC., 2 Chellis Ct., Owings Mills, MD 21117-1634, Tel: 410-581-0112; Sls. Mgr.: Larry Nickel

QMI/NIEC, 12900 Rolling Oaks Rd., Twin Oaks, CA 93518, Tel: 805-867-2555, FAX: 805-867-2698; Sls. Mgr.: Mitchell M. Cohen; Dist. Mgr.: Eric A. Wesoff, W. Reg. Mgr. .... A•2176-2177

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AL Huntsville, EMA, Inc. .... 205-830-4030  
 CA Laguna Hills, 4-Star Elctm. Comp. Sls. .... 714-583-9781

CO Denver, Alliance Elctms. Colorado .... 303-433-1648  
 CT Orange, Isdale Assocs. .... 203-389-8583  
 FL Boca Raton, Tech Sls. Specialists, Inc. .... 407-391-3718  
 GA Roswell, EMA, Inc. .... 404-992-7240  
 IL Glendale Hgts., Synergistic Sls., Inc. .... 708-858-8686  
 MI Troy, C.B. Jensen & Assocs., Inc. .... 313-643-0506  
 MN Prior Lake, Gleason Assoc., Inc. .... 612-447-7020  
 NJ No. Fairfield, Metro Logic Corp. .... 201-575-5585  
 NJ So. Medford, CEF Assocs. .... 609-953-8945  
 NC Raleigh, EMA, Inc. .... 919-846-6888  
 OR Rocky River, Oak Hill Mktg., Inc. .... 216-333-0000  
 TX Dallas, Electra Reps., Inc. .... 214-248-3852

QMS CIRCUITS, INC., QMS, 40 Hill Ave., Ft. Walton Bch., FL 32548, Tel: 904-244-6191, FAX: 904-244-0270; FSC No: 65977; Empl: 66; Sls. Mgr.: Jim Kimmitt

QPS INC., 95 Stiles Rd., Salem, NH 03079, Tel: 603-893-5100, FAX: 603-890-6675; FSC No: OR9M8

QSI CORPORATION, 2212 So. W. Temple No. 46, Salt Lake City, UT 84115, Tel: 801-466-8770, FAX: 801-466-8792; Empl: 10; Sls. Mgr.: Gerri Mackey ..... D•1105

## Local Sales Offices &amp; Reps

CT Orange, Isdale Assocs. .... 203-389-8583  
 FL Altamonte Springs, Machine Controls ..... 407-788-6607

Q-TECH CORP., 10150 W. Jefferson Blvd., Culver City, CA 90232-3510, Tel: 310-836-7900, FAX: 310-836-2157; FSC No: 51774; Empl: 121; Sls. Mgr.: Howard Phillips ..... A•1456-1459

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AZ Tempe, Piper Sls. Co. .... 602-949-0048  
 CA Hermosa Beach, Quattro Sls. Assoc., Inc. .... 310-372-4221  
 CA Moorpark, Quattro Sls. Assoc., Inc. .... 805-523-2978  
 CA San Diego, Quattro Sls. Assoc., Inc. .... 619-581-3093  
 CA San Jose, Blue Elctm. Sls. .... 408-345-0260  
 CA San Juan Capistrano, Quattro Sls. Assoc., Inc. .... 714-735-4510  
 CO Aurora, Pipers Sls. Co. .... 303-340-0216  
 CO Parker, Howard Assoc. .... 303-841-5755  
 CT Canterbury, Deltech Sls. Assocs. .... 203-546-6322  
 FL Altamonte Springs, Kinetic Sls., Inc. .... 407-339-3855  
 IN Fort Wayne, TX Sales Inc. .... 219-489-4447  
 IA Cedar Rapids, WG Controls .... 319-373-1009  
 KS Roeland Pk., Abrams & Assocs. .... 913-432-2303  
 MA Littleton, Deltech Sls. Assocs. .... 508-486-8294  
 MN Minneapolis, Torkelson Assocs. .... 612-835-2414  
 MO St. Louis, Abrams & Assoc. .... 314-569-0447  
 NJ Glen Gardner, F & M Tech. Sls. .... 908-537-7888  
 NJ Paramus, Eltech Sls. .... 201-967-1309  
 NM Albuquerque, Piper Sls. Co. .... 505-828-1300  
 TN Winchester, C.J. Sls. .... 615-967-2156  
 TX Houston, Texoma Technical Sales, Inc. .... 713-462-1432  
 TX Richardson, Texoma Tech. .... 214-238-8127  
 Can Don Mills, Ont., R.D. Assoc. .... 416-444-0959

QUAD DESIGN TECHNOLOGY, INC., 1385 Del Norte Road, Camarillo, CA 93010, Tel: 805-988-8250, FAX: 805-988-8259; Empl: 20; Sls. Mgr.: Ron Lee; Dist. Mgr.: Jack Weaver

QUADTECH, INC., Formerly GenRad Instruments, 45 Main St., Bolton, MA 01740-1107, Tel: 800-253-1230, FAX: 508-779-0247; Empl: 80; Sls. Mgr.: Bob White, VP Sls.

QUALITEC TECHNOLOGIES, INC., 43064 Christy St., Fremont, CA 94538, Tel: 510-498-1046, FAX: 510-498-5938; Empl: 130; Sls. Mgr.: Kevin Daniels ..... D•1317



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**QUALITY COMPONENTS, INC.**, P.O. Box 113, St. Marys, PA 15857, Tel: 814-834-2817, FAX: 814-834-9141; Empl.: 95; *Sls. Mgr.*: Michael Renaud, Mktg. Mgr.

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AZ Phoenix, Sanford Sls. .... 602-957-3570  
CA Arcadia, Van Gott & Assocs. .... 818-445-9728  
CA San Diego, Van Gott & Assocs. .... 619-489-0893  
CT Southington, The Orion Grp. .... 203-621-8371  
IL Palatine, Vine Sls., Inc. .... 414-279-3871  
MA Peabody, The Orion Grp. .... 508-532-6266  
WI Milwaukee, Vine Sls. .... 414-279-3871

**QUALITY MICROWAVE INTERCONNECTS, INC.**, 301 Ballardvale St., Wilmington, MA 01887, Tel: 508-988-9090, FAX: 508-988-9393; FSC No.: 64023; Empl.: 30; *Sls. Mgr.*: Paul M. Tusini

**QUALITY POWER SYSTEMS, INC.**, 2400 S. Texas Ave., Pearland, TX 77581, Tel: 713-997-1700, 800-992-1701, FAX: 713-997-1907; Empl.: 20; *Sls. Mgr.*: Clarence Oliver

**QUALITY RESEARCH COMPANY**, North 11424 Judkins Lane, Spokane, WA 99207-9632, Tel: 509-924-6895; Empl.: 6; *Sls. Mgr.*: Jon Roath

**QUALITY SEMICONDUCTOR**, 851 Martin Ave., Santa Clara, CA 95050, Tel: 408-450-8080, FAX: 408-496-0773

**QUALITY TECHNOLOGIES**, 610 N. Mary Ave., Sunnyvale, CA 94086, Tel: 408-720-1440, TELEX: 6731382, FAX: 408-720-0848; Empl.: 2000; *Sls. Mgr.*: Bob Taber; *Dist. Mgr.*: James Kahn



**FAX: 208-376-4754**

**QUALITY THERMISTOR**, 2147 Centurion Pl., Boise, ID 83709, Tel: 208-377-3373; FSC No.: 56866; Empl.: 30; *Sls. Mgr.*: John Mahoney; *Dist. Mgr.*: Todd Kettinski

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EXP Oradell, NJ, Sylvan Ginsbury Ltd. .... 201-261-3200

**QUALOGY INC.**, 109 Bonaventura Dr., San Jose, CA 95134, Tel: 408-434-5200, FAX: 408-434-5242; Empl.: 16; *Sls. Mgr.*: Mike Sills

**QUALSTAR CORP.**, 9621 Irontdale Ave., Chatsworth, CA 91311, Tel: 818-882-5822, FAX: 818-882-4081; Empl.: 50; *Sls. Mgr.*: W. J. Gervais

**Qualtek** ELECTRONICS CORPORATION

**FAX: 216-951-7252**

**QUALTEK ELECTRONICS CORP.**, 7158 Industrial Pl. Blvd., Mentor, OH 44060, Tel: 216-951-3300, TELEX: 985319; Empl.: 75; *Sls. Mgr.*: Laura Yano/Regional Sls. Mgr.; *Dist. Mgr.*: Pat Clark/Regional Sls. Mgr.

**A\*1600; C\*1638-1639**

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AL Madison, E-Squared Mktg. .... 205-464-0392  
CA Los Gatos, Luscombe Engr. .... 408-370-2020  
CA Montrose, Signal Entprs., Inc. .... 818-957-0640  
CO Golden, Cristec-Meade Co. .... 303-279-5070  
FL Tampa, Florida Comp. Sls. .... 813-873-3622  
IN Fishers, Connect 21 .... 317-578-2121  
IN Valparaiso, Catalyst .... 219-477-4004  
KS Olathe, Rothkopf & Assocs. .... 913-829-8897  
MA Needham, Sturgeon Tech. Sls. .... 617-444-6603  
MN Minneapolis, RK Sls. Assocs. Inc. .... 612-571-1001  
MO St. Louis, Rothkopf & Assocs. .... 314-961-4485  
NJ Lawrenceville, DVS Co. .... 609-896-1112  
NJ Matawan, Ashtec .... 908-583-6903  
NY Mendon, Tech Mark Inc. .... 716-624-3840  
NY Port Washington, Ashtec .... 516-767-0336  
OH Rocky River, Oak Hill Mktg. .... 216-333-0000

OH Westerville, Oak Hill Mktg. .... 614-890-5150  
OR Portland, Caruso & Camelleri Assocs. .... 503-246-5439  
TX Dallas, SW Mktg. Assocs. .... 214-341-8631  
VA Charlottesville, DVS Co. .... 804-973-0303  
WA Bellevue, Caruso & Assocs. .... 206-455-8811  
Can Ontario, Millennium Mktg. .... 416-798-3044

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CA Gardena, Cal Switch .... 714-538-9830  
CA Santa Ana, BDS Elctms. .... 714-662-1050  
CA Santa Clara, Cypress Elctms. .... 408-980-2500  
CT Hartford, Wes-Grade Comps. .... 203-527-7705  
IL Chicago, Newark Elctms. .... 312-784-5100  
IL Wheeling, Hawk Elctms. .... 708-459-4030  
MD Beltsville, Petricko Sls. .... 301-937-4960  
MA Marlboro, Hardware Specialty .... 508-481-8622  
MA Marlboro, Now Elctms. .... 508-460-0187  
MI Grand Rapids, RM Elctms. .... 616-531-9300  
MI Wyoming, North Coast .... 616-249-8910  
MN Roseville, Parts One .... 612-633-8079  
MO Maryland Hts., L-Comp .... 314-291-6200  
NJ Pennsauken, IMS Distrib. .... 609-662-1770  
NY Elmsford, Multimetrics .... 914-347-3666  
OH Highland Hgts., Major Electronix .... 216-442-6200  
PA Philadelphia, Sharp Elctms. .... 215-969-3300  
PA Pittsburgh, CAM-RPC .... 412-963-6202  
PA York, ECI .... 717-846-5334  
TX Ft. Worth, Allied Elctms. .... 817-595-3500  
TX Ft. Worth, Tandy Elctms. .... 817-870-5600  
WA Seattle, Radar Elec. .... 206-282-2511  
WA Vancouver, Interconnect Sls. .... 206-256-4085  
Can Markham, Carsten Elctms. .... 416-477-7705  
Can Pickering, Ont., A.C. Simmonds & Sons .... 416-839-8041  
Can Pointe Claire, Que., Future Elctms. .... 514-694-7710

**QUALTRONICS CORP., INC.**, Tollgate Rd., Palm, PA 18070-0468, Tel: 215-679-0900, FAX: 215-679-5927; FSC No.: 72968; Empl.: 22

**QUAM-NICHOLS CO.**, 234 E. Marquette Rd., Chicago, IL 60637, Tel: 312-488-5800, FAX: 312-488-6944; Empl.: 200; *Sls. Mgr.*: William G. Little; *Dist. Mgr.*: Greg Johns

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*Local Sales Offices & Reps*

AZ Mesa, Yocum Mktg. .... 602-834-3334  
CA Culver City, Westech Mktg. .... 310-842-8820  
CA Gardena, Bidwell-Schwartz Assocs. .... 213-770-0300  
UT Salt Lake City, Pro Tech Mktg. .... 801-943-8331  
FL Orlando, Cartwright & Bean of FL .... 407-422-4531  
GA Norcross, Cartwright & Bean of GA .... 404-368-0160  
IL Mt. Prospect, The Dornbro Co. .... 312-253-3326  
IL Skokie, Specialized Mktg. .... 708-674-1111  
IN Carmel, Green-Wissler Sls., Inc. .... 317-843-5785  
KS Prairie Village, R. W. Kunz & Assocs., Inc. .... 913-648-3535  
MA Chicopee, Repworks, Inc. .... 413-533-0845  
MN Edina, Mel Foster Techn. Sls. Inv. .... 612-941-9790  
NJ Rahway, R. E. Breuer Co. .... 201-388-5045  
NY Syracuse, The Lewis & Dunnigan Co., Inc. .... 315-446-5522  
OH Stow, J. W. Lehner Co. .... 216-686-1965  
PA Broomall, Lowery Assocs. Co. .... 215-356-5300  
TN Memphis, Cartwright & Bean of TN .... 901-362-8345  
TX Dallas, Dick Bellow Sls. .... 214-644-7881  
WA Seattle, Vector Manufacturers' Rep. .... 206-368-8400  
EXP Yonkers, NY, Roburm Agencies, Inc. .... 914-968-1016  
Can Waterloo, Ont., McBride Loudspeaker Source, Ltd. .... 519-884-3500  
MI Southfield, Robert Milsik Co. .... 313-354-3310

**QUAN-TECH**, Stansbury Industries Inc., P.O. Box 28, Rte. 206, Flanders, NJ 07836, Tel: 201-927-1766, FAX: 201-927-8242; FSC No.: 63921; *Sls. Mgr.*: Richard A. Stansbury

**QUANTEX CORPORATION**, 2 Research Ct., Rockville, MD 20850, Tel: 301-258-2701, 800-992-5149 (Sls. only), FAX: 301-258-9871; Empl.: 40; *Sls. Mgr.*: Ken Charbonneau

**QUANTRONIX**, Excel Technology, 45 Adams Ave., Hauppauge, NY 11788, Tel: 516-273-6900, TELEX: 685-2167, FAX: 516-273-6958; Empl.: 100; *Sls. Mgr.*: S. Tomegard

**QUANTUM CHROMODYNAMICS, INC.**, 2401 208th Street Unit 9, Torrance, CA 90501, Tel: 310-320-5717, FAX: 310-320-5848; Empl.: 4; *Sls. Mgr.*: David L. Hills



**FAX: 708-888-2802**

**QUANTUM DATA INC.**, 2111 Big Timber Road, Elgin, IL 60123, Tel: 708-888-0450, TELEX: 206725; Empl.: 23; *Sls. Mgr.*: Bill Down

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**QUANTUM ELECTRONICS, INC.**, 31 Industrial Park Rd., Lewistown, PA 17044, Tel: 717-242-1132, FAX: 717-248-8680; Empl.: 20; *Sls. Mgr.*: Kit C. Kennedy

**QUANTUM SCIENTIFIC INC.**, 433 Horner Ave., Unit 4, Toronto, Ont M8W 4Y4, Tel: 416-503-8555, 800-268-6000, FAX: 416-503-1322; Empl.: 14; *Sls. Mgr.*: Gary Atchison

**QUARTZITE PROCESSING, INC.**, 6 Holyoke St., Malden, MA 02148, Tel: 617-322-3611, FAX: 617-322-9623; Empl.: 11; *Sls. Mgr.*: D. Yanofsky

**QUATECH INC.**, 662 Wolf Ledges Pkwy., Akron, OH 44311, Tel: 216-434-3154, TELEX: 5101012726, FAX: 216-434-1409; Empl.: 32; *Sls. Mgr.*: Michael Cenker; *Dist. Mgr.*: Michael Cenker

**QUEST CONTROLS, INC.**, 208 9th St. Dr. West, Palmetto, FL 34221, Tel: 813-729-4799, FAX: 813-729-5480; Empl.: 32; *Sls. Mgr.*: Joe Hencoski

**Q.V.S., INC.**, 20 North 15th St., East Orange, NJ 07017, Tel: 201-673-3996, FAX: 201-673-3997; FSC No.: 89820; Empl.: 45

**RACAL-DANA INSTRS. INC.**, 4 Goodyear St., Irvine, CA 92718, Tel: 714-859-8999; FSC No.: 21793; Empl.: 230

**RACAL-DATACOM**, 1601 N. Harrison Parkway, Sunrise, FL 33323-2899, Tel: 305-846-1601, 1-800-RACAL-55, TWX: 510-955-4145, FAX: 305-846-4942; Empl.: 2400; *Sls. Mgr.*: Dan Latham; *Dist. Mgr.*: Bill Wilson

**RACAL-GUARDATA, INC.**, 480 Spring Pk. Pl., Sta. 900, Herndon, VA 22070, Tel: 703-471-0892, FAX: 703-437-9333; FSC No.: 56496; Empl.: 29; *Sls. Mgr.*: Thomas Mitchell, VP; *Dist. Mgr.*: Thomas Mitchell, VP

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Can Mississauga, Ont., Racal Guardata Canada .... 416-620-3431

**RADIAL CONTROLS INC.**, 2555 E. 55th Place, Indianapolis, IN 46220, Tel: 317-255-2796; Empl.: 25; *Sls. Mgr.*: R. L. Newsom

**RADIALL, INC.**, 150 Long Beach Blvd., Stratford, CT 06497, Tel: 203-386-1030, TELEX: 311796, FAX: 203-375-3808; Empl.: 40; *Sls. Mgr.*: Bill Pitcher; *Dist. Mgr.*: Peter Dionisio

**RADIANT COMMUNICATIONS CORP.**, 5001 Hadley Rd. P.O. Box 867, South Plainfield, NJ 07080, Tel: 908-757-7444, TELEX: 908-757-8666; Empl.: 10; *Sls. Mgr.*: Gene Thaw

**RADIOMETRICS MIDWEST CORP.**, 55 West 22nd Street, Ste. 106, Lombard, IL 60148, Tel: 708-932-7262, FAX: 708-932-7271; FSC No.: Cage Code 1Z075 SIC Code 8748 Ext. 0021; Empl.: 5

**RADIO RESEARCH INSTRUMENT CO., INC.**, 584 North Main Street, Waterbury, CT 06704-3506, Tel: 203-753-5840, FAX: 203-754-2567; FSC No.: 57174; *Sls. Mgr.*: E. B. Doyle

**RADIO TELEVISION PRODUCTS CORP.**, 2702 Washington Ave. N., Douglas, AZ 85607, Tel: 602-364-4438, FAX: 602-364-4430; FSC No.: 5950; Empl.: 120; *Sls. Mgr.*: W. J. McGaw

**RADIX MICROELECTRONICS INC.**, 3445 C Chelton Lp., Colorado Springs, CO 80909, Tel: 719-597-1975, FAX: 719-597-1975; Empl.: 18

**RADIX WIRE CO.**, 26260 Lakeland Blvd., Cleveland, OH 44132, Tel: 216-731-9191, FAX: 216-731-7082; Empl.: 90; *Sls. Mgr.*: Peter B. Thurstone; *Dist. Mgr.*: Doug Kerans, Dir. Sls./Mktg.

**RADSTONE TECHNOLOGY**, 20 Craig Rd., Montvale, NJ 07645, Tel: 201-391-2700, 800-368-2738, FAX: 201-391-2899; *Sls. Mgr.*: Larry Abzug

**RAE COMPANY INC.**, 1345 Brookville Way, Ste. C, Indianapolis, IN 46239, Tel: 317-351-1774, FAX: 317-351-1781; FSC No.: 07356; Empl.: 50; *Sls. Mgr.*: Tim Frazee

**RAF ELECTRONIC HARDWARE**, 95 Silvermead Rd., Seymour, CT 06483, Tel: 203-888-2133, FAX: 203-888-9800; FSC No.: 55566; Empl.: 120; *Sls. Mgr.*: William R. Bailey, Jr.; *Dist. Mgr.*: Dave Granger/John Capece

**RAG ELECTRONICS, INC.**, 21418 Parthenia St., Canoga Park, CA 91304, Tel: 818-998-6500, 800-732-3457, FAX: 818-407-5559



**RAGEN DATA SYSTEMS, INC.**, Subsidiary of Meggit U.S.A., 3 Oval Dr., Central Islip, NY 11722, Tel: 516-234-3800, FAX: 516-348-0993; FSC No.: 13068; Empl.: 180; *Sls. Mgr.*: Roberta Marino

**RAGEN SYSTEMS, INC.**, Ragen Corp., 1 Frederick Rd., Warren, NJ 07059, Tel: 908-561-4200, FAX: 908-561-1184; Empl.: 200; *Sls. Mgr.*: Richard Grawehr

**RALTRON ELECTRONICS**, 2315 N.W. 107th Ave., Miami, FL 33172, Tel: 305-593-6033, TELEX: 441588, FAX: 305-594-3973; Empl.: 40; *Sls. Mgr.*: Alexander Wolloch; *Dist. Mgr.*: Alexander Wolloch ..... **A-1460-1462**

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**AL** Madison, Lamons Sls. .... 205-461-7871, FAX: 205-461-7978

**AZ** Scottsdale, EDP & Assocs. .... 602-991-6119

**CA** Anaheim, Raltron-California ..... 714-974-2664, FAX: 714-921-2960

**CA** Los Angeles, Landa & Assocs. .... 213-879-0770, FAX: 310-478-0190

**CA** San Marcos, Falcon Sls. & Technlg. .... 619-591-0504, FAX: 619-591-4241

**CA** Santa Ana, Landa & Assocs. .... 714-543-7805

**CA** Santa Clara, Lintronics .... 408-748-2970

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**PA** Horsham, Nexus Technlg. Sls. .... 215-675-9600, FAX: 215-675-9604

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| IL                                    | Des Plaines, Electron Mktg. | 708-298-2330 |
| MA                                    | Needham, Ray Perron Co.     | 617-449-6162 |
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| MN                                    | Eden Prairie, Hanna Lind    | 612-942-8554 |
| MO                                    | Bridgeport, AEM             | 314-298-9900 |
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| CA                        | San Diego, Neumann Elctms.      | 619-695-3005 |
| CA                        | Santa Clara, Comps. Ctr.        | 408-988-3751 |
| CO                        | Littleton, Indelco              | 303-795-3431 |
| CT                        | Wallingford, Midstate           | 800-243-1043 |
| FL                        | Ft. Lauderdale, Brothers        | 305-561-6700 |
| FL                        | Melbourne, Pridmore             | 407-723-1213 |
| FL                        | W. Palm Beach, Atlantic Elctms. | 813-531-5900 |
| IL                        | Lisle, Components, Inc.         | 708-852-7707 |
| IL                        | Wood Dale, NEP Elctms.          | 708-595-8500 |
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| MA                        | Wilmington, Heiland Elctms.     | 508-657-4870 |
| MI                        | Grand Rapids, Calder            | 616-698-7400 |
| MI                        | Grand Rapids, RM Elctms.        | 616-531-9300 |
| MN                        | Roseville, Parts One            | 612-633-8079 |
| NH                        | Merrimack, Brevan Elctms.       | 603-429-1909 |
| NJ                        | E. Brunswick, Brothrs Elctms.   | 908-238-2200 |
| NY                        | Mamaroneck, New Yorker          | 914-968-7600 |
| NY                        | Rochester, Masline              | 716-546-5373 |
| OH                        | Akron, Aesco Elctms.            | 216-762-8811 |
| PA                        | Exton, VSH Elctms.              | 215-363-2250 |
| PA                        | McKean, Advacom                 | 814-476-7774 |
| TX                        | Ft. Worth, Allied Elctms.       | 800-433-5700 |
| WI                        | New Berlin, NEP                 | 414-785-9100 |

**R. C. ELECTRONICS INC.**, 6464 Hollister Ave, Goleta, CA 93117, Tel: 805-685-7770, FAX: 805-685-5853; Empl: 20; Sls. Mgr.: Chao-Sun Pang; Dist. Mgr.: Chao-Sun Pang

**RC ELECTRONICS**, 43002 Christy St., Fremont, CA 94538-3164, Tel: 510-656-8490, FAX: 510-656-4759; Sls. Mgr.: Joe Butler

**R-COLUMBIA PRODS. CO., INC.**, 2008 St. Johns Ave., Highland Park, IL 60035, Tel: 708-432-7915, FAX: 708-432-9181; Empl: 20

**RDF CORPORATION**, 23 Elm Ave., P.O. Box 490, Hudson, NH 03051-0490, Tel: 603-882-5195, 800-445-8367, FAX: 603-882-6925; FSC No.: 02009; Empl: 97; Sls. Mgr.: Randal A. Gauthier; Dist. Mgr.: Irwin Bluestein



**FAX: 914-777-7070**

**RDI ELCTRNS., INC.**, 147 Palmer Ave., Mamaroneck, NY 10543, Tel: 914-777-7000; Empl: 9; Sls. Mgr.: Barry Miller **A-2117; B-1801; C-1440-1441, 1803; D-1060-1062**

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| <i>Local Sales Offices &amp; Reps</i> |                                    |              |
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| CA                                    | Newport Bch., SPA Elctm. Sls.      | 714-863-1193 |
| CA                                    | San Jose, Comtech Mktg.            | 408-249-3330 |
| FL                                    | Longwood, M & H Assocs.            | 407-332-7912 |
| GA                                    | Marietta, E-Squared Mktg.          | 404-565-2088 |
| MD                                    | Germantown, Bresson Assocs.        | 301-540-0110 |
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| NY                                    | Hicksville, J. Square Mktg., Inc.  | 516-935-3200 |
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| PA                                    | Narberth, Bresson Assocs.          | 215-664-6460 |
| TX                                    | Austin, Nova Mktg.                 | 512-343-2321 |
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| TX                                    | Houston, Nova Mktg.                | 713-988-6082 |
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| WA                                    | Redmond, Elctm. Mktg. Grp., Inc.   | 206-882-0962 |

**REACTEL, INC.**, 687-K Lofstrand Ln., Rockville, MD 20850, Tel: 301-279-5535, FAX: 301-340-7304; FSC No.: 60458; Empl: 30; Sls. Mgr.: Manny Assurian

**READE ADVANCED MATERIALS**, A Reade Intl. business unit, P.O. Drawer 15039, Riverside, RI 02915-0039, Tel: 401-433-7000, FAX: 401-433-7001; FSC No.: 0A9E1; Empl: 25; Sls. Mgr.: Charles Reade Jr.; Dist. Mgr.: J.W. Mearz

**RE AMERICA**, 31029 Center Ridge Rd., Westlake, OH 44145, Tel: 216-871-7617, FAX: 216-871-4303; Empl: 25; Sls. Mgr.: P. A. Bosworth



**RE-AN U.S.A., INC., Re-An Ltd. (UK),** 16 Passail Ave., Fairfield, NJ 07004, Tel: 1-800-828-7266, FAX: 201-808-6517; *Sls. Mgr.*: Frank Riordan

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**RECTRON, 13252 E. Temple Ave., Industry, CA 91746,** Tel: 818-333-3802, FAX: 818-330-6296

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**RED SQUARE COMPANY, 2098 S. Grand Ave. Ste. H, Santa Ana, CA 92705,** Tel: 714-751-1373; *Sls. Mgr.*: Ed Burg

**REED SWITCH DEVELOPMENTS, INC.,** 1405-16th St. Racine, WI 53403, Tel: 414-637-8848, FAX: 414-637-8861; *Sls. Mgr.*: C. Carpenter ..... **B•2006**



**FAX: 717-243-0079**

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**REGULUS SYSTEMS, 11901 Forest View Dr., Nevada City, CA 95959,** Tel: 415-593-4197

**REICH ASSOCIATES, INC., Rt. 4, Box 4620, Lakehills, TX 78063,** Tel: 210-751-3220, FAX: 210-751-3054; FSC No.: 55916; Empl: 20; *Sls. Mgr.*: W. Reich

**REKCO, INC.,** See LEM U.S.A. Inc.

**RELAY SERVICE CO.,** 1300 N. Pulaski Rd., Chicago, IL 60651, Tel: 312-252-2700, FAX: 312-252-0300; Empl: 25; *Sls. Mgr.*: Chas. H. Badger

**RELAY SPECIALTIES, 17 Raritan Rd., Oakland, NJ 07436,** Tel: 201-337-1000, TELEX: 642751, FAX: 201-337-1862; Empl: 48; *Sls. Mgr.*: S. R. Gershberg

**RELCO PRODUCTS, 5594 E. Jefferson Ave., Denver, CO 80237,** Tel: 303-756-1143; FSC No.: 14454; Empl: 7

**RELCO/RITZ ELECTRONICS, 196 Queen St. N., New Dundee, Ont., Canada N0B 2E0,** Tel: 519-696-2616 ..... **C•1081; D•1913**

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MN Oakdale, Complete Sls. .... 612-731-2923  
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TX Farmers Branch, Keats & Assocs. .... 214-243-5905

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NY Port Chester, Zeus Comp., Inc. .... 914-937-7400

**RELIABLE ELECTRONIC MFG., Wyvern Technologies, 1205 E. Warner Ave., Santa Ana, CA 92705,** Tel: 714-966-0710, FAX: 714-556-7014; FSC No.: 0FNJ8; *Sls. Mgr.*: Dave Hall

**RELIABILITY INCORPORATED, P. O. Box 218370, Houston, TX 77218,** Tel: 713-492-0550, FAX: 713-492-0615; *Sls. Mgr.*: Len Moscovitz; *Dist. Mgr.*: Mike Tenore

**RELANCE COMM/TEC, Reliance Electric, P.O. Box 17438, Cleveland, OH 44117,** Tel: 800-245-4501

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**RELANCE MOTION CONTROL, Reliance Electric, 6950 Washington Ave. So., Eden Prairie, MN 55344,** Tel: 612-942-3600, FAX: 612-942-3636; *Sls. Mgr.*: Harry Webber; *Dist. Mgr.*: Brad Nelson

**RELANCE PLASTICS & PACKAGING, 217 Brook Ave., Passaic, NJ 07055,** Tel: 201-473-7200, FAX: 201-473-1023; Empl: 60; *Sls. Mgr.*: Hale Smith

**RELM COMMUNICATIONS, INC., Adage, Inc., 7707 Records Street, Indianapolis, IN 46226,** Tel: 317-545-4281, FAX: 317-545-2170; Empl: 300; *Sls. Mgr.*: John Biljan

**REMEE PRODUCTS CORP., 186 North Main Street, Florida, NY 10921,** Tel: 914-651-4431, FAX: 914-651-4160; FSC No.: 4R362; Empl: 135; *Sls. Mgr.*: Ken Pimental; *Dist. Mgr.*: Ken Pimental

**RENARD MANUFACTURING COMPANY, INC., 3305 N.W. 79th Ave., Miami, FL 33122-1015,** Tel: 305-592-1500, TELEX: 989326, ESYLNK: 62929141, FAX: 305-593-9990; Empl: 250; *Sls. Mgr.*: S. Simerly

**RENATA, 990 N. Bowser, Ste. 900, Richardson, TX 75081,** Tel: 214-234-8091, FAX: 214-699-3900

**RENCO ENCODERS INC., 26 Coromar Dr., Goleta, CA 93117-3094,** Tel: 805-968-1525, FAX: 805-685-7965; FSC No.: 34479; Empl: 100; *Sls. Mgr.*: Dan Baxter; *Dist. Mgr.*: Edward Burk

**RENCO ELECTRONICS, INC.**

**FAX: 516-586-5562**

**RENCO ELECTRONICS, INC., 60 Jeffry Blvd., East Deer Pk., NY 11729,** Tel: 516-586-5566, 1-800-645-5828; FSC No.: 14778; Empl: 275; *Sls. Mgr.*: Edward W. Rensing; *Dist. Mgr.*: Rhonda Rizzo .... **A•1283-1289, 2527-2531**

Toll-Free Engineering Hot Line 800-645-5828, in NY State 516-586-5566

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AZ Tempe, Border States Tech. Svc. .... 602-839-0248  
AR Arlington Heights, Russell Elctm. Sls. .... 708-394-5560  
CO Wheat Ridge, Wescom Mktg. Inc. .... 303-422-8957  
CT East Hampton, Apex Assocs. .... 203-268-8401  
GA Marietta, Solutions Mfrs. Reps. .... 404-951-5683  
IN Indianapolis, Scharck Mktg. Inc. .... 317-842-6204  
MA Needham, Apex Assocs. .... 617-444-8070  
MS Meridian, Solutions Mfrs. Reps. .... 601-482-4647  
MO St. Louis, Rush & West Assoc. .... 314-965-3322  
NJ Marlton, BGR Assocs. .... 609-983-1020  
NM Albuquerque, Border States Tech. Svc. .... 505-884-9100  
NY Skaneateles, NFRM Mktg. Grp. Inc. .... 315-685-8991  
NC Raleigh, Solutions Mfrs. Reps. .... 919-790-7606  
UT Sandy, Moss Mktg. .... 801-562-9000  
FL Indian Harbor Bch, Solutions Inc. .... 407-777-0994  
IA Davenport, Rush & West Assocs. .... 319-388-9494  
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OH Rocky River, Oak Hill Mktg. Inc. .... 216-393-0000  
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TX Dallas, Electra Reps .... 214-388-3852  
VA Front Royal, Eltron Sls. Ltd. .... 703-635-7201  
WA Bothell, Temco Northwest .... 206-481-6150  
WI Brookfield, Bert Wartchow Assocs. .... 414-821-2993  
Can Montreal, Que, Eli Manis, Inc. .... 514-484-2923

**REPRODUCTION TECHNOLOGIES INC., P.O. Box 790, Bristol, IN 46507-0790,** Tel: 219-848-5233; Empl: 10; *Sls. Mgr.*: Michael Stoll

**REPUBLIC ELECTRONICS CO., Esterline Technologies, 200 Wireless Blvd., Hauppauge, NY 11788,** Tel: 516-273-9800, FAX: 516-273-9820; FSC No.: 95750; Empl: 145; *Sls. Mgr.*: Sy Newman, Mktg. Mgr.

**RESEARCH DEVICES, INC., 121 Ethel Rd. West, Piscataway, NJ 08854,** Tel: 908-572-4800, TELEX: 467058, FAX: 908-572-4808; Empl: 30; *Sls. Mgr.*: Michael Schneider

**RESEARCH INC., P.O. Box 24064, Minneapolis, MN 55424,** Tel: 612-941-3300, TELEX: 29-0502, FAX: 612-941-3628; Empl: 140; *Sls. Mgr.*: JD Strand, Al Day, Marianne Walmsley

**RESEARCH SPECIALISTS, 1816 Settlers Oval, Cleveland, OH 44145,** Tel: 216-871-8909; Empl: 10; *Sls. Mgr.*: Tim Howard

**RESISTANCE TECHNOLOGY INC., 1260 Red Fox Rd., St. Paul, MN 55112,** Tel: 612-636-9770, FAX: 612-636-8944; *Sls. Mgr.*: Roger H. Falde, Dir. Sls.

**RESISTORS, INC., 5226 W. 26th St., Chicago, IL 60650,** Tel: 708-652-7555, FAX: 708-863-4272; Empl: 35; *Sls. Mgr.*: Theresa McGraw



**FAX: 408-441-7224**

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**TX** Richardson, Jim Gray & Associates ... 214-699-9976

**RF ELECTRONICS, INC.**, 1091 Duryea Ave., Irvine, CA 92714-5517, Tel: 714-263-0661, FAX: 714-263-0662; Empl: 18; *Sls. Mgr.*: Andy Webb; *Dist. Mgr.*: Andy Webb

**RFI CORPORATION**, 100 E. Pine Aire Dr., Bay Shore, NY 11706, Tel: 516-231-6400, FAX: 516-231-6465; FSC No.: 13619; Empl: 140; *Sls. Mgr.*: Dave Radford  
**A=1157-1158, 1601, 1676, 2315, 2532**

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**IL** Compucon West ... 708-513-7706  
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**RFL ELECTRONICS INC.**, Powerville Rd., Boonton, NJ 07005-0239, Tel: 201-334-3100, FAX: 201-334-3863; FSC No.: 49673; Empl: 300

**RF MONOLITHICS, INC.**, 4441 Sigma Rd., Dallas, TX 75244, Tel: 214-233-2903, FAX: 214-387-8148; FSC No.: 20874; Empl: 200; *Sls. Mgr.*: C. Baker

**R.F. POWER LABS, INC.**, Kalmus Engineering Inc., 21820 - 87th St., Woodinville, WA 98072, Tel: 206-481-8833, FAX: 206-486-1002; FSC No.: 057143; Empl: 17; *Sls. Mgr.*: Jeannie Olson

**RGB SPECTRUM**, 950 Marina Village Parkway, Alameda, CA 94501, Tel: 510-814-7000, FAX: 510-814-7026; Empl: 30; *Sls. Mgr.*: Lucien E. Long; *Dist. Mgr.*: Lucien E. Long



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**RHG ELECTRONICS LABORATORY, INC.**, 161 E. Industry Ct., Deer Park, NY 11729, Tel: 516-242-1100, FAX: 516-242-1222; Empl: 205; *Sls. Mgr.*: David E. Krautheimer

**RHINO ROBOTS, INC.**, P.O. Box 4010, Champaign, IL 61824, Tel: 217-352-8485, FAX: 217-356-7699; Empl: 18; *Sls. Mgr.*: H.S. Sandhu

**RHOMBUS INDUSTRIES**, 15801 Chemical Ln., Huntington Bch., CA 92649-1595, Tel: 714-898-0960, FAX: 714-896-0971; FSC No.: 16714; Empl: 60; *Sls. Mgr.*: Mary Manandik; *Dist. Mgr.*: Sheryl Lane **A=1579, 2533**

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**CT** Canterbury, Deltech Sls. ... 203-546-6322  
**FL** Altamonte Springs, Electramark ... 407-830-0844  
**FL** Boca Raton, Electramark ... 305-424-2872  
**FL** Tampa, Electramark ... 813-962-1882  
**MA** Littleton, Deltech Sls. ... 508-486-8294  
**NJ** Mt. Laurel, Wyck Mktg. ... 609-727-1070  
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**FAX: 908-389-9066**

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*Local Sales Offices & Reps*  
**AZ** Phoenix, Chaparral Elctns., Inc. ... 602-996-5909  
**CA** Orange, Dobson Mktg. ... 714-639-3278  
**CA** San Jose, Ruppert Sls. & Engrg. ... 408-998-8718  
**CO** Evergreen, Mid/West Co. ... 303-674-4829  
**CT** Milford, High Tech Sls. ... 203-242-6595  
**CA** Alpharetta, R A Sls. ... 404-484-6749  
**IL** Arlington Hgts., MJ Peterson & Assocs. ... 708-577-8200

**IN** Ft. Wayne, M/S Sls. ... 219-436-3023  
**IN** Greenwood, M/S Sls. ... 317-881-0110  
**KS** Wichita, Mid/West Co. ... 316-264-0440  
**MD** Baltimore, Stitzer Co. ... 301-494-9100  
**MI** Livonia, Electro Mktg. Grp., Inc. ... 800-338-6856  
**MN** Roseville, TLC Elctns. ... 612-483-2226  
**MO** Florissant, Mid/West Co. ... 314-837-3361  
**NE** Lincoln, Mid/West Co. ... 402-423-1386  
**NJ** Woodbridge, Jade Mktg. ... 908-750-2998  
**NM** Albuquerque, Chaparral Elctns., Inc. ... 502-271-2266  
**NC** New Bern, R A Sls. ... 919-244-2672  
**OH** Dayton, Electro Mktg. Grp., Inc. ... 800-338-6856  
**OH** N. Royalton, Electro Mktg. Grp., Inc. ... 800-338-6865  
**PA** Allison Park, Electro Mktg. Grp., Inc. ... 800-338-6856  
**CA** Malvern, Stitzer Co., Inc. ... 215-644-5500  
**SC** Easley, R A Sls. ... 803-859-1859  
**TN** Rutherford, R A Sls. ... 901-655-6301  
**WA** Redmond, Sls. & Engrg. Assoc. ... 208-883-4999  
**WA** Vancouver, Sls. & Engrg. Assoc. ... 206-573-5161  
**Can** Markham, Ont., Birde Mktg. ... 416-477-7722

*Local Distributors*  
**AZ** Phoenix, Beswitched ... 602-275-4805  
**AZ** Tempe, Control Des. Supp. ... 602-829-7981  
**AR** Maumelle, Control Des. Supp. ... 501-851-3171  
**CA** Anaheim, Control Des. Supp. ... 714-821-1516  
**CA** Buena Pk., SEL Sls., Inc. ... 714-521-8673

**CA** S. San Francisco, Steven Engrg. ... 415-588-9200  
**CA** San Carlos, Control Des. Supp. ... 415-592-4806  
**CA** San Carlos, Logan Elctns. ... 415-592-4806  
**CA** Santa Monica, Master Distrs. ... 310-452-1229  
**CO** Arvada, Denver Beta Wintronics ... 303-431-7161  
**CO** Denver, Control Des. Supp. ... 303-296-1922  
**CT** Wallingford, Control Des. Supp. ... 203-269-9955  
**FL** Davie, Arco Distrs., Inc. ... 305-473-2550  
**FL** Pompano Bch., Control Des. Supp. ... 305-783-1311  
**FL** Sanford, Control Design Supp. ... 407-328-8011  
**GA** Stone Mountain, Control Des. Supp. ... 404-479-3906  
**IL** Carol Stream, Lector Comps. ... 708-690-0520  
**IL** Schaumburg, Control Des. Supp. ... 708-307-8900  
**IL** Wood Dale, Electro-Kinetics ... 708-595-6700  
**IN** Indianapolis, Advent Elctns. ... 317-872-4910  
**IN** Indianapolis, Control Des. Supp. ... 317-788-4559  
**IA** Cedar Rapids, Advent Elctns., Inc. ... 319-363-0221  
**IA** Marion, Control Des. Supp. ... 319-373-2923  
**KS** Kansas City, Control Des. Supp. ... 913-362-4248  
**MA** Walpole, Richey-Imprct Elctns. ... 508-668-8200  
**MA** Woburn, Control Des. Supp. ... 617-932-9404  
**MI** Farmington Hills, Control Des. Supp. ... 313-473-0220  
**MI** Rose Mount, Advent Elctns., Inc. ... 708-297-6200  
**MN** Minneapolis, Control Des. Supp. ... 612-721-1628  
**MO** Kansas City, Barr-Thorp Elec. Co. ... 816-531-8840  
**MO** Maryland Heights, Control Design Supp. ... 314-432-1116

**NH** Goffstown, Key Comps. ... 603-626-1717  
**NJ** Bellmawr, Mid Atlantic Comps. ... 609-931-5303  
**NJ** Union, Lector Inds. ... 908-687-2626  
**NY** Bohemia, EBL Svcs., Inc. ... 516-567-5775  
**NY** Ronkonkoma, Spectrum Comps. ... 516-737-6900  
**NC** Charlotte, Control Des. Supp. ... 704-588-4410  
**NC** Winston-Salem, Kirkman Elctns., Inc. ... 919-722-9131

**OH** Akron, Aesco Elctns., Inc. ... 216-762-8818  
**OH** Cincinnati, Hughes Peters ... 513-351-2000  
**OH** Cleveland, Roberts Elctns. ... 216-230-1711  
**OH** Columbus, Aesco Elctns., Inc. ... 614-882-6762  
**OH** Dayton, Related Comps. ... 513-253-6116  
**OR** Portland, Tek-Elec. Control, Inc. ... 503-246-5451  
**PA** Malvern, Control Des. Supp. ... 215-296-0150  
**PA** Pittsburgh, Aesco Elctns. ... 412-344-1550  
**TX** Dallas, Control Des. Supp. ... 713-868-4018  
**TX** Houston, Control Des. Supp. ... 713-868-4018  
**UT** Nephi, Control Des. Supp. ... 801-623-2908  
**WA** Kent, Control Des. Supp. ... 206-251-6323  
**WA** Seattle, Tek-Electric Control ... 206-243-6007  
**WI** Milwaukee, Marsh Elctns., Inc. ... 414-475-6000  
**WI** New Berlin, Control Des. Supp. ... 414-784-1015  
**Can** Markham, Ont., Birde Mktg., Inc. ... 416-477-7722

**RICHARD HIRSCHMANN OF AMERICAN**, See Hirschmann

**RICHARDS, ARKLY S. CO., INC.**, 72 Winchester St., Newton Highlands, MA 02161-1796, Tel: 617-527-4385, FAX: 617-964-3746; *Sls. Mgr.*: L. K. Richards

**RICHARDSON ELECTRONICS, LTD.**, 40W267 Keslinger Rd., LaFox, IL 60147, Tel: 708-208-2200, 800-348-5500, FAX: 708-208-2550; FSC No.: 5L804; Empl: 625; *Sls. Mgr.*: Robert L. Prince; *Dist. Mgr.*: Robert L. Prince

**RICHCO PLASTIC CO.**, P.O. Box 804238, Chicago, IL 60680, Tel: 312-539-4080, FAX: 312-539-6770; FSC No.: 06915; Empl: 400; *Sls. Mgr.*: Ted E. Pavoris; *Dist. Mgr.*: Ted Pavoris

**RIDGE TOOL CO.**, Sub. Emerson Elec. Co., 400 Clark St., Elyria, OH 44036, Tel: 216-323-5581, TELEX: 0243420, FAX: 216-323-5204; *Dist. Mgr.*: John Drew

**RIFOCS CORP.**, 474 Constitution Ave., Camarillo, CA 93012, Tel: 805-389-9800, FAX: 805-389-9808; Empl: 12; *Sls. Mgr.*: Dennis N. Horwitz

**RITTAL CORP.**, One Rittal Place, Springfield, OH 45504-9807, Tel: 800-477-4000, TELEX: 513-390-5599; Empl: 270

**RITTER COIL, INC.**, 720 Sheridan Dr., P.O. Box 3130, Easton, PA 18043-3130, Tel: 215-258-6780, FAX: 215-258-6783; Empl: 20; *Sls. Mgr.*: Jackie Berhel

**RITZ ELECTRONICS/RELCO**, 196 Queen St. N., New Dundee, Ont., Canada N0B 2E0, Tel: 519-696-2616, FAX: 519-696-2670; Empl: 30; *Sls. Mgr.*: Gary Ritz; *Dist. Mgr.*: Leonard Snow **C=1081; D=1913**

*Local Sales Offices & Reps*  
**CA** Torrance, U.S. Power Converting Co. ... 213-316-9984  
**KS** Wichita, US Power/Relco Midwest ... 316-722-6440  
**Can** New Dundee, Ont., Ritz Electronics Ltd. ... 519-696-2616



## Local Distributors

CA Torrance, Leonard Snow & Assocs./U.S. Power ..... 213-316-9984  
 KS Wichita, US Power/Relco Midwest ..... 316-722-6440  
 Can New Dundee, Ont, Ritz Electronics Ltd. .... 519-696-2616

RIVERHEAD CIRCUITS, AMP & AKZO Corporation,  
 P.O. Box 700, West La, Aquebogue, NY 11931, Tel: 516-722-4100, FAX: 516-284-2352; Empl: 500; Sls. Mgr.: Dennis Marek

RJF INTERANTIONAL CORP., 3875 Embassy Pkwy.,  
 Fairlawn, OH 44333, Tel: 216-668-7689, FAX: 216-668-7701

R-K ELECTRONICS, 11560 Goldcoast Dr., Cincinnati, OH 45249, Tel: 513-489-4060; Empl: 25

RLC ELECTRONICS, INC., 83 Radio Cir., Mt. Kisco, NY 10549, Tel: 914-241-1334, FAX: 914-241-1753; FSC No.: 12598; Empl: 56; Sls. Mgr.: Walter Crofut; Dist. Mgr.: Walter Crofut

RME FILTERS, INC., PO Box 838, Amherst, NH 03031, Tel: 603-595-4573, FAX: 603-881-7649; FSC No.: 052B1

RMF PRODUCTS, INC., 1275 Paramount Pkwy., P.O. Box 520, Batavia, IL 60510, Tel: 708-879-0020, FAX: 708-879-6749; Empl: 11; Sls. Mgr.: R. Frieders ..... C-1533

RMS, Electrical Connector Division, 8600 Evergreen Blvd., Minneapolis, MN 55433, Tel: 612-786-1520, FAX: 612-786-1771; Empl: 50; Sls. Mgr.: Connie Laumeyer

RMS INSTRUMENTS, 1415-2 Bonhill Rd., Mississauga, Ont., Can L5T 1R2, Tel: 416-564-5533, FAX: 416-670-0053; Empl: 15; Sls. Mgr.: Edward A. McGovern

RMS TECHN., 11833 Canon Blvd., Ste 100, Newport News, VA 23606, Tel: 804-873-0100, FAX: 804-873-1512; FSC No.: 59606; Empl: 42

ROANWELL, 180 Varick St., New York, NY 10014, Tel: 212-989-1090, FAX: 212-989-3285; FSC No.: 82872; Empl: 80; Sls. Mgr.: Ray Lefebvre; Dist. Mgr.: Ray Lefebvre



FAX: 408-744-1521

RO ASSOCIATES, INC., 246 Caspian Dr., Box 61419, Sunnyvale, CA 94088, Tel: 408-744-1450; FSC No.: 24230; Empl: 60; Sls. Mgr.: R. D. Okada  
 D-1916-1917, 2202-2205

## Local Sales Offices &amp; Reps

AL Huntsville, JSL Inc. .... 205-883-4163  
 AZ Phoenix, Chaparral Elctms. .... 602-996-5909  
 CA Los Angeles, West Coast Reps. .... 310-690-9960  
 CA San Diego, W. Coast Rep ..... 619-581-2406  
 CA San Jose, P & M Elctms. .... 408-287-0402  
 CO Denver, F.G. Mktg. .... 303-795-9176  
 CT Redding, Power Factor .... 203-938-7013  
 DC Washington, Gans & Pugh ..... 703-709-0305  
 FL Ft. Lauderdale, Panamtech ..... 305-587-3769  
 FL Orlando, Panamtech ..... 407-679-5506  
 IL Chicago, Mar-con Assocs. Inc. .... 708-675-6450  
 KS Kansas City, Midtec ..... 913-541-0505  
 MD Baltimore, Gans & Pugh ..... 410-442-2189  
 MA Boston, Power Factor ..... 508-234-6415  
 MN Minneapolis, R J Inc. .... 612-866-3661  
 MO St. Louis, Midtec ..... 314-275-8666  
 NV Henderson, Chaparral ..... 702-433-5486  
 NM Albuquerque, Chaparral ..... 505-292-0007  
 NY Buffalo, NRM Mktg. .... 716-634-4300  
 NY Great Neck, M.O.S. Mktg. .... 516-487-3966  
 NY Rochester, NRM Mktg. .... 716-352-9166  
 NY Syracuse, NRM Mktg. .... 315-685-8991  
 OH Centerville, Omega Sls., Inc. .... 513-434-5507  
 OR Beaverton, Pacific Mktg. .... 503-641-9373  
 PA Philadelphia, Gans & Pugh ..... 215-699-6655  
 TX Houston, Barry Sls. .... 713-784-5860  
 TX Richardson, Barry Sls. .... 214-234-0255  
 WA Redmond, Pacific Mktg. .... 206-882-3144

ROBINSON NUGENT, INC., 800 East 8th St., New Albany, IN 47150, Tel: 812-948-0564, FAX: 812-945-0804; Empl: 400; Sls. Mgr.: Bill Gruhn; Dist. Mgr.: Carl Pearcy

ROBISON ELECTRONICS, P.O. Box 8121, San Luis Obispo, CA 93403-8121, Tel: 805-544-8000, FAX: 805-544-8091; FSC No.: 19080; Empl: 65

ROCKLAND INSULATED WIRE & CABLE, 87 Broadway, Haverstraw, NY 10927, Tel: 914-429-3103, FAX: 914-947-1712; FSC No.: 12111

ROCKLAND SCIENTIFIC CORPORATION, P.O. Box 3135, Princeton, NJ 08543, Tel: 609-844-0800, FAX: 609-895-9726; Empl: 15; Sls. Mgr.: S.N. Thanos

ROCKWELL INTERNATIONAL, 2990 Airway Ave., Costa Mesa, CA 92626, Tel: 714-641-5311, TELEX: 685532 COLLINS CSMA, FAX: 714-641-5320; Empl: 60; Sls. Mgr.: Robert A. Johnson

ROCKWELL INT'L SEMICONDUCTOR PRODUCTS DIVISION, 4311 Jamboree Rd., Newport Beach, CA 92660, Tel: 714-833-4600, TWX: 910-591-1698; FSC No.: 34576; Empl: 1995; Sls. Mgr.: Ernie Raper, Dir. of Sls.; Dist. Mgr.: K. Reutemann

ROCOM CORPORATION, 5957 Engineer Dr., Huntington Beach, CA 92649, Tel: 1-800-952-3539, 714-891-9922, FAX: 714-891-2121; FSC No.: 67361; Empl: 21; Sls. Mgr.: Robert Jewell; Dist. Mgr.: Robert Jewell



FAX: 516-277-8375

RODALE TECHNICAL SALES INC., 577 Main Street, Islip, NY 11751, Tel: 516-277-5454, TELEX: 5106007812, ESYLNK: T8003254112; Empl: 10; Sls. Mgr.: Gene Lipman ..... C-1640-1641, 1804-1805; D-1063

## Local Sales Offices &amp; Reps

CA Yorba Linda, Rodale Tech. Sls., Inc. .... 714-283-3140  
 IL Bensenville, Connecting Technlg. .... 708-238-0509  
 IN Carmel, Current Elctms. Mktg. .... 317-844-1770  
 KS Prairie Village, Crosslink Elctrl/Elctms. .... 913-432-6100  
 NY Islip, Rodale Tech. Sls., Inc. .... 516-277-5454  
 OH Bedford Hgts., P.H.P. .... 515-472-5984

Local Distributors

AZ Phoenix, Storm Prods. .... 602-269-3485  
 CA Inglewood, Storm Prods. .... 213-776-8141  
 CA Sacramento, AVAC Sunset ..... 1-800-AVAC-DIV  
 CO Broomfield, Storm Prods. .... 303-486-1991  
 MN Bloomington, KL Tannehill ..... 612-881-6700  
 MN St. Paul, AVAC Mid-America ..... 1-800-AVAC-DIV  
 NJ Edison, AVAC National ..... 1-800-AVAC-DIV  
 TN Nashville, AVAC Pioneer Tenn. .... 1-800-AVAC-DIV  
 TX Dallas, Storm Prods. .... 214-330-1381  
 UT Salt Lake City, Standard Supp. .... 801-486-3371  
 WA Woodinville, Storm Prods. .... 206-488-7400

RODANN ELECTRONICS MFG. CO., 3100 Airway Ave., 128, Costa Mesa, CA 92626, Tel: 714-662-3232, 800-366-7010, FAX: 714-662-3171; Sls. Mgr.: Alex Skarbak

RODELCO ELECTRONICS CORP., 111 Haynes Ct., Ronkonkoma, NY 11779, Tel: 516-981-0900, FAX: 516-981-1792; Empl: 44



FAX: 415-326-1993

ROD-L ELECTRONICS, INC., 923 Hamilton Ave., Menlo Park, CA 94025, Tel: 415-322-0711, 1-800-548-6305, TWX: 296210; Sls. Mgr.: Tom Cooke ..... D-1320-1321

## Local Sales Offices &amp; Reps

AZ Mesa, Scientific Dvcs. W. .... 602-839-6628  
 CA Menlo Park, ROD-L (factory) .... 415-322-0711  
 CO Louisville, Scientific Dvcs. W. .... 303-665-8089  
 FL Boca Raton, Electromark ..... 407-852-2259  
 GA Helen, Electromark Sys. .... 706-865-3120  
 IL Elk Grove, Loren Green Assocs. .... 312-593-0282  
 KS Merriam, Tec Rep ..... 913-262-9500  
 MN Minneapolis, Hei-Lite Sls. .... 612-861-6051  
 MN Plymouth, Hei-Lite ..... 612-550-0506  
 MO St. Louis, Tec Rep ..... 314-454-9100  
 NJ Laurel Springs, Donald Williams ..... 609-346-2876

NY Liverpool, Northern Tech. Sls. .... 314-451-1091  
 NC Winston-Salem, Nelson Assocs. .... 919-765-5520  
 OH N. Olmsted, AM Sls. .... 216-779-5033  
 OK Tulsa, Spectra Sls. .... 918-665-8899  
 OR Aloha, Core II Mktg. .... 503-649-0871  
 OR Beaverton, Core II Mktg. .... 503-641-0877  
 RI Narragansett, Pat Assocs. .... 401-783-9598  
 TX Houston, Spectra Sls. .... 713-270-8212  
 TX Richardson, Spectra Sls. .... 214-234-3600  
 VA Alexandria, Dyna Rep ..... 703-354-1222  
 Can Scarborough, MultiTest Elctms. .... 416-609-8399

## Local Distributors

CA Menlo Park, Rod-L (Factory) .... 415-322-0711  
 Can Scarborough, MultiTest Elctms. .... 416-609-8396

ROEDERSTEIN ELECTRONICS, INC., Vishay Electronic Components, 2100 W. Front St., Statesville, NC 28677, Tel: 704-872-8101, FAX: 704-872-8023; Empl: 98; Dist. Mgr.: Teresa Alexander

ROGAN, 3455 Woodhead Dr., Northbrook, IL 60062, Tel: 708-498-2300, FAX: 708-498-2334; FSC No.: 86797; Empl: 100; Sls. Mgr.: D. Pelletier; Dist. Mgr.: D. Pelletier

ROGERS CORPORATION, Circuit Components Div., 2400 S. Roosevelt St., Tempe, AZ 85282, Tel: 602-967-0624, FAX: 602-967-9385

ROGERS CORPORATION, Circuit Materials Div., Box 4000, Chandler, AZ 85244, Tel: 602-963-4584, FAX: 602-732-9381

ROGERS CORPORATION, Flexible Interconnections Div., Box 700, Chandler, AZ 85244, Tel: 602-963-4584, TELEX: 140-223, TWX: 910-950-1961, FAX: 602-786-8490; Sls. Mgr.: Darrel Brasch

ROGERS CORPORATION, Microwave & Circuit Mtl's Div., 100 S. Roosevelt Ave., Chandler, AZ 85226, Tel: 602-961-1382, FAX: 602-961-4533

ROGERS CORPORATION, Molding Materials Div., P.O. Box 550, Manchester, CT 06040, Tel: 203-646-5500, FAX: 203-646-5503

ROGERS CORPORATION, Power Distribution Div., 5750 E. McKellips Rd., Mesa, AZ 85205, Tel: 602-830-3370, FAX: 602-396-6401

ROGERS CORP., One Technology Dr., Rogers, CT 06263, Tel: 203-774-9605, TWX: 710-448-0047; Empl: 2500

ROH, Portland Instrument, 6120 San Fernando Rd., Glendale, CA 91201, Tel: 818-500-0137, FAX: 818-240-1828; Empl: 10; Sls. Mgr.: Dick Herbert

ROHDE & SCHWARZ, INC., 4425 Nicole Drive, Lanham, MD 20706, Tel: 301-459-8800, FAX: 301-459-2810; FSC No.: 82199; Empl: 65

ROHM CORPORATION, Rohm Electronics Division, 3034 Owen Drive, Antioch, TN 37013, Tel: 615-641-2020, FAX: 615-641-2022; Empl: 115; Sls. Mgr.: Mike DelGripio; Dist. Mgr.: Steve Bishop

ROLLS BATTERY ENGINEERING, 8 Proctor St., Salem, MA 01970, Tel: 508-745-3333, FAX: 508-741-8956; FSC No.: 6140 6135; Empl: 4-5; Dist. Mgr.: John J. Surette

ROLYN OPTICS CO., 706 Arrowgrand Circle, Covina, CA 91722-2199, Tel: 818-915-5707/5717, TELEX: 67-0380, FAX: 818-915-1379

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1991 Concourse Dr., San Jose, CA 95131, Tel: 408-943-  
0440, FAX: 408-943-0360; Empl: 13; Sls. Mgr.: Bob  
Burres; Dist. Mgr.: Bob Burres

**ROSE ENCLOSURES SYS., INC.**, 7330 Executive Way,  
Frederick, MD 21701-8353, Tel: 301-696-9800, FAX: 301-  
696-9494; FSC No.: 4Y520/C0242; Empl: 45; Sls. Mgr.:  
Warren Hudacek

**ROSEMONT-NASHVILLE, INC.**, See Chromalox  
Instrs. & Controls

**ROSEMOUNT ANALYTICAL INC.**, 89 Commerce Rd.,  
Cedar Grove, NJ 07009, Tel: 800-222-2600 ext. 400, FAX:  
201-857-9403

## ROSS ENGINEERING CORP.

**FAX: 408-377-5182**

**ROSS ENGINEERING CORP.**, 540 Westchester Dr.,  
Campbell, CA 95008, Tel: 408-377-4621; FSC No.: 23598;  
Empl: 45; Sls. Mgr.: Jim Ross; Dist. Mgr.: Jim Ross  
..... **B-1228, 1592-1594, 1802; D-1319**

**ROTEK INSTRUMENT CORP.**, 390 Main St., Waltham,  
MA 02254, Tel: 617-899-4611, FAX: 617-894-7273; FSC  
No.: 06678; Sls. Mgr.: Paul Luakdi

### Local Sales Offices & Reps

|    |                               |              |
|----|-------------------------------|--------------|
| AL | Huntsville, Kemp Instrs.      | 205-837-4304 |
| FL | Palm Harbor, Teqspec          | 813-942-6006 |
| MA | Randolph, EML Assocs.         | 617-341-0781 |
| MN | Minneapolis, Hei-Lite Sls.    | 612-550-0506 |
| NC | Winston-Salem, Teqspec        | 919-765-5553 |
| PA | Lansdale, Techn. Instr. Sls.  | 215-361-7850 |
| PA | Pittsburgh, Meas. Instr. East | 412-459-8090 |
| TX | Dallas, Kemp Instrs.          | 214-931-7100 |
| VA | Dumfries, Electra-Tech Inc.   | 703-670-6862 |
| WA | Seattle, Branom Instr. Co.    | 206-762-6050 |

**ROTORK CONTROLS, INC.**, 19 Jetview Drive, Rochester,  
NY 14624, Tel: 716-328-1550, FAX: 716-328-5848; Empl:  
75; Sls. Mgr.: Chris Warnett; Dist. Mgr.: Chris Warnett

## ROWE INDUSTRIES, INC.



**FAX: 419-729-1794**

**ROWE INDUSTRIES, INC.**, 6225 Benore Rd., P.O. Box  
8677, Toledo, OH 43612, Tel: 419-729-9761; FSC No.:  
82878; Empl: 89 ..... **C-1807**

### Local Sales Offices & Reps

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AL  | Huntsville, Giestings & Assoc.      | 205-830-4550 |
| AZ  | Scottsdale, Pinnacle Comps. Sls.    | 602-994-0441 |
| CA  | Laguna Hills, Rowe Inds.            | 714-643-2675 |
| CA  | Tustin, R.T.S. Assocs.              | 714-730-9561 |
| CO  | Denver, Spectrum                    | 303-480-9991 |
| CT  | New England, R.F. Assocs.           | 203-458-3674 |
| FL  | Clearwater, R.F. Assocs., Inc.      | 813-442-8500 |
| FL  | Longwood, R.F. Assocs., Inc.        | 407-657-7332 |
| GA  | Duluth, Giestings & Assocs.         | 404-476-0025 |
| IL  | Naperville, Connect Plus            | 708-355-6363 |
| IL  | Rolling Meadows, Rowe Inds.         | 708-670-0913 |
| IN  | Carmel, Giestings & Assoc.          | 317-844-5222 |
| MD  | Kensington, Koebert Assocs.         | 301-493-8924 |
| MA  | Topsfield, R.F. Assocs., Inc.       | 508-887-9762 |
| MI  | Livonia, Giestings & Assoc.         | 313-478-8106 |
| MN  | Stillwater, Kitts Co.               | 612-439-8088 |
| NY  | Pittsford, Franklin Sls.            | 716-248-8251 |
| NY  | Smithtown, Koebert Assocs.          | 516-979-6683 |
| OH  | Cincinnati, Makin Assocs.           | 513-871-2424 |
| OH  | Toledo, Rowe Inds.                  | 419-729-9761 |
| RI  | Cranston, Rowe Inds., Inc.          | 401-946-0210 |
| TX  | Austin, Kruvand Assocs., Inc.       | 512-219-9441 |
| TX  | Dallas, Kruvand Assocs., Inc.       | 214-437-3355 |
| UT  | Ogden, Spectrum                     | 801-972-8552 |
| VA  | Alexandria, Koebert Assocs.         | 703-461-3655 |
| WA  | Bellevue, Advanced Power Comp.      | 206-747-9127 |
| WA  | Vancouver, Advanced Power Comp.     | 206-896-4239 |
| WI  | Hartland, Connect-Plus              | 414-367-2094 |
| Can | Barnaby, B.C., Cartwright           | 416-528-0294 |
| Can | Burnaby, B.C., Advanced Power Comp. | 604-299-7330 |

### Local Distributors

|    |                                   |              |
|----|-----------------------------------|--------------|
| PA | Glenside, Mark Elctms.            | 215-887-2310 |
| TX | Fl. Worth, Fl. Worth Wire & Cable | 817-232-4100 |

**ROYAL ENTERPRISES CO.**, 4260 Valley Fair St, Simi  
Valley, CA 93063, Tel: 805-522-8730, 818-998-2455, FAX:  
805-522-9055; Empl: 5; Sls. Mgr.: Robert E. Burks

**MILTON ROY CO**, Process & Environ., 1238 W. Grove  
Ave., Orange, CA 92665-4134, Tel: 714-974-5560, FAX:  
714-921-2531; Empl: 60; Sls. Mgr.: Harold Peper

**ROYONIC INC.**, 25345 Ave. Stanford, Sta. 201, Valencia, CA  
91355, Tel: 805-257-0303, TELEX: 315672, ESYLNK:  
62840158, FAX: 805-257-0802; Empl: 7; Sls. Mgr.: Terry  
Josselyn

## R-THETA INC.

**FAX: 1-800-567-7115**

**R-THETA INC.**, 290 Larkin St., P.O. Box 1089, Buffalo, NY  
14220-8089, Tel: 1-800-388-5428; Empl: 75; Sls. Mgr.:  
Barry Butwell; Dist. Mgr.: Mike Tavener ..... **C-1643**

### Local Sales Offices & Reps

|    |                                 |              |
|----|---------------------------------|--------------|
| CA | Granada Hills, Timberlake Grp.  | 818-368-1782 |
| MA | Brookline, Harman Assocs., Inc. | 617-232-6687 |
| MN | Eden Prairie, Hanna Lind Ltd.   | 612-942-8554 |
| OH | Cleveland, Staffco              | 216-331-5100 |

### Local Distributors

|    |                                 |              |
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| NJ | Darien, C.W. Assocs.            | 203-656-2339 |
| NY | Syracuse, Leonard D. Allen Inc. | 315-437-8387 |

**RTRON CORP.**, 8151 N. Ridgeway, Skokie, IL 60076, Tel:  
708-679-7180, FAX: 708-675-3709; FSC No.: 19130; Sls.  
Mgr.: R. McLean

**RTS SYSTEMS, TELEX COMMUNICATIONS, INC.**,  
1100 W. Chestnut St., Burbank, CA 91506, Tel: 818-566-  
6700, TELEX: 194855, FAX: 818-843-7953; FSC No.:  
60572; Empl: 45; Sls. Mgr.: Shelley Brown Harrison; Dist.  
Mgr.: Shelley Brown Harrison

**RUSSTECH ENGINEERING COMPANY, INC.**, 23322  
(D) Madero Road, Mission Viejo, CA 92691, Tel: 714-472-  
0880, FAX: 714-472-1081; FSC No.: 01EG24; Sls. Mgr.:  
David Zosack

## rustrak®

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**RUSTRAK INSTRUMENTS, Mark IV Industries.**

Rte. 2 & Middle Rd., E. Greenwich, RI 02818, Tel: 401-884-  
6800, 800-332-3202, TWX: 710-387-1500; Empl: 250; Sls.  
Mgr.: John Olobri; Dist. Mgr.: John Olobri ..... **D-1416**

### Local Distributors

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Tempe, CMI Metermaster            | 602-431-0015 |
| CA | Fullerton, Rustrak                | 714-879-6384 |
| CA | Hayward, Coast Inst.              | 510-786-9300 |
| CA | San Marcos, Mitchell Inst.        | 619-744-2690 |
| CO | Commerce City, WACO Elctms.       | 303-289-4743 |
| FL | Palm Bay, EIL Instrs.             | 407-725-8300 |
| GA | Forest Park, Brownell Electro     | 404-362-9009 |
| MD | Hunt Valley, EIL Instrs.          | 410-584-7400 |
| MA | Burlington, EIL Instrs.           | 617-272-9450 |
| MI | Grand Rapids, Smith Inst.         | 616-245-1195 |
| MI | Royal Oak, George Inst.           | 313-280-1111 |
| MO | St. Louis, Indl. Svc. Labs        | 314-423-3141 |
| NJ | Newark, Norman Bragar Prods.      | 201-344-1100 |
| NC | Charlotte, Intek Corp.            | 704-527-5000 |
| OH | Cincinnati, Schlemmer Assocs.     | 513-522-8340 |
| OH | Cleveland, M.A. Blankenberg       | 216-251-7010 |
| PA | Philadelphia, Sunshine Scientific | 215-673-5600 |
| RI | E. Greenwich, Rustrak             | 800-332-3202 |
| TX | Dallas, Intek Corp.               | 214-243-8370 |
| TX | Houston, American Analog          | 713-941-7265 |
| WA | Seattle, Branom Instr.            | 206-762-6050 |
| WI | Waukesha, Wisconsin Control Corp. | 414-542-1588 |

**RUTHERFORD RESEARCH**, Box 249, Rutherford, NJ  
07070, Tel: 201-933-2091; Empl: 4; Sls. Mgr.: Dr. A.  
Blancq; Dist. Mgr.: Dr. A. Blancq

**R X D INC., Reim Communications**, 806 Custer Ave.,  
Norfolk, NE 68701, Tel: 402-379-0112, 800-228-8108,  
FAX: 402-379-3074 ..... **A-1470-1473**

### Local Sales Offices & Reps

|     |                                        |              |
|-----|----------------------------------------|--------------|
| AL  | Huntsville, BITS, Inc.                 | 205-881-2900 |
| AZ  | Scottsdale, Jackson Mktg.              | 602-998-0831 |
| CA  | Cupertino, Prism Tech. Sls.            | 408-435-7377 |
| CA  | Huntington Beach, Solutech, Inc.       | 714-374-0130 |
| CA  | San Diego, Solutech, Inc.              | 619-581-2741 |
| CA  | Norcross, BITS, Inc.                   | 404-564-5599 |
| IL  | Hoffman Estates, Astrotech Elctms.     | 708-934-1538 |
| IN  | Indianapolis, Mohrfield Mktg.          | 317-546-6969 |
| IN  | Leo, Mohrfield Mktg.                   | 219-627-5355 |
| MN  | Oakland, Complete Sls.                 | 612-731-2923 |
| NJ  | Mt. Laurel, S-J Assocs.                | 609-866-1234 |
| NJ  | Tenafly, Michel Assocs.                | 201-894-8964 |
| NY  | Canandaigua, S-J Assocs.               | 716-394-3281 |
| NY  | Rockville Centre, S-J Assocs.          | 516-536-4242 |
| NY  | Roslyn Heights, Michel Assocs.         | 516-621-6378 |
| NC  | Raleigh, BITS, Inc.                    | 919-676-1880 |
| OH  | Columbus, S-J Assocs.                  | 614-885-6700 |
| UT  | Salt Lake City, Wind River Mktg., Inc. | 801-972-1151 |
| VA  | Falls Church, S-J Assocs.              | 703-533-2233 |
| WI  | Watertown, Astrotech                   | 414-261-7600 |
| Can | Mississauga, Source Elctms.            | 416-676-0830 |
| Can | Mont. Gabriel, Source Elctms.          | 514-369-0321 |
| Can | Orleans, Source Elctms.                | 613-837-0220 |

### Local Distributors

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|----|---------------------------------------------|--------------|
| AL | Huntsville, Resistacap, Inc.                | 205-883-4270 |
| AZ | Phoenix, Arizona Comps.                     | 602-269-5655 |
| AZ | Scottsdale, Added Value Elec. Dist.         | 602-951-9788 |
| CA | Chatsworth, E/W Elctms.                     | 818-718-2500 |
| CA | Garden Grove, Ewing Elctms.                 | 714-891-9163 |
| CA | Milpitas, California Capacitor              | 408-262-6000 |
| CA | San Diego, Added Value Elec. Dist.          | 619-558-8890 |
| CA | San Jose, Compass Comps.                    | 408-432-7575 |
| CA | San Jose, Inductive Comps.                  | 408-971-0688 |
| CA | Stanton, Inductive Comps.                   | 714-828-3420 |
| CA | Tustin, Added Value Elec. Dist.             | 714-259-8258 |
| CA | Visalia, Added Value Elec. Dist.            | 209-734-8861 |
| CO | Wheat Ridge, Added Value Elec. Dist.        | 303-422-1701 |
| IN | Indianapolis, Custom Svc.                   | 317-879-9119 |
| MA | Methuen, AVED Elctms., Inc.                 | 508-688-3800 |
| MN | Roseville, Parts 1                          | 612-633-8079 |
| MO | St. Louis, RIC-Tronics                      | 314-997-4707 |
| NH | Merrimack, Brevan Elctms.                   | 603-429-1900 |
| NH | Salem, Diamond Elctms.                      | 603-894-4420 |
| NC | Charlotte, E.M.C. (Elec. Mktg. Corp.)       | 704-394-6195 |
| OH | Columbus, E.M.C. (Elec. Mktg. Corp.)        | 614-299-6161 |
| OH | Highland Height, E.M.C. (Elec. Mktg. Corp.) | 216-442-3441 |
| TX | Austin, LCD Elctms.                         | 512-388-0900 |
| TX | Carrollton, LCD Elctms.                     | 214-245-0600 |
| TX | Richardson, Ewing Elctms. Inc.              | 214-231-6725 |
| UT | West Valley, Added Value Elec. Dist.        | 801-975-9500 |

**RYE INDUSTRIES, INC.**, 3337 Air Park Rd., Fuquay-  
Varina, NC 27526, Tel: 919-557-0511, 800-626-1511, FAX:  
919-557-0510; Empl: 5

**SABRE COMMUNICATIONS CORP.**, 3400 Hwy 75 N.,  
P.O. Box 536, Sioux City, IA 51102, Tel: 712-258-6690,  
FAX: 712-258-8250; FSC No.: 60348; Sls. Mgr.: James D.  
Mack; Dist. Mgr.: Dick Fry

**SABRITEX**, 1733 Kaiser Ave., Irvine, CA 92714, Tel: 714-  
250-1244, FAX: 714-250-1009; FSC No.: 58795; Empl: 49

**SACO CONTROLS INC.**, 9700 Trans Canada Hwy.,  
Montreal, Qc., Canada H4S 1V9, Tel: 514-745-0310,  
TELEX: 055-62171, FAX: 514-745-0315; Empl: 36; Sls.  
Mgr.: Pat Argento

**SAE POWER, INC.**, 282 Brokaw Rd., Santa Clara, CA  
95050, Tel: 408-988-0700, FAX: 408-986-8529; Sls. Mgr.:  
Nick Markoff; Dist. Mgr.: Debbie Thomas

**SAFT AMERICA INC., Power Sources Div.**, 711  
Industrial Blvd., Valdosta, GA 31601, Tel: 912-247-2331,  
FAX: 912-247-6680; Empl: 200; Sls. Mgr.: Syd Reames  
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| CT | Stamford, AeroQuality Sls. | 203-351-8500 |
| TN | Nashville, Ryder Avial     | 615-754-7700 |

**SAFT AMERICA INC., Research & Development  
Center**, 109 Beaver Ct., Cockeysville, MD 21030, Tel:  
410-771-3200, FAX: 410-771-1144 ..... **D-1418, 1467-1471**

**SAFT AMERICA INC., Lithium Battery Div.**, 313  
Crescent St., Valdece, NC 28690, Tel: 704-874-4111, FAX:  
704-874-2431; Empl: 150; Sls. Mgr.: Glen Bowling  
..... **D-1418, 1467-1471**





FAX: 912-247-6680

**SAFT AMERICA, INC., Portable Battery Division:**  
711 Industrial Blvd., Valdosta, GA 31601, Tel: 912-247-2331, TELEX: 547-620; Empl: 600; Sls. Mgr.: Michael Marcoux; Dist. Mgr.: George Lupul

D-1418, 1467-1471



FAX: 812-948-5047

**SAMTEC, INC.,** P.O. Box 1147, New Albany, IN 47151-1147, Tel: 1-800-672-6832; FSC No.: 55322; Empl: 200; Sls. Mgr.: Mike Hynes ..... C-1548-1553

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CA Camarillo, SAFT America, Inc. .... 805-491-2821  
CA Redwood City, SAFT America, Inc. .... 415-365-4539  
GA Marietta, SAFT America, Inc. .... 404-992-6950  
IL Oak Forest, SAFT America, Inc. .... 708-687-6690  
IN Indianapolis, SAFT America, Inc. .... 317-594-0443  
TX Dallas, SAFT America, Inc. .... 214-239-3935  
MN Inver Grove Hgts., SAFT America, Inc. .... 612-552-0121  
NY Plainview, SAFT America, Inc. .... 516-931-5902  
NY Stony Point, SAFT America, Inc. .... 914-786-0213  
PA Bensalem, SAFT America, Inc. .... 215-744-8044

Local Sales Offices & Reps  
AZ Tempe, Westrep/AZ ..... 602-820-9932  
CA Anaheim, Westrep/CA ..... 213-404-3881  
CA Fallbrook, Gary Chilcote Assocs. .... 619-728-7678  
CA San Jose, Kottmeier ..... 408-371-8700  
CO Boulder, Front Range Mktg. .... 303-447-4780  
FL Margate, EPM Corp. .... 305-977-0331  
IL Lisle, W.G. Controls ..... 312-963-5954  
IN Indianapolis, Needler Sls. .... 317-255-8056  
IA Cedar Rapids, W.G. Controls ..... 319-373-1009  
KS Parker, S. W. Assocs. .... 913-898-6552  
MD Gaithersburg, Naudain Assocs. .... 301-258-5040  
MI Holland, Corn-Tek Sls. .... 616-399-7273  
MN Shorewood, Frank Anthony Mktg. .... 612-474-2850  
MO St. Louis, S.W. Assoc./Saunders ..... 800-821-6344  
NJ Hackensack, CBA/Metro ..... 201-440-4114  
NY Rochester, Mulahy-Welch Sls. .... 716-244-1100  
NC Raleigh, B. T. Funderburk ..... 919-846-2373  
OH Medina, J. C. Hofstetter ..... 216-241-4880  
PA Huntingdon Valley, Inacker Sls. .... 215-947-5660  
RI Warwick, Schumacher & Yarrington ..... 401-884-5671  
TX Plano, High Tech Sls. .... 214-612-0216  
WA Lynnwood, Quadra Sls. .... 206-743-2633  
WI Mequon, Badgery ..... 414-241-9200  
PR Caguas, K. D. Tronics ..... 809-746-0275  
Can Oakville, Ont., Haltronics ..... 416-844-2121  
Can Surrey, B.C., Cana Comm Mktg. .... 604-589-3822

## Local Distributors

Local Distributors  
AK Fairbanks, Cold Spot ..... 907-457-8555  
AZ Phoenix, Lynntronics ..... 602-841-3900  
CA Chatsworth, Mill Comm. Distrs., Inc. .... 818-998-3111  
CA Huntington Beach, House of Batteries ..... 800-432-3385  
CA Mountain View, Energy Sls. .... 415-969-0800  
CA San Diego, Tauber Elctms. .... 619-274-7242  
CO Littleton, AVT ..... 303-798-1958  
FL Altamonte Springs, TNR Tech. .... 407-682-4311  
FL Hialeah, Pro Battery ..... 305-884-4040  
GA Decatur, ELS Prods. .... 800-334-5066  
HI Honolulu, Battery Factory ..... 808-537-6797  
IL Downers Grove, TDI ..... 708-971-3460  
IL Lisle, Jabro Batteries ..... 708-964-9358  
IL Rosemont, Advent Elctms. .... 708-297-6200  
IN Indianapolis, Advent Elctms. .... 317-872-4910  
IA Cedar Rapids, Advent Elctms. .... 319-363-0221  
MA Andover, Generation Elctms. .... 508-683-1177  
MA Middleboro, Glynn Elctms. .... 508-947-4262  
MI Farmington Hills, Advent Elctms. .... 313-477-1650  
MN St. Paul, D. C. Battery Prods. Inc. .... 612-646-7478  
NY Pen Yan, Advacom ..... 315-536-2221  
NY Plainview, Plainview Batteries ..... 516-249-2873  
PA Bensalem, Avex Elctms. Corp. .... 215-638-3300  
PA McKean, Advacom ..... 814-476-7774  
TN Mt. Juliet, Batteries Unlimited ..... 615-754-8179  
TX Houston, Kent Elctms. .... 713-783-2288  
TX Houston, Lone Star Mktg. .... 713-587-9393  
TX Spring, Jabro Batteries, S.W. .... 713-367-9393  
UT Salt Lake City, Standard Supp. Co. .... 801-486-3371  
WA Redmond, Energy Sls. .... 206-883-2343  
Can Brampton, Ont., Innovative ..... 416-791-2132  
Can Burnaby, B.C., Polar ..... 604-294-1891  
Can Edmonton, D.C. Solutions ..... 403-486-3636  
Can Mississauga, Ont., Advance ..... 416-670-7159  
Can Mississauga, Ont., Alexander ..... 416-568-9877  
Can Montreal, Que., Universal ..... 514-722-3311  
Can Pointe-Claire, A.R. Grey ..... 514-694-6378  
Can Regina, Regina ..... 306-522-2221

**SAGE LABORATORIES, INC.,** 11 Huron Dr., Natick, MA 01760, Tel: 508-653-0844, FAX: 508-653-5671; FSC No.: 07180; Empl: 43; Sls. Mgr.: Tony Cieri

**SAINT SWITCH, INC.,** 103 N. 11th Ave., Box 604, St. Charles, IL 60174, Tel: 708-377-3779, FAX: 708-377-7438; FSC No.: 60198; Empl: 30

**SAMARIUS PRECISION INSTRUMENTS, INC.,** 26 Beaver St., Ansonia, CT 06401, Tel: 203-736-9805, FAX: 203-736-9835; FSC No.: 18065; Empl: 25; Sls. Mgr.: Joseph Mezei

**SAMATIC WINDING MACHINE, Jenlor Ltd.,** 200 Highbridge St., Fayetteville, NY 13066, Tel: 315-637-9080, FAX: 315-637-9149; Empl: 15; Sls. Mgr.: Jim Phillips; Dist. Mgr.: Jim Phillips

**SAMHWA U.S.A. INC.,** 9330 Eton Ave., Chatsworth, CA 91311, Tel: 818-727-0512, FAX: 818-727-0700/0800/0900; Empl: 8; Sls. Mgr.: Joseph Buckle; Dist. Mgr.: Diane Lawrence

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WA Bothell, Cypress ..... 206-483-1144  
WA Redmond, Pribe Elec. .... 800-426-9911  
WA Seattle, Radar Elect. .... 206-282-2511  
WI Milwaukee, Marsh ..... 414-475-6000  
Can Burnaby, B.C., Intek ..... 604-294-8100  
Can Calgary, Alberta, Intek ..... 403-243-8035  
Can Dartmouth, Nova Scotia, Arcorn ..... 902-464-1600  
Can Gloucester, Ont., Elctm. Whslr. .... 613-746-4413  
Can Mississauga, Ont., Rush Elect. .... 416-677-7280  
Can Montreal, Que., Elctm. Whslr. .... 514-769-8851  
Can Montreal, Que., Ferro Technique Ltd. .... 514-341-3450  
Can Scarborough, Ont., UTEch Elect. .... 416-609-2900  
Can Ste Foy, Que., Elctm. Whslr. .... 418-657-5020  
Can Surrey, BC, Memco ..... 604-590-1553  
Can Toronto, Ont., Carsten Elctms. Ltd. .... 416-495-7705  
Can Victoria, B.C., Pacific Coast Elect. .... 604-385-5111

**SAMTRON DISPLAYS, INC., SAMSUNG Display Devices,** 14251 E. Firestone Bl. No. 101, La Mirada, CA 90638, Tel: 310-802-8425, TWX: 183423 SEDLA; Sls. Mgr.: Myung Bang ..... B-1110-1111

## Local Sales Offices &amp; Reps

Local Sales Offices & Reps  
AL Madison, E-Squared Mktg. .... 205-464-0392  
AZ Phoenix, Moss Mktg. .... 602-433-9349  
CA Aliso Viejo, Pro Assocs. .... 714-588-2700  
CO Aurora, Moss Mktg. .... 303-340-8535  
CT Torrington, Phoenix Sls. Co. .... 203-934-7135  
IL Hoffman Estates, Astro/Tech. Elctms. .... 708-934-1538  
IN Ft. Wayne, Gen II Mktg. .... 219-436-4485  
IA Marion, A.E.M., Inc. .... 319-377-1129  
KS Lenexa, A.E.M., Inc. .... 913-888-0022  
KY Louisville, Gen II Mktg. .... 502-491-5250  
MA Peabody, Orion Grp. .... 508-532-6266  
MN Eden Prairie, Comprehensive Tech. Sls. .... 612-941-7181  
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NJ Allendale, Eastec Assocs. .... 201-934-7135  
NM Albuquerque, Moss Mktg. .... 505-292-7505  
NC Raleigh, Zucker Assocs. .... 919-782-8433  
OH Lyndhurst, Gallant III Elctms. .... 216-291-1185  
OK Locust Grove, IMPAQ Sls. Co. .... 918-479-6493  
OR Beaverton, A.T.M.I., Inc. .... 503-643-8307  
PA Erdenheim, Omni Sls. .... 215-233-4600  
TX Irving, IMPAQ Sls. Co. .... 214-650-0000  
UT Salt Lake City, Moss Mktg. .... 801-363-5875  
WA Redmond, A.T.M.I., Inc. .... 206-869-7636  
WI Watertown, Deaken Tech. Sls. Co. .... 414-261-7600

## Local Distributors

Local Distributors  
AZ Scottsdale, Added Value ..... 602-951-9788  
CA Laguna Hills, Jaco/DisTel, Inc. .... 714-837-8966  
CA San Diego, Added Value ..... 619-558-8890  
CA San Jose, JACO/DISTEL INC. .... 408-432-9290  
CA Sunnyvale, LCD Sys. .... 408-747-0277  
CA Tustin, Added Value ..... 714-259-8258  
CA Visalia, Added Value ..... 209-734-8861  
CA Westlake, JACO/DISTEL ..... 805-495-9998  
CA Westlake Village, Added Value ..... 818-889-2861  
CO Wheat Ridge, Added Value ..... 303-422-1701  
CT Meriden, JACO Elctms. Inc. .... 203-235-1422  
FL Tampa, JACO/Q.C. .... 813-628-4665  
MA Peabody, Jaco Elctm. Inc. .... 508-640-0010  
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NY Hauppauge, Jaco Elctms. Inc. .... 516-273-5500  
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OR Beaverton, IEC ..... 503-641-1690  
TX Addison, Jaco/Q.C. .... 214-733-4300  
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**SANDMAN ELECTRIC CO., INC.**, 530 West St., Braintree, MA 02184, Tel: 617-848-2111, FAX: 617-848-2129; Empl: 30



**FAX: 805-544-3109**

**S & S ASSOCIATES, INC.**, 863 Via Esteban, San Luis Obispo, CA 93401, Tel: 805-544-2500; Sls. Mgr: Bob Priest; Dist. Mgr: Bob Priest ..... **C-1082-1085, 1534**

**SAN FERNANDO ELEC. MFG.**, See SFE Technlgs.

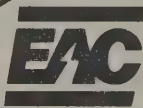
**SANFORD-MILLER CORP.**, 1800 A Access Road, Oceanside, NY 11572, Tel: 516-763-0926, 800-645-5900, FAX: 516-678-1355; Empl: 10

**SANGAMO COMPONENTS DIV.**, See Cornell Dubilier Electronics

**SANKEN ELECTRIC USA CORP.**, 2500 W. Higgins Rd. Ste. 730, Hoffman Estates, IL 60195, Tel: 708-519-1717, FAX: 708-884-1511; Empl: 9; Sls. Mgr: Lanny C. Anderson

**SANLAR, INC. T/A**, Harbison Industrial Products, 7205 Hibbs La., Levittown, PA 19057, Tel: 215-943-9000, FAX: 215-949-1518; Empl: 40

**SAN-O INDUSTRIAL CORP.**, 91-3 Colin Dr., Holbrook, NY 11741, Tel: 516-472-6666, FAX: 516-472-6777; Empl: 50; Sls. Mgr: N. Sato; Dist. Mgr: P. Wernick



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**SANWA COMPONENTS USA INC.**, 50 Brigham St., Marlboro, MA 01752, Tel: 508-480-9555, FAX: 508-481-2042; Empl: 8; Sls. Mgr: Mark Johnson



**FAX: 619-661-6743**

**SANYO ENERGY (U.S.A.) CORPORATION**, 2001 Sanyo Avenue, San Diego, CA 92173, Tel: 619-661-6620; Empl: 500; Sls. Mgr: Joseph A. Carcone ..... **D-1472**

**Local Sales Offices & Reps**

AZ Phoenix, Lynntronics ..... 602-841-3900  
 CA Mountain View, Energy Sls. .... 415-969-0800  
 CO Denver, Car-Go Battery ..... 303-296-8763  
 NJ Telemorgo, Engrd. Assemblies ..... 201-288-4477  
 NY Farmingdale, Milgray Elctms. .... 516-420-9800  
 NC Winston-Salem, Progressive Technlgs. .... 919-368-1375  
 OR Aloha, Elctm. Concepts ..... 503-642-9715  
 TX Houston, K-Power ..... 713-785-1300  
 WA Redmond, Energy Sls. .... 206-883-2343

WA Seattle, Rep West ..... 206-283-8351

**Local Distributors**

CA Costa Mesa, Battery Specialties ..... 714-755-0888  
 CA Escondido, Alexander Batteries ..... 619-480-4445  
 CA Santa Clara, Cypress Elctms. .... 408-980-8400  
 FL Altamonte Springs, TNR Tech. .... 800-346-0601  
 FL Tampa, Repron Elctms. (Lithium Only) ..... 800-800-5441  
 MI Livonia, LWC Distrs. .... 313-446-7700  
 MN Eden Prairie, Imtron Corp. .... 612-942-8554  
 TX Stafford, Southwest Elctms. .... 713-240-4000  
 UT Salt Lake City, Standard Supp. .... 801-486-3371

**SANYO SEMICONDUCTOR CORPORATION**, 453 Ravendale Dr., Ste. G, Mountain View, CA 94043, Tel: 415-960-8591, FAX: 415-960-8591

**SANYO SEMICONDUCTOR CORP.**, 80 Commerce Dr., Allendale, NJ 07401, Tel: 201-825-8080, FAX: 201-825-0163; Empl: 50; Sls. Mgr: Yoshi Paulovich

**SAPHIKON, INC.**, 33 Powers St., Milford, NH 03055, Tel: 603-673-5831, FAX: 603-673-1256; Empl: 75; Sls. Mgr: Linda Berthiaume



**FAX: 415-856-4732**

**SARONIX**, 151 Laura Lane, Palo Alto, CA 94303, Tel: 415-856-6900, TELEX: 348465; FSC No: 61441; Empl: 44; Sls. Mgr: Mike Nusbaum; Dist. Mgr: Mike Nusbaum ..... **A-1474-1479**

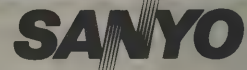
**Local Sales Offices & Reps**

AL Huntsville, Interop Assocs. Inc. .... 205-881-1096  
 CO Parker, Parker Webster Co. .... 303-841-4888  
 CT Torrington, Phoenix Sales ..... 203-496-7709  
 FL Altamonte Springs, Sls. Engrg. Concepts ..... 305-830-8444  
 FL Deerfield Beach, Sls. Engrg. Concepts ..... 305-426-4601  
 GA Norcross, Interop ..... 404-449-8680  
 IL Rolling Meadows, Phase II ..... 708-806-1330  
 IN Indianapolis, EMCI ..... 317-921-3450  
 MA Norwell, Norris Assocs. Inc. .... 617-659-7988  
 MI Jensen, R. C. Nordstrom & Co. .... 616-457-5762  
 MI Southfield, R. C. Nordstrom & Co. .... 313-559-7373  
 MN St. Paul, Innovate ..... 612-225-9772  
 NV Reno, Galena Technl. Grp. .... 702-746-0642  
 NJ Kenil, Harold Gray Assocs. .... 201-927-6662  
 NY Buffalo, Lynn Assocs. .... 716-631-0054  
 NC Raleigh, J & B Sls. .... 919-783-9440  
 OH Dayton, J. C. Hofstetter ..... 513-296-1010  
 OH Medina, J. C. Hofstetter ..... 216-241-4880  
 TN Greenville, Interop ..... 615-639-3491  
 TX Austin, Strategic Mktg. .... 512-335-4535  
 UT Murray, Parker Webster Co. .... 801-266-9939  
 WI Wauwatosa, Phase II ..... 414-771-9986  
 EXP CA, Palo Alto, SaRonix ..... 415-856-6900

**Local Distributors**

CA Anaheim, Deco Elctms. .... 714-630-8252  
 CA Manhattan Bch, Prime Electro Prods. .... 213-379-3642  
 CA Manhattan Beach, Prime Electro Prods. .... 213-379-3642  
 CA San Diego, Deco Elctms. .... 619-693-1595  
 CA Sherman Oaks, Delay Line Distrs., Inc. .... 818-986-9455  
 CA Sunnyvale, Target Elctms. .... 408-733-0384  
 CO Englewood, Indelco ..... 303-795-3431  
 FL Melbourne, Genl. Radio Supp. Co. .... 407-242-8151  
 FL Miami, All American ..... 305-621-8282  
 IL Palantine, Technl. Sls. Inc. .... 708-991-6600  
 MD Columbia, Genl. Radio Supp. .... 301-995-6744  
 MD Rockville, All American ..... 301-251-1205  
 MA Wakefield, All American ..... 617-246-2300  
 MA Wilmington, Northstar Elctms. .... 508-657-5155  
 MN Eden Prairie, All American ..... 612-944-2151  
 NJ Camden, General Radio Supp. Co. .... 609-621-8098  
 NY Mt. Vernon, All American ..... 914-699-2224  
 NY Stonybrook, Dove Elctm. Comps. .... 516-689-7733  
 OR Portland, Radar Elec. Co. .... 503-232-3404  
 TX Richardson, All American ..... 214-231-5300  
 TX Richardson, Ewing Elctms., Inc. .... 214-231-6725  
 WA Seattle, Radar Elec. Co. .... 206-282-2511  
 WI Milwaukee, Technl. Sls. Inc. .... 414-964-5015  
**SAS INDUSTRIES INC.**, Wading River Manor Rd., Manorville, NY 11949, Tel: 516-727-1441, 1-800-544-5238, FAX: 516-727-1387; FSC No: 4L975; Empl: 35; Sls. Mgr: Steve Steckis  
**SAVOY ELECTRONICS, INC.**, P.O. Box 5727, Ft. Lauderdale, FL 33310, Tel: 305-563-1333, 800-359-5400, FAX: 305-563-1378; FSC No: 13075; Empl: 20; Sls. Mgr: June Harris

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**FAX: (407) 682-4469**

**279 Douglas Avenue  
Altamonte Springs, Florida 32714**

**SAWTEK INC.**, P.O. Box 609501, Orlando, FL 32860-9501, Tel: 407-886-8860, FAX: 407-886-7061; FSC No: 58068; Empl: 150

**SAYLOR ELECTRONICS INT'L, INC.**, 3680 Research Way, Carson City, NV 89706, Tel: 702-883-4184; Empl: 7

**SBE, INC.**, 4550 Norris Canyon Rd., San Ramon, CA 94583-1389, Tel: 510-355-2000, 800-925-2666, FAX: 510-355-2020; Empl: 120; Sls. Mgr: Bill Allen VP Sls.; Dist. Mgr: Bill Allen VP Sls.

**SB ELECTRONICS, INC.**, 131 South Main St., Barre, VT 05641, Tel: 802-476-4146, FAX: 802-476-4149; FSC No: 49588; Empl: 100; Sls. Mgr: Mark Browning, Sr.

**SCANBE**, See Zero Enclosures, Zero Corp.

**SCANNING DEVICES, INC.**, 108 Elm St., Waltham, MA 02154, Tel: 617-891-8991, FAX: 617-899-2235; Empl: 16; Sls. Mgr: David Chanoux

**SCHAEFER, INC.**, Schaefer GmBH, 200 Butterfield Dr., Ashland, MA 01721, Tel: 508-879-8658, ESYLNK: 510-100-3630, FAX: 508-879-8669; Empl: 60; Sls. Mgr: Richard Sakakeeny

**SCHAFFNER EMC, INC. COMPONENTS DIVISION**, 9 Fadem Road, Springfield, NJ 07081, Tel: 201-379-7778, 800-367-5566, FAX: 201-379-1151; Sls. Mgr: Steve Cogger, VP of Sls. .... **A-1602-1605; D-1322**

**Local Sales Offices & Reps**

AL Huntsville, SACS ..... 205-533-4229  
 AZ Phoenix, C.T. Carlberg & Assoc. .... 602-468-0750  
 CA Auburn, Ewing-Foley, Inc. .... 916-885-6591  
 CA Fallbrook, Gary Chilcote Assoc. .... 619-728-7678  
 CA Irvine, Groh Assocs. .... 714-837-9871  
 CA Los Altos, Ewing-Foley, Inc. .... 415-941-4525  
 CO Englewood, Delltron Co. .... 303-741-2122  
 FL Ft. Lauderdale, Hawkins-Fredrickson Assoc. Inc. .... 305-321-6702  
 FL Maitland, Hawkins-Fredrickson Assoc. Inc. .... 407-831-2474  
 GA Norcross, SACS ..... 404-447-6154  
 IL Arlington Heights, Brainard-Nielsen Mktg. .... 708-437-2700  
 IA Marion, A.E.M. Inc. .... 319-377-1129  
 KS Lenexa, A.E.M. Inc. .... 913-888-0022  
 MD Randallstown, Beacon North ..... 703-478-2480  
 MI Livonia, Electro Mktg. Grp. .... 313-421-7590  
 MN Mendota Hgts, G-I Sls. .... 612-454-3086  
 MO St. Louis, A.E.M. Inc. .... 314-298-9900  
 NM Albuquerque, C.T. Carlberg ..... 505-899-2155  
 NY Kings Park, Mil-Corn Sls. .... 516-366-2156  
 NY Rochester, H.C. Johnson Agys. .... 716-586-0777  
 NC Raleigh, SACS ..... 919-859-9970



|     |                                  |              |
|-----|----------------------------------|--------------|
| OH  | Dayton, Electro Mktg. Grp.       | 513-890-8322 |
| OH  | N. Royallton, Electro Mktg. Grp. | 216-582-0075 |
| OK  | Broken Arrow, D.J. Sls.          | 918-258-1445 |
| OR  | Beaverton, Harry Levinson Co.    | 503-690-1312 |
| PA  | Allison Park, Electro Mktg. Grp. | 412-942-0688 |
| SC  | Irmo, SACS                       | 803-732-0816 |
| TN  | Knoxville, Beacon Electronics    | 615-588-4168 |
| TX  | Austin, D.J. Sls.                | 512-258-3002 |
| TX  | Dallas, D.J. Sls.                | 214-773-8876 |
| VA  | Sterling, Beacon North           | 703-478-2480 |
| WA  | Seattle, Harry Levinson Co.      | 206-382-1300 |
| WI  | Manitowa, Brainerd-Nielsen Mktg. | 414-682-1201 |
| PR  | Bayamon, Selmark Assoc.          | 809-797-2096 |
| CA  | Ontario, Avotronics Ltd.         | 416-475-2024 |
| Can | Quebec, Avotronics Ltd.          | 514-697-2135 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Comp. Distrib.          | 205-851-7800 |
| AZ | Mesa, Richey Impact Sls.            | 602-641-2313 |
| AZ | Tempe, Acacia/Deanco                | 602-894-2874 |
| AZ | Tempe, Cypress                      | 602-966-2256 |
| CA | Agora Hills, Cypress                | 818-597-9491 |
| CA | Costa Mesa, Cypress                 | 714-549-2424 |
| CA | Fremont, Acacia/Deanco              | 415-623-7500 |
| CA | Garden Grove, Richey Impact Sls.    | 714-895-0060 |
| CA | Gardena, Cal Switch                 | 213-770-2330 |
| CA | Irvine, Acacia/Deanco               | 714-660-0834 |
| CA | Manhattan Bch, Prime Electro Prods. | 310-379-3642 |

|     |                                |              |
|-----|--------------------------------|--------------|
| CA  | Riverside, Elctm. Supp.        | 714-683-7300 |
| CA  | San Diego, Acacia              | 619-597-0577 |
| CA  | San Diego, Cypress Elctms.     | 619-535-0011 |
| CA  | San Diego, Richey Impact Sls.  | 619-271-4511 |
| CA  | San Jose, Richey Impact Sls.   | 408-956-8010 |
| CA  | San Jose, Rose Elctms.         | 408-943-0255 |
| CA  | Santa Clara, Cypress Elctms.   | 408-980-2500 |
| CA  | Sun Valley, Richey Impact Sls. | 818-768-0403 |
| CO  | Denver, IEC                    | 303-292-6121 |
| CO  | Englewood, Cypress             | 303-792-5829 |
| CO  | Wheatridge, Acacia/Deanco      | 303-421-7004 |
| CT  | Wallingford, Sager Elctms.     | 203-265-4600 |
| FL  | Orlando, Sager Elctms.         | 407-240-3114 |
| GA  | Norcross, Component Distrib.   | 404-441-3320 |
| GA  | Norcross, Sager Elctms.        | 404-446-0085 |
| IL  | Hoffman Estates, IEC           | 708-843-2040 |
| IL  | Schaumburg, QPS Elctms.        | 708-884-6620 |
| MD  | Columbia, D.K. Elctms.         | 301-995-1950 |
| MD  | Columbia, Sager Elctms.        | 410-995-4900 |
| MA  | Hingham, Sager Elctms.         | 617-749-6700 |
| MA  | Walpole, Richey Impact Sls.    | 508-668-8200 |
| MI  | Farmington Hills, Key Elctms.  | 313-489-5455 |
| MN  | Eden Prairie, Cypress Elctms.  | 612-934-2104 |
| MN  | Roseville, Chris Elctms.       | 612-631-2647 |
| MO  | St. Charles, Finnigan Elctms.  | 314-946-6201 |
| MO  | St. Charles, Heartland         | 314-928-6010 |
| NH  | Salem, Sager Elctms.           | 603-898-1348 |
| NJ  | Moorestown, Marlac             | 609-234-4200 |
| NY  | Hauyppauge, Sager Elctms.      | 516-348-1300 |
| NY  | Rochester, Masline Elctms.     | 716-546-5373 |
| NC  | Raleigh, Sager Elctms.         | 919-850-9550 |
| OR  | Portland, Cypress              | 503-223-8900 |
| PA  | Mars, Sager Elctms.            | 412-772-2233 |
| PA  | McKean, Advacom                | 814-476-7774 |
| PA  | Philadelphia, Sager Elctms.    | 215-644-4336 |
| TX  | Dallas, Comp. Distrib.         | 214-644-0373 |
| TX  | Irving, Cypress                | 214-255-0065 |
| UT  | Salt Lake City, IEC            | 801-977-9750 |
| WA  | Blaine, Memo                   | 604-590-1553 |
| WA  | Bothell, Cypress               | 206-483-1144 |
| WA  | Redmond, Acacia/Deanco         | 206-881-5566 |
| WA  | Seattle, Kam Elctms.           | 206-382-1300 |
| WA  | Seattle, Richey Impact Sls.    | 206-575-1910 |
| WV  | McKean, Advacom                | 814-476-7774 |
| Can | Burlington, Ont., Sanbak Sls.  | 519-746-5801 |

**SCHAFFNER EMC, INC. INSTR. DIV.**, 9 Fadem Rd., Springfield, NJ 07081, Tel: 201-379-7778, FAX: 201-379-1151; Sls. Mgr.: Michael O'Connor, VP Sls. **D-1322**

## Local Sales Offices &amp; Reps

|    |                                        |              |
|----|----------------------------------------|--------------|
| AL | Huntsville, Southern Mktg. Assocs.     | 205-534-6020 |
| AZ | Phoenix, Tech. Mktg. Spec.             | 602-678-4940 |
| CA | Redondo Beach, Ward/Davis Assoc.       | 310-643-6977 |
| CA | San Diego, Ward/Davis Assoc.           | 619-292-1000 |
| CA | Santa Clara, Ward/Davis Assoc.         | 408-245-3700 |
| CO | Englewood, Tech. Mktg. Spec.           | 303-781-8819 |
| FL | Longwood, Southern Mktg. Assoc.        | 407-682-7317 |
| FL | Satellite Beach, Southern Mktg. Assoc. | 407-777-3587 |
| GA | Alpharetta, Southern Mktg. Assoc.      | 404-664-9797 |
| IL | Willowbrook, PVA Corp.                 | 708-655-3355 |
| IN | Fishers, Carter Technlg.               | 317-842-9277 |
| KS | Lenexa, Midtec                         | 913-541-0505 |
| MA | Hopkinton, Eastern Sys.                | 508-435-2151 |
| MI | Farmington Hills, Carter Technlg.      | 313-477-7700 |
| MN | Apple Valley, Alliance Tech. Prod.     | 612-432-2111 |
| MO | St. Louis, Midtec                      | 314-275-8666 |
| NM | Albuquerque, Tech. Mktg. Spec.         | 505-291-1363 |

|     |                                   |              |
|-----|-----------------------------------|--------------|
| NY  | Rochester, Eastern Sys.           | 716-292-1460 |
| NC  | Greensboro, Southern Mktg. Assoc. | 919-632-9370 |
| OH  | Englewood, Carter Technlg.        | 513-836-0951 |
| OH  | Parma, Carter Technlg.            | 216-398-0400 |
| OR  | Wilsonville, Syntek               | 503-682-2750 |
| PA  | Huntington Valley, Sci-Rep        | 215-322-6500 |
| PA  | Pittsburgh, Carter Technlg.       | 412-826-3800 |
| TX  | Austin, Barnhill Assocs.          | 512-472-2398 |
| TX  | Houston, Barnhill Assocs.         | 713-266-2666 |
| TX  | Richardson, Barnhill Assocs.      | 214-917-6777 |
| VA  | Fairfax, Sci-Rep, Inc.            | 703-385-0600 |
| WA  | Bellevue, Syntek                  | 206-462-7700 |
| WA  | Nine Mile Falls, Syntek           | 509-466-0451 |
| Can | St-Laurent, Que., Interfax Sys.   | 514-336-0392 |

**SCHAFFNER EMC, INC.**, Intepro, 9 Fadem Rd., Springfield, NJ 07081, Tel: 201-379-7778; Sls. Mgr.: Mike O'Connor

**SCHAUER MANUFACTURING**, 4500 Alpine Ave., Cincinnati, OH 45242, Tel: 513-791-3030, FAX: 513-791-7192; Empl: 195; Sls. Mgr.: Dave Blice, VP Mktg.; Dist. Mgr.: Dan Shaw

**SCHILL INC.**, P.O. Box 12689, St. Petersburg, FL 33733, Tel: 813-822-2600, 800-237-2600, FAX: 813-822-8800; Empl: 50; Dist. Mgr.: Steve Hahn

**SCHENCK PEGASUS CORPORATION**, 2890 John R Road, Troy, MI 48063, Tel: 313-689-9000, FAX: 313-689-8578; Empl: 130; Sls. Mgr.: David Sallberg

**SCHLEGEL CORP.**, P.O. Box 23197, Rochester, NY 14692, Tel: 800-828-6237, ext 2126, TELEX: 6854121, FAX: 716-427-9993; Empl: 500; Sls. Mgr.: Duncan Tyrrel

**SCHLEICHER GMBH & CO., c/o Progressive Automation Controls Co.**, 8300 Parkview Rd., Greendale, WI 53129-2161, Tel: 414-421-4380, 1-800-803-0444, FAX: 414-421-5964; FSC No.: 39-1749933; Empl: 5; Sls. Mgr.: Robert J. Yoblin; Dist. Mgr.: Robert J. Yoblin

**SCHLEUNIGER, INC.**, 150 Dow St. Tower Four, Manchester, NH 03101, Tel: 603-668-8117, FAX: 603-668-8119; Empl: 20; Sls. Mgr.: Marc Amiet

**SCHLUMBERGER INDUSTRIES**, Transducers Div., 1121 Richmond, M-102, Houston, TX 77082, Tel: 713-558-2587, TELEX: 791209, FAX: 713-558-8954; Sls. Mgr.: Mike Masso

**SCHLUMBERGER INSTRUMENTS**, Schlumberger Technlgs., 829 Middlesex Turnpike, Billerica, MA 01821, Tel: 508-671-9700, 1-800-225-5765, FAX: 508-671-9704; Empl: 70

**SCHNEIDER CORP. OF AMERICA**, 400 Crossways Park Drive, Woodbury, NY 11797, Tel: 516-496-8500, FAX: 516-496-8524; Empl: 13; Sls. Mgr.: Dwight Lindsey; Dist. Mgr.: Dwight Lindsey

**SCHONSTEDT INSTRUMENT CO.**, 1775 Wiehle Ave., Reston, VA 22090, Tel: 703-471-1050, FAX: 703-471-1795; Empl: 45; Sls. Mgr.: O. K. Davis

**SCHOTT CORP.**, 1000 Parkers Lk. Rd., Wayzata, MN 55391, Tel: 612-475-1173, FAX: 612-475-1786; FSC No.: 80023; Empl: 325; Sls. Mgr.: K. Nicholls

**SCHOTT ELECTRONICS**, 42 Silvermine Road, Seymour, CT 06483, Tel: 203-881-0102, TWX: 710-451-8911, FAX: 203-881-0098; Empl: 150; Sls. Mgr.: Ross Wieringa

**SCHOTT GLASS TECHNOLOGIES, INC.**, 400 York Ave., Duryea, PA 18642, Tel: 717-457-7485, TWX: 510-671-4535, FAX: 717-457-6960; FSC No.: 23-169-1403; Empl: 500; Sls. Mgr.: J. Nimmerfro

**SCHOTT HIGH VOLTAGE**, 1161 W. 2320 So., Salt Lake City, UT 84119, Tel: 801-972-3690, FAX: 801-972-3699; Empl: 35; Sls. Mgr.: Jeff Dalebout

**SCHRACK COMPONENTS, INC.**, 5305 NW 35th Terrace, Ft. Lauderdale, FL 33309, Tel: 305-733-3330, FAX: 305-733-7373; Empl: 10; Sls. Mgr.: R. Biddle, T. DiLeonardo, C. Gilliland; Dist. Mgr.: Christopher Meza

## Local Sales Offices &amp; Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| AL | Huntsville, New Age Elctms.       | 205-895-9400 |
| AZ | Phoenix/Scottsdale, Vikeland Sls. | 602-948-7921 |
| CA | Monrovia, Signal Enrtps.          | 818-957-0640 |
| CO | Boulder, Stratford Grp.           | 303-530-3194 |
| FL | Longwood, M & H Assoc.            | 407-332-7912 |
| IL | Arlington Hgts, Thermek Inc.      | 708-577-6900 |
| IN | Mishawaka, Power Comps.           | 219-256-6630 |

|    |                                    |              |
|----|------------------------------------|--------------|
| MD | Baltimore, Micro-Comp              | 410-644-5700 |
| MA | Swansea, Poisson                   | 508-677-3655 |
| MN | Roseville, T.L.C.                  | 612-883-2226 |
| MO | Bridgeton/St. Louis, Dy-Tronix     | 314-291-4777 |
| NJ | Lawrenceville, D.V.S.              | 609-896-1112 |
| NJ | Totowa, R.D.I. Sls.                | 201-812-9606 |
| NY | Buffalo, Lynn Assoc.               | 716-631-0054 |
| OH | Westlake, Baehr Greenleaf & Assoc. | 216-892-1770 |
| TX | Dallas, Rem Comps.                 | 214-234-1069 |
| WA | Seattle, Caruso & Camelleri Assoc. | 206-455-8811 |
| WI | Wauwatosa, Larsen & Assoc.         | 414-258-0529 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| AZ | Mesa, Consolidated Elctm. Distr.    | 602-962-9141 |
| AZ | Tempe, L Comp                       | 602-730-1633 |
| CA | City of Industry, ITAL Elctms. Sls. | 818-968-8515 |
| CA | Irvine, Kelex Controls              | 714-863-1230 |
| CA | Martinez, GE Supp. Co.              | 916-299-6425 |
| CA | Sacramento, GE Supp. Co.            | 513-648-3144 |
| CA | San Jose, GE Supply Co.             | 408-534-0600 |
| CA | Tustin, Western Switches & Controls | 714-259-8144 |

|    |                                            |              |
|----|--------------------------------------------|--------------|
| CO | Denver, Control Des. Supp.                 | 303-296-1922 |
| CO | Denver, CSID                               | 303-292-9594 |
| FL | Coral Springs, G.R.E.                      | 305-341-1103 |
| FL | Miami, All American                        | 305-621-8282 |
| GA | Stone Mountain, Control Des. Supp.         | 404-979-3500 |
| ID | Boise, Bolen's Control House               | 208-362-5280 |
| IL | Addison, L Comp                            | 708-628-1400 |
| IL | Carol Stream, Lectro Comps.                | 708-690-0520 |
| IN | Indianapolis, Control Des. Supp.           | 317-788-4559 |
| KS | Kansas City, Control Des. Supp.            | 913-362-4248 |
| ME | Gray, Longhill Electro. Tech.              | 207-657-2183 |
| MD | Gaithersburg, Axis Elec.                   | 301-840-9640 |
| MA | Cambridge, Hi-Tek                          | 617-491-0442 |
| MA | Methuen, Evad                              | 508-688-3800 |
| MA | Norwood, Amsel                             | 617-769-9500 |
| MI | Brighton, H.H. Barnum                      | 313-229-2961 |
| MN | Minneapolis, Control Des. Supp.            | 612-721-1628 |
| MN | Plymouth, Leeds                            | 612-557-1277 |
| MN | Roseville, Chris Elctms.                   | 612-631-2647 |
| MO | Kansas City, L Comp                        | 816-241-0111 |
| MO | St. Louis, Elctm. Controls Supp.           | 314-645-2400 |
| MO | St. Louis, L Comp                          | 314-298-7231 |
| NJ | E. Rutherford, A.A. Elec.                  | 201-777-5477 |
| NJ | Oakland, Relay Spec.                       | 201-337-1000 |
| NJ | Pennsauken, LMS.                           | 609-662-1770 |
| NJ | S. Hackensack, Nassor                      | 201-641-3737 |
| NY | Newburgh, Electrol Control Supp.           | 914-581-5330 |
| NY | Orchard Park, Park Elctm.                  | 716-662-7070 |
| NC | Charlotte, Control Des. Supp.              | 704-588-4410 |
| OH | Cincinnati, Cincinnati Controls            | 513-530-0044 |
| OR | Portland, Dunn Elctms.                     | 503-285-0214 |
| PA | Malvern, Control Des. Supp.                | 215-296-0150 |
| PA | McKean, Advacom                            | 814-476-7774 |
| TX | Houston, Wofford Elctms.                   | 713-351-2722 |
| UT | Nephi (Salt Lake City), Control Des. Supp. | 801-623-2906 |
| WA | Spokane, Consolidated Elctm. Distr.        | 509-535-8891 |
| WI | New Berlin, Control Des. Supp.             | 414-738-1015 |

**SCHROFF, INC.**, 170 Commerce Dr., Warwick, RI 02886, Tel: 401-732-3770, FAX: 401-738-7988; Empl: 120; Sls. Mgr.: William Bottis **C-1088-1089**

## Local Sales Offices &amp; Reps

|    |                                |              |
|----|--------------------------------|--------------|
| AL | Huntsville, W.L.A. & Assoc.    | 205-721-1788 |
| AZ | Phoenix, JBS Assocs.           | 602-244-1212 |
| CA | Downey, Buffa Inc.             | 310-923-4618 |
| CA | Los Gatos, Luscombe Engrg.     | 408-370-2020 |
| CO | Longmont, Luscombe Engrg.      | 303-772-3342 |
| FL | Melbourne, R-Rep. Co.          | 407-722-1900 |
| GA | Lawrenceville, W.L.A. Assoc.   | 404-339-9443 |
| IL | Hillside, Cadre Tech. Rep.     | 708-449-3900 |
| KS | Olathe, Tech. Sls. Assoc.      | 913-829-2800 |
| MD | Baltimore, Leading Edge Sls.   | 301-644-0016 |
| MI | Troy, C. B. Jensen             | 313-643-0506 |
| MN | Minneapolis, D. A. Case Assoc. | 612-831-6777 |
| MO | St. Louis, Tech. Sls. Assoc.   | 314-521-2044 |
| NH | Salem, Sales Engr.             | 603-893-5521 |
| NJ | Englewood, Sprung & Rea, Inc.  | 201-599-5666 |
| NY | E. Syracuse, Bastian Sls.      | 315-437-1482 |
| NY | Fairport, Bastian Sls.         | 716-223-0237 |
| NC | Raleigh, W.L.A. Assoc.         | 919-231-9939 |
| OH | Aurora, EMA                    | 216-562-6104 |
| OH | Centerville, EMA               | 513-433-2800 |
| TX | Garland, C.M.A.                | 214-681-1414 |
| TX | Houston, C.M.A.                | 713-771-1500 |
| UT | Salt Lake City, Luscombe Eng.  | 801-268-3434 |
| WA | Woodinville, T.E.A.M.          | 206-485-1111 |
| WI | Brookfield, Mc Mahon Sls. Inc. | 414-782-3335 |

## Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| CT | Wallingford, Sager                  | 203-265-4600 |
| FL | Orlando, Sager                      | 407-354-1130 |
| GA | Norcross, Sager                     | 404-446-0085 |
| IL | Chicago, Leeds Elctms.              | 312-625-3800 |
| MD | Columbia, Sager                     | 410-995-4900 |
| MA | Hingham, Sager                      | 617-749-6700 |
| MI | Madison Heights, Tracer Control Co. | 313-545-7140 |



|    |                            |              |
|----|----------------------------|--------------|
| MN | Minneapolis, Leeds Elctms. | 612-557-1277 |
| NH | Salem, Sager               | 603-898-1348 |
| NJ | Sager                      | 201-585-0029 |
| NY | Hauppauge, Sager           | 516-348-1300 |
| NC | Raleigh, Sager             | 919-850-9550 |
| PA | Philadelphia, Sager        | 215-464-4336 |
| WI | Milwaukee, Leeds Elctms.   | 414-789-6994 |

**SCHUMACHER ELECT. CORP.**, 7474 N. Rogers Ave., Chicago, IL 60626, Tel: 312-973-1600, FAX: 312-973-7781; Empl: 700; *Sls. Mgr.*: Norman Patinka

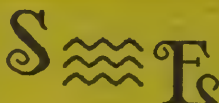


**FAX: 707-778-6401**

**SCHURTER, INC.**, 1016 Clegg Ct, Petaluma, CA 94954, Tel: 800-848-2600 ext.62; FSC No.: 61935; *Sls. Mgr.*: Janet Barrett **A•1606-1608; B•1386-1388, 1803; C•1450-1455**

| <i>Local Sales Offices &amp; Reps</i> |                                            |              |
|---------------------------------------|--------------------------------------------|--------------|
| AL                                    | Madison, Benchmark Tech. Sls. Inc.         | 205-464-0033 |
| AZ                                    | Scottsdale, JK & Assos.                    | 602-990-8804 |
| AR                                    | Little Rock, Doby Assoc.                   | 501-221-0326 |
| CA                                    | Chatsworth, Cygnus Sls. Engrg. Corp.       | 818-727-0312 |
| CA                                    | San Diego, Cygnus Sls. Engrg. Co.          | 619-268-7771 |
| CA                                    | San Jose, Arnold Tech. Sls. Inc.           | 408-954-0400 |
| CO                                    | Broomfield, Summit West Mktg., Inc.        | 303-460-9600 |
| FL                                    | Pompano Bch, IMR, Inc.                     | 305-942-2449 |
| GA                                    | Norcross, Benchmark Tech. Sls. Inc.        | 404-446-1711 |
| IL                                    | Arlington Hgts, MJ Petersen & Assoc., Ltd. | 708-577-8200 |
| IN                                    | Carmel, Current Elctm. Mktg.               | 317-844-1770 |
| KS                                    | Overland Park, Acorn Elctms.               | 913-649-6402 |
| MD                                    | Baltimore, Chesapeake Indl. Mktg.          | 410-653-0476 |
| MN                                    | Shorewood, Frank Anthony Mktg.             | 612-474-2850 |
| MS                                    | Schurter, Doby Assocs.                     | 601-981-1138 |
| MO                                    | St. Louis, Acorn Elctms. Inc.              | 314-421-1751 |
| NH                                    | Nashua, Bell Controls                      | 603-882-6984 |
| NJ                                    | Ho-Ho-Kus, D. J. Fisher Co.                | 201-652-0090 |
| NJ                                    | Medford, Champion Elctm. Sls. Co.          | 609-983-0932 |
| NY                                    | Fairport, TAC Sls. Inc.                    | 716-223-7610 |
| NC                                    | Raleigh, Benchmark Tech. Sls. Inc.         | 919-850-0633 |
| OH                                    | Beachwood, Electronic Salesmasters         | 216-831-9555 |
| OR                                    | Hillsboro, Doran Sls.                      | 503-640-4500 |
| TX                                    | Dallas, Reese & Assocs.                    | 214-224-1000 |
| UT                                    | Salt Lake City, Luscombe Engrg. Co.        | 801-268-3434 |
| WA                                    | Bothell, Doran Sls.                        | 206-488-1200 |

| <i>Local Distributors</i> |                                                 |              |
|---------------------------|-------------------------------------------------|--------------|
| AZ                        | Phoenix, BeSwitched                             | 602-275-4805 |
| AR                        | Little Rock, Carlton-Bates                      | 501-562-9100 |
| CA                        | Irvine, Kensington Elctms., Inc.                | 714-588-0575 |
| CA                        | Livermore, Quail Elctms.                        | 510-373-6700 |
| CO                        | Aurora, Jet Elctms.                             | 303-364-1000 |
| CT                        | Wallingford, Sager Elctms.                      | 203-265-4600 |
| FL                        | Orlando, Sager                                  | 407-354-1130 |
| GA                        | Norcross, NRC Elctms.                           | 404-729-0411 |
| ID                        | Boise, Radar Elec. Co.                          | 208-336-2227 |
| IL                        | Chicago, Leeds Electro Cmpnts.                  | 312-625-3800 |
| IL                        | Elk Grove Village, Nu-Way Elctm. Distribs. Inc. | 708-437-7120 |
| IN                        | Carmel, Alltex Elctms.                          | 317-848-1323 |
| IA                        | Cedar Rapids, Dee Elctms.                       | 319-365-7551 |
| MD                        | Columbia, Sager Elctms.                         | 301-995-4900 |
| MA                        | Hingham, Sager Elctms.                          | 617-749-6700 |
| MI                        | Livonia, RS Elctms.                             | 313-525-1155 |
| MN                        | Plymouth, Leeds Electro Comps., Inc.            | 612-557-1277 |
| NH                        | Salem, Sager Elctms.                            | 603-898-1348 |
| NY                        | Hauppauge, Sager Elctms.                        | 516-348-1300 |
| NY                        | Rochester, Masline Elctms.                      | 716-546-5373 |
| NC                        | Raleigh, Sager Elctms.                          | 919-850-9550 |
| OH                        | Strongsville, Fuse World                        | 216-238-1330 |
| OR                        | Portland, Radar Elctms. Co.                     | 503-232-3404 |
| OR                        | Tualatin, Moore Elctms., Inc.                   | 503-692-5333 |
| PA                        | Harrisburg, Ad-Tech Elctms., Inc.               | 717-561-9905 |
| PA                        | Mars, Sager Elctms.                             | 412-772-2233 |
| PA                        | McKean, Advacom                                 | 814-476-7774 |
| PA                        | Philadelphia, Sager Elctms.                     | 215-464-4336 |
| TX                        | Dallas, Fuses Unlimited                         | 214-907-8600 |
| WA                        | Kent, Moore Elctms.                             | 206-251-8090 |
| WA                        | Richland, Radar Elec. Co.                       | 509-943-8336 |
| WA                        | Seattle, Radar Elec. Co.                        | 206-282-2511 |
| WA                        | Spokane, Radar Elec. Co.                        | 509-477-3053 |
| WI                        | Oconomowoc, GW Elctms. Ltd.                     | 414-567-9445 |
| Can                       | Markham, Ont., Birde Mktg.                      | 416-477-7722 |



**SCHUSTER ELECTRONICS**, 54 Cove Rd., Huntington, NY 11743, Tel: 516-271-0590; *Sls. Mgr.*: Norman Schuster

**SCIENCE ACCESSORIES CORP.**, 200 Watson Blvd., Stratford, CT 06497, Tel: 203-386-9978, FAX: 203-381-9270; Empl: 40; *Sls. Mgr.*: H. A. Cleveland

**SCIENCE & ENGRG. CONSULTANTS, INC.**, 11800 Sunrise Valley Dr., Ste. A, Reston, VA 22091-5302, Tel: 703-471-1600, FAX: 703-620-1561; Empl: 2; *Sls. Mgr.*: Mr. Kevin B. Deasy

**SCIENCE/ELECTRONICS**, P. O. Box 986, Dayton, OH 45401-0986, Tel: 513-859-5555, FAX: 513-859-7930; Empl: 25; *Sls. Mgr.*: E. E. Pohl

**SCIENTECH, INC.**, 5649 Arapahoe Ave., Boulder, CO 80303, Tel: 303-444-1361, 800-525-0522, TWX: 910-940-0994, FAX: 303-444-9229; Empl: 35

**SCIENTIFIC-ATLANTA, INC.**, See Optima Enclosures



**FAX: 614-272-2288**

**SCIENTIFIC COLUMBUS CO.**, 1900 Arlingate Lane, Columbus, OH 43228-4105, Tel: 614-274-0400; Empl: 150 **B•2007-2012**

| <i>Local Sales Offices &amp; Reps</i> |                                            |              |
|---------------------------------------|--------------------------------------------|--------------|
| AL                                    | Birmingham, Spader & Assocs.               | 205-979-5500 |
| NC                                    | Charlotte, Robert W. Chapman & Co.         | 704-525-2421 |
| OH                                    | Grove City, Leidy Engrg. Sls.              | 614-875-1524 |
| PA                                    | Collegeville, GEE Co., Inc.                | 215-489-8860 |
| TN                                    | Chattanooga, Spader & Assocs.              | 615-899-3823 |
| AZ                                    | Scottsdale, Young Power Equip. Co.         | 602-991-9191 |
| AR                                    | Little Rock, BFCO, Inc.                    | 501-753-9977 |
| CA                                    | Glendale, Young & Co.                      | 818-242-2171 |
| CA                                    | San Francisco, Wrathall & Krusi, Inc.      | 415-777-0226 |
| CO                                    | Littleton, The Beabout Co., Inc.           | 303-795-1000 |
| FL                                    | Gainesville, RJC Assocs.                   | 904-372-4635 |
| FL                                    | Orlando, RJC Assocs.                       | 407-894-7371 |
| GA                                    | Decatur, Spader & Assocs.                  | 404-296-3024 |
| HI                                    | Honolulu, Berkeley Engrg. & Equip. Co.     | 808-845-9377 |
| IL                                    | Naperville, O'Conner, Serra & Assoc., Inc. | 708-420-7812 |
| IN                                    | Noblesville, C.D. Arnold Co.               | 317-773-5821 |
| IA                                    | Cedar Rapids, Harry Ferris Co.             | 319-377-1226 |
| KS                                    | Kansas City, Power Equip. Sls. Co., Inc.   | 913-384-3848 |
| LA                                    | Kenner, John J. Aertler Jr. Co., Inc.      | 504-469-0136 |
| MA                                    | Quincy, Fantasia Assocs., Inc.             | 617-479-0800 |
| MI                                    | Brighton, Dale P. Seyfried Co., Inc.       | 313-227-5353 |
| MI                                    | Grand Rapids, Dale P. Seyfried Co., Inc.   | 616-453-8603 |
| MN                                    | Minneapolis, Arjay Automation, Inc.        | 612-861-1749 |
| MO                                    | Springfield, Power Equip. Sls. Co., Inc.   | 417-833-3056 |
| MO                                    | St. Louis, Ken Way Co.                     | 314-469-9998 |
| NE                                    | Lincoln, Harry Ferris Co.                  | 402-464-6148 |
| NM                                    | Albuquerque, Young Power Equip. Co.        | 505-843-9450 |
| NY                                    | Albany, Expert Industrial Sys., Inc.       | 518-869-3355 |
| NY                                    | N. Tonawanda, Expert Industrial Sys., Inc. | 716-694-3935 |
| NY                                    | North Chili, Expert Industrial Sys., Inc.  | 716-594-5755 |
| NY                                    | Syracuse, Expert Industrial Sys., Inc.     | 315-455-2469 |
| NC                                    | Raleigh, Robert W. Chapman & Co.           | 919-782-2624 |
| OH                                    | N. Canton, Leidy Engrg. Sls.               | 216-497-9585 |
| OK                                    | Tulsa, C. B. Anderson Elec. Co.            | 918-836-4661 |
| OR                                    | Portland, McLaren Inc.                     | 503-627-0757 |
| PA                                    | Pittsburgh, Russell F. Clark Co., Inc.     | 412-242-9500 |
| SC                                    | Greenville, Robert W. Chapman & Co.        | 803-288-8821 |
| SC                                    | W. Columbia, Robert W. Chapman & Co.       | 803-739-0220 |
| TX                                    | Arlington, Ev Smith Sls. Co.               | 817-572-2911 |
| TX                                    | Houston, Ev Smith Sls. Co.                 | 713-931-0403 |

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| VA  | Alexandria, The Hildenbrand Co., Inc.   | 703-998-0445 |
| VA  | Midlothian, Robert W. Chapman & Co.     | 804-323-6088 |
| WA  | Kirkland, McLaren Inc.                  | 206-827-9400 |
| WI  | Milwaukee, Reynolds & Co.               | 414-351-1100 |
| Can | Calgary, Alb. Landel Controls Ltd.      | 403-254-8900 |
| Can | Mississauga, Ont., Siron Controls, Ltd. | 416-238-9505 |
| Can | Richmond, B.C., Landel Controls Ltd.    | 604-244-7331 |
| Can | St. Laurent, Que., Le Groupe Rotalec    | 514-341-3685 |

**SCIENTIFIC CONVERSION, INC.**, 42 Truman Dr., Novato, CA 94947, Tel: 415-892-2323, FAX: 415-892-2321; Empl: 15; *Sls. Mgr.*: Maura Vrydaghs

**SCIENTIFIC INSTRUMENTS**, 4400 W. Tiffany Dr., West Palm Beach, FL 33407, Tel: 407-881-8500, FAX: 407-881-8556; FSC No.: 591197614; Empl: 52; *Sls. Mgr.*: Mike Capers; *Dist. Mgr.*: Mike Capers

**SCIENTIFIC RESEARCH CORP.**, See TRAK Microwave Corp.



**FAX: 510-471-9752**

**SCIENTIFIC TECHNOLOGIES INC., Control Components Div.**, 31069 Genstar Rd., Hayward, CA 94544-7831, Tel: 510-471-9717, 800-221-7060; FSC No.: 52797; Empl: 25; *Sls. Mgr.*: Paul N. Dreiszun **B•1595-1596**

**SCIENTIFIC TECHNOLOGIES INC., Optical Sensor Div.**, 31069 Genstar Rd., Hayward, CA 94544, Tel: 510-471-9717, FAX: 510-471-9752; Empl: 120

**SCI TECHNOLOGY, INC.**, PO Box 1000, 8600 So. Memorial Pkwy., Huntsville, AL 35807, Tel: 205-882-4569, FAX: 205-882-4659

**SCITEQ ELECTRONICS, INC.**, 4775 Viewridge Ave., San Diego, CA 92123, Tel: 619-292-0500, FAX: 619-292-9120; FSC No.: 70561; Empl: 40; *Sls. Mgr.*: Phil Feinberg

**SCOPE INCORPORATED**, 1860 Michael Faraday Dr., Reston, VA 22090, Tel: 703-471-5600, FAX: 703-471-6750; Empl: 95; *Sls. Mgr.*: T. Titcomb

**SCORPION SEMICONDUCTOR**, 2360 Curme Dr., Ste. B, San Jose, CA 95131, Tel: 408-944-6270, FAX: 408-944-6272

**SCOTT SPECIALTY GASES, INC.**, 6141 Easton Rd., P.O. Box 310, Plumsteadville, PA 18949-0130, Tel: 215-766-8861, FAX: 215-766-0320; FSC No.: SIC 2818; *Sls. Mgr.*: James Wallis

**SC TECHNOLOGY, INC.**, 368 Earhart Way, Livermore, CA 94550, Tel: 510-373-9230, FAX: 510-373-9416; *Sls. Mgr.*: Susan L. Karl

**SCREENPRINT DOW**, See Dow Switch

**SEABOARD ELECTRONICS**, 70 Church St., New Rochelle, NY 10805, Tel: 914-235-8073, FAX: 914-235-8369; FSC No.: 6358,Y,Z; Empl: 30; *Sls. Mgr.*: Jerrold Hacker; *Dist. Mgr.*: Subhash Grandhi



**FAX: 201-664-8544**

**SEACOR, INC.**, 123 Woodland Ave., Westwood, NJ 07675, Tel: 201-666-5600; Empl: 20; *Sls. Mgr.*: D. Calamaras **A•1160-1162**

| <i>Local Sales Offices &amp; Reps</i> |                          |              |
|---------------------------------------|--------------------------|--------------|
| AL                                    | Huntsville, Summit Mktg. | 205-721-1701 |
| AZ                                    | Tempe, FP Sls.           | 602-894-5303 |



|     |                                         |                                   |
|-----|-----------------------------------------|-----------------------------------|
| CA  | Alhambra, James Gerry Co., Inc.         | 213-283-7694,<br>FAX:818-282-3836 |
| CA  | San Jose, H. W. Assocs.                 | 408-996-9940,<br>FAX:408-996-0885 |
| CO  | Denver, English/Damco Sls. Co.          | 303-782-0683,<br>FAX:303-782-0670 |
| FL  | Palm Harbor, Francois & Assocs., Inc.   | 813-784-4812,FAX:813-784-4854     |
| GA  | Norcross, Summit Mktg. Assoc.           | 404-498-4530                      |
| IN  | Indianapolis, Schank Elctm. Mktg. Inc.  | 317-842-6204,FAX:317-842-6205     |
| MD  | Bel Air, Freedman/Malta Assoc.          | 410-879-3148,<br>FAX:410-838-0789 |
| MA  | Sudbury, KSA of New England             | 508-443-5881,<br>FAX:508-443-0483 |
| MI  | Troy, Schank Elctm. Mktg. Inc.          | 313-588-2040                      |
| MN  | Plymouth, Highland Elctns. Sls. Co.     | 612-557-7002,<br>FAX:612-557-7014 |
| NJ  | Budd Lake, T & K Sls.                   | 201-347-1856,<br>FAX:201-691-1468 |
| NM  | Albuquerque, FP Sls.                    | 505-345-5553,<br>FAX:505-345-5555 |
| NY  | Skaneateles, NRM Mktg. Grp., Inc.       | 315-685-8991,<br>FAX:315-685-6199 |
| NY  | Smithtown, T & K Sls.                   | 516-724-3456,<br>FAX:516-724-3485 |
| NC  | Chapel Hill, Summit Mktg. Assoc.        | 919-968-7808                      |
| OH  | Cincinnati, Bob Gilbert & Assocs.       | 513-574-1932,<br>FAX:513-574-2854 |
| OH  | Miamitown, Bob Gilbert & Assocs.        | 513-353-4889,<br>FAX:513-353-4689 |
| PA  | King of Prussia, Freedman-Malta Assocs. | 215-337-9211,FAX:215-265-8764     |
| TX  | Richardson, Barry Sls., Inc.            | 214-234-0255,<br>FAX:214-235-0271 |
| Can | Markham, Ont., Kellogg Sls. & Mktg.     | 416-471-0202,<br>FAX:416-472-4519 |

## Local Distributors

|    |                                  |                                   |
|----|----------------------------------|-----------------------------------|
| CT | Bridgeport, Park Distrs.         | 203-366-7200                      |
| CT | Wallingford, Mid-State Elctns.   | 203-265-9900,<br>FAX:203-269-2374 |
| FL | Boca Raton, NRC Elctns.          | 407-241-8600,<br>FAX:407-241-3328 |
| FL | Fl. Lauderdale, Brothers Elec.   | 305-561-6700,<br>FAX:305-564-8080 |
| GA | Norcross, NRC Elctns.            | 404-729-0411,<br>FAX:404-448-2854 |
| IN | Carmel, Altex Elctns.            | 800-783-2589,<br>FAX:317-848-1323 |
| MA | Marlboro, NOW Elctms.            | 508-460-0187,<br>FAX:508-460-0467 |
| MA | Sudbury, ASK Elctms.             | 508-443-5881,<br>FAX:508-443-0483 |
| MN | Elitzen, Capacitor Assocs.       | 507-495-3306,<br>FAX:507-495-3454 |
| MN | Fridley, Voyager Elctms.         | 612-571-7766,<br>FAX:612-571-9519 |
| NJ | E. Brunswick, Brothers Elctms.   | 201-238-2200,<br>FAX:201-238-2218 |
| NJ | Rockaway, Tonar Inds.            | 201-586-9000,<br>FAX:201-586-2075 |
| NY | Ronkonkoma, Spectrum Comp. Supp. | 516-737-6900,FAX:516-737-6642     |
| WA | Seattle, Vesco Elctms.           | 206-575-3607                      |

**SEACOR PIEZO CERAMICS**, 8 Huntington St. Ste. 300, Huntington, CT 06484, Tel: 203-925-1320, FAX: 203-925-1320

**SEAFAB, INC.**, 14648 N.E. 95th St. Redmond, WA 98052, Tel: 206-881-2778, FAX: 206-882-0707; Empl: 80; Sls. Mgr.: Bruce Murray

**SEALING DEVICES, INC.**, 4400 Walden Ave., Lancaster, NY 14086, Tel: 716-684-7600, FAX: 716-684-0760; Empl: 95; Sls. Mgr.: Wayne K. Carrig

**SEALTRON, INC.**, 9705 Reading Road, Cincinnati, OH 45215, Tel: 513-733-8400, FAX: 513-733-0131; FSC No: 3678; Empl: 140; Sls. Mgr.: James Dawson

**SEASTROM MANUFACTURING CO., INC.**, 701 Sonora Ave., Glendale, CA 91201, Tel: 800-634-2356, FAX: 818-246-6803; FSC No.: 86928; Empl: 80; Sls. Mgr.: Dave Buddecke



**FAX: 714-261-8390**

**SECMA, INC.**, Secme, 17752 Skypark Circle No. 200, Irvine, CA 92714, Tel: 714-261-0610; Empl: 250  
B-1804-1807, 1850-1851

## Local Sales Offices & Reps

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AL  | Huntsville, Progressive Technlg.    | 205-551-7770 |
| CA  | Alameda, Liaison, Inc.              | 510-769-1991 |
| CA  | Chula Vista, PCA Mktg. & Sls. Eng.  | 714-493-3434 |
| CA  | Dana Point, PCA Mktg. & Sls. Engrg. | 714-493-9822 |
| CO  | Grand Junction, Krebill Comp. Sls.  | 303-243-8220 |
| IL  | Eik Grove Vlg., Tristar Grp.        | 708-593-0200 |
| IL  | Eik Grove Vlg., Tristar Grp.        | 708-364-6507 |
| IN  | Greenwood, Liberty Sls.             | 317-888-8396 |
| IN  | Lafayette, Liberty Sls.             | 317-474-5058 |
| MA  | Scituate, Olsen Tech. Sls.          | 617-545-5101 |
| NY  | Bohemia, Optimum Metro Sls.         | 516-244-5744 |
| OH  | Mentor, Sls. Plus                   | 216-942-7811 |
| OR  | Lake Oswego, SPS Elctms.            | 503-697-7768 |
| TX  | Lewisville, Elctm. Prod. Rep.       | 817-467-0377 |
| UT  | Sandy, Krebill Comp. Sls.           | 801-943-5311 |
| WA  | Mountlake Parris, SPS Elctms.       | 503-697-7768 |
| Can | Brossard, Que., D B Lectro          | 514-923-4525 |
| Can | Brossard, Que., DB Lectro           | 514-923-4525 |
| Can | Markham, Ont., Avtronics            | 416-475-1858 |
| Can | Ontario, Avtronics                  | 416-475-2024 |

## Local Distributors

|     |                            |              |
|-----|----------------------------|--------------|
| CA  | Covina, SelectaSwitch      | 818-697-4119 |
| MA  | Woburn, Control Des. Supp. | 617-932-9404 |
| Can | Markham, Ont., ARMA        | 416-475-1858 |

**SECTOR MICROWAVE IND. INC.**, 999 Grand Blvd., Deer Park, NY 11729, Tel: 516-242-2300, TELEX: 673-2151, TWX: 510-227-6075, FAX: 516-242-8158; Empl: 45; Sls. Mgr.: Thomas Nelson

**SECTOR SYSTEMS CO., INC.**, 416 Ocean Ave., Marblehead, MA 01945, Tel: 617-639-2625; Empl: 10

**SECURITY PLASTICS, INC.**, 14427 N.W. 60th Ave., Miami Lakes, FL 33014, Tel: 305-823-5440, FAX: 305-557-1431; Empl: 400; Sls. Mgr.: Nelson Rodriguez

**SEEG TECHNOLOGY**, 1849 Fortune Dr., San Jose, CA 95131, Tel: 408-432-7400, 1-800-333-7706, TELEX: 296609, TWX: 9103382313, FAX: 408-432-9549; Empl: 370; Sls. Mgr.: Phil Ortiz, V.P. Worldwide Sls.; Dist. Mgr.: Pat Bringuel



**FAX: 310-517-7792**

**SEIKO INSTRUMENTS U.S.A., INC. ELECTRONIC COMPONENTS**, 2990 W. Lomita Blvd., Torrance, CA 90505, Tel: 310-517-7770, Sls. Mgr.: A. Kishida; Dist. Mgr.: T. Touji A-1480; B-1113; D-1106, 1473

## Local Sales Offices & Reps

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AL  | Huntsville, Cartwright & Bean, Inc.      | 205-830-1540 |
| AZ  | Phoenix, C.T. Carlberg & Assocs.         | 602-468-0750 |
| AZ  | Scottsdale, C.T. Carlberg & Assocs.      | 602-994-9388 |
| AZ  | Tucson, C.T. Carlberg & Assocs.          | 602-299-1508 |
| CA  | Irvine, Groh Assoc.                      | 714-837-9871 |
| CA  | Newbury Park, Groh Assocs.               | 805-498-8410 |
| CA  | Poway, Groh Assocs.                      | 619-673-4321 |
| CA  | San Jose, H-Technical Sls.               | 408-453-2111 |
| CO  | Aurora, Electrodyne                      | 303-695-8903 |
| CT  | Madison, Focus Elctm. Sls.               | 203-245-4314 |
| FL  | Plantation, Gallagher & Assocs.          | 305-473-2101 |
| GA  | Norcross, Cartwright & Bean, Inc.        | 404-368-0160 |
| IL  | Elk Grove Village, TriStar Grp., Inc.    | 708-593-0200 |
| IN  | Ft. Wayne, Electro Rep Inc.              | 219-489-8205 |
| IN  | Indianapolis, Electro Rep Inc.           | 317-842-7202 |
| IA  | Cedar Rapids, J.R. Sls. Engrg., Inc.     | 319-393-2232 |
| KS  | Overland Park, Electri-Rep               | 913-649-2168 |
| MD  | Burtonsville, Chesapeake Technlg.        | 301-236-0530 |
| MA  | Taunton, Focus Elctns. Sls.              | 508-824-3840 |
| MI  | Farmington Hills, Rathsburn Assoc., Inc. | 313-489-1500 |
| MN  | Bloomington, Matrix Mktg. Grp.           | 612-835-6977 |
| MO  | St. Louis, Electri-Rep                   | 314-993-4421 |
| NJ  | E. Brunswick, Shepard & Assoc.           | 908-254-5757 |
| NM  | Albuquerque, C.T. Carlberg & Assocs.     | 505-899-2155 |
| NY  | E. Syracuse, Nycorn, Inc.                | 315-437-8343 |
| NC  | Charlotte, Cartwright & Bean, Inc.       | 704-536-0303 |
| NC  | Raleigh, Cartwright & Bean, Inc.         | 919-876-4130 |
| OH  | Brunswick, J. N. Bailey & Assocs.        | 216-273-3798 |
| OH  | Columbus, J.N. Bailey & Assocs.          | 614-262-7274 |
| OH  | New Lebanon, J. N. Bailey & Assocs.      | 513-687-1325 |
| OR  | Tigard, Earl & Brown Co. Inc.            | 503-639-2100 |
| PA  | Frazier, Industrial Comps., Inc.         | 215-889-0650 |
| TN  | Knoxville, Cartwright & Bean, Inc.       | 615-693-7450 |
| Can | Markham, Ont., Birde Mktg.               | 416-477-7722 |
| TX  | Austin, TI Mktg. Inc.                    | 512-371-7272 |

|     |                                  |              |
|-----|----------------------------------|--------------|
| TX  | Dallas, TL Mktg. Inc.            | 214-490-9300 |
| TX  | Houston, TL Mktg. Inc.           | 713-587-8100 |
| UT  | Salt Lake City, Electrodyne      | 801-264-8050 |
| WA  | Redmond, Earl & Brown Co., Inc.  | 206-885-5064 |
| WI  | Menomonee, TriStar Grp., Inc.    | 800-654-4105 |
| Can | Kanata, Ontario, Birde Mktg.     | 613-592-5411 |
| Can | St. Laurent, Quebec, Birde Mktg. | 514-335-4050 |
| Can | Vancouver, B.C., Birde Mktg.     | 604-431-0426 |

## Local Distributors

|    |                                              |              |
|----|----------------------------------------------|--------------|
| AZ | Phoenix, Aerospace S.W.                      | 602-582-2779 |
| AZ | Phoenix, Sterling Elctms.                    | 602-437-5565 |
| AZ | Tempe, Cypress Elctms.                       | 602-966-2256 |
| CA | Agoura Hills, Cypress Elctms.                | 818-597-9491 |
| CA | Chatsworth, Sterling Elctms.                 | 818-407-8850 |
| MD | Columbia, Sterling Elctms.                   | 301-290-3800 |
| CA | Costa Mesa, Cypress Elctms.                  | 714-549-2424 |
| CA | San Diego, Cypress Elctms.                   | 619-533-0977 |
| CA | San Diego, Sterling Elctms.                  | 619-560-8097 |
| CA | San Jose, All American                       | 408-943-1200 |
| CA | San Jose, Electro Alliance, Inc.             | 408-280-0221 |
| CA | San Jose, Sterling Elctms.                   | 408-435-0835 |
| CA | Santa Clara, Cypress Elctms.                 | 408-980-2500 |
| FL | Sunrise, All American                        | 305-572-7999 |
| CA | Tustin, OBI                                  | 714-258-1411 |
| CA | Tustin, Sterling Elctms.                     | 714-259-0900 |
| CO | Englewood, Cypress Elctms.                   | 303-792-5829 |
| CO | Englewood, Sterling Elctms.                  | 303-792-3939 |
| CT | Wallingford, Sterling Elctms.                | 203-265-9535 |
| FL | Miami, All American                          | 305-621-8282 |
| GA | Norcross, Applied Power Inc. (printers only) | 404-263-0421 |

|    |                                                       |              |
|----|-------------------------------------------------------|--------------|
| IL | Rosemont, Advent Elctms., Inc.(printers only)         | 708-297-6200 |
| IL | Schaumburg, Marsh Elctms.                             | 708-240-9290 |
| IL | Schaumburg, Sterling Elctms.                          | 708-303-9900 |
| IN | Carmel, Altex Elctms.                                 | 317-848-1323 |
| IN | Indianapolis, Advent Elctms., Inc.(printers only)     | 317-872-4910 |
| IA | Cedar Rapids, Advent Elctms., Inc.(printers only)     | 319-363-0221 |
| IA | Cedar Rapids, Dee Elctms., Inc. (LCD only)            | 319-365-7551 |
| KS | Lenexa, Sterling Elctms.                              | 913-492-5406 |
| MD | Midletown, Current Comps.                             | 301-473-5333 |
| MD | Raynham, Current Comps.                               | 508-824-7900 |
| MA | Woburn, Sterling Elctms.                              | 617-938-6200 |
| MI | Farmington Hills, Advent Elctms., Inc.(printers only) | 313-477-1650 |
| MN | Eden Prairie, Cypress Elctms.                         | 612-934-2104 |
| MN | Minneapolis, Aerospace Computer Supps.                | 612-884-4725 |

|    |                                        |              |
|----|----------------------------------------|--------------|
| MN | Minneapolis, Sterling Elctms.          | 612-831-2666 |
| NJ | Edison, Sterling Elctms.               | 908-417-1000 |
| NM | Albuquerque, Sterling Elctms.          | 505-884-1900 |
| NC | Raleigh, Century Elctms.               | 919-782-2116 |
| NY | Ronkonkoma, All American               | 516-981-3935 |
| NC | Raleigh, Sterling Elctms.              | 919-596-2220 |
| OH | Cincinnati, Schuster Elctms.           | 513-489-1400 |
| OH | Solon, Sterling Elctms.                | 216-248-1122 |
| OK | Tulsa, Sterling Elctms.                | 918-663-2410 |
| OR | Tualatin, Moore Elctms.                | 503-692-5333 |
| OR | Beaverton, Micropower (Batteries Only) | 503-626-7086 |

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| PA  | Norristown, Century Elctms.             | 215-631-5404 |
| TX  | Austin, Sterling Elctms.                | 512-836-1341 |
| TX  | Dallas, Sterling Elctms.                | 214-243-1600 |
| TX  | Houston, Sterling Elctms.               | 713-627-9800 |
| TX  | Irving, Cypress Elctms.                 | 214-255-0065 |
| UT  | Salt Lake City, Sterling Elctms.        | 801-972-5444 |
| VA  | Richmond, Sterling Elctms.              | 804-323-5510 |
| WA  | Bothell, Cypress Elctms.                | 206-483-1144 |
| WA  | Kent, Moore Elctms., Inc.               | 206-251-8090 |
| WI  | Milwaukee, Marsh Elctms.                | 414-475-6000 |
| Can | Burnaby, B.C., Semad/DGW Elctms.        | 604-420-9889 |
| Can | Calgary, Alb. Semad/DGW Elctms.         | 403-252-5664 |
| Can | Markham, Ont., Carsten Elctms. Ltd.     | 416-477-7705 |
| Can | Markham, Ont., Semad/DGW Elctms.        | 416-475-8500 |
| Can | Ottawa, Ont., Semad/DGW Elctms.         | 613-727-8325 |
| Can | Pointe Claire, Que., Semad/DGW Elctms.  | 514-694-0860 |
| Can | St. Laurent, Que., Carsten Elctms. Ltd. | 514-334-8321 |

**SEIKO INSTS. USA, INC.**, Graphic Devices & Systems Div., 1130 Ringwood Ct., San Jose, CA 95131, Tel: 408-922-5800, FAX: 408-922-5840; Sls. Mgr.: Steve Dadds; Dist. Mgr.: Ralph Kosoff

**SEIKO INSTRUMENTS U.S.A., INC.**, Robotics/Automation Div., 2990 W. Lomita Blvd., Torrance, CA 90505, Tel: 213-517-7850, FAX: 213-517-7793; Empl: 250; Sls. Mgr.: K. Curtis; Dist. Mgr.: P. Simpson

**SEKAI ELECTRONICS OF AMERICA, INC.**, 14535H Valley View Ave., Santa Fe Springs, CA 90670-5234, Tel: 310-921-7775, FAX: 310-921-7875; FSC No: 8Y398; Empl: 6; Sls. Mgr.: Larry Klementowski; Dist. Mgr.: Ron Burnett





FAX: 714-739-1507

**SELCO PRODUCTS CO., SEL Sales, Inc.,** 7580 Stage Rd., Buena Park, CA 90621, Tel: 714-521-8673; Empl: 18; *Sls. Mgr:* Ray Anton; *Dist. Mgr:* Ray Anton  
**B-1896-1897; C-1535; D-1368-1370**

*Local Sales Offices & Reps*

|    |                                  |              |
|----|----------------------------------|--------------|
| CA | Arcadia, HMC, Inc.               | 818-447-0958 |
| CA | Mission Viejo, Summit Sls.       | 714-830-5545 |
| CA | Sunnyvale, Pass Assocs.          | 408-735-9040 |
| CO | Littleton, Summit Sls.           | 303-973-9681 |
| FL | Sarasota, Rep-USA                | 813-923-2897 |
| IL | Woodridge, Gotten Assocs.        | 708-985-5100 |
| IN | Indianapolis, S & M Sls. & Mkts. | 317-843-5519 |
| MA | Andover, Crawford Assocs.        | 508-470-2122 |
| NY | Hauppauge, Sticom                | 516-366-4221 |
| OR | Beaverton, Luscombe Engrg.       | 503-636-6664 |
| PA | Valley Forge, J.E. Cuesta & Co.  | 215-935-0400 |
| TX | Dallas, H.H. & Assoc.            | 214-247-8308 |
| WA | Bellevue, Luscombe Engrg.        | 206-223-1541 |

*Local Distributors*

|    |                        |              |
|----|------------------------|--------------|
| CA | Arcadia, Parco         | 818-447-0958 |
| IL | Wheeling, Hawk Elctms. | 312-459-4091 |
| NY | Hauppauge, A J Elctms. | 516-361-9780 |

**SELECO, INC.,** P.O. Box 68809, Indianapolis, IN 46268, Tel: 317-872-4148, FAX: 317-875-3276; Empl: 30

**SELECT CONTROLS INC.,** 350 I Central Ave., Bohemia, NY 11716, Tel: 516-467-8577, FAX: 516-567-9013; Empl: 14

**SEMICON COMPONENTS, INC.,** A Subsidiary of Semicon, Inc., 10 North Ave., Burlington, MA 01803, Tel: 617-272-9015, FAX: 617-272-9109

**SEMICONDUCTOR CIRCUITS, INC., Astec America, Inc.,** 49 Range Rd., Windham, NH 03087, Tel: 603-893-2330, FAX: 603-893-6280; Empl: 52; *Sls. Mgr:* Douglas E. Hemingway, VP/Sls. **D-2207-2209**

*Local Sales Offices & Reps*

|    |                                                |              |
|----|------------------------------------------------|--------------|
| AZ | Chandler, Technisource Corp.                   | 602-497-0711 |
| CA | Los Angeles, Wiley Co.                         | 213-666-1611 |
| CA | Los Gatos, Luscombe Engr. Co. of San Francisco | 408-370-2020 |
| CO | Lakewood, Frontier Mktg.                       | 303-980-5888 |
| IL | Berkeley, ESA Tech. Mktg.                      | 708-544-0120 |
| IN | Plainfield, Rathsburg Assoc.                   | 317-838-0360 |
| MD | Pasadena, Elctm. Engr. & Sls, Inc.             | 410-255-9686 |
| MI | Farmington Hills, Rathsburg Assocs.            | 313-489-1500 |
| MN | Edina, Ohms Technlg, Inc.                      | 612-932-2920 |
| MO | Floissant, Delltron Co., Inc.                  | 314-839-0033 |
| NH | Nashua, Bennetron                              | 603-880-7008 |
| NJ | Morrestown, TAI Corp.                          | 609-778-5353 |
| NM | Albuquerque, Technisource Corp.                | 505-268-4232 |
| NY | Melville, Parallax                             | 516-351-1000 |
| NY | Syracuse, LD, Allen Co.                        | 315-437-8387 |
| OH | Columbus, Rathsburg Assocs.                    | 614-457-2242 |
| OR | Lake Oswego, Luscombe Engr. N/W                | 503-636-6664 |
| TX | Richardson, R.F. Kimball Co., Inc.             | 214-231-3447 |
| WA | Bellevue, Luscombe Engr. N/W                   | 206-223-1541 |
| CA | Ottawa, Ont., Cantec Reps, Inc.                | 613-725-3704 |

*Local Distributors*

|    |                                |              |
|----|--------------------------------|--------------|
| CA | Santa Clara, Foresight Elctms. | 408-980-9700 |
| CT | Seymore, Target Elctms.        | 203-888-1480 |
| CA | Norcross, Applied Power Inc.   | 404-263-0421 |
| IN | Carmel, Altex Elctms.          | 317-848-1323 |
| MA | Wellsley Hills, Target Elctms. | 617-235-2545 |
| MA | Westwood, Target Elctms.       | 617-329-2700 |
| MI | Brighton, Applied Power Inc.   | 313-227-3604 |
| NH | Derry, Target Elctms.          | 603-434-8440 |
| NJ | Lodi, TRC Elctms.              | 201-779-8282 |
| TX | Stafford, Southwest Elctms.    | 713-240-4000 |

**SEMICONDUCTOR PACKAGING MATERIALS CO.,** 431 Fayette Ave., Mamaroneck, NY 10543, Tel: 914-698-5353, FAX: 914-698-5386; Empl: 57; *Sls. Mgr:* Dolores Bankose

*Local Sales Offices & Reps*

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Chandler, Mission Mktg.           | 602-786-0804 |
| CA | Anaheim, Chalmers Technlg.        | 714-632-1724 |
| CA | San Ramon, California Tech. Svcs. | 510-743-8544 |
| CO | Fort Collins, Rep Sls, Inc.       | 303-226-1504 |
| CT | Southington, Libby Assoc.         | 203-747-5601 |
| CT | Southington, Libby Assocs.        | 203-747-5601 |
| CT | Washington Depot, Gemair Inc.     | 203-888-1390 |

|    |                                   |              |
|----|-----------------------------------|--------------|
| IL | Palatine, M & S Sls.              | 708-934-1200 |
| MD | Walkerville, KH Sls.              | 301-898-0758 |
| MN | Minneapolis, Fernan Sls.          | 612-721-8915 |
| PA | Franconia, Scharas Assocs.        | 215-682-0450 |
| TX | Dallas, Dallas Indl. Sls.         | 214-669-2608 |
| TX | Richardson, PSI                   | 214-644-5090 |
| WA | Bellevue, Mars                    | 206-747-3292 |
| WA | Redmond, Advanced Elec. Resources | 206-881-5207 |

**SEMICONDUCTOR TECHNOLOGY, INC.,** 3131 S.E. Jay St., Stuart, FL 34997, Tel: 407-283-4500, FAX: 407-286-8914; FSC No: 50891; Empl: 45

*Local Sales Offices & Reps*

|    |                                     |              |
|----|-------------------------------------|--------------|
| AZ | Scottsdale, Fred Board Assocs.      | 602-994-9388 |
| CA | Costa Mesa, Solid State Sls.        | 714-650-8414 |
| CA | Pleasanton, Luddy Assocs.           | 510-417-1033 |
| CO | Englewood, Component Sls.           | 303-779-8060 |
| FL | Longwood, Delmac Sls.               | 407-831-0040 |
| IL | Downers Grove, Frank Mendell Assoc. | 708-719-0099 |
| IN | Ft. Wayne, Scott Elctms.            | 219-489-5690 |
| IN | Indianapolis, Scott Elctms.         | 317-841-0010 |
| IA | Cedar Rapids, Lorenz Sls.           | 319-377-4666 |
| KS | Overland Park, Lorenz Sls.          | 913-469-1312 |
| MD | Towson, Arbotek                     | 301-825-0775 |
| MA | Burlington, Conti-Younger           | 617-273-1582 |
| MN | Minneapolis, Bill Deming & Assocs.  | 612-888-5050 |
| MO | St. Louis, Lorenz Sls.              | 314-997-4558 |
| NE | Lincoln, Lorenz Sls.                | 402-474-7094 |
| NJ | Hasbrouck Heights, Comp Tech Sls.   | 201-288-7400 |
| NM | Albuquerque, Q.A. Elctms.           | 505-888-1121 |
| NY | New Hyde Park, Comp Tech Sls.       | 516-593-2628 |
| NY | Rochester, Electra Sls.             | 716-427-7860 |
| NY | Syracuse, Electra Sls.              | 315-463-1242 |
| OH | Cincinnati, Scott Elctms.           | 513-791-2513 |
| OH | Cleveland, Scott Elctms.            | 216-473-5050 |
| OH | Dayton, Scott Elctms.               | 513-294-0539 |
| OH | Westerville, Scott Elctms.          | 614-882-6100 |
| OR | Beaverton, Westmark Elctms.         | 503-641-8780 |
| PA | Paoli, Stitzer Co. Inc.             | 215-644-5500 |
| PA | Pittsburgh, Scott Elctms.           | 412-963-6116 |
| TX | Austin, M-Rep                       | 512-250-0828 |
| TX | Dallas, M-Rep                       | 214-484-5711 |
| UT | Midvale, Utah/CSI                   | 801-561-5099 |
| WA | Bellevue, Westmark Elctms.          | 206-454-1944 |
| CA | Montreal, Que., Solid State Engrg.  | 514-481-3313 |

**SEMIKRON, INC.,** 11 Executive Dr., Hudson, NH 03051-0066, Tel: 603-883-8102, 1-800-258-1308, FAX: 603-883-8021; FSC No: 58687; Empl: 12; *Sls. Mgr:* Arthur Connolly

## SEMTECH CORPORATION

FAX: 805-498-3804

**SEMTECH CORPORATION,** 652 Mitchell Rd., Newbury Park, CA 91320, Tel: 805-498-2111; FSC No: 14099; Empl: 350; *Sls. Mgr:* Jack Poe; *Dist. Mgr:* Shawn O'Grady  
**A-2180-2218; D-1845**

*Local Sales Offices & Reps*

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AL | Huntsville, Giesting & Assocs.            | 205-830-4554 |
| AZ | Scottsdale, Arcorn Sls, Inc.              | 602-947-5745 |
| CA | Anaheim, First Rep of S. CA.              | 805-373-0887 |
| CA | La Jolla, Coastal Elctms.                 | 619-459-4148 |
| CA | Newbury Pk., Semtech Western Reg. Sls.    | 805-498-2111 |
| CA | Santa Clara, Quorum Tech. Sls.            | 408-980-0812 |
| CA | Westlake Village, First Rep of S. CA.     | 805-373-0887 |
| CO | Grand Junction, Krebill Comp. Sls.        | 303-243-8220 |
| FL | Deerfield Beach, Delmac Sls, Inc.         | 305-427-7788 |
| FL | Longwood, Delmac Sls, Inc.                | 407-831-0040 |
| GA | Duluth, Giesting & Assocs.                | 404-476-0025 |
| IL | Glendale Hgts., Synergistics Sls, Inc.    | 708-858-8686 |
| IN | Carmel, Giesting & Assocs.                | 317-844-5222 |
| KY | Versailles, Giesting & Assocs.            | 606-873-2330 |
| MD | Glen Burnie, Logical Technlg, Inc.        | 410-766-7444 |
| MA | Chelmsford, Semtech Eastern Reg. Sls.     | 508-256-0506 |
| MA | Framingham, Stone Comp. Sls.              | 508-875-3266 |
| MI | Comstock Park, Giesting & Assocs.         | 616-784-9437 |
| MI | Livonia, Giesting & Assocs.               | 313-478-8103 |
| MN | New Brighton, Design Technlg. Comps, Inc. | 612-631-3738 |
| MO | Floissant, Central Tech. Sls.             | 314-831-4069 |
| NJ | Fairfield, Metro Logic Corp.              | 201-575-5585 |
| NY | Bellmore, Compar New York, Inc.           | 516-221-7300 |
| NY | Rochester, Ontec Elctm. Mktg.             | 716-464-8636 |

|     |                                                 |              |
|-----|-------------------------------------------------|--------------|
| NY  | Wappingers Falls, Ontec Elctm. Mktg.            | 914-462-7188 |
| OH  | Cincinnati, Giesting & Assocs. (Home Off.)      | 513-385-1105 |
| OH  | Cleveland, Giesting & Assocs.                   | 216-261-9705 |
| OH  | Dublin, Giesting & Assocs.                      | 614-792-5900 |
| OR  | Beaverton, Quest Mktg.                          | 503-641-7377 |
| PA  | Horsham, Nexus Technlg. Sls, Inc.               | 215-675-9600 |
| PA  | Pittsburgh, Giesting & Assocs.                  | 412-828-3553 |
| TX  | Richardson, Semtech Central Reg. Sls.           | 214-783-9903 |
| WA  | Renton, Quest Mktg.                             | 206-228-2660 |
| WI  | Brookfield, Synergistics Sls, Inc.              | 414-821-1516 |
| EXP | Shijuku-Tokyo, Japan, Jepico-Shinjuku           | 03-348-0611  |
| Can | Hamilton, Ont., Cartwright Southall Assoc, Inc. | 416-528-0294 |

**SEMTECH CORPUS CHRISTI, Semtech Corporation,** 121 International Dr., Corpus Christi, TX 78410, Tel: 512-289-0403, FAX: 512-289-0472; Empl: 200  
**A-2180-2218; D-1845**

**SEMPERONICS CORP.,** 211 Prospect Pk., P.O. Box 2248, Peachtree City, GA 30269, Tel: 404-487-6681, FAX: 404-487-1128; Empl: 30; *Sls. Mgr:* Bradford Jubin

**SENCORE,** 3200 Sencore Dr., Sioux Falls, SD 57107, Tel: 1-800-736-2673, 605-339-0100, FAX: 605-339-0317; FSC No: 33347; Empl: 230; *Sls. Mgr:* George Gonos

**SENSIDYNE, INC.,** 16333 Bay Vista Drive, Clearwater, FL 34620, Tel: 813-530-3602, 1-800-451-9444; Empl: 70; *Sls. Mgr:* Bob Duff; *Dist. Mgr:* John Lavezzorio

**SENSITEK CORPORATION,** See Biddle Instruments

**SENSITIVE RESEARCH INSTRUMENTS,** 25 Dock St., Mt. Vernon, NY 10550, Tel: 914-699-9717, FAX: 914-699-9410; FSC No: 32590/16034A; Empl: 35

**SENSITRON SEMICONDUCTOR, RSM Electron Power Div.,** 221 W. Industry Ct., Deer Park, NY 11729, Tel: 516-586-7600, FAX: 516-242-9798; FSC No: 13409; Empl: 150; *Sls. Mgr:* Bryan Rogers; *Dist. Mgr:* Bryan Rogers



FAX: 503-684-8164

**SENSORAY,** 15800 Upper Boones Ferry Rd., #150, Lake Oswego, OR 97035, Tel: 503-684-8005

**SENSOR CORP.,** 303 Scottsdale Ave., Scottsdale, PA 15683, Tel: 412-887-4080, FAX: 412-887-0383; Empl: 6

**SENSOR DEVELOPMENTS INC.,** PO Box 290, Lake Orion, MI 48361, Tel: 313-391-3000, FAX: 313-391-0107; Empl: 80; *Sls. Mgr:* Bill Wood

**SENSOR PRODUCTS, INC.,** 171 Castle Ridge Park, E. Hanover, NJ 07936, Tel: 201-884-1755, FAX: 201-884-1699; Empl: 5

**SENSOR SCIENTIFIC, INC.,** 6 Kingsbridge Rd., Fairfield, NJ 07004, Tel: 201-227-7790, 800-524-1610, FAX: 201-227-8063; FSC No: 0A5E7; Empl: 125; *Sls. Mgr:* Robert Glinecki  
**B-1898-1901**

*Local Sales Offices & Reps*

|    |                            |              |
|----|----------------------------|--------------|
| CA | Irvine, Vale Elctm. Assoc. | 714-551-4004 |
| CA | Van Nuys, Vale Elctms.     | 818-705-0283 |
| CO | Ft. Collins, Rep. Sls.     | 303-226-1504 |
| MA | Lexington, Jordan Technlg. | 617-863-8898 |

**SENSOR SYSTEMS, INC.,** 8929 Fullbright Ave., Chatsworth, CA 91311, Tel: 818-341-5366, TELEX: 69-1583, FAX: 818-341-9059; *Sls. Mgr:* E. Schneider

**SENSOTEC, INC.,** 1200 Chesapeake Ave., Columbus, OH 43212, Tel: 614-486-7723, TWX: 810-482-1188, FAX: 614-486-0506; FSC No: 29927; *Sls. Mgr:* Jack Feil

**SENSYM, INC.,** 1255 Reamwood Ave., Sunnyvale, CA 94089, Tel: 408-744-1500, FAX: 408-734-0407; FSC No: 5955; Empl: 150; *Sls. Mgr:* Fred Jones; *Dist. Mgr:* Fred Jones

**SENTECH, INC.,** 518 Ryers Ave., Cheltenham, PA 19012, Tel: 215-663-0422, FAX: 215-663-0461; Empl: 5



**SENTRY MANUFACTURING COMPANY, P.O. Box**  
250, Chickasha, OK 73023, Tel: 405-224-6780, FAX: 405-  
224-8808; FSC No.: 5955; Empl: 26; Sls. Mgr.: Barbara  
Maberry

**SERCO PRODUCTS DIVISION: SERCO MOLD, INC.**, 612 Commercial Ave., Covina, CA 91723, Tel: 818-331-0517, 800-843-8172 (Calif.), FAX: 818-331-8584; Empl: 70; Sls. Mgr.: Neil Reckon ..... **C-1090-1091**

#### Local Sales Offices & Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Covina, Serco Prods.                    | 818-331-0517 |
| CA | Los Gatos, Shur Sls.                    | 408-399-7487 |
| CA | Valencia, Lessing & Assocs.             | 805-295-0225 |
| GA | Atlanta, Beacon Elec.                   | 404-256-9640 |
| KY | Louisville, O.H. Bromberg               | 502-456-1498 |
| MA | Burlington, Gerber Sls. Corp.           | 617-229-1150 |
| MN | S. Minneapolis, R.J., Inc.              | 612-866-3661 |
| MO | Florissant, Delltron Co., Inc.          | 314-839-0033 |
| NY | Latham, L-Tron Corp.                    | 518-785-5032 |
| NY | Port Washington, Ashtec, Inc.           | 516-767-0336 |
| OR | Portland, Brown Co.                     | 503-293-1683 |
| PA | FT. Washington, Simon Mktg. Consultants | 215-628-3394 |
| TX | Richardson, R. F. Kimball Co., Inc.     | 214-231-3447 |

#### Local Distributors

|     |                                                |              |
|-----|------------------------------------------------|--------------|
| AL  | Montgomery, Handey's Elctm. Ctr. Inc.          | 205-262-4885 |
| AZ  | Phoenix, Capital Elctms.                       | 602-252-5897 |
| AZ  | Phoenix, Elctm. Emporium Inc.                  | 602-437-8633 |
| AZ  | Tucson, Electronic City                        | 602-622-1173 |
| CA  | Canoga Park, Sandy's Elctms.                   | 818-346-0510 |
| CA  | Costa Mesa, Mar Vac Elctms.                    | 714-650-2001 |
| CA  | Cucamonga, Abletronics                         | 714-944-4952 |
| CA  | Culver City, DOW Elctms.                       | 213-391-6763 |
| CA  | El Monte, Marshall Ind.                        | 800-522-0084 |
| CA  | Fremont, Fry's Elctms.                         | 415-770-3797 |
| CA  | Goleta, DOW Elctms.                            | 805-968-7272 |
| CA  | Hawian Gardens, DOW Elctms.                    | 213-421-3786 |
| CA  | Hollywood, Pacific Radio Exchange              | 213-462-1393 |
| CA  | Inglewood, Inglewood Elctms.                   | 213-674-2366 |
| CA  | Oxnard, DOW Elctms.                            | 805-486-6353 |
| CA  | Palo Alto, Fry's Elctms.                       | 415-496-6100 |
| CA  | Pasadena, DOW Elctms.                          | 818-793-1195 |
| CA  | Pomona, DOW Elctms.                            | 818-966-8461 |
| CA  | Sacramento, Mar Vac California Radio           | 916-922-6531 |
| CA  | San Jose, Quement Elctms.                      | 408-998-5900 |
| CA  | Santa Maria, Elctm. Parts Supermart            | 805-925-8604 |
| CA  | Sunnyvale, Fry's Elctms.                       | 408-733-1770 |
| CO  | Aurora, Jet Elec. Supp.                        | 303-364-1000 |
| CT  | Wallingford, Midstate Elctms.                  | 203-265-9900 |
| FL  | Tampa, Sunex Elctm. Supp. Inc.                 | 813-885-4074 |
| FL  | West Palm Beach, Dolphin Elctm. Supp. Inc.     | 305-659-7166 |
| MA  | Burlington, Atlantic Comps.                    | 617-270-0051 |
| MA  | Lynn, Land Elctms. Inc.                        | 617-592-2220 |
| MN  | S. Minneapolis, Tortec Corp.                   | 612-866-3662 |
| MN  | Thief River Falls, Digi-Key                    | 218-681-6674 |
| NV  | Las Vegas, Sandy's Elctms.                     | 702-383-8353 |
| NJ  | Lodi, Nidisco Inc.                             | 201-773-1771 |
| NJ  | Rockaway, Tonar Ind.                           | 201-586-9000 |
| NY  | Ronkonkoma, Jet Comps.                         | 516-471-3124 |
| NY  | Woodside, Switches Unlimited                   | 718-478-5000 |
| NC  | Durham, Southeastern Elctms.                   | 919-638-8204 |
| NC  | Raleigh, Southeastern Elctms.                  | 919-828-2311 |
| OH  | Hudson, Hamshire                               | 216-425-8888 |
| TN  | Clarksville, Randolph, Hale & Matthews Inc.    | 615-647-2325 |
| TX  | Austin, Electrotex, Inc.                       | 512-454-0318 |
| TX  | Dallas, Electrotex, Inc.                       | 214-234-0433 |
| TX  | FT. Worth, Allied Elctms.                      | 800-433-5700 |
| TX  | Houston, Electrotex, Inc.                      | 713-526-3456 |
| WI  | Fond du Lac, Fedco Elctms. Inc.                | 414-922-6490 |
| WI  | Milwaukee, Marsh Elctms. Inc.                  | 414-475-6000 |
| Can | Kingston, Ont., Electronic Packaging Sys. Ltd. | 613-384-1142 |
| Can | Markham, Ont., Arma Elctms.                    | 416-475-1858 |
| Can | Montreal, Future Elctms.                       | 800-388-8731 |

**SERVOBYTE INC.**, P.O. Box 112, Millbury, MA 01527, Tel: 508-865-0225, FAX: 508-865-0295; Empl: 5; Sls. Mgr.: C. Harris

**SERVO CORPORATION OF AMERICA**, 111 New South Rd., Hicksville, NY 11801-5259, Tel: 516-938-9700, FAX: 516-938-9644; FSC No.: 92110 & 05627; Empl: 220

**SERVOMEX COMPANY, INC.**, 90 Kerry Pl., Norwood, MA 02062, Tel: 617-769-7710, TELEX: 4430161, FAX: 617-769-2834; Sls. Mgr.: Michael Hammond

# SERVO-TEK

**FAX: 201-427-4249**

**SERVO-TEK PRODUCTS CO.**, 1086 Goffie Rd., Hawthorne, NJ 07066, Tel: 201-427-3100; Empl: 47; Sls. Mgr.: T. J. Daly ..... **B-1306**

**SESCOM, INC.**, 2100 Ward Dr., Henderson, NV 89015-4249, Tel: 702-565-3400, FAX: 702-565-4828; FSC No.: 72174; Empl: 12; Sls. Mgr.: Franklin J. Miller ... **C-1093**

# setra

**FAX: 508-264-0292**

**SETRA SYSTEMS, INC.**, 45 Nagog Park, Acton, MA 01720, Tel: 508-263-1400, 1-800-25-SETRA, TELEX: 4430243; FSC No.: 53367; Empl: 110 .... **B-2014-2015**

#### Local Sales Offices & Reps

|     |                                     |              |
|-----|-------------------------------------|--------------|
| AL  | Huntsville, Burnette Techno Metrics | 205-830-2832 |
| AK  | Anchorage, Unit Process             | 907-522-1010 |
| CA  | Concord, QCon, Inc.                 | 510-682-2020 |
| CA  | Downey, Dynasales Co.               | 310-806-1400 |
| CO  | Westminster, RMS Sls.               | 303-429-1111 |
| FL  | Tampa, Quantum Measurements Corp.   | 813-933-8078 |
| GA  | Atlanta, Craft Assocs.              | 404-256-0420 |
| IL  | W. Dundee, Precision Meas. Prods.   | 708-426-4446 |
| IN  | FL Wayne, Domino, Inc.              | 219-456-5512 |
| IN  | Indianapolis, Domino, Inc.          | 317-841-6159 |
| KY  | Louisville, Domino, Inc.            | 502-425-2848 |
| MD  | Columbia, Stein Instrs.             | 301-596-3748 |
| MA  | Wilbraham, NEDT, Inc.               | 413-596-8853 |
| MN  | Hazel Park, Tiby Co.                | 313-547-3550 |
| MN  | Minneapolis, The Mark Co.           | 612-933-3026 |
| MO  | St. Louis, Adelphi, Inc.            | 314-821-1232 |
| NJ  | Little Falls, KLS Assocs.           | 201-785-4450 |
| NY  | Cazenovia, Ritec Enrtprs., Inc.     | 315-655-4158 |
| NY  | Rochester, Ritec Enrtprs., Inc.     | 716-271-3170 |
| OH  | Cleveland, Tiby Co.                 | 216-371-5335 |
| OH  | Dayton, Tiby Co.                    | 513-277-3822 |
| OK  | Tulsa, Intek Corp.                  | 918-627-1500 |
| PA  | Cheltenham, Stein Instrm.           | 215-379-1990 |
| TX  | Dallas, ADI Instrs.                 | 214-340-3445 |
| WA  | Seattle, EMRA Controls, Inc.        | 206-244-4341 |
| WI  | Waukesha, Ray Knitter Assocs.       | 414-544-1976 |
| Can | Ontario, Alpha Controls & Instr.    | 416-477-2133 |

**SEVEN MOUNTAINS SCI. INC.**, P.O. Box 650, Boalsburg, PA 16827, Tel: 814-466-6559, FAX: 814-466-6559; Empl: 4; Sls. Mgr.: Josephine Chesworth

**SFE TECHNOLOGIES**, 1501 1st St., San Fernando, CA 91340, Tel: 818-365-9411, TWX: 910-496-1535, FAX: 818-365-5117; FSC No.: 96733; Empl: 800; Sls. Mgr.: Michael Rosenberg

**SGS-THOMSON MICROELECTRONICS, INC.**, 1000 Bell Road, Phoenix, AZ 85022, Tel: 602-867-6100

**SGS-THOMSON MICROELECTRONICS, INC.**, 1310 Electronics, Carrollton, TX 75006, Tel: 214-466-6000, FAX: 214-466-7602; FSC No.: 7X328; Empl: 1700; Sls. Mgr.: Carlo Bozotti; Dist. Mgr.: Jack Dauber

**SHALLCO, INC.**, Box 1089, Smithfield, NC 27577, Tel: 919-934-3135, 1-800-876-3135, FAX: 919-934-3298; Empl: 30; Sls. Mgr.: M. D. Sutton .... **B-1808; D-1323**

**SHALLTRONIX CORP.**, Preston St., P.O. Box 235, Selma, NC 27576, Tel: 919-965-6346, FAX: 919-965-6620; FSC No.: 85258; Sls. Mgr.: Joe Deans ..... **D-1324**

#### Local Sales Offices & Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| TX | Arlington, Electronic Prod. Reps. | 817-467-0377 |
|----|-----------------------------------|--------------|

**SHAMROCK PLASTICS & RUBBER, INC.**, 5330 E 25th St., Indianapolis, IN 46218, Tel: 317-543-3540, 800-382-4635, FAX: 317-543-3553; Empl: 25; Sls. Mgr.: Bill Crispin

**SHAPE ELECTRONICS, INC.**, The Wiremold Co., 901 DuPage Ave., Lombard, IL 60148, Tel: 708-620-8394, 1-800-367-5811, FAX: 708-620-0784; Empl: 110; Sls. Mgr.: Jim Piantanida; Dist. Mgr.: Jim Piantanida

**SHAPIRO SCIENTIFIC INST.**, 3500 E. Coast Hwy., Corona del Mar, CA 92625, Tel: 714-675-1024, FAX: 714-675-9063; Empl: 7

**SHARP ELECTRONICS CORP.**, Microelectronics Grp., 5700 NW Pacific Rim Blvd., M/S. 20, Camas, WA 98607, Tel: 206-834-2500, FAX: 206-834-8903; Sls. Mgr.: Doug Goodyear; Dist. Mgr.: George Campot

**SHATTUCK INDUSTRIES**, 117 Fern St., Santa Cruz, CA 95060, Tel: 408-427-3122, FAX: 408-427-3134; Sls. Mgr.: Bruce Shattuck; Dist. Mgr.: Julie Murray

**SHELDahl, INC.**, 1150 Sheldahl Rd., Northfield, MN 55057, Tel: 507-663-8000, TWX: 910-565-2180, FAX: 507-663-8545; Empl: 1,257; Sls. Mgr.: Ed Lundstrom

**SHELDON INSTRUMENTS**, 1021 North University Ave., Ste. 204, Provo, UT 84604, Tel: 801-376-7861, FAX: 801-374-8022; Empl: 6; Sls. Mgr.: Robert Gaurie

# SHELLY

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**FAX: 714-669-1081**

**SHELLY ASSOCIATES, INC.**, 14811 Myford Rd., Tustin, CA 92680, Tel: 714-669-9850, TELEX: 85-2263; FSC No.: 00303; Empl: 30; Sls. Mgr.: Bill Alarlon ..... **B-1114-1117, 1179**

#### Local Sales Offices & Reps

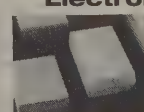
|     |                                    |              |
|-----|------------------------------------|--------------|
| AZ  | Mesa, Spectrum Assocs., S.W.       | 602-966-1788 |
| CA  | Pleasanton, Leddy Assocs., Inc.    | 510-417-1033 |
| CA  | San Diego, O'Donnell Assocs., Inc. | 619-578-1645 |
| CA  | Torrance, O'Donnell Assocs., Inc.  | 310-781-2255 |
| CO  | Westminster, Wstern Reg. Mktg.     | 303-428-8088 |
| FL  | Satellite Beach, Curtis Mktg.      | 407-779-3912 |
| GA  | Marietta, Intronic                 | 404-973-6605 |
| IL  | Glen Ellyn, Lincoln Hoages, Inc.   | 708-469-6750 |
| MN  | Hopkins, Steve Forsythe & Assocs.  | 612-933-8267 |
| MO  | Grandview, R. R. Burton & Assocs.  | 618-763-5385 |
| NJ  | Pitman, Colrud Corp.               | 609-589-5866 |
| NY  | Port Washington, TMA               | 516-883-2432 |
| RI  | Lincoln, Global Tech Sls.          | 401-334-3830 |
| TX  | Dallas, de Forest Sls. Co.         | 214-349-3290 |
| UT  | Salt Lake City, Western Reg. Mktg. | 801-268-9768 |
| WA  | Bellevue, AIE                      | 206-455-4697 |
| Can | Scarborough, Ont., Banke Elctms.   | 416-292-5152 |

#### Local Distributors

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AR | FT. Smith, Radio, Inc.                  | 501-646-5200 |
| CA | Anaheim, Bisco Inds. Inc.               | 714-635-0380 |
| CA | San Jose, Bisco Inds. Inc.              | 408-435-8980 |
| IL | Franklin Park, Bisco Inds. Inc.         | 708-451-1230 |
| MA | Woburn, Bisco Inds.                     | 617-938-8590 |
| MO | Kansas City, Elctms. Supp.              | 816-931-0250 |
| NY | Elmsford, White Plains Elctrl.          | 914-592-9555 |
| OH | Dayton, Advacom                         | 513-272-5900 |
| OH | Midlegrove, Advacom                     | 216-826-3300 |
| OH | Strongsville, Roberts Elctms. Co., Inc. | 216-238-1711 |
| OK | Tulsa, Radio, Inc.                      | 918-587-9123 |
| TX | Arlington, Bisco Inds.                  | 817-640-7046 |
| TX | Austin, Wofford Elctms.                 | 512-339-1131 |
| TX | Dallas, Wofford Elctms.                 | 214-320-1294 |
| TX | Houston, Wofford Elctms.                | 713-351-2255 |
| UT | Salt Lake City, Bisco                   | 801-972-3525 |

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**SHINANO KENSHI CORP. (SKC)**, 5737 Mesmer Ave.,  
Culver City, CA 90230, Tel: 310-915-7300, FAX: 310-915-  
7304; Empl: 7; *Sls. Mgr.*: Bill Dowis ..... **B-1307**

*Local Sales Offices & Reps*

|    |                                   |              |
|----|-----------------------------------|--------------|
| AL | Madison, Benchmark Sls.           | 205-464-0033 |
| CA | Culver City, Shinano Kenshi Corp. | 310-915-7300 |
| CA | Cupertino, PEI Sls. Assoc.        | 408-253-1960 |
| CO | Denver, Tech Rep Sls. Co.         | 303-758-7031 |
| CO | Englewood, Tech. Rep. Sls.        | 303-799-8877 |
| CT | Bloomfield, SIR/DSA Assocs.       | 203-243-9343 |
| FL | Lighthouse Pt, Krutek & Assocs.   | 305-783-2501 |
| GA | Norcross, Benchmark Sls.          | 404-446-1711 |
| IN | Carmel, Current Elctn. Mktg.      | 317-844-1770 |
| MA | Westford, SIR/DSA Assocs.         | 508-692-2500 |
| MI | Royal Oak, Elctrl. Sys. Co.       | 313-542-1747 |
| MN | Minneapolis, HMR, Inc.            | 612-888-2122 |
| NJ | Mt. Laurel, Paragon Sls.          | 609-778-1190 |
| NY | Clark Mills, KLM Garner           | 315-853-6126 |
| NY | Mineola, DOL Engrg.               | 516-747-3944 |
| NY | Pittsford, KLM Garner             | 716-381-8350 |
| NC | Raleigh, Benchmark Sls.           | 919-850-0633 |
| OH | Dayton, Elctrl. Sys. Co.          | 513-545-9822 |
| OH | Orville, Elctrl. Sys. Co.         | 216-682-5530 |
| OR | Portland, Intertech Sls.          | 503-775-7885 |
| PA | Bell, Deltronics                  | 215-641-9930 |
| TX | Austin, Capitrol Sls.             | 512-250-0201 |
| TX | Dallas, Theodore Borek Assoc.     | 214-985-7702 |
| WA | Redmond, Halbar                   | 206-882-0990 |

*Local Distributors*

|    |                                   |              |
|----|-----------------------------------|--------------|
| CA | Culver City, Digilog Devices Inc. | 310-915-7346 |
|----|-----------------------------------|--------------|

**Shindengen America, Inc.**

**FAX: 805-373-3710**

**SHINDENGEN AMERICA INC.**, 2985 E. Hillcrest Dr.,  
Westlake VI, CA 91362, Tel: 800-634-3654; Empl: 10; *Sls.*  
*Mgr.*: Peter Gajewski; *Dist. Mgr.*: Peter Gajewski  
..... **D-1918-1919, 2210-2211**

*Local Sales Offices & Reps*

|    |                                          |              |
|----|------------------------------------------|--------------|
| AZ | Phoenix, Hartland Sls.                   | 602-492-0012 |
| CA | Murrieta, Mil-Corn Sls., Inc.            | 714-677-2097 |
| CA | San Diego, Power Assocs.                 | 619-275-0641 |
| CA | San Jose, Integrated Tech. Sls.          | 408-727-3408 |
| CO | Bloomfield, Summitwest Mktg., Inc.       | 303-460-9600 |
| FL | Land O' Lakes, A.J.'s Power Source, Inc. | 813-996-2583 |
| IL | Rolling Meadows, Eagle Tech. Sls., Inc.  | 312-991-0700 |
| KS | Lenexa, Midtec Assocs.                   | 913-541-0505 |
| MD | Baltimore, Chesapeake Indl. Mktg.        | 301-653-0476 |
| MI | Lathrup VL, R. C. Nordstrom & Co.        | 313-559-7373 |
| MN | Mancato, E. I. Sls.                      | 507-345-5786 |
| MO | St. Louis, Midtec Assocs.                | 314-275-8666 |
| NH | Hampton, Primary Source                  | 603-926-8044 |
| NY | Haugpaape, Aurora-Schmitt                | 516-434-1313 |
| NY | Pittsford, Franklin Sls. Corp.           | 716-248-8251 |
| OR | Beaverton, Olsen Tech. Sls. Corp.        | 503-643-9488 |
| PA | Blue Bell, Deltatronics Inc.             | 215-641-9930 |
| TX | Richardson, Jim Gray & Assocs.           | 214-699-9976 |
| TX | Richmond, Jim Gray & Assocs.             | 713-342-1710 |
| UT | Midvale, Arrowhead/CSI                   | 801-561-5688 |
| WA | Bellevue, Olsen Tech. Sls. Corp.         | 206-883-7792 |
| WI | Waukesha, Eagle Tech. Sls.               | 414-549-3622 |

*Local Distributors*

|    |                                     |              |
|----|-------------------------------------|--------------|
| AZ | Phoenix, Dalis Elctn. Supply        | 602-275-2626 |
| AZ | Tucson, Dalis Elctn. Supply         | 602-294-2628 |
| CO | Littleton, Displays Plus, Inc.      | 303-730-7333 |
| CT | Danbury, Aved Elctn. Dist., Inc.    | 203-744-7838 |
| IL | Schaumburg, QPS Elctms.             | 312-884-6620 |
| MD | Gaithersburg, Axis Elctms.          | 301-840-9640 |
| MA | Andover, Aved Elctn. Dist., Inc.    | 508-688-3800 |
| MA | Tewksbury, Armor Elctms.            | 508-640-1499 |
| MI | St. Clair Shores, Spermo            | 313-771-2700 |
| NJ | Pennsauken, Alta Elctms.            | 609-488-1442 |
| NM | Albuquerque, Summit Elec. Supp. Co. | 505-884-4400 |
| NM | Albuquerque, Walker Elctn. Supply   | 505-883-2992 |
| NY | Glen Head, Livera Polk Assocs.      | 516-759-9300 |
| NY | Rochester, Masline ELctms.          | 716-546-5373 |
| OH | Cleveland, Major Elctms.            | 216-442-6200 |
| TX | Austin, Wofford Elctms.             | 512-339-1131 |
| TX | Dallas, Wofford Elctms.             | 214-320-0294 |
| TX | El Paso, Midland Wintronic Co.      | 915-779-8391 |
| TX | Houston, Wofford Elctms.            | 713-847-3583 |
| TX | Stafford, Southwest Elctms.         | 713-240-4000 |

**SHIN-ETSU POLYMER AMERICA, INC.**, 34135 7th St.,  
Union City, CA 94587, Tel: 510-475-9000, TWX: 910-338-  
2229, FAX: 510-475-0613; *Sls. Mgr.*: Doug Hall

*Local Sales Offices & Reps*

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Newbury Park, Interconn Tech. Mktg. | 714-589-4655 |
| IL | Crystal Lake, Mid America Reps.     | 815-455-5310 |
| IN | Carmel, Technology Mktg. Corp.      | 317-844-8462 |
| MA | Lexington, Jodan Technlg.           | 617-863-8898 |
| MI | Farmington Hills, J.L. Montgomery   | 313-489-0099 |
| TN | Greenville, Lamons Sls. Co.         | 615-639-8711 |
| TX | Dallas, THT Sls.                    | 214-783-1501 |

**SHIPLEY COMPANY, INC.**, 2300 Washington St.,  
Newton, MA 02162, Tel: 617-969-5500, FAX: 508-234-  
4055; *Sls. Mgr.*: Timothy S. Tubergen



**FAX: 516-466-0922**

**SHOGYO INTERNATIONAL CORP.**, 287 Northern  
Blvd., Great Neck, NY 11021-4799, Tel: 516-466-0911,  
TELEX: 4758024 ..... **A-2534; B-1180, 1809;**  
**C-1457-1459, 1808-1809; D-1064-1065, 1474, 1921**



**FAX: 914-736-3656**

**SHOKAI FAR EAST LTD.**, 9 Elena Court, Peekskill, NY  
10566, Tel: 914-736-3500, TELEX: 224219; Empl: 362;  
*Sls. Mgr.*: Shirlee Serber; *Dist. Mgr.*: Robert Craig  
..... **A-2118; B-1181; C-1460; D-1067**

**SHURE BROTHERS INC.**, 222 Hartrey Ave., Evanston, IL  
60202-3696, Tel: 708-866-2200, TELEX: 4330191, FAX:  
708-866-2279; *Sls. Mgr.*: A.G. Hershner, Dir. of Sls.

**SHURITE METERS, A Prime Technology Co., P.O.**  
Box 185, Twin Lakes Rd., North Branford, CT 06471, Tel:  
203-481-5721, TWX: 710-452-3092, FAX: 203-481-8937;  
FSC No: 82239; Empl: 15; *Sls. Mgr.*: James L. Jamieson,  
Mktg. VP ..... **D-1371**

*Local Sales Offices & Reps*

|     |                                                |              |
|-----|------------------------------------------------|--------------|
| AK  | Please Consult Factory, Please Consult Factory |              |
| CA  | Burbank, Modco Co.                             | 203-481-5721 |
| CA  | San Diego, Qualtronic                          | 619-848-2215 |
| CA  | So. San Francisco, Carell-EMA                  | 619-873-0118 |
| CO  | Denver, Nelson Co. Inc.                        | 415-873-3365 |
| CT  | Gilman, Adams McGregor Inc.                    | 303-295-1017 |
| FL  | Lakeland, Munday Sls. Co.                      | 203-537-3033 |
| IL  | Cary, Bob Burns Assocs.                        | 813-858-5606 |
| IN  | Indianapolis, John Sukup Inc.                  | 708-516-3322 |
| IA  | Des Moines, The Beams Co.                      | 317-253-5501 |
| KS  | Lenexa, The Beams Co.                          | 515-255-1148 |
| MI  | E. Detroit, Jack M. Thorpe Co.                 | 913-541-9197 |
| MO  | St. Louis, The Beams Co.                       | 313-779-6363 |
| NJ  | Franklin, D. F. Tobias & Co.                   | 314-434-8448 |
| NY  | Lawrenceville, DVS Co.                         | 201-751-8680 |
| NY  | Rochester, D. F. Tobias                        | 609-896-1112 |
| NC  | Raleigh, B.T. Funderburk Inc.                  | 201-751-8680 |
| OH  | Cleveland, John Olsen Co.                      | 919-846-2373 |
| PA  | Glenshaw, DVS Co.                              | 216-838-0510 |
| SC  | Landrum, B.T. Funderburk Inc.                  | 609-896-1112 |
| TX  | Dallas, The Crockett Sls. Co.                  | 919-846-2373 |
| Can | Thornhill, Ont., R. C. Kahert Sls. Ltd.        | 214-350-3377 |
| Can | Winnipeg, Manitoba, Smith-Patterson & Assocs.  | 416-764-2596 |
|     |                                                | 204-885-1376 |

*Local Distributors*

|    |                                        |                |
|----|----------------------------------------|----------------|
| AL | Birmingham, ACK Radio Supply           | 205-322-0588   |
| AZ | Phoenix, Capital Elctms. Supp.         | 602-252-5897   |
| AZ | Little Rock, Carlton-Bates             | 501-562-9100   |
| CA | San Francisco, Zack Elctms.            | 415-624-1444   |
| CA | San Jose, Quermets Elctms.             | 408-998-5900   |
| CA | San Rafael, Electronics Plus           | 415-457-0664   |
| CO | Denver, Fiestels Elec. Supp.           | 303-629-1312   |
| CT | New Haven, Hatry Elctms.               | 203-787-5921   |
| IN | East Chicago, Acro Elctms.             | 219-397-8681   |
| IA | Des Moines, Radio Trade Supp.          | 515-288-7237   |
| KY | Louisville, Peerless Elctn. Eqpt.      | 502-637-7677   |
| LA | Baton Rouge, Ralph's Elctn. Supp.      | 504-344-3761   |
| MO | Kansas City, Elctn. Supp. Co.          | 816-931-0250   |
| MO | Kansas City, Walters Indl. Elect. Inc. |                |
|    |                                        | 1-800-821-5248 |
| NM | Los Cruces, Elctn. Parts Co.           | 505-523-4578   |

|     |                                         |                |
|-----|-----------------------------------------|----------------|
| OH  | Akron, Akron Elctn. Supp.               | 216-762-8818   |
| OH  | Lima, Hutch & Sons                      | 419-229-8751   |
| OK  | Tulsa, Radio Inc.                       | 918-587-9123   |
| PA  | Reading, Barbey Elctms. Corp.           | 215-376-7451   |
| RI  | Pawtucket, Jabbour Elctms.              | 401-728-4600   |
| TX  | Fort Worth, Allied Elctms.              | 1-800-433-5700 |
| TX  | Houston, City Elctms. Supp.             | 713-621-1060   |
| TX  | Houston, Elctn. Prts. Outlet            | 713-784-0140   |
| WI  | Milwaukee, E.M. Instrs. Inc.            | 414-272-7799   |
| Can | Willowdale, Ontario, Electro Sonic Inc. | 416-494-1666   |

**SIEMENS-B C L MAGNETICS**, Siemens Automotive  
Ltd., 5045 North Service Rd., Burlington, Ont., Canada L7L  
5H6, Tel: 416-335-2530, FAX: 416-335-8474; Empl: 180;  
*Sls. Mgr.*: Dave Dore

**SIEMENS COMPONENTS, INC.**, 2191 Laurelwood Rd.,  
Santa Clara, CA 95054, Tel: 408-980-4568, TELEX: 84-  
4491

**SIEMENS COMPONENTS, INC.**, Optoelectronics  
Division, 19000 Homestead Rd., Cupertino, CA 95014,  
Tel: 408-257-7910, TELEX: 352084, TWX: 910-338-0022;  
FSC No: 50579; Empl: 1100; *Sls. Mgr.*: Chuck Berghoff;  
*Dist. Mgr.*: Regina Walls

**SIEMENS COMPONENTS, INC.**, Special Products  
Div., 186 Wood Ave., South Iselin, NJ 08830, Tel: 201-321-  
3400, TWX: 710-998-0588/0529, FAX: 201-321-3961;  
Empl: 800; *Sls. Mgr.*: Curt Hozian; *Dist. Mgr.*: Dick Robert

**SIENNA TECHNOLOGIES INC.**, 2535 Pilot Knob Road,  
St. Paul, MN 55120, Tel: 612-688-6100, FAX: 612-688-  
2197; Empl: 18; *Sls. Mgr.*: Deborah L. Bernard; *Dist. Mgr.*:  
George Doerfler

**SIERRA AUTOMATED SYSTEMS & ENGINEERING  
CORP.**, 2112 N. Glenoaks Blvd., Burbank, CA 91504, Tel:  
818-840-6749, FAX: 818-840-6751; *Sls. Mgr.*: Al Salci

**SIERRACIN/MAGNEDYNE**, 2258 Rutherford Rd.,  
Carlsbad, CA 92008, Tel: 619-438-3321, FAX: 619-438-  
4987; Empl: 150

**SIERRACIN POWER SYSTEMS**, See Valor  
Electronics

**SIERRA MONITOR CORP.**, 1991 Tarob Ct., Milpitas, CA  
95035, Tel: 408-262-6611, TELEX: 17-1618; FSC No:  
MSGNSDR; Empl: 30; *Sls. Mgr.*: Stephen R. Ferree; *Dist.*  
*Mgr.*: Stephen R. Ferree

**SIERRA POWER SYSTEMS**, See Valor Electronics

**SIERRA SEMICONDUCTOR CORP.**, 2075 N. Capitol  
Ave., San Jose, CA 95132, Tel: 408-263-9300, FAX: 408-  
263-3337

**SIERRA WEST POWER SYSTEMS**, 2615 Missouri Ave.,  
Bldg. No. 5, Las Cruces, NM 88001, Tel: 505-522-8828,  
FAX: 505-522-8828; Empl: 12

**SIGMA ELECTRONICS INC.**, 10830 Kinghurst Dr.,  
Houston, TX 77099, Tel: 713-933-4700, 800-874-7121,  
FAX: 713-933-9067; FSC No: 60767; Empl: 87; *Sls. Mgr.*:  
K. Johnson

**SIGMA PLASTRONICS, INC.**, P.O. Box 649, Whitmore  
Lake, MI 48189, Tel: 810-231-2871, FAX: 810-231-2960;  
Empl: 3

**SIGMAPOWER, INC.**, FPBSM Industries, Inc., 19060 S.  
Dominguez Hills Dr., Rancho Dominguez, CA 90220-6404,  
Tel: 310-884-5200, FAX: 310-635-1956; FSC No: 55196;  
Empl: 150

**SIGMA SYSTEMS CORP.**, 3163 Adams Ave., San Diego,  
CA 92116, Tel: 619-283-3193, FAX: 619-283-6526; Empl:  
21; *Sls. Mgr.*: David L. Russell ..... **D-1211**

*Local Sales Offices & Reps*

|      |                                      |              |
|------|--------------------------------------|--------------|
| AZ   | Scottsdale, Allen Sls. Assocs.       | 602-443-1820 |
| CA   | San Carlos, Electronic Engrg. Assoc. | 415-583-2189 |
| IL   | Elgin, R.K. Elctms., Inc.            | 312-695-8552 |
| MA   | Wilbraham, N.E.D.T.                  | 413-596-8853 |
| NP   | Parsippany, Creative Tech. Sls.      | 201-335-7881 |
| EXJ  | Bristol, England, Wesser Elctms.     | 272-571-4040 |
| Intl | Palaiseau, France, Salies S.A.       | 920-40-10    |

**SIGNAL PROCESSING TECHNOLOGIES**, 4755 Forge  
Rd., Colorado Springs, CO 80907, Tel: 719-528-2300, FAX:  
719-528-2370; Empl: 57; *Sls. Mgr.*: Rick Mintie; *Dist. Mgr.*:  
Sharon McDaniel

**SIGNAL RESEARCH INC.**, River Road, P.O. Box 357,  
Titusville, NJ 08560, Tel: 609-737-1917



**SIGNAL SWITCH COMPANY**, 1791 Capital St., Ste. F, Corona, CA 91720, Tel: 909-736-5404, FAX: 909-736-5406; FSC No: 58468; Empl: 10; *Sls. Mgr.*: Stan Adams  
B-1479

*Local Sales Offices & Reps*  
CA Redlands, Esco Elctms. .... 909-335-1444, FAX: 909-335-2996

FL Orlando, E.G. Holmes & Assocs. .... 407-281-0067  
IL Berkley, ESA Tech. Mktg. .... 708-544-0120, FAX: 708-544-0266

MD Silver Springs, Instrucom Inc. .... 301-384-0700, FAX: 301-984-6202

MA Holliston, E.S.I. .... 508-429-2493, FAX: 508-881-4577  
NM Albuquerque, C.T. Carlsberg & Assocs. .... 505-899-2155, FAX: 505-899-2160

NY Kings Park, E Square Mktg. Assocs. .... Voice, FAX: 516-544-4788

OH Cleveland, Leading Edge Elctm. Sls. .... 216-232-4946, FAX: 216-232-9510

PA Holland, W.A. Drobile, Inc. .... 215-364-2501, FAX: 215-364-2051

Can Halifax, N.S., Gates Engrg. Ltd. .... 902-457-0805

**SIGNAL SYSTEMS INTERNATIONAL**, P.O. Box 470, Lavalette, NJ 08735, Tel: 908-793-4668, FAX: 908-793-4679; Empl: 7; *Sls. Mgr.*: W. Kinney



**FAX: 516-239-7208**

**SIGNAL TRANSFORMER CO., INC., Insilco Corporation**, 500 Bayview Ave., Inwood, NY 11696, Tel: 516-239-5777; FSC No: 08779; Empl: 450; *Sls. Mgr.*: John Marino  
A-2536-2556

Direct sales only. Inwood, NY 516-239-5777

*Local Sales Offices & Reps*  
Can Toronto, Ont., Calbrooke Mktg. .... 416-346-2551

**SIGNATRON**, A Subsidiary of Meteor Communications Corp., 110 Hartwell Ave., Lexington, MA 02173, Tel: 617-861-1500, TELEX: 299551 (RCA GLOBCOM), FAX: 617-863-8039; FSC No: 59371; Empl: 25; *Sls. Mgr.*: Joseph T. McNamara

**SIGNUM, INC.**, 80 Hovey Street, Watertown, MA 02172-3356, Tel: 617-926-3566, FAX: 617-926-0333; *Sls. Mgr.*: Thomas DiGennaro

**SIGNUM SYSTEMS CORP.**, 171 E. Thousand Oaks Blvd. No. 202, Thousand Oaks, CA 91360, Tel: 805-371-4608, ESYLNK: ATMAILSIGNAL, FAX: 805-371-4610; Empl: 15; *Sls. Mgr.*: Don Mull; *Dist. Mgr.*: J. Pennese

**SIKAMA INTERNATIONAL, INC.**, 301 B Donaldson Place, Santa Barbara, CA 93117, Tel: 805-683-6379, FAX: 805-683-6740; Empl: 10; *Sls. Mgr.*: Len Cardoza; *Dist. Mgr.*: Len Cardoza

**SILICONES UNLIMITED, INC.**, 3939 Roswell Rd., Ste. 250, Marietta, GA 30062, Tel: 404-578-1274, FAX: 404-578-8209

**SILICON GENERAL**, 11861 Western Ave., Garden Grove, CA 92641, Tel: 714-898-8121, TELEX: 692-411, TWX: 910-596-1804, FAX: 714-893-2570; FSC No: 34333; Empl: 250; *Sls. Mgr.*: Roger Holliday; *Dist. Mgr.*: Louise Toussaint

**SILICON POWER CUBE**, See Crydom Company

**SILICON SENSORS**, Old Hwy. 18 East, Dodgeville, WI 53533, Tel: 608-935-2707, TWX: 910-997-0072, FAX: 608-935-2775; FSC No: 54822; Empl: 30; *Sls. Mgr.*: Phil Lulewicz

**SILICON SYSTEMS INC.**, 14351 Myford Rd., Tustin, CA 92680, Tel: 714-731-7110, TWX: 910-595-2809

**SILICON TRANSISTOR CORP.**, Katrina Rd., Chelmsford, MA 01824, Tel: 508-256-3321, FAX: 508-250-1046; FSC No: 07256; Empl: 200; *Sls. Mgr.*: John J. Flynn; *Dist. Mgr.*: Fred Wheaton

**SILONEX INC.**, 331 Cornelia St., Plattsburgh, NY 12901, Tel: 518-561-3160, FAX: 514-747-3906; Empl: 110; *Sls. Mgr.*: Carol Larsen  
B-1339

*Local Sales Offices & Reps*  
FL Tampa, Standard Mktg. Inc. .... 813-933-5833  
IL Crystal Lake, Komac Entprs. Inc. .... 815-459-7456

KS Lenexa, Midtec Assocs. Inc. .... 913-541-0505  
MD Ellicott City, Nelson Elctms. Inc. .... 410-747-7887  
MA Topsfield, RFC-Elctms. SLS, Inc. .... 508-887-8545  
MI Livonia, Amtech Reps. .... 313-474-8300  
NJ Denville, T. J. Sls., Inc. .... 201-361-5352  
TX Lewisville, Silonex Inc. .... 214-317-7585

**SILTRONICS LTD.**, P.O. Box 456, Dover, MA 02030, Tel: 617-329-4068, FAX: 508-785-2265; Empl: 110; *Sls. Mgr.*: G. Urban



**FAX: 305-233-1990**

**SIMCO**, 21401 SW 127 Ave., Miami, FL 33177, Tel: 305-233-9900, 800-780-9090; Empl: 15  
C-1094-1096

*Local Sales Offices & Reps*  
CA San Diego, Qualtronic, Inc. .... 619-695-0118  
CT Bethel, Instr. Dynamics .... 203-743-5045  
GA Atlanta, Electro Sls. Inc. .... 404-394-1122  
IL Cary, Bob Burns & Assocs. .... 708-516-3322  
MD Baltimore, Muncy Sls. Assocs. .... 301-484-6376  
MA Wakefield, Instr. Dynamics Inc. .... 617-245-5100  
MN St. Paul, Heyda-Hanks Assoc. .... 612-484-8531  
NY Great Neck, F & F Metro Inc. .... 516-482-4080  
OR Beaverton, Luscombe Eng./NW .... 206-223-1541  
TX Dallas, Southwest Elctm. Ind. Inc. .... 214-690-9881  
WA Bellevue, Luscombe Eng./NW .... 206-223-1541  
WI Wauwatosa, Larsen Assocs. Inc. .... 414-258-0529  
Can Markham, Ont., Avtronics Ltd. .... 416-475-2024

**SIMCO CO.**, 2257 North Penn Rd., Hatfield, PA 19440, Tel: 215-822-2171, FAX: 215-822-3795; Empl: 150; *Sls. Mgr.*: Bob Heacock

**SIMMONDS PRECISION ENGINE SYSTEMS, BF Goodrich Aerospace**, P.O. Box 310, Norwich, NY 13815, Tel: 607-335-5000, FAX: 607-335-5440; Empl: 650; *Sls. Mgr.*: G. D. Cummings

**SIMPSON ELECTRIC CO.**, 853 Dundee Ave., Elgin, IL 60120, Tel: 708-697-2260, FAX: 708-697-2272; Empl: 550; *Sls. Mgr.*: Brian Gieles/Jack Femmel

**SIMTEK CORP.**, 1465 Kelly Johnson Blvd., Colorado Springs, CO 80920, Tel: 719-531-9444, FAX: 719-531-9481; Empl: 25; *Sls. Mgr.*: L.D. Hockaday; *Dist. Mgr.*: David Bowers

**SIMULEX CORPORATION**, 2832-C Walnut Avenue, Tustin, CA 92680, Tel: 714-730-1500, FAX: 714-730-7176; *Sls. Mgr.*: Dave Guss

**SINCLAIR RADIO LABORATORIES LTD.**, 85 Mary St., Aurora, Ont., Canada L4G 3G9, Tel: 416-727-0165, FAX: 416-727-0861; Empl: 130; *Sls. Mgr.*: J.C. Stratt

**SINGER DATA PRODUCTS, INC.**, 790 Maple Lane, Bensenville, IL 60106, Tel: 708-860-6500, FAX: 708-860-3672; Empl: 54; *Sls. Mgr.*: Shelly Kroan  
D-1107

*Local Sales Offices & Reps*  
NJ Haddonfield, Singer Data .... 609-429-6927

**SINOTECH MADE IN CHINA, INC.**, Technology Communications Group, Inc., 23590 Stafford Hill Drive, West Linn, OR 97068, Tel: 503-638-1000, FAX: 503-638-1002; Empl: 45; *Sls. Mgr.*: John Vezmar

**SIPEX CORP.**, 22 Linnell Circle, Billerica, MA 01821, Tel: 508-667-8700, FAX: 508-667-8310; FSC No: 33256; Empl: 300; *Sls. Mgr.*: Emil Verano, Jack Worthen; *Dist. Mgr.*: Beth Tebbetts

**SITCO ANTENNAS DIV. OF SIMPLICITY TOOL CORP.**, 10330 N.E. Marx St., Portland, OR 97220, Tel: 503-253-2000, FAX: 503-253-2009; Empl: 18; *Sls. Mgr.*: M. Bureker

**S.I. TECH.**, 901 N. Batavia Ave., Batavia, IL 60510, Tel: 708-232-8640, FAX: 708-232-8677; Empl: 17; *Sls. Mgr.*: Ramesh Sheth; *Dist. Mgr.*: George Hain  
B-1229

*Local Sales Offices & Reps*  
AL Saraland, Coastal Computer Comm. .... 205-679-8657  
FL Melbourne, Raynolds & Raynolds .... 407-259-7000  
MA Holliston, Olson Mktg. .... 508-429-8066  
MN Hibbing, Minntech Ec. .... 218-262-5228  
NM Albuquerque, S & S Technlg. .... 505-298-7177  
PA Canonsburg, Performance Metrics .... 412-942-3035

TN Memphis, Professional Technlg. .... 901-458-1228  
WA Bellevue, Interconnect Tech. .... 206-462-9508

*Local Distributors*  
AL Birmingham, Newark Ec. .... 205-942-4044  
AK Anchorage, Petocom Supp. .... 907-274-8525  
AR Little Rock, Carlton Bates .... 817-293-5558  
CA Los Angeles, Anixter .... 213-625-7828  
CA San Francisco, Anixter .... 415-543-6070  
CO Denver, Newark Ec. .... 303-373-4540  
FL Miami, Newark Ec. .... 800-631-4608  
IL Chicago, Newark .... 312-792-8233  
IL Skokie, Anixter .... 800-243-8344  
LA Baton Rouge, Anixter .... 504-922-7755  
MA Boston, Anixter .... 508-682-8870  
MI Detroit, Anixter .... 313-478-3900  
MO St. Louis, Newark Ec. .... 314-821-7466  
NY Hauppauge, Manchester Equip. Co. .... 516-294-5351  
OH Columbus, Hughes-Peters .... 614-294-6215  
PA Pittsburgh, South-Hills Ec. .... 800-245-6215  
TN Chattanooga, Horizon Ec. .... 615-899-8585  
TN Clarksville, Randolph, Hale, Matthews .... 615-647-2325

TX Houston, Anixter .... 713-406-9473  
VA Chantilly, Newark Ec. .... 703-471-7447  
WA Bellevue, Newark Ec. .... 206-641-9800  
WI Milwaukee, Anixter .... 414-355-0222  
Can London, Newark Ec. .... 519-685-4280  
Can Toronto, Anixter .... 416-568-8999

**SITRONIC GMBH**, Weissenhoffstr.14, 4221 Steyregg, Steyregg, Austria, Tel: 732-640-591-0, FAX: 732-640-592-5; Empl: 8; *Sls. Mgr.*: Ing. Franz Peter Kogl; *Dist. Mgr.*: Mrs. Michaela Eibl

**SIVERS IMA AB**, 11520 Jefferson Blvd., Culver City, CA 90230, Tel: 213-306-4248, FAX: 213-390-4350; Empl: 300; *Sls. Mgr.*: Marshall Cleland

**SJOBERG, C. & SON, INC.**, 415 Station St., P.O. Box 3583, Cranston, RI 02910, Tel: 401-461-8220, FAX: 401-467-5446; Empl: 20

**SKB COPORATION**, 434 W. Levers Place, Orange, CA 92667, Tel: 714-637-1252, FAX: 714-637-0491; FSC No: 61302; Empl: 170; *Sls. Mgr.*: Allan Evavold

**SKF CONDITION MONITORING**, 4141 Ruffin Rd., San Diego, CA 92123-1841, Tel: 619-496-3400, FAX: 619-496-3546; Empl: 150

**SKO-DIE, INC.**, 8050 Austin Ave., Morton Grove, IL 60053, Tel: 708-965-1130, FAX: 708-966-0322; FSC No: 7P145; Empl: 50; *Sls. Mgr.*: Richard J. Steininger

**SKY COMPUTERS, INC.**, Subsidiary of Analogic Corporation, 27 Industrial Ave., Chelmsford, MA 01824, Tel: 508-250-1920, TELEX: 499-1331, FAX: 508-250-0036; Empl: 75

**SKYDYNE DIV., AAR MFG.**, 21 River Rd., Port Jervis, NY 12771, Tel: 914-856-6655, 800-428-CASE, FAX: 914-856-8378; Empl: 110; *Sls. Mgr.*: M. Timney

**SKYWAY MAGNETICS**, 35372 Hwy 79, Warner Springs, CA 92086-9714, Tel: 619-782-3342; FSC No: 3612,5950,3677,7584,3670,3820; Empl: 12; *Sls. Mgr.*: John Grudziazd

**SLAUGHTER CO, R.E. Phelon CO.**, 801 Hailey St., Ardmore, OK 73401, Tel: 405-223-4773, TELEX: 697-5577, FAX: 405-226-5757; FSC No: 05611; *Sls. Mgr.*: T. Medrick  
D-1325

**SL CORPORATION**, 240 Tamal Vista Blvd. No. 110, Corte Madera, CA 94925, Tel: 415-927-1724, FAX: 415-927-2931; Empl: 40; *Sls. Mgr.*: Christopher Wilson; *Dist. Mgr.*: Christopher Wilson



**SLOAN**

**FAX: 818-768-8326**

**SLOAN CO.**, 7704 San Fernando Rd., Sun Valley, CA 91353-0367, Tel: 213-875-1123, TWX: 910-498-2250; FSC No: 08717; Empl: 25  
B-1182-1187

*Local Sales Offices & Reps*  
AL Huntsville, Remco .... 205-533-3763  
CA Montrose, Signal Entprs. Inc. .... 818-957-0640  
CA Mtn. View, Francisco & Assocs. .... 415-962-1717  
RI Warwick, Schumacher & Yarrington .... 401-884-5671



|                           |                                          |              |
|---------------------------|------------------------------------------|--------------|
| IL                        | Wheaton, CS Tech Sls.                    | 708-653-8126 |
| MD                        | Glen Burnie, Macrotech Assoc.            | 301-766-1111 |
| MN                        | Minneapolis, Loren Green Assoc. of Minn. | 612-571-6666 |
| MO                        | Shawnee Mission, Microtronics            | 913-262-1444 |
| NJ                        | Cherry Hill, Quality Comps.              | 609-428-6226 |
| NJ                        | Englewood Cliffs, E. Glass Assocs.       | 201-592-0200 |
| NY                        | Rochester, Tech. Comps.                  | 716-342-2406 |
| OH                        | Cleveland, Allan Scraga                  | 216-232-4946 |
| TX                        | Dallas, IBL Engrg. & Sls.                | 214-363-2921 |
| WA                        | Bellevue, Olson Tech Sls.                | 206-883-7792 |
| <b>Local Distributors</b> |                                          |              |
| AL                        | Huntsville, Powell Elctms.               | 205-529-2731 |
| CA                        | Anaheim, Deco Elctms.                    | 714-630-8252 |
| CA                        | Canoga Park, AMC Radio Hardware          | 818-998-2584 |
| CA                        | Costa Mesa, Powell Elctms.               | 714-754-1717 |
| CA                        | San Diego, Deco Elctms.                  | 619-693-1595 |
| CA                        | San Jose, Powell Elctms.                 | 408-943-9020 |
| CT                        | W. Hartford, Signal Ctr. Inc.            | 203-236-6005 |
| FL                        | Ft. Lauderdale, Peerless Radio Corp.     | 305-973-4141 |
| FL                        | Ft. Lauderdale, Powell Elctms.           | 305-979-5000 |
| CA                        | Los Angeles, Trebor Elctms.              | 213-641-8304 |
| FL                        | Pompano Beach, Peerless Radio            | 305-973-4141 |



**BRILL ELECTRONICS**  
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810 E. 10th St., Oakland, CA 94606  
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**SOLA ELECTRIC**  
(310) 452-8002  
1220 Olympic Bl., Santa Monica CA 90404

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[209] 441-1725



**[800] CAL-SWCH**

|    |                                   |              |
|----|-----------------------------------|--------------|
| KS | Wichita, Lee Prods.               | 316-264-2172 |
| MD | Annapolis, Powell Elctms.         | 301-880-3355 |
| IL | Arlington, MarLyn Elctms.         | 312-364-7880 |
| MA | Westborough, Powell Elctms.       | 617-366-6100 |
| NY | Lynbrook, Peerless Radio Corp.    | 516-593-2121 |
| NJ | Englewood, Powell Elctms.         | 201-568-5600 |
| OH | Dayton, D & D Packaging Co., Inc. | 513-233-8585 |
| OH | Solon, Repco                      | 216-248-8900 |
| OK | Tulsa, Altair Co.                 | 918-252-5781 |
| PA | Philadelphia, Powell Elctms.      | 215-365-1900 |
| TN | Memphis, GFI Sls.                 | 901-683-6252 |
| TX | Austin, The Altair Co.            | 512-837-4490 |
| NC | Cary, Powell Elctms.              | 919-467-1212 |
| TX | Houston, Altair Co.               | 713-462-3029 |
| TX | Irving, Powell Elctms.            | 214-258-6841 |
| TX | Richardson, Altair Co.            | 214-231-5166 |

**SLOAN TECHNOLOGY**, 602 E. Montecito St, Santa Barbara, CA 93103, Tel: 805-963-4431, FAX: 805-965-0522; Empl: 75; Sls. Mgr: Drew Osterman

**SL WABER, INC.**, 520 Fellowship Rd. Ste. 306, Mt. Laurel, NJ 08054, Tel: 609-866-8888, 800-257-8384, FAX: 609-866-1945; Empl: 370; Sls. Mgr: Edward Brown

**SMART RELAY TECHNOLOGY, INC.**, 97 Gannet Dr, Commack, NY 11725, Tel: 516-543-7161, FAX: 516-543-7162; Sls. Mgr: Ron Colino

**H H SMITH, NT-T Inc.**, 632 Arch St, Meadville, PA 16335, Tel: 814-724-6440, FAX: 814-333-1912; Empl: 300; Sls. Mgr: Larry Zeiser; Dist. Mgr: Larry Zeiser

## SMK CORPORATION

**FAX: 714-779-2790**

**SMK ELECTRONICS CORPORATION, U.S.A.**  
1901 Nancita Cir., Placentia, CA 92670, Tel: 714-996-0960; FSC No.: 637-7400; Empl: 219; Sls. Mgr: Gary Redman/T. Klymenko C-1461

### Local Sales Offices & Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Huntsville, Electro-Mech         | 205-880-0592 |
| CA | San Jose, Signet Tech. Sls.      | 408-453-0611 |
| CO | Denver, Donohue Sls. Co.         | 303-455-1719 |
| GA | Norcross, Electro-Mech.          | 404-447-6478 |
| IL | Parkridge, Metcom Assocs.        | 708-696-1490 |
| IN | Indianapolis, John H. Weaver Co. | 317-849-1659 |
| IN | Indianapolis, Lat-Tronics        | 317-846-5788 |
| MI | Southfield, M. Gottlieb Assocs.  | 313-358-4151 |
| MN | Eden Prairie, PWC Inc.           | 612-934-1409 |
| NY | Dewitt, Interactive Comp. Sls.   | 315-445-9600 |
| NC | Raleigh, Electro-Mech            | 919-790-9300 |
| PA | Flourtown, C.G.M. Inc.           | 215-233-0333 |
| RI | Warwick, Circuit-Pro, Inc.       | 401-738-7332 |
| TX | Plano, Ram Elctms.               | 214-578-5400 |
| WA | Bothel, Quadra Sls. Corp.        | 206-489-3428 |
| CA | Ottawa, Elctms. Sls. Profs.      | 613-567-8547 |

### Local Distributors

|     |                                              |              |
|-----|----------------------------------------------|--------------|
| AZ  | Phoenix, Aero-Space Southwest                | 602-582-2779 |
| AZ  | Tempe, Cypress Elctms.                       | 602-966-2256 |
| CA  | Agoura Hills, Cypress Elctms.                | 818-597-9491 |
| CA  | Costa Mesa, Cypress Elctms.                  | 714-549-2424 |
| CA  | San Diego, Cypress Elctms.                   | 619-535-0011 |
| CA  | Santa Clara, Cypress Elctms.                 | 408-980-8400 |
| CO  | Englewood, Cypress Elctms.                   | 303-792-5829 |
| CT  | Danbury, Pilgrim Elctms.                     | 203-792-7274 |
| FL  | Ft. Lauderdale, Comp. Assocs.                | 305-733-4100 |
| GA  | Smyrna, ERC Parts, Inc.                      | 404-984-0276 |
| IN  | Carmel, Altex Elctms.                        | 317-848-1323 |
| MI  | Grand Rapids, EC Elctms.                     | 616-530-0576 |
| MN  | Eden Prairie, Cypress Elctms.                | 612-934-2104 |
| MN  | Minneapolis, Aero-Space Computer Supps. Inc. | 612-884-4725 |
| PA  | Essington, Tri-Corn, Inc.                    | 215-259-7400 |
| TX  | Irving, Cypress Elctms.                      | 214-255-0065 |
| WA  | Bothel, Cypress Elctms.                      | 206-483-1144 |
| Can | Markham, Ont., Carsten Elctms.               | 416-477-7705 |
| Can | St. Laurent, Que., Carsten Elctms.           | 514-334-8321 |

**S-MOS SYSTEMS, INC.**, 2460 North First St, San Jose, CA 95131, Tel: 408-922-0200, FAX: 408-922-0238

**SMT EAST CORPORATION**, 200 Foxborough Blvd., Foxborough, MA 02035, Tel: 800-888-SMT1, FAX: 508-543-3515; Empl: 55; Sls. Mgr: Steven E. Dutton; Dist. Mgr: Kanan Technologies

**SNAPTITE/ALLIED**, 6424 W. Ridge Rd, Erie, PA 16506, Tel: 814-838-3190, FAX: 814-833-5439; Empl: 75; Sls. Mgr: Ed Kindlin

**SOFTAID, INC.**, 8300 Guilford Rd, Columbia, MD 21046, Tel: 410-290-7760, FAX: 410-381-3253; Empl: 8; Sls. Mgr: Al Saxon

**SOLA**, 1717 Busse Rd, Elk Grove Village, IL 60007-5666, Tel: 708-439-2800, FAX: 800-626-6269; Sls. Mgr: James Kimball; Dist. Mgr: Brian Crowe

**SOLAOYNE DIVISION**, Rogers Corporation, 7447 Conroy Ct, San Diego, CA 92111, Tel: 619-279-7872, FAX: 619-277-9105; FSC No.: 55655; Empl: 76; Sls. Mgr: Dale Reed; Dist. Mgr: Rick Jansen

**SOLAR ELECTRONICS CO., A. T. Parker, Inc.**, 901 N. Highland, Hollywood, CA 90038, Tel: 800-952-5302, TWX: 910-997-1921, FAX: 213-462-3721; FSC No.: 13222; Empl: 17; Sls. Mgr: Roy Talley

**SOLATRON ENTERPRISES**, 421 E. Beach Ave, Inglewood, CA 90302, Tel: 213-678-4981, FAX: 213-678-0103; Empl: 20

**SOLDER ABSORBING TECHNOLOGY (SAT), A Sprig Co.**, 144 Oakland St, Springfield, MA 01108, Tel: 800-628-8862, FAX: 413-788-0490; Empl: 3; Sls. Mgr: Joyce White

**SoLiCo/mec**  
Sorenson Lighted Controls, Inc.

**FAX: 1-800-275-7092**

**SOLICO/MEC**, 75 Locust St, Hartford, CT 06114, Tel: 203-527-3092 B-1812

### Local Sales Offices & Reps

|    |                                             |              |
|----|---------------------------------------------|--------------|
| AZ | Scottsdale, Advent Comps.                   | 602-481-0044 |
| CA | Tustin, Schoenbachler-Dobson Co.            | 714-544-1888 |
| CO | Denver, Advent Comps.                       | 303-455-1985 |
| IL | Shiller Park, WRB Inc.                      | 708-678-7888 |
| IN | Fort Wayne, Menze Sls.                      | 219-747-5616 |
| MD | Gaithersburg, Naudin Assoc., Southern, Inc. | 301-258-5040 |
| MA | Hopkinton, Berkshire Elctms.                | 508-435-9356 |
| MI | Dearborn, Pitcher-Poulin                    | 313-582-5450 |
| MN | Minneapolis, Technical Comps. Grp.          | 612-561-5556 |
| NJ | Burlington, VDE Elctms.                     | 609-387-9331 |
| NY | Great Neck, Pacent Engrg.                   | 516-482-4678 |
| NC | Siler City, Crossroads Elctms.              | 919-742-2372 |
| TX | Richardson, R.F. Kimball Co., Inc.          | 214-231-3447 |
| WI | Mequon, WM Bolles Inc.                      | 414-241-3320 |

### Local Distributors

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Anaheim, Electro Comps. Distr.      | 213-628-2844 |
| CA | Covina, Selecta-Switch Inc.         | 818-967-4123 |
| CA | Freemont, Kea Elctms.               | 415-651-2600 |
| CA | Gardena, California Switch & Signal | 213-538-9830 |
| CA | Hayward, Electro Comps. Distr.      | 415-783-5800 |
| CA | Los Angeles, Electric Switchs       | 213-660-1310 |
| CA | Sunnyvale, Target Elctms.           | 408-733-0384 |
| CA | Tustin, Western Switches & Controls | 714-259-8144 |

|    |                                 |              |
|----|---------------------------------|--------------|
| CA | Van Nuys, Wes-Garde Compts.     | 818-786-3724 |
| CT | Hartford, Wes-Garde Comps.      | 203-527-7705 |
| FL | Lakeland, Wes-Garde Comps.      | 813-644-7564 |
| GA | Tucker, CID Inc.                | 404-491-3143 |
| IL | Carol Stream, Wes-Garde Comps.  | 708-653-1460 |
| KS | Overland Park, Wes-Garde Comps. | 913-262-2718 |
| MA | Conant, Xenell                  | 617-828-2948 |
| MI | St. Clair Shores, Spemco Inc.   | 313-771-2700 |
| MN | Minneapolis, Carl Berquist Co.  | 612-835-2322 |
| MO | St. Louis, Wes-Garde Comps.     | 314-567-7776 |
| NH | Nashua, Wes-Garde Comps.        | 603-880-1971 |
| NJ | Mt. Laurel, Wes-Garde Comps.    | 609-778-8190 |
| OH | Westerville, Wes-Garde Comps.   | 614-885-0319 |
| OR | Wilsonville, Wes-Garde Comps.   | 503-682-1333 |
| SC | Columbia, Dixie Elctms. Inc.    | 803-779-5332 |
| TX | Dallas, Wes-Garde Comps.        | 214-357-1758 |
| WI | Grafton, Lakeview Elctms.       | 414-377-8260 |
| WI | Milwaukee, Progressive Image    | 414-321-4722 |

**SOLID STATE, INC.**, 46 Farrand St, Bloomfield, NJ 07003-2596, Tel: 201-429-8700, FAX: 201-429-8683; Empl: 110; Sls. Mgr: Tom Smith, Gen. Sls. Mgr.

**SOLID STATE DEVICES**, 14849 Firestone Blvd., La Mirada, CA 90638, Tel: 714-670-7734; FSC No.: 30043; Empl: 200; Sls. Mgr: Sharon Pfifer

### Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| AZ | Parker, Howard Assoc.              | 303-841-5755 |
| IN | Ft. Wayne, M/S Sls. & Assoc., Inc. | 219-436-3023 |
| CA | Los Angeles, Varigon               | 818-594-5080 |
| CO | Parker, Howard Assoc.              | 303-841-5755 |



FL St. Petersburg, Bolton Assoc., Inc. .... 813-864-2294  
 FL Pompano Bch, Bolton Assocs. .... 305-975-7245  
 IN Greenwood, M/S Sls. And Assocs., Inc. .... 317-881-0110  
 MN Bloomington, Bill Deming & Assoc. .... 612-888-5000  
 OH Dublin, M/S Sls. & Assoc., Inc. .... 201-288-7400  
 NJ Hasbrouck Heights, Comp. Tech. Sls. .... 201-288-7400  
 WA Seattle, J.J. Backer .... 206-285-1300  
 Can Oakville, Ont, Haltronics .... 800-387-7949

**SOLID STATE ELECTRONICS CORP.**, 18646 Parthenia St., Northridge, CA 91324, Tel: 818-993-8257, FAX: 818-993-8259; FSC No: 11911; Empl: 15



**Solid State Optronics, Inc.**

**FAX: 408-436-1392**

**SOLID STATE OPTRONICS**, 2 North First St., San Jose, CA 95113-1201, Tel: 408-436-1390 ..... **B-1597-1601**

**SOLID STATE RELAYS**, 71 Regent, Oak Brook, IL 60521, Tel: 708-932-1660, FAX: 708-887-9522

**SOLID STATE TESTING, INC.**, 56 Middlesex Tpke., Burlington, MA 01803, Tel: 617-272-0972, FAX: 617-273-4896; Empl: 150; Sls. Mgr: James Roberts; Dist. Mgr: James DiGiacomo

**SOLITRON DEVICES, INC., Semiconductor Group**, 3301 Electronics Way, West Palm Beach, FL 33407-4697, Tel: 407-848-4311, FAX: 407-863-5946; FSC No.: 21845; Empl: 275; Sls. Mgr: Margaret McNutt; Dist. Mgr: Joanne Crumbley ..... **A-2219**

**SOLITRON/MICROWAVE, Solitron Devices, Inc.**, 3301 Electronics Way, West Palm Beach, FL 33407-4697, Tel: 407-848-4311, FAX: 407-848-4311, Ext.116; FSC No.: 95077; Empl: 175; Sls. Mgr: Brian Jackson; Dist. Mgr: Brian Jackson ..... **A-2219**

## Local Sales Offices & Reps

AZ Tempe, Piper Sls. Co. .... 602-949-0048  
 CO Longmont, Piper Sls. Co. .... 303-443-5337  
 CT Danbury, Phase One .... 203-791-9042  
 CT Washington, Tri-Corn Assocs. .... 203-868-7027  
 IL Elgin, R.H. Sls. Corp. .... 708-888-0099  
 MA Burlington, Tri-Corn Assocs. .... 617-272-8163  
 MN Edina, Gibb Tech. Sls. .... 612-835-3370  
 MO Grandview, R.R. Burton & Assocs., Inc. .... 816-763-5385  
 NJ Marlton, Solitron Dvs., Inc. .... 609-988-5470  
 NM Albuquerque, Piper Sls. Co. .... 505-828-1300  
 NY Tappan, Solitron Dvs., Inc. .... 914-359-5050  
 NY Syracuse, Pitrronics, Inc. .... 315-455-7346  
 OH Centerville, Solitron Dvs., Inc. .... 513-438-3308  
 OR Beaverton, Quest Mktg., Inc. .... 503-641-7377  
 TX Austin, Barry Sls., Inc. .... 512-837-3616  
 TX Houston, Barry Sls., Inc. .... 713-784-5860  
 TX Plano, Zeus Engr. .... 214-423-2027  
 TX Richardson, Barry Sls., Inc. .... 214-234-0255  
 UT Salt Lake City, Piper Sls. Co. .... 801-466-9336  
 WA Renton, Quest Mktg., Inc. .... 206-228-2916  
 Can Montreal, Que., Cana-Rep Grp., Inc. .... 514-576-4477

## Local Distributors

CA Burbank, Elmo Semicond. .... 818-768-7400  
 CA Centerville, Koehike Comps., Inc. .... 513-435-5435  
 CA San Jose, All American Semicond., Inc. .... 408-943-1200  
 CA Torrance, All American Semicond., Inc. .... 213-320-0240  
 CA Walnut, 3893004trns. Corp. .... 714-594-1731  
 CT Killingworth, ACI Elctms. Corp. .... 203-663-3311  
 FL Miami, All American Semicond. .... 305-621-8282  
 FL Sunrise, All American Semicond., Inc. .... 305-572-7999  
 MD Rockville, All American Semicond., Inc. .... 301-251-1205  
 MA Wakefield, All American Semicond. .... 617-246-2300  
 MA Woburn, ACI Elctms. Corp. .... 617-935-7230  
 MN Eden Prairie, All American Semicond., Inc. .... 612-944-2151  
 NJ Totowa, ACI Elctms. Corp. .... 201-812-0507  
 NY Mt. Vernon, All American Semicond., Inc. .... 914-699-2224  
 NY Plainview, ACI Elctms. Corp. .... 516-293-6630  
 NY Ronkonkoma, All American Semicond., Inc. .... 214-231-5300  
 TX Richardson, All American Semicond., Inc. .... 214-231-5300

**SOLTEC CORP.**, 12977 Arroyo Street, San Fernando, CA 91340-1597, Tel: 818-365-0800, 800-423-2344, FAX: 818-365-7839; Empl: 40; Sls. Mgr: Byron G. McIntire

**SONICALL, INC.**, 3288 E. Willow Street, Signal Hill, CA 90806, Tel: 213-490-2143, FAX: 213-490-2145; Sls. Mgr: Frank Handler

**SONICOR INSTRUMENT CORP.**, 100 Wartburg Ave., Copiague, NY 11726, Tel: 516-842-3344, TELEX: 649494, FAX: 516-842-3389; FSC No: 31605; Sls. Mgr: Arthur Liers; Dist. Mgr: Arthur Liers

**SONNENSCHN BATTERIES INC.**, See East Penn Manufacturing

**SONOBOND ULTRASONICS INC.**, Inductotherm Industries, 887 S. Matlack St., West Chester, PA 19382, Tel: 610-696-4710, 800-323-1269, FAX: 610-692-0674; FSC No: 15882; Empl: 21; Sls. Mgr: Thomas Walraven; Dist. Mgr: Kyle Kimbro

**SONY COMPONENT PRODUCTS CO.**, Semiconductor Division, 108333 Valley View St., Cypress, CA 90630, Tel: 714-229-4197, FAX: 714-229-4271; Empl: 120; Sls. Mgr: Chuck Schouw, V.P.; Dist. Mgr: Mark Marrietta

**SOPHIA SYSTEMS & TECHNOLOGY**, 777 California Avenue, Palo Alto, CA 94304, Tel: 415-493-6700, 800-824-9294, FAX: 415-493-4648

**SORENSEN COMPANY**, 615 N. Railroad Ave., Paxton, IL 60957, Tel: 800-255-2024, FAX: 217-379-9216; Empl: 115; Sls. Mgr: Gerald J. Demirjian

**SORENSEN LIGHTED CONTROLS**, 75 Locust St., Hartford, CT 06114, Tel: 203-527-3092, 1-800-275-7089, FAX: 1-800-275-7092; Empl: 100; Sls. Mgr: Ted Ogorzalek ..... **B-1812**

## Local Sales Offices & Reps

CA Tustin, Schoenbacher-Dobson Co. .... 714-544-1888  
 AZ Scottsdale, Advent Comp. Corp. .... 602-481-0044  
 CA San Rafael, Wright Assocs. .... 415-457-9940  
 CO Denver, Advent Comps. .... 303-455-1985  
 FL Tampa, Florida Comp. Sls. .... 813-873-3622  
 IL Schiller Park, W.R.B. Inc. .... 708-678-7888  
 IN Fort Wayne, Menze Sls. .... 219-747-5616  
 KS Shawnee Mission, The Mertens Co. .... 913-432-9323  
 MD Gaithersburg, Naudian Assoc. Southern, Inc. .... 301-258-5040  
 MA Hopkinton, Berkshire Elctms. .... 508-435-9356  
 MI Dearborn, Pitcher-Poulin, Inc. .... 313-582-5450  
 MN Minneapolis, Tech. Comps. Grp. .... 612-561-5556  
 MO Clayton, Mertens Co. .... 314-993-6600  
 NJ Burlington, VDE Elctms. .... 609-387-9331  
 NJ Hazlet, Pacent Engr. .... 908-264-2202  
 NY Great Neck, Pacent Eng. Co. .... 516-482-4678  
 NC Siler City, Crossroads Elctms. .... 919-742-2372  
 TX Dallas, Glidden Electro Equip. .... 214-341-0610  
 WI Mequon, WM Bolles Assoc., Inc. .... 414-241-3320

## Local Distributors

AZ Phoenix, Minarik Elec. Co. .... 602-233-3000  
 CA Anaheim, Electro Comps. Dist. .... 213-628-2844  
 CA Covina, Selecta Switch .... 818-967-4123  
 CA Freemont, KEA Elctms. .... 510-651-2600  
 CA Gardena, California Switch & Signal .... 310-538-9830  
 CA Glendale, Minarik Elec. Co. .... 818-507-6445  
 CA Los Angeles, Electric Switches .... 213-660-1310  
 CA San Diego, Minarik Elec. Co. .... 619-560-6632  
 CA Santa Clara, Minarik Elec. Co. .... 408-727-0575  
 CA Tustin, Western Switches .... 714-259-8144  
 CA Van Nuys, Wes-Garde Comps. Grp. .... 818-786-3724  
 CO Commerce City, Minarik Elec. Co. .... 303-289-5800  
 CT Hartford, Wes-Garde Comp. Grp. .... 203-527-7705  
 FL Lakeland, Wes-Garde Comp. Grp. .... 813-644-7564  
 GA Tucker, CID, Inc. .... 404-491-3143  
 IL Carol Stream, Wes-Garde Comp. Grp. .... 708-653-1460  
 KS Overland Park, Wes-Garde Comps. .... 913-262-2718  
 MA Canton, Xenell .... 617-828-2948  
 MI St. Clair Shores, Specialties Mfg. .... 313-771-2700  
 MN Minneapolis, Carl Bergquist .... 612-835-2322  
 MO St. Louis, Wes-Garde Comp. Grp. .... 314-567-7776  
 NH Nashua, Wes-Garde Comp. Grp. .... 603-880-1971  
 NJ Mt. Laurel, Wes-Garde Comp. Grp. .... 609-778-8190  
 NY Woodside, Switches Unltd. .... 718-478-5000  
 OH Valley City, Roberts Elctms. .... 216-225-4646  
 OH Westerville, Wes-Garde Comps. Grp. .... 614-885-0319  
 OR Portland, Minarik Elec. .... 503-253-3402  
 SC Columbia, Dixie Elctms. .... 803-779-5332  
 TX Dallas, Wes-Garde Comp. Grp. .... 214-357-1768  
 TX San Antonio, Minarik Elec. .... 512-822-7097  
 WI Grafton, Lake-View Elctms. .... 414-377-8250  
 WI Milwaukee, Progressive Image .... 414-321-4722

Can Edmonton, Deskin Sls. .... 403-466-2106  
 Can Montreal, Deskin Sls. .... 514-331-2860  
 Can Ottawa, Deskin Sls. .... 613-228-1201  
 Can Toronto, Deskin Sls. .... 416-475-1412  
 Can Vancouver, Deskin Sls. .... 604-324-8343  
 Can Winnipeg, Deskin Sls. .... 403-466-2106

**SOR, INC.**, 14685 W. 105th St., Lenexa, KS 66215, Tel: 913-888-2630, TELEX: 4992783, FAX: 913-888-0767; Empl: 200; Sls. Mgr: Steve Highberger

**SOSHIN ELECTRIC CO., LTD.**, No. 18-18, 1-Chome Nakamagome, Ota-Ku, Tokyo, Japan, Tel: (03) 3775-9119, TELEX: 246-6377, FAX: (03) 3775-7092; Empl: 1150; Sls. Mgr: M. Chiba, Overseas Dept.

**SOUNDCOAT CO., INC.**, 1 Burt Dr., Deer Park, NY 11729-5701, Tel: 516-242-2200, FAX: 516-242-2246; Empl: 100; Sls. Mgr: Anthony Fischetti

**SOUTH AMERICAN DEVELOPMENT CORP.**, 29 Noxon Rd., Poughkeepsie, NY 12590, Tel: 914-452-1305, FAX: 914-452-2526; Empl: 80; Sls. Mgr: C. Healy

**SOUTHCO, INC.**, 210 N. Brinton Lake Rd., Concordville, PA 19331, Tel: 215-459-4000, FAX: 215-459-4012; Sls. Mgr: R. W. Dougherty

**SOUTHERN COMPUTER CORP.**, 141 W. Wieuca Rd., Ste. 300-B, Atlanta, GA 30342, Tel: 404-252-3340, FAX: 404-252-8929; Sls. Mgr: Ray Manley

**SOUTHERN ELECTRONIC, F-Dyne**, 726 So. Flower St., Burbank, CA 91502, Tel: 818-845-2458, FAX: 818-845-6348; Empl: 50; Sls. Mgr: John Levyssohn

**SOUTHRONICS, INC.**, 1265 Kennestone Circle, Marietta, GA 30066-6029, Tel: 404-429-1000, FAX: 404-424-2000; Sls. Mgr: David Coleman

**SOUTHWALL TECHNOLOGIES INC.**, 1029 Corporation Way, Palo Alto, CA 94303, Tel: 415-962-9111, FAX: 415-967-8713; FSC No: 9U775; Empl: 8; Sls. Mgr: Terri Harris, Prod. Mgr.

**SOUTHWESTERN NAMEPLATE & MFG. CO., INC.**, P.O. Box 35, Fourth St., Anna, TX 75003, Tel: 214-231-6663, 214-924-3289, 1-800-331-6600, FAX: 214-924-3090; Empl: 14

**SPACE ELECTRONICS, INC.**, 81 Fuller Way, Berlin, CT 06037, Tel: 203-829-0001, FAX: 203-829-0005; Empl: 26; Sls. Mgr: Richard Boynton

**SPECIAL ELECTRIC CO., INC.**, 3628 W. Pierce St., Milwaukee, WI 53215, Tel: 414-383-6370, TELEX: 910-262-3106, FAX: 414-383-6725; Empl: 40; Sls. Mgr: F. James Heider

**SPECIALIZED PRODUCTS COMPANY**, 3131 Premier Dr., Irving, TX 75063, Tel: 214-550-1923, TELEX: 732764, FAX: 214-550-1386; Empl: 39; Sls. Mgr: Paul Jones

**SPECIALTY CABLE CORPORATION**, P.O. Box 50, Wallingford, CT 06492, Tel: 800-456-SPEC, FAX: 203-269-5293; Empl: 72

**SPECIALTY COATING SYSTEMS, INC.**, 5707 W. Minnesota St., Indianapolis, IN 46241, Tel: 317-244-1200, FAX: 317-240-2073; Empl: 135; Sls. Mgr: Bill Yager



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**SPECIALTY ELECTRONICS, INC.**, 19200 Asheville Hwy, Landrum, SC 29356, Tel: 803-457-3824; Empl: 80; Sls. Mgr: Tim Smith; Dist. Mgr: Frank Pellatt  
**C=1462-1467; D=1475**

## Local Sales Offices &amp; Reps

PA Lewisberry, Specialty Elctns, Inc. .... 717-938-6171, FAX: 717-938-5910

**SPECO DIV., Components Specialties, Inc.**, 1172 Rte. 109, P.O. Box 624, Lindenhurst, NY 11757-0624, Tel: 516-957-8700, 800-645-5516, FAX: 516-957-9142; FSC No.: 516-957-9142; Empl: 29; Sls. Mgr: Eric Forman/Angela Carolan; Dist. Mgr: Mel Hulkower

**SPECTRACOM CORPORATION**, 101 Despatch Drive, East Rochester, NY 14445-1484, Tel: 716-381-4827, TELEX: 9103509587, FAX: 716-381-4998; Sls. Mgr: Edward F. O'Connor

**SPECTRAL INNOVATIONS**, 4633 Old Ironsides Dr., Ste. 401, Santa Clara, CA 95054-1807, Tel: 408-727-1314, FAX: 408-727-1423

**SPECTRA LUX CORP.**, 11825 120th Ave. NE, Kirkland, WA 98034, Tel: 206-823-6857, FAX: 206-821-3193; FSC No.: 51896; Empl: 120; Sls. Mgr: Woody Hertzog

**SPECTRAN CORP.**, 50 Hall Road, Sturbridge, MA 01566, Tel: 508-347-2261, FAX: 508-347-1211; FSC No.: 6V569; Empl: 150

**SPECTRA-PHYSICS LASERS INC.**, 1330 Terra Bella Ave., P.O. Box 7013, Mountain View, CA 94039-7013, Tel: 415-961-2550, 800-456-2552, TELEX: 348-488, FAX: 415-969-4084; Sls. Mgr: Bob Turcotte

**SPECTRASCAN, INC.**, 1110A Elkton Drive, Colorado Springs, CO 80907, Tel: 719-599-9254, FAX: 719-599-0815; Empl: 15; Sls. Mgr: Don Trutwin

**SPECTRA SONICS**, 3750 Airport Rd, Ogden, UT 84405, Tel: 801-392-7531; Empl: 35

**SPECTRA-STRIP**, See Amphenol Products



FAX: 909-923-6765

**SPECTROL ELECTRONICS CORP.**, 4051 Greystone Dr., Ontario, CA 91761, Tel: 909-923-3313; FSC No.: 02111; Empl: 200; Sls. Mgr: Rob Taffinger; Dist. Mgr: Rob Taffinger  
**A=2119-2121; B=2016-2017**

## Local Sales Offices &amp; Reps

AL Huntsville, DHR Mktg. .... 205-536-9775  
 AZ Scottsdale, JK Assocs. .... 602-990-8804  
 CA Huntington Beach, West Elctns. Sls. .... 714-375-5500  
 CA San Diego, Hadden & Assoc. .... 619-565-9444  
 CA San Jose, Silicon Valley .... 408-432-1967  
 CO Denver, West, Inc. .... 303-477-8180  
 CT North Haven, Kitchen & Kutchin .... 203-239-0212  
 FL Altamonte Springs, DHR Mktg. .... 407-331-1199  
 IL Naperville, Lancaster Sls. .... 708-527-1142  
 IA Cedar Rapids, Lowell-Kangas .... 319-362-9290  
 KS Shawnee Mission, Lowell-Kangas .... 913-631-3515  
 GA Duluth, DHR Mktg. .... 404-564-0529  
 MA Burlington, Kitchen & Kutchin .... 617-229-2660  
 MI Farmington Hills, Luebbe Sls. .... 313-489-8828  
 MN Bloomington, Murnco .... 612-854-4161  
 MO St. Louis, Lowell-Kangas .... 314-821-4050  
 NJ Haddonfield, Sunday-O'Brien .... 609-429-4013  
 NM Scottsdale, AZ, J.K. Assocs. .... 602-990-8804  
 NY Commack, E.R.A. .... 516-543-0510  
 NY Victor, Net Sls. .... 716-924-1844  
 NC Raleigh, DHR Mktg. .... 919-829-1970  
 OH Cincinnati, Luebbe Sls. .... 513-530-0600  
 OH Dayton, Luebbe Sls. .... 513-438-0490  
 OH Westlake, Luebbe Sls. .... 216-899-0071  
 OR Beaverton, Westmark Elctn, Inc. .... 503-641-8780  
 PA Pittsburgh, Luebbe Sls. .... 412-364-0490

TN Nashville, DHR Mktg. .... 205-722-0440  
 TX Richardson, Pro Comp. Sls. Co. .... 214-669-1500  
 VA Sterling, Beacon North .... 703-478-2480  
 WA Bellevue, Westmark Elctns. .... 206-454-1944  
 WI Lancaster, Lancaster .... 414-569-9084  
 Can Markham, Deskin Sls. .... 416-475-1412

## Local Distributors

AL Mobile, Newark Elctns. .... 205-471-6500  
 AZ Phoenix, Newark Elctns. .... 602-864-9905  
 AZ Phoenix, Sterling Elctns. .... 602-437-5565  
 AZ Scottsdale, Kent/Shelley-Ragon .... 602-998-0399  
 CA Costa Mesa, Cypress Elctns. .... 714-549-2424  
 CA Fountain Valley, Component Center .... 714-979-0433  
 CA Orange, Newark Elctns. .... 714-634-8224  
 CA Santa Clara, Cypress Elctns. .... 408-980-2500  
 CA Sunnyvale, Abacus Elctns. .... 408-732-2000  
 CO Denver, Newark Elctns. .... 303-757-3351  
 CO Englewood, Kent/Shelley-Ragon .... 303-762-0670  
 CO Englewood, Sterling Elctns. .... 303-792-3939  
 CT Wallingford, Cronin Elctns. .... 203-265-3134  
 FL Largo, Kent/Shelley-Ragon .... 813-545-0057  
 GA Norcross, Newark Elctns. .... 404-448-8500  
 ID Boise, Newark Elctns. .... 208-342-4311  
 IL Bensenville, Voyager .... 312-860-1300  
 IL Chicago, Newark Elctns. .... 312-784-5100  
 IL Rosemont, Advent .... 708-297-6200  
 IN Ft. Wayne, Newark Elctns. .... 219-484-0766  
 IN Indianapolis, Olive Elctns. .... 317-253-9065  
 IA Cedar Rapids, Advent Elctns. .... 319-363-0221  
 KS Lenexa, Sterling Elctns. .... 913-492-5406  
 MD Columbia, Newark Elctns. .... 301-964-4482  
 MA Needham, Cronin Elctns. .... 617-449-5000  
 MA Norwood, Gerber Elctns. .... 617-769-6000  
 MA Tewksbury, Armor Elctns. .... 508-640-1499  
 MA Waltham, Newark Elctns. .... 617-894-8050  
 MA Woburn, Sterling Elctns. .... 617-938-6200  
 MI Farmington Hills, Advent Elctns. .... 313-477-1650  
 MI Livonia, RS Elctns. .... 313-525-1155  
 MI Oakpark, Newark Elctns. .... 313-967-0600  
 MN Bloomington, Sterling Elctns. .... 612-831-2666  
 MN Fridley, Voyager .... 612-571-7766  
 MN Minneapolis, Newark Elctns. .... 612-331-6350  
 MN St. Paul, Kent/Shelley-Ragon .... 612-642-2828  
 MN St. Paul, Gopher Elctns. .... 612-483-3322  
 MO Independence, Kent/Shelley-Ragon .... 816-254-3410  
 MO Maryland Heights, Oliver Elctns. .... 314-997-7709  
 NJ Randolph, Mouser Elctns. .... 201-328-3322  
 NJ Union, Newark Elctns. .... 908-851-2290  
 NM Albuquerque, Sterling Elctns. .... 505-884-1900  
 NY Buffalo, Summit Distrs. .... 716-887-2800  
 NY Medford, Kent/Shelley-Ragon .... 516-447-2000  
 NC Charlotte, Newark Elctns. .... 704-535-5650  
 OH Akron, Akron Elctns. Supp. .... 216-762-8818  
 OH Cincinnati, Newark Elctns. .... 513-722-8181  
 OH Columbus, Electronics Mktg. .... 614-299-4161  
 OH Dayton, Stotts-Friedman .... 513-298-5555  
 OK Tulsa, Altair .... 918-252-5781  
 OR Portland, Radar Elec. .... 503-232-3401  
 OR Tualatin, Moore Elctns. .... 503-692-5333  
 PA N. Versailles, CMD .... 412-678-6020  
 PA Philadelphia, Shap Elctns. .... 215-969-3300  
 SC Columbia, Dixie Elctns. .... 803-779-5332  
 TN Knoxville, Newark Elctns. .... 615-588-6493  
 TN Nashville, Randolph & Rice .... 615-255-5601  
 TX Dallas, Sterling Elctns. .... 214-243-1600  
 TX Houston, Kent/Shelley-Ragon .... 713-780-7770  
 TX Houston, Sterling Elctns. .... 713-623-3900  
 TX Mansfield, Mouser Elctns. .... 817-483-0165  
 TX Richardson, Altair .... 214-231-5166  
 UT Salt Lake City, Sterling Elctns. .... 801-972-5444  
 VA Richmond, Sterling Elctns. .... 804-226-2190  
 WA Bellevue, Newark Elctns. .... 206-641-9800  
 WA Redmond, Kent/Shelley-Ragon .... 206-883-7200  
 WA Seattle, Radar Elctns. .... 206-282-2511  
 WV Charleston, Newark Elctns. .... 304-744-9022  
 WI Milwaukee, Newark Elctns. .... 414-453-9100

**SPECTRON ENGINEERING INC.**, 255 Yuma Ct., Denver, CO 80223, Tel: 303-733-1060, FAX: 303-733-2432; Empl: 9; Sls. Mgr: Zdzislaw Krzystek

**SPECTRON GLASS & ELECTRONICS, INC.**, 595 Old Willets Path, P.O. Box 13368, Hauppauge, NY 11788, Tel: 516-582-5600, TELEX: 968296; FSC No.: 57349; Empl: 70; Sls. Mgr: Bob Marshall

**SPECTRONICS CORP.**, 956 Brush Hollow Rd, Westbury, NY 11590, Tel: 516-333-4840/1-800-274-8888, TWX: 510-222-5877, FAX: 516-333-4859; Empl: 150; Sls. Mgr: David Ross



SPECTRUM CONTROL, INC.

FAX: 814-835-9000

**SPECTRUM CONTROL, INC.**, 6000 West Ridge Rd, Erie, PA 16506, Tel: 814-835-4000; FSC No.: 33095/5733; Empl: 604; Sls. Mgr: D. Reynolds; Dist. Mgr: D. Zaday  
**A=1677-1679; C=1468**

## Local Sales Offices &amp; Reps

AL Huntsville, EMA, Inc. .... 205-880-8050  
 AZ Tempe, Westrep .... 602-820-9932  
 CA Huntington Bch, West Elctn. Sls. .... 714-375-6500  
 CA Mountain View, RF Assocs. North .... 415-694-4972  
 CO Denver, Lindberg Co. .... 303-758-9033  
 CT North Haven, Kitchen & Kutchin .... 203-239-0212  
 FL Margate, EPM Corp. .... 305-977-0331  
 GA Atlanta, EMA, Inc. .... 404-448-1215  
 IL Crystal Lake, Spectrum Control, Inc. .... 815-477-2600  
 IA Cedar Rapids, T. L. Dowell & Assoc. .... 319-393-7920  
 KS Overland Park, T. L. Dowell & Assoc. .... 913-722-4242  
 MD Centerville, EMC Technlgts. .... 410-758-3510  
 MA Burlington, Kitchen & Kutchin .... 617-229-2660  
 MN Bloomington, Murnco .... 612-854-4161  
 MO St. Louis, T. L. Dowell & Assoc. .... 314-849-4234  
 NJ Brielle, EMC Technlgts. .... 908-223-6699  
 NY Victor, EMC Technlgts. .... 916-924-1844  
 NC Raleigh, EMA, Inc. .... 919-847-9800  
 OH Beachwood, Elctn. Salesmasters, Inc. .... 216-831-9555  
 TX Dallas, J.V. Schoonmaker Co. .... 214-349-1650  
 UT Salt Lake City, Lindberg Co. .... 801-484-8689  
 VA Sterling, EMC Technlgts. .... 703-450-7988  
 WA Redmond, EMG, Inc. .... 206-882-0962  
 Can Oakville, Ont, Haltronics, Ltd. .... 416-844-2121

**SPECTRUM CORP.**, 10048 Easthaven, Houston, TX 77075, Tel: 713-944-6200, 1-800-392-5050(Sls), FAX: 713-944-1290; Empl: 35; Sls. Mgr: Gary W. Liddell; Dist. Mgr: Jim B. Bishop

**SPECTRUM DEVICES, P.O. Box 1586**, Sugar Land, TX 77487-1586, Tel: 713-242-6417, FAX: 713-242-6415; FSC No.: 0RNT4; Empl: 7; Sls. Mgr: Sajid Rafique

**SPECTRUM SIGNAL PROC.**, 250 H St., P.O. Box 8110-25, Blaine, WA 98231-0025, Tel: 1-800-663-8986 (US), 604-421-5422, FAX: 604-421-1764; Empl: 48; Sls. Mgr: Brian Lowe; Dist. Mgr: Rod Jensen

## Local Sales Offices &amp; Reps

CA Mountain View, Spectrum Signal Processing .... 415-903-7355  
 MA Westborough, Spectrum Signal Processing .... 800-323-1842/508-366-7355  
 Can Burnaby, B.C., Spectrum Signal Processing .... 800-663-8986/604-421-5422

## Local Distributors

CA Mountainview, Thorson West .... 415-964-9300

**SPECTRUM TECHNOLOGY, INC., DATUM**, Incorporated, 749 Ward Drive, Santa Barbara, CA 93111, Tel: 805-964-7791, TWX: 910-334-1163, FAX: 805-683-3481; FSC No.: 32464; Empl: 70; Sls. Mgr: RL Waguespack

**SPEEDY CIRCUITS, PJC Technologies, Inc.**, 5332 Commerical Dr., Huntington Bch., CA 92649, Tel: 714-898-4901, FAX: 714-891-0607; Empl: 36; Sls. Mgr: Jon P. Herkins



FAX: 516-349-8699

**SPELLMAN HIGH VOLTAGE ELCTRNS. CORP.**, 7 Fairchild Ave., Plainville, NY 11803, Tel: 516-349-8686, TWX: 510-221-2155; Empl: 180; Sls. Mgr: Eric Marko; Dist. Mgr: Eric Marko  
**D=1922-1935**

## Local Sales Offices &amp; Reps

Can British Columbia, Broman Engrg. .... 604-254-6311

**SPEMCO SWITCHES**, 23425 Harper, Box 386, St. Clair Shores, MI 48080, Tel: 800-482-2828, FAX: 313-771-3491; Empl: 12; Sls. Mgr: Andrew Richardson



**SPERRY, A. W. INSTRUMENTS**, P.O. Box 9300, Smithtown, NY 11787, Tel: 516-231-7050, 800-645-5398, TELEX: 645104, FAX: 516-434-3128; Empl: 50; Sls. Mgr.: Dennis W. Carroll

**SPIRA MANUFACTURING CORP.**, 12721 Saticoy Street South, North Hollywood, CA 91605, Tel: 818-764-8222, FAX: 818-764-9880; FSC No.: 60050; Empl: 18; Sls. Mgr.: Lisa A Panzich

**SPIRICON, INC.**, 2600 North Main, Logan, UT 84321, Tel: 801-753-3729, TELEX: 296-465 SPIR UR, FAX: 801-735-5213; Empl: 15; Sls. Mgr.: Ed Danahy

**SPRAGUE**, 70 Pembroke Rd., Concord, NH 03301, Tel: 603-224-1961, FAX: 603-224-1430 ..... **A-1166-1167**

**SPRAGUE, Solid Tantalum Capacitors**, 678 Main Street, Sanford, ME 04073-0231, Tel: 207-324-4140, FAX: 207-324-7223; Sls. Mgr.: Bob Marlowe ..... **A-1166-1167**

**SPRAGUE, Wet & Foil Tantalum Capacitors**, 1600 Curran Hwy., North Adams, MA 01247-3987, Tel: 413-664-4431, FAX: 413-663-5079; Sls. Mgr.: Mike Duffy ..... **A-1166-1167**

**SPRAGUE**, 267 Lowell Rd., Hudson, NH 03051, Tel: 603-881-7200, 603-883-9774 (Mktg), FAX: 603-880-1910; Sls. Mgr.: Phil Brucato



**FAX: 516-746-1396**

**SPRAGUE-GOODMAN ELCTRNS., INC.**, 134 Fulton Ave., Garden City Pk., NY 11040, Tel: 516-746-1385; FSC No.: 52769; Empl: 80; Sls. Mgr.: Martin D. Markson ..... **A-1164-1165**

#### Local Sales Offices & Reps

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AL  | Huntsville, TMA                      | 205-883-7893 |
| AZ  | Mesa, System Sls. of Arizona         | 602-464-9989 |
| CA  | Cupertino, Dura Elctm. Sls.          | 408-255-2084 |
| CA  | Dana Point, Quattro Sls. Assocs.     | 714-493-1720 |
| CA  | Hermosa Bch., Quattro Sls. Assocs.   | 310-372-4221 |
| CA  | Moorepark, Quattro Sls. Assocs.      | 805-523-2978 |
| CA  | San Diego, Quattro Sls. Assocs.      | 619-581-3093 |
| CO  | Englewood, Cain Technlg.             | 303-220-8118 |
| CT  | KSA Connecticut                      | 203-524-5849 |
| FL  | Deerfield, TMA                       | 305-427-1090 |
| FL  | Largo, TMA                           | 813-531-4405 |
| FL  | Winter Park, TMA                     | 407-671-2245 |
| GA  | Norcross, TMA                        | 404-446-3565 |
| IL  | Wood Dale, B.N.I. Elctms.            | 708-595-9210 |
| IN  | FL Wayne, Denton Mktg., Inc.         | 219-486-0665 |
| IA  | Marion, M.S.B. Assocs.               | 319-377-6261 |
| KS  | Roeland Park, M.S.B. Assocs.         | 913-432-2131 |
| MD  | Manchester, Imagitron Sls.           | 410-374-5600 |
| MA  | Sudbury, KSA of New England          | 508-443-5881 |
| MI  | Brighton, A.P. Assocs.               | 313-229-6550 |
| MN  | Eden Prairie, Electro Mark Inc.      | 612-944-5850 |
| MO  | St. Charles, M.S.B. Assocs.          | 314-946-5577 |
| NJ  | Imagitron Sls. Co., Inc.             | 800-638-3592 |
| NM  | Albuquerque, SSA of New Mexico       | 505-889-2901 |
| NY  | Buffalo, Upstate Engrg. Sls.         | 716-632-0011 |
| NY  | Johnson City, Upstate Engrg. Sls.    | 607-729-0827 |
| NY  | Melville, R F Elctms. Sls. Co., Inc. | 516-420-8890 |
| NY  | Rochester, Upstate Engrg. Sls.       | 716-225-2383 |
| NC  | Raleigh, TMA                         | 919-872-5104 |
| OH  | Cincinnati, Stegman Blaine Mktg.     | 513-729-1969 |
| OH  | Cleveland, Stegman Blaine Mktg.      | 216-582-0003 |
| OH  | Stow, Stegman Blaine Mktg.           | 216-688-6421 |
| OH  | Vandalia, Stegman Blaine Mktg.       | 513-890-7975 |
| OK  | Tulsa, Delta Comps.                  | 918-592-7711 |
| OR  | Beaverton, Harry Levinson Co.        | 503-690-1312 |
| TX  | Seagoville, Delta Comps.             | 214-287-6333 |
| WA  | Seattle, Harry Levinson Co.          | 206-382-1300 |
| WI  | Waukesha, BNI Elctms.                | 414-784-3544 |
| PR  | Caroline, Elctm. Sls. Assocs.        | 809-762-6459 |
| Can | Halifax, Norgay Entrps.              | 902-864-4321 |
| Can | Montreal, Norgay Entrps.             | 514-932-3233 |
| Can | Ottawa, Norgay Entrps.               | 613-745-4051 |
| Can | Toronto, Ont., Norgay Entrps.        | 416-234-8966 |
| Can | Vancouver, Norgay Entrps.            | 604-940-8988 |

#### Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| AZ | Phoenix, Arizona Comps.      | 602-269-5655 |
| AZ | Tempe, TTI, Inc.             | 602-431-1191 |
| CA | Garden Grove, Natl. Elctms.  | 714-892-7749 |
| CA | Milpitas, Projections Unltd. | 408-942-1717 |
| CA | Milpitas, TTI, Inc.          | 408-946-5577 |
| CA | Mission Hills, TTI, Inc.     | 818-891-8885 |

|     |                                      |              |
|-----|--------------------------------------|--------------|
| CA  | San Diego, Neumann Elctms.           | 619-695-3005 |
| CA  | San Diego, Projections Unltd.        | 619-453-7900 |
| CA  | San Diego, TTI, Inc.                 | 619-748-2025 |
| CA  | Santa Ana, TTI, Inc.                 | 714-641-9393 |
| CA  | Tustin, Projections Unltd.           | 714-544-2700 |
| CO  | Denver, TTI, Inc.                    | 303-429-6806 |
| CT  | Wallingford, TTI, Inc.               | 203-284-7474 |
| FL  | Fl. Lauderdale, Bros. Elctms. of FL  | 305-561-6700 |
| FL  | Melbourne, New Yorker Elctms.        | 407-727-0955 |
| FL  | Orlando, TTI, Inc.                   | 407-859-1000 |
| GA  | Norcross, TTI, Inc.                  | 404-662-0911 |
| IL  | Schaumburg, TTI Inc.                 | 708-884-6500 |
| IN  | Indianapolis, Meunier Elctms., Supp. | 317-635-3511 |
| MD  | Columbia, TTI, Inc.                  | 301-995-1331 |
| MA  | Wilmington, TTI, Inc.                | 508-658-4700 |
| MN  | Minnetonka, TTI, Inc.                | 612-933-8555 |
| NJ  | Fairfield, Tri Start Elctms.         | 201-227-3500 |
| NJ  | Mt. Laurel, TTI, Inc.                | 609-234-6400 |
| NY  | Mamaroneck, New Yorker Elctms.       | 914-698-7600 |
| NY  | Ronkonkoma, Tri-Start Elctms.        | 516-737-2200 |
| NY  | Ronkonkoma, TTI, Inc.                | 516-737-2000 |
| OH  | Dayton, TTI Inc.                     | 513-898-8330 |
| OH  | Independence, TTI Inc.               | 216-328-9755 |
| TX  | Fl. Worth, TTI, Inc.                 | 817-595-3100 |
| TX  | Garland, J & S Elctms. Inc.          | 214-487-8808 |
| WA  | Redmond, TTI, Inc.                   | 206-882-0291 |
| WA  | Seattle, Kam Elctms.                 | 206-382-1300 |
| Can | Toronto, Ont., Norgay Entrps. Ltd.   | 416-234-8966 |

**S-PRODUCTS INC.**, 35 Kings Highway East, Fairfield, CT 06430, Tel: 203-331-9546, FAX: 203-335-2723; Empl: 4

**SQUARE D CO.**, Executive Plaza, Palatine, IL 60067, Tel: 708-397-2600, FAX: 708-397-8814; Empl: 17,000; Sls. Mgr.: D. Pugh, Sls. VP; Dist. Mgr.: K. Fairleigh, Distbn. Mktg. & Sls. VP

**SQUARE D COMPANY**, 1700 Sunshine Drive, Clearwater, FL 34625, Tel: 813-447-2511, FAX: 813-447-4662; Empl: 175; Sls. Mgr.: Nick Powers

**SQUARE D COMPANY**, Control Products, Hwy 64 East, Knightdale, NC 27545, Tel: 919-266-3671, FAX: 919-266-8393; Empl: 900

**SR ENGINEERING, BW/IP International, Inc.**, 13961 Nautilus Dr., Dept. E, Garden Grove, CA 92643, Tel: 714-554-4200, TELEX: 364412INTR-871, FAX: 714-265-0856; FSC No.: 21441

**SRT ELECTRO-OPTICS, INC.**, 756 Tom Martin Drive, Birmingham, AL 35211, Tel: 205-916-2929, FAX: 205-916-2903; Empl: 35

**SSAC INCORPORATED**, P.O. Box 1000, Baldwinville, NY 13027, Tel: 315-638-1300, FAX: 315-638-0333; Empl: 250; Sls. Mgr.: D. Carroll

**S SQUARED ELECTRONICS**, formerly ComTech Systems, Inc., 10 Halyard Rd., Valley Stream, NY 11581-2813, Tel: 516-791-1175; Empl: 10

**STACKBIN CORP.**, 29 Powder Hill Rd., PO Box 397, Lincoln, RI 02865, Tel: 401-333-1600, 800-333-1603, FAX: 401-333-1952; Empl: 50; Sls. Mgr.: Lisa Porazzo; Dist. Mgr.: Timothy J. O'Leary

**STACKPOLE COMPONENTS CO.**, See Ark-les Special Products Grp., Div. of Stackpole Switches

**STACKPOLE, MAGNET DIV.**, 700 Elk Ave., Kane, PA 16735, Tel: 814-837-0272, FAX: 814-837-0277; Sls. Mgr.: G.A. Olson, Mgr. Sls. & Mktg.

**STACO, INC.**, See Staco Transpower Components Corp. of America



**FAX: 513-253-1723**

**STACO ENERGY PRODUCTS CO.**, 301 Gaddis Blvd., Dayton, OH 45403, Tel: 513-253-1191; FSC No.: 83008; Empl: 146; Sls. Mgr.: Don Ruther ..... **A-2535; D-1936**

#### Local Sales Offices & Reps

|    |                                |              |
|----|--------------------------------|--------------|
| CA | Mtn. View, Westech             | 415-961-1422 |
| CO | Denver, EDS                    | 303-871-8865 |
| FL | Maitland, Hawkins Frederickson | 407-831-2474 |
| GA | Atlanta, Millar                | 404-634-3350 |
| IL | Chicago, Saffro                | 708-299-7680 |

|     |                         |              |
|-----|-------------------------|--------------|
| MA  | Lexington, Hathaway     | 617-861-7010 |
| MI  | Detroit, R.C. Nordstrom | 313-559-7373 |
| MO  | St. Louis, Dowell       | 314-849-4234 |
| NY  | Clarence, R.W. Mitscher | 716-759-2350 |
| NY  | Northport, LSC          | 516-266-5020 |
| NC  | Raleigh, Millar         | 919-828-8840 |
| OH  | Cleveland, Depco        | 216-442-6200 |
| OR  | Hillsboro, Turn-A-Round | 503-640-4661 |
| PA  | Philadelphia, ECSC      | 215-825-8610 |
| Can | Scarborough, Decade     | 416-439-9921 |

#### Local Distributors

|     |                                 |              |
|-----|---------------------------------|--------------|
| AL  | Birmingham, JLS                 | 205-322-2486 |
| CA  | San Francisco, Stevens Engrg.   | 415-588-9200 |
| CO  | Arvada, Denver Beta Wintronic   | 303-431-7161 |
| CT  | Wallingford, Sager Elctm. Supp. | 203-265-4600 |
| FL  | Miami, Elctm. Equip.            | 305-526-6060 |
| FL  | Tampa, EMSCO                    | 813-253-2684 |
| GA  | Atlanta, Cleveland Elec.        | 404-696-4550 |
| HI  | Honolulu, Victor Kim            | 808-841-6266 |
| IL  | Chicago, Newark Elctms.         | 312-792-8233 |
| IL  | Palatine, Ohm Elctms.           | 312-359-5500 |
| IN  | Indianapolis, Bell Inds.        | 317-875-8200 |
| KY  | Louisville, Peerless            | 502-637-7674 |
| LA  | Lafayette, Ralph's              | 513-234-4507 |
| MA  | Norwood, Gerber Elctms.         | 617-769-6000 |
| MA  | Somerville, Electro Sls.        | 617-666-0500 |
| MI  | Madison Hgts, Galco             | 313-542-9090 |
| MN  | Minneapolis, Elctm. Center      | 612-378-2442 |
| MS  | Jackson, Ellington Elctms.      | 601-355-0561 |
| MO  | St. Louis, Van Sickle Ind.      | 314-621-5000 |
| NJ  | Kenilworth, Federated Purchaser | 201-272-0505 |
| NY  | Hempstead, Broadline Elctms.    | 516-231-4100 |
| NC  | Winston-Salem, Kirkman Elctms.  | 919-722-9131 |
| OH  | Cincinnati, Hughes-Peters, Inc. | 513-351-2000 |
| OH  | Dayton, Stotts Friedman Elctms. | 513-298-5555 |
| PA  | Drexel Hill, Kass Elctms.       | 215-449-2300 |
| SC  | Charleston, Wholesale Elctms.   | 803-722-2634 |
| TN  | Knoxville, Indl. Elctms.        | 615-573-7135 |
| TN  | Nashville, Randolph & Rice      | 615-255-5602 |
| TX  | Fl. Worth, Allied Elctms.       | 817-595-3500 |
| TX  | San Antonio, Sherman Elctms.    | 210-224-1001 |
| VA  | Charlottesville, VA Elctms.     | 804-296-4184 |
| WA  | Seattle, Radar Elec.            | 206-282-2511 |
| WI  | Milwaukee, Marsh Elctms.        | 414-475-6000 |
| Can | Scarborough, Decade Elctms.     | 416-439-9921 |

**STACOSWITCH**, 1139 Baker St., Costa Mesa, CA 92626, Tel: 714-549-3041, FAX: 714-549-0930; FSC No.: 12522; Multiple; Empl: 80; Sls. Mgr.: D. Sugg

**STACO TRANSPOWER, Components Corp. of America**, 610 W. 6th St., Mt. Carmel, IL 62863, Tel: 618-262-5555, FAX: 618-263-3150; FSC No.: 83008; Empl: 75; Sls. Mgr.: Lori Jeffries

**STAFFALL INC.**, 1468 Elmwood Ave., Cranston, RI 02910, Tel: 401-461-5554, TWX: 710-381-6964; Empl: 25

**STAG MICROSYSTEMS INC.**, 1600 Wyatt Drive, Santa Clara, CA 95054, Tel: 408-988-1118, 1-800-227-8836, FAX: 408-988-1232; Empl: 120; Sls. Mgr.: Bob Herford; Dist. Mgr.: Bob Herford

**STAINLESS, INC.**, 210 S. 3rd St., N. Wales, PA 19454, Tel: 215-699-4871, TWX: 510-661-8097, FAX: 215-699-9597; Empl: 80; Sls. Mgr.: Owen F. Ulmer

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# STANCOR

**FAX: 219-722-5189**

**STANCOR, White-Rodgers**, 131 Godfrey St., Logansport, IN 46947, Tel: 219-722-2244; FSC No.: 80089; Empl: 400; *Sls. Mgr.*: Richard K. Noel; *Dist. Mgr.*: Judi Carpenter, Prod. Mgr. .... **A-2558-2564; B-1602-1604; D-1937**

## Local Sales Offices & Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Athens, E.M.F.                   | 205-233-2947 |
| AZ | Scottsdale, Suntech Sls.         | 602-860-8262 |
| CA | Irvine, Groh Assocs.             | 714-837-9871 |
| CA | Los Gatos, Shur Sls.             | 408-399-7487 |
| CO | Denver, West, Inc.               | 303-477-8180 |
| CT | Waterbury, Cannon Assocs.        | 203-597-0240 |
| FL | Tampa, Uni-Rep                   | 813-681-3477 |
| GA | Atlanta, E.M.F.                  | 404-948-6023 |
| IL | Chicago, Joel Wasserman Assocs.  | 708-256-3566 |
| IN | Indianapolis, Century Tech. Sls. | 219-329-0447 |
| IA | Cedar Rapids, Lowell Kangas      | 319-362-9290 |
| KS | Shawnee, Lowell Kangas           | 913-631-3515 |
| MD | Sykesville, D.J.C.               | 301-795-7020 |
| MO | Bloomington, Mumco               | 612-854-4161 |
| MO | St. Louis, Lowell Kangas         | 314-821-4050 |
| NH | Nashua, Cannon Assoc.            | 603-598-4766 |
| NM | Albuquerque, Marino Elec.        | 505-292-0007 |
| NY | Rochester, Sennetec              | 716-425-3954 |
| NC | Lillington, E.M.F.               | 919-867-6221 |
| OH | Beachwood, Elctm. SalesMasters   | 216-831-9555 |
| OR | Beaverton, Procomp Tech.         | 503-292-8201 |
| PA | Philadelphia, D.J.C.             | 215-334-4533 |
| RI | Barrington, Cannon Assocs.       | 401-245-0850 |
| TX | Richardson, Pro-Comp Sls.        | 214-669-1500 |

**STANDARD CONDENSER CORP.**, 8151 N. Ridgeway, Skokie, IL 60076, Tel: 708-675-3133, FAX: 708-675-3709; FSC No.: 97419; *Sls. Mgr.*: B. P. McLean

**STANDARD CRYSTAL CORPORATION**, 9940 E. Baldwin Pl, El Monte, CA 91731, Tel: 818-443-2121, FAX: 818-443-9049; FSC No.: 30149; Empl: 45; *Sls. Mgr.*: Kathy Allie; *Dist. Mgr.*: Kathy Allie .... **A-1481**

## Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| AZ | Phoenix, Suntech                   | 602-860-8262 |
| CA | Fallbrook, Chilote Assoc.          | 619-728-7678 |
| CA | Huntington Beach, Force 1 Sls.     | 714-963-3949 |
| CA | Sunnyvale, ESCO Assoc.             | 408-745-1410 |
| FL | Winter Pl., HHP Assoc.             | 407-740-0320 |
| IN | Ft. Wayne, M/S Sls.                | 219-436-3023 |
| MI | Grand Rapids, R.P. Urban & Assocs. | 616-245-0511 |
| MN | Afton, Real Elctms.                | 612-436-1950 |

## Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| AL | Huntsville, Resistacap       | 205-883-4270 |
| CA | Carlsbad, Aegis Elctm. Grp.  | 619-729-2026 |
| CA | Irvine, Kelex Elctms.        | 714-863-1230 |
| CA | Milpitas, Sierra West        | 408-945-1050 |
| FL | Boca Raton, NRC Elctms.      | 407-241-8600 |
| FL | Largo, Elctm. Precepts of FL | 813-544-3636 |
| FL | Melbourne, Dove Elctms.      | 407-242-6916 |
| GA | Norcross, NRC Elctms.        | 404-729-0411 |
| IN | Indianapolis, Mar            | 317-633-6699 |
| MA | Woburn, First Frequency      | 617-935-3885 |
| MI | Wyoming, EC Elctms.          | 616-530-0576 |
| NV | Las Vegas, Klesub Elctms.    | 702-733-0024 |
| NJ | Edison, Dove Elctms.         | 908-738-0321 |
| NJ | Fairfield, Tri Start         | 201-229-3500 |
| NY | E. Setauket, Dove Elctms.    | 508-232-9825 |
| NY | Ronkonkoma, TRI Start        | 516-737-2200 |
| TX | Richardson, Ewing Elctms.    | 214-231-6725 |
| VA | Vienna, Dove Elctms.         | 703-893-1821 |

**STANDARD ENVIRONMENTAL SYSTEMS, INC.**, 383 Minnissink Rd., Totowa, NJ 07512, Tel: 201-256-2200, FAX: 201-256-2820; Empl: 26

**STANDARD GRIGSBY, INC., FLINT INDUSTRIES**, See OakGrigsby, Inc.

**STANDARD GRIGSBY INC., W. Gunther GMBH**, Vinsberger Strasse 51, D 8500 Nurnberg 82, West Germany, Tel: 0911-65521, TELEX: 622351, FAX: 0911/6552-239

**STANDARD INSERT CO., Penn Engrg. & Mfg. Corp.**, 5190 Old Easton Rd., Danboro, PA 18916, Tel: 215-766-0960, FAX: 215-766-0962; Empl: 7; *Sls. Mgr.*: Ed Soorikian

**STANDARD MAGNETIC CORP.**, 7231 Garden Grove Blvd., Ste. D, Garden Grove, CA 92641, Tel: 714-379-5671, FAX: 714-379-5673; FSC No.: 51103; Empl: 20; *Sls. Mgr.*: Satish Jain

**STANDARD MICROSYSTEMS**, 80 Arkay Dr., Hauppauge, NY 11788, Tel: 516-273-3100, FAX: 516-273-3123; FSC No.: 53848; Empl: 500

**STANDARD REFERENCE LABS, INC.**, See Koep Precision Standards, Inc.

**STANDARD WIRE & CABLE CO.**, 1959 E. Cashdan St., Rancho Dominguez, CA 90220, Tel: 310-609-1811, 800-326-0006, TELEX: 65-3423, ESYLNK: 62931655, FAX: 310-609-1862; Empl: 50; *Sls. Mgr.*: Dan Varvais; *Dist. Mgr.*: Jerry Gaither

## Standex Electronics


**FAX: 513-871-3779**

**STANDEX ELECTRONICS**, **Standex International**, 4538 Camberwell Rd., Cincinnati, OH 45209, Tel: 513-871-3777; FSC No.: 56402; Empl: 450; *Sls. Mgr.*: Charles C. Johnson, VP Sls. .... **A-1290-1295; B-1605, 1810-1811**

## Local Sales Offices & Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AL | Huntsville, R. W. Mitscher Co.          | 205-464-0745 |
| AZ | Tempe, Gassner & Clark                  | 602-968-9037 |
| CA | Granada Hills, C & W Comp. Sls.         | 818-368-4032 |
| FL | Lutz, R.W. Mitscher Co.                 | 813-948-2351 |
| FL | Tequesta, R.W. Mitscher Co.             | 407-575-4485 |
| GA | Lawrenceville, R. W. Mitscher Co.       | 404-923-3239 |
| IL | Arlington Hgts., Brainard-Nielson Mktg. | 312-437-2700 |
| IN | Granger, Gregory Sls. Co.               | 219-272-9626 |
| KS | Olathe, G.M. Brown & Assoc.             | 913-829-3086 |
| MD | Laurel, R. W. Mitscher Co., Inc.        | 301-498-6090 |
| MA | Sudbury, KSA of New England             | 617-443-5881 |
| MI | Detroit, R.P. Urban & Assoc.            | 313-535-2355 |
| MI | Grand Rapids, R.P. Urban & Assoc.       | 616-245-0511 |
| MN | Bloomington, Jay Borman Sls. Co.        | 612-922-7909 |
| MO | Florissant, G.M. Brown & Assoc.         | 314-839-3600 |
| NJ | Woodbridge, Jade Mktg.                  | 201-750-2998 |
| NY | Binghamton, R.W. Mitscher Co., Inc.     | 607-724-6561 |
| NY | Clarence, R. W. Mitscher Co., Inc.      | 716-759-2350 |
| NY | Rochester, R. W. Mitscher Co., Inc.     | 716-227-0839 |
| NC | Davidson, R.W. Mitscher Co., Inc.       | 704-896-7434 |
| NC | Raleigh, R. W. Mitscher Co., Inc.       | 919-848-0941 |
| OH | Dayton, J. C. Hofstetter Co.            | 513-296-1010 |
| OH | Medina, J. C. Hofstetter Co.            | 216-241-4880 |
| OR | Portland, Components Technlg.           | 503-292-1518 |
| PA | Wynnewood, Metz-Jade Assocs., Inc.      | 215-896-7300 |
| TN | Johnson City, R. W. Mitscher Co., Inc.  | 615-929-7258 |
| TX | Plano, B & R Elctm. Sls. Corp.          | 214-985-0028 |
| VA | Richmond, R. W. Mitscher Co., Inc.      | 804-222-5425 |
| WI | Manitowoc, Brainard-Wilson Mktg.        | 414-682-1201 |

## Standish LCD

*Division of Standish Industries, Inc.*
**FAX: 414-648-1001**

**STANDISH INDUSTRIES, Standish LCD Div.**, W7514 Hwy V, Lake Mills, WI 53551, Tel: 414-648-1000; FSC No.: OS145; Empl: 250; *Sls. Mgr.*: Richard D. Barbieri .... **B-1118**

## Local Sales Offices & Reps

|    |                                              |              |
|----|----------------------------------------------|--------------|
| CA | Anaheim, Gabriel & Assocs.                   | 714-666-0660 |
| CA | Mountain View, Straube Assocs.               | 415-969-6060 |
| CO | Boulder, Design Technlg. Sls.                | 303-440-5121 |
| CT | Branford, Coakley, Boyd & Abbott, Inc.       | 203-481-2218 |
| FL | Tampa, Bob Dean, Inc.                        | 813-969-2875 |
| GA | Atlanta, Wallace Elctm. Sls.                 | 404-634-3159 |
| IL | Skokie, Indl. Rep.                           | 708-967-8430 |
| IN | Carmel, TMC                                  | 317-844-8462 |
| IN | Ft. Wayne, TMC                               | 219-432-5553 |
| IA | Davenport, Rush & West                       | 319-388-9494 |
| KS | Olathe, Rush & West                          | 913-764-2700 |
| KY | Louisville, TMC                              | 502-245-7411 |
| MD | Gaithersburg, Naudain Assocs. Southern, Inc. | 301-258-5040 |
| MA | Framingham, Coakley, Boyd & Abbott, Inc.     | 508-820-0800 |
| MI | Farmington Hills, J.L. Montgomery Assocs.    | 313-489-0099 |
| MN | Minneapolis, R-J, Inc.                       | 612-866-3661 |

|     |                                          |              |
|-----|------------------------------------------|--------------|
| MO  | St. Louis, Rush & West                   | 314-965-3322 |
| NJ  | Hackensack, Coakley, Boyd, Abbott, Metro | 201-440-4114 |
| NJ  | Marlton, Naudain Assocs.                 | 609-983-5300 |
| NY  | Ithaca, Bob Dean, Inc.                   | 607-257-1111 |
| NC  | Kernersville, Wallace Elctm. Sls.        | 919-996-2742 |
| OH  | Centerville, Bear Mktg.                  | 513-436-2061 |
| OH  | Richfield, Bear Mktg.                    | 216-659-3131 |
| TX  | Austin, Procomp Sls. Co.                 | 512-331-0800 |
| TX  | Hurst, Procomp Sls. Co.                  | 817-589-0336 |
| TX  | Richardson, Procomp Sls. Co.             | 214-669-1500 |
| WI  | Brookfield, Indl. Rep.                   | 414-789-9393 |
| Can | Oakville, Ont., Haltronics Ltd.          | 416-844-2121 |

## Local Distributors

|     |                                |              |
|-----|--------------------------------|--------------|
| AZ  | Phoenix, Force Elctms.         | 602-437-1060 |
| AZ  | Tempe, Cypress Elctms.         | 602-966-2256 |
| CA  | Milpitas, Zack Elctms.         | 408-942-5432 |
| CA  | San Diego, Cypress Elctms.     | 619-535-0011 |
| CA  | Sanita Clara, Cypress Elctms.  | 408-980-2500 |
| CO  | Littleton, Displays Plus Co.   | 303-730-7333 |
| CT  | Danbury, Heiland Elctms.       | 203-797-8600 |
| IL  | Palatine, Ohm Elctms.          | 708-359-5500 |
| IN  | Ft. Wayne, Bell Inds.          | 219-423-3422 |
| IN  | Indianapolis, Bell Inds.       | 317-875-8200 |
| MA  | Hingham, Sager Elec. Supp.     | 617-749-6700 |
| MA  | Wilmington, Heiland Elctms.    | 508-657-4870 |
| MI  | Grand Rapids, Caldwell Elctms. | 616-698-7400 |
| MI  | Saginaw, Shand Elctms.         | 517-753-9900 |
| MN  | Minneapolis, Voyager Elctms.   | 612-571-7766 |
| NJ  | W. Berlin, General Comps, Inc. | 609-768-6767 |
| NM  | Albuquerque, Bell Inds.        | 505-292-2700 |
| NY  | Buffalo, Summit Distr.         | 716-887-2800 |
| NY  | Rome, Rome Elctms.             | 315-337-5400 |
| OH  | Dayton, Bell Inds.             | 513-453-8660 |
| OH  | Solon, Repco                   | 216-248-8900 |
| OK  | Tulsa, Radio, Inc.             | 918-587-9123 |
| OR  | Portland, Radar Elec.          | 503-232-3404 |
| PA  | McKean, Advacom                | 814-476-7774 |
| TX  | Dallas, Harrison Equip. Co.    | 214-239-2750 |
| TX  | Ft. Worth, Allied Elctms.      | 817-595-3500 |
| TX  | Stafford, Harrison Equip.      | 713-879-2700 |
| TX  | Stafford, Southwest Elctms.    | 713-240-4000 |
| WA  | Seattle, Radar Elec. Co.       | 206-282-2511 |
| WI  | Mequon, Taylor Elec.           | 414-241-4321 |
| Can | Markham, Ont., Semad Elctms.   | 416-475-8500 |
| Can | Ottawa, Ont., Semad Elctms.    | 613-727-8325 |
| WA  | Bellevue, Testco, Inc.         | 206-454-7422 |

**STANFORD RESCH. SYS., INC.**, 1290 D. Reamwood Ave., Sunnyvale, CA 94089, Tel: 408-744-9040, FAX: 408-744-9049; *Sls. Mgr.*: Daniel R. Melick

**STANFORD TELECOMMUNICATIONS, INC.**, 2421 Mission College Blvd., Santa Clara, CA 95056, Tel: 408-748-1010, TWX: 910-339-9531, FAX: 408-980-1066; FSC No.: 61362; Empl: 900; *Sls. Mgr.*: Chuck Frank

**STANGENES INDUSTRIES, INC.**, 1052 East Meadow Circle, Palo Alto, CA 94303, Tel: 415-493-0814, FAX: 415-595-9926; FSC No.: 62709; Empl: 61; *Sls. Mgr.*: Magne Stangenes

**STANLEY ELECTRONICS DIV.**, 250 E. Sandford Blvd., Mt. Vernon, NY 10550, Tel: 914-699-2000; FSC No.: 61544; Empl: 12


**FAX: 714-222-0555**

**I I STANLEY CO., INC.**, 2660 Barranca Pkwy., Irvine, CA 92714, Tel: 1-800-LED-LCD1; Empl: 450; *Sls. Mgr.*: Bill Roth .... **B-1130, 1188-1189**

## Local Sales Offices & Reps

|    |                                           |              |
|----|-------------------------------------------|--------------|
| AZ | Scottsdale, B.S.E.                        | 602-483-0373 |
| CA | Irvine, Gravley & Assoc., Inc.            | 714-852-9994 |
| CA | San Jose, Signet                          | 408-453-0611 |
| CO | Boulder, Stratford Grp.                   | 303-530-3194 |
| FL | Lighthouse Pl., Jack Krutek Assoc.        | 305-783-2501 |
| IL | Berkeley, ESA Tech. Mktg.                 | 708-544-0120 |
| IN | Indianapolis, EMCI                        | 317-921-3450 |
| KS | Overland Park, Mink Assoc.                | 913-341-8309 |
| MD | Highland, Penn Star Elctms.               | 301-854-2308 |
| MA | N. Reading, Alpha-Omega Sls.              | 508-664-1118 |
| MO | Bridgeton, Mink Assoc.                    | 314-291-5454 |
| NJ | Long Valley, Paul Sweeney Co., Inc.       | 908-852-1434 |
| NY | N. Syracuse, Entec Grp. Inc.              | 315-458-7936 |
| NC | Greensboro, Arthur, Harris & Assoc., Inc. | 919-275-3030 |
| OH | Lexington, EMCI                           | 414-884-3639 |
| PA | Penn Star Elctms.                         | 301-854-2308 |



TX Dallas, Norcom ..... 214-386-4888  
 UT Sandy, First Source ..... 801-943-6894

## Local Distributors

AL Huntsville, Future Elctms. .... 205-830-2322  
 AZ Tempe, Cypress Elctms. .... 602-966-2256  
 CA Santa Clara, Cypress Elctms. .... 408-980-2500  
 CO Littleton, Indelco, Inc. .... 303-795-3431  
 CT Hartford, Wesgarde Comps. Grp. .... 203-527-7705  
 FL Lakeland, Wesgarde Comps. Grp. .... 813-644-7564  
 GA Norcross, Milgray Elctms. .... 404-446-9777  
 IL Woodale, NEP Elctms. .... 708-595-8500  
 IN Carmel, Altex ..... 317-848-1323  
 IA Cedar Rapids, DEE Elctms. Inc. .... 319-365-7551  
 KS Overland Park, Milgray Elctms. .... 913-236-8800  
 MD Columbia, Future Elctms. .... 410-290-0600  
 MA Bolton, Future Elctms. .... 508-779-3000  
 MI Livonia, Future Elctms. .... 313-261-5270  
 MN Roseville, Chris Elctms. .... 612-631-2647  
 MO St. Louis, Wesgarde Comps. Grp. .... 314-567-7776  
 NH Nashua, Wesgarde Comps. Grp. .... 603-880-1971  
 NJ Mt. Laurel, Wesgarde Comps. Grp. .... 609-778-8190  
 NY Farmingdale, Milgray Elctms. .... 516-391-3000  
 NC Concord, Future ..... 704-455-9030  
 OH Westerville, Wes Garde Comps. .... 614-885-0319  
 OR Portland, Cypress Elctms. .... 503-223-8900  
 PA N. Versailles, CMD Elctms. .... 412-678-6020  
 TX Houston, Kent Elctms. .... 713-789-7770  
 UT Murray, Milgray Elctms. .... 801-261-2999  
 WA Redmond, Priebe Elctms. .... 206-881-2363  
 WI Waukesha, Future Elctms. .... 414-786-1884

STANLEY-VIDMAR, Stanley Works, 11 Grammes Rd.,  
 Allentown, PA 18103, Tel: 215-797-6600, TELEX: 847-345;  
 Empl: 5000; *Sls. Mgr.*: Ernie Gitlin, *Vic Joliat*; *Dist. Mgr.*:  
 Frank Casey

STANPAT PRODS., 100 Goldstein Drive, Woonsocket, RI  
 02895, Tel: 401-766-8400, FAX: 401-767-0244; Empl: 35;  
*Sls. Mgr.*: John Howley

STANTON MAGNETICS, INC., 101 Sunnyside Blvd.,  
 Plainview, NY 11803-1511, Tel: 516-349-0235, FAX: 516-  
 349-0230; Empl: 300; *Sls. Mgr.*: Ed Maidel; *Dist. Mgr.*: Ed  
 Maidel

STAR CASE MANUFACTURING CO., INC., 648  
 Superior Avenue, Munster, IN 46321, Tel: 219-922-4440,  
 800-822-STAR (outside IN), 800-782-CASE (inside IN),  
 FAX: 219-922-4442; Empl: 75; *Sls. Mgr.*: Veronica  
 Stadden



## FAX: 908-572-5095

STAR MICRONICS, INC., OEM Division, 70-D Ethel  
 Rd. W., Piscataway, NJ 08854, Tel: 800-572-9512; Empl:  
 120; *Sls. Mgr.*: Georgia Lombardi; *Dist. Mgr.*: Chris Duffy  
**D-1068-1071, 1108-1111**

## Local Sales Offices &amp; Reps

CA Burbank, Star Micronics ..... 818-972-1877  
 IL Arlington Hgts., Star Micronics ..... 708-670-7222

## Local Distributors

CA Los Angeles, Elec. Switches, Inc. .... 213-660-1310  
 CA Pasadena, MS Cash Drawer ..... 818-792-2111  
 CA San Diego, Tauber Elctms. .... 619-274-7242  
 CA Sunnyvale, Penstock Inc. .... 408-730-0300  
 CA Tustin, OBI Dists. .... 714-258-1411  
 CO Englewood, NEP Elctms. .... 303-799-9898  
 FL Oldsmar, Applied Power ..... 813-854-4004  
 GA Norcross, Applied Power Inc. .... 404-263-0421  
 IL Wood Dale, NEP Elctms. .... 708-595-8500  
 IL Wheeling, Hawk Elctms. Inc. .... 708-459-4030  
 KY Florence, U R I Elctms. Inc. .... 606-371-4423  
 MD Middletown, Current Comps. .... 301-473-5333  
 MA Mansfield, Current Comps. Inc. .... 508-824-7900  
 MI Brighton, Applied Power ..... 313-227-3604  
 MI Grand Rapids, S. F. Elec. Supp., Inc. .... 616-459-0216  
 NJ Sparta, Instrument & Equip. Co. .... 201-579-0009  
 OH Cincinnati, U R I Elctms. .... 513-723-8800  
 OH Columbus, Applied Power ..... 614-882-1110  
 TX Channelview, R. T. Henry Elctms. .... 713-452-4451  
 TX Dallas, Foxfire Inc. .... 214-353-9543  
 WA Bellevue, Penstock Inc. .... 206-454-2371  
 WI New Berlin, NEP Elctms. Inc. .... 414-785-9100  
 WI Waukesha, Hawk Elctms. Inc. .... 414-547-4457  
 EXP Markham, Ont., Birde Mktg. Inc. .... 416-477-7722  
 EXP Vancouver, B.C., Birde Mktg. Inc. .... 604-431-0426

STAR SEMICONDUCTOR CORP., 25 Independence  
 Blvd., Warren, NJ 07059, Tel: 908-647-9400, FAX: 908-  
 647-4755; *Sls. Mgr.*: Jim Magos, VP Sls.

STAR SEMICONDUCTOR CORP., 25 Independence  
 Blvd., Warren, NJ 07059, Tel: 908-647-9400, FAX: 908-  
 647-4755; *Sls. Mgr.*: Jim Magos, VP Sls.

STAR-TRON CORPORATION, 58 Curtis St., Providence,  
 RI 02909, Tel: 401-274-5090, FAX: 401-274-3936; Empl:  
 27; *Sls. Mgr.*: Joyce D'Orsi



## FAX: 714-997-1256

STATEK CORP., 512 N. Main St., Orange, CA 92668, Tel:  
 714-639-7810, TELEX: 67-8394; FSC No.: 51791; Empl:  
 130; *Sls. Mgr.*: Suzanne Ray; *Dist. Mgr.*: Suzanne Ray  
**A-1482-1483**

## Local Sales Offices &amp; Reps

AL Huntsville, L & D ..... 205-837-1469  
 AZ Phoenix, Eltron ..... 602-266-2164  
 CA Long Beach, RD & D Sls. .... 310-888-1116  
 CA Mtn. View, Dismar-Bakner ..... 415-969-3010  
 CO Englewood, Comp. Sls. .... 303-779-8060  
 FL Palm Habor, Sigma Tech ..... 813-789-5522  
 GA Atlanta, L & D ..... 404-395-7079  
 IL Rolling Meadows, Eagle Tech. Sls. .... 708-991-0700  
 IN Kokomo, Skyline Sls. .... 317-452-6500  
 IA Des Moines, SPS Assocs. .... 515-225-0607  
 KS Olathe, SPS Assocs. .... 913-764-4460  
 MA Woburn, Radian Assocs. .... 617-933-7386  
 MI Brighton, AP Assoc. .... 313-229-6550  
 MN Bloomington, Murnco Inc. .... 612-854-4161  
 MO Earth City, SPS Assocs. .... 314-291-0520  
 NJ Bellmawr, TAI Corp. .... 609-778-5353  
 NY Endwell, Reagan/Compar ..... 607-754-2171  
 NY Rye Brook, Tekmar ..... 914-632-2828  
 NC Charlotte, Prime Comps. .... 704-522-1150  
 NC Raleigh, Prime Comps. .... 919-850-9866  
 OH Centerville, Omega Sls. Inc. .... 513-434-5507  
 OH Cleveland, Omega Sls. Inc. .... 216-360-9400  
 OR Oregon City, Halbar Assoc. .... 503-656-3714  
 TX Austin, Norcom ..... 512-451-2757  
 TX Dallas, Norcom ..... 214-386-4888  
 TX Houston, Norcom ..... 713-778-0392  
 UT Midvale, Comp. Sls. .... 801-561-5099  
 WA Redmond, Halbar Assocs. .... 206-882-0990

## Local Distributors

AL Huntsville, Repron Elect. .... 205-722-9500  
 CA Orange, Western Micro ..... 714-637-0200  
 CA San Diego, Western Micro ..... 619-453-8430  
 CA Sunnyvale, Target Elctms. .... 408-733-0384  
 CA Yorba Linda, Target Elctms. .... 714-692-1630  
 CO Littleton, Indelco ..... 303-795-3431  
 FL Ft. Lauderdale, Repron Elctms. .... 305-735-1112  
 FL Miami, All American ..... 305-621-8232  
 FL Tampa, Repron Elctms. .... 813-855-4656  
 GA Norcross, Repron Elctms. .... 404-446-1300  
 IL Palatine, OHM Elctms. .... 708-359-5500  
 IL Schaumburg, Repron Elctms. .... 708-882-1700  
 IN Indianapolis, Mar Elctms., Inc. .... 317-633-6699  
 MA Woburn, First Frequency ..... 617-935-3885  
 MI Livonia, Repron Elctms. .... 313-525-2700  
 MN Minnetonka, Repron Elctms. .... 612-938-0000  
 MO Maryland Hgts., RS Elctms. .... 314-997-7709  
 NY Buffalo, Summit Dists. .... 716-887-2800  
 NY E. Setauket, Dove Elctms. .... 516-689-7733  
 NY Mt. Vernon, All American ..... 914-699-2224  
 OH Solon, Repron Elctms. .... 216-349-1415  
 TX Richardson, Ewing Elctms., Inc. .... 214-231-6725  
 WA Redmond, Kent Elect ..... 206-883-7200

STATE OF THE ART, INC., 2470 Fox Hill Rd., State  
 College, PA 16803-1797, Tel: 814-355-8004, FAX: 814-  
 355-2714; Empl: 100; *Sls. Mgr.*: Thomas S. Hufnagel  
**A-2020-2027**

## Local Sales Offices &amp; Reps

AZ Phoenix, Eltron, Inc. .... 602-266-2164  
 CA La Miranda, Select Elctms. .... 714-739-8891  
 CA Saratoga, EMS ..... 408-446-3833  
 CT New Haven, Masten-Wright, Inc. .... 203-288-1638  
 FL Melbourne, Graham Assoc., Inc. .... 407-773-6631  
 FL Palm Bch. Gdncs., Graham Assoc., Inc. .... 407-662-4049  
 IL Glenview, Crimson Engrg. Sls., Inc. .... 312-470-0024  
 IN Indianapolis, Hi-Tek Sls. .... 317-887-2564  
 MA Newton, Normel Assocs., Inc. .... 617-969-5478  
 MN Minneapolis, Peterson Sls. & Assocs. .... 612-835-5281  
 NY Bellmore, Compar NY, Inc. .... 516-221-7300  
 NY Lewiston, Watmet, Inc. .... 716-285-3595  
 PA Lansdale, EL Assocs. .... 215-368-8000

TX Dallas, Merino Sls. Co. .... 214-233-6002  
 WA Bellevue, Mars ..... 206-747-3292  
 Can Niagara Falls, Waters Metal Prods., Ltd. .... 416-374-3050

## Local Distributors

CA Los Alamitos, Semi Dice, Inc. .... 213-594-4631  
 MD Baltimore, RESCO ..... 410-931-8200  
 NJ Fairfield, Micros Comps. .... 201-227-8007  
 NJ Red Bank, CHPS, Inc. .... 908-758-1200  
 NY Hauppauge, Jaco Elctms. .... 516-273-5500  
 NY Port Chester, Zeus Comps. .... 914-937-7400



## FAX: 516-666-8039

STAVAR CO., INC., 41 Saxon Ave./P.O. Box 220M, Bay  
 Shore, NY 11706-9998, Tel: 516-666-8000; Empl: 80; *Sls.*  
*Mgr.*: Pat Sullivan **B-1119-1123**

## Local Sales Offices &amp; Reps

CA Cathedral City, R D Sls. Corp. .... 619-324-5044  
 IL Wheaton, RMP McBride Corp. .... 708-462-2500  
 IN Sugar Grove, The Manx Co. .... 708-466-4200  
 MN St. Paul, Proud Inds. .... 612-646-9428  
 NH Hancock, Eisenbeis Sls. .... 603-525-4417  
 NY East Northport, Levison Sls. Co. .... 516-266-5020  
 NC New Hill, Tom G. Santel ..... 919-362-4091  
 OR Beaverton, Quest Mktg. .... 503-641-7377  
 PA Montgomeryville, Eastern Scientific Mktg. .... 215-368-4570  
 SC Mauldin, Carl Hart Assocs. .... 803-288-2323  
 TX Dallas, Innovative Tech. Sls. .... 206-629-3485  
 TX Houston, Innovative Tech. Sls. .... 713-443-0331  
 WA Renton, Quest Mktg. .... 206-228-2660  
 WI Colgate, RMP McBride Sls. Corp. .... 414-628-4016

STEINEL AMERICA, INC., 15317 Minnetonka Ind. Rd.,  
 Minnetonka, MN 55345, Tel: 800-852-4343, FAX: 612-931-  
 3026; *Sls. Mgr.*: Nat Reidel; *Dist. Mgr.*: Jim Stangl

## Local Distributors

IL Addison, Len's Ace Hardware ..... 708-543-8882  
 MA N. Andover, Contact East ..... 508-682-9844  
 MN Bloomington, K.L. Tannehill, Inc. .... 612-881-6700  
 ND Grand Forks, Acme Elctrc. .... 701-746-6481  
 OH Akron, Philcap Elctms. .... 216-253-2109  
 TX Ft. Worth, Connector Micro Tooling ... 817-283-4882  
 WA Seattle, Radar Elctrc. .... 206-282-2511

STEINWALL, INC., 7895 Ranchers Rd. NE, Minneapolis,  
 MN 55432, Tel: 612-571-8202, FAX: 612-572-2031; Empl:  
 61; *Sls. Mgr.*: Maureen Steinwall

STENNING INSTRUMENTS, INC., 604 Via Del Oerro,  
 Camarillo, CA 93010, Tel: 805-484-4996, FAX: 805-484-  
 5337; *Sls. Mgr.*: Charles Stenning

STEP ENGINEERING, P.O. Box 3166, Sunnyvale, CA  
 94088, Tel: 408-733-7837, TWX: 910-339-9506, FAX: 408-  
 773-1073; Empl: 50; *Sls. Mgr.*: Darrell Wilburn

STEPHENS ANALYTICAL, INC., 2750 Brabant-  
 Marineau, Montreal, Que, CA H4S 1L1, Tel: 514-392-1230,  
 FAX: 514-335-6566; Empl: 12; *Sls. Mgr.*: Mr. Alan Lee



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**STERLING INSTRUMENTS**, a DSG Company, 2101 Jericho Tpke. Box 5416, New Hyde Pk, NY 11042-5416, Tel: 516-328-3300, TWX: 510-223-0642, FAX: 516-326-8827; Empl: 150

| Local Sales Offices & Reps               |              |
|------------------------------------------|--------------|
| AZ Phoenix, Silver Mountain Des.         | 602-266-7671 |
| CA Chatsworth, Western Component Sls.    | 818-882-6226 |
| CA San Carlos, Western Comp. Sls.-N.     | 415-594-1222 |
| CO Denver, Manufacturers Marketing Corp. | 303-985-2008 |
| FL Clearwater, Tech-Rep Assoc., Inc.     | 813-572-9900 |
| IL Downers Grove, Rockford Controls Co.  | 708-960-2046 |
| MD Upperco, Imagitron Sales Co.          | 301-374-5600 |
| MA Lowell, Underwood Sales               | 508-256-8191 |
| MI Southfield, R.C. Nordstrom & Co.      | 313-559-7373 |
| MN St. Paul, Northstar Motion & Control  | 612-770-5311 |
| NY Clark Mills, KLM-Garner, Inc.         | 315-853-6126 |
| NY New Hyde Park (Metropolitan) Sterling | 516-328-3300 |
| OH Medina, Rockford Controls Ohio, Inc.  | 216-725-3705 |
| TX Richardson, Zonk & Associates         | 214-238-7651 |
| WA Seattle, Northmar Inc.                | 208-524-5170 |

**STETCO, INC.**, 3344 Schierhorn Ct., Franklin Pk, IL 60131, Tel: 708-671-4208, FAX: 708-671-5270; FSC No.: 52763; Empl: 45; Sls. Mgr.: Saul A. Gussaras

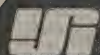
**STETRON INTERNATIONAL, INC.**, 90 Broadway, Buffalo, NY 14203, Tel: 716-854-3443, FAX: 716-854-3448; Empl: 70

**STEVENS PRODUCTS, INC.**, 128 N. Park St., E. Orange, NJ 07019, Tel: 201-672-2140, FAX: 201-672-2837; Empl: 50; Sls. Mgr.: Robert Cantilina

**STEWART, INC.**, E 36th St., P.O. Box 510, Chattanooga, TN 37401, Tel: 615-867-4100, FAX: 615-867-4102; Empl: 250; Sls. Mgr.: Don Lepard; Dist. Mgr.: Steve Woods

**STEWART CONNECTOR SYS., INC.**, R.D. No. 2 Box 2020, Glen Rock, PA 17327, Tel: 717-235-7512, TELEX: 4977105, FAX: 717-235-7954; Empl: 196; Dist. Mgr.: T. Meighen, Dir. Mktg.(USA) A. McDonald, Dir. Mktg.(Europe) **C-1469**

| Local Sales Offices & Reps                     |              |
|------------------------------------------------|--------------|
| AL Huntsville, Comps. Mktg. Svc.               | 205-881-6699 |
| CA Dana-Point, PCA                             | 714-493-9822 |
| CA Santa Clara, Nova-Tronix                    | 408-727-9530 |
| CO Boulder, Component Prod. Sls. Co., Inc.     | 303-530-2800 |
| IL Prospect Hgts., Comms. Equip.               | 708-506-9000 |
| IL St. Charles, XYZ Mktg.                      | 708-584-3001 |
| IN Carmel, Valentine Assocs.                   | 317-846-0008 |
| KS Parker, S.W. Assocs., Inc.                  | 913-898-6552 |
| MA Tauton, Focus                               | 508-824-3840 |
| MI Southfield, Carl H. Schmidt                 | 313-353-6000 |
| MN Brookline Center, Combined Sls.             | 612-566-2724 |
| NJ Franklin Lakes, Atlantic Tech. Comps., Inc. | 201-337-2477 |
| NY Syracuse, Leonard D. Allen, Inc.            | 315-437-8387 |
| NC Charlotte, D.P. Riggins                     | 704-375-7550 |
| OH Dayton, J.C. Hofstetter Co.                 | 513-296-1010 |
| OH Medina, J.C. Hofstetter                     | 216-725-6422 |
| PA Boswell, B.E. Gibson                        | 814-629-6772 |
| PA Glen Rock, SCS                              | 717-235-7512 |
| TX Dallas, JYSCO                               | 214-349-1650 |
| VA Ashland, Glasscock Assocs.                  | 804-798-2125 |
| WA Issaquah, Elctms. Northwest, Inc.           | 206-557-0851 |
| Can Campden, Ont., Magden                      | 416-563-5408 |



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|                               |              |
|-------------------------------|--------------|
| CA Irvine, Kensington Elctms. | 714-588-0575 |
| CA Milpitas, Sierra West      | 408-945-1050 |
| CA San Jose, Spectra Elctms.  | 408-452-1590 |
| IL Lisle, Comps., Inc.        | 708-852-7707 |
| MA Ashland, Quality Comps.    | 508-881-6504 |
| NH Atkinson, AEI Astrum       | 603-898-3399 |

**Stimpson**  
Co., Inc.

**FAX: 516-472-2425**

**STIMPSON COMPANY, INC.**, 900 Sylvan Ave., Bayport, NY 11705-1097, Tel: 516-472-2000; Empl: 800; Sls. Mgr.: Edward J. Dewalters **C-1555**

| Local Sales Offices & Reps      |              |
|---------------------------------|--------------|
| NY Bayport, Stimpson Co., Inc.  | 516-472-2000 |
| RI Cranston, Stimpson Co., Inc. | 401-461-7720 |

| Local Distributors              |              |
|---------------------------------|--------------|
| NY Bayport, Stimpson Co., Inc.  | 516-472-2000 |
| RI Cranston, Stimpson Co., Inc. | 401-461-7720 |

**ST KELTEC CORP.**, Subsidiary of Signal Technology Corp., 84 Hill Ave., Ft. Walton Beach, FL 32548, Tel: 904-244-0043, FAX: 904-664-0546; FSC No.: 09062; Empl: 410; Sls. Mgr.: Alex Coronis

**ST MICROSONICS CORP.**, Subsidiary of Signal Technology Corporation, 60 Winter St., Weymouth, MA 02188, Tel: 617-337-4200, FAX: 617-337-4208; FSC No.: 11869; Empl: 80; Sls. Mgr.: Ken Lambert

**ST MICROWAVE CORP.**, Sub. of Signal Technlg. Corp., 955 Benecia Ave., Sunnyvale, CA 94086, Tel: 408-730-6300, FAX: 408-424-3396, 408-733-0254; FSC No.: 27338; Empl: 208; Sls. Mgr.: Paul Thesing

**STN INTERNATIONAL C/O CHEMICAL ABSTRACTS SERVICE**, 2540 Olentangy River Road, Columbus, OH 43202-1505, Tel: 614-447-3600, TELEX: 810-482-1608, ESYLNK: 614-447-3713; Empl: 1500; Sls. Mgr.: Tom Gornick

**STOCK DRIVE PRODUCTS**, a DSG Company, 2101 Jericho Tpke. Box 5416, New Hyde Pk, NY 11042-5416, Tel: 516-328-0200, 328-3300, TWX: 510-223-0642, FAX: 516-326-8827; Empl: 228; Sls. Mgr.: Murray Ores

| Local Sales Offices & Reps              |              |
|-----------------------------------------|--------------|
| AZ Phoenix, Silver Mountain Des.        | 602-266-7071 |
| CA Chatsworth, Western Comp. Sls.       | 818-882-6226 |
| CA San Carlos, Western Comp. Sls. N.    | 415-594-1222 |
| CO Denver, Manufacturer's Mktg.         | 303-985-2008 |
| FL Clearwater, Tech-Rep Assoc., Inc.    | 813-572-9900 |
| IL Downers Grove, Rockford Controls Co. | 708-960-2046 |
| MD Upperco, Imagitron Sls. Co.          | 301-374-5600 |
| MA Lowell, Underwood Sls.               | 508-256-8191 |
| MI Southfield, R.C. Nordstrom & Co.     | 313-559-7373 |
| MN St. Paul, Northstar Motion & Control | 612-770-5311 |
| NY Clark Mills, KLM-Garner, Inc.        | 315-853-6126 |
| NY New Hyde Park, SDP                   | 516-328-3300 |
| OH Medina, Rockford Controls Ohio       | 216-725-3705 |
| TX Richardson, Zonk & Associates        | 214-238-7651 |
| WA Seattle, Northmar Inc.               | 206-524-5170 |

**STOCK MODEL PARTS**, a DSG Company, 2101 Jericho Tpke. Box 5416, New Hyde Pk, NY 11042-5416, Tel: 516-328-3300, FAX: 516-326-8827

**STOCKO CONNECTORS**, Stocko Corporation, 495 Industrial Road, Carlstadt, NJ 07072, Tel: 201-933-4452, FAX: 201-933-4522; Empl: 34; Sls. Mgr.: Rudolf Schindler **C-1470-1471**

| Local Sales Offices & Reps              |                   |
|-----------------------------------------|-------------------|
| AL Huntsville, E-Squared Mktg.          | 205-430-3000      |
| CA San Diego, Cetinske Sls. Co.         | 619-487-3335      |
|                                         | FAX: 619-673-0612 |
| CA Santa Clara, Nova-Tronix             | 408-729-9530      |
| GA Lawrenceville, E-Squared Mktg.       | 404-995-7206      |
| GA Marietta, E-Squared Mktg.            | 404-565-2088      |
| KS Olathe, G.M. Brown & Assocs.         | 913-829-3086      |
|                                         | FAX: 913-829-3274 |
| MA Norwood, Comp. Mktg. Svcs.           | 617-762-4339      |
|                                         | FAX: 617-769-8662 |
| MI Grand Rapids, J.M.J. & Assocs., Inc. | 616-285-8887      |
|                                         | FAX: 616-285-7633 |
| MO Florissant, G.M. Brown & Assocs.     | 314-839-3600      |
|                                         | FAX: 314-839-3601 |
| PA Pittsburgh, KT Mktg.                 | 412-367-1011      |
|                                         | FAX: 412-367-2153 |

TX Burleson, Bounty Elctms, Inc. .... 817-447-9775, FAX: 817-447-9706

| Local Distributors                |                   |
|-----------------------------------|-------------------|
| MI Wyoming, EC Elctms.            | 616-530-0576      |
|                                   | FAX: 616-530-8598 |
| MO St. Charles, Heartland Elctms. | 314-928-6010      |
|                                   | FAX: 314-447-3416 |
| NJ Carlstadt, Stocko Connectors   | 201-933-4452      |
|                                   | FAX: 201-933-4522 |
| OR Beaverton, Murphy Elctms.      | 503-642-2001      |
| WA Redmond, Murphy Elctms.        | 206-881-1234      |

**ST OLEKTRON CORPORATION**, Subsidiary of Signal Technology Corp., 28 Tozer Rd., Beverly, MA 01915, Tel: 508-922-0019, FAX: 508-927-9328; FSC No.: ON8W8; Empl: 105; Sls. Mgr.: Chuck Davis

All Locations for Compucon Dists. Call 800-426-7746

**ST OLEKTRON SYSTEMS**, Signal Technology Corp., 61 Sutton Road, Webster, MA 01570, Tel: 508-943-7440, FAX: 508-949-1804; FSC No.: 32252; Empl: 35; Sls. Mgr.: Bill Uffelman

**STOLZBERG RESEARCH, INC.**, 3 Seabrook Court, Stony Brook, NY 11790-3305, Tel: 516-751-4277, 800-568-4634, FAX: 516-689-6671; Empl: 4; Sls. Mgr.: Bruce Davis; Dist. Mgr.: Bruce Davis

**STORM PRODUCTS CO.**, 116 Shore Drive, Hinsdale, IL 60521, Tel: 708-323-9121, FAX: 708-323-9398; FSC No.: 57500; Empl: 72; Sls. Mgr.: Brian J. Holland

**STRATOS PRODUCT DEVELOPMENT GROUP**, 2025 First Ave., Ste PH-B, Seattle, WA 98121, Tel: 206-448-1388, FAX: 206-448-7830; Empl: 28

**STRAWBERRY TREE, INC.**, 160 S. Wolfe Rd., Sunnyvale, CA 94086, Tel: 408-736-8800, TELEX: 650 3172834 MCI, FAX: 408-736-1041; Empl: 25

**STRONGBOX**, P.O. Box 2726, Culver City, CA 90231-2726, Tel: 310-305-8288, FAX: 310-305-1905; FSC No.: 2T043; Empl: 5; Sls. Mgr.: Larry Martinek **C-1098-1099**

**STRUTHERS-DUNN, INC. AND HI-G CO., INC.**, Lambs Rd., Pitman, NJ 08071-0901, Tel: 609-589-7500, ESYLNK: 622-87939, FAX: 609-589-2619, 609-589-2094; FSC No.: 78290; Empl: 467; Sls. Mgr.: Bruce E. Armstrong, V.P. **B-1606-1614**

| Local Sales Offices & Reps              |              |
|-----------------------------------------|--------------|
| AZ Scottsdale, BSE, Inc.                | 602-483-0373 |
| CA Los Angeles, RD&D                    | 213-666-1611 |
| CA San Jose, Ruppert Sls. & Engrg.      | 408-998-8717 |
| CO W. Parker, W. Howard Assoc., Inc.    | 303-841-5755 |
| CT Bloomfield, Friedman                 | 203-242-7781 |
| FL Orlando, Comp. Design Mktg.          | 407-352-5480 |
| GA E. Norcross, Advanced Comps. Mktg.   | 404-448-7025 |
| IL Downers Grove, Bob Burns & Assoc.    | 312-960-2046 |
| IN Ft. Wayne, TX Sls.                   | 219-423-3422 |
| IA Cedar Rapids, Advanced Tech. Sls.    | 319-393-8280 |
| KS Olathe, Advanced Tech. Sls.          | 913-782-8702 |
| LA Lafayette, Fralla                    | 318-269-9452 |
| MD Monkton, Imagitron Sls.              | 410-374-5600 |
| MI Southfield, TX Sls.                  | 313-353-8210 |
| MN Minneapolis, Jay Borman              | 612-888-2122 |
| MO St. Louis, Advanced Tech. Sls.       | 314-878-2921 |
| NJ West Caldwell, Grimm, Siegel Assocs. | 201-575-9300 |
| NM Albuquerque, BSE                     | 505-293-2582 |
| NY Buffalo, Tri-Tech                    | 716-877-3677 |
| OH Cincinnati, Elctm Comps.             | 513-729-1969 |
| OH Miamisburg, Elctm. Comps.            | 513-866-3340 |
| TX Euless, W. Pat Fralla Co.            | 817-354-1144 |
| WA Bellevue, Eltech, Inc.               | 206-643-4330 |

| Local Distributors                  |              |
|-------------------------------------|--------------|
| CA Santa Ana, Norstan Elctms., Inc. | 714-540-4165 |
| MO Maryland Hgts., L. Comp. Inc.    | 314-291-6200 |
| NJ Oakland, Relay Specialties, Inc. | 201-337-1000 |
| NY Plainview, A.C.I. Elctms.        | 516-293-6630 |
| PA Philadelphia, PEI/Genesis        | 215-673-0400 |
| TX Dallas, Associated Aircraft      | 214-331-4381 |

**ST-SEMICONDUCTORS OF INDIANA, INC.**, 415 N. College Ave., P.O. Box 609, Bloomington, IN 47402-0609, Tel: 812-332-1435, FAX: 812-331-8706; Empl: 100; Sls. Mgr.: Jim Davis; Dist. Mgr.: Jim Davis

**SUBMARINE SIGNAL DIVISION**, Raytheon Company, 1847 W. Main Road, Portsmouth, RI 02871, Tel: 401-847-8000, TELEX: 71-6817111, FAX: 401-847-2364; Empl: 2,300





FAX: 619-744-6081

**SULLINS ELECTRONICS CORP.**, P.O. Box 189, 801 E. Mission Rd., San Marcos, CA 92079, Tel: 619-744-0125, TWX: 910-322-1472, ESYLNK: 62912413; Empl: 75  
C-1472-1473

## Local Sales Offices &amp; Reps

|    |                                       |              |
|----|---------------------------------------|--------------|
| AZ | Phoenix, TM Entprs.                   | 602-759-9650 |
| AL | Athens, Effective Mktg. Force         | 205-233-2947 |
| CA | Lacandade, KCP                        | 818-790-1365 |
| CA | Newport Beach, Qual Conn              | 714-851-6465 |
| CA | Santa Clara, Nova-Tronix, Inc.        | 408-727-9530 |
| CO | Wheatridge, Cluff & Assocs.           | 303-425-6604 |
| FL | Palm Harbor, Bob Dean, Inc.           | 813-789-1233 |
| GA | Lithia Springs, Effective Mktg. Force | 404-948-6023 |
| IL | Mt. Prospect, Dombrow Co.             | 708-253-3326 |
| IN | Indianapolis, M & L Elctm. Sls.       | 317-359-4742 |
| IA | Marion, M-S-B Assocs.                 | 319-377-6261 |
| KS | Shawnee Mission, M-S-B Assoc.         | 913-432-2131 |
| MD | Randallstown, Chesapeake Inds. Mktg.  |              |

|    |                                    |              |
|----|------------------------------------|--------------|
| MA | Harvard, Cycle Sls.                | 410-653-0476 |
| MN | Minneapolis, RK Sls. Assocs., Inc. | 508-456-6868 |
| MO | St. Louis, M-S-B Assocs., Inc.     | 612-571-1001 |
| NC | Peconic, HLJ Comp-Tech             | 314-772-2166 |
| NY | Lillington, Effective Mktg. Force  | 516-734-7784 |
| OH | Dublin, Sls. Plus                  | 919-867-6221 |
| PA | Pt. Washington, SMC Inc.           | 216-942-7811 |
| TX | Richardson, Comp. Partners         | 215-628-3394 |
| WA | Camas, Elctm. Mktg. Grp.           | 214-644-1288 |
| WA | Redmond, Elctm. Mktg. Grp.         | 206-834-6548 |
| WI | Oconomowoc, Artmor Ltd.            | 206-882-0962 |
|    |                                    | 414-367-8789 |

## Local Distributors

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Birmingham, American Elctm. Supp.     | 205-942-4656 |
| AZ | Phoenix, Arizona Comps.               | 602-269-5655 |
| AZ | Tempe, Cypress Elctms.                | 602-966-2256 |
| CA | Burbank, Atwater Elctms.              | 818-841-9050 |
| CA | City of Industry, Ital Elct Sls. Inc. | 818-968-8515 |
| CA | Costa Mesa, Cypress Elctms.           | 714-549-2424 |
| CA | Pasadena, Empire Elctms.              | 213-681-2711 |
| CA | San Diego, Cypress/RPS Elct.          | 619-535-0011 |
| CA | San Jose, Sierra W. Elctms.           | 408-945-1050 |
| CA | Santa Clara, Cypress Elctms.          | 408-980-2500 |
| CA | Simi Valley, Lee Johnson Sls.         | 818-346-5412 |
| CA | Woodland Hills, Cypress Elctms.       | 818-710-7780 |
| CO | Arvada, Denver Beta Wintronic         | 303-431-7161 |
| CO | Engelwood, Cypress Elctms.            | 303-792-5829 |
| CO | Littleton, Indelco Inc.               | 303-795-3431 |
| CT | Bridgeport, Millenium Elctm. Sls.     | 203-372-2037 |
| FL | Davie, Arco Distrs., Inc.             | 305-473-2550 |
| FL | Miami, Electronic Equip. Co.          | 305-871-3500 |
| FL | Winter Park, Deanco                   | 407-671-5100 |
| GA | Marietta, Deanco                      | 404-429-0126 |
| IL | Addison, Belford Elctms.              | 708-691-1100 |
| IL | Carol Stream, Lectro Comps.           | 708-690-0520 |
| IL | Wheeling, Hawk Elctms.                | 708-459-4030 |
| IL | Wood Dale, NEP Elctms.                | 708-595-8500 |
| IN | Indianapolis, Advent Elctms.          | 317-872-4910 |
| IN | Indianapolis, Mar Elctms., Inc.       | 317-633-6699 |
| IA | Cedar Rapids, DEE Elctms.             | 319-365-7551 |
| MD | Beltville, Petrick Sls.               | 301-937-4960 |
| MD | Gaithersburg, Axis Elctms., Inc.      | 301-840-9640 |
| MD | Gaithersburg, Deanco                  | 301-948-5444 |
| MD | Timonium, M X 4 Elctms., Inc.         | 301-252-1192 |
| MA | Canton, Richey/Impact Elct.           | 508-668-8200 |
| MI | Farmington Hills, Advent Elctms.      | 313-477-1650 |
| MI | St. Clair Shore, Spemco               | 313-771-2700 |
| MN | Bloomington, Bergquist Co.            | 612-835-2322 |
| MN | Eden Prairie, Cypress Elctms.         | 612-934-2104 |
| MN | St. Paul, Kent/Shelley Ragon, Inc.    | 612-642-2828 |
| MN | Thief River Fls., Digi-Key Corp.      | 218-681-6674 |
| MO | Independence, Shelley-Ragon, Inc.     | 816-254-3410 |
| NH | Atkinson, Astrum Elctms.              | 603-898-3399 |
| NJ | Bellmawr, Mid-Atlantic Elct.          | 609-931-5303 |
| NJ | Fairfield, Deanco                     | 201-575-7960 |
| NM | Albuquerque, Electronic Parts         | 505-293-6161 |
| NM | Las Cruces, Electronic Parts          | 505-523-4578 |
| NY | Ithaca, Deanco                        | 607-257-4444 |
| NY | Peconic, Forejay Assocs.              | 516-734-7760 |
| NY | Penn Yan, Advacom Techniq., Inc.      | 515-536-2221 |
| NC | Fayetteville, Southeastern Elctms.    | 704-523-1122 |
| NC | Hickory, Southeastern Elctms., Inc.   | 919-828-2311 |
| OH | Cincinnati, Schuster Elec. Co.        | 513-489-1400 |
| OH | Twinsburg, Schuster Elec. Co.         | 216-425-8134 |
| OR | Portland, Dunn Elctms.                | 503-285-0214 |
| PA | McKean, Advacom                       | 814-476-7774 |
| PA | Wayne, Peak Elctms.                   | 215-293-9000 |
| RI | Warwick, Cal-Greg Comps., Inc.        | 401-738-6170 |
| TN | Knoxville, Indl. Elctms., Inc.        | 615-573-7135 |
| TN | Nashville, Randolph & Rice            | 615-255-5601 |
| TX | Dallas, Off The Shelf                 | 214-247-0052 |
| TX | Dallas, Tactic Elctms.                | 214-702-6111 |
| TX | Garland, J & S Elctms.                | 214-487-8808 |
| TX | Houston, Kent/Shelley-Ragon           | 713-780-7770 |
| TX | Irving, Cypress Elctms.               | 214-255-0065 |
| TX | Pluggerville, RSI                     | 512-251-1161 |
| TX | Richardson, Off The Shelf             | 214-238-0808 |
| UT | Salt Lake City, S.L.C. Wintronic      | 801-966-0236 |

|     |                                           |              |
|-----|-------------------------------------------|--------------|
| UT  | Salt Lake City, Standard Supp. Co.        | 801-486-3371 |
| VA  | Annandale, Arcade Elect. Inc.             | 703-256-4610 |
| VA  | Charlottesville, Virginia Radio Supp.     | 804-296-4184 |
| VA  | Virginia Bch., Deanco                     | 804-499-3322 |
| WA  | Bothel, Cypress Elctms.                   | 206-483-1144 |
| WA  | Seattle, Radar Elec.                      | 206-282-2611 |
| WA  | Tukwila, Carlyle                          | 206-251-0700 |
| WI  | Grafton, Lake-View Elect. Inc.            | 414-377-8250 |
| WI  | Milwaukee, Indl. Elctms.                  | 414-276-1212 |
| WI  | New Berlin, NEP Elctms.                   | 414-785-9100 |
| WI  | Oconomowoc, G.W. Elctms., Ltd.            | 414-367-6003 |
| Can | Burnaby, Intek                            | 604-294-8100 |
| Can | Pointe Claire, Que., A. R. Gray & Assocs. |              |
|     |                                           | 514-694-6378 |
| Can | Victoria, Pacific Coast Elect.            | 604-385-5111 |

**SUMMAGRAPHICS CORP.**, 60 Silvermine Rd., Seymour, CT 06483, Tel: 203-881-5400, TELEX: 964348, FAX: 203-881-5367; Empl: 185; Sls. Mgr.: Jim Whitney; Dist. Mgr.: George Poland

**SUMMIT ELECTRONICS, DIVISION OF BASLER ELECTRIC**, See Basler Electric, Electronic Product Group

**SUNBANK ELECTRONICS**, 1740 Commerce Way, Paso Robles, CA 93446, Tel: 805-238-2840, FAX: 805-238-0241; FSC No.: 07418; Empl: 260; Sls. Mgr.: Patrick Banakis

**SUNDSTRAND DATA CONTROL**, 15001 N.E. 36th St., Redmond, WA 98073-9701, Tel: 206-885-3711, TELEX: RCA 286144; Empl: 1500; Sls. Mgr.: C. Friesen

**SUN ELECTRONIC SYSTEMS, INC.**, 5307 NW 35th Terr., Ft. Lauderdale, FL 33309, Tel: 305-739-7004, FAX: 305-739-7006; Empl: 12; Sls. Mgr.: Veronica L. Pasqua

## Local Sales Offices &amp; Reps

|    |                           |              |
|----|---------------------------|--------------|
| CA | San Jose, Woodell Assocs. | 408-732-4327 |
|----|---------------------------|--------------|

**SUNON**, 23362 Madero Rd. C, Mission Viejo, CA 92691, Tel: 714-583-9802, FAX: 714-583-9785; Empl: 5; Sls. Mgr.: Frank Buday

**SUNRISE ELECTRONICS, INC.**, 524 S. Vermont Ave., Glendora, CA 91740, Tel: 818-914-1926, FAX: 818-914-1583; FSC No.: 64908; Empl: 10; Sls. Mgr.: Joseph F. Petralia; Dist. Mgr.: Joseph F. Petralia

**SUNSHINE INSTRUMENTS**, 1810 Grant Ave., Philadelphia, PA 19115, Tel: 215-673-5600, 800-343-1199, FAX: 215-673-5609; Empl: 30; Sls. Mgr.: M.L. Norton

**SUNX SENSORS/IMPORTED BY RAMCO ELECT.**, 1207 Maple St., West Des Moines, IA 50265, Tel: 515-225-6933, FAX: 515-225-0063; Empl: 25; Sls. Mgr.: Mike Reelitz; Dist. Mgr.: Mike Reelitz

**SUPERCOMIX INC.**, 261 Fifth St. East, St. Paul, MN 55101, Tel: 612-222-0046, FAX: 612-222-0049; Empl: 15; Sls. Mgr.: C. Gallo; Dist. Mgr.: C. Gallo

**SUPERIOR CARBON PRODUCTS, INC.**, 101 HWY 35, Superior Pl., Walnut Grove, MS 39189, Tel: 601-253-2442, FAX: 601-253-2430; FSC No.: 68256; Empl: 71

**SUPERIOR ELECTRIC, Warner Electric**, 383 Middle St., Bristol, CT 06010, Tel: 203-582-9561, FAX: 203-584-1483; FSC No.: 58474; Empl: 500; Sls. Mgr.: John Hegel/James Hayden; Dist. Mgr.: Michael Miga/Michael Bonney

## Local Sales Offices &amp; Reps

|    |                       |              |
|----|-----------------------|--------------|
| MS | Jackson, Doby Assocs. | 601-981-1138 |
|----|-----------------------|--------------|

**SUPERIOR FLUX & MFG. CO.**, 95 Alpha Park, Cleveland, OH 44143, Tel: 216-461-3315, FAX: 216-461-6846; FSC No.: 3439; Empl: 10; Sls. Mgr.: Linda Cohen

**SUPERTEX, INC.**, 1225 Bourdeaux Drive, Sunnyvale, CA 94088, Tel: 408-744-0100, TWX: 910-339-9388

**SUPPORT ELECTRONICS, INC.**, 52 Roosevelt Ave., Butler, NJ 07405-1367, Tel: 1-201-838-2755, FAX: 1-201-838-2755

**SUPPORT SYSTEMS INTL. CORP.**, 150 South Second St., Richmond, CA 94804, Tel: 510-234-9090, TWX: 910-382-8130, FAX: 510-233-8888; Empl: 30; Sls. Mgr.: Nola Sanders; Dist. Mgr.: Nola Sanders

**SURGEONICS LIMITED**, One Sullivan Parkway, Fort Edward, NY 12828, Tel: 518-747-2156, FAX: 518-747-2607; Empl: 20; Sls. Mgr.: R. Thomas

**SURON MAAGAN MICHAEL**, Kibbutz Maagan-Michael, D.N. Menashe 37805, Israel, Tel: 06-394211, TELEX: 471468 SURON IL, FAX: 063-90296; Empl: 38; Sls. Mgr.: Gershon Peleg

**SUSCO ELCTRNS.**, 61A Carolyn Blvd., Farmingdale, NY 11735, Tel: 516-249-4848, FAX: 516-249-4865

**SUTTON DESIGNS, INC.**, 215 N. Cayuga Street, Ithaca, NY 14850, Tel: 800-326-8119, FAX: 607-277-6983; FSC No.: 6625; Empl: 24; Sls. Mgr.: Mark Miller

**SWAN ASSOCIATES**, P.O. Box 9424, New Haven, CT 06534, Tel: 203-387-3917, FAX: 203-397-5306; Empl: 2

**SWISS JEWEL COMPANY**, 613 Lafayette Building, Philadelphia, PA 19106, Tel: 215-925-2867, FAX: 215-922-3055; Empl: 8; Sls. Mgr.: P. N. Steel, Jr.

# Switchcraft®

FAX: 312-792-2129

**SWITCHCRAFT, INC., A Raytheon Company**, 5555 N. Elston, Chicago, IL 60630, Tel: 312-792-2700, TWX: 910-221-5199; FSC No.: 82389; multiple; Empl: 600

B-1813; C-1476-1482, 1810-1811

## Local Sales Offices &amp; Reps

|    |                                              |              |
|----|----------------------------------------------|--------------|
| AL | Huntsville, New Age Electr.                  | 205-895-9400 |
| AZ | Phoenix, Moss Mktg.                          | 602-433-9349 |
| CA | Los Angeles, Wiley Co.                       | 213-666-1611 |
| CA | San Diego, Wiley Co.                         | 619-453-9018 |
| CA | Santa Clara, Ross Mktg. Assoc.               | 408-988-8111 |
| CA | Denville, Moss Mktg.                         | 303-340-8535 |
| CO | Merrimac, Switchcraft, Inc. New England Sls. |              |
|    |                                              | 603-424-4423 |
| FL | Clearwater, Sunland Assoc.                   | 813-536-2955 |
| FL | Lauderhill, Sunland Assoc.                   | 305-748-1303 |
| FL | Oviedo, Sunland Assoc.                       | 407-365-9533 |
| GA | Duluth, New Age Electr.                      | 404-476-0079 |
| IL | Chicago, Switchcraft Inc.                    | 312-792-2700 |

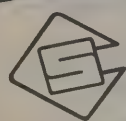
**BRILL ELECTRONICS**  
(510) 834-5888  
610 E. 10th. St., Oakland, CA 94609

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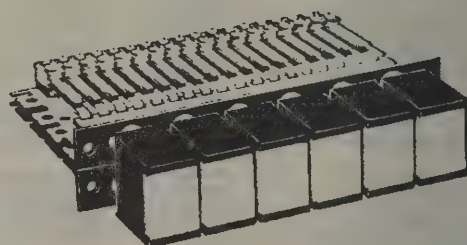
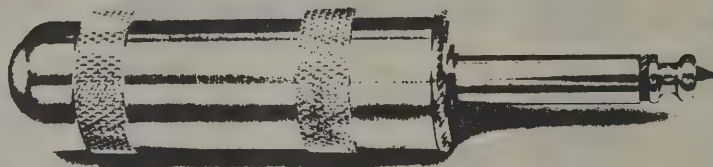
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|-----|----------------------------------------------|--------------|
| KS  | Overland Park, Thomas L. Dowell & Assoc.     | 913-648-7373 |
| MA  | Taunton, Switchcraft, Inc. New England Sls.  | 508-880-0027 |
| MI  | Royal Oak, Switchcraft, Inc. Michigan Sls.   | 313-549-4848 |
| MN  | Minnetonka, Switchcraft, Inc. Minnesota Sls. | 612-544-7123 |
| MS  | Jackson, Doby Elctms.                        | 601-981-1138 |
| MO  | St. Louis, Thomas L. Dowell & Assoc.         | 314-849-4234 |
| NJ  | Cherry Hill, Trinkle Sls.                    | 609-795-4200 |
| NJ  | Woodbridge, Jade Mktg.                       | 908-750-2998 |
| NM  | Albuquerque, Moss Mktg.                      | 505-292-7505 |
| NY  | Centereach, Jade Mktg.                       | 516-696-3331 |
| NY  | Rochester, Apex Assocs.                      | 716-272-7040 |
| NC  | Raleigh, New Age Electr.                     | 919-954-1552 |
| OH  | Dayton, J. C. Hofstetter Co.                 | 513-296-1010 |
| OH  | Medina, J. C. Hofstetter Co.                 | 216-241-4880 |
| OR  | Milwaukee, Comtec                            | 503-654-6626 |
| TN  | Memphis, Doby Elctms.                        | 901-365-9575 |
| TX  | Austin, J. Y. Schoonmaker Co.                | 512-327-5274 |
| TX  | Dallas, J. Y. Schoonmaker Co.                | 214-349-1650 |
| TX  | Houston, J. Y. Schoonmaker Co.               | 713-738-2427 |
| UT  | Salt Lake City, Moss Mktg.                   | 801-562-9000 |
| WA  | Bellevue, Comtec                             | 206-453-1188 |
| WI  | Burlington, Switchcraft                      | 414-763-2100 |
| Can | Toronto, A.C. Simmonds & Sons Ltd.           | 416-839-8041 |

**SWITCHES UNLIMITED, INC.**, 34-11 56th St, Woodside, NY 11377, Tel: 718-478-5000, 800-221-0487, FAX: 718-672-6370; Empl: 20; Sls. Mgr: Douglas King

**SWITCHING POWER INC.**, 3601 Veterans Hwy, Ronkonkoma, NY 11779, Tel: 516-981-7231, TWX: 510-220-1528, FAX: 516-981-7266; Empl: 200



**FAX: 714-996-2753**

**SWITCHING SYSTEMS INTERNATIONAL**, 500 Porter Way, Placentia, CA 92670, Tel: 714-996-0909, 800-992-7740; Empl: 85; Sls. Mgr: Guy Lacerte  
**D-1938-1941**

#### Local Sales Offices & Reps

|    |                                     |              |
|----|-------------------------------------|--------------|
| AL | Huntsville, Hughes Assocs.          | 205-533-9108 |
| AZ | Phoenix, Holder Hauer               | 602-242-4025 |
| CA | Los Alamitos, Power Specialists     | 213-594-9418 |
| CA | Placentia, Switching Sys. Intl.     | 714-996-0909 |
| CA | San Diego, Power Specs.             | 619-586-1160 |
| CA | San Jose, Nelson Elctms. Sls.       | 408-437-9300 |
| CO | Denver, Holder Hauer                | 303-427-3443 |
| CT | Meriden, Power Conversion Sys.      | 203-235-4886 |
| FL | Orlando, Hughes Assocs.             | 305-629-5933 |
| GA | Atlanta, Hughes Assocs.             | 404-662-1587 |
| IL | Chicago, Utronix                    | 312-834-1100 |
| IL | Elmhurst, Utronix                   | 312-834-1100 |
| MD | Randallstown, Beacon North Inc.     | 800-877-3747 |
| VA | Sterling, Beacon North, Inc.        | 703-478-2480 |
| MI | Ann Arbor, Lintott & Assoc.         | 313-662-1611 |
| MN | Minneapolis, Electro-Serv           | 612-338-3475 |
| NH | Londonderry, Power Conversion Sys.  | 603-434-2371 |
| NM | Albuquerque, Holder Hauer           | 505-888-9614 |
| NY | Rochester, Power Conversion Assocs. | 716-426-3598 |
| NY | Spring Valley, Powertronics         | 914-735-3775 |
| NC | Raleigh, Hughes Assocs.             | 919-467-7029 |
| PA | Collegeville, Beacon North          | 215-287-5479 |
| TN | Nashville, Hughes Assocs.           | 615-871-0908 |
| TX | Garland, Carey, McMahon & Assoc.    | 214-681-1414 |
| UT | Salt Lake City, Holder Hauer        | 801-532-2111 |

#### Local Distributors

|    |                     |              |
|----|---------------------|--------------|
| CA | Milpitas, Compumech | 408-945-9100 |
|----|---------------------|--------------|

**SYGENEX INC.**, 15446 Bel-Red Rd. Ste. 450, Redmond, WA 98052, Tel: 206-881-5500, FAX: 206-869-2837; Empl: 8; Sls. Mgr: Mary J. Grubic, Business Mgr.

**SYLVANIA AUTOMOTIVE AND MINIATURE LIGHTING**, Osram Sylvania, 275 W. Main St, Hillsboro, NH 03244, Tel: 603-464-5533, FAX: 603-464-0259; FSC No.: 88204; Empl: 850; Dist. Mgr: Tom Izbicki, Sls. Mgr: **B-1190-1194**

#### Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| AL | Huntsville, Cartwright & Bean      | 205-830-1540 |
| AR | Little Rock, Cartwright & Bean     | 901-362-8345 |
| CA | Irvine, English/Damco Sls. Assocs. | 714-837-3801 |
| CO | Wheatridge, Cluff & Assocs.        | 303-425-6604 |

|    |                                        |              |
|----|----------------------------------------|--------------|
| CT | Branford, Coakley, Boyd & Abbott       | 203-481-2218 |
| FL | Apopka, Cartwright & Bean              | 407-889-9100 |
| GA | Norcross, Cartwright & Bean            | 404-368-0160 |
| IL | Skokie, IRI                            | 708-967-8430 |
| IN | Ft. Wayne, R.O. Whitesell & Assocs.    | 219-432-5591 |
| IN | Indianapolis, R.O. Whitesell & Assocs. | 317-876-9000 |
| IN | Kokomo, R. O. Whitesell                | 317-457-9127 |
| IA | Cedar Rapids, R. W. Kunz               | 319-306-5386 |
| KS | Prairie Village, R.W. Kunz             | 913-648-3535 |
| KY | Versailles, R.O. Whitesell & Assocs.   | 606-873-1182 |
| LA | Covington, Cartwright & Bean           | 504-892-1780 |
| MA | Framingham, Coakley, Boyd & Abbott     | 508-820-0800 |
| MI | Grand Rapids, R.O. Whitesell & Assocs. | 616-942-5420 |
| MI | Southfield, R. O. Whitesell            | 313-352-5454 |
| MI | St. Joseph, R.O. Whitesell & Assocs.   | 616-983-7337 |
| MN | Minneapolis, Stoss & Assocs.           | 612-925-2757 |
| MS | Jackson, Cartwright & Bean             | 601-981-1170 |
| MO | St. Louis, R.W. Kunz                   | 314-966-4977 |
| NJ | Hackensack, Coakley, Boyd & Abbott     | 201-440-4114 |
| NJ | Long Valley, Paul A. Sweeney           | 908-852-1434 |
| OH | Cincinnati, R.O. Whitesell & Assocs.   | 513-528-5644 |
| OH | Cleveland, R.O. Whitesell & Assocs.    | 216-447-9020 |
| OH | Columbus, R.O. Whitesell & Assocs.     | 614-888-9396 |
| OH | Dayton, R.O. Whitesell & Assocs.       | 513-298-9546 |
| OR | Beaverton, Electronic Sources Inc.     | 503-627-0838 |
| PA | Pittsburgh, R.O. Whitesell & Assocs.   | 412-963-6161 |
| PA | Trevose, P.S.A. Inc.                   | 215-245-0513 |
| TN | Memphis, Cartwright & Bean             | 901-362-8345 |
| TX | Dallas, Erickson Sales                 | 214-739-5833 |
| TX | Round Rock, Erickson Sls.              | 512-244-3068 |
| TX | Stafford, Erickson Sales               | 713-261-5031 |
| WA | Bellevue, Electronic Sources Inc.      | 206-451-3500 |
| WI | Milwaukee, F.C. DuBois & Assocs.       | 414-774-3100 |

**SYLVANIA, Emissive Products/Process Heat**, Portsmouth Ave., Exeter, NH 03833, Tel: 603-772-4331, FAX: 603-772-9710; Empl: 200; Sls. Mgr: Joe Stark

**SYLVANIA LIGHTING**, Sylvania Lighting Center, 100 Endicott St, Danvers, MA 01923, Tel: 1-800-544-4828, 508-777-1900



**SYNEKTRON**  
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**FAX: 503-639-5453**

**SYNEKTRON CORPORATION**, 12000 S. W. Garden Place, Portland, OR 97223, Tel: 503-684-3090; Empl: 100  
**B-1310**

**SYNERGY MICROWAVE CORPORATION**, 483 McLean Boulevard, Paterson, NJ 07504, Tel: 201-881-8800, FAX: 201-881-8361; FSC No.: 63155; Empl: 48; Sls. Mgr: Antonio Almeida

**SYNERGY SEMICONDUCTOR CORPORATION**, 3450 Central Expressway, Santa Clara, CA 95051, Tel: 408-730-1313, FAX: 408-737-0831

**SYNETCOM DIGITAL INCORPORATED**, 1426 Aviation Blvd. Ste. 101, Redondo Bch, CA 90278, Tel: 310-379-2000; Empl: 5; Sls. Mgr: Donald Laufer

**SYNOPTICS, LTD.**, Paragon Towers, 233 Needham St, Newton, MA 02164, Tel: 617-527-4461, FAX: 617-527-4084; Empl: 25; Sls. Mgr: Barbara Finer, Dist. Mgr: Barbara Finer

**SYNTEST CORP.**, 40 Locke Dr, Marlboro, MA 01752-9973, Tel: 508-481-7827, FAX: 508-481-5769; Empl: 26; Sls. Mgr: Mitchell Corrigan  
**D-1112**

#### Local Sales Offices & Reps

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|----|-------------------------------------|-------------------------------|
| CA | Los Gatos, Estronics Co.            | 408-356-2968, Fx:408-356-7249 |
| CA | Murrieta, Mil-Corn Sales, Inc.      | 714-677-2097, Fx:714-677-2096 |
| CA | San Diego, Mil-Corn Sales, Inc.     | 619-275-0641, Fx:619-275-0641 |
| FL | Winter Pk, Carter Assocs.           | 407-678-5133, Fx:407-678-5251 |
| IL | Arlington Hgts, Coombs Assocs. Inc. | 708-439-9810, Fx:708-593-1746 |
| NJ | Butler, General Technlgs.           | 201-492-1292, Fx:201-492-0051 |

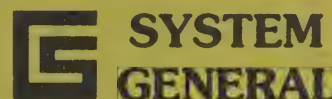
|    |                              |                               |
|----|------------------------------|-------------------------------|
| OH | Aurora, EMA, Inc.            | 216-562-6104                  |
| OH | Aurora, Meta Tech. Sls, Inc. | 216-562-8772, Fx:216-562-7129 |
| OH | Centerville, EMA, Inc.       | 513-433-2800, Fx:513-433-3147 |
| OH | Cleveland, EMA Inc.          | 216-562-7498                  |
| TX | Missouri City, C & L Assocs. | 713-499-5541, Fx:713-499-5473 |
| WI | Milwaukee, Coombs Assocs.    | 414-351-6123, Fx:414-351-6154 |

#### Local Distributors

|    |                              |              |
|----|------------------------------|--------------|
| WV | Ravenswood, Valtronics, Inc. | 304-273-5356 |
|----|------------------------------|--------------|

**SYSCON INTL, INC.**, 1108 So. High St, So. Bend, IN 46601-3796, Tel: 219-232-3900, FAX: 219-287-5916; Empl: 80; Sls. Mgr: Ed Hansen

**SYSTEC, INC.**, 3816 Chandler Dr, Minneapolis, MN 55421, Tel: 612-788-9701, FAX: 612-788-9502; Empl: 15; Sls. Mgr: Tom Thielen



**FAX: 408-262-9220**

**SYSTEM GENERAL CORPORATION**, 510 South Park Victoria Dr, Milpitas, CA 95035, Tel: 408-263-6667; Empl: 52; Sls. Mgr: Gary Delucchi; Dist. Mgr: Gary Delucchi  
**A-1717**

#### Local Sales Offices & Reps

|    |                                 |              |
|----|---------------------------------|--------------|
| CA | Pleasanton, IFM, Inc.           | 510-846-0762 |
| NH | Merrimack, Wilson/Reilly Assoc. | 603-673-9504 |
| PA | Philadelphia, Austek            | 215-924-6228 |
| TX | Denton, System General Corp.    | 817-565-9944 |

**SYSTEMS ALTERNATIVES**, 1705 Indian Wood Circle, Maumee, OH 43537, Tel: 419-891-1100, FAX: 419-891-1045; Sls. Mgr: Mark Weihs

**SYSTEMS DATA, INC.**, 2830 Copley Road, P.O. Box 4297, Akron, OH 44321, Tel: 216-666-0085, FAX: 216-666-7183; Empl: 12; Sls. Mgr: John C. Hall

**SYSTEMS RESEARCH LABORATORIES**, Arvin/Calspan, 2800 Indian Ripple Rd, Dayton, OH 45440, Tel: 513-426-6000, FAX: 513-426-1984; FSC No.: 14590; Empl: 1000; Sls. Mgr: Frank Balogh, Jr.

**SYSTEMS TESTING, INC.**, PO Box 242, Santa Clara, CA 95052, Tel: 408-727-0100, FAX: 408-496-0117; Empl: 4; Sls. Mgr: Frank J. Ardezzone

**SYSTRAN CORP.**, 4126 Linden Ave, Dayton, OH 45432-3068, Tel: 1-800-252-5601, FAX: 513-258-2729; Empl: 70; Sls. Mgr: Susan Chicoine

**SYSTRON-DONNER INERTIAL DIV., A BEI Electronics Company**, 2700 Syston Dr, Concord, CA 94518, Tel: 510-671-6400, TWX: 910-481-9478, FAX: 510-671-6590; Empl: 370

**SYSTRON-DONNER MICROWAVE DIV.**, 13100 Tellair Ave, Sylmar, CA 91342, Tel: 818-362-9900, FAX: 818-367-4709; Empl: 160; Sls. Mgr: Ashvin K. Sheth

**SYSTRONIX INC.**, 555 S. 300 East, PO Box 526398, Salt Lake City, UT 84152-6398, Tel: 801-534-1017, FAX: 801-534-1019; Empl: 4; Sls. Mgr: Bruce Boyes

**TABER INDUSTRIES**, 455 Bryant St, N. Tonawanda, NY 14120, Tel: 716-694-4000, 800-333-5300, FAX: 716-694-1450; Empl: 100; Sls. Mgr: Bernie W. Daube

**3-D VISIONS**, 2780 Skypark Dr, Torrance, CA 90505, Tel: 310-325-1339, FAX: 310-325-1505; Empl: 8

**TAB/MCGRAW-HILL**, McGraw-Hill Inc., Blue Ridge Summit, PA 17294-0850, Tel: 717-794-2191, TELEX: 820562, FAX: 717-794-2080; Empl: 400; Sls. Mgr: Tim Higgins

**TACC INTERNATIONAL CORPORATION**, Formulated Resins Corp., Air Station Inds Pk, Rockland, MA 02370, Tel: 617-878-7015, TELEX: 952123, ESYLNK: 5106015650(TACC INTL CORP), FAX: 617-871-6727; Empl: 70; Sls. Mgr: Norman G. Harrington





# TADIRAN

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**TADIRAN ELECTRONIC INDUSTRIES, INC.**, 2 Seaview Blvd., Port Washington, NY 11050, Tel: 516-621-4980; Empl: 6300; Dist. Mgr.: Effie Shoval, Sls. Mgr. **D-1477**

| Local Sales Offices & Reps            |              |
|---------------------------------------|--------------|
| AL Huntsville, M Squared I (M2I)      | 205-830-0498 |
| AZ Repronix                           | 602-230-2630 |
| AZ Tempe, Repronix Ltd.               | 602-345-4580 |
| CA Nexus                              | 415-691-1100 |
| CA Cameron Plk, Parsons Tech. Mktg.   | 916-676-2025 |
| CA Los Angeles, Tech. Solutions       | 818-704-1693 |
| CA Orange County, Tech. Solutions     | 714-707-4565 |
| CA San Jose, Tritech Sls.             | 408-925-9409 |
| CA Santa Ana, Technig. Solutions      | 714-558-9562 |
| CT Bloomfield, Friedman Sls. Inc.     | 203-243-3122 |
| CT Farmington, SBX Sls. (FSI)         | 203-676-1880 |
| FL Melbourne, Photon Sls. Inc.        | 407-259-8999 |
| GA Norcross, M Squared I (M2I)        | 404-447-6124 |
| IL Palatine, Technology Sls.          | 708-991-6600 |
| IA AEM, Inc.                          | 319-377-1129 |
| KS AEM, Inc.                          | 913-888-0022 |
| MI Grand Rapids, Urban Assocs., Inc.  | 616-245-0511 |
| MI Livonia, Urban Assocs., Inc.       | 313-421-9150 |
| MN Tech. Solutions                    | 612-785-9341 |
| MN St. Louis Plk, Elctm. Innovators   | 612-922-2945 |
| MO AEM, Inc.                          | 314-298-9900 |
| MO Florissant, G.M. Brown & Assoc.    | 314-839-3600 |
| NJ Mt. Laurel, Paragon Sls. & Mktg.   | 609-778-1990 |
| NM Albuquerque, Repronix Ltd.         | 505-292-1718 |
| NC Raleigh, M Squared I (M2I)         | 919-851-0010 |
| OH Cleveland, Arthur H. Baier Co.     | 216-292-7500 |
| OK T-Tec Sls.                         | 918-747-0522 |
| OK Broken Arrow, G.M. Brown & Assoc.  | 918-251-2084 |
| OR EE Sls.                            | 503-639-3978 |
| OR Portland, Elctm. Engrg. Sls.       | 503-639-3978 |
| TX T-Tec Sls.                         | 817-274-9662 |
| TX Austin, Mil-Rep Assocs.            | 512-346-6331 |
| TX El Paso, T-Tec Sls.                | 915-581-7920 |
| TX Houston, Mil-Rep Assocs.           | 713-444-2525 |
| TX Houston, T-Tec Sls.                | 713-578-9666 |
| TX Richardson, Mil-Rep Assocs.        | 214-644-6731 |
| VA Sterling, Beacon North             | 800-336-3747 |
| WA EE Sls.                            | 206-883-3374 |
| WA Redmond, Elctm. Engrg. Sls.        | 206-883-3374 |
| WI Milwaukee, Technig. Sls.           | 414-964-5015 |
| Can Mil                               | 403-236-2431 |
| Can Markham, Ont., Designtronics      | 416-513-8760 |
| Can Pt. Claire, Que., Designtronics   | 514-695-3124 |
| Can Richmond, B.C., Blakewood Elctms. | 604-273-9910 |

| Local Distributors                                 |              |
|----------------------------------------------------|--------------|
| AZ Phoenix, Lynntronics                            | 602-841-3900 |
| CA Canoga Park, Powerline                          | 818-887-3337 |
| CA Costa Mesa, Battery Specialties                 | 714-755-0888 |
| CA Costa Mesa, House of Batteries                  | 714-548-3968 |
| CA Huntington Bch., House of Batteries             | 714-375-0222 |
| CA Los Angeles, Bell Inds.(Corporate Ofc.)         |              |
| CA Mountain View, Power Source                     | 213-826-3975 |
| CA Palo Alto, Power Source                         | 415-960-0700 |
| CA San Diego, Tauber Elctms.                       | 619-274-7242 |
| CA San Jose, JDR MicroDevices                      | 408-559-1200 |
| CA San Jose, Pioneer Technigs.                     | 408-954-9100 |
| CA San Jose, Rose Elctms.                          | 408-943-0200 |
| CA Tarzana, Battery Biz                            | 818-774-1678 |
| CA Van Nuys, Cresta Corp.                          | 818-787-3919 |
| CO Littleton, AVT                                  | 800-537-9602 |
| CT Oxford, Periphex, Inc.                          | 203-264-3985 |
| FL Altamonte Springs, TNR Tech.                    | 800-346-0601 |
| FL Hialeah, Pro Battery Specs.                     | 305-884-4040 |
| FL Jacksonville, Sunn Battery                      | 904-353-6452 |
| FL Tampa, Micro Precision, Inc.                    | 813-854-2816 |
| GA Decatur, ELS                                    | 800-334-5066 |
| GA Marietta, Synergistics                          | 404-973-2020 |
| IL Chicago, Newark Elctms.(Corporate Ofc.)         |              |
| IL Downers Grove, Telecomm. Dvcs.                  | 312-784-5100 |
| IL Lisle, Jabro House of Batteries                 | 708-971-3460 |
| LA Lafayette, Mark Avant Sls.                      | 708-964-9358 |
| MD Gaithersburg, Pioneer Technigs.(Corporate Ofc.) | 301-232-6609 |
| MA Andover, Generation Elctms.                     | 301-921-0660 |
| MA Methuen, Generation Elctms.                     | 508-683-1177 |
| MI Grand Rapids, North Coast Comps.                | 508-683-1177 |
| MI Livonia, LWC Distrs.                            | 616-452-0800 |
| MN Minneapolis, Unipower Corp.                     | 313-464-7700 |
| MN St. Paul, D C Battery Prods.                    | 612-884-2933 |
| MN St. Paul, Shelly Ragon(Corporate Ofc.)          | 612-646-7478 |
| NY Bohemia, Battery Assemblers                     | 612-642-2820 |
| NY Commack, Bren-Tronics                           | 516-567-8855 |
| NY Lynbrook, Dantona Inds., Inc.                   | 516-499-5151 |
| NY Plainville, Micro Connections                   | 800-326-8662 |
| NY Plainville, Micro Connections                   | 516-993-1460 |
| NY Staten Island, Yakar Sys.                       | 800-783-8181 |
| NC Pilot Mountain, Progressive Tech., Inc.         | 919-368-1375 |

|                                                |              |
|------------------------------------------------|--------------|
| NC Winston Salem, Progressive Technigs.        | 919-761-1375 |
| OH Cleveland, Pioneer Standard(Corporate Ofc.) |              |
| OH Columbus, Promark Elctms.                   | 216-587-3600 |
| OR Beaverton, Micro Power                      | 614-351-2191 |
| PA Levittown, Aim Elctms.                      | 503-626-7086 |
| PA Richboro, Power Comps.                      | 215-785-3500 |
| TX Ft. Worth, Tandy Consumer Mail              | 800-628-7029 |
| TX Houston, Bar-Tec                            | 817-390-8273 |
| TX Houston, Tech Elctms.                       | 713-957-4771 |
| TX Richardson, Elect-A-Van                     | 713-780-7770 |
| TX Spring, Jabro                               | 214-231-5351 |
| TX Spring, Jabro                               | 713-367-9393 |
| UT Salt Lake City, Standard Supp. Co.          | 801-486-3371 |
| Can Alberta, Edmonton, Cardinal Elec., Ltd.    |              |
| Can Burnaby, BC, Enercell                      | 403-484-8926 |
| Can Calgary, AB, Cardinal Elctms., Ltd.        | 604-435-3666 |
| Can Markham, Ont., Semad                       | 403-259-6817 |
| Can Richmond, BC, Enernax Batteries            | 416-475-8500 |
| Can Surrey, BC, Excell Battery Co.             | 604-270-0812 |
| Can Surrey, BC, Excell Battery Co.             | 604-591-6588 |

**TA ENGINEERING CO., INC.**, 1605 School St., Moraga, CA 94556, Tel: 415-376-8500, FAX: 415-376-4977; Empl: 12

**TAIYO YUDEN (USA) INC.**, 714 W. Algonquin Rd., Arlington Heights, IL 60005-4493, Tel: 708-364-6104, FAX: 708-870-7828; Empl: 63; Sls. Mgr.: Ken Keim


**FAX: 314-265-3350**

**TALEMA ELECTRONIC, INC.**, P.O. Box 306, Saint James, MO 65559, Tel: 314-265-5500; Empl: 44; Sls. Mgr.: Jeff Goff **A-2566-2570**

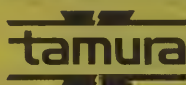
| Local Sales Offices & Reps            |              |
|---------------------------------------|--------------|
| AL Huntsville, Progressive Technig.   | 205-551-7770 |
| CA Campbell, King-Way Assocs. Inc.    | 408-866-5010 |
| CA Tarzana, King-Way Assocs., Inc.    | 818-609-1974 |
| CO Grand Junction, Krebil Comp. Sls.  | 303-293-8220 |
| IL Wheaton, EMTronics, Inc.           | 312-665-6220 |
| KS Shawnee, Buckman & Assocs.         | 913-268-6917 |
| MN Minneapolis, RK Sls. Assocs., Inc. | 612-571-1001 |
| MO St. Charles, Buckman & Assocs.     | 314-946-6201 |
| NH Hampton, Primary Source            | 603-926-8044 |
| NY Commack, R.C. Engrg. Sls.          | 516-543-3325 |
| OR Beaverton, Luscombe Engrg.         | 503-636-6664 |
| RI Warwick, Circuit-Pro, Inc.         | 401-738-7332 |
| TX Lewisville, Elctm. Prod. Reps.     | 214-436-4772 |
| WA Bellevue, Luscombe Engrg.          | 206-643-1463 |
| Can Markham, Ont., Avotronics Ltd.    | 416-475-2024 |

**TALIQ CORP.**, 1277 Reamwood Ave., Sunnyvale, CA 94089, Tel: 408-745-0750, FAX: 408-745-1820; Empl: 100; Sls. Mgr.: Bob Simpson

**TALTRONICS, Dimetrics, Inc.**, 404 Armour St., P.O. Box 339, Davidson, NC 28036, Tel: 704-892-8872, FAX: 704-892-4713; Empl: 3000; Sls. Mgr.: Gene Sokolowski; Dist. Mgr.: Gene Sokolowski **D-1942-1943, 2313**

| Local Sales Offices & Reps    |              |
|-------------------------------|--------------|
| CA Sunnyvale, Peartech Ind.   | 408-732-1500 |
| FL Largo, Electrocraft        | 813-544-1766 |
| NH Nashua, Bennetron          | 603-880-7008 |
| NJ Medford, The McCoy Grp.    | 609-953-0770 |
| NY Jericho, J Squared Mktg.   | 516-935-3200 |
| NC Raleigh, Pinnacle Mktg.    | 919-848-0404 |
| OK Tulsa, Advance Tech. Sls.  | 918-664-0482 |
| TX Dallas, Advance Tech. Sls. | 214-340-1300 |

**TAMA ELECTRIC CO., LTD.**, See Railtron Electronics Corp.


**FAX: 909-676-9482**

**TAMURA CORPORATION OF AMERICA**, 43352 Business Park Dr., P.O. Box 892230, Temecula, CA 92589-2230, Tel: 909-699-1270; Empl: 6000; Sls. Mgr.: Steve Fisher; Dist. Mgr.: Steve Fisher **A-1297-1299, 1610-1611, 2571-2579; D-1479, 1945-1955**

| Local Sales Offices & Reps                   |              |
|----------------------------------------------|--------------|
| AL Huntsville, Electronic Mktg. Assoc.       | 205-880-8050 |
| AZ Scottsdale, Avtec/Earl & Assoc.           | 602-994-3813 |
| CA Marina Del Rey, Macro Rep Inc.            | 310-827-5120 |
| CA San Diego, Varigon San Diego, Inc.        | 619-576-0100 |
| CA Santa Clara, Technig. Sls.                | 408-727-7200 |
| CO Golden, J. F. Hurlbut Co.                 | 303-279-7796 |
| CT Marlborough, Precision Sls., Inc.         | 203-295-0580 |
| FL Deerfield Bch., Micro-Elec. Comps. Corp.  |              |
| FL Largo, Micro-Elec. Comps. Corp.           | 305-426-8944 |
| FL Winter Springs, Micro-Electm. Comps.      | 813-393-5011 |
| GA Atlanta, Electronic Mktg. Assoc.          | 407-366-1379 |
| IL Park Ridge, Metcom Assoc. Corp.           | 414-468-1215 |
| IN Huntington, Elctm. Reps Inc.              | 708-696-1490 |
| IN Indianapolis, Elctm. Reps Inc.            | 219-356-3513 |
| IN Indianapolis, Elctm. Reps Inc.            | 317-894-1414 |
| IA Davenport, Rush & West                    | 319-388-9494 |
| KS Olathe, Rush & West                       | 913-764-2700 |
| KY Lexington, Elctm. Reps Inc.               | 606-277-0436 |
| MI Livonia, Lowell-Wendt Mktg. Co.           | 313-464-2722 |
| MI Wyomring, Lowell-Wendt Mktg. Co.          | 616-791-7370 |
| MN Edina, Grayden & Flemmer                  | 612-941-1120 |
| MO St. Louis, Rush & West                    | 314-965-3322 |
| NJ Lodi, TRC Elctms.                         | 201-779-8282 |
| NC Raleigh, Elctm. Mktg. Assoc.              | 919-847-8800 |
| OH Dayton, Dolfuss-Root & Co.                | 513-433-6776 |
| OH Westlake, Dolfuss-Root & Co.              | 216-899-9370 |
| OH Worthington, Dolfuss-Root & Co.           | 614-885-4844 |
| PA Allentown, TRC Elctms.                    | 215-264-4995 |
| TX Dallas, Marathon Assocs.                  | 214-234-5686 |
| TX Freeport, Marathon Assocs.                | 409-233-7026 |
| TX Houston, Marathon Assocs.                 | 713-495-6495 |
| WA Redmond, S.E.A. (Sls. & Engrg. Assoc.)    |              |
| WA Vancouver, S.E.A. (Sls. & Engrg. Assoc.)  |              |
| WI West Allis, Metcom Assocs. Corp.          | 206-883-4999 |
| Can Pointe Claire, Que., A.R. Gray & Assocs. | 206-573-5161 |
|                                              | 414-476-1300 |
|                                              | 514-694-6378 |

| Local Distributors                           |              |
|----------------------------------------------|--------------|
| AL Birmingham, American Elctm. Supply        | 205-942-4656 |
| CA Manhattan Beach, Prime Electro Prods. Co. |              |
| CA Santa Clara, Foresight Elctms.            | 213-379-3642 |
| CA Yorba Linda, Target Elctms., Inc.         | 408-980-9700 |
| CO Littleton, Deltex, Inc.                   | 714-733-0384 |
| CO Littleton, Displays Plus, Inc.            | 303-779-1611 |
| FL Palm Bay, Comp. Distrs., Inc.             | 303-730-7333 |
| GA Norcross, Applied Power Inc.              | 407-724-9910 |
| IL Glendale Hgts, Mac Gregor & Co., Inc.     | 404-263-0421 |
| IL Grove Vlg., Nu-Way Elctms., Inc.          | 708-469-4080 |
| IN Indianapolis, Meunier Elctms.             | 708-437-7120 |
| LA Houma, Control Genl.                      | 517-635-3511 |
| MD Burtonsville, U.S. Elctms., Inc.          | 504-872-9002 |
| MD Columbia, Vantage Comps.                  | 301-384-3300 |
| MI Livonia, LWC Distrs.                      | 410-720-5100 |
| MN Minneapolis, Acme Elctms.                 | 313-464-7700 |
| MN Minneapolis, Bergquist Co.                | 612-338-1016 |
| MN Minneapolis, Bert Corp.                   | 612-835-2322 |
| MN Minneapolis, Torte Corp.                  | 612-866-3662 |
| MN St. Paul, Power Motion                    | 612-645-0781 |
| MN St. Paul, Power Motion                    | 612-645-0781 |
| MS Jackson, Ellington Elctm. Supp. Inc.      | 601-355-0561 |
| NJ Lodi, TRC Elctms.                         | 201-779-8282 |
| NM Albuquerque, Elctm. Parts Co.             | 505-293-6161 |
| NY Syracuse, ADR Technigs., Inc.             | 515-437-7087 |
| OH Centerville, Indl. Prods. Distbg., Inc.   | 513-435-2086 |
| OH Cincinnati, Schuster Elctms., Inc.        | 513-489-1400 |
| TX Richardson, The Altair Co.                | 214-231-5166 |
| TX Stafford, Southwest Elctms.               | 713-240-4000 |
| TX Tomball, Wofford Elctms.                  | 713-351-2255 |
| WA Redmond, Priebe Elctms.                   | 206-881-2363 |
| WI Mequon, Taylor Elec. Co.                  | 414-241-4321 |
| WI Milwaukee, Progressive Image, Inc.        | 414-321-4722 |

**T&W SYSTEMS, INC.**, See Versacad Computervision Personal CAD/CAM

**TANE ALARM PRODUCTS**, 247-40 Jericho Tpke., Floral Park, NY 11001, Tel: 516-328-3351, FAX: 516-326-9125; Empl: 10; Sls. Mgr.: Tab Hauser, Dist. Mgr.: Sam Lurie

**KL. TANNEHILL INC.**, 1210 W. 96th St., Bloomington, MN 55431, Tel: 612-881-6700, FAX: 612-881-0743; Empl: 21; Sls. Mgr.: James Falcone

**TANSITOR ELECTRONICS**, West Rd., P.O. Box 230, Bennington, VT 05201, Tel: 802-442-5473, TELEX: 954007, FAX: 802-447-1297; FSC No.: 03026626; Empl: 183; Sls. Mgr.: David Latchum; Dist. Mgr.: 225

**TAPECON, INC.**, 10 Latta Rd., Rochester, NY 14612, Tel: 716-621-8400; Empl: 120; Sls. Mgr.: Joseph C. Pallone

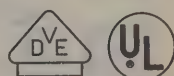
**TAPESWITCH CORP. OF AMERICA**, 100 Schmitt Blvd., Farmingdale, NY 11735, Tel: 516-694-6312, FAX: 516-694-6304; Empl: 100; Sls. Mgr.: Ed Duhan



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**COMMON MODE COILS**

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**SCR/TRIAC TRIGGER TRANSFORMERS**

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**OEM PCB BOARD POWER TRANSFORMERS**

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**NOISE, COMMON MODE & POWER COILS**

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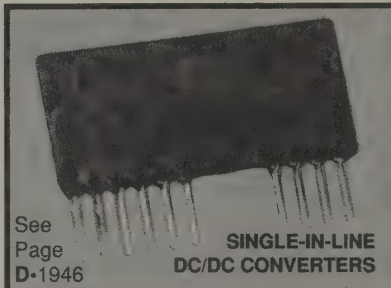


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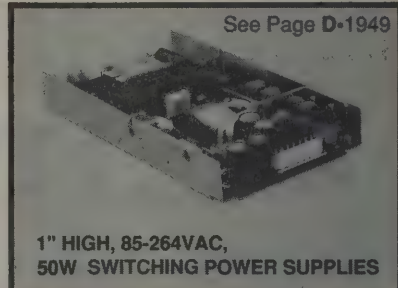
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**SWITCHING POWER  
SUPPLIES TO 400W**



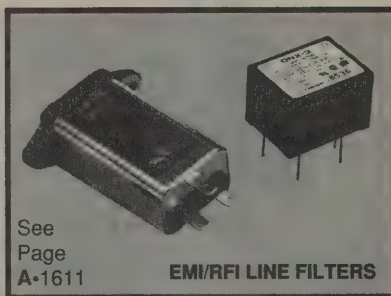
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**SINGLE-IN-LINE  
DC/DC CONVERTERS**



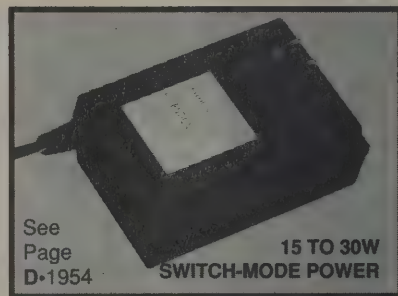
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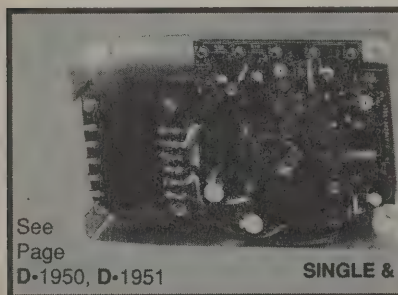
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**EMI/RFI LINE FILTERS**



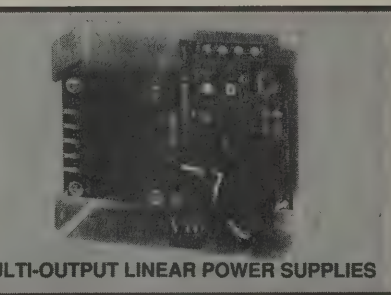
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**15 TO 30W  
SWITCH-MODE POWER**



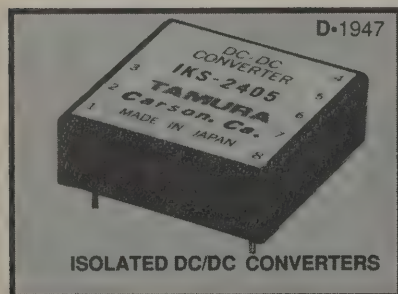
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**SINGLE & MULTI-OUTPUT LINEAR POWER SUPPLIES**



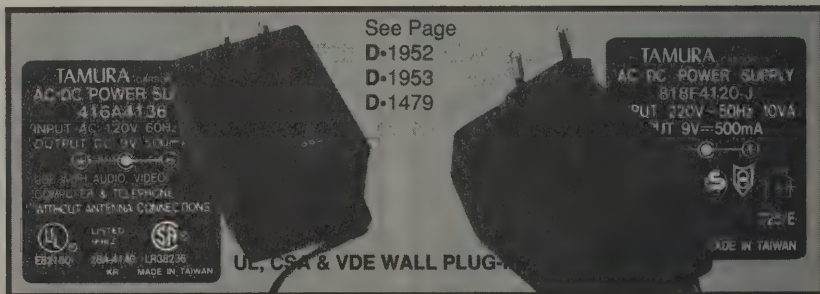
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**40 TO 60W  
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**TARSAN ENG. INC.**, 1290 Old Bayshore Hwy., Burlingame, CA 94010, Tel: 415-348-8666, 800-284-8666, FAX: 415-348-2821; Empl: 8; *Sls. Mgr.*: Arthur Lin

**TATUM LABS INC.**, 1287 N. Silo Ridge, Ann Arbor, MI 48108, Tel: 313-663-8810, FAX: 313-663-3640; Empl: 11

# TAUBER

**FAX: 619-274-2220**

**TAUBER ELCTRS. INC.**, 4901 Morena Blvd, Bldg. 314, San Diego, CA 92117, Tel: 619-274-7242, 1-800-927-0004; Empl: 45; *Sls. Mgr.*: Bob Tauber; *Dist. Mgr.*: Ed Hoscoe **D-1480-1482**

| Local Sales Offices & Reps |                                  |                |
|----------------------------|----------------------------------|----------------|
| AL                         | Huntsville, Macro-Mktg.          | 205-883-9630   |
| CA                         | Fullerton, Tauber Elctms.        | 1-800-927-0004 |
| CA                         | San Diego, Irv Korson-Mike Dione | 619-274-7242   |
| CA                         | Santa Ana, Carlos Gonzalez       | 1-800-927-0004 |
| FL                         | Land-O-Lakes, AJS Power Source   | 813-996-2583   |
| GA                         | Norcross, Marco Mktg.            | 404-662-5580   |
| IL                         | Wheeling, Ed Joyner & Co.        | 708-520-1200   |
| IA                         | Des Moines, Beams Co.            | 515-255-1148   |
| KS                         | Shawnee Mission, Beams Co.       | 913-631-0300   |
| MD                         | Laurel, Penn Star Elctms.        | 301-854-2308   |

**TAURUS CORPORATION**, See Signal Research Inc.

**TAURUS ELECTRONICS, INC.**, One Tupperware Dr., Ste. 13, N. Smithfield, RI 02895, Tel: 401-769-2625, FAX: 401-765-8455; Empl: 10; *Sls. Mgr.*: Richard E. Schaffer

**TAYLOR ELECTRONICS, INC.**, 401 West Orion, Tempe, AZ 85283, Tel: 602-838-4523, FAX: 602-838-7456; Empl: 25; *Sls. Mgr.*: Sharon F. Hansen

**TAYLOR INDUSTRIAL SOFTWARE**, 10045 111 St, Ste. 1002, Edmonton, Alberta, Canada T5K 2M5, Tel: 403-482-7547, FAX: 403-488-0032; Empl: 75; *Dist. Mgr.*: Carl Cooke, VP Sls. & Mktg.

**T-BAR DATA SWITCH CORP.**, 12 Carcade Blvd, Orange, CT 06477, Tel: 203-795-0739, 800-726-8227, FAX: 203-795-8870; FSC No.: 14195; Empl: 140; *Sls. Mgr.*: Gerard F. Ryan **B-1814**

| Local Sales Offices & Reps |                                   |              |
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| AZ                         | Tempe, Cantelec Sls. Inc.         | 602-345-1276 |
| CA                         | Arcadia, Van Golt & Assocs.       | 818-445-9728 |
| FL                         | Clearwater, Tech-Rep Assocs.      | 813-577-9370 |
| MD                         | Gaithersburg, Carwithen Assocs.   | 301-921-9545 |
| NY                         | E. Setauket, Eastern Metro Assoc. | 516-928-2726 |
| TX                         | Richardson, McCoy Assocs. Co.     | 214-864-1838 |
| WA                         | Seattle, Datacom Assocs.          | 206-285-2525 |

| Local Distributors |                         |              |
|--------------------|-------------------------|--------------|
| IL                 | Chicago, Newark Elctms. | 312-784-5100 |

**TCA**, 7733 Telegraph Rd, Montebello, CA 90640, Tel: 213-726-0303, FAX: 213-727-7621; Empl: 200; *Sls. Mgr.*: Jay Giles

# teli BATTERIES

THE POWER TO SOLVE PROBLEMS

**FAX: 708-971-3903**

**T.D.I. BATTERIES**, 2852 Hitchcock Ave., Downers Grove, IL 60515, Tel: 800-323-7307; Empl: 250; *Sls. Mgr.*: Chuck Pokonosky; *Dist. Mgr.*: Pam English **D-1483**

**TDJ CO., INC.**, 1154 Morena Blvd, San Diego, CA 92110, Tel: 619-276-5920, FAX: 619-276-5960; FSC No.: Cage Code 60382; Empl: 7; *Sls. Mgr.*: R. Scherr **C-1100-1101**

**TDK CORPORATION OF AMERICA**, Electronic Components & Material, 1600 Feehanville Drive, Mount Prospect, IL 60056, Tel: 708-803-6100, FAX: 708-803-6296; Empl: 7,800; *Sls. Mgr.*: Tadashi Enami; *Dist. Mgr.*: Tadashi Enami (TDK Corp. of America)

**TEAL ELECTRONICS CORPORATION**, 10350 Sorrento Valley Rd, San Diego, CA 92121, Tel: 619-558-9000, FAX: 619-558-9500; Empl: 60; *Sls. Mgr.*: Art Allard

**TEAM SYSTEMS**, 2934 Corvin Dr., Santa Clara, CA 95051, Tel: 408-720-8877, FAX: 408-720-9643; Empl: 6; *Sls. Mgr.*: Bill Nicklin

**TEAM VISIONICS CORPORATION**, 3071 De La Cruz Blvd, Ste. 108, Santa Clara, CA 95054, Tel: 408-562-0123, FAX: 408-492-1380; Empl: 15

**TEAPO ELECTRONIC CORP. OF AMERICA**, 5550 Peachtree Inds. Blvd., Norcross, GA 30071, Tel: 404-449-6220, FAX: 404-447-1109, 404-448-8584; Empl: 1000; *Sls. Mgr.*: Michael Lin

# teca

**FAX: 312-342-0191**

**TECA, THERMOELECTRIC COOLING AMERICA CORP.**, 4048 W. Schubert Ave., Chicago, IL 60639, Tel: 312-342-4900; Empl: 50 **C-1644-1645**

| Local Distributors |                                |              |
|--------------------|--------------------------------|--------------|
| Can                | Sudbury, Ont., Avad Indl. Sls. | 705-897-2584 |

# TECCOR

A SIEBE COMPANY

**FAX: 214-550-1309**

**TECCOR ELECTRONICS, INC.**, 1801 Hurd Dr., Irving, TX 75038, Tel: 214-580-1515, TELEX: 79-1600; Empl: 1250; *Sls. Mgr.*: Gerry Wiley, *Sls. Mgr.*: VP **A-2220-2223**

| Local Sales Offices & Reps |                                        |              |
|----------------------------|----------------------------------------|--------------|
| AL                         | Daphne, Interep Assocs.                | 205-478-1036 |
| AL                         | Huntsville, Interep Assocs.            | 205-881-1096 |
| AZ                         | Mesa, System Sls. of Az(SSA)           | 602-464-9989 |
| CA                         | Meadow Vista, O'Donnell North          | 916-878-9087 |
| CA                         | San Diego, O'Donnell Assocs.           | 619-578-1645 |
| CA                         | San Jose, O'Donnell North              | 408-456-2950 |
| CA                         | Torrance, O'Donnell Assocs.            | 310-781-2255 |
| CO                         | Littleton, Harthun Assocs.             | 303-795-5545 |
| CT                         | Guilford, S-J Connecticut              | 203-458-7558 |
| FL                         | Boca Raton, Perrott Assocs. Inc.       | 407-362-0191 |
| FL                         | Casselberry, Perrott Assocs. Inc.      | 407-830-0094 |
| FL                         | Melbourne, Perrott Assocs. Inc.        | 407-676-0305 |
| FL                         | Tampa, Perrott Assocs. Inc.            | 813-985-1900 |
| GA                         | Norcross, Interep Assocs. Inc.         | 404-449-8680 |
| IL                         | Itasca, Micro Sls.(MSI)                | 708-285-1000 |
| IN                         | Huntington, Elctm. Rep. Inc.           | 219-356-3513 |
| IN                         | Indianapolis, Elctm. Rep. Inc.         | 317-894-1414 |
| IA                         | West Des Moines, SPS Assocs. Ltd.      | 515-225-0607 |
| KS                         | Olathe, SPS Assocs. Ltd.               | 913-764-4460 |
| KY                         | Lexington, Elctm. REP. Inc.            | 606-277-0436 |
| MA                         | Medfield, JEF Components               | 508-359-5501 |
| MA                         | Still River, JEF Comps.                | 508-456-3369 |
| MA                         | Wenham, S-J New England (Boston)       | 508-468-5057 |
| MA                         | Worcester, S-J Assocs. Inc.            | 508-799-5409 |
| MI                         | Farmington Hills, Rathsburg Assocs.    | 313-489-1500 |
| MN                         | Minneapolis, ECS (Electric Comp. Sls.) | 612-933-2594 |
| MO                         | Earth City, SPS Assocs. Ltd.           | 314-291-0520 |
| NJ                         | Mt. Laurel, S-J Mid Atlantic Inc.      | 609-866-1234 |
| NM                         | Albuquerque, Sys. Sls. of NM (SSA)     | 505-889-2901 |
| NY                         | Canandaigua, Bensman/Upstate Assocs.   | 716-396-2498 |
| NY                         | Lewiston, Bensman/Upstate Assocs.      | 716-754-9155 |
| NY                         | Rockville Centre, S-J Assocs. Inc.     | 516-536-4242 |
| NC                         | Charlotte, Godwin Assocs.              | 704-549-8500 |
| NC                         | Raleigh, Godwin Assocs.                | 919-878-8000 |
| OH                         | Columbus, Rathsburg Assoc.             | 614-457-2242 |
| OH                         | Independence, Rathsburg Assoc.         | 216-447-8825 |
| OH                         | Miamisburg, Rathsburg Assocs.          | 513-434-1026 |
| TN                         | Greenville, Interep Assocs. Inc.       | 615-639-3491 |
| TX                         | Irving, Amir Jabin                     | 214-580-1515 |
| VA                         | Falls Church, S-J Chesapeake           | 703-533-2233 |
| WA                         | Bothel, Quadra Sls.                    | 206-489-3428 |
| WI                         | Wauwatosa, Larsen Assocs.              | 414-258-0529 |
| Can                        | Concord, Ont., Astec Comps.            | 416-669-4022 |

| Local Distributors |                                        |              |
|--------------------|----------------------------------------|--------------|
| AL                 | Huntsville, Hammond Elctms.            | 205-830-4764 |
| AZ                 | Phoenix, Arizona Comp. Co.             | 602-269-5855 |
| CA                 | Hayward, Electro Comp. Distrs.         | 510-783-5800 |
| CA                 | Santee, Mouser Elctms.                 | 619-449-2220 |
| CA                 | Tustin, Added Value Elect. Distr. Inc. | 714-259-8258 |
| CT                 | Milford, Fleet Elctms. Inc.            | 203-877-2577 |
| CT                 | Wallington, Greene-Shaw                | 203-265-3333 |
| FL                 | Fl. Lauderdale, Hammond Elctms.        | 305-973-7103 |
| FL                 | Orlando, Hammond Elctms.               | 407-849-6060 |
| GA                 | Norcross, Hammond Elctms.              | 404-449-1996 |
| CO                 | Wheat Ridge, Added Value Rcky. Mtns.   | 303-422-1701 |

|    |                                       |              |
|----|---------------------------------------|--------------|
| IL | Rosemont, Advent Elctms. Inc.         | 708-298-4210 |
| IN | Indianapolis, Advent Elctms. Inc.     | 317-872-4910 |
| IA | Cedar Rapids, Advent Elctms. Inc.     | 319-363-0221 |
| MD | Savage, Pyttronic Ind. Inc.           | 301-953-9650 |
| MA | Newton, Greene-Shaw                   | 617-969-8900 |
| MI | Farmington Hills, Advent Elctms. Inc. | 313-477-1650 |
| MN | Minneapolis, Stark Elctms. Supp. Co.  | 612-332-1325 |
| MN | St. Paul, Gopher Elctms.              | 612-490-4907 |
| MN | Thief River Falls, Digi-Key           | 800-344-4539 |
| MO | St. Charles, Finnegan Elctms.         | 314-946-6201 |
| NE | Lincoln, Scott Elctm. Supp.           | 402-466-8221 |
| NJ | Bloomfield, Solid State Inc.          | 201-429-8700 |
| NJ | Randolph, Mouser Elctms.              | 201-328-3322 |
| NM | Albuquerque, Bell Inds. of NM         | 505-292-2700 |
| NY | Buffalo, Summit Elctms.               | 716-887-2800 |
| NY | Penn Yan, Advacom Inc.                | 513-536-2221 |
| NC | Greensboro, Hammond Elctms.           | 919-275-6391 |
| OR | Portland, Radar Elec.                 | 503-232-3404 |
| PA | Export, Advacom Inc.                  | 412-425-7551 |
| PA | McKean, Advacom Inc.                  | 814-476-7774 |
| PA | Montgomeryville, Pyttronic Ind. Inc.  | 215-483-2850 |
| SC | Greenville, Hammond Elctms.           | 803-233-4121 |
| TX | Carrollton, Omni Pro Intl. Inc.       | 214-713-9000 |
| TX | Houston, Omni Pro Elctms.             | 713-270-1700 |
| TX | Mansfield, Mouser Elctms.             | 817-483-4422 |
| UT | West Valley City, Added Value (AVED)  | 801-975-9500 |

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| WA  | Richland, Radar Elec. Co. Inc.          | 509-943-8336 |
| WA  | Seattle, Radar Elec. Co. Inc.           | 206-282-2511 |
| WA  | Spokane, Radar Elec.                    | 509-477-3053 |
| WI  | Milwaukee, Marsh Elctms. Inc.           | 414-475-6000 |
| WI  | Mukwonago, Advent Elctms.               | 414-363-3249 |
| Can | Calgary, Alberta, Cardinal Ind Elctms.  | 403-259-6817 |
| Can | Edmonton, Alberta, Cardinal IND Elctms. | 403-483-6266 |

|     |                                       |              |
|-----|---------------------------------------|--------------|
| Can | Montreal, Que, Electronic Wholesalers | 514-769-8861 |
| Can | Richmond, B C, Electro Sonic Inc.     | 604-273-2911 |
| Can | Saskatoon, Sask, Cardinal Ind Elctms. | 306-934-3443 |
| Can | Willowdale, Ont., Electro Sonic Inc.  | 416-494-1666 |

**TECH-ETCH, INC.**, 45 Aldrin Rd, Plymouth, MA 02360, Tel: 508-747-0300, TELEX: 989997, FAX: 508-746-9639; Empl: 280; *Sls. Mgr.*: P. A. Thomas

**TECH LABORATORIES INC.**, 500 10th St, Palisades Pk, NJ 07650, Tel: 201-944-2221, FAX: 201-944-1653; FSC No.: 83332; Empl: 25; *Sls. Mgr.*: Nino M. Vlachic **B-1815**

| Local Sales Offices & Reps |                                  |              |
|----------------------------|----------------------------------|--------------|
| CA                         | Canoga Park, C & W Compents Sls. | 818-700-2684 |
| CA                         | Mtn. View, Bridge Mktg.          | 415-965-8045 |
| IL                         | Glenview, Crimmon Engrg. Co.     | 312-470-0024 |
| KS                         | Lenexa, Midtec Assocs.           | 913-541-0505 |
| MI                         | Jackson, N. Scroggs Co.          | 517-750-1170 |
| MO                         | St. Louis, Midtec Assocs.        | 314-275-8666 |
| NJ                         | Whippany, Ken L. Love Assocs.    | 201-540-0204 |
| NY                         | Hempstead, Ken L. Love Assocs.   | 516-681-3155 |
| OH                         | Cincinnati, Patco                | 513-931-3311 |
| SC                         | Myrtle Beach, Candor Co. Inc.    | 803-448-8361 |
| TX                         | Dallas, Southwest Elctms.        | 214-690-9881 |
| TX                         | Houston, Southwest Elctms.       | 713-729-1670 |

# T

**FAX: 310-827-2572**

**TECHMAR CORP.**, 4150-A Glencoe Ave., Marina Del Rey, CA 90292, Tel: 310-827-8897; FSC No.: 32597; Empl: 8; *Sls. Mgr.*: Jeff Wilson **C-1102-1104**

**TECHMATION, INC.**, 2730 South Hardy, Ste. 5, Tempe, AZ 85282, Tel: 602-968-9946, FAX: 602-968-1849

**TECHNAR, INC.**, See TRW Technar, Inc.



TECHNETICS CORPORATION, 6408 Castleplace Dr., Indianapolis, IN 46250, Tel: 317-842-5377, 800-467-8324; Empl: 120; Sls. Mgr: Michael L. Scherer

TECHNIC, INC., Box 9650, Providence, RI 02940-9650, Tel: 401-781-6100, TELEX: 927514, FAX: 401-781-2890; Empl: 225; Sls. Mgr: Andrew T. Ferris

TECHNICAL DEVICES, 580 Alaska Ave., Torrance, CA 90503, Tel: 310-618-8437, FAX: 310-618-1543; FSC No.: 04772; Empl: 45; Sls. Mgr: D. Murrin; Dist. Mgr: D. Murrin

TECHNICAL DEVICES, 9181 N. Dixie Dr., Dayton, OH 45414, Tel: 513-890-7881, FAX: 513-890-5136; Empl: 12 C-1813; D-1956-1957

#### Local Sales Offices & Reps

|    |                                      |              |
|----|--------------------------------------|--------------|
| AL | Huntsville, CMS                      | 205-881-6699 |
| AZ | Scottsdale, Western Region Mktg.     | 602-661-0093 |
| CO | Westminster, Western Region Mktg.    | 303-428-8088 |
| FL | Longwood, Larry Wood Sls. Agcy. Inc. | 407-774-2554 |
| GA | Newman, CMS                          | 404-304-0814 |
| IL | Western Springs, Corlinear Reps.     | 708-784-1100 |
| MI | Grand Rapids, J.M.J. & Assocs.       | 616-285-8887 |
| MN | New Hope, Customer First             | 612-533-5604 |
| NC | Durham, CMS                          | 919-383-9448 |
| OH | Cleveland, Tech. Dvcs.               | 216-975-1985 |
| OH | Dayton, Tech. Dvcs.                  | 513-890-6811 |
| TX | Austin, Component Technlg.           | 512-288-7382 |
| TX | Dallas, Component Technlg.           | 214-783-8831 |
| TX | Houston, Component Technlg.          | 713-690-3111 |
| UT | Salt Lake City, Western Reg. Mktg.   | 801-268-9768 |

TECHNICAL HEATERS, INC./THERMOLAB, 710 Jessie St., San Fernando, CA 91340, Tel: 818-365-9435, FAX: 818-361-2788; FSC No.: 09152

TECHNICAL MARKING SYS., See Autoroll Machine Corp.

TECHNICAL PANELS, INC., 1600 W. Acoma Blvd., 60, Lake Havasu City, AZ 86403, Tel: 602-680-9191, FAX: 602-680-9101; Empl: 14

TECHNICAL RESEARCH & MFG., INC., See TRM, Inc.

TECHNICAL SERVICES FOR ELECTRONICS, INC., 108 5th Ave. N.W., P.O. Box 616, Arlington, MN 55307, Tel: 612-964-2237, FAX: 612-964-2465; Empl: 300

TECHNICAL SERVICES LABORATORY INC., 95 Ready Ave., Ft. Walton Beach, FL 32548, Tel: 904-243-3722, FAX: 904-244-6653; FSC No.: 51283; Empl: 12; Sls. Mgr: Andrew J. Corbin

TECHNICAL WITTS, INC., 6319 W. Villa Theresa Dr., Glendale, AZ 85308, Tel: 602-439-1833, FAX: 602-439-1833; Empl: 2; Sls. Mgr: Ernest H. Wittenbreder

## TECHNIPOWER

**Penril**

A SUBSIDIARY OF DEXTER-TECHNIPOWER

FAX: 203-797-9285

TECHNIPOWER, A PENRIL CO., P.O. Box 222, Commerce Pk., Danbury, CT 06813, Tel: 203-748-7001; FSC No.: 13850; Empl: 85; Sls. Mgr: Jack Schramm A-2565; D-1958-1959

#### Local Sales Offices & Reps

|     |                                    |              |
|-----|------------------------------------|--------------|
| AL  | Huntsville, Rakes Engrg. & Mktg.   | 205-533-3763 |
| CA  | La Habra, Cygnus Sls. Engrg. Corp. | 213-691-2993 |
| CO  | Parker, Technlg. Mktg. Assoc.      | 303-841-3435 |
| MD  | Owings Mills, Neal Deoul Assocs.   | 301-363-4311 |
| MN  | Minneapolis, Intertec Assocs.      | 612-921-8443 |
| MO  | St. Louis, AEM Inc.                | 314-298-9900 |
| NJ  | Flanders, K & R Engrg. Sls. Corp.  | 201-584-5235 |
| PA  | Pipersville, Yax Assocs.           | 215-766-2100 |
| TX  | Irving, Kite Elctrn.               | 214-986-0321 |
| WA  | Kirkland, NorthWest Comp. Sls.     | 206-828-2104 |
| Can | Guelph, Ont., Victrix, Ltd.        | 518-836-1480 |
| Can | Ontario, Cana Rep. Grp. Inc.       | 416-250-6683 |

#### Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| CA | Los Angeles, Cal-State Elctrms. | 213-933-8187 |
| CA | Oakland, N.A. D'Arcy            | 415-638-7773 |
| CT | Bristol, M.L. Assocs. Inc.      | 203-589-2856 |
| GA | Atlanta, Motion Elctrms.        | 404-455-8262 |
| IL | Des Plaines, Delta TechProds.   | 708-803-6070 |
| IN | South Bend, PEI/Genesis         | 800-523-0727 |
| MD | Baltimore, PEI/Genesis          | 301-529-2200 |
| MA | Woburn, Abbott Elctrms. Co.     | 617-935-2040 |

|     |                                      |              |
|-----|--------------------------------------|--------------|
| MI  | Dearborn, Industrial Temp. & Control | 313-278-2210 |
| MN  | St. Paul, Gopher Elctrms. Co.        | 612-494-4900 |
| NY  | Albany, Adirondack Elctrms., Inc.    | 518-456-0203 |
| NC  | Charlotte, Jenkins Elec. Co.         | 704-392-7371 |
| OH  | Dayton, Wright Source                | 513-293-1341 |
| OK  | Tulsa, Inotek Corp.                  | 918-627-1500 |
| PA  | Philadelphia, PEI/Genesis            | 215-673-0400 |
| TX  | Dallas, Inotek Corp.                 | 214-243-7000 |
| TX  | Houston, Inotek Corp.                | 713-688-4490 |
| Can | Guelph, Ont., Victrix Ltd.           | 519-836-1484 |

TECHNIQUES, INC., 235 Jackson St., Englewood, NJ 07631, Tel: 201-569-5900, FAX: 201-569-5615; Empl: 60

TECHNI-TOOL, 5 Apollo Rd., Box 368, Plymouth Meeting, PA 19462, Tel: 215-825-4990, TELEX: 834-763, FAX: 215-828-5623; FSC No.: 30239; Empl: 80; Sls. Mgr: W. Bezar

#### Local Sales Offices & Reps

|    |                        |              |
|----|------------------------|--------------|
| AZ | Mesa, Techni-Tool West | 602-345-2700 |
| CA | W. Covina, Electra-Tec | 818-964-9722 |
| FL | Ft. Pierce, Hyber-Sem  | 305-464-0461 |
| NJ | Butler, Genl. Techn.   | 201-492-1292 |

TECHNITROL, 1952 E. Allegheny Ave., Philadelphia, PA 19134, Tel: 215-426-9105, FAX: 215-426-2836; FSC No.: 90095; Empl: 900; Sls. Mgr: G. Shilling A-1580-1583

#### Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| CA | Livermore, United Techn. Mktg.     | 415-449-7644 |
| AZ | Phoenix, Detomasi & Grupp          | 602-947-3724 |
| CA | Mission Hills, Detomasi & Grupp    | 818-365-8285 |
| CA | Torrance, Detomasi & Grupp, Inc.   | 213-618-8898 |
| CO | Grand Junction, Krebill Comp. Sls. | 303-243-8220 |
| AL | Huntsville, Advanced Comps. Mktg.  | 205-881-5493 |
| GA | Norcross, Advanced Comps. Mktg.    | 404-448-7025 |
| IL | Wauconda, Cudahy Sls.              | 708-526-2484 |
| KS | Parker, S.W. Assocs.               | 913-898-6552 |
| MD | Baltimore, Callas Elctms.          | 301-744-7711 |
| MO | St. Louis, S.W. Assocs. Inc.       | 314-576-4650 |
| NM | Albuquerque, Quatra Assocs. Inc.   | 505-296-6781 |
| NY | Jericho, J. Square Mktg.           | 516-935-3200 |
| NY | Mendon, Tech-Mark, Inc.            | 716-624-3840 |
| OH | Dayton, The Lyons Corp.            | 513-278-0714 |
| FL | Seminole, Q-Rep                    | 813-397-8431 |
| OR | Tigard, Vantage Corp.              | 503-684-0422 |
| PA | Easton, The Kendon Co.             | 215-253-3100 |
| TX | Dallas, M-Rep                      | 214-484-5711 |
| UT | Sandy, Krebill Comp. Sls.          | 801-943-5311 |
| WA | Bellevue, Vantage Corp.            | 206-455-3460 |

TECHNO DIVISION, DALE ELECTRONICS, 7803 Lemona Avenue, Van Nuys, CA 91405-1139, Tel: 818-781-1642, FAX: 818-781-8647; FSC No.: 69274; Empl: 140; Sls. Mgr: Pete Huber; Dist. Mgr: Jon Trabert A-1916, 1925

TECHNO-ISEL USA DIVISION, Designatronics, 2101 Jericho Tpke. - Box 5416, New Hyde Park, NY 11042-5416, Tel: 516-328-3970, TWX: 510-223-0642, FAX: 516-326-8827; Empl: 85; Sls. Mgr: Dr. George Klein; Dist. Mgr: Dr. George Klein

TECHNOLOGY DESIGN INC., 10838 Main St., Bellevue, WA 98006, Tel: 206-455-9822, FAX: 206-455-3449; Empl: 16; Sls. Mgr: Larry Stapleton

## TECHNOLOGY DYNAMICS inc.

FAX: 201-385-0702

TECHNOLOGY DYNAMICS INC., 100 School St., Bergenfield, NJ 07621, Tel: 201-385-0500; Empl: 70; Sls. Mgr: Mark S. Jacobus D-1574-1578, 2056-2057, 2070

#### Local Sales Offices & Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| AL | Huntsville, BCI                  | 205-539-4411 |
| CA | San Diego, Cirolia Elctrms. Sls. | 619-743-3015 |
| CA | Santa Clara, W. J. Elect Sls.    | 408-982-9222 |
| FL | Clearwater, Tech-Rep Assoc.      | 813-872-9900 |
| GA | Lawrenceville, BCI               | 404-962-6826 |
| IL | Arlington Heights, Greenslade    | 708-593-3450 |
| MD | Columbia, Delta III Assoc.       | 410-730-4700 |
| MA | Topsfield, Whitehead Assoc.      | 508-887-8050 |
| MN | Minneapolis, Tec Teams Sls.      | 612-854-6616 |
| NM | Albuquerque, IMEC                | 505-275-0936 |
| NY | Elmont, Crane & Egert            | 516-872-0800 |
| NY | Fayetteville, Tri-Tech           | 315-446-2881 |
| OH | Chagrin, J. J. Bair              | 216-543-8617 |
| TX | Dallas, Tesco                    | 214-553-1200 |

|    |                            |              |
|----|----------------------------|--------------|
| UT | Midvale, Christee          | 801-566-3694 |
| WI | Wauwatosa, Greenslade Sls. | 414-258-2727 |

TECHNOLOGY 80, INC., 658 Mendelssohn Ave. N., Minneapolis, MN 55427, Tel: 612-542-9545, FAX: 612-542-9785; Empl: 25; Sls. Mgr: Dennis Sherwood

TECHNO SCIENTIFIC INC., 60 Caster Ave., Woodbridge, Ont., Canada L4L 5Y9, Tel: 905-851-9958, FAX: 905-851-6314; FSC No.: 6635; Empl: 20; Sls. Mgr: Victoria McDonald

TECHRAND CORP. OF AMERICA, 6520 Schamber Dr., Muskegon, MI 49444, Tel: 616-798-2930, FAX: 616-798-2934; Empl: 40; Sls. Mgr: James Arter

## TECHRON

FAX: 1-219-294-8329

TECHRON DIV., Crown Intl., Inc., 1718 W. Mishawaka Rd., Elkhart, IN 46517, Tel: 219-294-8300, TWX: 801-294-2160; FSC No.: 06306; Empl: 600 D-1019-1021

#### Local Sales Offices & Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| CA | Laguna Hills, Elotek Sys., Inc.         | 714-830-4856 |
| CA | Pleasanton, IFM Inc.                    | 510-846-0762 |
| CO | Commerce City, Williams Assocs.         | 303-289-5647 |
| CT | Woodbridge, Electronic Marketing Assoc. | 203-397-1461 |
| FL | Melbourne, Reynolds & Assocs., Inc.     | 407-259-7000 |
| IL | Arlington Hgts., Bernot Assocs. Inc.    | 708-632-0900 |
| MI | Livonia, Lowell-Wendt Mktg. Co.         | 313-464-2722 |
| NY | Syracuse, Labtronics Inc.               | 315-455-7314 |
| OH | Brecksville, Audio Mktg. Assoc.         | 216-526-2426 |
| PA | Montgomeryville, Eastern Sci-Mktg.      | 215-368-4570 |

TECH SPRAY, INC., Box 949, Amarillo, TX 79105, Tel: 806-372-8523, TELEX: 738450, FAX: 806-372-8750; Empl: 70; Sls. Mgr: Gerald Winters

TECHTROL CYCLONETICS, INC., 815 Market St., New Cumberland, PA 17070, Tel: 717-774-2746, FAX: 717-774-6799; FSC No.: 58792; Empl: 15; Sls. Mgr: James M. Griffith

TECKNIT, 129 Dermody St., Cranford, NJ 07016, Tel: 908-272-5500, TELEX: 6853079 TCKNT, FAX: 908-272-2741; FSC No.: 07700; Empl: 225; Sls. Mgr: Joseph Barbuto

TECLAB, Kalamazoo Technical Furniture, P.O. Box 1165, Kalamazoo, MI 49005, Tel: 616-372-6000, 800-832-5227, FAX: 616-372-6116; Empl: 35; Sls. Mgr: B. Smith C-1105

TECNETICS, See Computer Products, Inc.

TECNETICS INC., 6287 Arapahoe Ave., Boulder, CO 80303, Tel: 303-442-3837, FAX: 303-444-9437; Empl: 120; Sls. Mgr: Paula Guadiana

Refer to Tecnetics Inc. 6287 Arapahoe Ave. Boulder, CO 80303

TECO CORP., Bay Rd., P.O. Box 4, Winnisquam, NH 03289, Tel: 603-524-1998, FAX: 603-524-1899; Empl: 30; Sls. Mgr: Sandra Murphy

## TECTROL INC

SWITCHING POWER PRODUCTS

FAX: 416-638-0553

TECTROL, INC., 39 Kodiak Cres., Downsview, Ontario, Canada M3J 3E5, Tel: 416-630-8108; Empl: 450; Sls. Mgr: Paul Carroll D-1960-1964

#### Local Sales Offices & Reps

|    |                                  |              |
|----|----------------------------------|--------------|
| CA | Granada Hills, Plustronics       | 818-995-8908 |
| CA | Newport Beach, Plustronics       | 714-476-8009 |
| CA | San Diego, Mesa Comps.           | 619-278-8021 |
| CO | Denver, Seale & Assoc. Inc.      | 303-695-1980 |
| CA | Cupertino, PEI Sls. Assoc.       | 408-253-1600 |
| IN | Lombard, High-Tech Assocs.       | 812-378-4835 |
| CT | Bloomfield, Zaslow Sls.          | 203-242-7781 |
| MA | Natick, Zaslow Sls.              | 508-393-8150 |
| MN | S.S. Paul, Northport Engrg. Inc. | 612-457-8000 |



|                                       |              |
|---------------------------------------|--------------|
| NY Albany, Lynn Assocs. ....          | 518-459-1239 |
| NY Buffalo, Lynn Assocs. ....         | 716-631-0054 |
| NY Ronkonoma, PMR .....               | 516-467-8200 |
| NC Raleigh, VMI .....                 | 919-870-7123 |
| OH Dayton, Tech. Dvcs. ....           | 513-890-6811 |
| OK Tulsa, Tectrol Inc. ....           | 918-234-2440 |
| OR Tigard, Rep-West .....             | 503-639-0325 |
| PA Pittsburgh, Lynn Assocs. ....      | 412-443-3670 |
| TX Arlington, T-Tech Sls. ....        | 817-274-0505 |
| WA Seattle, Rep-West .....            | 206-283-8351 |
| Can Downsview, Ont, Tectrol Inc. .... | 416-630-8108 |

## Local Distributors

|                                        |              |
|----------------------------------------|--------------|
| CA Santa Clara, Foresight Elctms. .... | 408-980-9700 |
|----------------------------------------|--------------|

TEGAM, INC., 7230 North Ridge Rd., Madison, OH 44057,  
Tel: 800-666-1010, FAX: 216-428-1068; Empl: 50; Sls.  
Mgr.: Terry Gambill



an  
Interplex  
industries  
company

**FAX: 401-461-2310**

**TEKA INTERCONNECTION SYSTEMS, Interplex Industries**, 45 Salem Dr., Providence, RI 02907, Tel: 401-785-4110; Empl: 89; Sls. Mgr.: Barry Manchester; Dist. Mgr.: Barry Manchester ..... **C-1484-1489**

## Local Sales Offices &amp; Reps

|                                              |              |
|----------------------------------------------|--------------|
| AZ Tempe, Spectrum Assocs. S.W. Inc. ....    | 602-966-1788 |
| CA Downey, Management Mktg. & Sls. ....      | 213-560-5584 |
| CA Fullerton, Kent Elctms. ....              | 714-773-0781 |
| CA Pleasanton, Leddy Assocs., Inc. ....      | 510-417-1033 |
| CA San Diego, Kent Elctms. ....              | 619-271-5404 |
| CA San Diego, Qualtronic ....                | 619-695-0118 |
| CO Boulder, R.G. Entprs., Inc. ....          | 303-447-9211 |
| FL Orlando, Wemdl & Assocs. ....             | 407-851-1923 |
| GA Marietta, Quality Mktg. ....              | 404-565-5578 |
| IL Barrington, Bill Walthall & Assocs. ....  | 708-381-3177 |
| MN Wayzata, Cardinal Sls. ....               | 612-475-0041 |
| NY Hauppauge, Sticom Sls. & Mktg. ....       | 516-366-4221 |
| NJ Mt. Laurel, WYCK Mktg. ....               | 609-727-1070 |
| OH Cincinnati, Century Tech. Sls. ....       | 513-677-5088 |
| OR Beaverton, Norwest Interconnect Sys. .... | 503-690-7120 |
| TX Lincoln, Global Technical Sls. Inc. ....  | 401-334-3830 |
| TX Austin, Mil-Rep Assocs. ....              | 512-346-6331 |
| TX Houston, Mil-Rep Assocs. ....             | 713-444-2557 |
| TX Richardson, Mil-Rep Assocs. ....          | 214-644-6731 |
| EXP Huntington Beach, Interaction Inc. ....  | 714-636-3722 |
| Can St. Laurent, Que., HHR Electro ....      | 514-739-7054 |

## Local Distributors

|                                                   |                                 |
|---------------------------------------------------|---------------------------------|
| CA Hayward, KEA Elctms. ....                      | 415-887-2900                    |
| CA Irvine, Mann Southwest .....                   | 714-380-4170                    |
| CA San Diego, Deco .....                          | 619-693-1595                    |
| CA San Jose, Compass Comp. ....                   | 408-432-7575                    |
| CA San Jose, Spectra Elec. ....                   | 1-800-252-1590                  |
| CA San Jose, Turbo Elctms. ....                   | 408-441-6616                    |
| CA Santa Ana, Norstan Elctms. ....                | 714-540-4165                    |
| CA Santa Clara, Kent Elec. ....                   | 408-727-9810                    |
| CA Sunnyvale, PSC Elctms. ....                    | 408-737-1333                    |
| FL Largo, Elctm. Precepts of FL .....             | 1-800-367-4649,<br>813-544-3636 |
| MA Methuen, Aved Elctms. ....                     | 508-688-3800                    |
| MI Fraser, Madison Elctms. ....                   | 313-294-8300                    |
| MN St. Paul, Kent Elctms. ....                    | 612-642-2844                    |
| NJ Cherry Hill, Jetta Corp. ....                  | 609-663-7272                    |
| NJ Whippany, American Distrs. Inc. ....           | 201-428-0510                    |
| NY Farmingdale, Pride Elctms. ....                | 516-293-4020                    |
| NY Ronkonoma, Conco Elctms. ....                  | 516-467-8200                    |
| NC Raleigh, Resco Raleigh .....                   | 919-781-5700                    |
| OH Centerville, I.P.D., Inc. ....                 | 513-435-2086                    |
| RI Warwick, Cal-Reg-Comps. ....                   | 401-738-6170                    |
| TX Allen, Prime Distrib. ....                     | 214-231-0170                    |
| WA Redmond, Kent Elctms. ....                     | 206-241-1980                    |
| Can Burlington, Ont., Alternate Source Comp. .... | 416-335-6385                    |

**TEKNATIONAL INDS., INC.**, 430 S. Clinton Ave., Rochester, NY 14620-1103, Tel: 716-232-1291, FAX: 716-232-1295; FSC No: 24227; Empl: 15; Sls. Mgr.: J. D. Hochheimer

**TEKNOR MICROSYSTEMS INC.**, 31 Blvd. de la Seigneurie Est, Ste. 107, Blainville, Que., CAN J7G 4G6, Tel: 514-437-5682, 800-387-4222, FAX: 514-437-8053; Empl: 32; Sls. Mgr.: Pierre McMaster

**TEKTONE SOUND & SIGNAL**, 1331 S. Killian Dr., Lake Park, FL 33403, Tel: 407-844-2383, FAX: 407-845-1587; FSC No: 59-1500771; Empl: 70; Sls. Mgr.: David Dueller; Dist. Mgr.: David Dueller

**TEKTRONIX, INC.**, P.O. Box 1000, Wilsonville, OR 97070, Tel: 800-835-9433, TWX: 910-467-8708; FSC No: 80009; Empl: 12,500

**TEKTRONIX, INC.**, Display Products, P.O. Box 500 M/S 46-943, Beaverton, OR 97077, Tel: 503-627-5000, FAX: 503-627-1070

**TEKTRONIX-SIGNAL ANALYSIS UNIT**, 3003 Bunker Hill Ln, PO Box 58086, Santa Clara, CA 95052-8086, Tel: 408-496-0960, FAX: 408-496-6108



**TELCO INTERCONTINENTAL CORPORATION**

**FAX: 713-859-8825**

**TELCO INTERCONTINENTAL CORP., TECO**, 9812 Whithorn Dr., Houston, TX 77095, Tel: 713-855-2218; Empl: 13; Sls. Mgr.: Ruth Haber ..... **B-1311; C-1490-1491**

## Local Sales Offices &amp; Reps

|                                            |                                   |
|--------------------------------------------|-----------------------------------|
| CA Lomita, Tech Rep Comps. ....            | 310-539-9070,<br>FAX:310-539-0434 |
| CA Mountain View, Bridge Mktg. ....        | 415-965-8045                      |
| CA San Jose, Mc Farland Assoc. ....        | 408-993-0200,<br>FAX:408-993-0123 |
| CA Santa Clara, Suneical Mktg. Co. ....    | 408-244-9900                      |
| CA Solana Bch, Carco .....                 | 619-792-5555                      |
| CO Denver, Motion Technlg. ....            | 303-757-3003,<br>FAX:303-757-0616 |
| CO Erie, ROKC Comps. ....                  | 303-828-3872                      |
| FL FL Lauderdale, Motion Controls .....    | 305-434-4197,<br>FAX:305-434-5682 |
| GA Atlanta, Industrial Apparatus .....     | 404-875-8086,<br>FAX:404-875-1506 |
| GA Kernersville, Wallace Elctms, Sls. .... | 919-996-2742                      |
| IL Addison, Vikeland Sls. ....             | 708-832-8425,<br>FAX:708-832-7251 |
| IL Chicago, Rendell Sls. ....              | 312-539-1820                      |
| KS Overland Pk, Singer Inds. Sls. ....     | 913-897-2008                      |
| MA Northborough, Easterly Sls. ....        | 508-393-7399                      |
| NH Dover, Pfalt Assoc. ....                | 603-742-0966,<br>FAX:603-743-3347 |
| NJ Sussex, Carbone Assoc. ....             | 201-875-1882,<br>FAX:201-875-2685 |
| NY Glen Cove, DymoRep .....                | 516-676-1598                      |
| OH Worthington, R J Mktg. ....             | 614-888-7638                      |
| PA Willow Grove, Tech Sls. Assocs. ....    | 215-784-0170                      |
| TX Austin, Sunbelt Comps. ....             | 512-335-0499,<br>FAX:512-331-1351 |
| TX Burleson, Bounty Elctms. ....           | 817-447-9775                      |
| TX Dallas, Sunbelt Comps. ....             | 214-248-8000,<br>FAX:214-248-8100 |

**TELEBYTE TECHNOLOGY, INC.**, 270 East Pulaski Road, Greentown, NY 11740, Tel: 516-423-3232, 800-835-3298, FAX: 516-385-8184; Empl: 48; Sls. Mgr.: J. Kramer; Dist. Mgr.: R. Nazario

**TELECOMMUNICATIONS TECHNIQUES CORP.**, 20410 Observation Drive, Germantown, MD 20876, Tel: 301-353-1550, FAX: 301-353-0734

**TELECTRO SYSTEMS CORP.**, 96-18 43rd Ave., Corona, NY 11368, Tel: 718-651-8900, TWX: 510-601-8607, TELEFAX: 718-651-4103; FSC No: 30040; Empl: 50; Sls. Mgr.: Harry Sussman

**TELE-DENKEN RESOURCES, INC.**, 7702 FM 1960 East, Humble, TX 77346, Tel: 713-852-5366, TELEX: 4949653, FAX: 713-852-3869; Sls. Mgr.: Gary Killian; Dist. Mgr.: Gary Killian

**TELEDYNE COMPONENTS**, 1300 Terra Bella Ave., PO Box 7267, Mountain View, CA 94039-7267, Tel: 415-968-9241, FAX: 415-967-1590; FSC No: 15818; Empl: 200; Sls. Mgr.: Robbie Izat; Dist. Mgr.: Nancye R. Beck; Worldwide Distr. Sls. Mgr.

**TELEDYNE GURLEY**, 514 Fulton St., P.O. Box 88, Troy, NY 12181, Tel: 518-272-6300, 800-759-1844, TWX: 710-443-8156, FAX: 518-274-3660; Sls. Mgr.: G. S. Gordon

**TELEDYNE KINETICS**, Div. of Teledyne, Inc., 8650 Balboa Ave., San Diego, CA 92123-1502, Tel: 619-576-1005, FAX: 619-576-0607; FSC No: 06928; Empl: 100; Sls. Mgr.: Peter Kurikoff

**TELEDYNE MICROELECTRONICS**, 12964 Panama St., Los Angeles, CA 90066, Tel: 310-822-8229, 310-305-0248, TWX: 910-343-7436, FAX: 213-305-0248; FSC No: 16170; Empl: 912; Sls. Mgr.: W. Kennedy

**TELEDYNE MICROWAVE**, 1290 Terra Bella Ave., Mountain View, CA 94043, Tel: 415-968-2211, FAX: 415-966-1521; FSC No: 24022; Empl: 200; Sls. Mgr.: M. Lee

**TELEDYNE PENN-UNION**, Solderless Connector Div., One Riverside Dr., Ansonia, CT 06401, Tel: 203-732-7025, TELEX: 963408, ESYLNK: 62877180, FAX: 203-732-0831; FSC No: 19724; Sls. Mgr.: Bob O'Keefe

**TELEDYNE PENN-UNION**, 229 Waterford St., Edinboro, PA 16412, Tel: 814-734-1631 Ext. 382, FAX: 814-734-4946; Sls. Mgr.: Chuck Malay

**FAX: 213-779-9161**

**TELEDYNE RELAYS, Teledyne, Inc.**, 12525 Daphne Ave., Hawthorne, CA 90250, Tel: 213-777-0077; FSC No: 11532; Sls. Mgr.: Tom Garland ..... **B-1616-1623**

## Local Sales Offices &amp; Reps

|                                              |                                   |
|----------------------------------------------|-----------------------------------|
| AL Huntsville, Elcom .....                   | 205-830-4001,<br>FAX:205-830-4058 |
| AZ Scottsdale, Arcom Sls. ....               | 602-947-5745,<br>FAX:602-990-1765 |
| CA Anaheim, Westrep .....                    | 714-527-2822,<br>FAX:714-527-3868 |
| CA San Diego, Westrep .....                  | 619-674-1880,<br>FAX:619-674-1878 |
| CA San Jose, Meridian-West .....             | 408-927-6377,<br>FAX:408-927-6378 |
| CO Englewood, Thorson Rocky Mtn, Inc. ....   | 303-773-6300,FAX:303-773-6302     |
| CT Stratford, VISTAssociates, Inc. ....      | 203-375-5456,<br>FAX:203-375-6907 |
| FL Longwood, Teledyne Relays .....           | 407-682-9044,<br>FAX:407-682-7644 |
| FL Winter Pk, HHP Assocs., Inc. ....         | 407-740-0320,<br>FAX:407-740-0319 |
| GA Norcross, Elcom .....                     | 404-447-8200,FAX:404-447-8340     |
| IL Bloomington, Teledyne Relays .....        | 708-529-1060,<br>FAX:708-529-1120 |
| IN Indianapolis, Leslie M. Devoe Co. ....    | 317-842-3245,<br>FAX:317-845-8440 |
| IA Cedar Rapids, Stan Clothier Co. ....      | 319-393-1576,<br>FAX:319-393-7317 |
| KS Olathe, C-Tron .....                      | 913-780-3796,FAX:913-780-3007     |
| MD Towson, Arbotek Assocs., Inc. ....        | 410-825-0775,<br>FAX:410-337-2781 |
| MA Marlborough, VISTAssociates, Inc. ....    | 508-481-9277,<br>FAX:508-460-1869 |
| MN Eden Prairie, Stan Clothier Co. ....      | 612-944-3456,<br>FAX:612-944-6904 |
| MO St. Louis, Rothkopf & Assocs., Inc. ....  | 314-961-4485,<br>FAX:314-961-4736 |
| NJ Cherry Hill, Vantage Sls. ....            | 609-424-6777,<br>FAX:609-424-8909 |
| NJ Montville, Teledyne Relays .....          | 201-299-7667,<br>FAX:201-299-6998 |
| NM Albuquerque, Reptronix .....              | 505-292-1718,<br>FAX:505-299-1611 |
| NY Mount Vernon, Friedman-Smith Elctms. .... | 914-664-4866,FAX:914-664-4928     |
| NY Syracuse, Holze & Murcan Assocs. ....     | 315-455-8807,<br>FAX:315-455-8810 |
| NC Asheville, Elcom .....                    | 704-298-8709,FAX:404-447-834      |
| OH Dayton, J.C. Hofstetter Co. ....          | 513-296-1010,<br>FAX:513-296-1274 |
| OH Medina, J.C. Hofstetter Co. ....          | 216-241-4880,<br>FAX:216-725-4471 |
| OR Beaverton, Tekrep Inc. ....               | 503-626-3759,<br>FAX:503-626-3759 |
| PA Hickory, J. C. Hofstetter Co. ....        | 412-356-2305,<br>FAX:412-356-7303 |
| TX Austin, Kruvand Assocs., Inc. ....        | 512-219-9441,<br>FAX:512-219-1932 |
| TX Dallas, Kruvand Assocs., Inc. ....        | 214-437-3355,<br>FAX:214-680-8854 |
| UT Salt Lake City, Thorson Rocky Mtn. ....   | 801-942-1683,<br>FAX:801-942-1694 |
| VA Hawthorne, Teledyne Relays .....          | 213-777-0077,<br>FAX:213-779-9161 |
| WA Gig Harbor, Tekrep, Inc. ....             | 206-884-5050,<br>FAX:206-884-3170 |
| Can Mississauga, Ont., G.M.A. ....           | 416-671-8111,<br>FAX:416-671-2422 |

## Local Distributors

|                                        |                                   |
|----------------------------------------|-----------------------------------|
| AL Huntsville, Pioneer / Alabama ..... | 205-837-9300,<br>FAX:205-837-9358 |
| AL Huntsville, Time Elctms. ....       | 205-721-1133                      |



|    |                                            |                                  |                                                                                                                                                                                    |                                   |                                  |                           |                                      |                                         |                                  |
|----|--------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------|---------------------------|--------------------------------------|-----------------------------------------|----------------------------------|
| CA | Tempo, Time Elctms.                        | 602-967-2000<br>FAX:602-967-5923 | NY                                                                                                                                                                                 | Farmingdale, Milgray/NY           | 516-391-3000<br>FAX:516-420-0685 | GA                        | Norcross, Elcom                      | 404-447-8200/FAX:404-447-8340           |                                  |
| CA | Camarillo, Milgray/Los Angeles             | 805-484-4055<br>FAX:805-388-8169 | NY                                                                                                                                                                                 | Hauppauge, Time Elctms.           | 516-273-0100<br>FAX:516-273-0037 | IL                        | Bloomington, Teledyne Solid State    | 708-529-1060<br>FAX:708-529-1120        |                                  |
| CA | Hawthorne, Teledyne Relays                 | 213-777-0077<br>FAX:213-779-9161 | NY                                                                                                                                                                                 | Pittsford, Milgray/Upstate NY     | 716-381-9700<br>FAX:716-381-9495 | IN                        | Indianapolis, Leslie M. Devore Co.   | 317-842-3245<br>FAX:317-845-8440        |                                  |
| CA | Irvine, Milgray/Orange County              | 714-753-1282<br>FAX:714-753-1882 | NY                                                                                                                                                                                 | Rochester, Summit Dists. Inc.     | 716-334-8110<br>516-921-8700     | IA                        | Cedar Rapids, Stan Clothier Co.      | 319-393-1576<br>FAX:319-393-7317        |                                  |
| CA | San Diego, Time Elctms.                    | 619-586-0129<br>FAX:714-544-2526 | NY                                                                                                                                                                                 | Woodbury, Pioneer/Woodbury        | 516-921-2143<br>704-522-8188     | KS                        | Olathe, C-Tron                       | 913-780-3796/FAX:913-780-3007           |                                  |
| CA | San Jose, Milgray/San Jose                 | 408-456-0900<br>FAX:408-456-0300 | NC                                                                                                                                                                                 | Charlotte, Pioneer/Charlotte      | 704-522-8188<br>FAX:704-522-8564 | MD                        | Towson, Arbotek Assocs., Inc.        | 410-825-0775<br>FAX:410-337-2781        |                                  |
| CA | Sunnyvale, Time Elctms.                    | 408-734-9888<br>FAX:408-734-1719 | NC                                                                                                                                                                                 | Durham, Pioneer/Durham            | 919-544-5400<br>FAX:919-544-5885 | MA                        | Marlborough, VISTAssociates, Inc.    | 508-481-9277<br>FAX:508-480-1869        |                                  |
| CA | Tustin, Time Elctms.                       | 714-669-0100<br>FAX:714-544-2526 | NC                                                                                                                                                                                 | Raleigh, Milgray/Raleigh          | 919-790-8094<br>FAX:919-872-8851 | MN                        | Eden Prairie, Stan Clothier Co.      | 612-944-3456/FAX:612-944-6904           |                                  |
| CA | Woodland Hills, Time Elctms.               | 818-593-8400<br>FAX:818-593-8484 | OH                                                                                                                                                                                 | Cleveland, Milgray/Cleveland      | 216-447-1520<br>FAX:216-447-1761 | MO                        | St. Louis, Rothkopf & Assocs.        | 314-961-4485<br>FAX:314-961-4733        |                                  |
| CO | Englewood, Time Elctms.                    | 303-721-8882<br>FAX:303-796-0324 | OH                                                                                                                                                                                 | Cleveland, Pioneer/Cleveland      | 216-587-3600<br>FAX:216-663-1004 | NJ                        | Cherry Hill, Vantage Sls. Co.        | 609-424-6777<br>FAX:609-424-8900        |                                  |
| CT | Millford, Milgray/Conn.                    | 203-878-5538<br>FAX:203-878-6970 | OH                                                                                                                                                                                 | Columbus, Time Elctms.            | 614-794-3301<br>FAX:708-303-3030 | NJ                        | Montville, Teledyne Solid State      | 201-299-7667<br>FAX:201-299-6998        |                                  |
| CT | Norwalk, Pioneer/Connecticut               | 203-853-1515<br>FAX:203-838-9901 | OH                                                                                                                                                                                 | Dayton, Pioneer/Dayton            | 513-236-9900<br>FAX:513-236-8133 | NM                        | Albuquerque, Reptronix               | 505-292-1718<br>FAX:505-299-1611        |                                  |
| FL | Altamonte Springs, Pioneer/Altamonte Spgs. | 407-834-9090/FAX:407-834-0865    | OR                                                                                                                                                                                 | Beaverton, Time Elctms.           | 503-626-2979<br>FAX:206-820-1088 | NY                        | Mount Vernon, Friedman-Smith Elctms. | 914-664-4866/FAX:914-664-4928           |                                  |
| FL | Clearwater, Pioneer/Clearwater             | 813-536-0445<br>FAX:813-531-5037 | PA                                                                                                                                                                                 | Horsham, Pioneer/Horsham          | 215-674-4007<br>FAX:215-674-3107 | NY                        | Syracuse, Hotze & Murcan Associates  | 315-455-8807/FAX:315-455-8810           |                                  |
| FL | Deerfield Beach, Pioneer/Deerfield Beach   | 305-428-8877/FAX:305-481-2950    | PA                                                                                                                                                                                 | Pittsburgh, Pioneer/Pittsburgh    | 412-782-2300<br>FAX:412-963-8255 | NC                        | Asheville, Elcom                     | 704-298-8709/FAX:404-447-8340           |                                  |
| FL | Fl. Lauderdale, Time Elctms.               | 305-484-7778<br>FAX:305-484-7880 | TX                                                                                                                                                                                 | Austin, Pioneer/Austin            | 512-835-4000<br>FAX:512-835-9829 | OH                        | Dayton, J. C. Hofstetter Co.         | 513-296-1010<br>FAX:513-296-1274        |                                  |
| FL | Orlando, Time Elctms.                      | 407-841-6565<br>FAX:407-648-0814 | TX                                                                                                                                                                                 | Austin, Time Elctms.              | 512-346-7346<br>FAX:512-346-7527 | OH                        | Medina, J. C. Hofstetter Co.         | 216-241-4880<br>FAX:216-725-4471        |                                  |
| FL | Winter Pk., Milgray/Fla.                   | 407-647-5747<br>FAX:407-629-0757 | TX                                                                                                                                                                                 | Dallas, Milgray/Dallas            | 214-248-1603<br>FAX:214-248-0218 | OR                        | Beaverton, Tekrep, Inc.              | 503-626-3759<br>FAX:503-626-3759        |                                  |
| GA | Atlanta, Electro-Air Corp.                 | 404-351-3545<br>FAX:404-351-9081 | TX                                                                                                                                                                                 | Dallas, Pioneer/Dallas            | 214-386-7300<br>FAX:214-490-6419 | PA                        | Hickory, J. C. Hofstetter Co.        | 412-356-2305<br>FAX:412-356-7303        |                                  |
| GA | Duluth, Pioneer/Duluth                     | 404-623-1003<br>FAX:404-623-0665 | TX                                                                                                                                                                                 | Houston, Pioneer/Houston          | 713-495-4700<br>FAX:713-495-5642 | TX                        | Austin, Kruvand Assocs., Inc.        | 512-219-9441<br>FAX:512-219-1932        |                                  |
| GA | Norcross, Milgray/Atlanta                  | 404-446-9777<br>FAX:404-446-1186 | TX                                                                                                                                                                                 | Richardson, Time Elctms.          | 214-644-4644<br>FAX:214-644-6666 | TX                        | Dallas, Kruvand Assocs., Inc.        | 214-437-3355/FX<br>214-680-8854         |                                  |
| GA | Norcross, Time Elctms.                     | 404-368-0969<br>FAX:404-368-0970 | TX                                                                                                                                                                                 | Stafford, Milgray/Houston         | 713-240-5380<br>FAX:713-240-5404 | WA                        | Gig Harbor, Tekrep Inc.              | 206-884-5050<br>FAX:206-884-3100        |                                  |
| IL | Addison, Pioneer/Chicago                   | 708-495-9680<br>FAX:708-495-9831 | UT                                                                                                                                                                                 | Murray, Milgray/Utah              | 801-261-2999<br>FAX:801-261-0880 | <i>Local Distributors</i> |                                      |                                         |                                  |
| IL | Bloomington, Teledyne Relays               | 708-529-1060<br>FAX:708-529-1120 | UT                                                                                                                                                                                 | W. Valley, Time Elctms.           | 801-973-8494<br>FAX:801-973-7418 | AL                        | Huntsville, Pioneer/Alabama          | 205-837-9300<br>FAX:205-837-9358        |                                  |
| IL | Palatine, Milgray/Chicago                  | 708-202-1900<br>FAX:708-202-1985 | WA                                                                                                                                                                                 | Kirkland, Time Elctms.            | 206-820-1525<br>FAX:206-820-1088 | AL                        | Huntsville, Time Elctms.             | 205-721-1133                            |                                  |
| IL | Schaumburg, Time Elctms.                   | 708-303-3000<br>FAX:708-303-3030 | WI                                                                                                                                                                                 | Brookfield, Pioneer/Wisconsin     | 414-784-3480<br>FAX:414-784-8207 | AZ                        | Tempe, Time Elctms.                  | 602-967-2000<br>FAX:602-967-5923        |                                  |
| IN | Indianapolis, Pioneer/Indiana              | 317-573-0880<br>FAX:317-573-0979 | Can                                                                                                                                                                                | Mississauga, Ont, Milgray/Toronto | 416-678-0958<br>FAX:416-678-1213 | CA                        | Camarillo, Milgray/Los Angeles       | 805-484-4055<br>FAX:805-388-8169        |                                  |
| KS | Overland Pk., Milgray/Kansas City          | 913-236-8800<br>FAX:913-384-6825 | Can                                                                                                                                                                                | Mississauga, Ont, Time Elctms.    | 416-672-5300<br>FAX:416-672-5304 | CA                        | Hawthorne, Teledyne Solid State      | 213-777-0077<br>FAX:213-779-9161        |                                  |
| MD | Columbia, Milgray/Wash.                    | 301-621-8169<br>FAX:301-381-3066 | Can                                                                                                                                                                                | Pointe Claire, Milgray/Montreal   | 514-426-5900<br>FAX:514-426-5836 | CA                        | Irvine, Milgray/Orange Ctny          | 714-753-1282<br>FAX:714-753-1682        |                                  |
| MD | Columbia, Time Elctms.                     | 301-964-3090<br>FAX:301-964-9274 | TELEDYNE ROTOLITE, P.O. Box 398, Owen, WI 54460,<br>Tel: 800-524-0105, FAX: 715-229-2124; Sls. Mgr.: Harry Brebaugh                                                                |                                   |                                  |                           | CA                                   | San Diego, Time Elctms.                 | 619-586-0129<br>FAX:714-544-2526 |
| MD | Gaithersburg, Pioneer/Gaithersburg         | 301-921-0660/FAX:301-921-4255    | TELEDYNE RYAN ELECTRONICS, 8650 Balboa Ave.,<br>San Diego, CA 92123, Tel: 619-560-6400, TELEX: 695-028, TWX: 910-335-1174, FAX: 619-560-1147; Empl: 250;<br>Sls. Mgr.: J.E. Wallin |                                   |                                  |                           | CA                                   | San Jose, Milgray/San Jose              | 408-456-0900<br>FAX:408-456-0300 |
| MA | Lexington, Pioneer/Mass.                   | 617-861-9200<br>FAX:617-863-1547 |                                                                                                                                                                                    |                                   |                                  |                           | CA                                   | Sunnyvale, Time Elctms.                 | 408-734-9888<br>FAX:408-734-1719 |
| MA | Peabody, Time Elctms.                      | 508-532-9900<br>FAX:508-532-9989 |                                                                                                                                                                                    |                                   |                                  |                           | CA                                   | Tustin, Time Elctms.                    | 714-669-0100<br>FAX:714-544-2526 |
| MA | Wilmington, Milgray/New England            | 508-657-5900<br>FAX:508-658-7989 |                                                                                                                                                                                    |                                   |                                  |                           | CA                                   | Woodland Hills, Time Electronics        | 818-593-8400<br>FAX:818-593-8484 |
| MI | Grand Rapids, Pioneer Western Mich.        | 616-698-1800/FAX:616-698-1831    |                                                                                                                                                                                    |                                   |                                  |                           | CO                                   | Englewood, Time Elctms.                 | 303-721-8882<br>FAX:303-796-0322 |
| MI | Livonia, Pioneer/Mich.                     | 313-525-1800<br>FAX:313-427-3720 |                                                                                                                                                                                    |                                   |                                  |                           | CT                                   | Millford, Milgray/Conn.                 | 203-878-5538<br>FAX:203-878-6970 |
| MN | Eden Prairie, Pioneer/Twin Cities          | 612-944-3355<br>FAX:612-944-3794 |                                                                                                                                                                                    |                                   |                                  |                           | CT                                   | Norwalk, Pioneer/CT                     | 203-853-1515<br>FAX:203-838-9901 |
| MN | Edina, Time Elctms.                        | 612-839-1252<br>FAX:708-303-3030 |                                                                                                                                                                                    |                                   |                                  |                           | FL                                   | Altamonte Spgs, Pioneer/Altamonte Spgs. | 407-834-9090/FAX:407-834-0865    |
| MO | Manchester, Time Elctms.                   | 314-230-7500<br>FAX:314-391-8603 |                                                                                                                                                                                    |                                   |                                  |                           | FL                                   | Clearwater, Pioneer/Clearwater          | 813-536-0445<br>FAX:813-531-5037 |
| MO | St. Louis, Pioneer/St. Louis               | 314-432-4350<br>FAX:314-432-4854 |                                                                                                                                                                                    |                                   |                                  |                           | FL                                   | Deerfield Bch, Pioneer/Deerfield Bch.   | 305-428-8877/FAX:305-481-2950    |
| NJ | Fairfield, Pioneer/NJ                      | 201-575-3510<br>FAX:201-575-3454 |                                                                                                                                                                                    |                                   |                                  |                           | FL                                   | Fl. Lauderdale, Time Elctms.            | 305-484-7778<br>FAX:305-484-7880 |
| NJ | Marlton, Milgray/Delaware Valley           | 609-983-5010<br>FAX:609-985-1607 |                                                                                                                                                                                    |                                   |                                  |                           | FL                                   | Orlando, Time Elctms.                   | 407-841-6565<br>FAX:407-648-0814 |
| NJ | Marlton, Time Elctms.                      | 609-596-6700<br>FAX:609-596-4555 |                                                                                                                                                                                    |                                   |                                  |                           | FL                                   | Winter Pk., Milgray/Fla.                | 407-647-5747<br>FAX:404-351-9081 |
| NJ | Montville, Teledyne Relays                 | 201-299-7667<br>FAX:201-299-6998 |                                                                                                                                                                                    |                                   |                                  |                           | GA                                   | Atlanta, Electro-Air Corp.              | 404-351-3545<br>FAX:404-623-1003 |
| NJ | Parsippany, Milgray/New Jersey             | 201-335-1766<br>FAX:201-335-2110 |                                                                                                                                                                                    |                                   |                                  |                           | GA                                   | Norcross, Milgray/Atlanta               | 404-446-9777<br>FAX:404-446-1186 |
| NY | Binghamton, Pioneer/Binghamton             | 607-722-9300<br>FAX:607-722-9562 |                                                                                                                                                                                    |                                   |                                  |                           | GA                                   | Norcross, Time Elctms.                  | 404-368-0969<br>FAX:404-368-0970 |
| NY | Buffalo, Summit Dists. Inc.                | 716-887-2800<br>FAX:716-887-2866 |                                                                                                                                                                                    |                                   |                                  |                           | IL                                   | Addison, Pioneer/Chicago                | 708-495-9680<br>FAX:708-495-9831 |
| NY | E. Syracuse, Time Elctms.                  | 315-432-0355<br>FAX:315-432-8147 |                                                                                                                                                                                    |                                   |                                  |                           | IL                                   | Bloomington, Teledyne Solid State       | 708-529-1060<br>FAX:708-529-1120 |
| NY | Fairport, Pioneer/Rochester                | 716-381-7070<br>FAX:716-381-5955 |                                                                                                                                                                                    |                                   |                                  |                           | IL                                   | Palatine, Milgray/Chicago               | 708-202-1900<br>FAX:708-202-1985 |

## TELEDYNE SOLID STATE

FAX: 213-779-9161

TELEDYNE SOLID STATE, 12525 Daphne Ave.,  
Hawthorne, CA 90250, Tel: 213-777-0077; FSC No.:  
63745; Sls. Mgr.: Tom Garland B-1616-1623

### Local Sales Offices & Reps

|    |                                 |                                  |
|----|---------------------------------|----------------------------------|
| AL | Huntsville, Elcom               | 205-830-4001<br>FAX:205-830-4058 |
| AZ | Scottsdale, Arcom Sls.          | 602-947-5745<br>FAX:602-990-1765 |
| CA | Anaheim, Westrep                | 714-527-2822<br>FAX:714-527-3868 |
| CA | Hawthorne, Teledyne Solid State | 213-777-0077<br>FAX:213-779-9161 |
| CA | San Diego, Westrep              | 619-674-1880<br>FAX:619-674-1878 |
| CA | San Jose, Meridian-West         | 408-927-6377<br>FAX:408-927-6378 |
| CT | Stratford, VISTAssociates, Inc. | 203-375-5456<br>FAX:203-375-6907 |
| FL | Winter Pk. HHP Assocs., Inc.    | 407-740-0320<br>FAX:407-740-0319 |



|    |                                        |                                   |
|----|----------------------------------------|-----------------------------------|
| IN | Indianapolis, Pioneer/Indiana          | 317-573-0880,<br>FAX:317-573-0979 |
| KS | Overland Pk, Milgray/Kansas City       | 913-236-8800,<br>FAX:913-384-6825 |
| MD | Columbia, Milgray/Wash.                | 301-621-8169,<br>FAX:301-381-3066 |
| MD | Columbia, Time Elctms.                 | 301-964-3090,<br>FAX:301-964-9274 |
| MD | Gaithersburg, Pioneer/Gaithersburg     | 301-921-0660,FAX:301-921-4255     |
| MA | Lexington, Pioneer/Mass.               | 617-861-9200,<br>FAX:617-863-1547 |
| MA | Peabody, Time Elctms.                  | 508-532-9900,<br>FAX:508-532-9989 |
| MA | Wilmington, Milgray/New England        | 508-657-5900,<br>FAX:508-658-7989 |
| MI | Grand Rapids, Pioneer/Western Michigan | 616-698-1800,FAX:616-698-1831     |
| MI | Livonia, Pioneer/Mich.                 | 313-525-1800,<br>FAX:313-427-3720 |
| MN | Eden Prairie, Pioneer/Twin Cities      | 612-944-3355,<br>FAX:612-944-3794 |
| MN | Edina, Time Elctms.                    | 612-830-1252,<br>FAX:708-303-3030 |
| MO | Manchester, Time Elctms.               | 314-230-7500,<br>FAX:314-391-8603 |
| MO | St.Louis, Pioneer/St. Louis            | 314-432-4350,<br>FAX:314-432-4854 |
| NJ | Fairfield, Pioneer/New Jersey          | 201-575-3510,<br>FAX:201-575-3454 |
| NJ | Marlton, Milgray/Delaware Valley       | 609-983-5010,<br>FAX:609-985-1607 |
| NJ | Marlton, Time Elctms.                  | 609-596-6700,<br>FAX:609-596-4555 |
| NJ | Montville, Teledyne Solid State        | 201-299-7667,<br>FAX:201-299-6998 |
| NJ | Parsippany, Milgray/New Jersey         | 201-335-1766,<br>FAX:201-335-2110 |
| NY | Binghamton, Pioneer/Binghamton         | 607-722-9300,<br>FAX:607-722-9562 |
| NY | Buffalo, Summit Dists. Inc.            | 716-887-2800,<br>FAX:716-887-2866 |
| NY | E. Syracuse, Time Elctms.              | 315-432-0355,<br>FAX:315-432-8147 |
| NY | Fairport, Pioneer/Rochester            | 716-381-7070,<br>FAX:716-381-5955 |
| NY | Farmingdale, Milgray/New York          | 516-391-3000,<br>FAX:516-420-0685 |
| NY | Hauppauge, Time Elctms.                | 516-273-0100,<br>FAX:516-273-0037 |
| NY | Pittsford, Milgray/Upstate New York    | 716-381-9700,FAX:716-381-9495     |
| NY | Rochester, Summit Dists. Inc.          | 716-334-8110                      |
| NY | Woodbury, Pioneer/Woodbury             | 516-921-8700,<br>FAX:516-921-2143 |
| NC | Charlotte, Pioneer/Charlotte           | 704-527-8188,<br>FAX:704-522-8564 |
| NC | Durham, Pioneer/Durham                 | 919-544-5400,<br>FAX:919-544-5885 |
| NC | Raleigh, Milgray/Raleigh               | 919-790-8094,<br>FAX:919-872-8851 |
| OH | Cleveland, Milgray/Cleveland           | 216-447-1520,<br>FAX:216-447-1761 |
| OH | Cleveland, Pioneer/Cleveland           | 216-587-3600,<br>FAX:216-663-1004 |
| OH | Columbus, Time Elctms.                 | 614-794-3301,<br>FAX:708-303-3030 |
| OH | Dayton, Pioneer/Dayton                 | 513-236-9900,<br>FAX:513-236-8133 |
| OR | Beaverton, Time Elctms.                | 503-626-2979,<br>FAX:206-820-1088 |
| PA | Horsham, Pioneer/Horsham               | 215-674-4000,<br>FAX:215-674-3107 |
| PA | Pittsburgh, Pioneer/Pittsburgh         | 412-782-2300,<br>FAX:412-963-8255 |
| TX | Austin, Pioneer/Austin                 | 512-835-4000,<br>FAX:512-835-9829 |
| TX | Austin, Time Elctms.                   | 512-346-7346,<br>FAX:512-346-7527 |
| TX | Dallas, Milgray/Dallas                 | 214-248-1603,<br>FAX:214-248-0218 |
| TX | Dallas, Pioneer/Dallas                 | 214-386-7300,<br>FAX:214-490-6419 |
| TX | Houston, Pioneer/Houston               | 713-495-4700,<br>FAX:713-495-5642 |
| TX | Richardson, Time Elctms.               | 214-644-4644,<br>FAX:214-644-6668 |
| TX | Stafford, Milgray/Houston              | 713-240-5360,<br>FAX:713-240-5404 |
| UT | Murray, Milgray/Utah                   | 801-261-2999,<br>FAX:801-261-0880 |
| UT | West Valley, Time Elctms.              | 801-973-8494,<br>FAX:801-973-7418 |
| WA | Kirkland, Time Elctms.                 | 206-820-1525,<br>FAX:206-820-1088 |
| WI | Brookfield, Pioneer/Wisconsin          | 414-784-3480,<br>FAX:414-784-8207 |

|     |                                      |                                   |
|-----|--------------------------------------|-----------------------------------|
| Can | Mississauga, Ont, Milgray/Toronto    | 416-678-0958,<br>FAX:416-678-1213 |
| Can | Mississauga, Ont, Time Elctms.       | 416-672-5300,<br>FAX:416-672-5304 |
| Can | Pointe Claire, Que, Milgray/Montreal | 514-426-5900,FAX:514-426-5836     |

**TELEDYNE THERMATICS, Teledyne Inds., Inc., P O**  
Box 909, Elm City, NC 27822, Tel: 919-236-4311, ESYLNK:  
62877220, FAX: 919-236-3613; FSC No: 12515; Empl: 400;  
Sls. Mgr: Harry Helmer; Dist. Mgr: Ed Rattie

**TELEFUNKEN, See AEG Corp.**

**TELEGENIX/GRIM**  
AN INDUCTOTHERM COMPANY

**FAX: 609-424-2022**

**TELEGENIX/GRIM CORP., P.O. Box 5550, Cherry Hill,**  
NJ 08034, Tel: 609-424-5220; Empl: 125; Dist. Mgr: Ray  
Madonna **D=1074-1075**

**Local Sales Offices & Reps**

VA Fairfax, GRIM Corp, Govt. Sls. 703-934-4615

**Local Distributors**

NJ Cherry Hill, Telegenix/GRIM Corp. 800-933-4746

**TELEMET, Geotel, Inc., 25 Davids Dr., Hauppauge, NY**  
11788, Tel: 516-436-7260, TWX: 510-227-9850, FAX: 516-  
436-7257; Empl: 35; Sls. Mgr: Paul H. Paulson III

**TELENEX CORPORATION, A Unit of General Signal**  
Corp., 13000 Midlantic Dr., Mt. Laurel, NJ 08054, Tel: 609-  
234-7900, FAX: 609-778-8700; Empl: 400; Sls. Mgr: Kirby  
Holmes, EVP-Mktg. & Sls.

**TELEPHONICS CORPORATION/PRD**  
INSTRUMENTS, 770 Park Avenue, Huntington, NY  
11743, Tel: 516-549-6415/6428, TELEX: 510-222-4494,  
FAX: 516-549-6100; FSC No: 78711, 9N770; Empl: 22;  
Sls. Mgr: Jacob Levy

**TELEPLEX, INC., Afford Division, 32 Sixth Rd., Woburn,**  
MA 01801, Tel: 617-935-8610, FAX: 617-933-4512; FSC  
No.: OL1H4; Empl: 20; Sls. Mgr: Lois Clark, V.P.

**TELE QUARZ, USA, 2427 Twilight Rd., P.O. Box 240392,**  
Charlotte, NC 28224-0392, Tel: 704-553-0300, FAX: 704-  
552-6044

**TELEQUARZ-GMBH, See Raltron Electronics Corp.**

**TELESIS MARKING SYSTEMS, INC., Box 5000,**  
Chillicothe, OH 45601, Tel: 614-642-3200, FAX: 614-642-  
2037; Empl: 75; Sls. Mgr: Larry Holt; Dist. Mgr: Larry Holt

**TELE-TECH CORPORATION, P.O. Box 790, Bozeman,**  
MT 59715, Tel: 406-586-0291, FAX: 406-587-0653; FSC  
No: 62759; Empl: 75; Sls. Mgr: Al Zoller

**TELETERMINAL CORP., Greenland, NH 03840, Tel: 603-**  
431-1200; Empl: 13

**TELEVISION EQUIPMENT ASSOCS., Box 393, So.**  
Salem, NY 10590-0393, Tel: 914-763-8893, FAX: 914-763-  
9158; Empl: 10

**TELLUREX CORP., 1248 Hastings, Traverse City, MI**  
49684, Tel: 616-947-0110, FAX: 616-947-5821; Empl: 16;  
Sls. Mgr: Gregg Smith

**TELONIC/BERKELEY, Berkeley Inds. Inc., P.O. Box**  
277, Laguna Beach, CA 92652, Tel: 714-494-9401, FAX:  
714-497-7331; FSC No: 04423; Empl: 50; Sls. Mgr:  
Richard Aaron

**TELPAR, INC., 4137 Billy Mitchell Rd., Box 296, Addison,**  
TX 75001, Tel: 214-233-6631, TELEX: 73-2561, FAX: 214-  
233-8947; Empl: 28; Sls. Mgr: Bob Reynolds **D=1113-1115**

**TELTEC, INC., 7890 12th Ave. S., Minneapolis, MN 55425,**  
Tel: 612-854-9177, FAX: 612-854-8601; FSC No: 57856;  
Empl: 7; Sls. Mgr: Victor Vachhani; Dist. Mgr: Victor  
Vachhani

**TELTRON, INC., 2 Riga Lane, Birdsboro, PA 19508, Tel:**  
610-582-2711, TELEX: 4990805, FAX: 610-582-0851;  
FSC No: 28287; Empl: 35; Sls. Mgr: Clyde Mock

**TEMESCAL/AIRCO COATING TECHNOLOGY, The**  
BOC Group, Inc., 2700 Maxwell Way, PO Box 2529,  
Fairfield, CA 94533-0252, Tel: 707-423-2100, FAX: 707-  
425-1706; Sls. Mgr: Brian Kaemmer

**TEMP-FLEX CABLE, INC., 11 Depot Street, S. Grafton, MA**  
01560, Tel: 508-839-5987, FAX: 508-839-4128; FSC No:  
0CGL7; Empl: 48; Sls. Mgr: Warren Persak

**TEMPIL DIV., Big Three Inds., Hamilton Blvd., S. Plainfield,**  
NJ 07080, Tel: 908-757-8300, TELEX: 138-662, FAX: 908-  
757-9273; Empl: 38; Sls. Mgr: A. P. Jeanguenin

**TEMPO INSTRUMENT, INC., 87 Modular Ave.,**  
Commack, NY 11725, Tel: 516-864-3700, TWX: 510-226-  
3787, FAX: 516-864-4972; FSC No: 07031; Empl: 205;  
Sls. Mgr: Steven Waite

**TEMPOSONICS SENSORS DIVISION, MTS Sys.**  
Corp., PO Box 13218, Research Triangle Park, NC 27709,  
Tel: 919-677-0100, FAX: 919-677-0200; Sls. Mgr: David  
Miller

**TEMPTRONIC CORPORATION, 55 Chapel St., Newton,**  
MA 02158, Tel: 617-969-2501, FAX: 617-969-2475; Empl:  
750; Sls. Mgr: R. Himmel, R. DiFilippo, E. Lowerre

**TEMPUSTECH, INC., 295 Airport Rd., Naples, FL 33942,**  
Tel: 813-643-2424, FAX: 813-643-4981; Empl: 13

**D=1144**

**TENNEY ENGINEERING, 109 Springfield Rd., Union, NJ**  
07083, Tel: 908-686-7870, TWX: 710-985-4725, FAX: 908-  
686-7971; Empl: 175; Sls. Mgr: Jerome A. Perlestein, Mgr.  
Application Engr.

**TENOR CONTROLS COMP, 17020 W. Rogers Dr., New**  
Berlin, WI 53151, Tel: 414-782-3800, FAX: 414-782-0005;  
Empl: 30; Sls. Mgr: Ted James

**TENSOLITE COMPANY, Subsidiary of Carlisle Corp.,**  
100 Tensolite Drive, St. Augustine, FL 32092, Tel: 904-829-  
5600, FAX: 904-829-3447; Empl: 210; Sls. Mgr: William  
Dungan; Dist. Mgr: John Berlin

**TENSOR, Box 14843, Austin, TX 78761, Tel: 512-251-4131,**  
TELEX: ITT 4940124, FAX: 512-251-5798; Empl: 36

**TEN-TEC, INC., Industrial Park, Sevierville, TN 37882, Tel:**  
615-453-7172, FAX: 615-428-4483; Empl: 100

**TEPRO OF FLORIDA, 2608 Enterprise Rd., Clearwater,**  
FL 34623, Tel: 813-796-1044, FAX: 813-791-7425; FSC  
No: 15915; Empl: 97; Sls. Mgr: Pat Tesi **A=2028-2035**

**Local Sales Offices & Reps**

|    |                     |              |
|----|---------------------|--------------|
| CA | Bridge Mktg.        | 415-965-8045 |
| FL | APM Assocs.         | 813-886-2457 |
| MA | Berkshire Elctms.   | 508-435-9356 |
| NY | R.P. Luce           | 516-754-5064 |
| OH | Comps. Inc.         | 216-243-9200 |
| TX | Miles J. Cooley Co. | 214-262-5893 |
| VA | Abasco              | 804-674-8939 |

**Local Distributors**

|    |                   |              |
|----|-------------------|--------------|
| FL | NRC               | 407-241-8600 |
| NY | Sherburn Elctms.  | 516-231-4300 |
| NY | Tri-Start Elctms. | 516-737-2200 |

**TERADYNE CONNECTION SYS., Teradyne, Inc. 44**  
Simon St., Nashua, NH 03060, Tel: 603-889-5156, FAX:  
603-889-2128; FSC No: 31413; Empl: 1000; Sls. Mgr: D.  
Murphy

**Local Sales Offices & Reps**

|    |                                             |              |
|----|---------------------------------------------|--------------|
| CA | Irvine, Teradyne Connection Sys.            | 714-757-2600 |
| CA | Sunnyvale, Teradyne Connection Sys.         |              |
| CO | Longmont, Teradyne Connection Sys.          | 408-732-8770 |
| CT | Cromwell, Teradyne Connection Sys.          | 303-651-3737 |
| FL | Altamonte Springs, Teradyne Connection Sys. |              |
| NC | Raleigh, Teradyne Connection Sys.           | 407-332-6555 |
| MD | Columbia, Teradyne Connection Sys.          | 919-872-0392 |
| MN | Columbia Heights, Teradyne Connection Sys.  | 410-290-9189 |
| NH | Nashua, Teradyne Connection Sys.            | 612-636-1770 |
| PA | Trevose, Teradyne Connection Sys.           | 603-889-5156 |
| TX | Richardson, Teradyne Connection Sys.        | 215-638-2829 |
|    |                                             | 214-231-5384 |



Can. Mississauga, Ont., Teradyne Canada, Ltd.

416-602-6999

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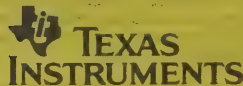
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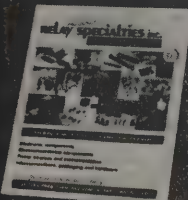
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**TL INDS. INC.**, 2541 Tracy Rd., Northwood, OH 43619, Tel: 419-666-8144, FAX: 419-666-6534; Empl: 100; Sls. Mgr.: Ted Stechschiulte

**TMC SYSTEMS (ARIZ.) INC.**, See Dale Electronics, Inc.



**FAX: 714-972-9658**

**TMP INC.**, 1701 E. Edinger Ave., Ste. F1, Santa Ana, CA 92705, Tel: 714-558-8028; Empl: 8; Sls. Mgr.: Michael W. DiPronio **A-1300, 2580; B-1195**

**Local Sales Offices & Reps**

|    |                                            |              |
|----|--------------------------------------------|--------------|
| AL | Madison, Benchmark Tech. Sls., Inc.        | 205-464-0033 |
| CO | Denver, Motion Technlg.                    | 303-757-3003 |
| FL | Safety Harbor, Jack Colgan & Assocs., Inc. |              |
|    |                                            | 813-725-5182 |
| GA | Norcross, Benchmark Tech. Sls., Inc.       | 404-446-1711 |
| IN | Fl. Wayne, Material Consultants            | 219-744-1315 |
| MA | Natick, Wayland Engrg. Sls., Inc.          | 508-655-6080 |
| NJ | Lakewood, Atek Inc.                        | 908-905-4443 |
| NC | Raleigh, Benchmark Tech. Sls., Inc.        | 919-850-0633 |
| WA | Federal Way, Wilson Elctms. Sls. Team      |              |
|    |                                            | 206-946-8016 |
| CA | San Clemente, A.T.A. Assocs.               | 714-661-9700 |

**TNR TECHNICAL INC.**, 279 Douglas Ave. No.1112, Altamonte Springs, FL 32714, Tel: 407-682-4311, FAX: 407-682-4469; Empl: 9; Sls. Mgr.: Jerrold Lazarus

**TOBE DEUTSCHMANN LABS., INC.**, 550 Turnpike St., Canton, MA 02021, Tel: 617-828-3366, FAX: 617-828-3048; FSC No: 21966; Empl: 25; Sls. Mgr.: T. Deutschmann, Jr.

**TOCOS AMERICA, INC., Tokyo Cosmos Electric Co., Ltd.**, 1177 E. Tower Road, Schaumburg, IL 60173, Tel: 708-884-6664, FAX: 708-884-6665; Empl: 2,000; Sls. Mgr.: Robert W. Kruse **A-2122-2123**

**Local Sales Offices & Reps**

|     |                                      |                   |
|-----|--------------------------------------|-------------------|
| AL  | Huntsville, WLA & Assocs.            | 205-721-1788      |
|     |                                      | FAX: 205-721-1789 |
| AZ  | Scottsdale, Pinnacle Comp. Sls.      | 602-994-0441      |
|     |                                      | FAX: 602-994-3638 |
| AZ  | Tucson, Pinnacle Comp. Sls.          | 602-886-1726      |
|     |                                      | FAX: 602-749-5539 |
| CA  | Colton, Inland Empire Elec. Sls.     | 714-872-0988      |
|     |                                      | FAX: 714-872-0988 |
| CA  | Pleasanton, Leddy Assocs.            | 510-417-1033      |
|     |                                      | FAX: 510-417-1458 |
| CO  | Denver, English-Damco Sls. Co.       | 303-782-0683      |
|     |                                      | FAX: 303-782-0670 |
| FL  | Altamonte Springs, TSS, Inc.         | 407-332-0067      |
| FL  | Boca Raton, TSS, Inc.                | 407-391-3718      |
| FL  | Clearwater, TSS, Inc.                | 813-530-5739      |
| GA  | Lawrenceville, WLA & Assocs.         | 404-339-9443      |
|     |                                      | FAX: 404-513-9148 |
| IL  | Deerfield, Mid-Tek Mktg. Co.         | 708-808-8822      |
|     |                                      | FAX: 708-808-8869 |
| IN  | Columbus, A E Sls.                   | 812-378-4361      |
|     |                                      | FAX: 812-372-8216 |
| IN  | Fishers, AE Sls.                     | 317-578-2121      |
| IN  | Leesburg, AE Sls.                    | 219-834-1232      |
|     |                                      | FAX: 219-834-1234 |
| MD  | Randallstown, Chesapeake Indl. Mktg. | 410-653-0476      |
|     |                                      | FAX: 410-653-4675 |
| MA  | Woburn, Radian Assocs., Inc.         | 617-933-7386      |
|     |                                      | FAX: 617-933-3516 |
| MI  | Kentwood, Millmore Sls., Inc.        | 616-554-9292      |
|     |                                      | FAX: 616-554-9210 |
| MI  | Novi, Millmore Sls., Inc.            | 313-349-0260      |
|     |                                      | FAX: 313-349-0756 |
| MN  | Roseville, Vector Comp. Sls.         | 612-631-1334      |
|     |                                      | FAX: 612-631-1329 |
| NM  | Albuquerque, Zia Tech. Sls.          | 505-296-4255      |
|     |                                      | FAX: 505-296-4255 |
| NY  | Pittsford, Franklin Sls. Corp.       | 716-248-8251      |
|     |                                      | FAX: 716-248-3866 |
| PA  | Philadelphia, Check Assocs., Inc.    | 215-487-3007      |
|     |                                      | FAX: 215-483-1096 |
| TX  | Houston, Barry Sls.                  | 713-784-5860      |
| TX  | Richardson, Barry Sls., Inc.         | 214-234-0255      |
|     |                                      | FAX: 214-235-0271 |
| WA  | Seattle, Northmar, Inc.              | 206-524-5170      |
|     |                                      | FAX: 206-524-0402 |
| Can | Oakville, Ont., Haltronics Ltd.      | 416-844-2121      |
|     |                                      | FAX: 416-844-0129 |

**Local Distributors**

|     |                                      |                   |
|-----|--------------------------------------|-------------------|
| CA  | Chatsworth, EW Elctms.               | 818-718-2500      |
|     |                                      | FAX: 818-718-9007 |
| CA  | Chatsworth, Passive Comps. Inc.      | 818-700-8838      |
|     |                                      | FAX: 818-700-9389 |
| CA  | Fremont, KEA Elctms.                 | 415-651-2600      |
|     |                                      | FAX: 415-651-2691 |
| CA  | Industry, ITAL Elctms. Sls., Inc.    | 818-968-8515      |
|     |                                      | FAX: 818-336-1725 |
| CA  | Irvine, Kelex Elctms.                | 900-4-CAPACI      |
|     |                                      | FAX: 714-474-1231 |
| CA  | Lake Elsinore, Dave Vest             | 714-245-3835      |
| CA  | San Jose, Passive Comps.             | 408-441-1441      |
| CA  | San Jose, Surface Mount Ctr.         | 408-453-2023      |
|     |                                      | FAX: 408-453-5699 |
| CA  | Santa Maria, Garrett Inst. & Comps.  | 805-922-0594      |
|     |                                      | FAX: 805-922-3643 |
| CA  | Tustin, H.T.S.                       | 714-259-7733      |
| CA  | Yorba Linda, Corona Elctms.          | 714-283-8185      |
|     |                                      | FAX: 714-283-8191 |
| CO  | Aurora, QPS Elctms. Inc. (CO)        | 303-343-9260      |
|     |                                      | FAX: 303-343-3051 |
| FL  | Boca Raton, N.R.C. Elctms.           | 407-241-8600      |
|     |                                      | FAX: 407-241-3328 |
| FL  | Clearwater, Atlantic Elctms.         | 813-531-5900      |
|     |                                      | FAX: 813-535-6354 |
| FL  | Fl. Lauderdale, Stock Elctms.        | 305-978-9875      |
| FL  | Lakeland, Atlantic Elctms.           | 813-687-0200      |
|     |                                      | FAX: 813-687-0300 |
| FL  | Orlando, Atlantic Elctms.            | 800-354-2505      |
|     |                                      | FAX: 407-352-9528 |
| FL  | W. Palm Bch., Atlantic Elctms.       | 407-686-8553      |
|     |                                      | FAX: 407-686-9694 |
| IL  | Addison, Belford Elctms., Inc.       | 708-691-1100      |
|     |                                      | FAX: 708-691-1118 |
| IL  | Bensenville, Voyager Elctms.         | 708-860-1300      |
|     |                                      | FAX: 708-860-1573 |
| IL  | Schaumburg, QPS Elctms., Inc.        | 708-884-6620      |
|     |                                      | FAX: 708-884-7573 |
| IN  | Indianapolis, Meunier Elctms. Supp.  | 317-635-3511      |
|     |                                      | FAX: 317-631-4707 |
| IN  | Indianapolis, MAR Elctms.            | 317-633-6699      |
|     |                                      | FAX: 317-633-6687 |
| IN  | Indianapolis, R.M. Elctms. Co. Inc.  | 317-291-7110      |
|     |                                      | FAX: 317-291-1675 |
| MD  | Beltsville, Petricko Sls., Inc.      | 301-937-4960      |
|     |                                      | FAX: 301-937-5299 |
| MD  | Gaithersburg, Axis Elctms.           | 301-840-9640      |
|     |                                      | FAX: 301-840-9299 |
| MA  | Andover, Aved Elctms., Inc.          | 800-441-AVED      |
|     |                                      | FAX: 508-794-0159 |
| MA  | Billerica, Baldwin Comps. Ctr. Inc.  | 508-667-6710      |
|     |                                      | FAX: 508-671-0034 |
| MN  | Fridley, Voyager Elctms.             | 612-571-7766      |
|     |                                      | FAX: 612-571-9519 |
| MN  | Plymouth, Leeds                      | 612-557-1277      |
| NH  | Salem, Diamond Elctms.               | 603-894-4420      |
|     |                                      | FAX: 603-894-5897 |
| NJ  | Whippany, A.D.I.                     | 201-428-0510      |
| NM  | Albuquerque, Betatron                | 505-821-1122      |
|     |                                      | FAX: 505-828-0450 |
| NY  | Ronkonkoma, Baldwin Comps. Ctr. Inc. | 800-645-5608      |
|     |                                      | FAX: 516-588-5441 |
| NY  | Syracuse, A.D.R. Technlg.            | 315-437-7087      |
|     |                                      | FAX: 315-437-7794 |
| PA  | Wayne, Peak Elctms.                  | 215-293-9000      |
|     |                                      | FAX: 215-687-4579 |
| TX  | Austin, Tinkertronics, Inc.          | 512-926-4420      |
|     |                                      | FAX: 512-926-9590 |
| TX  | Dallas, Off the Shelf Comps.         | 214-247-0052      |
|     |                                      | FAX: 214-247-2332 |
| TX  | Richardson, All American             | 214-231-5300      |
| TX  | Richardson, Comp. Technlg. Corp.     | 214-437-2211      |
|     |                                      | FAX: 214-437-2265 |
| TX  | Richardson, Off the Shelf Comps.     | 214-238-0808      |
|     |                                      | FAX: 214-669-0560 |
| WA  | Seattle, KAM                         | 206-382-1300      |
| WI  | Brookfield, Leeds                    | 414-789-6995      |
|     |                                      | FAX: 414-789-6994 |
| Can | Burlington, Alternate Source Comp.   | 800-661-9536      |
| Can | Calgary, Alb., Memco                 | 403-258-3399      |
|     |                                      | FAX: 403-259-3459 |
| Can | Surrey, B.C., Memco                  | 604-590-1553      |
|     |                                      | FAX: 604-590-5008 |

**Local Sales Offices & Reps**

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AL | Huntsville, Glen White Assocs.          | 205-882-6751 |
| CA | Livermore, Todd Prods. Corp.            | 510-449-6186 |
| CA | San Clemente, Todd Prods. Corp.         | 714-496-1155 |
| CA | San Diego, Todd Prods. Corp.            | 619-672-9062 |
| CO | Englewood, Thorson Rocky Mtn. Inc.      | 303-773-6300 |
| FL | Altamonte Springs, Glen White Assocs.   | 407-322-4875 |
| FL | Baco Raton, Glen White Assocs.          | 407-393-0776 |
| FL | Palm Harbor, Glen White Assocs.         | 813-787-8503 |
| GA | Duluth, Glen White Assocs.              | 404-418-1500 |
| IL | Hoffman Estates, Todd Prods. Corp.      | 708-882-3325 |
| MD | Glen Arms, Glen White Assocs.           | 410-592-9105 |
| MA | Hingham, Northeast Reps.                | 617-749-8700 |
| MI | Jenison, Electro Mktg.                  | 616-667-2983 |
| MI | Livonia, Electro Mktg.                  | 313-421-7590 |
| MN | Minneapolis, R. K. Sales Assocs.        | 612-571-1001 |
| MO | Grandview, Harris-Hanson Co.            | 816-763-6200 |
| MO | St. Louis, Harris-Hanson Co.            | 314-432-3611 |
| NJ | Fairfield, T.A.M.                       | 201-575-4130 |
| NY | Syracuse, Labtronics                    | 315-455-7314 |
| NC | Raleigh, Glen White Assocs.             | 919-848-1931 |
| OH | Dayton, Electro Mktg.                   | 513-890-8322 |
| OH | No. Royalton, Electro Mktg.             | 215-582-0075 |
| OR | Boothell, Temco Northwest               | 206-481-6150 |
| PA | Allison Park, Electro Mktg.             | 412-492-0688 |
| PA | Glenide, Koebert Assocs.                | 215-887-2310 |
| TN | Gray, Glen White Assocs.                | 615-477-8850 |
| TX | Houston, AID Elctms. Inc.               | 713-575-7959 |
| TX | Irving, AID Elctms. Inc.                | 214-790-4761 |
| UT | Salt Lake City, Thorson Rocky Mtn. Inc. | 801-942-1683 |
|    |                                         | 804-385-6110 |
| VA | Lynchburg, Glen White Assocs.           | 804-385-6110 |
| WA | Boothell, Temco Northwest               | 206-481-6150 |

**TODD SYSTEMS, INC.**, 50 Ash St., Yonkers, NY 10701, Tel: 914-963-3400, FAX: 914-963-3506; Empl: 45; Sls. Mgr.: S. Edwards **A-2582-2585**

**Local Distributors**

|     |                                |              |
|-----|--------------------------------|--------------|
| AL  | Mobile, Kretzer's Inc.         | 205-438-5611 |
| CA  | Berkeley, Roma Elctms.         | 410-644-0661 |
| CA  | San Francisco, Aris Corp.      | 415-550-8605 |
| CT  | Stamford, Elm Elctms.          | 203-348-6278 |
| FL  | Miami, Electronic Equip.       | 305-526-6000 |
| FL  | Miami Bch., B. Frank Inc.      | 305-861-8227 |
| GA  | Macon, Giga Corp.              | 912-745-2987 |
| IL  | Aurora, Bwy. Appliance         | 708-897-8688 |
| LA  | New Orleans, Gulf Marine Supp. | 504-525-6252 |
| MD  | Brookville, Albee Sls.         | 301-924-5538 |
| MA  | Boston, Astro Int.             | 617-323-6993 |
| NJ  | Newark, Cotrapex, Inc.         | 201-589-1416 |
| NJ  | Newark, Pinto Trading          | 201-344-7748 |
| NY  | New York, ABC Trading Co.      | 212-228-5070 |
| NY  | New York, Taft Elctms.         | 212-575-5194 |
| OH  | Dayton, K. Elctms.             | 513-426-1877 |
| TX  | Houston, Cross & Co.           | 713-673-3100 |
| TX  | Houston, Western Sls.          | 713-869-6671 |
| VA  | Fairfax, Atlantic Export       | 703-573-8383 |
| WA  | Seattle, Foreign Elctms.       | 206-682-2761 |
| WA  | Seattle, Pearl Elctms.         | 206-622-6200 |
| EXP | NY, New York, Able Intl. Ltd.  | 212-696-5300 |

**TOKIN AMERICA, INC.**, 155 Nicholson Ln., San Jose, CA 95134, Tel: 408-432-8020, FAX: 408-434-0375; Empl: 20; Sls. Mgr.: William English; Dist. Mgr.: William English

**TOKO AMERICA, INC.**, 1250 Feehanville Dr., Mt. Prospect, IL 60056, Tel: 708-297-0070, FAX: 708-699-7864; Empl: 75; Sls. Mgr.: Frank Migliarese; Dist. Mgr.: Tom Quinlan

**TOLTEC INDUSTRIES, INC.**, 7024 Many Circle, San Diego, CA 92154, Tel: 619-423-0700, FAX: 619-423-6647; Empl: 1000; Sls. Mgr.: Joseph F. Harrison

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**TODD PRODUCTS CORP.**, 50 Emjay Blvd., Brentwood, NY 11717, Tel: 516-231-3366; Empl: 250 **D-1488, 1967-1996**



**TOPAZ, INC.**, See Square D Co. Power Protection Sys.

**TOPFLIGHT**, 160 East 9th Ave., York, PA 17404, Tel: 717-843-9901, 800-233-9386, FAX: 717-845-6087; Empl: 250; Sls. Mgr: Bill Ciabattini

**TOPLINE COMPONENTS**, P.O. Box 5100, Garden Grove, CA 92645, Tel: 714-898-3830, FAX: 714-891-0321; Empl: 50



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**TOP-LINK COMPUTER INC.**, 1585 Mc Candless Drive, Milpitas, CA 95035-8001, Tel: 408-946-7886; Empl: 420; Sls. Mgr: Alan Richards **D-1998-2001**

## Local Sales Offices & Reps

|    |                               |              |
|----|-------------------------------|--------------|
| CA | Calabassas, Centaur Corp.     | 818-591-1655 |
| CA | Irvine, Centaur Corp.         | 714-261-2123 |
| CA | Mountain View, Taarcom Inc.   | 415-960-1550 |
| CA | Sacramento, Taarcom Inc.      | 916-782-1781 |
| CA | San Diego, Centaur Corp.      | 619-278-4950 |
| CO | Denver, Electrophase          | 303-237-3739 |
| IL | Chicago, Heartland Technical  | 708-358-6622 |
| KS | Olathe, C-Tron Inc.           | 913-780-3796 |
| MA | Boston, Mac Allister & Assoc. | 617-631-7556 |
| MI | Detroit, Greiner Assocs.      | 313-499-0188 |
| MN | Minneapolis, Technical Comps. | 612-561-5556 |
| NJ | Lodi, TRC Elctms.             | 201-779-8282 |
| OH | Dayton, J.C. Hofstetter       | 513-296-1010 |
| OH | Medina, J.C. Hofstetter       | 216-725-4477 |
| OR | Portland, Power Factor        | 503-233-6969 |
| PA | Allentown, TRC Elctms.        | 215-264-4995 |
| TX | Austin, Kruvand Assoc.        | 214-437-3355 |
| TX | Dallas, Kruvand Assoc.        | 512-219-9441 |
| TX | Dallas, Kruvand Assoc.        | 214-437-3355 |
| WI | Milwaukee, Heartland Tech.    | 414-789-6860 |

## Local Distributors

|    |                              |                            |
|----|------------------------------|----------------------------|
| AL | Huntsville, Comp. Distrs.    | 205-851-7800, 800-888-0331 |
| CA | Santa Ana, Foresight Elctms. | 714-833-2134, 800-253-0490 |
| CA | Santa Clara, Foresight       | 408-980-9700, 800-253-0490 |
| CO | Englewood, Comp. Distrs.     | 303-770-6214, 800-551-7357 |
| CO | Littleton, Displays Plus     | 713-240-4000, 800-231-3612 |
| FL | Clearwater, Comp. Distrs.    | 813-796-0466               |
| FL | Palm Bay, Comp. Distrs.      | 407-724-9910, 800-558-2351 |
| GA | Norcross, Comp. Distrs.      | 404-441-3320, 800-874-7209 |
| IL | Roselle, Foresight Elctms.   | 708-980-9890               |
| NJ | Lodi, TRC Elctms.            | 201-779-8282               |
| PA | Allentown, TRC Elctms.       | 215-264-4995               |
| TX | Dallas, Comp. Distrs.        | 214-644-0373, 800-848-4234 |
| TX | Houston, Southwest Elctms.   | 713-240-4000, 800-231-3612 |

**TORAD COIL CO., INC.**, 283 Linden Rd., Wayne, NJ 07470, Tel: 201-835-6195; Sls. Mgr: Dan Gupta

**TORELCO, INC.**, 14 Paine Ave., P. O. Box 560, Irvington, NJ 07111, Tel: 201-374-8641, 800-867-3526, FAX: 201-374-7611; Empl: 20; Sls. Mgr: Harold Tischler **A-2581**



**TOREMA U.S.A., INC.**, 10401 West Office Drive, Houston, TX 77042, Tel: 713-977-2500, FAX: 713-977-5031; FSC No: QB2R8; Empl: 40; Sls. Mgr: David P. Snelling



**FAX: 410-860-0302**

**TOROID CORP. OF MARYLAND**, 608 Naylor Mill Rd, Salisbury, MD 21801, Tel: 410-860-0300; Empl: 48; Sls. Mgr: Lennart Elmund **A-2586-2592**

## Local Sales Offices & Reps

|    |                                      |              |
|----|--------------------------------------|--------------|
| AZ | Phoenix, Tech Rep                    | 602-991-6646 |
| CA | Anaheim, Texel                       | 714-998-2941 |
| CA | San Diego, Texel                     | 619-560-1050 |
| CA | San Jose, Marketing Co.              | 408-272-6836 |
| CA | Seal Beach, Texel                    | 213-596-9411 |
| CA | Simi Valley, Texel                   | 805-582-1223 |
| FL | Boca Raton, Electro-Craft            | 407-394-9686 |
| FL | Largo, Electro-Craft                 | 813-544-1766 |
| GA | Atlanta, Overton Assocs.             | 404-497-0166 |
| IL | Wheeling, Ed Joyner & Co.            | 708-520-1200 |
| MD | Salisbury, Toroid Corp. of Maryland  | 410-860-0300 |
| MA | Southboro, Sullivan Tech. Sls.       | 508-881-2215 |
| MN | Osseo, Gaffney Sls.                  | 612-425-5484 |
| MO | Salisbury, Toroid Corp. of Mo.       | 410-860-0300 |
| NJ | Budd Lake, T & K Sls.                | 201-347-1856 |
| NY | Clark Mills, KLM Garner              | 315-853-6126 |
| NY | Pittsford, KLM Garner                | 716-381-8350 |
| NY | Smithtown, T & K Sales               | 516-724-3456 |
| NC | Raleigh, Overton Assocs.             | 919-469-5190 |
| OH | Vandalia, Whit-Corn Sls.             | 513-898-5433 |
| OR | Beaverton, Harry Levinson Co.        | 503-690-1312 |
| PA | Huntingdon Valley, Ed Leiby & Assoc. | 215-659-8938 |
| SC | Walhalla, Overton Assocs.            | 803-638-7101 |
| TN | New Tazewell, Overton Assocs.        | 615-626-6009 |
| VT | Lucidlow, Vero & Assoc.              | 802-228-5240 |
| VA | Alexandria, Ed Leiby & Assocs.       | 703-360-9039 |
| WA | Seattle, Harry Levinson Co.          | 206-382-1300 |

**TOROTEL TECHNOLOGIES, INC.**, 8-70 Hanlan Rd., Woodbridge, Ont., Can L4L 3P6, Tel: 905-850-5122, FAX: 905-850-5129; Empl: 11; Sls. Mgr: Saverio Panetta; Dist. Mgr: Saverio Panetta



**FAX: 816-763-2278**

**TOROTEL PRODS. INC.**, 13402 S. 71 Hwy, Grandview, MO 64030-3199, Tel: 816-761-6314; Empl: 250; Sls. Mgr: H. Norem **A-1301-1307, 2594-2596**

## Local Sales Offices & Reps

|    |                                         |              |
|----|-----------------------------------------|--------------|
| AZ | Tempe, Gassner & Clark Co.              | 602-968-9037 |
| CA | San Jose, Tech Rep Inc.                 | 408-261-8287 |
| CA | Santa Ana, California Elctm. Mktg.      | 714-835-2702 |
| FL | Altamonte Springs, Semtronics Inc.      | 407-831-8233 |
| KS | Overland Pk., QDC Inds.                 | 913-642-2214 |
| MD | Baltimore, Dickison Sls. Co.            | 301-823-0923 |
| MA | Lowell, Underwood Sls.                  | 508-256-8191 |
| MI | Livonia, Electro-Mktg. Inc.             | 313-421-7590 |
| NY | Northport, R. P. Luce & Co., Inc.       | 516-754-5064 |
| NY | Pittsford, James E. Zimmerman Sls. Inc. | 716-381-3186 |
| OH | Dayton, Electro-Mktg. Inc.              | 513-890-8322 |
| PA | Langhorne, R.P. Luce & Co.              | 215-757-3518 |
| WA | Bellevue, Olson Tech. Sls. Corp.        | 206-883-7792 |

**TOROTRON CORP.**, 519 South Fifth Ave., Mt. Vernon, NY 10550, Tel: 914-664-2050; Empl: 14; Sls. Mgr: Miriam Zanger **D-1326**

**TORQ CORP.**, 32 W. Monroe St., Bedford, OH 44146, Tel: 216-232-4100, FAX: 216-232-4104; Empl: 50; Sls. Mgr: Lee Seaback

**TORTRAN INC.**, 915 Pembroke St., Bridgeport, CT 06608, Tel: 203-367-5188, FAX: 203-384-8120; Empl: 6 **A-2593**

**TORWICO ELCTRNS. INC.**, 410 Oberlin Ave. South, Lakewood, NJ 08701, Tel: 908-364-1800, FAX: 908-363-6234; Empl: 200

**TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.**, 9775 Toledo Way, Irvine, CA 92718, Tel: 714-455-2000, FAX: 714-859-3963

**TOSHIBA INSTRUMENTATION DIV.**, Toshiba Intl. Corp., 5354 S. 129th E. Ave., Tulsa, OK 74134, Tel: 918-252-3548, FAX: 918-250-9023; Empl: 20; Sls. Mgr: Lewis E. Smith

**TOSHIN KOGYO CO., R.G. Allen Co.**, 7267 Coldwater Canyon, N. Hollywood, CA 91605, Tel: 818-765-8300

**TOTAL CONCEPT SALES**, 501 W. Glenoaks Blvd., Ste 343, Glendale, CA 91202-2896, Tel: 818-547-9476, FAX: 818-547-9473; Empl: 3; Sls. Mgr: Robert J. Cunningham; Dist. Mgr: Robert J. Cunningham

**TOTAL POWER INTERNATIONAL, INC.**, 418 Bridge St., Lowell, MA 01850, Tel: 508-453-7272, FAX: 508-453-7395; Empl: 15; Sls. Mgr: Patrick Letendre **D-2002**  
All states not listed call T.P.I. direct 508-453-7272

## Local Sales Offices & Reps

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Tempe, Trembly                    | 602-431-9417 |
| CA | San Diego, Amasco                 | 619-292-7666 |
| CA | San Jose, Amasco                  | 408-262-1500 |
| CA | Torrance, Amasco                  | 310-781-9494 |
| CT | Weston, Paquette Elctms.          | 203-544-9424 |
| CO | Golden, Trembly Assoc.            | 303-279-3019 |
| IL | Palatine, Vine Sls. Inc.          | 708-934-5476 |
| IN | Carmel, Giesting & Assoc.         | 317-844-5222 |
| KY | Versailles, Giesting & Assoc.     | 606-873-2330 |
| MD | Elliott City, Technology Sls.     | 301-461-7802 |
| MA | Marlboro, JDS Reps.               | 508-460-0187 |
| MI | Livonia, Giesting & Assoc.        | 313-478-8106 |
| MN | Oakdale, Complete Sls.            | 612-731-2923 |
| NV | Las Vegas, Trembly Assoc.         | 702-739-9770 |
| NM | Albuquerque, Trembly Assoc.       | 505-266-8616 |
| NY | Buffalo, Lynn Assocs.             | 716-631-0054 |
| OH | Cincinnati, Giesting & Assoc.     | 513-385-1105 |
| OR | Portland, Index Inc.              | 503-297-3364 |
| PA | Gibsonia, Lynn Assocs.            | 412-443-3670 |
| PA | Horsham, Jacobsen Assoc.          | 215-674-2937 |
| PA | Pittsburgh, Giesting & Assoc.     | 412-828-6160 |
| TX | Dallas, Rem Components            | 214-234-1069 |
| UT | N. Salt Lake City, Trembly Assoc. | 801-295-4703 |
| WA | Bellevue, Inex, Inc.              | 206-271-2979 |
| WI | Genoa City, Vine Sls. Inc.        | 414-279-3871 |

## Local Distributors

|    |                           |              |
|----|---------------------------|--------------|
| AL | Huntsville, Resistacap    | 205-883-4270 |
| CA | San Jose, Power and Data  | 408-629-3550 |
| MA | Marlboro, Now Electronics | 508-460-0187 |
| MN | Roseville, Parts 1        | 612-633-8079 |
| TX | Houston, Wofford          | 713-847-3583 |

**TOTAL TEMPERATURE INSTRUMENTATION, INC.**, PO Box 1073, 30 Krupp Dr., Williston, VT 05495, Tel: 802-863-0085, FAX: 802-863-1193; Empl: 10; Sls. Mgr: Bob Berman; Dist. Mgr: Bob Berman

**TOUCH TECHNOLOGY**, 5524 Bee Caves Rd. Building L, Austin, TX 78746, Tel: 512-328-9284, FAX: 512-328-9285; Empl: 65; Sls. Mgr: Sue Ellen Smith

**TOWER ELECTRONICS, INC.**, 281 S. Commerce Circle, Fridley, MN 55432, Tel: 612-571-3737, FAX: 612-571-5605; Empl: 75; Sls. Mgr: Gary Schmitz



**FAX: 708-593-5678**

**TOYOCOM USA INC.**, 617 E. Golf Rd., Ste. 112, Arlington Heights, IL 60005, Tel: 708-593-8780/1-800-TOYOCOM; Empl: 18; Sls. Mgr: Dennis Reifel **A-1484-1495**

## Local Sales Offices & Reps

|    |                                                  |              |
|----|--------------------------------------------------|--------------|
| AL | Huntsville, Electramark                          | 205-830-4400 |
| AZ | Tempe, Cantec Sls.                               | 602-968-9021 |
| CA | El Toro (Southern), English/Damco                | 714-753-1950 |
| CA | Santa Clara, Pinnacle Sls.                       | 408-249-7400 |
| CO | Colorado Spgs., Pinnacle Rocky Mtn.              | 719-570-0180 |
| FL | Maitland, EIR                                    | 407-660-9600 |
| GA | Norcross, Electramark                            | 404-446-7915 |
| IL | Arlington Hgts., Toyocom U.S.A., (Corp. Hdqtrs.) | 708-593-8785 |
| IN | Carmel, Giesting & Assocs.                       | 317-844-5222 |
| IA | Cedar Rapids, ATS                                | 319-393-8280 |
| MD | Rockville, Cetech                                | 301-590-0111 |
| MD | Timonium, Cetech                                 | 410-666-0315 |



|    |                                      |              |
|----|--------------------------------------|--------------|
| MA | Randolph, Hatch Assocs.              | 617-963-3306 |
| MI | Coloma, Giesting & Assocs.           | 616-468-4200 |
| MI | Livonia, Giesting & Assocs.          | 313-478-8106 |
| MN | Minneapolis, Scott Elctms.           | 612-929-2985 |
| NJ | Mountainside, Henry G. Richter       | 908-233-4615 |
| NY | Fairport, Henry G. Richter           | 716-223-6010 |
| NC | Raleigh, C-Tech Sls.                 | 919-954-7000 |
| OH | Cincinnati, Giesting & Assocs.       | 513-385-1105 |
| OH | Cleveland, Giesting & Assocs.        | 216-261-9705 |
| OR | Beaverton, Quest Mktg.               | 503-641-7377 |
| PA | Phoenixville (EPA), Henry G. Richter | 215-495-6176 |
| PA | Pittsburgh (WPA), Giesting & Assocs. | 412-828-3553 |

|      |                                     |              |
|------|-------------------------------------|--------------|
| TX   | Fl. Worth (xtal), Rice Entrpr.      | 214-436-6062 |
| UT   | Salt Lake City, Pinnacle Rocky Mtn. | 801-264-8366 |
| WA   | Renton, Quest Mktg.                 | 206-228-6660 |
| Intl | San German, Digi-Tech Sls.          | 809-892-2317 |
| Can  | Kanata, Ont. (East), C.M.T.         | 613-591-9555 |
| Can  | Mississauga, Ont. (East), C.M.T.    | 416-612-0900 |

**TRACER ELECTRONICS, INC.**, 200 Broadacres Drive, Bloomfield, NJ 07003, Tel: 201-338-1234, FAX: 201-338-1125; Empl: 10

**TRACEWELL ENCLOSURES, INC.**, 567 Enterprise Dr., Westerville, OH 43081, Tel: 614-846-6175, 800-848-4525, FAX: 614-846-4450; Empl: 50; Sls. Mgr.: Fred Meyer  
C-1106-1113

**TRA-CON, INC.**, 55 North St., Medford, MA 02155, Tel: 617-391-5550; Empl: 55; Sls. Mgr.: Dan Romanow



**FAX: 813-886-2794**

**TRAK MICROWAVE CORP.**, 4726 Eisenhower Blvd., Dept. E-2, Tampa, FL 33634, Tel: 813-884-1411, TELEX: 52-827, TWX: 810-876-9140; FSC No: 12855; Sls. Mgr.: Thomas L. Roberts; Dist. Mgr.: Sharon Altimari  
A-1852-1857; D-1077, 1207

#### Local Sales Offices & Reps

|     |                                          |              |
|-----|------------------------------------------|--------------|
| AZ  | Scottsdale, Thorson Desert States, Inc.  | 602-998-2444 |
| CA  | Dana Point, S&S Technlg., Inc.           | 714-661-4619 |
| CA  | Folsom, Dismann-Bakner                   | 916-983-1029 |
| CA  | Granada Hills, S & S Technlg., Inc.      | 818-366-2866 |
| CA  | Mountain View, Dismann Bakner            | 415-969-3010 |
| CA  | San Diego, S & S Technlg. Inc.           | 619-484-2996 |
| CO  | Parker, Howard Assocs.                   | 303-841-5755 |
| FL  | Harbour Bch, M. Lader Co.                | 800-442-3177 |
| FL  | Melbourne, Jerry Williams, Inc.          | 407-259-7700 |
| FL  | Tampa, M. Lader Co.                      | 813-264-1444 |
| GA  | Stockbridge, M. Lader Co.                | 800-442-3177 |
| GA  | Warner Robbins, JC Coefield              | 912-922-5555 |
| IL  | Northbrook, CJ Sls.                      | 708-559-0660 |
| IN  | Fl. Wayne, TX Sls. Indiana               | 219-489-4447 |
| IA  | Cedar Rapids, J.R. Sls. Engrg.           | 319-393-2232 |
| MD  | Columbia, M. Lader Co.                   | 410-381-1550 |
| MO  | Florissant, Central Tech. Sls.           | 314-831-4069 |
| NH  | Amherst, TMR Assocs.                     | 603-672-9336 |
| NJ  | Clarksboro, M. Lader Co.                 | 609-423-4213 |
| NJ  | Denville, Ascor Elctms., Inc.            | 201-627-1863 |
| NM  | Albuquerque, Thorson Desert States, Inc. | 505-883-4343 |
| NY  | Liverpool, R&D Assocs.                   | 315-457-0100 |
| NY  | New Rochelle, Ascor Elctms.              | 914-235-8838 |
| NY  | Seaford, Ascor Elctms., Inc.             | 516-826-7204 |
| NC  | Greensboro, M. Lader Co.                 | 919-674-8970 |
| PA  | Conshohocken, M. Lader Co.               | 215-825-3177 |
| PA  | East Greenville, M. Lader Co.            | 215-679-8485 |
| TX  | Austin, Thorson Co.                      | 512-467-2737 |
| TX  | Dallas, Thorson Co.                      | 214-233-5744 |
| TX  | Houston, Thorson Co.                     | 713-558-8205 |
| VA  | Strasburg, M. Lader Co.                  | 703-465-9180 |
| Can | Burnaby, B.C., Giga-Tron                 | 604-299-4244 |
| Can | Ottawa, Giga-Tron Assocs. Ltd.           | 613-225-4090 |

#### Local Distributors

|    |                                   |              |
|----|-----------------------------------|--------------|
| AZ | Scottsdale, Spirit Elctms.        | 602-998-2444 |
| CA | Mtn. View, Comstock Distrs., Inc. | 415-969-3010 |
| NY | Ronkonkoma, Compucon Distr., Inc. | 516-981-8810 |
| PA | Conshohocken, MLC Distrs., Ltd.   | 215-825-3177 |

**TRAK MICROWAVE LTD.**, TRAK Microwave Corp., 3/4 Lindsay Court, Dundee Technlg. Pk., Dundee, Scotland DD2 1TY, Tel: 44-382-561509, FAX: 44-382-562643; Empl: 30



**FAX: 813-886-2794**

**TRAK SYSTEMS, Div. TRAK Microwave Corp.**, 4722 Eisenhower Blvd., Dept. E-2, Tampa, FL 33634-6391, Tel: 813-884-1411, TELEX: 52-827, TWX: 810-876-9140; FSC No: 11165; Sls. Mgr.: Thomas L. Roberts  
D-1077, 1207

#### Local Sales Offices & Reps

|     |                                    |              |
|-----|------------------------------------|--------------|
| AZ  | Huntsville, Saber Assocs., Inc.    | 205-776-9481 |
| AL  | Phoenix, J. Smith Assocs.          | 602-267-0981 |
| CA  | Laguna Hills, Elotek Sys.          | 714-830-4856 |
| CA  | Mountain View, Dismann Bakner      | 415-969-3010 |
| CO  | Parker, Howard Assocs.             | 303-841-5755 |
| FL  | Fl. Walton Bch, Mktg. & Consulting | 904-863-3017 |
| FL  | Melbourne, Saber Assocs.           | 407-724-0920 |
| GA  | Lawrenceville, Saber Assocs., Inc. | 404-962-8740 |
| IN  | Fl. Wayne, TX Sls. Indiana         | 219-489-4447 |
| MA  | Andover, Saret Assocs.             | 508-475-9332 |
| MO  | Maryland Hgts, KJS Mktg., Inc.     | 314-770-1412 |
| NM  | Albuquerque, J. Smith Assocs.      | 505-345-6501 |
| NC  | Clayton, Saber Assocs., Inc.       | 919-553-5009 |
| PA  | Philadelphia, Rabal Assocs.        | 215-922-6914 |
| TX  | Austin, Thorson                    | 512-467-2737 |
| TX  | Dallas, Thorson                    | 214-233-5744 |
| TX  | Houston, Thorson                   | 713-558-8205 |
| Can | Burnaby, B.C., Giga-Tron           | 604-299-4244 |
| Can | Ottawa, Giga-Tron Assocs., Ltd.    | 613-225-4090 |

**TRANSAMERICA DELAVAL, INC.**, See CEC Instruments, IMO Inds. Inc.

**TRANSAMERICA DELAVAL**, See Gems Sensors, IMO Inds. Inc.

**Trans American Transformer, Inc.**

**FAX: 516-928-0852**

**TRANS AMERICAN TRANSFORMER**, 26 Hulse Rd., E. Setauket, NY 11733, Tel: 516-928-0762; FSC No: 61619; Empl: 30  
A-2597

**TRANSCHEM, Jetronics Industries, Inc.**, P.O. Box 667, 1521 Pomona Rd., Corona, CA 91718, Tel: 909-371-5751, FAX: 909-371-9602; FSC No: 03526; Empl: 60; Sls. Mgr.: Ernie Aiu, Gent. Mgr.

**TRANSCO PRODUCTS, INC.**, Subsidiary of Datron Systems Inc., Vard Newport, Camarillo, CA 93012, Tel: 805-987-8007, TELEX: 857579, FAX: 805-484-0830; FSC No: 82152; Empl: 300; Sls. Mgr.: Larry Neeley, Sls. Mgr.

**TRANSDUCERS & SYSTEMS, A Prime Technology Company**, Twin Lakes Rd., P.O. Box 185, N. Brantford, CT 06471, Tel: 203-481-5721, TWX: 710-452-3092, FAX: 203-481-8937; Empl: 60; Sls. Mgr.: J.L. Jamieson, Mktg. VP

All states not listed consult factory, N. Brantford, CT

**TRANSDUKTOR, INC.**, See Ulveco, Inc.

**TRANSENE**, Rte. 1, Rowley, MA 01969, Tel: 508-948-2501, FAX: 508-948-2206; Empl: 21; Sls. Mgr.: H. Femino

**TRANSFORMER DESIGN**, MTE Corporation, W147 N9525 Held Drive, Menomonee Falls, WI 53051, Tel: 414-253-8200, FAX: 414-253-8222; Empl: 120; Sls. Mgr.: John A. Houdek

**TRANSFORMER ENGINEERING CORPORATION**, 2550 Brookpark Rd., Cleveland, OH 44134, Tel: 216-741-5282, FAX: 216-741-4860; Empl: 85; Sls. Mgr.: William M. Dick

**TRANSFORMER TECHNOLOGIES, INC.**, 402 Locust St., Mt. Vernon, NY 10552, Tel: 914-668-1600, FAX: 914-668-4794; Empl: 15; Sls. Mgr.: Thomas Quaglieri  
A-2598

#### Local Sales Offices & Reps

|    |                             |              |
|----|-----------------------------|--------------|
| IL | Highland Pk., Mid-Tek Mktg. | 708-831-1130 |
| VA | Ashland, Glasscock Assocs.  | 804-798-2125 |

**TRANSICOIL, INC.**, Eagle-Picher Inc., 2560 General Armistead Blvd., Trooper, PA 19403, Tel: 215-539-4400, FAX: 215-539-3400; FSC No: 82686; Empl: 215; Sls. Mgr.: John Stalber, Dist. Mgr.: Fran Mashintonio

**TRANSISTOR DEVICES, INC.**, 274 S. Salem St., Randolph, NJ 07869, Tel: 201-361-6622, FAX: 201-361-7665; FSC No: 09004; Empl: 650; Sls. Mgr.: Martin M. O'Donnell  
D-2003

#### Local Sales Offices & Reps

|     |                                         |              |
|-----|-----------------------------------------|--------------|
| AL  | Huntsville, Reynolds & Assocs., Inc.    | 205-539-1485 |
| AZ  | Phoenix, Trembley Assocs.               | 602-431-9417 |
| AZ  | Tucson, Trembley Assoc.                 | 602-790-9945 |
| CA  | Bakersfield, FLW, Inc.                  | 805-398-0720 |
| CA  | Campbell, SMA                           | 408-370-6900 |
| CA  | Carlsbad, FLW, Inc.                     | 619-434-5251 |
| CA  | Costa Mesa, FLW, Inc.                   | 714-751-7512 |
| CO  | Colorado Springs, Trembley Assocs.      | 719-475-0072 |
| CO  | Denver, Trembley Assocs.                | 303-279-3019 |
| CT  | Scientific Dvcs., Inc.                  | 203-248-9361 |
| FL  | Melbourne, Reynolds Assocs., Inc.       | 407-259-7000 |
| GA  | Duluth, Reynolds Assocs., Inc.          | 404-476-4992 |
| IL  | Wheeling, Ed. Joyner & Co.              | 312-520-1200 |
| IA  | Cedar Rapids, Midwest Tech. Sls.        | 319-377-1688 |
| KS  | Goddard, Midwest Tech. Sls.             | 616-794-8565 |
| KS  | Lenexa, Midwest Tech. Sls.              | 913-888-5100 |
| MA  | Lexington, E. F. Delfino, Inc.          | 617-862-1118 |
| MI  | Ann Arbor, Ashby Assocs., Inc.          | 313-995-4082 |
| MN  | Anoka, Tech. Solutions, Inc.            | 612-785-9303 |
| MO  | Earth City, Midwest Tech. Sls. Inc.     | 314-298-8787 |
| NV  | Las Vegas, Trembley Assocs., Inc.       | 702-739-9770 |
| NJ  | Comp-Tech Sls.                          | 201-935-2152 |
| NJ  | Hasbrouck Hgts, Comp-Tech Sls.          | 201-288-7400 |
| NM  | Albuquerque, Trembley Assocs. Inc.      | 505-266-8616 |
| NM  | Las Cruces, Trembley Assocs. Inc.       | 505-526-1615 |
| NY  | Commack, Comp-Tech Sls.                 | 516-499-9189 |
| NY  | New Hyde Park, Comp-Tech Sls.           | 516-488-4520 |
| NC  | Raleigh, Reynolds & Assocs., Inc.       | 919-876-0282 |
| OH  | Arcanum, Ashby Assocs., Inc.            | 513-692-8713 |
| OH  | Cleveland, Ashby Assocs., Inc.          | 216-461-0826 |
| PA  | Southampton, Campbell Assoc.            | 215-322-6630 |
| TX  | Austin, Jim Hughes Co.                  | 512-467-8896 |
| TX  | Lewisville, Jim Hughes Co.              | 214-221-1536 |
| UT  | N. Salt Lake City, Trembley             | 801-295-4703 |
| VA  | Alexandria, Dyna-Rep Co.                | 703-354-1222 |
| Can | Weston Ont., Duncan Instrs. Canada Ltd. | 416-742-4448 |

|              |
|--------------|
| 505-266-8616 |
| 505-526-1615 |
| 516-499-9189 |
| 516-488-4520 |
| 919-876-0282 |
| 513-692-8713 |
| 216-461-0826 |
| 215-322-6630 |
| 512-467-8896 |
| 214-221-1536 |
| 801-295-4703 |
| 703-354-1222 |
| 416-742-4448 |

**TRANSMAGNETICS**, 210 Adams Blvd., Farmingdale, NY 11735, Tel: 516-293-3100, FAX: 516-293-3793; FSC No: 17755; Empl: 44; Sls. Mgr.: Fred Haber  
D-1208-1210

#### Local Sales Offices & Reps

|     |                                           |              |
|-----|-------------------------------------------|--------------|
| NY  | Saugerties, Beckrep                       | 914-246-3031 |
| OR  | Beaverton, Seltech Elctms. Mfg. Rep. Inc. | 503-629-9254 |
| TX  | Richardson, Scientific Sls. Co.           | 214-231-6541 |
| WA  | Bellevue, Seltech Elctms. Mfg. Rep. Inc.  | 206-746-7970 |
| Can | St. Laurent, Que., Testforce Sys. Inc.    | 514-856-0970 |

**TRANS METRICS, INC.**, 5325 Naiman Pkwy Ste.E, Solon, OH 44139, Tel: 216-248-2229, FAX: 216-248-7780; FSC No: 6685; Empl: 20; Sls. Mgr.: James N. Dietrich

**TRANSONIC SYSTEMS INC.**, 34 Dutch Mill Rd., Ithaca, NY 14850, Tel: 607-257-5300, TELEX: 413523, ESYLNK: 62050974; Empl: 40

**TRANSPARENT DEVICES, INC.**, 853 Lawrence Drive, Newbury Park, CA 91320, Tel: 805-499-5000, FAX: 805-499-5888; Empl: 26; Sls. Mgr.: C. Estiandan  
B-1126

#### Local Sales Offices & Reps

|    |                                    |              |
|----|------------------------------------|--------------|
| CA | Irvine, Cal Rep, Inc.              | 714-509-7707 |
| CO | Aurora, Electrodyne                | 303-695-8903 |
| GA | Acworth, EAB, Inc.                 | 404-975-3660 |
| IL | Glendale Heights, Synergistic Sls. | 708-858-8686 |
| IA | Cedar Rapids, Spectrum Sls.        | 319-366-0576 |
| KS | Overland Park, Spectrum Sls.       | 913-648-6811 |
| MD | Towson, ATS, Inc.                  | 410-296-9360 |
| MN | Minneapolis, Electro-Serv          | 612-338-3475 |
| MO | Florissant, Spectrum Sls.          | 314-921-1313 |
| NJ | E. Brunswick, Shepard Assocs.      | 908-254-5757 |
| NY | E. Syracuse, Nycorn, Inc.          | 315-437-8343 |
| OH | Solon, Five Star Elctms.           | 216-349-1611 |
| OK | Tulsa, Delta Comps., Inc.          | 918-592-7711 |
| PA | Frazier, Indl. Comps.              | 215-889-0650 |
| PA | Pittsburgh, Marktech               | 412-367-2327 |
| TX | Seagoville, Delta Comps., Inc.     | 214-267-6333 |
| UT | Salt Lake City, Electrodyne        | 801-264-8050 |
| WA | Seattle, J.J. Assocs.              | 206-246-6619 |



WI Brookfield, Synergistic Sls. .... 414-821-1516  
MA Westford, Eclm. Microtech Assoc. .... 508-692-0070

**TRANSTECHNOLOGY ELECTRONICS**, Transtechnology Corporation, 8800 Allen Rd, Peoria, IL 61615-1584, Tel: 309-693-3300, TWX: 510-390-3691, FAX: 309-693-3308; FSC No.: 30463; Sls. Mgr.: Ignas Budrys; Dist. Mgr.: Ignas Budrys

**TRANSTECTOR SYSTEMS, INC.**, P.O. Box 300, Hayden Lake, ID 83835, Tel: 800-829-2901, TELEX: 150-077TRANSTECPLS, FAX: 208-772-9016; FSC No.: 30992; Empl: 150; Sls. Mgr.: Mary Mohr

**TRAN-TEC CORP.**, Box 1044, Columbus, NE 68601, Tel: 402-564-2748, FAX: 402-564-4946; Empl: 46; Sls. Mgr.: Cliff Schroeder

**TRATEC OF CALIFORNIA, INC.**, 3648 Main St, Chula Vista, CA 91911, Tel: 619-476-1155, ESYLNK: 619-476-1176; Empl: 250; Sls. Mgr.: Dale Fox

**TREE TECHNOLOGIES CORPORATION**, Baird Research Pk, 1576 Sweet Home Rd, Buffalo, NY 14228, Tel: 716-688-4640, FAX: 716-636-3630; Empl: 8; Sls. Mgr.: Victor Demjanenko, PH.D.

**TREK, INCORPORATED**, 3932 Salt Works Road, Medina, NY 14103-0728, Tel: 716-798-3140, FAX: 716-798-3106; Empl: 119; Sls. Mgr.: Donald L Pritchard; Dist. Mgr.: Donald L Pritchard

**TREND CIRCUITS**, 44358 Old Warm Springs Blvd, Fremont, CA 94538-6148, Tel: 510-651-1150, FAX: 510-651-5763; Empl: 142; Sls. Mgr.: Colleen Frisz

**TREND DLC, INC.**, 3D Great Meadow Lane, East Hanover, NJ 07936, Tel: 201-515-4935, FAX: 201-515-4938; Empl: 20; Sls. Mgr.: Joseph R. La Manna

**TRENT, INC.**, 201 Leverington Ave, Philadelphia, PA 19127, Tel: 215-482-5000, FAX: 215-482-9389; Empl: 55

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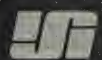
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**TRICON INDUSTRIES, INC.**, Brazing Alloys & Chemical Products Div., 5000 Chase St, Downers Grove, IL 60515-4012, Tel: 708-963-0220, FAX: 708-963-0269; Empl: 19; Sls. Mgr.: T. R. Boedecker

**TRICON INDUSTRIES, INC.**, Electromechanical Division, 2325 Wisconsin Avenue, Downers Grove, IL 60515-4076, Tel: 708-964-2330, FAX: 708-964-5179; Empl: 289; Sls. Mgr.: Robert Stevens

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**TRIDYNE PROCESS SYSTEMS**, DBI Industries, 80 Allen Rd, So. Burlington, VT 05403, Tel: 802-863-6873, FAX: 800-325-2654; Empl: 35; Sls. Mgr.: Charlie Goetz

**TRIGON/ADCOTECH**, Dynatech, 100 S. Milpitas Blvd, Milpitas, CA 95035, Tel: 408-946-4300, FAX: 408-263-9217; Empl: 50

**TRILITHIC, INC.**, 9202 E. 33rd St, Indianapolis, IN 46236, Tel: 800-344-2412, FAX: 317-895-3613; FSC No.: 23042; Empl: 120; Sls. Mgr.: D. Distler



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**TRI-MAG, INC.**, 1601 N. Clancy Ct, Visalia, CA 93291, Tel: 209-651-2222, TELEX: (ITT) 4994462; FSC No.: 64771; Empl: 80 ..... A-1612-1614; D-2004-2006, 2212-2214

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| NY | Syracuse, R.M. Scanlon & Assoc, Inc. ....  | 315-463-7682 |
| OH | Mentor, Sales Plus, Inc. ....              | 216-942-7811 |
| OK | Tulsa, Innovative Tech. Sls. ....          | 214-699-3485 |
| OR | Beaverton, Pacific Mktg. Spec. ....        | 503-641-9373 |
| PA | Ambler, W.R. Hartmaier Assoc, Inc. ....    | 215-643-6691 |
| PA | Ambler, W.R. Hartmaier Assocs, Inc. ....   | 215-643-6691 |
| TX | Austin, Innovative Tech. Sls. ....         | 512-255-1510 |
| TX | Dallas, Innovative Tech. Sls. ....         | 214-699-3485 |
| TX | Houston, Innovative Tech. Sls. ....        | 214-699-3485 |
| WA | Redmond, Pacific Mktg. Spec. ....          | 206-882-3144 |
| WI | Milwaukee, Coombs Assocs, Inc. ....        | 414-351-6123 |

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| MA | Needham, Power Electro Supp. Co. .... | 718-767-1447 |

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**TRINETICS INC.**, 55807 Currant Rd, Mishawaka, IN 46545-4899, Tel: 219-259-8535, FAX: 219-259-8552; FSC No.: 3677; Empl: 50; Sls. Mgr.: AJ Reinke

**TRIONICS, INC.**, P.O. Box 225, St. Charles, IL 60174, Tel: 708-365-6570, FAX: 708-365-6575; Empl: 80

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| MN | Stillwater, Kits Co. ....                | 612-439-8088 |
| NY | Manhasset, Win-Cor Eclm. Sls. ....       | 516-627-9474 |
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| PA | McKean, Advacom Inc. ....          | 814-476-7774 |

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| FL | Orlando, CBC Eclmns. ....       | 407-831-5380 |
| FL | Tampa, CBC Eclmns. ....         | 813-969-1901 |
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| NY | Great Neck, Mos Assocs. ....    | 516-487-3966 |
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**TRI-TECH ELECTRONICS, INC.**, 9480 E. Colonial Dr, Orlando, FL 32817, Tel: 407-277-2131, FAX: 407-282-1202; Empl: 115

**TRM, INC.**, 280 S. River Rd, Manchester, NH 03110, Tel: 603-627-6000, FAX: 603-627-6025; Empl: 40; Sls. Mgr.: D. Crocker

**TROMPETER ELECTRONICS, INC.**, 31186 La Baya Dr, P.O. Box 5069, Westlake Village, CA 91362-4047, Tel: 818-707-2020, FAX: 818-706-1040; FSC No.: 14949; Empl: 180; Sls. Mgr.: Dick Coleman; Dist. Mgr.: Raymond Calvin ..... C-1499-1505

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| CA | Los Angeles, Knight Co. ....             | 310-670-2833 |
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| CO | Denver, Aztec Entprs. ....               | 303-779-5285 |
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| NJ Elmwood Park, L. & M Assoc.                | 800-722-0441 |
| NM Albuquerque, Aztec Enptrs.                 | 505-262-1688 |
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| NY Waverly, TAE REP Inc.                      | 607-565-3485 |
| NY Whitney Point, TAE REP Inc.                | 607-692-3705 |
| NC Charlotte, CPF Atlantic, Inc.              | 704-846-1702 |
| NC Greensboro, CP&F Atlantic, Inc.            | 919-218-0800 |
| OH Cincinnati, Geisting & Assoc.              | 513-385-1105 |
| OH Richfield, Geotronics                      | 216-859-6100 |
| OH Trotwood, Geotronics                       | 513-854-5939 |
| OR Portland, Evergreen Mktg. Grp.             | 503-598-7667 |
| PA Allison Park, Geotronics                   | 412-487-1770 |
| PA Southampton, WA Drobile, Inc.              | 215-364-2501 |
| TX Arlington, Ion Assocs.                     | 817-695-8000 |
| TX Austin, Ion Assocs.                        | 512-794-9006 |
| TX Houston, ION Assocs.                       | 713-537-7717 |
| UT Salt Lake City, Aztec Enptrs.              | 801-467-4675 |
| WA Edmonds, Evergreen Mktg.                   | 206-771-3593 |
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| Can St. Laurent, PQ, Promark Elctms. (Canada) | 800-363-8855 |

TRONTECH, INC., 38 Industrial Way E., Eatontown, NJ 07724, Tel: 908-542-1133; Empl: 70; Sls. Mgr: Albert E. Arbuckle



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TRU-CONNECTOR CORP., 245 Lynnfield St., Peabody, MA 01960, Tel: 508-532-0775, 1-800-262-9787, 1-800-COAXTRU; FSC No.: 92180; Empl: 46; Sls. Mgr: Robert F. Hoff C-1507

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TS PRODUCTS, INC., 12455 Branford St, Bldg. 22, Arleta, CA 91331-3429, Tel: 818-896-6676, FAX: 818-896-2816; Empl: 5; Sls. Mgr: James T. Thomasson; Dist. Mgr: James T. Thomasson D-2317

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| CA Los Angeles, TS Products, Inc.       | 818-896-6676 |
| CA Montebello, TUCUL Engrg.             | 818-791-1364 |

TSSI, 8205 S.W. Creekside Place, Beaverton, OR 97005, Tel: 503-643-9281, FAX: 503-646-4954; Empl: 65; Sls. Mgr: Dean Turnbaugh, V.P., N.A. Sls.; Dist. Mgr: David Flanigan, V.P., Intl. Sls.



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| IL Arlington Hgt., Davix       | 708-577-4475 |
| MI Grand Rapid, JMU Assoc.     | 616-774-9480 |
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TUCKER ELECTRONICS, Box 551419, Dallas, TX 75355-1419, Tel: 214-348-8800, 800-527-4642, FAX: 214-348-0367; Empl: 65; Sls. Mgr: Bill Chapman

TUMBLER CORP. CABLE DIV., 175 Kootenai Drive, Fremont, CA 94539, Tel: 510-657-3002, FAX: 510-770-1933; Empl: 86; Sls. Mgr: Vincent P. Lin

TUMBLER TECHNOLOGIES, 1340 Fulton Place, Fremont, CA 94539, Tel: 510-651-7724, FAX: 510-651-7840; Empl: 5 Local/120 Overseas; Sls. Mgr: Alex T. Hung

TUNGSTONE BATTERIES, INC., 18 Billings St, Sharon, MA 02067, Tel: 617-784-2000, FAX: 617-784-5563; Empl: 23; Sls. Mgr: William O'Connell

TURCK INC., 3000 Campus Drive, Minneapolis, MN 55441-2656, Tel: 612-553-9224, 1-800-328-0580, FAX: 612-553-0708; FSC No.: SIC 3625; Empl: 98; Sls. Mgr: Jeffrey C. Ursell, Dir. of Sls.; Dist. Mgr: B. Nielson (West)/ R. Black (East)

TURTLE MOUNTAIN CORPORATION, 1st St So., Dunseith, ND 58329, Tel: 701-244-5242, FAX: 701-244-5582; Empl: 190; Sls. Mgr: Van Barkus



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TUS ELECTRONICS, 22612 Albares, Mission Viejo, CA 92691, Tel: 714-458-1155 C-1649-1651

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| OH | Independence, TTI         | 216-328-9755 |
| PA | Coatesville, Penstock     | 215-383-9536 |
| TX | Dallas, TTI               | 214-701-9555 |
| TX | Fort Worth, TTI           | 817-595-3100 |
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| WA | Redmond, TTI              | 206-882-0291 |

**TUSTIN ELECTRONICS CO.**, 1580 N. Kellogg Drive, Anaheim, CA 92807, Tel: 714-777-5800, FAX: 714-777-5814; FSC No.: 7025-0010; Sls. Mgr.: Saul Tunkelrott

**2M SALES COMPANY**, 1601 E. Hwy. 13, Ste. 202, Burnsville, MN 55337, Tel: 612-890-7774, FAX: 612-894-9352

**TWO TECHNOLOGIES, INC.**, 419 Sargon Way, Horsham, PA 19044, Tel: 215-441-5305, FAX: 215-441-0423; Empl: 13; Sls. Mgr.: Joan Rickards

**TWP, INC.**, 2133 4th St., Berkeley, CA 94710, Tel: 510-548-4434, FAX: 510-548-3073; Empl: 10; Sls. Mgr.: Colleen Heffley

**TYCO INSTR. DIV.**, See Data Instrs.

**TYCOR INTERNATIONAL INC.**, 6107-6 Street S.E., Calgary, Alberta, Canada T2H 1L9, Tel: 403-259-3200, FAX: 403-253-0663; Empl: 32

**TYTON CORP.**, Box 23055, 7930 N. Faulkner Rd., Milwaukee, WI 53223, Tel: 414-355-1130, 800-535-5552, TWX: 910-262-3094, FAX: 414-355-7341; Sls. Mgr.: Jim Campion, VP Sls.; Dist. Mgr.: Terry Tuttle

**UCE, INC.**, 35 Rockland Rd., Norwalk, CT 06854, Tel: 203-838-7509, FAX: 203-838-2566; Empl: 20; Sls. Mgr.: C. Rob Wilcox; Dist. Mgr.: Greg Borstelmann

**UDS/MOTOROLA, INC.**, Motorola Information Systems Group, 5000 Bradford Dr., Huntsville, AL 35805-1993, Tel: 205-430-8000, TELEX: 726202 UDS HTV, FAX: 205-830-5657; Empl: 1000; Sls. Mgr.: Tony Zalenski

**U. E. SYSTEMS, INC.**, 12 West Main St., Elmsford, NY 10523, Tel: 914-592-1220, 800-223-1325, TELEX: 229676, FAX: 914-347-2181; Empl: 20

**ULTRAN LABORATORIES**, 1020 East Boal Ave., Boalsburg, PA 16827, Tel: 814-466-6200, FAX: 814-466-6847; FSC No.: 6635, AJ14, H266, 5999; Empl: 13; Sls. Mgr.: Julie L. Rhodes

**ULTRAVOLT, INC.**, CS9002, Ronkonkoma, NY 11779, Tel: 800-876-POWER, FAX: 516-363-2423; Empl: 15; Sls. Mgr.: Jim Morrison **D-2013-2015**

**ULVAC NORTH AMERICA CORPORATION**, P.O. Box 799, 105 York Street, Kennebunk, ME 04043, Tel: 207-985-2973, TELEX: 46-9045, FAX: 207-985-4459; Empl: 50; Sls. Mgr.: Susan Zilano; Dist. Mgr.: Harold Baum



**FAX: 713-977-5031**

**ULVECO, INC.**, 10401 West Office Dr., Houston, TX 77042, Tel: 1-800-527-7042; Empl: 50; Sls. Mgr.: Dave Snelling **A-2600-2601**

|                                       |                                 |              |
|---------------------------------------|---------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                 |              |
| AZ                                    | Chandler, Techni-Source Corp.   | 602-497-0711 |
| AR                                    | Van Buren, Hightower Indl. Sls. | 501-471-8116 |
| CA                                    | Arcadia, Van Gott & Assocs.     | 818-445-9728 |

|    |                                     |              |
|----|-------------------------------------|--------------|
| CA | Murrieta, Van Gott & Assocs.        | 909-698-7774 |
| CA | San Jose, Carmen Elctms.            | 408-275-3775 |
| CO | Franktown, MRC                      | 303-660-8750 |
| CT | Avon, Tom Maguire Assocs.           | 203-673-3019 |
| FL | Maitland, E I R, Inc.               | 407-660-9600 |
| GA | Duluth, PCI                         | 404-623-8604 |
| IL | Arlington Heights, Hill Sales Corp. | 708-255-4400 |
| MA | Norwood, Tom Maguire Assocs.        | 617-551-0500 |
| MI | Ann Arbor, Lintott Assocs., Inc.    | 313-665-8457 |
| MN | Minneapolis, Electro-Serv Co.       | 612-338-3475 |
| NH | Windham, Tom Maguire Assocs.        | 603-437-1245 |
| NM | Albuquerque, Techni-Source Corp.    | 505-268-4232 |
| OH | Lexington, North Central Mktg.      | 419-884-9804 |
| PA | Exton, Linear Sls.                  | 215-524-8080 |

**UNADILLA ANTENNA MFG. CO.**, Ballardvale Station, P.O. Box 4215, Andover, MA 01810, Tel: 508-475-7831, FAX: 508-474-8949; Empl: 6; Sls. Mgr.: P. Jannini

**UNDERWATER KINETICS**, 1020 Linda Vista Dr., San Marcos, CA 92069, Tel: 619-744-7560, FAX: 619-744-7320; Empl: 85; Sls. Mgr.: Greg Sippel

**UNDERWOOD INDUSTRIES OF N.Y., INC.**, d/b/a Viking Products, 456 Broad St., P.O. Box 269, Waverly, NY 14892, Tel: 607-565-4551, FAX: 607-565-9650; Empl: 7; Sls. Mgr.: Robert Pichette

**UNGAR, Rubbermaid Office Products Group**, 5620 Knott Ave., Buena Park, CA 90621, Tel: 714-994-2510, TELEX: 4720750 Eldon, FAX: 714-523-7790; FSC No.: 78976; Empl: 140; Sls. Mgr.: Richard Shivers; Dist. Mgr.: Dianna Paul

**UNHOLTZ-DICKIE CORP.**, 6 Brookside Dr., Wallingford, CT 06492, Tel: 203-265-3929, FAX: 203-265-2690; Empl: 45

**UNICORP**, 291 Cleveland St., Orange, NJ 07050, Tel: 201-674-1700, 800-526-1389, FAX: 201-674-3803; FSC No.: 04729; Empl: 82; Sls. Mgr.: Steven Mercadante

**UNIMAX**, A Division of C & K, Ives Rd., P.O. Box 152, Wallingford, CT 06492, Tel: 203-269-8701, FAX: 203-265-5398; FSC No.: 80207; Empl: 250; Sls. Mgr.: B. D'Amico

**UNIMEASURE, INC.**, 7055 N.W. Grandview Dr., Corvallis, OR 97330, Tel: 503-757-3158, FAX: 503-757-0858

**UNION CARBIDE CHEMICALS & PLASTICS COMPANY INC.**, Industrial Chemicals Div., Crystal, 9320 Chesapeake Dr., Ste. 216, San Diego, CA 92123, Tel: 619-279-4500, FAX: 619-565-8926; Empl: 125; Sls. Mgr.: L. R. Rothrock

**UNIPLEX CORP.**, 2905 Country Dr., St. Paul, MN 55117, Tel: 612-490-1936, FAX: 612-490-0495; Empl: 8; Sls. Mgr.: M. Bryan



**UNIPower CORPORATION**

**FAX: 305-971-1837**

**UNIPOWER CORPORATION**, 2981 Gateway Dr., Pompano Bch., FL 33069-4803, Tel: 305-974-2442; FSC No.: 62125; Empl: 260; Sls. Mgr.: Warren Peters, Mgr. Tech. Sls. **D-2016-2035**

|                                       |                                 |              |
|---------------------------------------|---------------------------------|--------------|
| <b>Local Sales Offices &amp; Reps</b> |                                 |              |
| AZ                                    | Huntsville, Marco Mktg.         | 205-883-9630 |
| AZ                                    | Phoenix, Comp. Sls.             | 602-263-6022 |
| CA                                    | Los Angeles, Wiley Co.          | 213-666-1611 |
| CA                                    | San Diego, Wiley Co.            | 619-453-9018 |
| CA                                    | San Jose, The JSYS Grp.         | 408-928-1411 |
| CO                                    | Denver, AKI Enterprises         | 303-756-0700 |
| FL                                    | Margate, EPM Corp.              | 305-977-0331 |
| FL                                    | Orlando, EPM Corp.              | 407-425-6149 |
| IL                                    | Itasca, Beta Technlgy.          | 708-250-9586 |
| MD                                    | Gaithersburg, Deltatronics      | 301-253-0615 |
| MA                                    | Bellingham, OEM Mktg. & Sls.    | 508-528-4983 |
| MI                                    | Livonia, Lowell-Wendt Mktg.     | 313-464-2722 |
| MI                                    | Wyoming, Lowell-Wendt Mktg.     | 616-791-7370 |
| MN                                    | Minneapolis, Scott Elctm. Sls.  | 612-929-2985 |
| NH                                    | Salem, OEM Mktg. & Sls.         | 603-893-0009 |
| NY                                    | Great Neck, F & F Metro         | 516-482-4080 |
| NY                                    | Rochester, Elcom Sls. Inc.      | 716-385-1400 |
| NY                                    | Skaneateles, Elcom Sls. Inc.    | 315-685-8967 |
| OH                                    | Columbus, McFadden Sls.         | 614-761-3177 |
| OR                                    | Tigard, Northwest Comp. Sls.    | 503-620-3285 |
| PA                                    | Blue Bell, Deltatronics         | 215-641-9930 |
| TX                                    | Richardson, Jim D. Gray Assocs. | 214-699-9976 |

|     |                                     |              |
|-----|-------------------------------------|--------------|
| VA  | Alexandria, Deltatronics            | 703-971-1733 |
| WA  | Kirkland, Northwest Comp. Sls.      | 206-828-2104 |
| WI  | Milwaukee, Beta Technl.             | 414-543-6609 |
| Can | Mississauga, Andy Bauman Assocs.    | 416-828-2600 |
| Can | W. Vancouver, Leister Blake Entprs. | 604-926-6127 |

#### Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| CA | N. Hollywood, B.J. Wolfe        | 213-877-5518 |
| CA | San Jose, B.J. Wolfe            | 408-371-3443 |
| CA | San Jose, ForeSight Elctms.     | 408-980-9700 |
| CA | Santa Ana, ForeSight Elctms.    | 714-833-2134 |
| FL | Land-O-Lakes, AJ'S Power Source | 813-996-2583 |
| IL | Roselle, ForeSight Elctms.      | 708-980-9890 |
| NH | Salem, Diamond Elctms.          | 603-894-4420 |
| TX | Austin, Wofford Elctms.         | 512-339-1131 |
| TX | Dallas, Wofford Elctms.         | 214-340-8555 |
| TX | Houston, Wofford Elctms.        | 713-351-2255 |

**UNI-POWER HYBRIDS INTERNATIONAL**, See Hybrids Intl. Ltd.

**UNIT DESIGN**, 1811 N. Case St., Orange, CA 92665, Tel: 714-282-8100, FAX: 714-282-8188; Empl: 20; Sls. Mgr.: Nanette Janes



**FAX: 708-640-6341**

**UNITED CHEMI-CON INC.**, 9801 W. Higgins Rd., Rosemont, IL 60018, Tel: 708-696-2000; Empl: 65 **A-1171-1173**

#### Local Sales Offices & Reps

|     |                                      |              |
|-----|--------------------------------------|--------------|
| AL  | Huntsville, R. O. Whitesell          | 205-883-5110 |
| CA  | Los Altos, Recht Assoc.              | 415-964-6321 |
| CA  | Santa Ana, Jones & McGeoy Sls., Inc. | 714-547-6466 |
| CO  | Englewood, Purdy & Assocs.           | 303-790-2211 |
| GA  | Norcross, R. O. Whitesell            | 404-449-9190 |
| IL  | Chicago, M. Gottlieb Assocs.         | 312-775-1151 |
| IN  | Indianapolis, R. O. Whitesell        | 317-876-9000 |
| IA  | Cedar Rapids, J.R. Sls., Inc.        | 319-393-2232 |
| KS  | Overland Pk., Spectrum Sls.          | 913-648-6811 |
| KY  | Versailles, R. O. Whitesell          | 606-873-1182 |
| MI  | Grand Rapids, R. O. Whitesell        | 616-942-5420 |
| MI  | Southfield, R. O. Whitesell          | 313-559-5454 |
| MI  | St. Joseph, R. O. Whitesell          | 616-983-7337 |
| MN  | Plymouth, Twist Co.                  | 516-550-0922 |
| NY  | Hauapauge, Aurora Mktg.              | 612-434-1313 |
| NY  | Pittsford, Franklin Sls. Corp.       | 716-248-8251 |
| NC  | Raleigh, Vantage Mktg.               | 919-870-7123 |
| OH  | Cleveland, R. O. Whitesell           | 216-447-9020 |
| OH  | Dayton, R. O. Whitesell              | 513-298-9546 |
| OR  | Beaverton, Elctm. Source, Inc.       | 503-627-0838 |
| PA  | Ambler, W.R. Hartmaier               | 215-643-6691 |
| PA  | Pittsburgh, R. O. Whitesell          | 412-963-6161 |
| PA  | Spring House, Hartmaier, Assoc.      | 215-643-6691 |
| TN  | Knoxville, R. O. Whitesell           | 615-694-9476 |
| TX  | Austin, RAM Elctm. Sls.              | 512-250-5082 |
| TX  | Houston, RAM Elctm. Sls.             | 713-580-7394 |
| TX  | Plano, RAM Elctm. Sls.               | 214-578-5400 |
| Can | Scarborough, Ont., JRL/Franklin      | 416-756-9862 |

#### Local Distributors

|    |                                 |              |
|----|---------------------------------|--------------|
| AL | Huntsville, Hammond Elctms      | 205-830-4764 |
| AZ | Phoenix, Arizona Comps.         | 602-269-5655 |
| AZ | Tempe, Time Elctms.             | 602-967-2000 |
| CA | Agoura Hills, Bell Inds.        | 818-706-2608 |
| CA | Agoura Hills, Time Elctms.      | 818-707-2890 |
| CA | Anaheim, Time Elctms.           | 714-937-0911 |
| CA | Camariillo, Milgray Elctms.     | 800-635-7812 |
|    |                                 | 805-484-4055 |
| CA | Chatsworth, Passive Comps.      | 818-700-8838 |
| CA | El Monte, Marshall Inds.        | 818-307-6000 |
| CA | Irvine, Kelex Elctms.           | 714-863-1230 |
| CA | Irvine, Milgray Elctms.         | 714-753-1282 |
| CA | San Jose, Capstone Elctms.      | 408-453-9804 |
| CA | Tustin, Capstone Elctms.        | 713-730-0349 |
| CA | Tustin, Projections Unltd.      | 714-544-2700 |
| CA | Tustin, Time Elctms.            | 714-669-0100 |
| CO | Denver, Capstone Elctms.        | 303-375-1300 |
| CO | Englewood, Time Elctms.         | 303-799-8851 |
| CT | Cheshire, Time Elctms.          | 203-271-3200 |
| CT | Milford, Milgray                | 800-922-6911 |
| FL | Ft. Lauderdale, Hammond Elctms. | 305-973-7103 |
| FL | Ft. Lauderdale, Time Elctms.    | 305-974-4800 |
| FL | Melbourne, New Yorker Elctms.   | 407-727-0955 |
| FL | Winter Pk., Milgray Elctms.     | 800-241-5523 |
| GA | Atlanta, Time Elctms.           | 404-984-0923 |
| GA | Norcross, Hammond Elctms.       | 404-449-1996 |
| GA | Norcross, Milgray Elctms.       | 800-241-5523 |
| IL | Chicago, Newark Elctms.         | 312-907-5211 |



|     |                                   |                               |
|-----|-----------------------------------|-------------------------------|
| IL  | Itasca, Capstone Elctms.          | 708-250-0300                  |
| IL  | Palatine, Milgray Elctms.         | 800-322-6271                  |
| IL  | Schaumburg, Time Elctms.          | 708-303-3000                  |
| IL  | Wood Dale, Nep Elctms.            | 708-595-8500                  |
| KS  | Overland Pk, Milgray Elctms.      | 800-255-6576,<br>913-236-8800 |
| MD  | Columbia, Milgray Elctms.         | 800-638-6656                  |
| MD  | Columbia, Time Elctms.            | 301-964-3090                  |
| MA  | Hopkinton, Interface Elctms.      | 508-435-6858                  |
| MA  | Peabody, Time Elctms.             | 508-532-9756                  |
| MA  | Wilmington, Capstone Elctms.      | 508-657-5874                  |
| MA  | Wilmington, Milgray Elctms.       | 800-334-6941                  |
| MA  | Wilmington, North Star Elctms.    | 508-657-5155                  |
| MO  | St. Louis, Time Elctms.           | 314-391-6444                  |
| NJ  | Marlton, Capstone Elctms.         | 609-727-7800                  |
| NJ  | Marlton, Milgray Elctms.          | 800-257-7111                  |
| NJ  | Parsippany, Milgray Elctms.       | 800-622-0291                  |
| NJ  | Rockaway, Tonar Inds.             | 201-586-9000                  |
| NJ  | Teterboro, EAC                    | 201-288-4477                  |
| NY  | Farmingdale, Milgray Elctms.      | 800-645-4729                  |
| NY  | Hauppauge, Time Elctms.           | 516-273-0100                  |
| NY  | Mamaroneck, New Yorker Elctms.    | 914-698-7600                  |
| NY  | Ronkonkoma, Tri-Start Elctms.     | 516-737-2200                  |
| NC  | Charlotte, Time Elctms.           | 704-522-7600                  |
| NC  | Greensboro, Hammond Elctms.       | 919-275-6391                  |
| NC  | Raleigh, Capstone Elctms.         | 919-954-0600                  |
| NC  | Raleigh, Milgray Elctms.          | 800-562-3118                  |
| OH  | Cleveland, Milgray Elctms.        | 800-321-0006                  |
| OH  | Dublin, Time Elctms.              | 614-761-1100                  |
| OR  | Beaverton, Future Elctms.         | 503-645-9454                  |
| PA  | King of Prussia, Time Elctms.     | 215-337-0900                  |
| PA  | Malvern, Interface Elctms.        | 215-889-2060                  |
| SC  | Greenville, Hammond Elctms.       | 803-233-4121                  |
| TX  | Carrollton, Capstone Elctms.      | 214-380-9049                  |
| TX  | Dallas, Milgray Elctms.           | 800-637-7227                  |
| TX  | Fort Worth, TTI, Inc.             | 817-740-9000                  |
| TX  | Houston, Time Elctms.             | 713-530-0800                  |
| UT  | Salt Lake City, Milgray Elctms.   | 800-537-9739                  |
| UT  | W. Valley, Time Elctms.           | 801-973-8181                  |
| WA  | Bothell, Projections Unltd.       | 206-485-2147                  |
| WA  | Redmond, Time Elctms.             | 206-882-1600                  |
| WI  | Milwaukee, Marsh Electronics      | 414-786-5300                  |
| WI  | New Berlin, Nep Elctms.           | 414-785-9100                  |
| Can | Mississauga, Ont., Capstone       | 416-495-7705                  |
| Can | Mississauga, Ont., Time Elctms.   | 416-672-5300                  |
| Can | Ottawa, Ont., Future Elctms.      | 613-820-8313                  |
| Can | Richmond, B.C., Electronics, Inc. | 604-273-2911                  |
| Can | Vancouver, B.C., Future           | 604-438-5545                  |
| Can | Willowdale, Ont., Electronics     | 416-494-1666                  |
| Can | Willowdale, Ont., Milgray Elctms. | 800-268-3315,<br>416-756-4481 |
| Can | Winnipeg, Sas, Zenronics          | 204-694-1957                  |

(UEC) UNITED ELECTRIC CONTROLS, P. O. Box 9143, Watertown, MA 02272-9143, Tel: 617-926-1000, TELEX: 92 2445, FAX: 617-926-2568; Empl: 420; Sls. Mgr.: Dave Williams; Dist. Mgr.: George Miller

UNITED FOAM PLASTICS, 172-Q E Main St, Georgetown, MA 01833, Tel: 508-352-2200, FAX: 508-352-7169; FSC No.: 55900; Empl: 200; Sls. Mgr.: R.L. Bailly

UNITED MOTION TECHNOLOGY, 2954 Scott Blvd, Santa Clara, CA 95054, Tel: 408-970-9742, 1-800-424-STEP, FAX: 408-986-8009; Empl: 4

| Local Sales Offices & Reps |                               |              |
|----------------------------|-------------------------------|--------------|
| CA                         | Milpitas, Maxim Elctm Sls.    | 408-946-6001 |
| CT                         | Essex, Winslow Elec. Co.      | 203-767-8229 |
| FL                         | Pampano Bch, Motion Prods.    | 305-783-9003 |
| NY                         | Cazenovia, Delen Assocs.      | 315-655-8602 |
| PA                         | Pittsburgh, Precision Dvcs.   | 412-941-7662 |
| Can                        | Ottawa, Graham Dewar & Assoc. | 613-744-8463 |

UNITED PRICING REPORTS, 645 Stewart Ave, Garden City, NY 11530, Tel: 516-227-1300, FAX: 516-227-1901

UNITED SOLDER WRAP INC, See Vector Elctms. Co., Inc.

UNITED STATES CRYSTAL CORP., 3605 McCart St, Fort Worth, TX 76110, Tel: 817-921-3014, 800-433-7140, TWX: 910-893-4084, FAX: 817-923-0424; FSC No.: 52847; Empl: 75; Sls. Mgr.: Jan Henderson

UNITED STATES ELECTRONICS, 60 Brown Ave, Springfield, NJ 07081, Tel: 201-912-0111, FAX: 201-912-0015; Empl: 20

UNITED SUPORTEK, INC., 118 Charcot Ave., San Jose, CA 95131-1101, Tel: 408-922-0730, FAX: 408-922-0534; Empl: 55; Sls. Mgr.: Roger Meade

UNITED SWITCH COMPANY, 3214 W. McGraw, Seattle, WA 98199, Tel: 206-282-8823, FAX: 206-282-9173; Empl: 3; Sls. Mgr.: John Spaulding

UNITED TECHNICAL PRODUCTS, 6 Headley Pl, Fallsington, PA 19054, Tel: 800-553-5300, FAX: 215-736-8515; Empl: 50; Sls. Mgr.: Bob Harbison, Jr.

UNITED TECHNOLOGIES MICROELECTRONICS CENTER, United Technologies Corp., 1575 Garden of The Gods Rd, Colorado Springs, CO 80907, Tel: 719-594-8000, 1-800-MIL-UTMC, FAX: 719-594-8032; Empl: 308; Sls. Mgr.: Dwight Deem

UNITED WIRE & CABLE CORP., 425 Shrewsbury St, Worcester, MA 01604, Tel: 508-757-3872, FAX: 508-753-2173; FSC No.: 51348; Empl: 10; Sls. Mgr.: T. P. Andrews

UNIT INDUSTRIES, 1140 E. Valencia Dr., Fullerton, CA 92631, Tel: 714-871-4161, FAX: 714-871-4164; FSC No.: 0AMM9; Empl: 40; Sls. Mgr.: D. Molby

## UNITRACK®

UNITRACK INDUSTRIES, INC.

FAX: 302-424-5055

UNITRACK INDUSTRIES, INC., 967 E. Masten Cir., Milford, DE 19963, Tel: 302-424-5050; Empl: 40; Sls. Mgr.: Anna Orcutt C-1114-1115

| Local Sales Offices & Reps |                                       |              |
|----------------------------|---------------------------------------|--------------|
| AZ                         | Paradise Valley, Techrep-Arizona      | 602-991-6646 |
| CA                         | Santa Ana, El-Corn, Inc.              | 714-432-6630 |
| CA                         | Santa Clara, Cindel/Penmark           | 408-988-8331 |
| CO                         | Highlands Ranch, Valcomp Elctms, Inc. | 303-791-0330 |
| FL                         | Clearwater, Brennan Assocs.           | 813-446-5006 |
| IA                         | Des Moines, The Beams Co.             | 515-255-1148 |
| IL                         | Glen Ellyn, Lincoln, Hodges & Assocs. | 708-469-6750 |
| IN                         | Ft. Wayne, Outman Sls.                | 219-489-7699 |
| MD                         | Ellicott City, Callas Elctms, Inc.    | 410-465-0044 |
| MA                         | Northboro, Easterly Sls. Assocs.      | 508-393-7399 |
| MI                         | Chelsea, Sean T. Sls.                 | 313-475-2021 |
| MN                         | St. Paul, Countryman Assocs.          | 612-645-9151 |
| NJ                         | Hampton, Churchill Assocs.            | 908-735-6626 |
| NY                         | Larchmont, Hington Walsh Assocs, Inc. | 914-834-5781 |
| NY                         | Rochester, Nortek                     | 716-387-0640 |
| NC                         | Greensboro, Loki Data Prods, Inc.     | 919-234-5066 |
| OH                         | Akron, Augnat Assocs.                 | 216-239-2499 |
| PA                         | Souderton, Intek, Inc.                | 215-723-0433 |
| TX                         | Richardson, Barry Sls.                | 214-234-0255 |

| Local Distributors |                                     |              |
|--------------------|-------------------------------------|--------------|
| CA                 | Milpitas, M.S. Inserts & Fasteners  | 408-946-6565 |
| CA                 | Santa Ana, El-Corn, Inc.            | 714-432-6630 |
| CA                 | Santa Clara, Context Engrg.         | 408-748-8676 |
| CO                 | Denver, Integrated Elctms, Inc.     | 303-393-6121 |
| CT                 | Wallingford, Midstate Elctms.       | 203-265-9900 |
| FL                 | Coral Springs, HAI Elctms, Inc.     | 305-752-7520 |
| GA                 | Norcross, Applied Power, Inc.       | 404-263-0421 |
| MA                 | Billerica, M.S. Inserts & Fasteners | 508-670-5600 |
| MA                 | Northboro, Papi Supp. Co.           | 508-393-3127 |
| MA                 | Winchester, Webb Distrib.           | 617-729-5800 |
| MI                 | Grand Rapids, S-F Elctms. Supp. Co. | 616-459-0216 |
| NC                 | Winston-Salem, Kirkman Elctms.      | 919-722-9131 |
| OH                 | Warren, Rem Elctms. Supp. Co, Inc.  | 216-373-1300 |
| TX                 | Houston, Tristar Elctms.            | 713-667-7200 |
| TX                 | Wylie, Air Quip/Robleco             | 214-442-3573 |

UNITREK CORPORATION, 3000 Lewis & Clark Hwy, Ste2, Vancouver, WA 98661, Tel: 206-699-7277, FAX: 206-694-9230; Empl: 80; Sls. Mgr.: John Sailer

UNITRODE CORP., 580 Pleasant St, Watertown, MA 02172, Tel: 617-926-0404, FAX: 617-924-1235; Empl: 2,000; Sls. Mgr.: Leslie Wallace; Dist. Mgr.: Ron Myers

UNITRODE INTEGRATED CIRCUITS CORP., 7 Continental Blvd, Merrimack, NH 03054-0399, Tel: 603-424-2410, TWX: 95-3040

UNIVERSAL AD-YU/D-F INC., 2517 E. Norwich St, St. Francis, WI 53235, Tel: 414-482-4100; FSC No.: 90101; Empl: 10; Sls. Mgr.: Ronald Tessmer

UNIVERSAL INSTRS. CORP., MECHANIZED ELCTRN. ASSEMBLY (MEA) DIV., See Mechanized Elctm. Assembly Div., Universa

UNIVERSAL SEMICONDUCTOR INC., 1925 Zanker Rd, San Jose, CA 95112, Tel: 408-436-1906, FAX: 408-436-1125; FSC No.: 62305; Empl: 30; Sls. Mgr.: Uday B. Koppikar

## Universal Voltronics

FAX: 914-241-3129

UNIVERSAL VOLTRONICS DIV., Thermo Voltek Corp., 27 Radio Circle Dr., Mt. Kisco, NY 10549, Tel: 914-241-1300, TWX: 710-571-2142; FSC No.: 14225; Empl: 85 D-2037-2039

| Local Sales Offices & Reps |                                          |              |
|----------------------------|------------------------------------------|--------------|
| AZ                         | Tempe, Trembly Assocs.                   | 602-967-2058 |
| CA                         | Los Alamitos, Tritek Sls. Dvcs.          | 714-362-3592 |
| CO                         | Wheat Ridge, Trembly Assocs.             | 303-921-8900 |
| IN                         | Ossian, Science Sls. Inc.                | 219-622-7383 |
| NV                         | Las Vegas, Trembly Assoc., Inc.          | 702-739-9770 |
| NJ                         | Roseland, Tech. Mktg. Assoc.             | 201-228-7800 |
| NM                         | Albuquerque, Trembly Assoc., Inc.        | 505-266-8616 |
| PA                         | Audubon, Holmes Assocs., Inc.            | 215-666-0637 |
| TX                         | El Paso, Trembly Assoc.                  | 915-533-9380 |
| UT                         | No. Salt Lake City, Trembly Assocs, Inc. | 801-295-4703 |
| WA                         | Bellevue, The Western Rep.               | 206-637-0947 |
| Can                        | Nepean, Ont., Datacomp Elctms.           | 613-723-8825 |
| Can                        | Toronto, Ont., Datacomp Elctms.          | 416-533-4076 |

| Local Distributors |                                      |              |
|--------------------|--------------------------------------|--------------|
| AZ                 | Phoenix, Trembly Assoc. Inc.         | 602-967-2058 |
| CO                 | Wheat Ridge, Trembly Assoc. Inc.     | 303-421-8900 |
| NV                 | Las Vegas, Trembly Assoc. Inc.       | 702-739-9770 |
| NM                 | Albuquerque, Trembly Assoc. Inc.     | 505-266-8616 |
| UT                 | North Salt Lake, Trembly Assoc. Inc. | 801-295-4703 |
| Can                | Toronto, Ont., Datacomp Elctms.      | 416-533-4076 |

UNIVERSITY SOUND, INC., Mark IV Industries, 13278 Ralston, Sylmar, CA 91342, Tel: 818-362-9516, FAX: 818-367-5292; Empl: 72; Sls. Mgr.: Greg McLagan

URBAN ELECTRONICS, P. O. Box 456, Dover, MA 02030, Tel: 617-329-4068, FAX: 508-785-2265; Empl: 50; Sls. Mgr.: G. Urban

## U.R.D.

United Research and Development

FAX: 714-831-6371

U.R.D. AMERICA, P.O. Box 6006, Laguna Nigel, CA 92607, Tel: 714-831-0111; Sls. Mgr.: Lawrence Sultan D-1169

| Local Sales Offices & Reps |                                 |              |
|----------------------------|---------------------------------|--------------|
| CA                         | Canoga Pk, C & W Comp. Sls.     | 818-700-2684 |
| IL                         | Lena, BB & J Sls, Inc.          | 815-369-2066 |
| MA                         | Brookline, Reliable Sls.        | 617-738-8305 |
| NY                         | Franklin Sq, Cooper Simon Emtec | 516-489-0404 |

USAPEX CORP., 2378 Walsh Ave, Ste B, Santa Clara, CA 95051, Tel: 408-982-9063, FAX: 408-982-0223; FSC No.: 77-0326422; Empl: 15

USAR SYSTEMS, INC., 568 Broadway Ste. 405, New York, NY 10012, Tel: 212-226-2042, FAX: 212-226-3215; Empl: Less than 10; Sls. Mgr.: Tony D'Amato

## US DIGITAL

FAX: 206-260-7452

U. S. DIGITAL CORP., 17401 N.E. Stoney Meadows Dr., Vancouver, WA 98682, Tel: 206-260-7451; Sls. Mgr.: David Madore B-2019-2023; D-1327

| Local Sales Offices & Reps |                                     |              |
|----------------------------|-------------------------------------|--------------|
| VA                         | Roanoke, Engrg. & Mktg. Corp. of VA | 703-562-0726 |
| Local Distributors         |                                     |              |
| VA                         | Roanoke, Engrg. & Mktg. Corp. of VA | 703-562-0726 |

USD PRODUCTS, Div. of Bussmann, 7300 W. Wilson Ave, Chicago, IL 60656, Tel: 708-867-4600, FAX: 708-867-2211; Empl: 200; Sls. Mgr.: Mr. Chris Osmun



USECO DIV., Litton Inds, 13536 Satcoy St, Van Nuys, CA 91409, Tel: 818-786-6381, FAX: 818-786-9162; FSC No.: 88245; Empl: 100; Sls. Mgr.: Ed Wallen

U.S. ELCO, INC., See Cosel USA Inc. (Formerly US Elco)

U. S. LASER CORP., 825 Windham Court North, Wyckoff, NJ 07481, Tel: 201-848-9200, FAX: 201-848-9006; Empl: 25; Sls. Mgr.: James F. Golden

**U.S. POWER/RELCO MIDWEST, U.S. Power Converting Co.**, 8830 West 61st North, Wichita, KS 67205, Tel: 316-722-6440; Empl: 12; Dist. Mgr.: Jonathan P. Snow ..... **C•1081; D•1913**

**U.S. POWER CONVERTING COMPANY/RELCO, Leonard V. Snow & Assocs.**, 21517 Ocean, Torrance, CA 90503, Tel: 310-316-9984, FAX: 310-316-9050; Empl: 8; Sls. Mgr.: Van Snow; Dist. Mgr.: Tom Clark ..... **C•1081; D•1913**

#### Local Sales Offices & Reps

KS Wichita, U.S. Power Converting/Relco ..... 316-722-6440  
Can New Dundee, Ont., Ritz Elctms. .... 519-696-2616  
Can Torrance, U.S. Power Conv. Co. .... 310-316-9984

#### Local Distributors

CA Torrance, U.S. Power Converting/L. Snow & Assocs. .... 310-316-9984  
KS Wichita, U.S. Power Converting/Relco ..... 316-722-6440  
Can New Dundee, Ont., Ritz Elctms. .... 519-696-2616

U.S. RESISTOR, INC., P.O. Box 1059, St. Marys, PA 15857-1059, Tel: 814-781-7679, FAX: 814-834-9201

U.S. SENSOR CORP., 1832 W. Collins Ave., Orange, CA 92667, Tel: 714-639-1000, FAX: 714-639-1220; Empl: 25

U.S. SENSOR CORP., 1832 W. Collins Ave., Orange, CA 92667, Tel: 714-639-1000, FAX: 714-639-1220; Empl: 25

U.S. TERMINALS INC., 7502 Camargo Rd., Cincinnati, OH 45243, Tel: 513-561-8145, FAX: 513-561-8755; FSC No.: 12615; Empl: 45; Sls. Mgr.: George L. Stepp



**FAX: 818-287-7350**

**U.S. TOYO FAN CORP.**, 4915 Walnut Grove Ave., San Gabriel, CA 91776, Tel: 818-287-5297; Empl: 20; Sls. Mgr.: Bill Jacobs; Dist. Mgr.: Bill Jacobs ..... **C•1652-1653**

#### Local Sales Offices & Reps

AL Huntsville, DHR Mktg., Inc. .... 205-536-9775  
AZ Scottsdale, Western High Tech. Mktg. .... 602-860-2702  
CA Oceanside, Noo Rep Tech Sls. .... 619-941-0558  
CA San Gabriel, U.S. Toyo Fan Corp. .... 818-287-5297  
CA Sunnyvale, U.S. Toyo Fan Corp. .... 408-737-0123  
CO Boulder, Comp. Prod. Sls. .... 303-530-2800  
FL Oviedo, Sunland Assocs. .... 407-365-9533  
GA Duluth, DHR Mktg., Inc. .... 404-564-0529  
IL Woodridge, Goltien Assoc. .... 708-985-5100  
IA Blue Grass, Rothkopf & Assocs. .... 319-381-4396



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**(510) 835-1500**  
1026 6th. AVENUE  
OAKLAND, CA 94606

KS Olathe, Rothkopf & Assocs. .... 913-829-8897  
MD Towson, Dalbrook Corp. .... 410-296-3165  
MA Norwood, Tom Maguire Assocs. .... 617-551-0500  
MI Brighton, W. R. Hummon .... 313-486-5333  
MN New Brighton, Boerger & Assoc. .... 612-636-4339  
MO St. Louis, Rothkopf & Assocs. .... 314-961-4485  
NJ Fort Lee, Neptune Elec. .... 201-461-2789  
NY E. Syracuse, Fountain, Young & Co. .... 315-437-7733  
NY Plainview, Neptune Elec. .... 516-349-1600  
NC Raleigh, DHR Mktg., Inc. .... 919-829-1970  
OH Richfield, Geotronics .... 216-659-6100  
OR Beaverton, Unicom, Inc. .... 503-643-1645  
PA Allison Pk, Geotronics Inc. .... 412-487-1770  
PA Lansdale, Dalbrook Corp. .... 215-362-8033  
SC Greenville, DHR Mktg., Inc. .... 803-235-3594  
TN Nashville, DHR Mktg., Inc. .... 615-331-2745  
TX Richardson, Zonk & Assoc. .... 214-238-7651  
VA Fredericksburg, Dalbrook Corp. .... 703-786-1873  
WA Snohomish, Unicom, Inc. .... 206-568-0511  
PR Santruce, SISCO .... 809-726-3137  
Can Montreal, Dynatech Elctms. .... 514-276-4477

#### Local Distributors

AZ Scottsdale, Added Value Elctms. .... 602-951-9788  
CA Fremont, Connex Elctms. .... 510-656-7722  
CA San Jose, Rose Elctms. .... 408-263-9700  
CA Tustin, Added Value Elctms. Distr. .... 714-259-8258  
CO Wheatridge, Added Value Elctms. .... 303-422-2529  
CT Hamden, Astrex, Inc. .... 203-288-0044  
UT Salt Lake City, Added Value Elect. .... 801-975-9500  
IL Elk Grove, Martec Assocs. .... 708-956-8090  
MD Beltsville, Petricko Sls. .... 301-837-4960  
MA Haverhill, Cord Elctms. .... 617-374-0100  
MN W. Springfield, Astrex, Inc. .... 413-788-7341  
MA Fridley, Voyager Elec. .... 612-571-9519  
MN Minneapolis, Aerospace Computer Supp. .... 612-884-4725

NY Elmsford, Multimetrics .... 914-347-3666  
NY Endwell, Astrex, Inc. .... 607-754-3823  
OR Beaverton, Comp. Resources, Inc. .... 503-641-8488  
PA Willow Grove, Astrex, Inc. .... 215-784-9934  
TX Richardson, Zec Sls. .... 214-669-0895  
Can Mississauga, Ont., Rush Elec. Ltd. .... 416-677-7280  
Can Surrey, B.C., MEMCO .... 604-590-1553

**U.S. TRANSFORMER AND INDUCTOR, 1400 E. College Dr., Cheyenne, WY 82007, Tel: 800-584-9339, FAX: 307-637-4883; Empl: 11; Sls. Mgr.: Carl Le Jandre**

**UTE MICROWAVE**, 3500 Sunset Ave., Asbury Park, NJ 07712, Tel: 908-922-1009, FAX: 908-922-1848; FSC No.: 23261; Empl: 35

**UTICOR TECHNOLOGY**, 4140 Utica Ridge Rd., Bettendorf, IA 52272, Tel: 319-359-7501, FAX: 319-359-9094; Empl: 110; Sls. Mgr.: Tom Howard

**UTI INSTRUMENTS CO.**, 2030-C Fortune Dr., San Jose, CA 95131, Tel: 408-428-9400, FAX: 408-428-0823; Empl: 80; Sls. Mgr.: Tom Strahl

**UVP, INC.**, 5100 Walnut Grove Ave., San Gabriel, CA 91776, Tel: 818-285-3123, 800-452-6788, FAX: 818-285-2940; Empl: 100; Sls. Mgr.: Phil Spillane

**VAIL SILICON TOOLS**, 692 A. S. Military Trail, Deerfield Beach, FL 33442, Tel: 305-570-5580, FAX: 305-428-1811; Empl: 4; Sls. Mgr.: Jim Prince; Dist. Mgr.: Doug Beard



**VALHALLA SCIENTIFIC**

**FAX: 619-457-0127**

**VALHALLA SCIENTIFIC**, 9955 Mesa Rim Rd., San Diego, CA 92121, Tel: 619-457-5576; Empl: 75; Sls. Mgr.: Kerry Clark ..... **D•1328-1331**

#### Local Sales Offices & Reps

AL Huntsville, Currie, Peak & Frazier .... 205-536-1506  
CA Costa Mesa, Cutlass Elctms. .... 714-949-9358  
CA San Diego, Amasco .... 619-292-7666  
CA San Jose, ARC Tech. Resources .... 408-263-6486  
CA Sunnyvale, ARC Technical Resources .... 408-773-8871  
CA Torrance, Cutlass Elctms. .... 213-324-7360  
FL Orlando, Currie, Peak & Frazier .... 407-855-0843  
FL Pace, Currie, Peak & Frazier .... 904-994-0599  
FL Tampa, Currie, Peak & Frazier .... 813-854-5116  
FL W. Melbourne, Currie, Peak & Frazier .... 407-724-6795  
GA Dulth, Currie, Peak & Frazier .... 404-497-9404  
IL Arlington Hgts., Comtel Midwest Co. .... 708-392-4040

IN Indianapolis, Comtel Midwest Co. .... 317-253-1681  
KS Shawnee Mission, Comtel Midwest .... 913-268-0762  
KS Shawnee Mission, Comtel Midwest Co. .... 913-268-0762  
MD Landover, Set-Tronics .... 301-341-2700  
MA Hopkinton, Eastern Sys. .... 508-435-2151  
MI Farmington Hills, Carter, McCormic & Peirce (CMP) .... 313-477-7700  
MN Wayzata, Comtel Midwest Co. .... 612-476-1551  
MO Kansas City, Comtel Midwest .... 913-268-0762  
NY Rochester, Eastern Systems .... 716-292-1460  
NC Charlotte, Currie, Peak & Frazier .... 704-846-1702  
NC Greensboro, Currie, Peak & Frazier .... 919-373-0380  
OH Englewood, Carter, McCormic & Peirce (CMP) .... 513-836-0951

OH Parma, Carter, McCormic & Peirce (CMP) .... 216-398-0400  
OR Portland, Weston, Inc. .... 503-283-0132  
PA Philadelphia, Robert Meyers Assocs. .... 215-224-1663  
PA Pittsburg, Carter, McCormic & Peirce (CMP) .... 412-826-3800  
TX Dallas, Entest .... 214-980-9876  
TX Houston, Entest .... 713-686-7306  
VA Hampton, Set-Tronics .... 804-827-6308  
WI New Berlin, Comtel Midwest Co. .... 414-544-6042

**VALIDYNE ENGINEERING CORPORATION**, 8626 Wilbur Ave., Northridge, CA 91324, Tel: 818-886-2057, TELEX: 65-1303, FAX: 818-886-6512; Empl: 200

**VALLEY ELECTROMAGNETICS, ECM Motor Co.**, 1099 Proctor Dr., Elkhom, WI 53121, Tel: 414-724-6400, FAX: 414-723-7373; Empl: 100; Sls. Mgr.: R. Forschler

**VALOR ELECTRONICS**, 9715 Business Park Avenue, San Diego, CA 92131-1642, Tel: 619-537-2500, TELEX: 653406 VALORS, FAX: 619-458-0875; FSC No.: 15003; Empl: 5000; Sls. Mgr.: Brad Rogers ..... **A•1686-1687, 2602-2603; D•2215**

#### Local Sales Offices & Reps

AL Madison, Benchmark Tech. .... 205-464-0033, FAX: 205-464-9909  
AZ Scottsdale, American Mktg., Inc. .... 602-948-2778, FAX: 602-860-4455  
CA Garden Grove, ElSCO Elctms. .... 714-891-4621, FAX: 714-891-1251  
CA San Diego, ElSCO Elctms., Inc. .... 619-292-1771  
CA Santa Clara, Fahrner-Miller Assocs. .... 408-727-9800, FAX: 408-496-6952  
CO Englewood, Comp. Sls., Inc. .... 303-779-8060, FAX: 303-779-8357  
FL Boca Raton, So. Atlantic Comp. Sls. .... 417-391-1034  
FL Orlando, So. Atlantic Comp. Sls. .... 407-857-3650, FAX: 407-857-3298  
FL Seminole, So. Atlantic Comp. Sls. .... 813-595-6397, FAX: 813-595-6397  
GA Norcross, Benchmark Technlg. .... 404-446-1711, FAX: 404-446-2854  
ID Meridian, Utah CSI .... 208-888-3554  
IL Arlington Hgts., KMA Sls., Co. .... 708-398-5300, FAX: 708-398-5708  
IN Carmel, Valentine Assoc., Inc. .... 317-846-0008  
MA Topsfield, Whitehead Assocs. Inc. .... 508-887-8050, FAX: 508-887-5434  
MI Canton, Techrep Inc. .... 313-981-1950, FAX: 313-981-2006

MN Minneapolis, DeBeck-Hays Assocs. Inc. .... 612-835-3610, FAX: 612-835-0515  
NJ Marlton, BGR Assocs. .... 609-983-1020, FAX: 609-983-1879  
NJ Matawan, Ashtec, Inc. .... 908-583-6903, FAX: 908-583-0379  
NY Apalachin, T-Squared Elctms. Co. .... 607-625-3983  
NY Cicero, T-Squared Elctms. Co. .... 315-699-1559  
NY Port Washington, Ashtec Inc. .... 516-767-0336, FAX: 516-767-0981

NY Victor, T-Squared Elctms. Co. .... 716-924-9101  
NC Raleigh, Benchmark Technlg. .... 919-850-0633, FAX: 919-850-0725  
OH Dayton, KW Elctm. Sls. .... 513-890-2150, FAX: 513-890-5408  
OH Shaker Heights, KW Elctm. Sls. .... 216-491-9177, FAX: 216-491-9102  
PA Pittsburgh, KW Elctm. Sls. .... 412-492-0777, FAX: 412-492-0780

TX Austin, Kruvand ... 512-219-9441, FAX: 512-219-1932  
TX Dallas, Kruvand ... 214-437-3355, FAX: 214-680-8854  
UT Midvale, Utah CSI .... 801-561-5099  
WA Seattle, Northmar Inc. .... 206-524-5170, FAX: 206-524-0402  
WI Milwaukee, KMA Sls. Co. .... 414-259-1771, FAX: 414-259-0246  
PR Rio Piedras, D.K. Marketing .... 809-765-5380, FAX: 809-758-5380  
Can Rexdale, Ont., Electro-Source, Inc. .... 416-675-4490

#### Local Distributors

AL Huntsville, Hall-Mark Elctms. Corp. .... 205-837-8700  
AZ Phoenix, Hall-Mark Elctms. Corp. .... 602-437-1200



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|-----|----------------------------------------|--------------|
| CA  | Chatsworth, Hall-Mark Elctms. Corp.    | 818-773-4560 |
| CA  | Irvine, Hall-Mark Elctms. Corp.        | 714-727-6000 |
| CA  | Milpitas, Sierra West                  | 408-945-1050 |
| CA  | Riverside, Electronic Supply           | 714-683-7300 |
| CA  | Rocklin, Hall-Mark Elctms. Corp.       | 916-624-9781 |
| CA  | San Diego, Elctm. Supp.                | 619-693-8222 |
| CA  | San Diego, Hall-Mark Elctms. Corp.     | 619-268-1201 |
| CA  | San Jose, Elctm. Supp.                 | 408-453-3770 |
| CA  | San Jose, Hall-Mark Elctms. Corp.      | 408-432-4000 |
| CO  | Englewood, Hall-Mark Elctms. Corp.     | 303-790-1662 |
| CT  | Cheshire, Hall-Mark Elctms. Corp.      | 203-271-2844 |
| CT  | Wallingford, Cronin Elctms.            | 203-265-3134 |
| FL  | Casselberry, Hall-Mark Elctms. Corp.   | 407-830-5855 |
| FL  | Largo, Hall-Mark Elctms. Corp.         | 813-541-7440 |
| FL  | Pompano Bch, Hall-Mark Elctms. Corp.   |              |
| GA  | Duluth, Hall-Mark Elctms. Corp.        | 305-971-9280 |
| IL  | Wood Dale, Hall-Mark Elctms. Corp.     | 708-860-3800 |
| IN  | Indianapolis, Hall-Mark Elctms. Corp.  |              |
| KS  | Lenexa, Hall-Mark Elctms. Corp.        | 317-872-8875 |
| MD  | Columbia, Hall-Mark Elctms. Corp.      | 913-888-4747 |
| MA  | Billerica, Hall-Mark Elctms. Corp.     | 301-988-9800 |
| MA  | Needham, Cronin Elctms.                | 508-667-0902 |
| MA  | Plymouth, Hall-Mark Elctms. Corp.      | 617-449-5000 |
| MN  | Bloomington, Hall-Mark Elctms. Corp.   | 313-416-5800 |
| MO  | Earth City, Hall-Mark Elctms. Corp.    | 612-881-2600 |
| MO  | Earth City, Hall-Mark Elctms. Corp.    | 314-291-5350 |
| NH  | Manchester, Cronin Elctms.             | 603-624-0105 |
| NJ  | Moorsetown, Hall-Mark Elctms. Corp.    |              |
| NJ  | Parlissippany, Hall-Mark Elctms. Corp. | 609-235-1900 |
| NJ  | Rockaway, Tonar Inds. Inc.             | 201-515-3000 |
| NY  | Fairport, Hall-Mark Elctms. Corp.      | 201-586-9000 |
| NY  | Ronkonkoma, Hall-Mark Elctms. Corp.    | 716-425-3300 |
| NC  | Raleigh, Hall-Mark Elctms. Corp.       | 516-737-0600 |
| NC  | Raleigh, Hall-Mark Elctms. Corp.       | 919-872-0712 |
| OH  | Solon, Hall-Mark Elctms. Corp.         | 216-349-4632 |
| OH  | Worthington, Hall-Mark Elctms. Corp.   |              |
| OK  | Tulsa, Hall-Mark Elctms. Corp.         | 614-888-3313 |
| TX  | Austin, Hall-Mark Elctms. Corp.        | 918-254-6110 |
| TX  | Dallas, Hall-Mark Elctms. Corp.        | 512-258-8848 |
| TX  | Houston, Hall-Mark Elctms. Corp.       | 214-343-5822 |
| UT  | Salt Lake City, Hall-Mark Elctms. Inc. | 713-781-6100 |
| WA  | Seattle, Hall-Mark Elctms. Corp.       | 801-269-0416 |
| WI  | New Berlin, Hall-Mark Elctms. Corp.    | 206-547-0415 |
| Can | Pointe Claire, Tonar Inds., Inc.       | 414-797-7844 |
|     |                                        | 514-694-3057 |

**VALPEY-FISHER:MATEC CORP.**, 75 South St, Hopkinton, MA 01748, Tel: 508-435-6831, FAX: 508-435-5289; FSC No.: 5955; Empl: 120; Sls. Mgr.: Mark Freymuth, Mktg. Mgr.; Dist. Mgr.: John Pimentel

**VALPEY-OPT COMPANY**, Valpey-Fisher Corp./Opt Inds., 75 South St, Hopkinton, MA 01748, Tel: 508-435-6831, FAX: 508-435-5289; Empl: 7; Sls. Mgr.: Wim Van Den Akker

**VAMISTOR CORP.**, 144 River Bend Drive, Sevierville, TN 37862, Tel: 615-453-0001, FAX: 615-453-0003; FSC No.: 56856, OEBU2; Empl: 53; Sls. Mgr.: Pat Healy; Dist. Mgr.: Pat Healy

**VANGUARD ELECTRONICS CO.**, 1480 W. 178th St, Gardena, CA 90248, Tel: 310-323-4100, FAX: 310-329-8427; FSC No.: 03550; Empl: 250; Sls. Mgr.: Kenneth R. Finley (Intl.); Dist. Mgr.: John Hoenig (Domestic)

**VANN INSTRUMENTS**, 1046 Vassar NE, Albuquerque, NM 87106, Tel: 505-265-2498, FAX: 505-268-9722; Sls. Mgr.: Michael E. Vann

**VAN WATERS & ROGERS INC.**, Univac Corp., PO Box 64004, St. Paul, MN 55164-0004, Tel: 612-774-9400, FAX: 612-774-0850; Empl: 30000; Sls. Mgr.: George Coyle

**VARIAN ASSOCIATES**, Electronic Device Business, 3100 Hansen Way, Palo Alto, CA 94304, Tel: 415-493-4000, 800-544-4636, TELEX: 34 8476, FAX: 415-424-6276; FSC No.: 02845; Empl: 10,700; Sls. Mgr.: John Beighley

**VARIAN MICROWAVE EQUIPMENT PRODUCTS**, Varian Assocs., Inc., 3200 Patrick Henry, Santa Clara, CA 95054, Tel: 408-496-6273, TELEX: 510-601-5674 MEDSC, TWX: 348476, FAX: 408-496-6235; FSC No.: 59782; Empl: 300; Sls. Mgr.: Don Crumm

**VARITRONIX**, See VL Electronics

**VARTA BATTERIES, INC.**, 300 Executive Blvd, Elmsford, NY 10523, Tel: 914-592-2500, 800-431-2154, FAX: 914-592-2667; Empl: 33

**VASAK INDS., INC.**, 211 Eucalyptus Drive, El Segundo, CA 90245, Tel: 1-800-67-VASAK; Empl: 10; Sls. Mgr.: John Vasak

**VA-TRAN SYSTEMS INC.**, 677 Anita St. Ste. A, Chula Vista, CA 91911, Tel: 619-423-4555, FAX: 619-423-4604; Empl: 10; Sls. Mgr.: J.E. Sloan

**VEAM, Litton Systems**, 100 New Wood Rd, Watertown, CT 06795, Tel: 203-274-9681, TELEX: 710-477-0039, FAX: 203-274-4963; FSC No.: 55561; Empl: 80; Sls. Mgr.: Maryellen Myers



**FAX: 818-365-5718**

**VECTOR ELECTRONIC CO., INC.**, 12460 Gladstone Ave, Sylmar, CA 91342, Tel: 818-365-9661, 800-423-5659; FSC No.: 82893; Empl: 95; Dist. Mgr.: J. Forman  
**C\*1025, 1674-1675, 1678-1681**

For Vector Elctms.' sales offices and reps. in all other states- 800-423-5659.

**Local Sales Offices & Reps**

|    |                            |              |
|----|----------------------------|--------------|
| CA | Carlsbad, OPI Sls.         | 714-431-8859 |
| CA | Santa Ana, Mike Roth       | 714-647-0606 |
| FL | Melbourne, Saber Assocs.   | 407-724-0920 |
| IL | Inverness, Carvel Eng.     | 708-934-9600 |
| MA | Needham Hgts, Todino       | 617-444-7925 |
| NJ | Newark, Rical Assocs.      | 201-643-0880 |
| NM | Albuquerque, Odyssey1      | 505-345-9695 |
| OH | Solon, Five Star           | 216-349-1161 |
| OR | Beaverton, Luscombe, Eng.  | 503-636-6664 |
| PA | King of Prussia, KSI, Inc. | 215-783-6400 |
| TX | Dallas, Technig. Reps.     | 214-713-9027 |
| VA | Alexandria, Dyna-Rep       | 703-354-1222 |

**National Distributors**

**Local Distributors**

|    |                                 |              |
|----|---------------------------------|--------------|
| IL | Chicago, Newark Elctms.         | 312-784-5100 |
| MD | Gaithersburg, Pioneer Technlg.  | 301-921-0660 |
| MN | Thief River Falls, Dig-Key      | 800-344-4539 |
| OH | Cleveland, Pioneer Stand. Elec. | 216-587-3600 |
| PA | Philadelphia, Powell Elctms.    | 215-365-1900 |
| TX | FT Worth, Allied                | 800-433-5700 |
| TX | FT Worth, Allied Elctms.        | 800-433-5700 |

**THE VECTOR GROUP, INC.**, 189 Horsham Rd., Horsham, PA 19044, Tel: 1-800-523-3696, FAX: 215-672-3411; Empl: 10; Sls. Mgr.: Frank Menichello

**VECTRONICS MICROWAVE CORP.**, 113 Lincoln Blvd., Middlesex, NJ 08846, Tel: 908-356-2377, FAX: 908-356-6782; FSC No.: 32846; Empl: 30; Sls. Mgr.: John G. Vogler

**VECTRON LABORATORIES, INC.**, 166 Glover Ave., P.O. Box 5160, Norwalk, CT 06856-5160, Tel: 203-853-4433, TWX: 710-468-3796, FAX: 203-849-1423; FSC No.: 27802; Empl: 340; Sls. Mgr.: Larry Jawitz

**A\*1502-1509**

**Local Sales Offices & Reps**

|    |                                       |              |
|----|---------------------------------------|--------------|
| AL | Huntsville, Saber Assocs.             | 800-327-0853 |
| AZ | Phoenix, J. Smith & Assoc.            | 602-267-0981 |
| CA | Mountain View, Schoenduve Corp.       | 415-962-8330 |
| CA | San Diego, Midwin & Olifson, Inc.     | 800-275-8765 |
| CA | Tarzana, Midwin & Olifson, Inc.       | 800-275-8765 |
| CO | Parker, Techn. Mktg. Assocs.          | 303-841-3435 |
| CT | Watertown, May Tech.                  | 203-274-3777 |
| FL | Melbourne, Saber Assocs.              | 800-432-6288 |
| GA | Lawrenceville, Saber Assocs.          | 800-327-0853 |
| IL | Libertyville, GMR Sls., Inc.          | 708-367-8440 |
| IN | Greenwood, Valentine & Assocs.        | 317-888-2260 |
| IN | Kokomo, Valentine & Assocs.           | 317-453-3799 |
| IN | South Bend, Valentine & Assocs.       | 219-288-7070 |
| MO | St. Louis, Rush & West Assocs.        | 314-965-3322 |
| KS | Olathe, Rush & West Assocs.           | 913-764-2700 |
| MD | Burtonsville, Eastern Instrumentation |              |

|    |                                      |              |
|----|--------------------------------------|--------------|
| MA | Reading, May Tech.                   | 301-384-8500 |
| MI | Grand Rapids, R. P. Urban Assocs.    | 617-942-7135 |
| MN | Burnsville, Allied Comp. Reps.       | 616-245-0511 |
| NY | Great Neck, F & F Metro              | 612-435-7876 |
| NM | Albuquerque, J. Smith & Assocs.      | 516-482-4080 |
| NY | Rochester, T-Squared Elctms.         | 505-345-6501 |
| NC | Clayton, Saber Assocs.               | 716-924-9101 |
| NC | Clayton, Saber Assocs.               | 800-327-0853 |
| OH | Englewood, A. Nace Co.               | 513-836-0931 |
| OH | Hudson, A. Nace Co.                  | 216-656-3273 |
| PA | Havertown, SWR Tech, Inc.            | 215-353-6639 |
| TX | Dallas, Texas Avionics               | 214-437-5677 |
| UT | Salt Lake City, Techn. Mktg. Assocs. | 801-483-1009 |

|     |                           |              |
|-----|---------------------------|--------------|
| WA  | Seattle, Datacom          | 206-285-2525 |
| Can | Quebec, Microvolt Elctms. | 514-421-4164 |

**VEECO INSTRUMENTS INC.**, Terminal Dr., Plainview, NY 11803, Tel: 516-349-8300, FAX: 516-349-8321; Sls. Mgr.: Gary DiBiase



**FAX: 308-324-4985**

**VEETRONIX, INC.**, Box 480, Lexington, NE 68850, Tel: 308-324-4600; Empl: 25; Sls. Mgr.: Eddie Howerter  
**B\*1816-1817**

**VEGA PRECISION LABS.**, 800 Follin La, Vienna, VA 22180, Tel: 703-938-6300, FAX: 703-938-6311; FSC No.: 23115; Empl: 160; Sls. Mgr.: Joe E. Bennett

**VEKTREX ELECTRONIC SYSTEMS, INC.**, 8675 Miralini Dr., Ste. 150, San Diego, CA 92126, Tel: 619-578-6787; FSC No.: 0BV42; Empl: 5

**VELMEX, INC.**, P. O. Box 38, East Bloomfield, NY 14443, Tel: 716-657-6151, 800-642-6446, FAX: 716-657-6153; Empl: 30; Sls. Mgr.: R. Yurick

**VELONEX**, 560 Robert Ave., Santa Clara, CA 95050, Tel: 408-727-7370, FAX: 408-727-0389; Empl: 25; Sls. Mgr.: Sam Link  
**D\*1388**

**VEMALINE PRODUCTS DIV.**, See Handles Unlimited

**VENABLE INDUSTRIES, INC.**, 2120-M Braker Ln, Austin, TX 78758, Tel: 512-837-2888, 800-262-2522, TELEX: 752421, FAX: 512-837-3209; Empl: 20; Sls. Mgr.: Shelley Kelly

**VENT RAK**, See General Devices

**VERDURE INDUSTRIES INC.**, PO Box 24886, Omaha, NE 68124, Tel: 402-691-8300, FAX: 402-691-8400; Empl: 7; Sls. Mgr.: Larry Johnson

**VERMONT PRECISION RESISTOR, Codeco Corp. of Vermont**, P.O. Box 1207, Stowe, VT 05672-1207, Tel: 802-253-8567, 802-253-7649, FAX: 802-253-8019; Empl: 8  
**A\*2036-2037**

**Local Sales Offices & Reps**

|    |                                |              |
|----|--------------------------------|--------------|
| MA | Frammingham, Gallagher Assosc. | 508-626-2346 |
| VT | Burlington, Twin State Sls.    | 802-658-7868 |

**VERMONT RESEARCH CORP.**, Precision Pk., N. Springfield, VT 05150, Tel: 802-886-2256, FAX: 802-886-2682; Empl: 50; Sls. Mgr.: John Dimitruk

**VERNITECH:VERNITRON CORP.**, 300 Marcus Blvd, Deer Pk., NY 11729, Tel: 516-586-5100, TWX: 510-227-6079; FSC No.: 30223; Empl: 170

**VERNITRON CONTROLS**, Vernitron Corp., See Magtech Controls, Vernitron Corporation



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VRN INTERNATIONAL DIVISION

FAX: 813-347-3881

**VERNITRON CORP., Precision Comps. Group,**  
2800 Anvil St. N., St. Petersburg, FL 33710, Tel: 813-347-2181; FSC No.: 80408; Empl: 350; Sls. Mgr: Dennis Snavely/Roger Millheim; Dist. Mgr: K. Hansen  
A-1308, 2124-2126, 2599

## Local Sales Offices &amp; Reps

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AL  | Huntsville, South Tech. Sls.          | 205-880-8200 |
| AK  | Factory Direct                        | 813-347-2181 |
| AZ  | Phoenix, Sheffer-Kahn                 | 602-257-9015 |
| AR  | Little Rock, Doby Assoc.              | 501-221-0326 |
| CA  | Los Angeles, Factory Direct           | 813-347-2181 |
| CA  | Santa Clara, West Rep                 | 408-988-3188 |
| CO  | Denver, J.F. Huribut Co.              | 303-279-7796 |
| NH  | Amherst, D.A. Crowley & Assoc.        | 603-673-7050 |
| FL  | Largo, Electrocraft                   | 813-544-1766 |
| IL  | Downers Grove, Goltien Assocs.        | 708-985-5100 |
| IN  | Indianapolis, Elctmrns. Reps.         | 317-894-1414 |
| KS  | Lenexa, MTS                           | 913-888-5100 |
| MD  | Manchester, Imagitron Sls.            | 410-374-5600 |
| MI  | Farmington Hills, R.C. Merchant & Co. | 313-476-4600 |
| MI  | St. Joseph, R.C. Merchant & Co.       | 616-983-7378 |
| MN  | Minneapolis, PSI                      | 612-944-8545 |
| MS  | Jackson, Doby Assocs.                 | 601-981-1138 |
| NM  | Albuquerque, Sheffer-Kahn             | 505-345-3591 |
| NY  | Great Neck, Moss Assocs.              | 516-487-3966 |
| NY  | Syracuse, PiTronics                   | 315-435-7346 |
| OH  | Cleveland, Baehr Greenleaf            | 216-892-1770 |
| OH  | Dayton, Baehr Greenleaf               | 513-439-0724 |
| PA  | Warrendale, Baehr Greenleaf           | 412-934-3088 |
| TX  | Dallas, Erickson Sls.                 | 214-739-5833 |
| Can | Scarborough, Ont., JRL Assocs.        | 416-756-9862 |
| Can | V. Vancouver, Leister Blake           | 604-926-6127 |

## Local Distributors

|     |                                       |              |
|-----|---------------------------------------|--------------|
| AZ  | Phoenix, Future                       | 602-968-7410 |
| AZ  | Scottsdale, Kent                      | 602-998-0399 |
| AZ  | Tempe, TTI                            | 602-431-1191 |
| CA  | Agoura Hills, Zeus                    | 818-889-3838 |
| CA  | Los Angeles, Bell                     | 310-826-3975 |
| CA  | Los Angeles, TTI                      | 818-891-8885 |
| CA  | San Diego, Kent                       | 619-453-7133 |
| CA  | San Diego, TTI                        | 619-748-2025 |
| CA  | San Jose, Future                      | 408-434-1122 |
| CA  | San Jose, TTI                         | 408-466-5577 |
| CA  | San Jose, Zeus                        | 408-629-4789 |
| CA  | Santa Ana, TTI                        | 714-641-9393 |
| CA  | Santa Clara, Kent                     | 408-727-9830 |
| CA  | Torrance, Kent                        | 310-320-2700 |
| CO  | Denver, TTI                           | 303-429-6806 |
| CT  | Bethel, Future                        | 203-743-9594 |
| CT  | Wallingford, TTI                      | 203-284-7474 |
| FL  | Baco Raton, Jaco                      | 407-241-7943 |
| FL  | Clearwater, Future                    | 813-530-1222 |
| FL  | Orlando, TTI Inc.                     | 407-849-1000 |
| GA  | Norcross, Jaco                        | 404-449-9508 |
| GA  | Norcross, RS                          | 404-242-0520 |
| GA  | Norcross, TTI                         | 404-662-0911 |
| IL  | Elk Grove, Kent                       | 708-364-1300 |
| MA  | Wilmington, TTI Inc.                  | 508-658-4700 |
| MD  | Columbia, TTI                         | 410-995-1331 |
| MD  | Columbia, Zeus                        | 410-997-1118 |
| MA  | Bolton, Future                        | 508-779-3000 |
| MA  | Lexington, Zeus                       | 617-246-8200 |
| MA  | Tewksbury, JACO                       | 508-640-0010 |
| MN  | Eden Prairie, TTI                     | 612-933-8555 |
| MO  | St. Pauls, Kent                       | 612-642-2828 |
| MO  | St. Louis, Olive                      | 314-997-7709 |
| MD  | Columbia, Jaco                        | 301-995-6620 |
| NJ  | Marlton, Future                       | 609-596-4080 |
| NJ  | Mt. Carmel, TTI                       | 609-234-6400 |
| NY  | Hauppauge, Fairmont Elec. Sls.        | 516-231-3313 |
| NY  | Hauppauge, Jaco Elctmrns.             | 516-273-5500 |
| NY  | Liverpool, Future                     | 315-451-2371 |
| NY  | Mamaroneck, New Yorker                | 914-698-7800 |
| NY  | Port Chester, Zeus                    | 914-937-7400 |
| NY  | Port Jefferson Station, Unique        | 516-474-4320 |
| NY  | Ronkonkoma, TTI Inc.                  | 516-737-2000 |
| OH  | Columbus, Elctmrns. Mktg.             | 614-299-4161 |
| OH  | Dayton, Bell Micro-Mil                | 513-434-8231 |
| OH  | Dayton, Zeus                          | 513-293-6162 |
| OH  | Independence, TTI                     | 216-328-9755 |
| PA  | Philadelphia, P.E.I. Genesis          | 215-673-0400 |
| TX  | Addison, JACO                         | 214-733-3300 |
| TX  | Ft. Worth, Allied                     | 817-595-3500 |
| TX  | Ft. Worth, TTI Inc.                   | 817-595-3100 |
| TX  | Richardson, Zeus                      | 214-783-7010 |
| UT  | Salt Lake City, Future                | 801-972-8489 |
| WA  | Bothell, Future                       | 206-489-3400 |
| WA  | Redmond, TTI                          | 206-882-0291 |
| WI  | Milwaukee, Marsh Elctmrns.            | 414-475-6000 |
| Can | Pointe Claire, Que., Future Elctmrns. | 514-694-7710 |

VERNITRON ELEC. COMPS, See Beau Prods. Div.

**VERN KIEBLER ELECTRONICS, INC.,** 201 N. Gables,  
Wheaton, IL 60187, Tel: 708-668-5407, FAX: 708-462-7590; Empl: 150; Sls. Mgr: Vern Kiebler

**VERSALOGIC CORP.,** 3888 Stewart Rd, Eugene, OR  
97402, Tel: 800-824-3163, FAX: 503-485-5712

**VERTEK INTL. INC.,** 9465 Customhouse Plaza, Ste. D, San  
Diego, CA 92173, Tel: 619-661-6868, FAX: 706-686-3444(Mexico); Empl: 150

**VERTEX INDUSTRIES, INC.,** P. O. Box 996, 23 Carol St.,  
Clifton, NJ 07014, Tel: 201-472-1331, FAX: 201-472-0814;  
Empl: 85; Sls. Mgr: Carlo Pastore

**VERTOX CO.,** 10022 Imperial Ave. E., Garden Grove, CA  
92643, Tel: 714-530-4541, FAX: 714-530-0143; FSC No.:  
53688; Empl: 12; Sls. Mgr: Steve Hacker; Dist. Mgr:  
Steve Hacker

**VESTA TECHNOLOGY, INC.,** 7100 W. 44th Ave. Ste 101,  
Wheat Ridge, CO 80033, Tel: 303-422-8088, FAX: 303-422-9800; Empl: 12; Sls. Mgr: Cyndi Reish

**VETRA SYSTEMS CORP.,** 27 Newtown Rd, Plainview,  
NY 11803, Tel: 516-454-6469, FAX: 516-454-1648; Empl:  
10; Sls. Mgr: Jim Del Rossi B-1852

**VG CONTROLS, INC.,** 34 Jenkins Road, Hewitt, NJ  
07421, Tel: 201-853-4600, TELEX: 201-853-7913; Empl: 3  
B-1855

**VGI, INC.,** Vikay Industrial Pte. Ltd., 1800 Vernon St.,  
Roseville, CA 95661, Tel: 916-783-7878, FAX: 916-783-7845; Empl: 14; Sls. Mgr: Gary Johnson

**VIALE SYSTEMS INC.,** Box 369, Sherborn, MA 01770,  
Tel: 508-653-7665, TELEX: 922 495 VIALEUS, FAX: 508-653-6645; Empl: 30

**VIATRAN CORPORATION,** 300 Industrial Drive, Grand  
Island, New York 14072, Tel: 716-773-1700, TELEX: 710-260-1353, ESYLNK: 716-773-2488; Empl: 110

**VIA WEST INTERFACE, INC.,** 534 N. Stone Ave, Tucson,  
AZ 85705, Tel: 602-623-5716, 1-800-266-5716, FAX: 1-602-623-5718; Empl: 4; Sls. Mgr: Robert S. Bos

**VIBRAC,** 16 Columbia Dr., Amherst, NH 03031, Tel: 603-882-6777, TELEX: 312698 VIBRAC, FAX: 603-886-3857; Empl: 50; Sls. Mgr: F. Searle



FAX: 203-288-4937

**VIBRA-METRICS, INC.,** 1014 Sherman Ave, Hamden,  
CT 06514, Tel: 203-288-6158, 1-800-U-SENS-IT; Empl:  
25; Sls. Mgr: William McClain B-2024

## Local Sales Offices &amp; Reps

|     |                                             |              |
|-----|---------------------------------------------|--------------|
| AZ  | Tempe, Rusler Tech.                         | 602-897-2877 |
| CA  | Huntington Bch, Transducer Sys. Co.         | 714-969-7690 |
| CO  | Longmont, Weaver & Assocs.                  | 303-772-1999 |
| GA  | Tunnel Hill, Pump & Vibration Consits.      | 404-935-5851 |
| MI  | Troy, Satullo Assoc., Inc.                  | 313-585-4811 |
| LA  | Greenwell Springs, Vibratronics             | 504-261-7580 |
| MI  | Troy, Satullo Assocs., Inc.                 | 313-585-4811 |
| NM  | Albuquerque, Mesa Tech. Corp.               | 505-883-8833 |
| NY  | E. Berne, Northeast Rsch. Assoc.            | 518-872-2062 |
| OH  | Cleveland, Abtec                            | 216-531-9122 |
| OR  | Portland, R & T Factors, Inc.               | 503-287-6114 |
| PA  | New Hope, NOVA Pennsylvania Inc.            | 215-297-0950 |
| RI  | Narragansett, Pat Assocs.                   | 800-628-8860 |
| SC  | Spartanburg, Pat Assocs.                    | 803-591-4284 |
| TN  | Chattanooga, Pump & Vibration Consits.      | 404-935-5851 |
| TX  | Friendswood, Parameter Meas.                | 713-482-8470 |
| TX  | Webster, Parameter Meas.                    | 214-907-6300 |
| UT  | W. American Fork, Highland Tech. Mktg.      | 801-756-2634 |
| VA  | Powhatan, IHN Mntc & Eng. Svcs.             | 804-598-7625 |
| WA  | Issaquah, Avantech                          | 206-392-4033 |
| WI  | Mequon, James L. Griffin Co. Inc.           | 414-241-4451 |
| EXP | Harden, CT, Vibra-Metrics, Inc.             | 203-288-6158 |
| Can | Burnaby, BC, Machinery Condition Monitoring | 606-738-8675 |

Can Montreal, Que., Silentec, Ltd. .... 514-731-3397  
Can St. John, NB, Dynamic Signal Analysis Corp. .... 604-433-8515

## Local Distributors

CT Ledyard, Emprise Corp. .... 203-464-8555  
MA Action, Lindskog Balancing Co. .... 508-263-2040

**VIBRO-METER CORP.,** P.O. Box 5058, Billerica, MA  
01822-5058, Tel: 508-663-7322, TELEX: 948145, TWX:  
710-320-1872, FAX: 508-667-1944; FSC No.: 62587;  
Empl: 50; Sls. Mgr: John Strich

**VICOM SYSTEMS, INC.,** 46107 Landing Pkwy, Fremont,  
CA 94538, Tel: 415-498-3200, FAX: 415-498-3325; Empl:  
45; Sls. Mgr: Michael Pittoff, Sls. VP

**VICOR CORP.,** 23 Frontage Rd, Andover, MA 01810, Tel:  
508-470-2900, TELEX: 910-380-5144, ESYLNK: 508-475-6715; Empl: 400; Sls. Mgr: D. Nesbitt; Dist. Mgr: L. Cavanaugh

**V.I. CORPORATION,** 47 Pleasant St, Northampton, MA  
01060, Tel: 413-586-4144, FAX: 413-586-3805; Empl: 75;  
Sls. Mgr: Paul Maguire, VP Nat. Sls.

**VICTOREEN, INC.,** 6000 Cochran Rd, Solon, OH 44139-3395, Tel: 216-248-9300, 216-248-9043, FAX: 216-248-9301; Empl: 350; Sls. Mgr: Glenn Whiteley  
A-2038-2040

**VICTOR ELEC. WIRE & CABLE,** 618 Main St, W.  
Warwick, RI 02893, Tel: 401-821-1700, SALES 401-821-7800, TELEX: 952122, TWX: 710-382-1534, FAX: 401-828-0441; Empl: 500; Sls. Mgr: E. M. Colasanto

**VICTOR ENGINEERING,** 1000 Calle Cordillera, San  
Clemente, CA 92673, Tel: 714-366-2931, FAX: 714-366-2385

**VICTOR WIRE & CABLE CORP.,** 3601 Holdrege Ave.,  
Los Angeles, CA 90016, Tel: 213-870-9933, FAX: 213-559-4167; Empl: 30

**VICTORY ENGINEERING CORP.,** Victory Rd,  
Springfield, NJ 07081, Tel: 201-379-5900, FAX: 201-379-5982; Empl: 98

**VIDCO, INC.,** 6175 S.W. 112th Ave, Beaverton, OR 97005,  
Tel: 503-641-1804, FAX: 503-641-1806; Empl: 10; Sls.  
Mgr: Bradley Cohen

**VIDEO AUTOMATION SYSTEMS,** 10 Upper Shad Rd,  
Pound Ridge, NY 10576, Tel: 914-764-4613, FAX: 914-764-4613; Empl: 5

**VIDEO DISPLAY CORP.,** 1868 Tucker Industrial Dr.,  
Tucker, GA 30084, Tel: 404-938-2080, 800-241-5005, FAX:  
404-493-3903; Empl: 300; Sls. Mgr: Robert (Bob) Liss;  
Dist. Mgr: Randy Russell

**VIDEO MONITORS, INC.,** Dotronix, Inc., 3833 N. White  
Ave, Eau Claire, WI 54703, Tel: 715-834-7785, TELEX:  
510-100-1880, FAX: 715-834-5672; Empl: 120; Sls. Mgr:  
J. Jensen

**VIKING CASES,** 10480 Oak St. N.E., St. Petersburg, FL  
33716, Tel: 813-577-1216, FAX: 813-577-2082; Sls. Mgr:  
Bill Strickland

**VIKING ELECTRONICS, INC.,** 1531 Ind. St. PO Box 448,  
Hudson, WI 54016, Tel: 715-386-8861, FAX: 715-386-7423; Empl: 40; Sls. Mgr: Roy Crist

**VIKING ELECTRONICS, INC.,** 21001 Nordhoff St, P.O.  
Box 2379, Chatsworth, CA 91311, Tel: 818-341-4330, FAX:  
818-882-5713; FSC No.: 05574; Empl: 150; Sls. Mgr:  
William Vockerath; Dist. Mgr: William Vockerath

**VIKING INDUSTRIAL PRODUCTS,** 729 Farm Rd,  
Marlboro, MA 01752, Tel: 508-481-4600, FAX: 508-481-4602; Empl: 25; Sls. Mgr: Aubrey Elms

**VIRGINIA PANEL CORPORATION,** 1400 New Hope Rd,  
Waynesboro, VA 22980, Tel: 703-949-8376, FAX: 703-942-2856; FSC No.: 18117; Empl: 130; Sls. Mgr: Norman D. Wood



FAX: 703-375-0135

**VIRGINIA PLASTICS CO.,** P.O. Box 4577, Roanoke, VA  
24015-0577, Tel: 703-375-0100; FSC No.: 59608; Empl:  
110; Sls. Mgr: Barry D. Lee  
C-1508-1509, 1814-1817



| Local Sales Offices & Reps             |              |
|----------------------------------------|--------------|
| AL Huntsville, Solutions, Inc.         | 205-539-3152 |
| AZ Phoenix, Howe & Howe Sls.           | 602-264-7971 |
| CA Arcadia, H M C Inc.                 | 818-447-0958 |
| CA San Diego, HMC, Inc.                | 619-484-8921 |
| CA Santa Clara, Penmark Sls. Co.       | 408-980-1303 |
| CO Denver, Lindberg Co.                | 303-758-9033 |
| FL Apopka, Dan-Tech Sls.               | 407-884-0252 |
| FL Clearwater, Dan-Tech Sls.           | 813-441-2609 |
| FL Davie, Dan-Tech Sls.                | 305-581-2884 |
| GA Marietta, Solutions, Inc.           | 404-951-5683 |
| IL Wheaton, CS Tech. Sls., Inc.        | 708-653-8126 |
| MD Gaithersburg, Carwithen Assocs.     | 301-921-9545 |
| MA Norwood, MacInnis Co.               | 617-762-8090 |
| MI Livonia, Engrg. & Mktg. Svcs. Co.   | 313-522-9465 |
| MN Minneapolis, Elec. Comp. Sls.       | 612-933-2594 |
| MS Meridian, Solutions, Inc.           | 601-482-4647 |
| MO Lake St. Louis, Markline Technlgs.  | 314-625-6222 |
| NJ Englewood, Sprung & Rea Inc.        | 201-569-5666 |
| NM Albuquerque, Lindberg Co.           | 505-881-1006 |
| NY Buffalo, Empire Tech.               | 716-381-8500 |
| NY Skaneateles, Empire Tech.           | 315-685-5703 |
| NC Raleigh, Solutions, Inc.            | 919-790-7606 |
| OH Rocky River, Oak Hill Mktg.         | 216-333-0000 |
| OH Westerville, Oak Hill Mktg.         | 614-890-5150 |
| OR Lake Oswego, SPS Elctms.            | 503-697-7768 |
| PA Harrisburg, All-Tech Mktg.          | 717-540-1204 |
| PA West Chester, All-Tech Mktg., Inc.  | 215-344-0134 |
| KS Overlook Pk, Markline Technlgs.     | 913-681-8880 |
| TX Austin, M-Rep                       | 512-250-0828 |
| TX Dallas, M-Rep                       | 214-484-5711 |
| UT Salt Lake City, Lindberg Co.        | 801-484-8689 |
| WA Mountlake Terrace, SPS Elctms.      | 206-323-4140 |
| Can Downsview, Ont., Tienkay, Inc.     | 416-736-1221 |
| Can Montreal, Que., XLR8 Inc.          | 514-481-6566 |
| Local Distributors                     |              |
| CA Canoga Park, Acort Inds.            | 818-700-2991 |
| NH Manchester, Yankee Elctm. Supp. Co. | 800-365-9720 |
| Can Downsview, Ont., P.S. Comps.       | 416-665-9546 |

**VISHAY-MANN SYSTEM, See Vishay Resistive Systems**

**VISHAY RESISTORS, 63 Lincoln Hwy, Malvern, PA 19355, Tel: 215-644-1300, TWX: 510-668-5812; Empl: 500; Sls. Mgr: William Brennan ... A•2041-2048, 2127**

|                                           |              |
|-------------------------------------------|--------------|
| CO Westminster, TTI, Inc.                 | 303-429-6806 |
| CT Berlin, Kent Elec./Shelley-Ragon       | 203-829-2100 |
| FL Largo, Kent Elec./Shelley-Ragon        | 813-545-0057 |
| FL Orlando, TTI, Inc.                     | 407-859-1000 |
| FL St. Petersburg, MMG Elec./L&S          | 813-521-2966 |
| CT Wallingford, TTI, Inc.                 | 203-284-7474 |
| GA Norcross, TTI, Inc.                    | 404-662-0911 |
| IL Elk Grove, Kent Elec./Shelley-Ragon    | 708-364-1300 |
| IL Schaumburg, TTI, Inc.                  | 708-884-6500 |
| IA Cedar Rapids, Kent Elec./Shelley-Ragon | 319-373-0525 |
| KS Overland, Kent Elec./Shelley-Ragon     | 816-254-3410 |
| MD Baltimore, RESCO/Baltimore             | 410-931-8200 |
| MD Beltsville, RESCO/Washington           | 301-937-9100 |
| MA Chelmsford, Kent Elec./Shelley-Ragon   | 508-250-9666 |
| MA Tewksbury, TTI, Inc.                   | 508-851-2000 |
| MN Minnetonka, TTI, Inc.                  | 612-933-8555 |
| MN St. Paul, Kent Elec./Shelley-Ragon     | 612-642-2828 |
| MS Columbia, TTI, Inc.                    | 410-995-1331 |
| MO Hazlewood, Kent Elec./Shelley-Ragon    | 314-895-1515 |
| MO Independence, Kent Elec./Shelley-Ragon | 816-254-3410 |
| NJ Denville, Kent Elec./Shelley-Ragon     | 201-625-5500 |
| NJ Mt. Laurel, TTI Inc.                   | 609-234-6400 |
| NY Farmingdale, Command Elctms. Corp.     | 516-293-1212 |
| NY Ronkonkoma, Mast Dists., Inc.          | 516-471-4422 |
| NY Ronkonkoma, TTI, Inc.                  | 516-737-2000 |
| NY Valley Stream, L & S Elctms.           | 516-561-2474 |
| NC Charlotte, TTI, Inc.                   | 704-522-0277 |
| SC Charleston, L & S                      | 803-720-4242 |
| OH Dayton, Micro Mil Div.                 | 513-434-8231 |
| OH Dayton, TTI, Inc.                      | 513-898-8330 |
| OH Independence, TTI, Inc.                | 216-328-9755 |
| OR Beaverton, Kent Elec./Shelley-Ragon    | 503-626-8300 |
| PA Malvern, Vishay Resistive Sys. Grp.    | 215-644-1300 |
| TX Austin, Kent Elec./Shelley-Ragon       | 512-834-1900 |
| TX Ft. Worth, TTI, Inc.                   | 817-595-3100 |
| TX Ft. Worth, TTI, Inc.                   | 817-740-9000 |
| TX Houston, Kent Elec./Shelley-Ragon      | 713-780-7770 |
| TX Houston, Texas Comp. Corp.             | 713-468-3882 |
| TX Houston, TTI, Inc.                     | 713-879-5800 |
| TX Richardson, Kent Elec./Shelley-Ragon   | 214-669-2600 |

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| WA Redmond, Kent Elec./Shelley-Ragon | 206-883-7200 |
| WA Redmond, TTI, Inc.                | 206-882-0291 |
| Can Burnaby, B.C., Kaytronics        | 604-294-2000 |
| Can Kanata, Ont., Kaytronics         | 613-564-0080 |
| Can Mississauga, Ont., Kaytronics    | 416-507-6400 |
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| CA Los Angeles, Electric Switch Inc.   | 213-660-1310 |
| CA San Diego, Orange County Comps.     | 619-549-2511 |
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| CA Sunnyvale, PSC Elctms.              | 408-737-1333 |
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| FL Clearwater, Component Dists.        | 800-558-2351 |
| FL Ft. Lauderdale, Component Dists.    | 813-796-0466 |
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| OH Centerville, Industrial Prod. Dist. | 513-435-2086 |

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| TX Dallas, Component Dist. Inc. | 800-848-4234 |

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**VITEC, INC., 236000 Mercantile Rd., Cleveland, OH 44122, Tel: 1-800-321-6384, FAX: 216-464-5324; Empl: 300; Dist. Mgr: Ernie Hopp**

**VITEQ CORP., 1000 Aerospace Rd., Lanham, MD 20706, Tel: 301-731-0400, FAX: 301-731-5995; Empl: 120; Sls. Mgr: Edward Bone**

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**VIZ METEOROLOGICAL INSTRUMENTS, 335 E. Price St., Philadelphia, PA 19144-5782, Tel: 215-844-2626, TWX: 710-670-2626; FSC No: 41226; Empl: 325; Sls. Mgr: Tom Curran; Dist. Mgr: Tom Curran**

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| IA Marion, A.E.M. Assocs.             | 319-377-1129 |
| KS Olathe, A.E.M. Assocs.             | 913-888-0022 |
| MA Canton, New England Elctm. Sls.    | 617-828-4835 |
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 Can Toronto, Norgay Entprs., Ltd. .... 416-234-8966  
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**VME MICROSYSTEMS INTL CORP.**, 12090 South Memorial Pkwy., Huntsville, AL 35803-3308, Tel: 205-880-0444, FAX: 205-882-0859; FSC No.: OBPH5; Empl: 137; Sls. Mgr.: Al Casteleyn

**VMETRO, INC.**, VMETRO as, 16010 Barker's Point Ln., Ste. 575, Houston, TX 77079, Tel: 713-584-0728, FAX: 713-584-9034; Empl: 6; Sls. Mgr.: Jennifer Kaufmann

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**VOLTARC TECHNOLOGIES, INC.**, 186 Linwood Ave., P.O. Box 688, Fairfield, CT 06430, Tel: 203-255-2633, TELEX: 96-4337, FAX: 203-259-1194; Empl: 500; Sls. Mgr.: Gino J. Ciancanelli

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| CA | Lomita, Techrep                      | 310-539-9070 |
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| TX | Dallas, Circum, Inc.                 | 214-690-0400 |

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**WAVETEK COMMUNICATIONS DIV.**, (Formerly Wavetek Indiana, Inc.), 5808 Churchman By-Pass, Indianapolis, IN 46203-6109, Tel: 317-788-9351, ESYLNK: 317-782-4607; FSC No.: 34280; Empl.: 303; Sls. Mgr.: Gary Culbertson; Dist. Mgr.: Ben Constantini

For Sls. Ofcs. & Reps. 9145 Balboa Ave., San Diego, CA 92123

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**WAYNE KERR INC.**, Farnell Electronics plc, 11 Sixth Rd., Woburn, MA 01801, Tel: 617-938-8390, 1-800-933-9319, FAX: 617-933-9523; Empl.: 7; Sls. Mgr.: Ken Harrison

**WEARNES HOLLINGSWORTH CORP.**, 4 Chrysler, Irvine, CA 92718, Tel: 714-855-6404, FAX: 714-855-8264; Empl.: 30; Sls. Mgr.: Jim Hunter

**WEARNES HOLLINGSWORTH, Electrical Products Division**, 1601 N. Powerline Rd., Pompano Bch, FL 33069, Tel: 305-979-2050, FAX: 305-960-1431; Empl.: 117; Sls. Mgr.: Jack Kelly

**WEBER PROTECTION, INC.**, 291 Great Valley Parkway, Malvern, PA 19355, Tel: 610-651-0770, 800-WEBERPA, FAX: 610-651-0775; Sls. Mgr.: Theo Notaras **B-1391-1393**

#### Local Sales Offices & Reps

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| AZ | Hartland Sls.          | 602-492-0012 |
| CA | Lighthouse Technlg.    | 619-270-7399 |
| CA | Signal Entprs.         | 818-957-0640 |
| CA | Trademark Assocs.      | 408-997-1216 |
| CO | Donohue Sls. Co.       | 303-455-1719 |
| CT | C.W. Assocs.           | 203-656-2339 |
| FL | EAB, Inc.              | 407-339-4986 |
| GA | EAB, Inc.              | 404-975-3660 |
| IL | Production Comps.      | 312-774-3434 |
| MI | Urban Assocs.          | 616-245-0511 |
| MN | Engr. Prods.           | 612-835-9022 |
| MO | M.I.N.K. Assocs.       | 314-291-5454 |
| NH | Bell Controls          | 603-882-6984 |
| NY | L-Tron                 | 716-383-0050 |
| NY | Sticom Sls. & Mktg.    | 516-366-4221 |
| OH | R.K. Comp. Sls.        | 216-642-9312 |
| OR | Controltek             | 503-641-0876 |
| PA | Freedman-Malta Assocs. | 215-337-9211 |
| TX | D.J. Sls. & Assocs.    | 214-783-8876 |
| WI | Bert Wartchow Assocs.  | 414-821-2993 |

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#### Local Sales Offices & Reps

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| AL | Huntsville, Cartwright & Bean Inc.    | 205-830-1540 |
| AZ | Mesa, Hartland Sls. Inc.              | 602-834-7042 |
| CA | Newport Bch, SPA Inc.                 | 714-863-1193 |
| CA | San Diego, SPA Inc.                   | 619-530-0209 |
| CA | San Jose, Silicon Valley Sls.         | 408-432-1967 |
| CO | Boulder, Stratford Grp.               | 303-530-3194 |
| FL | Apopka, Cartwright & Bean Inc.        | 407-889-9100 |
| FL | Deerfield, Cartwright & Bean Inc.     | 305-429-3400 |
| GA | Norcross, Cartwright & Bean Inc.      | 404-368-0160 |
| IL | Palatine, Key Entprs. Inc.            | 708-991-2144 |
| IN | Indianapolis, MEI (Mktg. Engrs.)      | 317-872-5665 |
| IA | Davenport, Rush & West Assocs. Inc.   | 319-388-9494 |
| KS | Olathe, Rush & West Assocs. Inc.      | 913-764-2700 |
| KY | Lexington, Mktg. Engrs. Inc.          | 606-275-4103 |
| LA | Covington, Cartwright & Bean Inc.     | 504-892-1700 |
| MD | Randalls Town, Chesapeake Indl. Mktg. | 410-653-0476 |
| MA | Scituate, Olsen Tech Sls. Inc.        | 617-545-5101 |
| MI | Farmington, Marlow Assocs. Inc.       | 313-478-2240 |
| MI | Novi, Marlow Assocs. Inc.             | 313-348-5791 |
| MN | Eden Prairie, PWC Inc.                | 612-934-1409 |
| MS | Jackson, Cartwright & Bean Inc.       | 601-981-1170 |
| MO | St. Louis, Rush & West Assocs. Inc.   | 314-965-3322 |
| NH | Nashua, Olsen Tech. Sls. Inc.         | 603-888-3619 |
| NJ | Woodbridge, Riser Sls. Inc.           | 908-634-0954 |
| NY | Buffalo, NRM Mktg. Inc.               | 716-634-4300 |
| NY | Skaneateles, NRM Mktg. Inc.           | 315-685-8991 |
| NY | Spencerport, NRM Mktg. Inc.           | 716-352-9166 |

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| NC | Charlotte, Cartwright & Bean Inc.  | 704-536-0303 |
| NC | Raleigh, Cartwright & Bean Inc.    | 919-876-4130 |
| OH | Dayton, Marlow Assocs. Inc.        | 513-274-9666 |
| OR | Lake Oswego, SPS Elctms.           | 503-697-7768 |
| PA | Allison Pk, Marlow Assocs. Inc.    | 412-487-0664 |
| PA | Spring Grove, Select Sls. Assocs.  | 717-229-2977 |
| TN | Germantown, Cartwright & Bean Inc. | 901-758-8113 |
| TN | Knoxville, Cartwright & Bean Inc.  | 605-693-7450 |
| TX | Austin, Electra Reps. Inc.         | 512-339-1163 |
| TX | Dallas, Electra Reps. Inc.         | 214-248-3852 |
| TX | Houston, Aid Elctms. Inc.          | 713-575-7959 |
| WA | Snohomish, SPS Elctms.             | 206-323-4140 |
| WI | Milwaukee, Key Entprs. Inc.        | 414-762-2323 |

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| AZ | Phoenix, Beswitched                       | 602-275-4805 |
| AZ | Scottsdale, Evolution Technlg.            | 602-991-0223 |
| AZ | Tempe, Control Design Supp. Inc.          | 602-829-7981 |
| AR | N. Little Rock, Control Design Supp. Inc. | 501-851-3137 |
| CA | Anaheim, Control Design Supp. Inc.        | 714-821-1516 |
| CA | Brea, Interconnect Specialties Inc.       | 714-961-7955 |
| CA | Fountain Valley, Comp. Ctr.               | 714-979-0433 |
| CA | Fremont, Connex Elctms. Corp.             | 510-656-7722 |
| CA | San Carlos, Control Design Supp. Inc.     | 415-592-4806 |
| CA | San Diego, Control Design Supp. Inc.      | 619-457-9822 |
| CA | San Diego, DECO Elctms. Inc.              | 619-693-1595 |
| CA | Santa Ana, BDS Elctms. Inc.               | 714-662-1050 |
| CA | Santa Clara, Component Ctr.               | 408-988-3751 |
| CA | Van Nuys, Wes-Garde Comps. Grp.           | 818-786-3724 |
| CO | Denver, Control Design Supply Inc.        | 303-296-1922 |
| CT | Wallingford, Control Design Supp. Inc.    | 203-269-9955 |
| CT | Yalesville, Glynn Elctms.                 | 203-265-2498 |
| FL | Davie, ARCO Dists. Inc.                   | 305-473-2550 |
| FL | Largo, Electronic Precepts of FL Inc.     | 813-544-3636 |
| FL | Pompano Bch, Control Design Supp. Inc.    | 305-782-1311 |
| FL | Sanford, Control Design Supp. Inc.        | 407-328-8011 |
| GA | Fayetteville, Frankland Inc.              | 404-461-4026 |
| GA | Stone Mtn., Control Design Supp. Inc.     | 404-979-3500 |
| IL | Carol Stream, Lectro Comps. Inc.          | 708-690-0520 |
| IL | Glendale Heights, Mac Gregor & Co. Inc.   | 708-469-4080 |
| IL | Schaumburg, Control Design Supp. Inc.     | 708-307-8900 |
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| IA | Marion, Control Design Supp. Inc.             | 319-373-2923 |
| KS | Kansas City, Control Design Supp. Inc.        | 913-362-4248 |
| KS | Wichita, RSC Elctms. Inc.                     | 316-267-5213 |
| KY | Owensboro, Ohio Valley Sound                  | 502-683-6727 |
| MD | Gaithersburg, Axis Elctms. Inc.               | 301-840-9640 |
| MA | Middleboro, Glynn Elctms. Inc.                | 508-947-4262 |
| MA | Woburn, Control Design Supp. Inc.             | 617-932-9404 |
| MI | Farmington Hills, Control Design Supp. Inc.   | 313-473-0220 |
| MN | Minneapolis, Control Design Supp. Inc.        | 612-721-1628 |
| MO | St. Louis, Control Design                     | 314-432-1116 |
| MO | St. Louis, Franklin Elctms.                   | 314-429-3111 |
| NH | Manchester, Glynn Elctms.                     | 603-622-8131 |
| NJ | Cliffwood, Federated Purchaser Inc.           | 908-290-2900 |
| NY | Henrietta, Control Design Supp. Inc.          | 716-334-1120 |
| NY | Rome, Rome Elctm.                             | 315-337-5400 |
| NY | Syracuse, ADR Tech.                           | 315-437-7087 |
| NC | Charlotte, Control Design                     | 704-588-4410 |
| NC | Raleigh, Century Elctm. Co.                   | 919-596-2220 |
| OH | Akron, Aesco Elctms. Inc.                     | 216-762-8818 |
| OH | Cincinnati, Hughes Peters Inc.                | 513-351-2000 |
| OH | Columbus, Aesco Elctms. Inc.                  | 614-882-6762 |
| OH | Columbus, Hughes Peters Inc.                  | 614-294-5351 |
| OH | Columbus, Thompson Elctm. Supp.               | 614-228-6191 |
| OH | Dayton, Scotts-Friedman Co. Inc.              | 513-298-5555 |
| OH | Valley City, Roberts Elctm. Co. Inc.          | 216-225-4646 |
| OK | Oklahoma City, RSC Elctms. Inc.               | 405-631-7729 |
| OR | Portland, Dunn Elctms. Inc.                   | 503-285-0214 |
| PA | Allentown, Lighting Fixture & Supply Co. Inc. | 215-435-9691 |
| PA | Malvern, Control Design Supp. Inc.            | 215-296-0150 |
| PA | McKean, Advacom                               | 814-476-7774 |
| PA | Norristown, Century Elctm. Co. Ltd.           | 215-631-5404 |
| PA | York, Elctm. Comp. for Inds.                  | 717-846-5334 |
| TN | Nashville, Randolph & Rice, Inc.              | 615-255-5601 |
| TX | Austin, Wofford Elctms. Inc.                  | 512-339-1131 |
| TX | Dallas, Control Design                        | 214-358-1441 |
| TX | Dallas, Wofford Elctms. Inc.                  | 214-340-8555 |
| TX | Ft. Worth, Allied Elctms. Inc.                | 817-595-3500 |
| TX | Richardson, RSC Elctms. Inc.                  | 214-644-3444 |
| TX | Tomball, Wofford Elctms. Inc.                 | 713-351-2255 |
| UT | Nephi, Control Design Supply Inc.             | 801-623-2908 |

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| WA | Bothell, Dunn Elctms. Inc.      | 206-382-0379 |
| WA | Kent, Control Design Supp. Inc. | 206-251-6323 |
| WA | Richmond, Murphy Elctms. Inc.   | 206-881-1234 |
| WA | Seattle, H.D. Campbell          | 206-433-1900 |
| WI | New Berlin, Control Design      | 414-784-1016 |



FAX: 514-694-0956

**WECO ELECTRICAL CONNECTORS, INC.**, 16791 Hymus Blvd., Kirkland, Quebec, Canada H9H 3L4, Tel: 514-694-9136; FSC No.: 5935, 5963, 5940; Empl: 52; Sls. Mgr.: John T. Meikle, Corp. Sls. & Mktg. Mgr.; Dist. Mgr.: J.J. Gauthier C-1510-1521

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| Can | Dorval, Que., Weiss Co.      | 514-685-6644 |
| Can | Edmondton, Sas., Deskin Sls. | 403-466-2106 |
| Can | Mississauga, Ont., Weiss Co. | 416-673-0011 |
| Can | Nepean, Ont., Weiss Co.      | 613-225-1810 |
| Can | Transcona, Man., Deskin Sls. | 204-224-1321 |
| Can | Vancouver, B.C., Deskin Sls. | 604-324-8343 |

## Local Distributors

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| Can | Calgary, Alb., Deskin Sls.                        | 403-270-4440 |
| Can | Dartmouth, N.S., Arcorn Elctms.                   | 902-464-1600 |
| Can | Dorval, Que., Bentin Elctrl.                      | 514-631-2061 |
| Can | Dorval, Que., Elkon                               | 514-636-0510 |
| Can | Drummondville, Que., Marnel Intl. Inc.            | 819-478-3128 |
| Can | Edmonton, Alb., Deskin Sls.                       | 403-466-2106 |
| Can | Islington, Ont., D.T. Shaw Co. Ltd.               | 416-231-2706 |
| Can | Markham, Ont., Carsten Elctms. Ltd.               | 416-477-7705 |
| Can | Markham, Ont., Deskin Sls.                        | 416-475-1412 |
| Can | Mississauga, Ont., Rush Elctms. Ltd.              | 416-677-7280 |
| Can | Mississauga, Ont., Sayal Elctms.                  | 416-238-8640 |
| Can | Montreal, Que., Cite Electronique                 | 514-526-9184 |
| Can | Montreal, Que., Crobrel Electronique Ltee         | 514-493-8818 |
| Can | Montreal, Que., D.T. Shaw Co. Ltd.                | 514-332-1163 |
| Can | Montreal, Que., Versatech Elctms. Inc.            | 514-335-3833 |
| Can | Nepean, Ont., Deskin Sls.                         | 613-228-1201 |
| Can | Oakville, Ont., Cantwell Cullen & Co.             | 416-842-8470 |
| Can | Pointe Claire, Laval, Que., Montcalm Electronique | 514-663-3102 |

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| Can | Quebec, Que., Pro Technique Que. Inc.           | 418-529-5774 |
| Can | Scarborough, Ont., Elkon                        | 416-398-4014 |
| Can | Scarborough, Ont., Sayal Elctms.                | 416-494-8999 |
| Can | Sherbrooke, Que., Cite Electronique             | 819-822-9908 |
| Can | St. Laurent, Que., Carsten Elctms. Ltd.         | 514-334-8321 |
| Can | St. Laurent, Que., Access-O-Tronik              | 514-335-6000 |
| Can | St. Laurent, Que., Deskin                       | 514-331-2860 |
| Can | St. Laurent, Que., Ferrotronics Components Inc. | 514-333-7288 |
| Can | Ste. Foy, Que., Access-O-Tronik                 | 418-683-5979 |
| Can | Ste. Foy, Que., Crobrel Electronique Ltee       | 418-687-1171 |

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| Can | Stittsville, Ont., Carsten Elctms. Ltd. | 613-831-1620 |
| Can | Transcona, Man., Deskin Sls.            | 204-224-1321 |
| Can | Vancouver, B.C., Deskin Sls.            | 604-324-8343 |
| Can | Winnipeg, Man., WES Elctms. Ltd.        | 204-632-1260 |

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**WEED INSTRUMENT CO., INC.**, 707 Jeffrey Way, P.O. Box 300, Round Rock, TX 78680-0300, Tel: 512-244-1956, FAX: 512-244-0836; Empl: 123; Sls. Mgr.: Jim Robertson

**WEETECH, INC.**, Wee GmbH, 1 Merchant St., Sharon, MA 02067, Tel: 617-784-1208, FAX: 617-784-1281; Empl: 70; Sls. Mgr.: Ken Castle



FAX: 516-254-2099

**WEICO WIRE & CABLE, INC.**, 161 Rodeo Dr., Edgewood, NY 11717, Tel: 516-254-2970; FSC No.: 7R617; Sls. Mgr.: Theodore Weill C-1818-1855

**WEIDMULLER INC.**, 821 Southlake Blvd., Richmond, VA 22326, Tel: 804-794-2877, FAX: 804-794-0252; Empl: 110; Sls. Mgr.: Peter Anest

**WEIDMULLER INC.**, Paladin Tools, 3543 Old Conejo Rd., No. 101, Newbury Park, CA 91320, Tel: 805-499-0318, FAX: 805-499-4006; Empl: 20; Sls. Mgr.: Lee Sachs, Label Sls. Mgr.; Dist. Mgr.: Shannon Burke, Distr. Mgr.

**WEIR ELCTRNS. LTD.**, Durban Rd., Bognor Regis, West Sussex, ENG PO 22 9RW, Tel: 0243-865991, TELEX: 86543, FAX: 0243-868613; Empl: 500; Sls. Mgr.: Peter Cole (Exp.)

**WEITZ ELECTRONICS/MARVWA USA**, 1040 1st Ave., Ste. 361, New York, NY 10022, Tel: 718-523-3688, FAX: 718-657-6938; Empl: 49; Sls. Mgr.: Greg Weitz

**WELCH ALLYN, INC.**, Data Collection Div., 4619 Jordan Rd., Skaneateles Falls, NY 13153-0187, Tel: 315-685-8945, FAX: 315-685-3172; Sls. Mgr.: Richard Kraetz; Dist. Mgr.: Andy Adams

**WELLEX CORPORATION**, 44141 S. Grimmer Blvd., Fremont, CA 94538, Tel: 510-490-3263, FAX: 510-490-5531; Empl: 356; Sls. Mgr.: John E. Soares

**WELLS ELECTRONICS, INC.**, 1701 S. Main St., South Bend, IN 46613, Tel: 219-287-5941, TELEX: 4937960, FAX: 219-287-0356; FSC No.: 219-287-0356; Empl: 200; Sls. Mgr.: Mike Myers

**WELLS-GARDNER ELCTRNS. CORP.**, 2701 N. Kildare Ave., Chicago, IL 60639, Tel: 312-252-8222, FAX: 312-252-8072; Empl: 282; Sls. Mgr.: Lawrence J. Brady

**WENZEL ASSOCIATES, INC.**, 1005 La Posada Dr., Austin, TX 78752, Tel: 512-450-1400, FAX: 512-450-1490; FSC No.: 62821; Empl: 45; Sls. Mgr.: Liz Ronchetti A-1510

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| CA                         | Sunnyvale, Esco Assocs. ....          | 408-745-0533 |
| NH                         | Hollis, RF Elctms. New England .....  | 603-465-3211 |
| NY                         | Melville, RF Elctms. ....             | 516-420-8890 |
| VA                         | Alexandria, Vanguard Engrg. Sls. .... | 703-768-1660 |
| Can                        | Ottawa, Ont. Gligatron .....          | 613-225-4090 |

**WERLATONE, INC.**, P. O. Box 47, Rte. 22, Brewster, NY 10509, Tel: 914-279-6187, FAX: 914-279-7404; FSC No.: 28812; Empl: 13; Sls. Mgr.: G. Werlau

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**WESCHLER INSTRUMENTS, Hughes Corp.**, 16900 Foltz Parkway, Cleveland, OH 44136, Tel: 216-238-2550; Empl: 125; Sls. Mgr.: Gary Gonzales D-1389-1401

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| CA                         | Northern CA, Seco Controls    | 510-798-8300 |
| CA                         | Southern CA, RDX Corp.        | 714-599-0985 |
| CO                         | Anderson Controls             | 303-692-0290 |
| FL                         | Datarep Inc.                  | 407-843-5224 |
| IL                         | Ray Knitter Assoc.            | 708-690-6363 |
| IN                         | IN North, Jack Margis Assoc.  | 219-374-5905 |
| IN                         | IN South, Ray Knitter Assoc.  | 317-862-2788 |
| IA                         | Simone Engrg.                 | 319-364-2378 |
| LA                         | Weschler                      | 216-238-2550 |
| MA                         | Eastern Systems               | 508-435-2151 |
| MI                         | G&D Assoc.                    | 313-684-5233 |
| MN                         | Waltam Sales                  | 612-781-2778 |
| MO                         | Controls Midwest              | 816-842-4290 |
| NE                         | Simone Engrg.                 | 402-592-0098 |
| NV                         | Vegas, Kachina Ctrls.         | 702-791-5666 |
| NJ                         | RJM Sales                     | 908-322-7880 |
| NM                         | Kachina Controls              | 505-345-1045 |
| NY                         | NY, Eastern Sys.              | 508-435-2151 |
| NC                         | J.H. Instruments              | 704-889-5600 |
| OH                         | OH (North), Advanced Technlg. | 216-835-5050 |
| OH                         | OH (South), CKM Indl.         | 513-871-1413 |
| OK                         | Wallace & Schoeffler          | 918-742-5331 |
| OR                         | McLaren Inc.                  | 503-627-0757 |
| PA                         | PA (East), RJM Sales          | 215-643-6610 |
| TX                         | Wilsner Co.                   | 713-683-6826 |
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 WI WI (East), Ray Knitter Assoc. .... 414-544-1976

**WESCO ELECTRICAL CO.**, 201 Munson St., Greenfield, MA 01301, Tel: 413-774-4358, FAX: 413-774-4562; FSC No.: 12673; Empl: 150; Sls. Mgr.: James R. DeSanty  
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AZ Tempe, ACS of AZ ..... 602-731-9711  
 CA Mission Viejo, Jay Mktg. Assoc. .... 714-768-7519  
 CA San Jose, Westron Assoc. .... 408-264-4070  
 CT Milford, Cuming Assoc. .... 203-878-3946  
 FL Maitland, EIR, Inc. .... 305-660-9600  
 IN Indianapolis, John H. Weaver Co. .... 317-257-7661  
 MA Framingham, Bengal Assocs. .... 617-877-2639  
 MA Randolph, Bengal Assocs. .... 617-961-4120  
 MI Madison Hgts, DEM Sls., Inc. .... 313-583-1500  
 MN Minneapolis, Furber Sls. Co. .... 612-881-3620  
 NY Shirley, Tri-Tek Mktg. .... 516-395-3391  
 NC Raleigh, Quantum Mktg. .... 919-846-5728  
 OH Woughby Hills, Versatron ..... 216-944-0082  
 PA Montgomeryville, Quick Response Tech Sls. .... 215-362-9225  
 TN McMinnville, B & D Mktg. .... 615-473-7155  
 Can Oakville, Ontario, Haltronics Ltd. .... 416-844-2233

**WESCORP STATIC CONTROL PRODUCTS**, 144 S. Whisman Rd., Mountain View, CA 94041, Tel: 415-969-7717, FAX: 415-969-6130; Empl: 15; Sls. Mgr.: Thelma Paxton; Dist. Mgr.: Sue McCray

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CA Newport Bch, Innotech ..... 714-722-8767  
 IN Indianapolis, Emmtronics ..... 317-845-0668  
 MA Hopedale, DMA Mktg. .... 508-473-9994  
 MN New Brighton, Pragmatic Technlg., Inc. .... 612-631-1981  
 NY Jericho, B & D Assocs. .... 516-937-3593  
 OR Beaverton, Broward, Potter & Assts. .... 503-644-5233  
 TX El Paso, Alexander Entprs. .... 915-591-3142  
 TX Rowlett, Campion Sls. Co., Inc. .... 214-475-8313

**WES-GARDE COMPONENTS GROUP, INC.**, 190 Elliott St., Hartford, CT 06114, Tel: 203-525-6907

**WESTAMP**, 1542 15th St., Santa Monica, CA 90404, Tel: 310-393-0401, FAX: 310-451-1058; FSC No.: 12745; Empl: 40; Sls. Mgr.: Bradley A. Landseadel

**WESTBEG MANUFACTURING INC. (WESTACH)**, 3400 Westach Way, Sonoma, CA 95476, Tel: 707-938-2121; Empl: 20; Sls. Mgr.: R. R. Westberg

**WEST COAST ELEC. MFG.**, 1399 Charlotte Hwy., Fairview, NC 28730, Tel: 704-628-1711, FAX: 704-628-1439; FSC No.: 81823; Empl: 25; Sls. Mgr.: W. E. Seal

**WESTCON**, 959 Cheney Ave., Marion, OH 43302, Tel: 614-382-5771, TELEX: 3775688; Empl: 50

**WESTCON, INC.**, 5101 N. Interstate Ave., Portland, OR 97217, Tel: 503-283-0132, FAX: 503-283-0137; Empl: 15; Sls. Mgr.: Jan M. Rundquist; Dist. Mgr.: Jan M. Rundquist

**WESTCOR CORPORATION**, 485-100 Alberto Way, Los Gatos, CA 95032, Tel: 408-395-7050, FAX: 408-395-1518; Sls. Mgr.: Nancy Pepper

**WEST ELECTRONIC SALES TEAM**, 16512 Burke Lane, Ste. A, Huntington Beach, CA 92647, Tel: 714-375-6500, 310-495-5569, FAX: 714-375-6507; Empl: 15; Sls. Mgr.: Mark Wickham; Dist. Mgr.: Jack Carrigan

**WESTERN CASE, INC.**, 14351 Chambers Rd., Tustin, CA 92680, Tel: 714-838-8460, FAX: 714-838-3039; Sls. Mgr.: David B. Horne

**WESTERN DATACOM CO., INC.**, 959 Bassett Rd., Westlake, OH 44145, Tel: 216-835-1510, 800-262-3311, FAX: 216-835-9146; Empl: 15; Sls. Mgr.: Philip Ardire; Dist. Mgr.: Linda Naughton

**THE WESTERN DESIGN CENTER, INC.**, 2166 East Brown Rd., Mesa, AZ 85213, Tel: 602-962-4545, FAX: 602-835-6442

**WESTERN DIGITAL CORP.**, 8105 Irvine Center Drive, Irvine, CA 92718, Tel: 714-932-6000, FAX: 714-932-6498; Empl: 6500; Sls. Mgr.: Tom DeMarchi

**WESTERN ELECTRO-MECHANICAL CO., INC.**, 300 Broadway, Oakland, CA 94607, Tel: 415-452-1936, FAX: 415-452-1939; Empl: 9; Sls. Mgr.: Hal Johnson

**WESTERN ELCTRN. COMPS. CORP.**, 1250-A Avenida Acaso, Camarillo, CA 93012, Tel: 805-482-8002, FAX: 805-482-8675; Empl: 25; Sls. Mgr.: Diane Ziese

**WESTERN ELECTRONIC PRODUCTS CO.**, 915-G Calle Amanecer, San Clemente, CA 92673, Tel: 714-492-4677, FAX: 714-492-5952; Empl: 6; Sls. Mgr.: Tony English



**FAX: 714-855-0895**

**WESTERN GRAPHTEC, INC.**, 11 Vanderbilt, Irvine, CA 92718-2067, Tel: 714-770-6010, 800-854-8385; FSC No.: 6625; Empl: 850; Sls. Mgr.: Larry Roberson; Dist. Mgr.: Grant Smith  
**D-1417**

#### Local Sales Offices & Reps

AZ Chandler, Vic Myers Assocs. .... 602-241-9324  
 CA Irvine, Western Graphtec ..... 714-770-6010  
 CO Aurora, Vic Myers Assocs. .... 303-629-9676  
 FL Boca Raton, Western Graphtec ..... 407-392-4550  
 IL Arlington Hgts, Comtel Midwest ..... 312-392-4040  
 IN Indianapolis, Comtel Midwest ..... 317-253-1681  
 KS Shawnee Mission, Comtel Midwest ..... 913-268-0672  
 MA Andover, Western Graphtec ..... 508-470-1806  
 MA Hopkinton, Eastern Sys. .... 508-435-2151  
 MI Milford, T.M.S. .... 313-360-1514  
 MN Wayzata, Comtel Midwest ..... 612-476-1551  
 MO St. Peters, Western Graphtec ..... 314-279-3951  
 NM Albuquerque, Vic Myers Assocs. .... 505-294-1791  
 NY Cedar Grove, K.L.S. .... 201-785-4450  
 NY Kings Pk, K.L.S. .... 516-724-3155  
 OH Beavercreek, T.M.S. .... 513-429-1142  
 OH Westlake, T.M.S. .... 216-327-3527  
 PA Bridgeville, T.M.S. .... 412-221-2338  
 UT Salt Lake City, Vic Myers ..... 801-581-1760  
 VA Hampton, Sel-Tronics ..... 804-827-6308  
 WI New Berlin, Comtel Midwest ..... 414-544-6042

**WESTERN MULTIPLEX CORP.**, 310 Harbor Blvd., Belmont, CA 94002, Tel: 415-592-8832, TELEX: 295114 VIA RCA, FAX: 415-592-4249; FSC No.: 94-2620670; Empl: 52; Sls. Mgr.: Graham Barnes

**WESTERN RESERVE ELECTRONICS**, 2150 Highland Rd., Twinsburg, OH 44087, Tel: 216-425-4951, FAX: 216-425-4956; Empl: 100; Sls. Mgr.: Robert Rhodes

**WESTINGHOUSE ELECTRIC CORP.**, Control Division, P.O. Box 819, Oldsmar, FL 34667, Tel: 813-855-4621, TELEX: 358713; Empl: 330; Sls. Mgr.: E.M. Tempest

**WEST INSTRUMENT**, A Mark IV Company, Rte. 2 & Middle Rd., E. Greenwich, RI 02818, Tel: 401-884-4188, FAX: 401-884-4872; Empl: 150; Sls. Mgr.: Warden Hunt; Dist. Mgr.: Warden Hunt

**WESTLAKE COMPONENTS INTERNATIONAL**, 30961 Agoura Rd. Ste.311, Westlake Village, CA 91361, Tel: 800-228-1097, FAX: 818-707-1754; Sls. Mgr.: Rick Odorfer

**WESTON INSTRUMENTS**, Electrical Instrument Service, Inc., 25 Dock St., Mt. Vernon, NY 10550, Tel: 914-699-9717; FSC No.: 32590; Empl: 35; Sls. Mgr.: Gerald D. Frank; Dist. Mgr.: Gerald D. Frank

**WESTREX PRODUCTS**, 25 Denby Rd., Boston, MA 02134, Tel: 617-254-1200, FAX: 617-254-6848; Empl: 200; Sls. Mgr.: Joe Grimaldi

**WESTRONICS INC. OF TEXAS**, A Baker Hughes Co., 5001 Blue Mound Rd., Box 961003, Ft. Worth, TX 76161, Tel: 817-625-2311, FAX: 817-625-1068; Empl: 130; Sls. Mgr.: Jim Bittikoff

**WESTVACO-STATIC CONTROL**, 311 Industry Ave., P.O. Box 1675, Springfield, MA 01101-1675, Tel: 413-787-9783, FAX: 413-787-9626; Sls. Mgr.: Arthur Semle

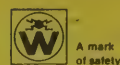
**WHEELLOCK, INC.**, 273 Branchport Ave., Long Branch, NJ 07740, Tel: 908-222-6880, FAX: 908-222-8707; Empl: 200; Sls. Mgr.: William L. Goldstein, Sls./Mktg. VP

**WHITE-RODGERS LOGANSPOUT DIV.**, See Stancor/ White Rodgers

**S.S. WHITE TECHNOLOGIES INC.**, 151 Old New Brunswick Rd., Piscataway, NJ 08854-3761, Tel: 908-752-8300, FAX: 908-752-3750; FSC No.: 0KZS2; Empl: 100; Sls. Mgr.: Craig Griffin; Dist. Mgr.: Pam Barnhard

**WHITE TECHNOLOGY, INC.**, Bowmar Instrument Corp., 4246 E. Wood St., Phoenix, AZ 85040, Tel: 602-437-1520, FAX: 602-437-9120; FSC No.: 54230; Empl: 93; Sls. Mgr.: Steve McComb, Bob Faris

**WHITMOR WIRE & CABLE CORP.**, 27737 Ave. Hopkins, Valencia, CA 91355, Tel: 805-257-2400, FAX: 805-257-2495; FSC No.: 15851; Empl: 29; Sls. Mgr.: Mark Lee; Dist. Mgr.: Mark Lee



**Wickmann USA, Inc.**

**FAX: 404-699-9176**

**WICKMANN USA, INC.**, 4100 Shirley Drive, Atlanta, GA 30336, Tel: 404-699-7820; Empl: 600-650; Sls. Mgr.: Michael V. Nagle; Dist. Mgr.: Joyce Bullard  
**B-1394-1398**

#### Local Sales Offices & Reps

CA Arcadia, Van Gott & Assoc. .... 818-445-9728  
 CA San Jose, Ruppert Sls. & Engrg. .... 408-998-8717  
 FL Ft. Lauderdale, Stock Elctms. .... 305-978-9875  
 GA Atlanta, JWL Assoc. .... 404-518-8500  
 IL Crystal Lake, Golbeck Miliota Assoc. .... 815-459-0504  
 IN Indianapolis, J.C. Hofstetter Co. .... 317-897-7914  
 MD Baltimore, Muncy Sls. Assocs. .... 410-484-6376  
 MA Needham Hgts, Rosen & Assocs. .... 617-449-4700  
 MI Grand Rapids, R.P. Urban & Assocs. .... 616-245-0511  
 MN Minneapolis, RK Sls. .... 612-571-1001  
 NJ Monmouth Junction, S.E.A. Co., Inc. .... 908-821-4100  
 NC Charlotte, JWL Assoc. .... 704-541-5750  
 OH Medina, J.C. Hofstetter Co. .... 216-725-4477  
 OR Beaverton, Temper Tech. Mktg. .... 503-292-8201  
 TX Dallas, Fern Comps. .... 214-234-1069

#### Local Distributors

CA Sunnyvale, Target Elctms. .... 408-733-0384  
 CA Van Nuys, Fuses Unlimited .... 818-786-8111  
 CA Yorba Linda, Target Elctms. .... 714-692-1630  
 FL Ft. Lauderdale, Stock Elctms. .... 305-978-9875  
 IL Crystal Lake, Right Dists. .... 815-459-0645  
 MA Sharon, Adcour Inc. .... 617-784-8123  
 MN Roseville, Parts 1 .... 612-633-8079  
 NJ Orange, Actionfuse Co. .... 800-232-3873  
 OH Cincinnati, Schuster Elctms. .... 800-521-1358  
 OH Twinsburg, Schuster Elctms. .... 216-425-8134  
 OR Beaverton, Comp. Resources Inc. .... 800-537-5494  
 TX Dallas, Fuses Unltd. .... 214-907-8600  
 TX Tomball, Wofford Elctms. .... 713-351-2255  
 UT Salt Lake City, Intermountain Fuse .... 801-265-8333  
 WA Kent, Comp. Resources Inc. .... 800-547-6523  
 WI Milwaukee, Progressive Image, Inc. .... 800-686-7764  
 Can Downsview, Ont., PS Comps., Inc. .... 416-665-9546

**WIDE BAND ENGINEERING CO., INC.**, Box 21652, Phoenix, AZ 85036, Tel: 602-254-1570, FAX: 602-254-1570; FSC No.: 58907; Empl: 10

**WIDE RANGE ELCTRNS. CORP.**, 174 Chesterfield Indl. Blvd., Chesterfield, Missouri 63005, Tel: 314-532-5887, FAX: 314-532-5492; Empl: 11; Sls. Mgr.: Donald Toone

**WIELAND INC.**, 49 International Rd., Burgaw, NC 28425, Tel: 919-259-5050, FAX: 919-259-3691; FSC No.: 06229; Empl: 100; Sls. Mgr.: Carl Gruenberg, V.P. Sls. & Mktg.; Dist. Mgr.: Steve Vineis

**WIKO, LTD.**, 10490 West 164th Place, Orlando Park, IL 60462, Tel: 1-800-323-1107, FAX: 1-800-241-9928; Empl: 40; Sls. Mgr.: Jerry Francis

**WILBRECHT ELECTRONICS**, 346 Chester St., St. Paul, MN 55107, Tel: 612-222-2791, FAX: 612-222-7639; Empl: 150; Sls. Mgr.: R. Vermilyea



**FAX: 317-293-9462**

**WILCO CORP.**, 6451 Saguaro Court, Indianapolis, IN 46268, Tel: 317-293-9300 ... **A-1309-1313, 2604-2605**

#### Local Sales Offices & Reps

IL Arlington Heights, M.B. Sls. .... 708-392-9499



**WILCO WIRE & CABLE CO., INC.**, 1921 Las Plumas Ave., San Jose, CA 95133, Tel: 408-926-8880, FAX: 408-251-0508; Empl: 52; *Sls. Mgr.*: Joe Shepherd; *Dist. Mgr.*: Sylvia Nesi

**WILCOXON RESEARCH, INC.**, 21 Firstfield Rd., Gaithersburg, MD 20878, Tel: 301-330-8811, FAX: 301-330-8873 ..... **B-2025**

**WILKORSON INSTRUMENT COMPANY INC.**, 2915 Parkway St., Lakeland, FL 33811, Tel: 813-646-3909, FAX: 813-644-5318; Empl: 56; *Sls. Mgr.*: Julie Unger

**WILKINSON, P.O.** Box 4558, Westlake Village, CA 91359, Tel: 818-889-0050, 800-822-4653, FAX: 818-889-3810; Empl: 28; *Sls. Mgr.*: R. Cook; *Dist. Mgr.*: R. Cook

**WL WILLIAMSON & ASSOC. LTD.**, 528 S. Extension Rd., Mesa, AZ 85210, Tel: 602-833-5202, FAX: 602-833-5529; Empl: 3

**WILLIAMSON CORPORATION**, 70 Domino Dr., Concord, MA 01742, Tel: 508-369-9607, FAX: 508-369-5485; FSC No.: 92-3343 WILLIAMSON WCRD; Empl: 25; *Sls. Mgr.*: William R. Barron

**WILMAR ELECTRONICS, INC.**, 2430 Amster St., Torrance, CA 90505, Tel: 310-326-6668, FAX: 310-326-9147; FSC No.: 25248; Empl: 25; *Sls. Mgr.*: Zev Heifetz

*Local Sales Offices & Reps*  
CA Emeryville, Davis Gregory & Doll ..... 415-428-9103  
CA Fountain Valley, J.S.B. Engrg. .... 714-546-5402  
GA Atlanta, Sls. of Georgia, Inc. .... 404-875-7726  
NJ Flanders, Guido Assocs. .... 201-347-4643

**WILMORE ELECTRONICS CO., INC.**, Box 1329, Hillsborough, NC 27278, Tel: 919-732-9351, TELEX: 292617, FAX: 919-732-9359; Empl: 48; *Sls. Mgr.*: J. L. Harris ..... **D-2041, 2218-2220, 2306-2307**

**WILSON COMPANY-SYSTEMS DIVISION**, 16301 Addison Road, Dallas, TX 75248, Tel: 214-931-8666, 800-580-1212, FAX: 214-248-1177; Empl: 65; *Sls. Mgr.*: Jerry Herrin; *Dist. Mgr.*: Jerry Herrin

**WILSON, H. F., ENGINEERING CO.**, 475 Taft Ave., Glen Ellyn, IL 60137, Tel: 708-469-7473, FAX: 708-469-8663; Empl: 21; *Sls. Mgr.*: Robert W. Carroll; *Dist. Mgr.*: Howard Wilson

**WILTRON**, 490 Jarvis Dr., Morgan Hill, CA 95037-2809, Tel: 408-778-2000, TELEX: 285227 WILTRON MH, FAX: 408-778-0239; FSC No.: 20944; Empl: 800

**THE WINATIC CORP.**, Electro-Technik Industries, Inc., 409 Commerce Rd., Vestal, NY 13850, Tel: 607-729-6318, FAX: 607-729-6446; Empl: 125; *Sls. Mgr.*: Ted Zaparzynski

**WINEGARD CO.**, 3000 Kirkwood St., Burlington, IA 52601-2000, Tel: 319-754-0600, FAX: 319-754-0787; Empl: 300; *Sls. Mgr.*: James Riffel, *Sls. Dir.*

**WINSYSTEMS, INC.**, 715 Stadium Dr., Arlington, TX 76011, Tel: 817-274-7553, FAX: 817-548-1358; FSC No.: 1AU87

**WINTK CORP.**, 1801 South St., Lafayette, IN 47904-2993, Tel: 317-448-1903, 800-742-6809, FAX: 317-448-4823; Empl: 10 ..... **D-1146**

**WIREBENDERS, INC.**, 2440 W. Mission Ln., Ste. 910, Phoenix, AZ 85021-2824, Tel: 602-861-1856, FAX: 602-870-9242; FSC No.: 5950/FSCS/CAGE 1DA26; Empl: 22

**WIRE GRAPHICS, INC.**, 95 Sherwood Ave., Farmingdale, NY 11735, Tel: 516-293-1525, FAX: 516-293-1607; Empl: 23; *Sls. Mgr.*: Nat Stettin

**THE WIREMOLD COMPANY**, 60 Woodlawn Street, W. Hartford, CT 06110, Tel: 203-233-6251, FAX: 203-232-2062; Empl: 900; *Sls. Mgr.*: Scott Bartosch

**WIRE-PRO, INC.**, 23 Front Street, Salem, NJ 08079, Tel: 609-935-7601, 609-935-7651, TWX: 510-680-4750, FAX: 609-935-0102; FSC No.: FSCN 50738; Empl: 225; *Sls. Mgr.*: Russell Morgan, *Sls. & Svc. Mgr.*: Phil Negrin, *Mktg. Mgr.*

**WOLFRAM RESEARCH, INC.**, 100 Trade Center Drive, Champaign, IL 61820-7237, Tel: 217-398-0700, FAX: 217-398-0747; Empl: 1000; *Sls. Mgr.*: Zoe Molier; *Dist. Mgr.*: Roy Chumko

**WONDERWARE**, 16 Technology, Ste 154, Irvine, CA 92718, Tel: 714-727-3200; Empl: 45; *Sls. Mgr.*: Jerry Brooks; *Dist. Mgr.*: Rick Mellor

**WONTRONICS**, 3048 N. Coolidge Ave., Los Angeles, CA 90039, Tel: 213-660-6230, FAX: 213-913-2299; *Sls. Mgr.*: Frank Phillips

**WORLD PRODUCTS INC.**, 19654 8th St. East, Sonoma, CA 95476, Tel: 707-996-5201, TELEX: Worldpro snom 171715, FAX: 707-996-3380; FSC No.: 410966309; Empl: 445; *Sls. Mgr.*: Mark Beynon  
.. **A-1177, 2050-2051, 2224-2225; B-1128-1129, 1399**

*Local Sales Offices & Reps*  
AZ Scottsdale, American Mktg. .... 602-948-2778, FAX: 602-860-4455  
AZ Tempe, Spectrum Assocs., Inc. .... 602-966-1788, FAX: 602-966-1726  
CA Anaheim (North), Jay Mktg. Assocs. .... 714-768-7519, FAX: 714-581-1211  
CA Anaheim (South), Jay Mktg. Assocs. .... 714-974-7182, FAX: 714-283-2915  
CA Fullerton, Jay Mktg. Assocs. .... 714-870-9573, FAX: 714-870-1448  
CA Mission Viejo, Jay Mktg. Assocs. .... 714-768-7519, FAX: 714-581-1211  
CA Mt. View, Straube Assocs. Inc. .... 415-969-6060, FAX: 415-964-6526  
CA Newport Bch. (NEC only), S.P.A. Elctrn. Sls. .... 714-863-1193, FAX: 714-863-1250  
CA Northridge, Jay Mktg. Assocs. .... 818-363-6308, FAX: 818-363-6790  
CA San Jose (NEC only), Signet Tech. Sls. .... 408-453-0611, FAX: 408-453-0633  
CO Englewood, Purdy Co. Assocs. .... 303-790-2211, FAX: 303-790-2230  
CT Bloomfield, Zaslows Sls. Co., Inc. .... 203-242-7781, FAX: 203-243-9442  
FL Boca Raton, Aurora-Schmitt Assocs. .... 407-392-9497, FAX: 407-392-9497  
FL Orlando, Aurora-Schmitt Assocs. .... 407-297-6039, FAX: 407-297-6039  
GA Alpharetta, Pinnacle Mktg. .... 404-410-9980, FAX: 404-410-9980  
IL Arlington Hgts, Davix Intl. Ltd. .... 708-259-5300, FAX: 708-259-5428  
IN Indianapolis, Elctrn. Sls. & Engrg. .... 317-849-4260, FAX: 317-841-0231  
IA Marion, Associated Elctrn. Mktg., Inc. .... 319-377-1129, FAX: 319-377-1539  
MD Towson, Arbotek Assocs., Inc. .... 410-825-0775, FAX: 410-337-2781  
MI Livonia, Lowell-Wendt Mktg. Co. .... 313-464-2722, FAX: 313-464-3123  
MN Minneapolis, Tecteam Sls. Inc. .... 612-854-6616, FAX: 612-854-8031  
MO St. Louis, AEM, Inc. .... 314-298-9900, FAX: 314-298-8660  
NJ Marlton, BGR Assocs. .... 609-983-1020, FAX: 609-983-1879  
NM Albuquerque, Syntech .... 505-266-7951, FAX: 505-292-4411  
NY Hauppauge, Aurora-Schmitt Assocs. .... 516-434-1313, FAX: 516-434-1572  
NY New Hartford, Franklin Sls. .... 315-793-3161, FAX: 315-793-3139  
NY Pittsford, Franklin Sls. .... 716-248-8251, FAX: 716-248-3866  
NC Raleigh, Pinnacle Mktg. .... 919-848-0404, FAX: 919-848-0101  
NC Wilmington, Pinnacle Mktg. .... 919-686-4696, FAX: 919-686-4697  
OH Dayton, Baehr Greenleaf & Assocs. (BGA) .... 513-439-0724, FAX: 513-439-0387  
OH Dayton, John Stephenson & Assoc. .... 513-435-0745, FAX: 513-435-7902  
OH Westlake, Baehr Greenleaf & Assoc. .... 216-892-1770, FAX: 216-892-1771  
OR Beaverton, Luscombe Engrg. .... 503-636-6664, FAX: 503-697-7611  
PA Pittsburgh, Baehr Greenleaf & Assoc. .... 412-934-3990, FAX: 412-934-3088  
TX Austin, Comp. Technlg. .... 512-288-7328, FAX: 512-288-7372  
TX Dallas, Comp. Technlg. .... 214-783-8831, FAX: 214-783-4801  
TX Houston, Comp. Technlg. .... 713-690-3011, FAX: 713-462-9906  
WA Bellevue, Luscombe Engrg. .... 206-643-1463, FAX: 206-649-9120  
WI Menomonee Falls, Davix Intl. Ltd. .... 414-255-1600, FAX: 414-255-1863

*Local Distributors*  
AL Huntsville, All American .... 205-837-1555, FAX: 205-837-7732  
AL Huntsville, Repton Elctrn. Inc. .... 205-722-9500, FAX: 205-722-9565  
CA Corona, Compumech Elctrn. .... 714-278-4761, FAX: 714-278-4761  
CA Milpitas, Compumech Elctrn. .... 408-945-9100, FAX: 408-945-9395

CA San Diego, All American .... 619-458-5850  
CA San Diego, All American .... 619-458-5850, FAX: 619-458-5866  
CA San Diego, Neumann .... 619-695-3005, FAX: 619-695-0935  
CA San Jose, All American Semiconductor Inc. .... 408-943-1200, FAX: 408-943-1393  
CA Santa Clara, Trinity Elctrn. .... 408-980-9011, FAX: 408-980-9014  
CA Sunnyvale, Target Elctrn. .... 408-733-0384, FAX: 408-733-0397  
CA Thousand Oaks, Compumech Elctrn. .... 805-492-6299, FAX: 805-492-8429  
CA Torrance, All American Semiconductor Inc. .... 310-320-0240, FAX: 310-320-7207  
CA Yorba Linda, Target Elctrn. .... 714-692-1630, FAX: 714-692-1547  
CO Aurora, QPS .... 303-373-2766, FAX: 303-373-4029  
FL Ft. Lauderdale, Repton Elctrn. .... 305-735-1112, FAX: 305-735-1121  
FL Melbourne, Pridmore .... 407-727-2491, FAX: 407-723-1213  
FL Miami, All American Semiconductor Inc. .... 305-621-8282, FAX: 305-620-7831  
FL Sunrise, All American Semiconductor Inc. .... 305-572-7999, FAX: 305-749-9229  
FL Tampa, Repton Elctrn. .... 813-854-2351, FAX: 813-855-0942  
GA Athens, Resource Elctrn. .... 706-613-7755, FAX: 706-613-7856  
GA Norcross, Repton Elctrn. .... 404-446-1300, FAX: 404-446-2991  
ID Boise, Radar Elctrn. .... 208-337-2227, FAX: 208-337-2322  
IL Chicago, All American .... 312-659-9075, FAX: 312-477-9962  
IL Lisle, Components Inc. .... 708-852-7707, FAX: 708-852-0263  
IL Schaumburg, QPS Elctrn., Inc. .... 708-884-6620, FAX: 708-884-7573  
IL Schaumburg, Repton Elctrn. .... 708-882-1700, FAX: 708-882-8904  
IL Wheeling, All American .... 708-970-8976, FAX: 708-537-5631  
IA Des Moines, Midstate .... 515-244-7231, FAX: 515-244-0828  
MD Rockville, All American Semiconductor Inc. .... 800-426-0420, FAX: 301-251-8574  
MA Norwood, Emtel .... 617-769-9500, FAX: 617-769-8329  
MA Wakefield, All American Semiconductor Inc. .... 617-246-2300, FAX: 617-246-2305  
MI Livonia, Repton Elctrn. .... 313-525-2700, FAX: 313-525-3209  
MN Eden Prairie, All American Semiconductor Inc. .... 612-944-2151, FAX: 612-944-9803  
MN Minnetonka, Repton Elctrn. .... 612-938-0000, FAX: 612-938-3995  
MO Fenton, Beckwith Elctrn. .... 314-343-6463, FAX: 314-343-7026  
MO St. Charles, Finnigan Elctrn. .... 314-946-6201, FAX: 314-724-8956  
NE Omaha, Mid-State Distbn. Co. .... 402-592-5965, FAX: 402-331-7382  
NE Omaha, Midstate .... 402-592-5965  
NJ West Berlin, GCI .... 609-768-6767, FAX: 609-768-3649  
NM Albuquerque, Betatron .... 505-821-1122, FAX: 505-828-0450  
NY Penh Yan, Advacom .... 315-536-2221  
NY Ronkonkoma, All American Semiconductor .... 516-981-3935, FAX: 516-981-3947  
NC Charlotte, Resource Elctrn. .... 704-521-8682, FAX: 704-558-4696  
NC Hickory, Resource Elctrn. .... 704-328-1130, FAX: 704-328-8318  
NC Raleigh, Repton Elctrn. .... 919-870-5189, FAX: 919-870-5210  
NC Raleigh, Resource Elctrn. .... 919-829-0704, FAX: 919-527-9647  
NC Winston-Salem, Resource Elctrn. .... 919-724-5961, FAX: 919-723-7024  
OH Dayton, Advacom, Inc. .... 513-274-5900, FAX: 513-274-9124  
OH Middleburg, Advacom, Inc. .... 216-826-3300, FAX: 216-826-1669  
OH Solon, Repton Elctrn. .... 216-349-1415, FAX: 216-349-1634  
OR Portland, Radar Elctrn. .... 503-232-3404, FAX: 503-235-0428  
PA Harrisburg, Cumberland Elctrn. .... 717-232-5999, FAX: 717-238-5379  
PA McKean, Advacom Inc. .... 814-476-7774, FAX: 814-476-7724  
PA York, Advacom, Inc. .... 717-741-9277, FAX: 717-741-9462  
SC Columbia, Resource Elctrn. .... 803-779-5332, FAX: 803-765-9276  
SC Greenville, Resource Elctrn. .... 803-297-1430, FAX: 803-297-1439



SC No. Charleston, Resource Elctms. .... 803-552-2671,  
FAX:803-552-2676  
TN Gray, Resource Elctms. .... 615-477-2131,  
FAX:615-477-4407  
TN Oakridge, Resource Elctms. .... 615-481-3393,  
FAX:615-481-3397  
TX Austin, Omni Pro Elctms. .... 512-794-9200,  
FAX:512-338-9576  
TX Carrollton, Omni Pro Elctms. .... 214-713-9000,  
FAX:214-732-8743  
TX Houston, Omni Pro Elctms. .... 713-270-1700,  
FAX:713-270-8020  
TX Richardson, All American Semiconductor  
..... 214-231-5300,FAX:214-437-0353  
UT Salt Lake City, All American ..... 801-682-8313,  
FAX:801-261-3885  
VA Charlottesville, Virginia Elctm. Comp.  
..... 804-296-4184,FAX:804-971-8411  
WA Edmonds, Oman & Assocs. .... 206-774-1887,  
FAX:206-771-2296  
WA Richland, Radar Elctms. .... 509-943-8336,  
FAX:509-943-6790  
WA Seattle, Radar Elctms. .... 206-282-2511,  
FAX:206-282-1598  
WA Spokane, Radar Elctms. .... 509-747-3053,  
FAX:509-456-8069  
WI Lisle, Comps. Inc. .... 414-529-4106,  
FAX:708-852-0263  
WI Milwaukee, QPS Elctms. .... 414-789-7577,  
FAX:708-884-7573  
Can Calgary, Alb. Memco ..... 403-258-3399,  
FAX:403-258-3459  
Can Ontario, Sanbek Sls. .... 519-746-5801,  
FAX:519-746-6561  
Can Ontario, Utech ..... 416-609-2900,FAX:416-609-2588  
Can St. Laurent, Que., C.I.E. Elctms. .... 514-342-2447,  
FAX:514-342-4073  
Can St. Laurent, Que., Versatech Elctms. .... 514-335-3833,  
FAX:514-355-0307  
Can Surrey, B.C., Memco ..... 604-590-1553,  
FAX:604-590-5008  
KS Lenexa, Associated Elctm. Mktg., Inc.  
..... 913-888-0022,FAX:913-888-4848


**FAX: 707-996-3380**

**WORLD PRODUCTS INC., Systems Design Grp.,**  
19654 8th St. E., Sonoma 95476, Tel: 707-996-5201; Empl:  
50 ..... **A=1177, 2050-2051, 2224-2225; B=1128-1129,**  
**1399**

**Local Sales Offices & Reps**

AZ Tempe, Spectrum Assocs. .... 602-966-1788  
CA Los Angeles, SPA Elctm. Sls. .... 714-863-1193  
CA San Jose, Signet Tech. Sls. .... 408-453-0611  
CO Denver, Donohue Sls. Co. .... 303-455-1719  
FL Melbourne, R-Rep Co., Inc. .... 407-242-9800  
IL Arlington, KMA Sls. Co. .... 312-398-5300  
IN Fort Wayne, Berberich Assoc. .... 219-486-0673  
MN Minneapolis, Holmgren Assocs. .... 612-786-7641  
NJ Livingston, Avermark Tech. Mktg. .... 201-992-5331  
OH Dayton, Berberich Assocs. Inc. .... 513-433-0342  
OR Beaverton, Luscombe Engrg./N.W. .... 503-636-6664  
PA Hatboro, AQS Electro ..... 215-674-4421  
TX Dallas, Southwestern Tech. Sls. .... 214-369-0977  
VA Herndon, Stinson Assocs. .... 703-620-1332  
WA Bellevue, Luscombe Engrg./N.E. .... 206-643-1463  
WI Milwaukee, KMA Sls. Co. .... 414-259-1771  
Can Montreal, ELI Manis Inc. .... 514-484-2923

**Local Distributors**

AL Huntsville, Repton Elctms. Inc. .... 205-722-9500,  
FAX:205-722-9565  
CA Anaheim, Compumech Elctms. .... 714-939-9100,  
FAX:714-939-9113  
CA Milpitas, Compumech Elctms. .... 408-945-9100,  
FAX:408-945-9395  
CA San Diego, All American ..... 619-458-5850  
CA San Diego, Neumann ..... 619-695-3005,  
FAX:619-695-0935  
CA San Jose, All American Semiconductor  
..... 408-943-1200,FAX:408-943-1393  
CA Santa Clara, Trinity Elctms. .... 408-980-9011,  
FAX:408-980-9014  
CA Sunnyvale, Target Elctms. .... 408-733-0384,  
FAX:408-733-0391  
CA Torrance, All American Semiconductor  
..... 800-831-8300,FAX:310-320-7207  
CA Yorba Linda, Target Elctms. .... 714-692-1630,  
FAX:714-692-1547  
CT Yalesville, Schaal ..... 203-269-3779,  
FAX:203-284-2159

FL Ft. Lauderdale, Repton Elctms. .... 305-735-1112,  
FAX:305-735-1121  
FL Melbourne, Pridmore ..... 407-727-2491,  
FAX:407-723-1213  
FL Miami, All American Semiconductor ..... 305-621-8282,  
FAX:305-620-7831  
FL Sunrise, All American Semiconductor  
..... 305-572-7999,FAX:305-749-9229  
FL Tampa, Repton Elctms. .... 813-854-2351,  
FAX:813-855-0942  
FL Winter Park, Deanco ..... 407-671-5100,  
FAX:407-679-0361  
GA Augusta, Dixie Elctms. .... 404-722-2055,  
FAX:404-722-0388  
GA Marietta, Deanco ..... 404-429-0126,  
FAX:404-429-0333  
GA Norcross, Repton Elctms. .... 404-446-1300,  
FAX:404-446-2991  
ID Boise, Radar Elctms. .... 208-336-2222,  
FAX:208-336-2327  
IL Lisle, Components Inc. .... 708-852-7707,  
FAX:708-852-0263  
IL Schaumburg, Repton Elctms. .... 708-882-1700,  
FAX:708-882-8904  
IA Cedar Rapids, Mid-State Distbg. Co. .... 800-798-9411,  
FAX:319-365-9411  
IA Des Moines, Mid-State Distbg. Co. .... 515-244-7231,  
FAX:515-244-0828  
IA Mason City, Mid-State Distbg. Co. .... 800-798-8012,  
FAX:515-423-8012  
IA Ottawa, Mid-State Distbg. Co. .... 800-937-5407,  
FAX:515-682-5407  
MD Gaithersburg, Deanco ..... 301-948-5444,  
FAX:301-963-6469  
MA Burlington, Schaal ..... 617-272-7940,  
FAX:617-272-3343  
MA Norwood, Emtel ... 617-769-9500,FAX:617-769-8329  
MA Wakefield, All American Semiconductor  
..... 617-246-2300,FAX:617-246-2305  
MI Livonia, Repton Elctms. .... 313-525-2700,  
FAX:313-525-3209  
MN Eden Prairie, All American Semiconductor  
..... 612-944-2151,FAX:612-944-9803  
MN Minnetonka, Repton Elctms. .... 612-938-0000,  
FAX:612-938-3995  
MO Fenton, Beckwith Elctms. .... 314-343-6463,  
FAX:314-343-7026  
NE Omaha, Mid-State Distbg. Co. .... 402-592-5965,  
FAX:402-331-7382  
NJ Fairfield, Deanco ..... 201-575-7960,  
FAX:201-575-3606  
NM Albuquerque, Betatron ..... 505-821-1122,  
FAX:505-828-0450  
NY Hauppauge, Schaal ..... 516-434-7700,  
FAX:516-434-7111  
NY Ithaca, Deanco .... 607-257-4444,FAX:607-257-3678  
NY Penn Yan, Advacom Technlg. .... 315-536-2221,  
FAX:315-536-0828  
NY Ronkonkoma, All American Semiconductor  
..... 800-874-2830,FAX:516-981-3947  
NC Charlotte, Dixie Elctms. .... 704-377-4348,  
FAX:704-377-2561  
NC Raleigh, Deanco .... 919-851-2065,FAX:919-859-4806  
NC Raleigh, Repton Elctms. .... 919-870-5189,  
FAX:919-870-5210  
NC Winston-Salem, Dixie Elctms. .... 919-724-5961,  
FAX:919-723-7024  
OH Cleveland, Advacom, Inc. .... 216-826-3300,  
FAX:216-688-5914  
OH Solon, Repton Elctms. .... 216-349-1415,  
FAX:216-349-1634  
OH Worthington, Repton Elctms. .... 614-436-6675,  
FAX:614-436-4285  
OR Portland, Radar Elctms. .... 503-232-3404,  
FAX:503-235-0428  
PA Harrisburg, Cumberland Elctms. .... 717-232-5999,  
FAX:717-238-5379  
PA McKean, Advacom, Inc. .... 814-476-7774,  
FAX:814-476-7724  
PA Philadelphia, Deanco ..... 215-735-3678  
SC Columbia, Dixie Elctms. .... 803-779-5332,  
FAX:803-765-9276  
SC Greenville, Dixie Elctms. .... 800-868-2260,  
FAX:803-297-1439  
SC No. Charleston, Dixie Elctms. .... 803-868-3336,  
FAX:803-552-2676  
TN Gray, Dixie Elctms. .... 615-477-3938,  
FAX:615-477-4407  
TN Oakridge, Dixie Elctms. .... 615-481-3393,  
FAX:615-938-4133  
TX Austin, Omni Pro Elctms. .... 512-794-9200,  
FAX:512-338-9576  
TX Dallas, Omni Pro Elctms. .... 214-233-0500,  
FAX:214-245-7508  
TX Houston, Omni Pro Elctms. .... 713-270-1700,  
FAX:713-270-8020  
TX Richardson, All American Semiconductor  
..... 214-231-5300,FAX:214-437-0353

VA Charlottesville, Virginia Elctms. Comps.  
..... 804-296-4184,FAX:804-971-8411  
VA Virginia Beach, Deanco ..... 804-499-3322,  
FAX:804-499-1038  
WA Richland, Radar Elctms. .... 509-943-8336,  
FAX:509-943-6790  
WA Seattle, Radar Elctms. .... 206-282-2511,  
FAX:206-282-1598  
WA Spokane, Radar Elctms. .... 509-747-3053,  
FAX:509-456-8069  
Can Nepean, Ont., Zanin Elctms. .... 613-596-2911,  
FAX:613-596-2915  
Can St. Foy, Que., Zanin Elctms. .... 418-681-1262,  
FAX:418-681-1264  
Can St. Laurent, Que., Zanin Elctms. .... 514-342-6211,  
FAX:514-342-4071  
Can Toronto, Ont., Zanin Elctms. .... 416-674-7220,  
FAX:416-674-7836

**'WORLD' TEST SYSTEMS, INC.,** P. O. Drawer 1428,  
Waynesboro, VA 22980, Tel: 703-949-6753, FAX: 703-  
943-3826; *Sls. Mgr:* Buford H. Baber

**WOVEN ELECTRONICS, Woven Electronics**  
Corporation, 1001 Old Stage Rd., Simpsonville, SC  
29881, Tel: 803-963-5131, TWX: 810-963-5131, FAX: 803-  
963-1761; Empl: 400; *Sls. Mgr:* Tommy Little

**WPI GROUP, INC.,** 18 Mill St., Warner, NH 03278, Tel: 603-  
456-3111, FAX: 603-456-2498; Empl: 115; *Sls. Mgr:* Paul  
D. Iversen

**WSI, 47280 Kato Rd., Fremont, CA 94538, Tel: 510-656-5400,**  
800-451-5970 (USA), FAX: 510-657-5916; Empl: 150; *Sls.*  
*Mgr:* Bob Hoard; *Dist. Mgr:* Mike Speckman

**WYLE LABS, See Electronic Enclosures**

**XANTREX TECHNOLOGY INC.,** 3873 Airport Way,  
Bellingham, WA 98227-9754, Tel: 206-671-2966, FAX:  
206-671-3095; *Sls. Mgr:* Michael Rodger; *Dist. Mgr:*  
Michael Rodger

**XCEL CORPORATION, See Digitran and Computron**  
Display Sys. Divs.

**XCEL CONTROLS, INC.,** 1600 W. 6th St., Mishawaka, IN  
46544, Tel: 219-259-7804, FAX: 219-259-5769; Empl: 40;  
*Sls. Mgr:* Bruce Shepard

**XCP, INC.,** 40 Elm St., P.O. Box 819, Dryden, NY 13053, Tel:  
607-844-9143; *Sls. Mgr:* Diane Rademacher

**XEDAR CORP.,** 2500 Central Ave., Boulder, CO 80301, Tel:  
303-443-6441, FAX: 303-443-6444; *Sls. Mgr:* Andy  
Zeidler

**XELTEK, 757 N. Pastoria Ave., Sunnyvale, CA 94086, Tel:**  
408-524-1935, FAX: 408-245-7084; Empl: 19; *Sls. Mgr:*  
Andrew Rao; *Dist. Mgr:* Brian Lee

**XENON CORP.,** 20 Commerce Way, Woburn, MA 01801,  
Tel: 617-938-3594, FAX: 617-933-8804; Empl: 45; *Sls.*  
*Mgr:* Louis R. Panico

**XENOTRONIX INC.,** 26074 Ave., Hall No. 10, Valencia, CA  
91355, Tel: 805-257-4793, FAX: 805-257-1093; *Dist. Mgr:*  
L. Geery, T. Dos Santos, M. Mitchner

# Xentek

**FAX: 619-471-4021**

**XENTEK, INC., Taiyo Yuden USA, Inc.,** 1770 La  
Costa Meadows Dr., San Marcos, CA 92069, Tel: 619-471-  
4001; FSC No.: 53279; Empl: 220; *Sls. Mgr:* Chuck Henry  
**D=2042-2047, 2308-2309**

**Local Sales Offices & Reps**

AL Madison, Lamons Sls. Co. .... 205-461-7886  
CA Huntington Bch., Regan/Munro Sls. Inc. .... 714-841-1411  
CA San Jose, Ruppert Sls. & Eng. .... 408-998-8717  
CO Denver, AC Mktg. .... 303-433-1648  
FL Ft. Lauderdale, Post Mktg. .... 305-989-2931  
FL Indian Harbor Bch., Post Mktg. .... 407-777-0994  
GA Norcross, Lamons Sls. Co. .... 404-242-2610  
IL Itasca, LTD Technlg., Inc. .... 708-773-2900  
IA Cedar Rapids, Midtec Assocs. .... 319-395-0028  
KS Lenexa, Midtec Assoc. .... 913-541-0505  
MA Chelmsford, Waterstate Sls. .... 508-256-2287



|                                                 |              |
|-------------------------------------------------|--------------|
| MI Farmington Hills, Carter, McCormick & Pierce | 313-477-7700 |
| NJ Medford, Mech-Elec. Sls.                     | 609-654-8209 |
| MN Richfield, Clay Rep Co.                      | 612-861-2191 |
| MO St. Louis, Midtec Assocs.                    | 314-275-8666 |
| NH Nashua, Bell Controls                        | 603-882-6984 |
| NC Raleigh, Lamons Sls. Co.                     | 919-846-1652 |
| NJ Fairfield, Astroprep                         | 201-808-0025 |
| NY Babylon, Astroprep                           | 516-422-2500 |
| NY Dewitt, ICS                                  | 315-445-9600 |
| OH Cincinnati, Tri-State Mktg.                  | 513-761-7993 |
| OR Portland, E-Square                           | 503-292-8204 |
| PA Pittsburgh, Carter, McCormick & Pierce       |              |
|                                                 | 412-826-3800 |
| TN Greenville, Lamons Sls. Co.                  | 615-639-8711 |
| TX Austin, Pro Comp                             | 512-331-0800 |
| TX Houston, Pro Comp                            | 713-977-8550 |
| TX Hurst, Pro Comp                              | 817-589-0336 |
| TX Richardson, Pro Comp                         | 214-669-1500 |
| VA Richmond, Mech-Elec Sls.                     | 804-231-4006 |
| WA Bellevue, E-Square                           | 206-637-0302 |
| WI Milwaukee, LTD Technlg.                      | 414-774-1000 |

**XERCON, INC.**, P.O. Box 554, Portland, OR 97207, Tel: 503-292-8682, FAX: 503-292-8697; Empl: 6; Sls. Mgr: G. Osgood

**XEROX CORPORATION**, United States Customer Operations, Xerox Square, 0-5, Rochester, NY 14644, Tel: 800-832-6979; Empl: 100,900

**XETEL CORPORATION**, 2525 Brookton Dr., Austin, TX 78758, Tel: 512-834-2266, FAX: 512-834-9250; Empl: 395; Sls. Mgr: Mark Trutna

**XICO, INC.**, 9737 Eton Ave., Chatsworth, CA 91311, Tel: 818-709-4403, FAX: 818-709-5235; Empl: 21; Sls. Mgr: Robert Browning

**XICON CAPACITORS**, P.O. Box 170537, Arlington, TX 76003, Tel: 800-628-0544, FAX: 817-473-1808; Sls. Mgr: Drey Hayford; Dist. Mgr: Buck Johnson

**XICOR, INC.**, 851 Buckeye Court, Milpitas, CA 95035, Tel: 408-432-8888, TWX: 910-379-0033, FAX: 408-432-0640; FSC No.: 60395; Empl: 1010; Sls. Mgr: Bruce Mattem, VP Sls.; Dist. Mgr: Bruce Mattem

**XILINX CORP.**, 2100 Logic Drive, San Jose, CA 95124, Tel: 408-559-7778, FAX: 408-559-7114

# XITRON

## TECHNOLOGIES

**FAX: 619-458-9213**

**XITRON TECHNOLOGIES**, 10225 Barnes Canyon Rd., San Diego, CA 92121, Tel: 619-458-9852; Empl: 10; Sls. Mgr: Stephen Merrill **D-1335**

**XKD CORPORATION**, Dynatech, 101 Cooper Court, Los Gatos, CA 95030, Tel: 408-395-3700, FAX: 408-354-2606; Sls. Mgr: Skip McLaughlin

**XL MICROWAVE**, 5811 Racine St., Oakland, CA 94609, Tel: 510-428-9488, FAX: 510-428-9469; Empl: 7; Sls. Mgr: William J. Ariz

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#### Local Sales Offices & Reps

|                                          |              |
|------------------------------------------|--------------|
| AL Huntsville, Murco Corp.               | 205-539-8476 |
| AZ Phoenix, Western High Tech. Mktg.     | 602-266-2070 |
| CA Los Altos, Kolm Mktg. Assoc.          | 415-948-2635 |
| CA Mission Viejo, Chaparral Elctrn. Sls. | 714-582-2950 |
| FL Ocala, Florida Electro Comps.         | 904-351-4125 |
| IL Schaumburg, Sieger Assocs.            | 708-381-7403 |
| KS MidTech Assoc., Inc.                  | 913-541-0505 |
| KS Lenexa, Midtec Assoc. Inc.            | 913-541-0505 |
| KY Ft. Mitchell, G. W. Thelen Co.        | 606-341-8181 |
| MD Ellicott City, VPI, Inc.              | 410-461-2525 |
| MA Amesbury, Carl Sheys Assoc. Ltd.      | 508-388-3616 |
| MN Eden Prairie, Aldridge Assocs., Inc.  | 612-944-8433 |
| NJ Hasbrouck Heights, Comp. Tech. Sls.   |              |
|                                          | 201-288-7400 |
| NY E. Syracuse, R. D. Sherman            | 315-433-1165 |
| NC Winston-Salem, Murco Corp.            | 919-722-9445 |
| PA Montgomeryville, Rulco Sys. Comps.    | 215-368-8495 |
| TX Sherman, Repmaster                    | 214-247-6263 |
| EXP NY, Great Neck, Techcomp Intl.       | 516-466-2167 |
| OH Ft. Mitchell, G.W. Thelen Co.         | 606-341-8181 |

**XYLOG CORP.**, 83 Hobart St., Hackensack, NJ 07601, Tel: 201-489-4040, FAX: 201-489-6745; Empl: 30; Sls. Mgr: Milton Frank

**XYLOGICS, INC.**, 53 Third Ave., Burlington, MA 01803, Tel: 800-225-3317, FAX: 617-273-5392; Empl: 165; Sls. Mgr: Bernard D. Olmsted; Dist. Mgr: Joe Twardy

**XYZ ELECTRONICS**, 4700 N. 600 W., McCordsville, IN 46055, Tel: 317-335-2128, FAX: 317-335-2128; Empl: 5

**YAMAICHI ELECTRONICS, INC.**, Yamaichi Electronics Co., Ltd., 1420 Koll Circle, Ste.B, San Jose, CA 95112, Tel: 408-452-0797, FAX: 408-452-0799; Empl: 24; Sls. Mgr: Bob Million; Dist. Mgr: Jim Bennett

**YARDNEY TECHNICAL PRODUCTS, INC.**, 82 Mechanic St., Pawcatuck, CT 06379, Tel: 203-599-1100, TELEX: 6813114, TWX: 710-470-0260; FSC No.: 87362; Empl: 250; Sls. Mgr: Louis R. Magnarella, VP

**YELLOW SPRINGS INSTRUMENTS CO.**, Box 279, Yellow Springs, OH 45387, Tel: 800-765-4974, TELEX: 205437, FAX: 513-767-9353; Empl: 359; Sls. Mgr: Michael Flora **B-1909-1910**

#### Local Sales Offices & Reps

|                                           |              |
|-------------------------------------------|--------------|
| AZ Chandler, Elec-Corn Assocs.            | 602-893-2930 |
| CA San Dimas, RDX Corp.                   | 714-599-0985 |
| GA Atlanta, Craft Assocs.                 | 404-256-0420 |
| IL Lombard, Patrick & Douglas             | 708-268-1900 |
| KS Shawnee, Cornel Midwest                | 913-268-0762 |
| MA Natick, Andruss-Peskin                 | 800-878-3919 |
| MI Canton, Tech-Rep, Inc.                 | 313-981-1950 |
| MN Minneapolis, Automation Sensors, Inc.  |              |
|                                           | 612-537-6416 |
| MO Chesterfield, Advanced Indl. Sys.      | 314-532-2477 |
| NJ Scotch Plains, RJM Sls.                | 908-322-7880 |
| NY Syracuse, Labtronics                   | 315-455-7314 |
| OH Chesterfield, EQS Assoc.               | 216-729-2222 |
| PA Chadds Ford, RJM Sls.                  | 215-358-4014 |
| VA Richmond, Advanced Control             | 804-282-9499 |
| Can Scarborough, Ont., Finnan Engr. Prod. |              |
|                                           | 416-438-6070 |

#### Local Distributors

|                                      |              |
|--------------------------------------|--------------|
| CA Foster City, Therm-X              | 415-571-1166 |
| MA Natick, Andruss-Peskin            | 508-853-3919 |
| NJ Scotch Plains, RJM Sls.           | 201-322-7880 |
| OH Dayton, RDP Corp.                 | 513-253-6175 |
| Can Scarborough, Ont., Finnan Engrd. | 416-438-6070 |

**YOUNG TECHNOLOGY**, 48012 Fremont Blvd., Fremont, CA 94538, Tel: 510-490-6373, FAX: 510-490-3214; Empl: 30; Sls. Mgr: Ian McLean; Dist. Mgr: Ian McLean

**YSI INCORPORATED**, See Yellow Springs Instrument Co.

# YUASA

## EXIDE INC.

**FAX: 215-378-0345**

**YUASA-EXIDE, INC.**, 645 Penn St., Reading, PA 19601, Tel: 215-378-0333; Empl: 2000; Sls. Mgr: Ronn Alonso, Francis Taylor, Bill McKenty; Dist. Mgr: Greg Rapp **D-1485**

#### Local Sales Offices & Reps

|                                              |              |
|----------------------------------------------|--------------|
| AL Huntsville, Over & Over                   | 205-837-7105 |
| AZ Tempe, Westrep                            | 602-820-9932 |
| CA Huntington Beach, West Elctns.            | 310-493-5569 |
| CA San Diego, West Elctns.                   | 619-233-0236 |
| CA Santa Clara, Novatronix                   | 408-727-9530 |
| CO Denver, Lindberg Co.                      | 303-758-9033 |
| CT North Haven, Kitchen & Kutchin            | 203-939-0212 |
| FL Altamonte Springs, Over & Over            | 407-332-1222 |
| FL Coral Springs, Over & Over                | 305-753-7050 |
| FL Tampa, Over & Over                        | 813-626-9100 |
| GA Norcross, Over & Over                     | 404-449-6205 |
| IL Arlington Heights, Brainard-Nielsen       | 708-437-2700 |
| IA Cedar Rapids, R.W. Kunz & Assocs.         | 319-396-5386 |
| KS Prairie Vlg., R.W. Kunz & Assocs.         | 913-648-3535 |
| KS Wichita, R. W. Kunz & Assocs.             | 316-686-3436 |
| MD Hunt Valley, Samuel K. MacDonald          | 410-584-8631 |
| MA Burlington, Kitchen & Kutchen             | 617-229-2660 |
| MN Anoka, Tech. Solutions                    | 612-750-6122 |
| MO St. Louis, R.W. Kunz & Assocs.            | 314-966-4799 |
| NJ Berkeley Hgts., Cambridge Allen & Assocs. |              |
|                                              | 908-464-0203 |

|                                       |              |
|---------------------------------------|--------------|
| NC Charlotte, Over & Over             | 704-542-9111 |
| NC Raleigh, Over & Over               | 919-876-7338 |
| OH Columbus, McFadden Sls.            | 614-761-3177 |
| OR Beaverton, Westmark Elctns.        | 503-641-8780 |
| PA Monroeville, Samuel K. MacDonald   | 412-373-1723 |
| TX Richardson, Krone & Assocs.        | 214-437-1892 |
| UT Salt Lake City, Lindberg Co.       | 801-484-8689 |
| WA Bellevue, Westmark Elctns.         | 206-454-1944 |
| WI Manitowoc, Brainard-Nielsen        | 414-797-7940 |
| Can Mississauga, Ont., Tech-Trek Ltd. | 416-238-0366 |
| Can Nepean, Ont., Tech-Trek Ltd.      | 613-225-5161 |
| Can Richmond, B.C., Tech-Trek Ltd.    | 604-276-8735 |
| Can St. Laurent, Que., Tech-Trek Ltd. | 514-337-7540 |

#### Local Distributors

|                                             |              |
|---------------------------------------------|--------------|
| AZ Glendale, Lyntronics                     | 602-931-5981 |
| CA Buena Park, Cypress Elctns.              | 714-521-5230 |
| CA Costa Mesa, House of Batteries           | 714-462-8222 |
| CA Santa Clara, Cypress Elctns.             | 408-980-2500 |
| FL Miami, Elctrn. Equip.                    | 305-871-3500 |
| GA Norcross, Applied Power                  | 404-263-0421 |
| HI Honolulu, Elctrn. Equip.                 | 808-533-3881 |
| IL Downers Grove, Jarbo Battery             | 312-964-9358 |
| MD Beltsville, Mark Elctns.                 | 301-595-5040 |
| MA Middleboro, Glynn Elctns.                | 617-947-4262 |
| MI Brighton, Applied Power                  | 313-229-6550 |
| MN Minneapolis, Bergquist Co.               | 612-835-2322 |
| NI Salem, Cronin Elctns.                    | 603-898-4440 |
| NJ Clifton, Engrd. Assemblies               | 201-340-0600 |
| NY Farmingdale, Battery Expeditors          | 516-752-0111 |
| NY Flushing, W & W Assocs.                  | 718-961-2103 |
| NY Rochester, Masline Elctns.               | 716-546-5373 |
| NC Raleigh, Engrd. Assemblies               | 919-790-9700 |
| OH Columbus, Whitehead Elctns.              | 614-224-1186 |
| OH Solon, Repco Elctns.                     | 216-248-8900 |
| OR Portland, Standard Batteries of Portland |              |
|                                             | 503-234-7251 |
| TX Allen, Prime Distrib.                    | 214-231-0170 |
| WA Redmond, Priebe Elctns.                  | 206-881-2363 |
| EXP National & Canada, Newark Elctns.       | 800-367-3573 |
| Can Brampton, Ont., Zentronics              | 416-451-8445 |

**ZAKI CORPORATION**, 420 Maple St., Marlboro, MA 01752, Tel: 508-480-0201, FAX: 508-481-0595; Sls. Mgr: Steven Sotsky

**ZAMBRE CO., INC.**, 2134 Old Middlefield Way, Mountain View, CA 94043, Tel: 415-968-9176, FAX: 415-968-4851; FSC No.: 58758; 5950; Empl: 20 Average

**ZAXTEK**, 42 Corporate Pk. Ste. 100, Irvine, CA 92714, Tel: 714-474-1170, 800-421-0982, FAX: 714-474-0159; Empl: 15; Sls. Mgr: Robert J. Parente, Dir. of Sls. & Mktg.

**Z COMMUNICATIONS, INC.**, 9939 Via Pasar, San Diego, CA 92126, Tel: 619-621-2700, FAX: 619-621-2722; FSC No.: 1564A; Empl: 20; Sls. Mgr: Devang Patel

**ZEBRA TECHNOLOGIES CORPORATION**, 333 Corporate Woods Pkwy., Vernon Hills, IL 60061-3109, Tel: 708-634-6700, TELEX: 206230, FAX: 708-913-8766; Sls. Mgr: Kevin O'Donnell

**CARL ZEISS, INC.**, One Zeiss Drive, Thornwood, NY 10594, Tel: 800-233-2343, FAX: 914-681-7446

**ZENDEX CORP.**, 6780 Sierra Court, Ste. A, Dublin, CA 94568, Tel: 510-828-3000, TWX: 910-389-4009, FAX: 510-828-1574; Empl: 20; Sls. Mgr: Russ Gamble

**ZENITH MAGNETICS**, Zenith Electronics Corp., 1000 Milwaukee Ave., Glenview, IL 60025-2493, Tel: 708-391-8700; Sls. Mgr: Bob Cunningham; Dist. Mgr: Allan Parker

#### Local Sales Offices & Reps

|                                    |              |
|------------------------------------|--------------|
| AZ Scottsdale, Vikeland Sls., Inc. | 602-948-7921 |
| CA Dana Point, Electro Venture     | 909-496-5225 |



|    |                                        |              |
|----|----------------------------------------|--------------|
| CA | Laguna Hills, Electro Venture-s        | 714-581-9244 |
| CA | Santa Clara, Ross Mktg. Assoc.         | 408-988-8111 |
| CO | Denver, Tech Rep. Sls.                 | 303-758-7031 |
| CO | Englewood, Tech. Rep. Sls.             | 303-799-8877 |
| CT | Franklin, OEM Mktg. & Sls.             | 313-572-0516 |
| FL | Clearwater, Tech. Rep. Assocs.         | 813-572-9900 |
| IL | Arlington Hts, Hill Sls. Corp.         | 708-255-4400 |
| MA | Bellingham, OEM Mktg. & Sls.           | 508-528-4983 |
| MI | Farmington Hills, Carter Technlg. Inc. | 313-477-7700 |
| MN | Minneapolis, Comstrand, Inc.           | 612-574-9480 |
| NH | Salem, OEM Mktg. & Sls.                | 603-893-1197 |
| NY | Pittsford, Elcom Sls, Inc.             | 716-385-1400 |
| OH | Cleveland, S-Tek                       | 216-468-0413 |
| OR | Portland, Jos. V. Belusko Co.          | 503-222-4279 |
| PA | Willow Grove, Tech Sls. Assoc.         | 215-784-0170 |
| TX | Dallas, MGR Elctms.                    | 214-238-5246 |
| VA | Alexandria, Mid-States Mktg. Inc.      | 703-370-2600 |

**ZERCOM CORPORATION**, P.O. Box 84, Zercom Drive, Merrifield, MN 56465-0084, Tel: 218-765-3151, FAX: 218-765-3900; Empl: 160; Sls. Mgr.: Jeff Zernov

**ZERO CABINETS (STANTRON)**, 12224 Montague St., Pacoima, CA 91331-2226, Tel: 818-890-3445, FAX: 818-890-4460; FSC No.: 06514; Empl: 125; Sls. Mgr.: G. A. Tessier C\*1118-1123

| Local Sales Offices & Reps |                                          |              |
|----------------------------|------------------------------------------|--------------|
| AL                         | Huntsville, Esneault Assocs.-BJR         | 205-881-3569 |
| AZ                         | Phoenix, Sheffer/Kahn                    | 602-581-0884 |
| CA                         | Camarillo, Luscombe Engrg.               | 805-388-2058 |
| CA                         | Long Bch., Luscombe Engrg.               | 310-594-5994 |
| CA                         | Mission Viejo, Luscombe Engrg.           | 714-855-8954 |
| CA                         | Montrose, Luscombe Engrg.                | 818-249-9000 |
| CA                         | Pleasanton, Moulthrop Sls.               | 510-463-0450 |
| CA                         | San Diego, Qualtronic                    | 619-695-0118 |
| CA                         | Thousand Oaks, Luscombe Engrg.           | 805-377-8415 |
| CO                         | Golden, J. F. Hurlbut Co.                | 303-279-7796 |
| FL                         | Indiana Rocks Bch., P & M Tech. Sls. Co. | 813-593-3248 |
| IL                         | Elk Grove Village, Carlson Elctm. Sls.   | 708-956-8240 |
| IA                         | Cedar Rapids, Carlson Elctm. Sls.        | 319-378-1450 |
| MD                         | Rockville, Marktron, Inc.                | 301-251-8990 |
| MA                         | Palmer, Benoit & Co.                     | 617-833-8343 |
| MN                         | Bloomington, Elctm. Sls. Agcy.           | 612-884-8291 |
| MO                         | Raytown, Cadon Tech. Sls.                | 816-356-7685 |
| MO                         | St. Louis, Cadon Tech. Sls.              | 314-645-8670 |
| NH                         | Hudson, Benoit & Co.                     | 603-598-3291 |
| NM                         | Albuquerque, S & S Technlgs.             | 505-298-7177 |
| NY                         | Commack, MTR Inc.                        | 516-462-9580 |
| NY                         | New Hyde Pk., MTR Inc.                   | 516-326-8138 |
| NY                         | Syracuse, Fountain, Young & Co., Inc.    | 315-437-7733 |
| OH                         | Cincinnati, KCH Co.                      | 513-931-1686 |
| OR                         | Tiger, Halbar-R.T.S. Inc.                | 503-624-5741 |
| PA                         | Boswell, B.E. Gibson, Co.                | 814-629-6772 |
| PA                         | Southampton, Campbell Assocs.            | 215-322-6630 |
| TX                         | Houston, Barry Sls.                      | 713-784-5860 |
| TX                         | Richardson, Barry Sls.                   | 214-234-0255 |
| UT                         | Salt Lake City, Effective Sls.           | 801-266-9617 |
| VA                         | Martinsville, Engrg. Reps Assocs.        | 703-632-2365 |
| WA                         | Redmond, Halbar-R.T.S. Inc.              | 206-882-0990 |
| WA                         | Vashon, Halbar-R.T.S. Inc.               | 206-285-1363 |
| WI                         | Waukegan, Carlson Elctm. Sls.            | 414-476-2790 |

**ZERO EAST, Zero Corporation**, 288 Main St., Monson, MA 01057-0128, Tel: 413-267-5561, FAX: 413-267-5569; FSC No.: 1400; Empl: 235; Sls. Mgr.: John S. Drylowicz (Cabinets) C\*1124-1127

| Local Sales Offices & Reps |                                     |              |
|----------------------------|-------------------------------------|--------------|
| AL                         | Huntsville, BJR Mfrs. Reps.         | 205-881-3569 |
| AZ                         | Phoenix, Howe & Howe Sls.           | 602-264-7971 |
| CA                         | Montrose, Luscombe Engr. Co.        | 818-249-9000 |
| CA                         | Pleasanton, Moulthrop Sls., Inc.    | 510-463-0450 |
| CA                         | San Diego, Qualtronic               | 619-695-0118 |
| CA                         | San Jose, Qualtronic                | 415-955-0119 |
| CO                         | Golden, J.F. Hurlburt               | 303-279-7796 |
| FL                         | Indian Rocks Bch., P & M Tech. Sls. | 813-593-3248 |
| IA                         | Cedar Rapids, Carlson Elctm. Sls.   | 319-378-1450 |
| MD                         | Rockville, Marktron, Inc.           | 301-251-8990 |
| MA                         | Monson, Zero East (House Acct.)     | 413-267-5561 |
| MA                         | Palmer, Benoit & Co.                | 617-833-8343 |
| MN                         | Bloomington, Elctm. Sls. Agency     | 612-884-8291 |
| MO                         | St. Louis, Cadon Tech. Sls.         | 314-645-8670 |
| NM                         | Albuquerque, S & S Technlgs.        | 505-298-7177 |
| NY                         | Commack, MTR, Inc.                  | 516-462-9580 |
| NY                         | Syracuse, Fountain, Young Co.       | 315-437-7733 |
| OH                         | Cincinnati, Kenneth C. Hoffman Co.  | 513-931-1686 |
| OR                         | Portland, Halbar-R.T.S., Inc.       | 503-244-4123 |
| PA                         | Boswell, B.E. Gibson Co.            | 814-629-6772 |

|     |                                       |              |
|-----|---------------------------------------|--------------|
| PA  | Huntingdon Valley, Inacker Sls., Inc. | 215-947-5660 |
| TX  | Richardson, Barry Sls., Inc.          | 214-234-0255 |
| UT  | Salt Lake City, Effective Sls.        | 801-266-9617 |
| VA  | Martinsville, Engrg. Reps.            | 703-632-2365 |
| WA  | Redmond, Halbar-R.T.S., Inc.          | 206-882-0990 |
| WA  | Vashon, Halbar-R.T.S., Inc.           | 206-285-1363 |
| Can | Montreal, Jelco                       | 514-522-6038 |

**ZERO ENCLOSURES, Zero Corp.**, 200 North 500 West, North Salt Lake, Utah 84054-0310, Tel: 801-298-5900, FAX: 801-292-9450; Empl: 285; Sls. Mgr.: Doug Griffith, V.P.

**ZERO CORP.**, Zero East Div., 288 Main St., Monson, MA 01057-0128, Tel: 413-267-5561, FAX: 413-267-5569; FSC No.: 19178; Empl: 380; Sls. Mgr.: Roger St. Martin

**ZERO PLASTICS, Zero Corp.**, 288 Main St., Monson, MA 01092, Tel: 413-267-5561, FAX: 413-267-3179; FSC No.: 03663; Empl: 110; Sls. Mgr.: Kathy Odiome

**ZETA GRAPHICS CORP.**, 737 E. Arnold Dr., Martinez, CA 94553, Tel: 510-313-5900, FAX: 510-372-7431; Empl: 70; Sls. Mgr.: Gary Hasenfus, VP Sls. Mktg.



**FAX: 516-864-7630**

**ZETEX, INC., Zetex plc.**, 87 Modular Avenue, Commack, NY 11725, Tel: 516-543-7100; Sls. Mgr.: Joseph M. DeBlasio A\*2227

| Local Sales Offices & Reps |                                         |              |
|----------------------------|-----------------------------------------|--------------|
| AZ                         | Huntsville, ACM, Inc.                   | 205-881-5493 |
| AL                         | Phoenix, Repronix, Ltd.                 | 602-230-2630 |
| CA                         | Milpitas, Ward Elctms.                  | 408-945-0420 |
| CA                         | San Diego, Cerco                        | 619-693-7500 |
| CA                         | Westlake Village, First Rep of Southern | 805-373-0887 |
| CT                         | Clinton, Stone Comp. Sls.               | 203-669-4344 |
| FL                         | Casselberry, American Micro Sls.        | 407-831-2505 |
| FL                         | Tarpon Springs, American Micro Sls.     | 813-938-3073 |
| FL                         | West Palm Beach, American Micro Sls.    | 407-689-3860 |
| GA                         | Norcross, ACM, Inc.                     | 404-448-7025 |
| IL                         | Park Ridge, Metcom Assocs.              | 708-696-1490 |
| IN                         | Fort Wayne, Scott Elctms.               | 219-489-5690 |
| IN                         | Indianapolis, Scott Elctms.             | 317-841-0010 |
| IA                         | Cedar Rapids, M.I.N.K. Assocs.          | 319-393-0373 |
| KS                         | Overland Park, M.I.N.K. Assocs.         | 913-341-8309 |
| MA                         | Framingham, Stone Comp. Sls., Inc.      | 508-875-3266 |
| MI                         | Grand Rapids, Urban Assocs., Inc.       | 616-245-0511 |
| MI                         | Livonia, Urban Assocs., Inc.            | 313-421-9150 |
| MN                         | Eden Prairie, Electro Mark Inc.         | 612-944-5850 |
| MO                         | Brighton, M.I.N.K. Assocs.              | 314-291-5454 |
| NJ                         | Fairfield, Metro Logic                  | 201-575-5585 |
| NM                         | Albuquerque, Repronix, Ltd.             | 505-292-1718 |
| NY                         | Binghamton, Micro-Tech                  | 607-771-8867 |
| NY                         | New Plaz, Micro-Tech                    | 914-255-7019 |
| NY                         | Rochester, Micro-Tech                   | 716-426-0806 |
| NC                         | Charlotte, JWL Assocs.                  | 704-541-5750 |
| NC                         | Raleigh, JWL Assocs.                    | 919-787-4826 |
| OH                         | Cincinnati, Scott Elctms.               | 513-791-2513 |
| OH                         | Cleveland, Scott Elctms.                | 216-473-5050 |
| OH                         | Dayton, Scott Elctms.                   | 513-294-0539 |
| OH                         | Westerville, Scott Elctms.              | 614-882-6100 |
| OR                         | Portland, General Elctms.               | 503-297-8500 |
| TX                         | Austin, Oeler & Menelaides              | 512-453-0275 |
| TX                         | Dallas, Oeler & Menelaides              | 214-361-8876 |
| TX                         | The Woodlands, Oeler & Menelaides       | 713-894-5021 |
| WA                         | Stanwood, Gen. Elctms.                  | 206-246-8096 |
| WI                         | West Allis, Metcom Assocs.              | 414-476-1300 |
| Can                        | Mississauga, GMA                        | 416-671-8111 |
| Can                        | Nepean, Ont., GMA                       | 613-820-3822 |
| Can                        | St. Laurent, GMA                        | 514-336-9572 |
| Can                        | Vancouver, GMA                          | 604-439-3383 |
| Local Distributors         |                                         |              |
| AL                         | Huntsville, All American Semiconductor  | 205-837-1555 |
| CA                         | San Diego, All American Semiconductor   | 619-458-5850 |
| CA                         | San Jose, All American                  | 408-943-1200 |
| CA                         | San Jose, Jaco                          | 408-432-9290 |
| CA                         | Torrance, All American                  | 310-320-0240 |
| CA                         | Tustin, Jaco                            | 714-258-9003 |
| CA                         | Westlake, Jaco                          | 805-495-9998 |
| FL                         | Boca Raton, Jaco                        | 407-241-7943 |

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|-----|--------------------------------------------|--------------|
| FL  | Miami, All American                        | 305-621-8282 |
| FL  | Surprise, All American                     | 305-572-7999 |
| ID  | Boise, Radar Elec.                         | 208-336-2227 |
| IL  | Rosemont, Advent                           | 708-297-6200 |
| IN  | Indianapolis, Advent                       | 317-872-4910 |
| IA  | Cedar Rapids, Advent                       | 319-363-0221 |
| MD  | Columbia, Jaco                             | 410-995-6620 |
| MD  | Rockville, All American                    | 301-251-1205 |
| MA  | Tewksbury, Jaco                            | 508-640-0010 |
| MA  | Wakefield, All American                    | 617-246-2300 |
| MI  | Farmington Hills, Advent                   | 313-477-1650 |
| MN  | Eden Prairie, All American                 | 612-944-2151 |
| MN  | Fridley, Voyager                           | 612-571-7766 |
| MN  | Thief River Falls, Digi-Key Corp.          | 218-681-6674 |
| MO  | St. Louis, Ric-Tronics                     | 314-997-4707 |
| NJ  | Fairfield, Microcomp Comps.                | 201-227-8007 |
| NJ  | West Berlin, Gen. Comps.                   | 609-768-6767 |
| NY  | Hauapauge, Jaco                            | 516-273-5500 |
| NY  | Penn Yan, Advacom Technlg                  | 513-536-2221 |
| NY  | Ronkonkoma, All American                   | 616-981-3935 |
| NY  | Ronkonkoma, Mast Distrs.                   | 516-471-4422 |
| NY  | Spring Valley, Sota-Tech Inc.              | 914-425-5900 |
| NC  | Raleigh, Jaco                              | 919-876-7767 |
| OH  | Cincinnati, Schuster                       | 513-489-1400 |
| OH  | Cleveland, Schuster                        | 216-285-8134 |
| PA  | Mc Kean, Advacom Inc.                      | 814-476-7774 |
| TX  | Austin, Jaco                               | 512-835-0220 |
| TX  | Richardson, All American                   | 214-231-5300 |
| TX  | Richardson, Jaco                           | 214-234-5565 |
| UT  | Salt Lake City, All American Semiconductor | 801-261-4210 |
| WA  | Richland, Radar Elec.                      | 509-943-8336 |
| WA  | Seattle, Radar Elec.                       | 206-282-2511 |
| WA  | Spokane, Radar Elec.                       | 509-747-3053 |
| WI  | West Allis, Advent Elctms.                 | 414-475-6860 |
| Can | Surrey, BC, Martin Elctm. Mktg. Corp.      | 604-590-1553 |

**ZEUS INDL. PRODS. INC.**, P.O. Box 2167, Orangeburg, SC 29116, Tel: 803-531-2174, 800-526-3842, FAX: 803-533-5694; FSC No.: 32039; Empl: 350; Sls. Mgr.: Jamie McLean, OEM Sls. Mgr.; Dist. Mgr.: Heather Bernardo, Distr. Sls. Mgr.

**ZEVEATECH, INC.**, 2700 Gateway Centre Blvd., Morrisville, NC 27560, Tel: 919-460-0111, FAX: 919-469-0480; Empl: 29; Dist. Mgr.: Bob Black

**ZEXCO**, 5526 Murieta Ave., Van Nuys, CA 91401, Tel: 818-997-7895

**ZIATECH**, 3433 Roberto Ct., San Luis Obispo, CA 93401, Tel: 805-541-0488, FAX: 805-541-5088; Empl: 65; Sls. Mgr.: Ron Giovannelli

**ZILOG, INC.**, 210 East Hacienda Avenue, Campbell, CA 95008-6600, Tel: 408-370-8000, TWX: 910-338-7621

**ZIPPERTUBING CO.**, Box 61129, Los Angeles, CA 90061, Tel: 310-527-0488, FAX: 310-767-1714; Empl: 60; Sls. Mgr.: Mike Sullivan

**ZI-TECH INSTRUMENT CORP.**, P.O. Box 51845, Palo Alto, CA 94303-0725, Tel: (415) 326-2151, FAX: 415-325-1276; Empl: 7; Sls. Mgr.: J. Ziman

**ZITEL CORPORATION**, 630 Alder Drive, Milpitas, CA 95035, Tel: 408-321-9600, 800-622-5020, FAX: 408-321-9696; Empl: 160; Sls. Mgr.: Don Olker; Dist. Mgr.: Don Olker

**Z-LINE POWER CONTROLLERS**, See Pulizzi Engineering, Inc.

**ZMAN MAGNETICS**, 7633 South 180th, Kent, WA 98032, Tel: 206-251-8064, FAX: 206-251-6264; Empl: 40; Sls. Mgr.: Mark Mennella A\*1315, 2606

| Local Sales Offices & Reps |                               |              |
|----------------------------|-------------------------------|--------------|
| CA                         | Mountain View, Bridge Mktg.   | 415-965-9045 |
| OR                         | Beaverton, Eclipse Mktg. Grp. | 503-642-1661 |
| WA                         | Redmond, Eclipse Mktg. Grp.   | 206-885-6991 |

**Z-WORLD ENGINEERING**, 1724 Picasso Ave., Davis, CA 95616, Tel: 916-757-3737, FAX: 916-753-5141; Empl: 18; Sls. Mgr.: Carrie Maha; Dist. Mgr.: Kelli Binsky

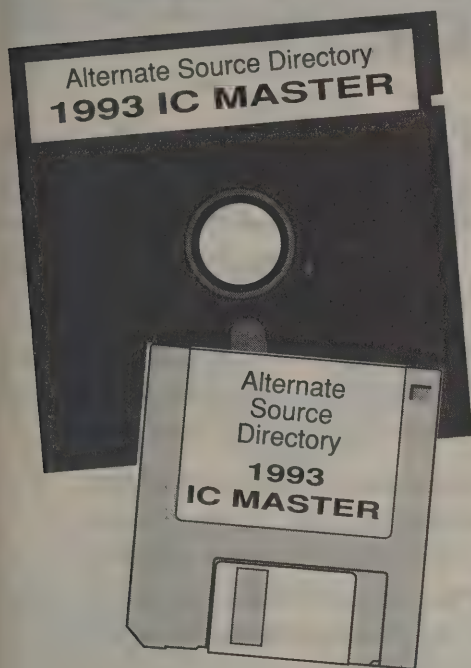
**ZYLAB CORPORATION**, 100 Lexington Dr., Buffalo Grove, IL 60089, Tel: 708-459-8000, FAX: 708-459-8054; Empl: 21; Sls. Mgr.: Beth Harvey

**ZYTRONICS, INC.**, 70 Tirrell Hill Road, Bedford, NH 03110, Tel: 603-623-8888, FAX: 603-623-4009; Empl: 100; Sls. Mgr.: Debra Lemieux



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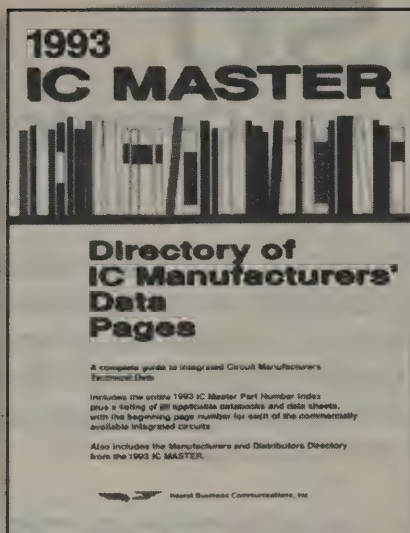
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## CHARACTERISTICS OF BATTERIES AND FUEL CELLS

| System                         | Anode                         | Cathode               | Theoretical battery |                    | Practical battery        |                       |                    |
|--------------------------------|-------------------------------|-----------------------|---------------------|--------------------|--------------------------|-----------------------|--------------------|
|                                |                               |                       | Voltage,<br>V       | Capacity,<br>Ah/kg | Typical<br>voltage,<br>V | Capacity <sup>a</sup> |                    |
|                                |                               |                       |                     |                    |                          | Wh/kg                 | Wh/dm <sup>3</sup> |
| Primary:                       |                               |                       |                     |                    |                          |                       |                    |
| Leclanche                      | Zn                            | MnO <sub>2</sub>      | 1.6                 | 230                | 1.2                      | 65                    | 175                |
| Magnesium                      | Mg                            | MnO <sub>2</sub>      | 2.0                 | 270                | 1.5                      | 100                   | 195                |
| Organic cathode                | Mg                            | <i>m</i> -DNB         | 1.8                 | 1,400              | 1.15                     | 130                   | 180                |
| Alkaline MnO <sub>2</sub>      | Zn                            | MnO <sub>2</sub>      | 1.5                 | 230                | 1.15                     | 65                    | 200                |
| Mercury                        | Zn                            | HgO                   | 1.34                | 185                | 1.2                      | 80                    | 370                |
| Mercad                         | Cd                            | HgO                   | 0.9                 | 165                | 0.85                     | 45                    | 175                |
| Silver oxide                   | Zn                            | AgO                   | 1.85                | 285                | 1.5                      | 130                   | 310                |
| Zinc-air                       | Zn                            | Air (O <sub>2</sub> ) | 1.6                 | 815                | 1.1                      | 200                   | 190                |
| Li-organic electrolyte         | Li                            | <i>b</i>              | 2.1-5.4             | 130-660            | 1.8-3.2                  | 250                   | 400                |
| Secondary:                     |                               |                       |                     |                    |                          |                       |                    |
| Lead-acid                      | Pb                            | PbO <sub>2</sub>      | 2.1                 | 55                 | 2.0                      | 37                    | 70                 |
| Edison                         | Fe                            | Ni oxides             | 1.5                 | 195                | 1.2                      | 29                    | 65                 |
| Nickel-cadmium                 | Cd                            | Ni oxides             | 1.35                | 165                | 1.2                      | 33                    | 60                 |
| Silver-zinc                    | Zn                            | AgO                   | 1.85                | 285                | 1.5                      | 100                   | 170                |
| Silver-cadmium                 | Cd                            | AgO                   | 1.4                 | 230                | 1.05                     | 55                    | 120                |
| Zinc-nickel oxide              | Zn                            | Ni oxides             | 1.75                | 185                | 1.6                      | 55                    | 110                |
| Zinc-air <sup>c</sup>          | Zn                            | Air (O <sub>2</sub> ) | 1.6                 | 815                | 1.1                      | 150                   | 155                |
| Cadmium-air <sup>c</sup>       | Cd                            | Air (O <sub>2</sub> ) | 1.2                 | 475                | 0.8                      | 90                    | 90                 |
| Zinc-O <sub>2</sub>            | Zn                            | O <sub>2</sub>        | 1.6                 | 610                | 1.1                      | 130                   | 120                |
| H <sub>2</sub> -O <sub>2</sub> | H <sub>2</sub>                | O <sub>2</sub>        | 1.23                | 3,000              | 0.8                      | 45                    | 65                 |
| Reserve:                       |                               |                       |                     |                    |                          |                       |                    |
| Cuprous chloride               | Mg                            | CuCl                  | 1.5                 | 240                | 1.4                      | 45                    | 65 <sup>d</sup>    |
| Silver-chloride                | Mg                            | AgCl                  | 1.6                 | 170                | 1.5                      | 60                    | 95 <sup>d</sup>    |
| Zinc-silver oxide              | Zn                            | AgO                   | 1.85                | 285                | 1.5                      | 30                    | 75 <sup>e</sup>    |
| Thermal                        | Ca                            | <i>b</i>              | 2.8                 | 240                | 2.6                      | 10                    | 20 <sup>f</sup>    |
| Ammonia-activated              | Mg                            | <i>m</i> -DNB         | 2.2                 | 1,400              | 1.7                      | 22                    | 60 <sup>g</sup>    |
| High-                          | NA                            | S                     | 2.1                 | 685                | 1.8                      | 200                   | <i>h</i>           |
| temperature                    | Li                            | S                     | 2.2                 | 1,150              | 1.8                      | 200                   | <i>i</i>           |
| Solid electrolyte              | Ag                            | Polyiodide            | 0.66                | ...                | 0.6                      | 180                   | 75 <sup>j</sup>    |
| Fuel cell:                     |                               |                       |                     |                    |                          |                       |                    |
| Hydrogen <sup>c</sup>          | H <sub>2</sub>                | Air                   | 1.23                | 26,000             | 0.7                      |                       | <i>k</i>           |
| Hydrazine <sup>c</sup>         | N <sub>2</sub> H <sub>4</sub> | Air                   | 1.5                 | 2,100              | 0.7                      | 800 <sup>b</sup>      | <i>l</i>           |
| Methanol <sup>c</sup>          | CH <sub>3</sub> OH            | Air                   | 1.3                 | 1,400              | 0.9                      | 175 <sup>b</sup>      | 185 <sup>m</sup>   |

*a* Delivered capacity when discharged at normal temperatures (20°C) at normal discharge rates.

*b* Based on fuel consumption only.

*c* Weight of air not considered in computation of watt hours.

*d* Water-activated

*e* Automatically activated; high rate discharge; 2- to 10-min rate.

*f* Fused salt; heat-activated; high rate discharge; 2- to 10-min rate.

*g* Four-minute discharge rate.

*h*  $\beta$ -alumina electrolyte, 300°C operation.

*i* Fused salt; 350°C operation.

*j* Solid RbAg<sub>4</sub>I<sub>5</sub> electrolyte.

*k* Several different cathode materials used.

*l* Fuel consumption is based on source of H<sub>2</sub>.

*m* Based on methanol battery-fuel supply in situ.





## MINIGLOSSARY CAPACITORS

**Anode:** One of two plates or conductors. In polarized capacitors, the anode should be connected to the positive conductor in the circuit.

**Capacitive Reactance:** The opposition (in ohms) of capacitance to the flow of alternating current, equal to the reciprocal of the product of the angular frequency ( $2\pi$  times frequency in Hertz) of the current times the capacitance in farads.

**Cathode:** One of two plates or conductors. In electrostatic capacitors the cathode is metallic. In electrolytic capacitors the cathode is a liquid, gel or other conductive material which is in intimate contact with a metallic cathodic connection.

**Dielectric Constant:** The ratio of the capacitance of a capacitor with some material other than air between the capacitor plates to the capacitance of the same capacitor with air between the plates. For example, the dielectric constants of air, Teflon®, polystyrene and ruby mica are 1, 2.1, 2.6 and 5.4, respectively.

**Electrolytic:** A capacitor with one metallic conductor (generally the anode) and with a liquid or semiconductor cathode. Nonpolarized electrolytic capacitors generally have two equal anodes as well as the liquid cathode. These anodes operate alternately as anode and cathodic connection as alternating current is applied.

**Electrostatic:** One of two general classes of capacitors in which two or more discrete metallic conductors are present and separated by an insulating dielectric material. Examples include: mica, ceramic, film, and paper types.

**Farad:** The basic unit of measure in capacitors. A capacitor charged to one volt with a charge of one coulomb (one ampere flowing for one second) has a capacitance of one farad. Capacitors are generally rated at portions of a farad (microfarads or picofarads).

1 farad (F) = 1,000,000 microfarads ( $\mu$ F) 1 microfarad ( $\mu$ F) = 1,000,000 picofarads (pF)

**Impedance:** All capacitors exhibit impedance. It is a function of capacitor type and internal construction. This can be particularly important in certain applications such as filters for switching power supplies. Capacitors used in these applications often have special multiple tab construction to shorten current paths and to reduce internal resistance.

**Leakage Current:** Expressed as dcl for electrolytic capacitors, a measure of the intrinsic losses in a charged capacitor. Generally speaking, the lower the dcl, the higher quality the capacitor.

**Power Factor:** A measure of the overall efficiency of a capacitor. Power factor ratings take all internal losses into consideration in a complex formula. This parameter of certain capacitors is often very important in AC applications such as motor-start and/or motor-run capacitors

**Rated Voltage:** The rated working voltage of a capacitor. Generally expressed in DC Volts (Vdcw). This is the voltage at which a capacitor may be safely operated at 25°C continuously within its overall parameters.

**Ripple Current:** The total amount of alternating and direct current that may be applied to an

electrolytic capacitor under stated conditions. In general, the higher the ripple current applied, the shorter the operating life of the capacitor will be. Application of significantly higher than rated ripple currents can shorten the capacitor life dramatically and may even cause catastrophic failure (explosion).

**Surge Voltage:** The momentary surge voltage which may be applied for a stated length of time without doing permanent damage to the unit.

**Temperature:** Capacitors are generally rated at 25°C at sea level under specific humidity conditions. Operating temperature ranges are also given, along with derating (reliability) curves for operation at temperatures other than 25°C.

**Temperature Coefficient:** Expressed as TC in ppm (parts per million) or in percent (%) from the norm of 25°C. This is seldom a straight line and may vary widely for certain types. Most capacitors have positive TC in that the capacitance increases as temperature increases. Some types, however, have negative TC in that the capacitance decreases as temperature increases.

### Ceramic Capacitor Codes (Capacitance Given In pF)

| Color  | Digit | Multi-plier | Tolerance    |           |           | Temperature Coefficient ppm°C | Signi-ficant Figure | Multi-plier |
|--------|-------|-------------|--------------|-----------|-----------|-------------------------------|---------------------|-------------|
|        |       |             | Class 1      |           | Class 2   |                               |                     |             |
|        |       |             | 10pF or less | Over 10pF |           |                               |                     |             |
| Black  | 0     | 1           | ±2.0pF       | ±20%      | ±20%      | 0                             | 0.0                 | −1          |
| Brown  | 1     | 10          | ±0.1pF       | ±1%       |           | −33                           |                     | −10         |
| Red    | 2     | 100         |              | ±2%       |           | −75                           | 1.0                 | −100        |
| Orange | 3     | 1000        |              | ±3%       |           | −150                          | 1.5                 | −1000       |
| Yellow | 4     | 10000       |              |           | +100% −0% | −220                          | 2.0                 | −10000      |
| Green  | 5     |             | ±0.5pF       | ±5%       | ±5%       | −330                          | 3.3                 | +1          |
| Blue   | 6     |             |              |           |           | −470                          | 4.7                 | +10         |
| Violet | 7     |             |              |           |           | −750                          | 7.5                 | +100        |
| Gray   | 8     | 0.01        | ±0.25pF      |           | +80% −20% | +150 to −1500                 |                     | +1000       |
| White  | 9     | 0.1         | ±1.0pF       | ±10%      | ±10%      | +100 to −750                  |                     | +10000      |
| Silver |       |             |              |           |           |                               |                     |             |
| Gold   |       |             |              |           |           |                               |                     |             |





# MINIGLOSSARY

## BASIC CAPACITOR FORMULAS

### I. Capacitance (farads)

$$\text{English: } C = \frac{.224 \text{ K A}}{t_D}$$

$$\text{Metric: } C = \frac{.0884 \text{ K A}}{t_D}$$

### II. Energy stored in capacitors (Joules, watt-sec)

$$E = \frac{1}{2} CV^2$$

### III. Linear charge of a capacitor (Amperes)

$$I = C \frac{dV}{dt}$$

### IV. Total Impedance of a capacitor (ohms)

$$Z = \sqrt{R_s^2 + (X_c - X_L)^2}$$

Where  $R_s$  = ESR

### V. Capacitive Reactance (ohms)

$$X_c = \frac{1}{2 \pi f C}$$

### VI. Inductive Reactance (ohms)

$$X_L = 2 \pi f L$$

### VII. Phase Angles:

Ideal Capacitors: Current leads voltage  $90^\circ$

Ideal Inductors: Current lags voltage  $90^\circ$

Ideal Resistors: Current in phase with voltage

### VIII. Dissipation Factor

$$DF = \tan \delta \text{ (loss angle)} = \frac{ESR}{X_c} = \frac{ESR}{(2 \pi f C) (ESR)}$$

### IX. Power Factor

PF =  $\sin \delta$  (loss angle) =  $\cos \phi$  (phase angle)

PF = DF (when less than 10%)

### X. Quality Factor (dimensionless)

$$Q = \cotan \delta \text{ (loss angle)} = \frac{1}{DF}$$

### XI. Equivalent Series Resistance (ohms)

$$ESR = (DF) (X_c) = (DF) \left( \frac{1}{2 \pi f C} \right)$$

### XII. Power Loss (watts)

$$\text{Power loss} = (2 \pi f C V^2) (DF)$$

### XIII. KVA (Kilowatts)

$$KVA = 2 \pi f C V^2 \times 10^{-3}$$

### XIV. Temperature Characteristic (ppm/ $^\circ\text{C}$ )

$$TC = \frac{C_t - C_{25}}{C_{25} (T_t - 25)} \times 10^6$$

### XV. Cap Drift (%)

$$C.D. = \frac{C_1 - C_2}{C_1} \times 100$$

### XVI. Reliability of Ceramic Capacitors

$$\frac{L_o}{L_t} = \left( \frac{V_t}{V_o} \right)^x \left( \frac{T_t}{T_o} \right)^y$$

### XVII. Capacitors in Series (current the same)

$$\text{Any number: } \frac{1}{C_T} = \frac{1}{C_1} + \frac{1}{C_2} + \dots + \frac{1}{C_N}$$

$$\text{Two: } C_T = \frac{C_1 C_2}{C_1 + C_2}$$

### XVIII. Capacitors in Parallel (voltage the same)

$$C_T = C_1 + C_2 + \dots + C_N$$

### XIX. Aging Rate

$$A.R. = \% \Delta C / \text{decade of time}$$

### XX. Decibels

$$db = 20 \log \frac{V_1}{V_2}$$

### Metric prefixes:

|       |              |
|-------|--------------|
| Pico  | X $10^{-12}$ |
| Nano  | X $10^{-9}$  |
| Micro | X $10^{-6}$  |
| Milli | X $10^{-3}$  |
| Deci  | X $10^{-1}$  |
| Deca  | X 10         |
| Kilo  | X $10^3$     |
| Mega  | X $10^6$     |
| Giga  | X $10^9$     |
| Tera  | X $10^{12}$  |

### Symbols:

|          |                             |
|----------|-----------------------------|
| K        | = Dielectric Constant       |
| A        | = Area of electrode overlap |
| $t_D$    | = Dielectric thickness      |
| V        | = Voltage (volts)           |
| t        | = time (hours)              |
| $R_s$    | = Series Resistance (ohms)  |
| f        | = frequency (Hertz)         |
| L        | = Inductance (henries)      |
| $\delta$ | = Loss angle                |

|        |                                              |
|--------|----------------------------------------------|
| $\phi$ | = Phase angle                                |
| x+y    | = Exponent effect of voltage and temperature |
| $L_o$  | = Operating life (hours)                     |
| $L_t$  | = Test life (hours)                          |
| $V_t$  | = Test voltage (volts)                       |
| $V_o$  | = Operating voltage (volts)                  |
| $T_t$  | = Test temperature ( $^\circ\text{C}$ )      |
| $T_o$  | = Operating temperature ( $^\circ\text{C}$ ) |





## MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

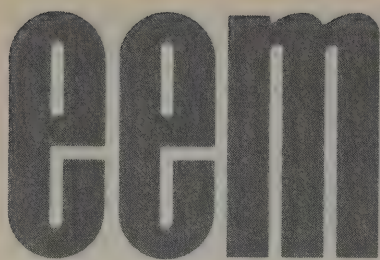
**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.

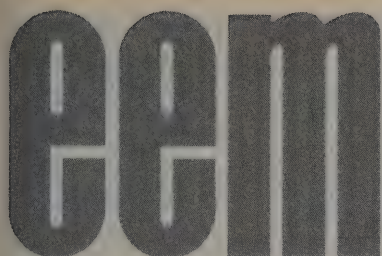




# MAXIMUM CURRENT CAPACITY— CONDUCTORS

| Size,<br>AWG | MIL-W-5088      |                  |                 |                  | National<br>Electrical<br>Code | Underwriters<br>Laboratory |      | American<br>Insurance<br>Association | 500<br>c mils/A |
|--------------|-----------------|------------------|-----------------|------------------|--------------------------------|----------------------------|------|--------------------------------------|-----------------|
|              | Copper          |                  | Aluminum        |                  |                                | 60°C                       | 80°C |                                      |                 |
|              | Single-<br>wire | Wire-<br>bundled | Single-<br>wire | Wire-<br>bundled |                                |                            |      |                                      |                 |
| 30           | ...             | ...              | ...             | ...              | ...                            | 0.2                        | 0.4  | ...                                  | 0.20            |
| 28           | ...             | ...              | ...             | ...              | ...                            | 0.4                        | 0.6  | ...                                  | 0.32            |
| 26           | ...             | ...              | ...             | ...              | ...                            | 0.6                        | 1.0  | ...                                  | 0.51            |
| 24           | ...             | ...              | ...             | ...              | ...                            | 1.0                        | 1.6  | ...                                  | 0.81            |
| 22           | 9               | 5                | ...             | ...              | ...                            | 1.6                        | 2.5  | ...                                  | 1.28            |
| 20           | 11              | 7.5              | ...             | ...              | ...                            | 2.5                        | 4.0  | 3                                    | 2.04            |
| 18           | 16              | 10               | ...             | ...              | 6                              | 4.0                        | 6.0  | 5                                    | 3.24            |
| 16           | 22              | 13               | ...             | ...              | 10                             | 6.0                        | 10.0 | 7                                    | 5.16            |
| 14           | 32              | 17               | ...             | ...              | 20                             | 10.0                       | 16.0 | 15                                   | 8.22            |
| 12           | 41              | 23               | ...             | ...              | 30                             | 16.0                       | 26.0 | 20                                   | 13.05           |
| 10           | 55              | 33               | ...             | ...              | 35                             | ...                        | ...  | 25                                   | 20.8            |
| 8            | 73              | 46               | 58              | 36               | 50                             | ...                        | ...  | 35                                   | 33.0            |
| 6            | 101             | 60               | 86              | 51               | 70                             | ...                        | ...  | 50                                   | 52.6            |
| 4            | 135             | 80               | 108             | 64               | 90                             | ...                        | ...  | 70                                   | 83.4            |
| 2            | 181             | 100              | 149             | 82               | 125                            | ...                        | ...  | 90                                   | 132.8           |
| 1            | 211             | 125              | 177             | 105              | 150                            | ...                        | ...  | 100                                  | 167.5           |
| 0            | 245             | 150              | 204             | 125              | 200                            | ...                        | ...  | 125                                  | 212.0           |
| 00           | 283             | 175              | 237             | 146              | 225                            | ...                        | ...  | 150                                  | 266.0           |
| 000          | 328             | 200              | ...             | ...              | 275                            | ...                        | ...  | 175                                  | 336.0           |
| 0000         | 380             | 225              | ...             | ...              | 325                            | ...                        | ...  | 225                                  | 424.0           |





# MINIGLOSSARY

## BASIC EBCDIC CODE

| Bit Positions 4, 5, 6, 7 |  | Second Hexadecimal Digit |  | Digit Punches |  | 00 |   |    |   | 01 |    |    |    | 10 |    |    |    | 11 |   |    |   | Bit Positions 0, 1      |  |
|--------------------------|--|--------------------------|--|---------------|--|----|---|----|---|----|----|----|----|----|----|----|----|----|---|----|---|-------------------------|--|
|                          |  |                          |  |               |  | 00 |   | 01 |   | 10 |    | 11 |    | 00 |    | 01 |    | 10 |   | 11 |   | Bit Positions 2, 3      |  |
|                          |  |                          |  |               |  | 0  | 1 | 2  | 3 | 4  | 5  | 6  | 7  | 8  | 9  | A  | B  | C  | D | E  | F | First Hexadecimal Digit |  |
|                          |  |                          |  |               |  | 12 |   |    |   | 12 | 12 |    | 12 | 12 | 12 |    | 12 | 12 |   |    |   |                         |  |
|                          |  |                          |  |               |  | 11 |   |    |   |    |    | 11 |    | 11 |    | 11 |    |    |   | 11 |   | Zone Punches            |  |
|                          |  |                          |  | 0             |  |    |   | 0  |   | 0  |    | 0  |    | 0  |    | 0  |    |    |   | 0  |   | Digit Punches           |  |
|                          |  | 9                        |  | 9             |  | 9  |   | 9  |   | 9  |    | 9  |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
|                          |  |                          |  |               |  |    |   |    |   |    |    |    |    |    |    |    |    |    |   |    |   |                         |  |
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### Card Hole Patterns

|   |               |   |            |   |       |   |          |
|---|---------------|---|------------|---|-------|---|----------|
| ① | 12-0-9-8-1    | ⑤ | No-Punches | ⑨ | 12-0  | ⑬ | 0-1      |
| ② | 12-11-9-8-1   | ⑥ | 12         | ⑩ | 11-0  | ⑭ | 11-0-9-1 |
| ③ | 11-0-9-8-1    | ⑦ | 11         | ⑪ | 0-8-2 | ⑮ | 12-11    |
| ④ | 12-11-0-9-8-1 | ⑧ | 12-11-0    | ⑫ | 0     |   |          |

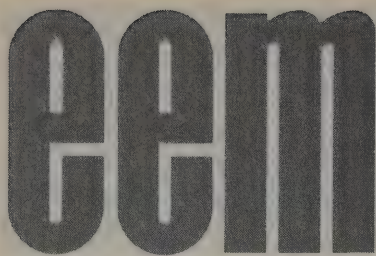
### Control Character Representations

|     |                  |     |                              |     |                         |
|-----|------------------|-----|------------------------------|-----|-------------------------|
| ACK | Acknowledge      | EOT | End of Transmission          | PF  | Punch Off               |
| BEL | Bell             | ESC | Escape                       | PN  | Punch On                |
| BS  | Backspace        | ETB | End of Transmission Block    | RES | Restore                 |
| BYP | Bypass           | ETX | End of Text                  | RS  | Reader Stop             |
| CAN | Cancel           | FF  | Form Feed                    | SI  | Shift In                |
| CC  | Cursar Control   | FS  | Field Separator              | SM  | Set Mode                |
| CR  | Carriage Return  | HT  | Horizontal Tab               | SMM | Start of Manual Message |
| CU1 | Customer Use 1   | IFS | Interchange File Separator   | SO  | Shift Out               |
| CU2 | Customer Use 2   | IGS | Interchange Group Separator  | SOH | Start of Heading        |
| CU3 | Customer Use 3   | IL  | Idle                         | SOS | Start of Significance   |
| DC1 | Device Control 1 | IRS | Interchange Record Separator | SP  | Space                   |
| DC2 | Device Control 2 | IUS | Interchange Unit Separator   | STX | Start of Text           |
| DC4 | Device Control 4 | LC  | Lower Case                   | SUB | Substitute              |
| DEL | Delete           | LF  | Line Feed                    | SYN | Synchronous Idle        |
| DLE | Data Link Escape | NAK | Negative Acknowledge         | TM  | Tape Mark               |
| DS  | Digit Select     | NL  | New Line                     | UC  | Upper Case              |
| EM  | End of Medium    | NUL | Null                         | VT  | Vertical Tab            |
| ENQ | Enquiry          |     |                              |     |                         |

### Special Graphic Characters

|    |                       |
|----|-----------------------|
| ˆ  | Cent Sign             |
| ˙  | Period, Decimal Point |
| ˘  | Less-than Sign        |
| ˙  | Left Parenthesis      |
| +  | Plus Sign             |
| ∨  | Logical OR            |
| &  | Ampersand             |
| !  | Exclamation Point     |
| \$ | Dollar Sign           |
| *  | Asterisk              |
| )  | Right Parenthesis     |
| ;  | Semicolon             |
| ~  | Logical NOT           |
| -  | Minus Sign, Hyphen    |
| /  | Slash                 |
| ,  | Comma                 |
| %  | Percent               |
| _  | Underscore            |
| >  | Greater-than Sign     |
| ?  | Question Mark         |
| :  | Colon                 |
| #  | Number Sign           |
| @  | At Sign               |
| '  | Prime, Apostrophe     |
| =  | Equal Sign            |
| "  | Quotation Mark        |





## MINIGLOSSARY ENCAPSULATION

### MATERIALS/HANDLING

**Catalyst:** A substance which changes the *rate* of chemical reaction. Very small quantities can cause fast change.

**Conformal coating** Sprayed or dipped. A thin conformal jacket which protects an assembly from moisture or other degrading environments.

**Curing agent:** See catalyst.

**Hardener:** See catalyst.

**Hermetic:** A permanent gas-tight seal.

**RTV:** Room Temperature Vulcanizing. Associated with silicone rubber sealants which vulcanize at room temperature.

**Thermoplastic:** Plastic materials which can be made to flow *repeatedly* with the application of heat.

**Thermosetting:** Plastics which once cured cannot be made to flow again.

**Thixotropy:** The property of a coating compound which has low viscosity when agitated, but which thickens when the agitation ceases.

**Viscosity:** Measured in units of *poise* or *centipoise*. The property of a liquid which resists internal flow. Low viscosity equates with thin and vice-versa.

### PROCESSING

**Casting:** Parts or assemblies are placed in a mold. Encapsulating material is added and cured. Part is then removed from the mold.

**Dip coating:** Part or assembly is dipped into the encapsulating material. Final thickness is determined by number of dips, viscosity, rate of withdrawal, and temperature.

**Embedding:** Wherein an encapsulant substantially fills all voids in and about an assembly.

**Impregnation:** A process of encapsulation involving evacuating all air and then allowing the encapsulating material to flow in and fill all voids.

**Molding:** Similar to casting except this process usually implies multicavity molds and costly machines.

**Potting:** Wherein the part or assembly is immersed in an encapsulating material contained in a shell which becomes a permanent outer surface after curing.

### DIELECTRIC

**Arc resistance:** An encapsulant's resistance to the formation of a conductive path or track. Measured in time.

**Breakdown voltage:** The voltage at which an encapsulant fails electrically.

**Capacitance:** The property of conductors and dielectrics which allows the storage of an electrical charge when the voltage is applied.

**Corona:** A luminous discharge of electricity due to air ionization when a cer-

tain voltage is reached. Can be internal or external. The formation of ozone can cause rapid deterioration of certain materials.

**Dielectric:** Insulator (Nonconductor.)

**Dielectric constant:** The property of a material that determines its ability to store electrostatic energy.

**Dielectric strength:** The ratio of dielectric breakdown to the thickness of insulating material.

**Dissipation factor:** The ratio of a dielectric material's energy losses.

**Flashover:** Point at which an electric discharge occurs around an edge or across a surface. Can result in a carbon track and permanent degradation.

**Insulation resistance:** (IR) An insulating material's total DC leakage.

**Surface resistivity:** The resistance of the surface of an insulating material to the flow of direct current.

**Voltage endurance:** Sometimes called corona resistance. The ability of a material to withstand the application of sustained high voltage.

**Volume resistivity:** The resistance of a material to direct current flow as a measure of volume. Expressed as ohm-centimeters.



## MINIGLOSSARY

### OPTO SEMICONDUCTORS

**Avalanche Photodiode:** A photodiode that takes advantage of avalanche multiplication of photocurrent. It is particularly suited to low noise and/or high speed applications.

**Contrast:** A noticeable difference in color, brightness, or other characteristics in a side-by-side comparison.

**Chrominance Contrast:** The color contrast between two adjacent surfaces of identical area, shape, texture, and luminance. The human eye is more sensitive to differences in color than it is to differences in brightness.

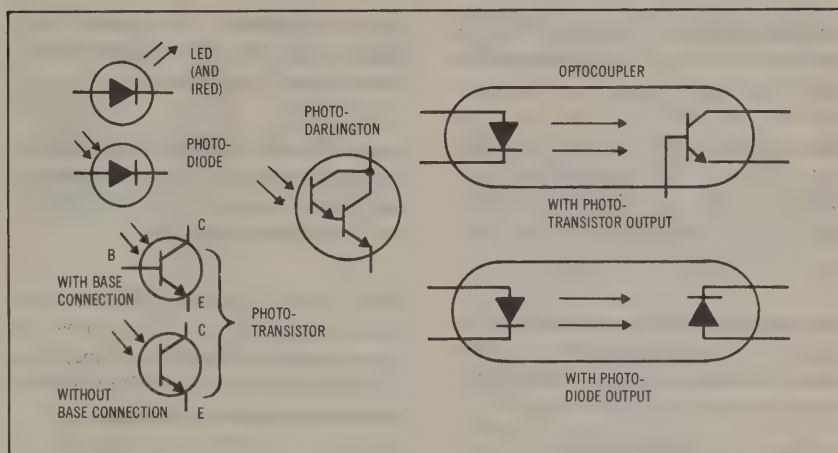
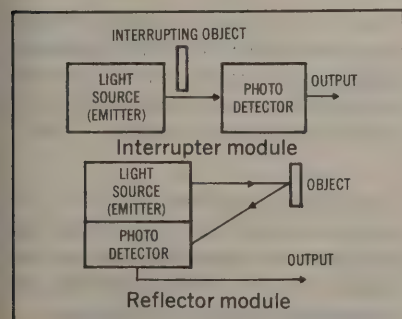
**Current Transfer Ratio:** The ratio of an optocoupler's output current to input current at a specified bias.

**Dark Current:** The leakage current of a photodetector with no incident light.

**Dominant Wavelength:** The wavelength that is a quantitative measure of apparent color of light as perceived by the human eye.

**Infrared Radiation:** The electromagnetic wavelength region between approximately 0.75 and 100 micrometers longer than the wavelength of visible light.

**Interrupter (module):** A device that produces an electrical output signal when an object breaks the light (visible or invisible) between a light source and a photodetector.



**IRED:** An infrared-emitting diode. See light-emitting diode.

**Light Current:** The current that flows through a photodetector when it is exposed to radiant energy.

**Light-Emitting Diode (LED):** A semiconductor diode that emits incoherent light at its PN junction when forward biased. The light can be in the visible or invisible (infrared) wavelength region.

**Luminance Contrast:** The observed brightness of a light-emitting element compared to the brightness of the "surround," an integral part of the device and inseparable from it.

**Optocoupler:** A device that transmits electrical signals, without electrical connection, between a light source (input) and the receiver (output). The input is generally an LED; the output might be a photodiode, phototransistor, a photo-Darlington, etc. Sometimes referred to as optoisolator.

**Peak Wavelength:** The wavelength at the peak of the radiated spectrum of an emitter.

**Photo-Darlington:** A light-sensitive Darlington-connected transistor pair. The photo-Darlington has a very high sensitivity to illumination or radiation.

**Photodetector:** A device that provides an electrical output signal when subjected to radiation in the visible, infrared, or ultraviolet regions of the electromagnetic spectrum. Photodiodes, phototransistors, and photo-Darlington are the most common type of photodetectors.

**Photodiode:** A junction diode that is responsive to radiant energy. Photodiodes have a high degree of linearity between the input radiation and the output current, and faster switching speeds than phototransistors.

**Photothyristor:** A thyristor whose switching action is controlled by light applied to the thyristor gate.

**Phototransistor:** A light-sensitive transistor that delivers an electrical output proportional to the light intensity at its input. The low-level photocurrent that is generated is amplified by the current gain of the transistor. The base region (or gate in a FET) may or may not be brought out as an external terminal.

**Point Source:** A source with a maximum dimension less than one-tenth the distance between sources and detector.

**Reflector (module):** A device containing a light source and a photodetector that detects any object that reflects light produced by the source back to the detector.



**Ambient reference:** Refers to the temperature of the still air surrounding the power supply.

**Case reference:** One of the specs that make up the nominal rating. The temperature of the case with the temperature of the surrounding still air at a stated temperature (usually 25°C).

**Crowbar circuit:** Protects the load. A protective circuit that applies a short circuit across the output immediately upon overload. (See overvoltage).

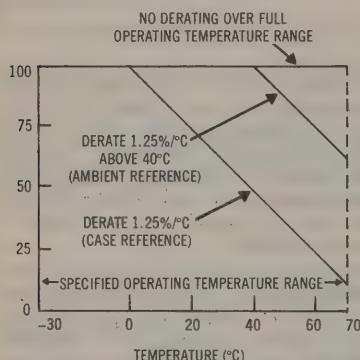


Fig. 1. Power output derating can be referred to ambient or case.

**Derating:** The degree output is reduced as temperature increases. Usually referenced to ambient case temperature and shown on a graph.

**Efficiency:** Ratio of the output power to the required input power. Usually expressed as a percentage given nominal environmental temperature.

**EMI/RFI:** Interference electronic circuitry caused by energy from electromagnetic or radio frequency power supplies.

**Foldback:** Built-in protective circuits that automatically reduce the output voltage and/or current to very low levels in the event of an overload.

**Holdover (Holdup):** The interval that rated output will continue after input ceases. Usually milliseconds.

**Input reflected current:** The peak-to-peak alternating current generated by switching transients in DC/DC converters. Should not exceed 1%.

**Inrush current limiting:** Built-in circuits that monitor high currents through the rectifiers to the capacitors at turn ON. Circuit is usually inhibited as capacitors attain full charge.

**Nominal rating:** The spec value of the supply at stated conditions of input, output, and temperature.

**Overshoot:** A transient voltage change occurring during turn ON or OFF or during an abrupt load change.

**Overvoltage (Overload) protection:** Built-in circuits that protect the load or the supply by shutting it down or providing foldback.

**Recovery:** The time interval between the termination of an overload and restoration to normal operations.

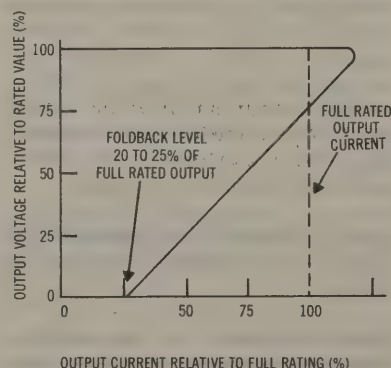


Fig. 2. Current foldback limiting self-resets with removal of fault.

**Response:** The time interval between a stated step change in input voltage or load current and return of output to normal operating conditions.

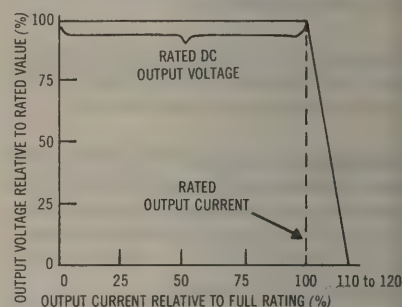


Fig. 3. Current limiting restrictions output current to a valve somewhat greater than full rated output; it resets when fault is removed.

**Sensing:** Regulation techniques that monitor output voltage and/or current. *Local sensing* refers to the output terminals. *Remote sensing* allows a feedback from the load circuit to the power supply.

**Soft start:** Allows the supply to start from zero current and/or voltage over a stated period of time during start up to prevent voltage overshoots and current imbalances.

**Switchers:** Power supplies using switching techniques to achieve high efficiency regulation. These techniques can have attendant EMI/RFI problems.

**Tracking:** The maintaining of fixed ratios between multiple outlets despite variations in line, load or temperature. Particularly important in supplies with symmetrical (+)(-) outputs.

**Transient protection:** Circuitry designed to protect the supply from high amplitude line transients. Generally expressed in terms of peak voltage and maximum transient time duration.



## MINIGLOSSARY ELECTROMECHANICAL RELAYS

### RELAYS

**Hybrid:** Isolated input and output either with a solid-state input and an electromechanical output or vice versa. Typically a reed switch is used to trigger a solid-state output or a solid-state amplifier is used to trigger an electromechanical relay.

**Differential:** Have multiple windings to function when voltage, current and/or power difference reaches a specific level or value.

**Close-differential:** The dropout value is specified close to the pickup value.

**Frequency sensitive:** Operates at a set frequency or within specific frequency bands. A resonant reed, for example.

**Hermetically sealed:** Totally sealed by glass-to-metal or metal-to-metal seals to ensure very low rates of gas leakage over long time periods.

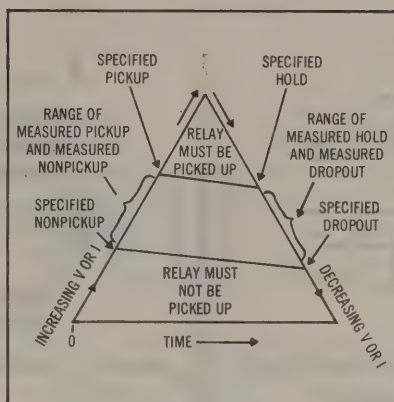
**Encapsulated:** Imbedded in a suitable potting compound.

**Sealed:** Enclosed in a relatively airtight cover. (Not the same as hermetically sealed.)

**Covered:** Unsealed metal or plastic enclosure or housing.

### CONTACTS

**Dry circuit:** contacts that carry current but do not open or close during ener-



gizing of the load circuit. Often wrongly used in reference to low level contacts.

**Low Level:** Contacts controlling relatively low voltages and low currents. Generally below 5 Vdc and 10mA.

### OPERATING CHARACTERISTICS

**Measured dropout:** The value at which all contacts restore to their unoperated position as current or voltage decreases.

**Specified dropout:** The value at or above which all contacts *must* restore to their unoperated position as voltage or current is decreased.

**Specified hold:** The value that *must* be reached before any contact change occurs as voltage or current is decreased on an operated relay.

**Specified nonpickup:** The value that *must* be reached before any contact change occurs as voltage or current decreases on an unoperated relay.

**Measured pickup:** The value at which all contacts function as voltage or current increases on an unoperated relay.

**Specified pickup:** The value at or below which all contacts *must* function as voltage or current increases on an unoperated relay.

**Sensitivity:** Specified pickup expressed in watts.

**Normal bridging:** The make-before-break action between adjacent contacts on relays designed for this purpose.

**Abnormal bridging:** The undesired closing of contacts caused by a metal bridge or protrusion developed by arcing.

**Magnetic freezing:** Sticking of the armature to the core as a result of residual magnetism.

### TIME

**Actuation:** The interval from coil energization or de-energization to the functioning of a specified contact.

**Initial actuation:** The interval from coil energization or de-energization to the *first* closing or opening of a previously open or closed contact.

**Final actuation:** Sum of initial actuation and bounce intervals following an actuation.

**Contact bounce:** The interval from close or opening of a contact to the end of the bounce of "chatter."

**Chatter:** See bounce.

**Operate:** Normally taken as the interval between energization and the opening or closing of the last contact to function not including bounce.

**Release:** Normally taken as the interval between de-energization and the opening or closing of the last contact to function excluding bounce.

**Transfer:** The interval between opening a closed contact and closing an open contact of a break-before-make relay.

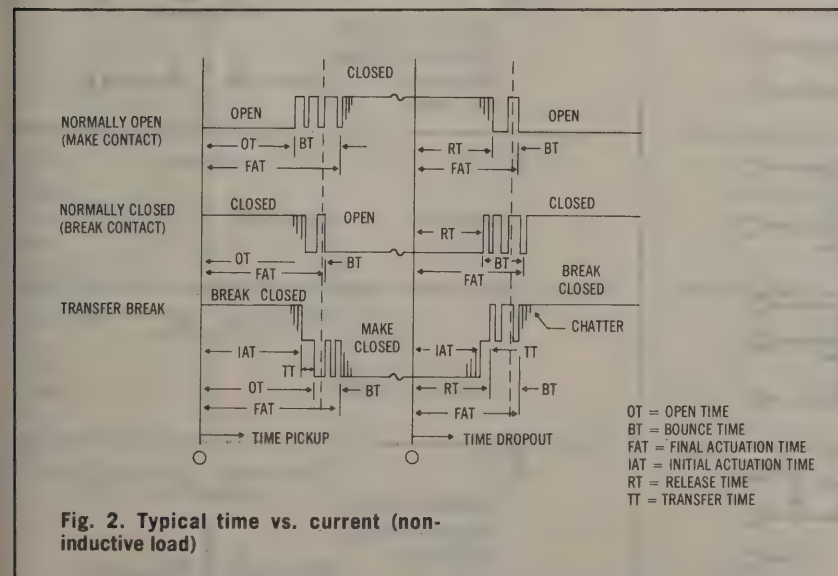


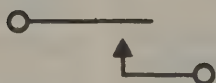
Fig. 2. Typical time vs. current (non-inductive load)



## MINIGLOSSARY RELAY CONTACT FORMS

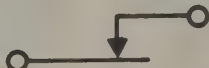
**A**

Make  
SPST-NO



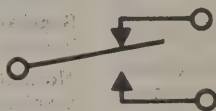
**B**

Break  
SPST-NC



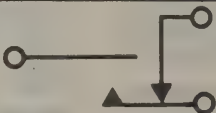
**C**

Break, Make  
(Transfer)  
SPDT



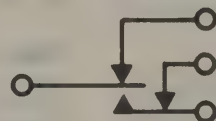
**D**

Make, Break  
(Continuity  
Transfer)



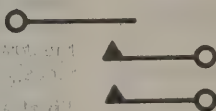
**E**

Break,  
Make,  
Break



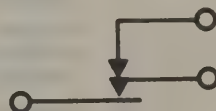
**F**

Make,  
Make



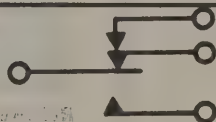
**G**

Break,  
Make



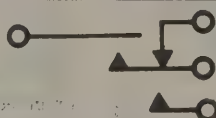
**H**

Break,  
Break,  
Make



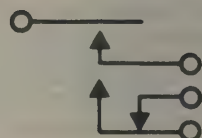
**I**

Make,  
Break,  
Make



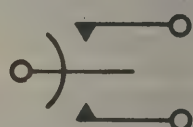
**J**

Make,  
Make,  
Break



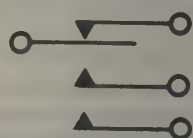
**K**

Center off  
SPDT



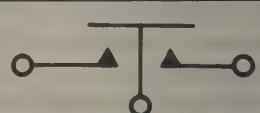
**L**

Break,  
Make,  
Make



**U**

Double  
make  
Contact  
on arm



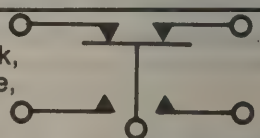
**V**

Double break  
Contact on arm



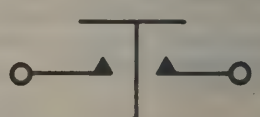
**W**

Double break,  
Double make,  
Contact  
on arm



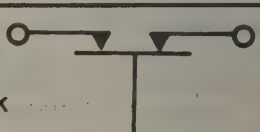
**X**

Double  
make



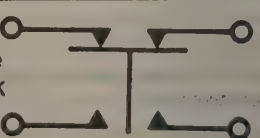
**Y**

Double break

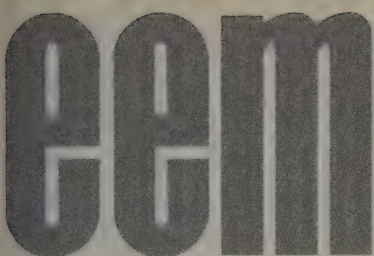


**Z**

Double make  
Double break  
SPDT-DB



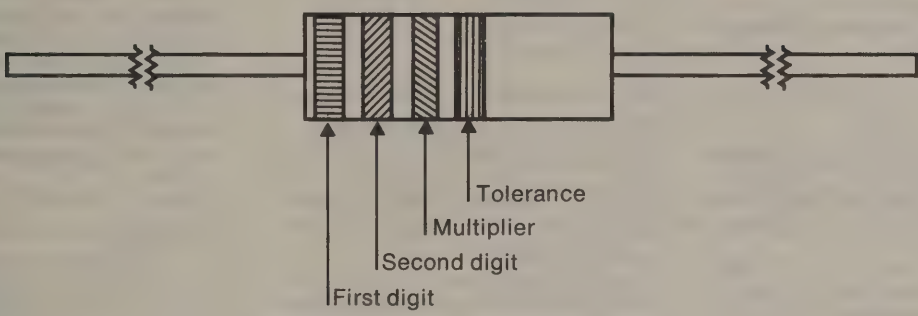




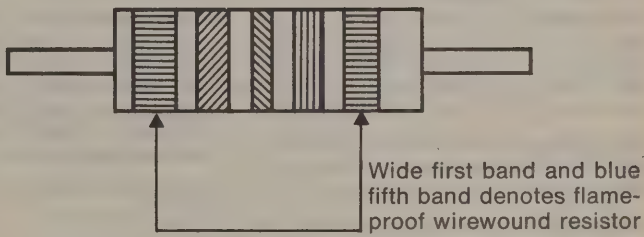
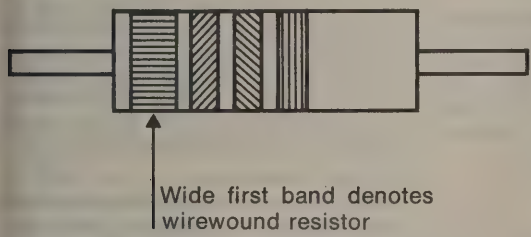
# MINIGLOSSARY

## RESISTOR COLOR CODES

### EIA/MIL Resistor Color Codes



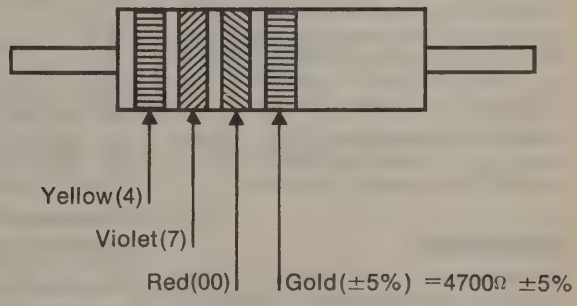
Color code for general-purpose industrial resistors



Color code for general-purpose wirewound resistors

| Color    | Significant digit | Multiplier | Tolerance |
|----------|-------------------|------------|-----------|
| Black    | 0                 | 1          | —         |
| Brown    | 1                 | 10         | ± 1%      |
| Red      | 2                 | 100        | ± 2%      |
| Orange   | 3                 | 1000       | ± 3%      |
| Yellow   | 4                 | 10,000     | ± 4%      |
| Green    | 5                 | 100,000    | —         |
| Blue     | 6                 | 1,000,000  | —         |
| Violet   | 7                 | 10,000,000 | —         |
| Gray     | 8                 | —          | —         |
| White    | 9                 | —          | —         |
| Gold     | —                 | 0.1        | ± 5%      |
| Silver   | —                 | 0.01       | ± 10%     |
| No color | —                 | —          | ± 20%     |

Example:





#### SPECIFICATIONS

**Excitation:** The input voltage and frequency.

**Transformation Ratio:** The ratio of the output voltage, at maximum coupling, to the input voltage.

**Phase Shift:** The lead or lag of the output voltage with respect to the input voltage. For most synchros and resolvers, the phase shift can be approximated by the angle whose tangent is the ratio of the primary winding's DC resistance to its reactive component.

**Impedance:** Specified as  $R + jX$ , where  $R$  is the AC resistive component and  $X$  is the reactive component. Important impedances are: (a)  $Z_{po}$  (or  $Z_{ro}$  for rotor primary units), which is the impedance of the primary winding with the secondary open; (b)  $Z_{so}$ , which is the impedance of the secondary winding with the primary open; and (c)  $Z_{sn}$ , which is the impedance of the secondary with the primary shorted (essentially when driven by a low impedance).

**Null Voltage:** The voltage remaining when the unit is at electrical zero or in the minimum coupling position.

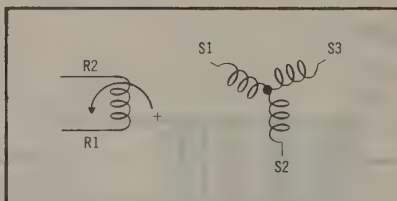
**Accuracy:** The error of the position of the rotor with respect to the electrical angle. It is defined as the output voltage driven by the "speed" (pole pairs) of the unit, referenced to the starting point of the calibration (usually the electrical zero position). Error is commonly expressed in minutes of arc (1/60 of a degree) or in seconds of arc.

**Loads:** For a transmitting unit, the impedance that the output voltage signal faces. This can be a receiver, a differential with its load, a control transformer, an A/D converter, etc.

**Operation Temperature:** The ambient temperature range over which the unit performs its primary function.

#### FUNCTIONS

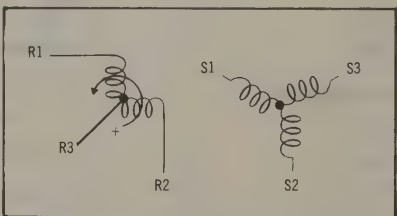
**Transmitter:** A unit with a Y-connected stator that outputs a signal proportional to the position of its single-phase excited rotor. High power units, called "torque transmitters," are used to drive one or more receivers. Low power transmitters are used to drive control transformers.



**Receiver:** A unit with a three-phase stator excited by the input, usually from a torque transmitter, and a single-phase rotor that follows the resulting stator field. Usually used to drive a position pointer.

**Control Transformer:** A unit with a three-phase stator excited by the input from a transmitter and a single-phase rotor mechanically driven to the null position by an external motor or other device.

**Differential:** A unit with a three-phase stator and a three-phase rotor. It is usually connected between a transmitter, which excites its stator, and a receiver or control transformer. It can be used to "dial in" correction factors for the synchro chain.

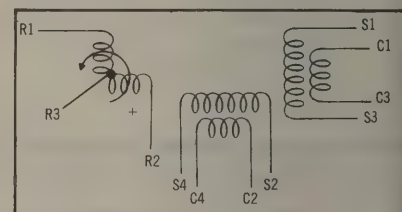


**Transolver:** A unit with a three-phase stator and a two-phase rotor that can be used either as a control transmitter (with one rotor phase excited and the other shorted), or as a control transformer with the signal obtained from one phase of the rotor—making sure the other phase is equally loaded to prevent unbalances.

**Differential Resolver:** A unit with a two-phase stator and a three-phase rotor that is used as a transolver with the advantage that when connected as a control transformer, the signal does not travel through slip rings.

**Resolver:** A unit with a two-phase rotor and a two-phase stator that is used to create or receive SIN-COS signals such as vector resolutions for

solving inertial platform coordinate transformations, unknowns of right triangles, etc. Resolvers can also be used as transmitting, differential, or receiving elements by proper choice of impedances. It is also possible to use resolvers as phase shifters where, in one mode, one rotor phase is excited and the two stator windings are feeding an appropriate RC network and indicating a phase shift, referred to the input, that corresponds to the rotor position.



**Compensated Resolver:** A unit with a "2x2" phase stator and a two-phase rotor used as a resolver with the added benefit of feedback windings in parallel with the stator windings that increase the useful accuracy over a wide range of environmental operating conditions.

**Linear Transformer:** A unit with a single-phase stator and single-phase rotor designed to provide a linear output voltage that is directly proportional to the rotor input angle. It operates over a range of less than  $\pm 90^\circ$ , and is analogous to a potentiometer providing infinite resolution, but without contact between the elements. It can be used only with AC voltages.

**Brushless Synchro:** Available in two types—hairspring and bobbin. Hairspring synchros use spiral wound conductor springs to pick off the rotor signal, and are generally limited to a  $\pm 165^\circ$  rotation. Most have mechanical stops to prevent damage due to over-rotation. Bobbin synchros pick off the rotor signal with rotary transformers inside the unit, allowing the rotor unlimited motion.

**Pancake Unit:** A name derived from the physical dimensions of the unit, which has a diameter that exceeds axial length. Sizes range from under 1" to 20" or more. The unit is frequently used as a gimbal pickoff element and is designed to fit a particular application envelope. It can be supplied as a rotor and stator only.



# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

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- **Over 200 standard models.** Available from stock throughout the U.S. and around the world.
- **Wide range of attractive, functional designs and sizes.** From handheld and unique remote control units...to full size instrument and keyboard enclosures, you'll find the style and size you need for your product.
- **Unique ergonomic designs and variations.** PacTec enclosures provide contemporary styling and high quality at reasonable cost.
- **Custom modifications at low cost.** PacTec's innovative insert tooling technology makes high-value modifications available at surprisingly low cost.
- **Prototyping kits** contain all components necessary to create enclosures for prototyping or short production runs.
- **Standard membrane switches.** Here's an economical way to obtain and integrate high-quality, rugged switches at a very reasonable cost. See page C-1068.
- **Wide variety of options and accessories.** From handles, tilt stands, and belt clips to battery compartments (9-volt & 4AA), display bezels, vents, and much more, you'll find what you need to create your special design.

## The PacTec Design Team

With years of experience in electronics packaging, Design Team engineers have assisted hundreds of customers meet their exact packaging needs with uniquely designed and modified enclosures. The Design Team is always available to discuss your special needs: they'll assist you in every step of the design process... from creating initial and final layouts, detailed drawings, and parts lists to suggesting innovative component mounting and assembly methods, final finishing steps, and much more. All in a matter of days! All they need to get started is a simple sketch, description of your concept, and suggested parts list. They'll take it from there!



FOR DETAILED INFORMATION, SEE PAGES C-1062 THRU C-1068.

PacTec 8425 Executive Avenue, Philadelphia, PA 19153 215/365-8400 800/220-9800 FAX: 215/365-4420



## CABINETS

| Manufacturer                       | Starting EEM Page No. | Consoles |               | Cabinets |       |          |             | Turrets |           | Racks |          | Special    |      | Characteristics |                                      |             |                  |          |
|------------------------------------|-----------------------|----------|---------------|----------|-------|----------|-------------|---------|-----------|-------|----------|------------|------|-----------------|--------------------------------------|-------------|------------------|----------|
|                                    |                       | Desk-top | Free-standing | Sys-tems | Bench | Desk-top | Instru-ment | Rack    | Port-able | Bench | Desk-top | Equip-ment | Kits | Equip-ment      | Desks, Work Stations                 | Composition | 19 in. Stand-ard | Shielded |
| AMCO Engineering                   | C•1010                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       |          |            |      | ✓               |                                      | ✓           | ✓                |          |
| Buckeye Stamping Co.               | C•1016                | ✓        |               |          | ✓     | ✓        | ✓           | ✓       | ✓         |       |          |            |      |                 | Alum                                 | ✓           | ✓                |          |
| Cabtron Systems                    | C•1017                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         | ✓     | ✓        | ✓          |      |                 |                                      | ✓           | ✓                |          |
| CMP Enclosures                     | C•1019                | ✓        | ✓             | ✓        | ✓     | ✓        |             | ✓       | ✓         | ✓     | ✓        | ✓          |      | ✓               |                                      | ✓           | ✓                |          |
| ECS Composites                     | C•1021                |          |               |          |       |          |             | ✓       | ✓         |       | ✓        |            |      | ✓               | Composite                            | ✓           | ✓                |          |
| Electronic Packaging Systems       | C•1023                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       | ✓        | ✓          | ✓    | ✓               | Metal                                | ✓           | ✓                |          |
| Electronic Solutions               | C•1116                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       |          |            |      |                 |                                      |             | ✓                |          |
| Elma Electronics                   | C•1031                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       | ✓        | ✓          |      | ✓               |                                      | ✓           | ✓                | ✓        |
| Emcor Products                     | C•1034                |          | ✓             | ✓        |       |          | ✓           | ✓       |           | ✓     | ✓        |            | ✓    | ✓               |                                      | ✓           | ✓                | ✓        |
| Equipto Electronics Corp.          | C•1038                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       |           | ✓     | ✓        | ✓          | ✓    | ✓               |                                      | ✓           | ✓                |          |
| Flexible Furniture Division        | C•1044                |          |               | ✓        | ✓     |          | ✓           |         | ✓         |       |          |            |      | ✓               |                                      |             |                  |          |
| Fury Products                      | C•1045                |          | ✓             |          |       |          |             | ✓       |           |       |          |            |      |                 |                                      | ✓           |                  |          |
| Gemini                             | C•1046                |          |               |          |       |          |             |         |           |       | ✓        |            |      |                 |                                      | ✓           |                  |          |
| General Devices                    | C•1048                |          |               | ✓        |       |          | ✓           | ✓       | ✓         |       |          | ✓          | ✓    |                 | C.S.R                                | ✓           | ✓                |          |
| Hammond Manufacturing              | C•1049                | ✓        | ✓             |          |       | ✓        | ✓           | ✓       |           |       | ✓        |            |      | ✓               |                                      | ✓           | ✓                | ✓        |
| Knurr USA                          | C•1050                |          |               |          | ✓     | ✓        | ✓           | ✓       | ✓         |       | ✓        |            |      | ✓               |                                      | ✓           | ✓                | ✓        |
| Lansing Instrument                 | C•1054                |          |               |          |       | ✓        | ✓           | ✓       |           |       | ✓        |            |      |                 | Alum, steel, plastics                | ✓           | ✓                |          |
| Optima Electric Packaging Systems  | C•1056                | ✓        | ✓             |          |       | ✓        | ✓           | ✓       | ✓         |       | ✓        |            |      | ✓               |                                      | ✓           | ✓                | ✓        |
| Pactec                             | C•1062                | ✓        |               |          |       |          |             |         |           |       |          |            |      |                 |                                      |             |                  |          |
| Par Metal Products                 | C•1069                | ✓        | ✓             | ✓        |       | ✓        |             | ✓       |           | ✓     | ✓        | ✓          | ✓    | ✓               |                                      | ✓           |                  |          |
| Polycase Products                  | C•1070                |          |               |          |       | ✓        |             |         |           |       |          |            |      |                 |                                      |             |                  | ✓        |
| Powerbox Inc.                      | C•1071                |          |               |          | ✓     | ✓        | ✓           |         |           |       |          |            |      |                 |                                      |             |                  |          |
| Precision Fabrication Technologies | C•1073                |          | ✓             |          |       | ✓        | ✓           | ✓       |           |       | ✓        |            |      |                 | Steel aluminum                       | ✓           |                  |          |
| Premier Metal Products             | C•1080                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         | ✓     | ✓        |            |      | ✓               |                                      | ✓           | ✓                |          |
| Ritz Electronics                   | C•1081                | ✓        | ✓             |          | ✓     | ✓        | ✓           | ✓       |           |       | ✓        | ✓          |      |                 |                                      | ✓           |                  |          |
| S & S Associates                   | C•1082                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       |           |       |          |            |      |                 |                                      |             | ✓                |          |
| Schroff, Inc.                      | C•1088                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       | ✓        | ✓          |      |                 | Steel, aluminum                      | ✓           | ✓                |          |
| Sescom Inc.                        | C•1093                | ✓        |               |          | ✓     | ✓        | ✓           | ✓       | ✓         |       |          |            |      |                 |                                      |             |                  |          |
| SIMCO                              | C•1094                |          |               |          |       | ✓        | ✓           |         | ✓         |       |          |            |      |                 | ABS                                  |             |                  |          |
| Strongbox                          | C•1098                |          |               |          |       |          |             |         |           |       |          | ✓          |      |                 |                                      | ✓           |                  |          |
| Techmar Corp.                      | C•1102                |          |               |          | ✓     | ✓        |             | ✓       |           |       | ✓        | ✓          |      |                 | Aluminum                             | ✓           |                  |          |
| TDJ Company Inc.                   | C•1100                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       |           |       |          | ✓          |      |                 | Aluminum; Vinyl clad aluminum covers | ✓           |                  |          |
| Teclab                             | C•1105                |          |               | ✓        | ✓     |          |             |         |           |       |          |            |      | ✓               |                                      |             |                  |          |
| Tracewell Enclosures               | C•1106                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       | ✓        |            |      |                 |                                      | ✓           | ✓                |          |
| Unitrack Industries                | C•1114                |          |               |          |       | ✓        |             | ✓       |           |       |          |            |      |                 |                                      | ✓           |                  |          |
| Vector Electronics                 | C•1024                |          |               |          |       |          | ✓           | ✓       | ✓         |       | ✓        |            |      |                 |                                      |             | ✓                |          |
| Zero Cabinets (Stantron)           | C•1118                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         | ✓     | ✓        | ✓          | ✓    | ✓               |                                      | ✓           | ✓                |          |
| Zero East                          | C•1124                |          |               | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         |       | ✓        |            |      |                 |                                      |             | ✓                | ✓        |
| Zero Electronic Enclosures         | C•1128                | ✓        | ✓             | ✓        | ✓     | ✓        | ✓           | ✓       | ✓         | ✓     | ✓        | ✓          | ✓    | ✓               |                                      | ✓           | ✓                |          |



## CASES

| Manufacturer                       | Starting EEM Page No. | Type      |         |          |           |      |            |          |         |                    | Characteristics                     |                 |          |                |
|------------------------------------|-----------------------|-----------|---------|----------|-----------|------|------------|----------|---------|--------------------|-------------------------------------|-----------------|----------|----------------|
|                                    |                       | Bench-top | Display | Desk-top | Key-board | Kits | Instrument | Portable | Transit | Equipment, General | Composition                         | 19 in. Standard | Shielded | NEMA/UL Listed |
| Altech Corp.                       | C•1006                |           |         |          |           |      | ✓          |          |         |                    | Non-metallic                        |                 |          | ✓              |
| Alumapak                           | C•1009                | ✓         |         |          |           |      | ✓          |          |         | ✓                  |                                     |                 | ✓        |                |
| Ange Electronics Corp.             | C•1014                | ✓         |         | ✓        | ✓         |      | ✓          |          |         | ✓                  |                                     | ✓               | ✓        |                |
| Buckeye Stamping Co.               | C•1016                | ✓         |         | ✓        | ✓         | ✓    | ✓          |          |         |                    | Alum                                | ✓               |          |                |
| Compac                             | C•1020                |           |         |          |           |      |            |          |         |                    |                                     |                 | ✓        |                |
| ECS Composites                     | C•1021                | ✓         | ✓       | ✓        | ✓         |      | ✓          |          | ✓       | ✓                  | Composite                           | ✓               | ✓        |                |
| Electronic Packaging Systems       | C•1023                | ✓         | ✓       | ✓        | ✓         | ✓    | ✓          |          |         |                    | Metal or plastic                    | ✓               | ✓        |                |
| Electronic Solutions               | C•1116                |           |         |          |           |      | ✓          | ✓        |         | ✓                  |                                     |                 |          |                |
| Elma Electronics                   | C•1031                | ✓         | ✓       | ✓        | ✓         | ✓    | ✓          |          | ✓       | ✓                  |                                     | ✓               | ✓        | ✓              |
| Emcor Products                     | C•1034                |           |         |          |           |      | ✓          |          |         |                    |                                     | ✓               |          |                |
| Extrusion                          | C•1042                | ✓         | ✓       | ✓        | ✓         | ✓    | ✓          |          | ✓       | ✓                  |                                     |                 | ✓        |                |
| Gemini Inc.                        | C•1046                |           | ✓       |          |           |      | ✓          |          | ✓       | ✓                  |                                     | ✓               |          |                |
| Hammond Manufacturing              | C•1049                | ✓         |         | ✓        | ✓         |      | ✓          |          |         |                    |                                     | ✓               | ✓        | ✓              |
| Knurr USA                          | C•1050                | ✓         | ✓       | ✓        |           |      | ✓          |          |         | ✓                  |                                     | ✓               | ✓        | ✓              |
| Lansing Instrument                 | C•1054                | ✓         |         | ✓        |           |      | ✓          |          |         | ✓                  | Alum, steel, plastic, + other sizes | ✓               | ✓        |                |
| Optima Electric Packaging Systems  | C•1056                |           |         | ✓        |           |      | ✓          |          |         | ✓                  |                                     | ✓               |          |                |
| Pactec                             | C•1062                | ✓         | ✓       | ✓        | ✓         | ✓    | ✓          |          |         | ✓                  | Plastic (ABS)                       |                 | ✓        |                |
| Polycase Products                  | C•1070                | ✓         |         | ✓        |           |      | ✓          |          |         | ✓                  |                                     |                 |          |                |
| Powerbox Inc.                      | C•1071                | ✓         |         | ✓        |           | ✓    | ✓          |          |         |                    |                                     | ✓               |          |                |
| Precision Fabrication Technologies | C•1073                | ✓         |         | ✓        | ✓         | ✓    | ✓          |          |         |                    | Aluminum                            |                 |          |                |
| Premier Metal Products             | C•1080                | ✓         |         | ✓        |           |      | ✓          |          | ✓       | ✓                  |                                     | ✓               |          |                |
| Ritz Electronics                   | C•1081                | ✓         | ✓       | ✓        | ✓         | ✓    | ✓          |          |         |                    |                                     | ✓               |          |                |
| S & S Associates                   | C•1082                | ✓         |         | ✓        |           | ✓    | ✓          |          |         |                    |                                     |                 | ✓        |                |
| Schroff, Inc.                      | C•1088                | ✓         |         | ✓        | ✓         | ✓    | ✓          |          | ✓       | ✓                  | Steel, aluminum                     | ✓               | ✓        |                |
| Sescom Inc.                        | C•1093                | ✓         |         | ✓        | ✓         |      | ✓          |          |         |                    |                                     | ✓               |          |                |
| SIMCO                              | C•1094                |           |         | ✓        |           | ✓    | ✓          |          |         |                    |                                     |                 |          |                |
| Strongbox                          | C•1098                |           |         |          |           | ✓    | ✓          |          |         | ✓                  |                                     | ✓               |          |                |
| Tracewell Enclosures               | C•1106                | ✓         |         | ✓        | ✓         |      | ✓          |          |         | ✓                  |                                     | ✓               | ✓        |                |
| Zero Cabinets (Stantron)           | C•1118                |           |         |          |           |      | ✓          |          | ✓       | ✓                  |                                     | ✓               | ✓        |                |
| Zero East???                       | C•1124                |           |         |          |           |      |            |          |         |                    |                                     |                 |          |                |
| Zero Electronic Enclosures         | C•1128                |           |         |          |           |      | ✓          |          | ✓       | ✓                  |                                     | ✓               | ✓        |                |



## PCB MOUNTING

| Manufacturer                 | Starting EEM Page No. | Card Cages/ Frames | Card Files | Card Guides | Vertical Card Guides | * Retainers | Inserters/ Extractors | Ejectors | NEMA/UL Listed |
|------------------------------|-----------------------|--------------------|------------|-------------|----------------------|-------------|-----------------------|----------|----------------|
| Altech Corp.                 | C•1006                |                    |            | ✓           |                      |             |                       |          | ✓              |
| Atlee, Inc.                  | C•1015                |                    |            | ✓           |                      |             |                       |          |                |
| Buckeye Stamping Co.         | C•1016                | ✓                  |            | ✓           |                      |             |                       |          |                |
| Calmark Corp.                | C•1018                | ✓                  | ✓          | ✓           |                      | ✓           | ✓                     | ✓        |                |
| EG & G Birtcher              | C•1022                | ✓                  |            | ✓           | ✓                    | ✓           | ✓                     | ✓        |                |
| Electronic Packaging Systems | C•1023                | ✓                  | ✓          | ✓           | ✓                    | ✓           | ✓                     | ✓        | ✓              |
| Electro-Space Fabricators    | C•1026                | ✓                  | ✓          | ✓           |                      |             | ✓                     | ✓        | ✓              |
| Elma Electronics             | C•1031                | ✓                  | ✓          | ✓           | ✓                    | ✓           | ✓                     | ✓        |                |
| Extrusion                    | C•1042                | ✓                  | ✓          | ✓           | ✓                    |             |                       |          |                |
| Knurr USA                    | C•1050                | ✓                  |            |             |                      |             |                       |          |                |
| Pactec                       | C•1062                |                    |            | ✓           | ✓                    |             |                       |          |                |
| Polycase Products            | C•1070                |                    |            | ✓           |                      |             |                       |          |                |
| Premier Metal Products       | C•1080                | ✓                  |            | ✓           |                      |             |                       |          |                |
| Schroff, Inc.                | C•1088                | ✓                  | ✓          | ✓           | ✓                    | ✓           | ✓                     | ✓        |                |
| Serco Products               | C•1090                |                    |            |             | ✓                    |             |                       |          |                |
| Techmar Corp.                | C•1102                | ✓                  |            | ✓           | ✓                    |             |                       |          |                |
| Tracewell Enclosures         | C•1106                | ✓                  |            |             |                      |             |                       |          |                |
| Unitrack Industries          | C•1114                | ✓                  | ✓          | ✓           | ✓                    | ✓           | ✓                     | ✓        |                |

## CHASSIS/TRACKS

| Manufacturer                 | Starting EEM Page No. | Chassis | Tracks/ Slides |
|------------------------------|-----------------------|---------|----------------|
| Ango Electronics Corp.       | C•1014                | ✓       |                |
| ECS Composites               | C•1021                |         | ✓              |
| Electronic Packaging Systems | C•1023                | ✓       | ✓              |
| Electro-Space Fabricators    | C•1026                | ✓       |                |
| Elma Electronics             | C•1031                | ✓       | ✓              |
| Emcor Products               | C•1034                |         | ✓              |
| Equipto Electronics Corp.    | C•1038                | ✓       | ✓              |
| Fury Products                | C•1045                | ✓       |                |
| General Devices              | C•1048                | ✓       | ✓              |
| Knurr USA                    | C•1050                | ✓       |                |
| Lansing Instrument           | C•1054                | ✓       |                |
| Par Metal Products           | C•1069                |         | ✓              |
| Premier Metal Products       | C•1080                | ✓       | ✓              |
| Ritz Electronics             | C•1081                | ✓       | ✓              |
| Schroff, Inc.                | C•1088                | ✓       | ✓              |
| Strongbox                    | C•1098                | ✓       | ✓              |
| TDJ Company Inc.             | C•1100                | ✓       |                |
| Techmar Corp.                | C•1102                | ✓       | ✓              |
| Tracewell Enclosures         | C•1106                | ✓       |                |
| Zero Cabinets (Stantron)     | C•1118                |         | ✓              |
| Zero East                    | C•1124                | ✓       | ✓              |

## STORAGE EQUIPMENT

| Manufacturer         | Starting EEM Page No. | Cartridge/ Cassette | Disk | Magnetic Card | Multifunctional | Reel-to-Reel Tape |
|----------------------|-----------------------|---------------------|------|---------------|-----------------|-------------------|
| ECS Composites       | C•1021                |                     |      |               |                 | ✓                 |
| Tracewell Enclosures | C•1106                | ✓                   | ✓    |               | ✓               |                   |
| Unitrack Industries  | C•1114                |                     |      |               | ✓               |                   |



# Altech Corp.

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## ENCLOSURES THAT PROTECT AND LOOK GOOD TOO!

Altech/Spelsberg enclosures provide needed protection in a functional and creative way while enhancing the value of your product with their appealing designs. Innovative housing for electrical/electronic/pneumatic components; terminal blocks and assemblies; meters, switches, sensors; and DIN rail mount circuit breakers and devices. Choose from our wide selection of sizes and styles.

- Dustproof and Watertight
- Non-Corroding, Chemical and Impact Resistant
- International Approvals
- Fully Gasketed with Polyurethane Seals
- Precision Molded Polystyrene, Polycarbonate, or Glass Reinforced Polycarbonate
- Available with Transparent or Gray Covers
- NEMA 4X
- Smooth or Knockout Sidewalls
- Selection of Cover Heights and Styles
- Special Colors Upon Request
- Easily Customized
- Complete Line of Accessories Available



Altech's Family of Nonmetallic Enclosures

### TK Variety—Polycarbonate, sidewalls without knockouts, NEMA 4X/IP66

| Type        | Cover Type  | Dimensions (inches) | Type         | Cover Type  | Dimensions (inches) |
|-------------|-------------|---------------------|--------------|-------------|---------------------|
| PC77-6-o    | gray        | 2.56 sq x 2.24      | PC1313-7-o   | gray        | 5.12 sq x 2.95      |
| PC77-8-o    | gray        | 2.56 sq x 3.19      | PC1313-10-o  | gray        | 5.12 sq x 3.90      |
| PC77-6-to   | transparent | 2.56 sq x 2.24      | PC1313-7-to  | transparent | 5.12 sq x 2.95      |
| PC77-8-to   | transparent | 2.56 sq x 3.19      | PC1313-10-to | transparent | 5.12 sq x 3.90      |
| PC97-6-o    | gray        | 3.70 x 2.56 x 2.24  | PC1811-9-o   | gray        | 7.09 x 4.33 x 3.54  |
| PC97-8-o    | gray        | 3.70 x 2.56 x 3.19  | PC1811-11-o  | gray        | 7.09 x 4.33 x 4.37  |
| PC97-6-to   | transparent | 3.70 x 2.56 x 2.24  | PC1811-9-to  | transparent | 7.09 x 4.33 x 3.54  |
| PC97-8-to   | transparent | 3.70 x 2.56 x 3.19  | PC1811-11-to | transparent | 7.09 x 4.33 x 4.37  |
| PC99-6-o    | gray        | 3.70 sq x 2.24      | PC1818-9-o   | gray        | 7.17 x 7.09 x 3.54  |
| PC99-8-o    | gray        | 3.70 sq x 3.19      | PC1818-11-o  | gray        | 7.17 x 7.09 x 4.37  |
| PC99-6-to   | transparent | 3.70 sq x 2.24      | PC1818-9-to  | transparent | 7.17 x 7.09 x 3.54  |
| PC99-8-to   | transparent | 3.70 sq x 3.19      | PC1818-11-to | transparent | 7.17 x 7.09 x 4.37  |
| PC1111-7-o  | gray        | 4.33 sq x 2.60      | PC2518-9-o   | gray        | 10.0 x 7.09 x 3.54  |
| PC1111-9-o  | gray        | 4.33 sq x 3.54      | PC2518-11-o  | gray        | 10.0 x 7.09 x 4.37  |
| PC1111-7-to | transparent | 4.33 sq x 2.60      | PC2518-9-to  | transparent | 10.0 x 7.09 x 3.54  |
| PC1111-9-to | transparent | 4.33 sq x 3.54      | PC2518-11-to | transparent | 10.0 x 7.09 x 4.37  |
| PC1309-6-o  | gray        | 5.12 x 3.70 x 2.24  | PC3625-11-o  | gray        | 14.21 x 10 x 4.37   |
| PC1309-8-o  | gray        | 5.12 x 3.70 x 3.19  | PC3625-16-o  | gray        | 14.21 x 10 x 6.50   |
| PC1309-6-to | transparent | 5.12 x 3.70 x 2.24  | PC3625-11-to | transparent | 14.21 x 10 x 4.37   |
| PC1309-8-to | transparent | 5.12 x 3.70 x 3.19  | PC3625-16-to | transparent | 14.21 x 10 x 6.50   |

### TK Variety—Polystyrene, sidewalls with knockouts, NEMA 4X/IP66

| Type     | Cover Type | Qty/Size Knockouts | Dimensions (inches) | Type      | Cover Type | Qty/Size Knockouts | Dimensions (inches) |
|----------|------------|--------------------|---------------------|-----------|------------|--------------------|---------------------|
| PS77-6   | Gray       | 4/Pg 16            | 2.56 sq x 2.24      | PS1313-7  | Gray       | 7/Pg 21/16         | 5.12 sq x 2.95      |
| PS77-8   | Gray       | 4/Pg 16            | 2.56 sq x 3.19      | PS1313-10 | Gray       | 7/Pg 21/16         | 5.12 sq x 3.90      |
| PS97-6   | Gray       | 6/Pg 16            | 3.70 x 2.56 x 2.24  | PS1811-9  | Gray       | 12 <sup>1</sup>    | 7.09 x 4.33 x 3.54  |
| PS97-8   | Gray       | 6/Pg 16            | 3.70 x 2.56 x 3.19  | PS1811-11 | Gray       | 12 <sup>1</sup>    | 7.09 x 4.33 x 4.37  |
| PS99-6   | Gray       | 7/Pg 16            | 3.70 sq x 2.24      | PS1818-9  | Gray       | 12 <sup>2</sup>    | 7.17 x 7.09 x 3.54  |
| PS99-8   | Gray       | 7/Pg 16            | 3.70 sq x 3.19      | PS1818-11 | Gray       | 12 <sup>2</sup>    | 7.17 x 7.09 x 4.37  |
| PS1111-7 | Gray       | 7/Pg 21/16         | 4.33 sq x 2.60      | PS2518-9  | Gray       | 16 <sup>3</sup>    | 10.0 x 7.09 x 3.54  |
| PS1111-9 | Gray       | 7/Pg 21/16         | 4.33 sq x 3.54      | PS2518-11 | Gray       | 16 <sup>3</sup>    | 10.0 x 7.09 x 4.37  |
| PS1309-6 | Gray       | 10/Pg 16/11        | 5.12 x 3.70 x 2.24  | PS3625-11 | Gray       | 26 <sup>4</sup>    | 14.21 x 10 x 4.37   |
| PS1309-8 | Gray       | 10/Pg 16/11        | 5.12 x 3.70 x 3.19  | PS3625-16 | Gray       | 26 <sup>4</sup>    | 14.21 x 10 x 6.50   |

1.) 4, Pg 21/16, 16, Pg 16; 2.) 8, Pg 21/16, 4, Pg 29/21; 3.) 12, Pg 21/16, 4, Pg 29/21; 4.) 32, Pg 16, 4, Pg 21/16, 6, Pg 29/21

### EK Quick Access - Polystyrene

Transparent Hinged Covers

Sidewalls with knockouts, NEMA 4X (IP65)

| Type  | Qty/Size Knockouts  | Dimensions (in.) W x D x H |
|-------|---------------------|----------------------------|
| EK004 | 4/Pg 16, 1/Pg 21/16 | 4.33 sq x 7.09             |
| EK006 | 8/Pg 16, 1/Pg 21/16 | 7.17 x 7.09 x 4.33         |
| EK012 | 8/Pg 16, 2/Pg 21/16 | 10 x 7.09 x 4.33           |
| EK024 | 8/Pg 16, 1/Pg 29/16 | 14.21 x 10 x 4.33          |

### HP Economy Junction Boxes

Semi-rigid Polypropylene

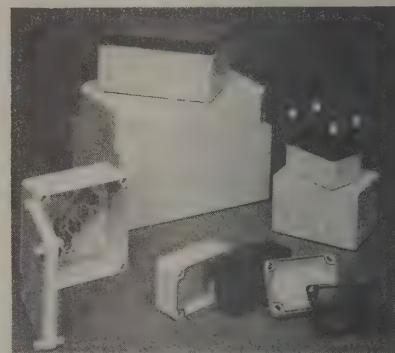
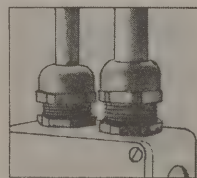
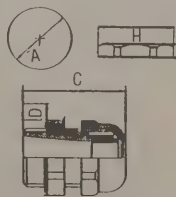
with universal entry seals NEMA 12/12 IP54

| Type   | Dimensions (in.) |
|--------|------------------|
| HP 70  | 2.95 sq x 1.66   |
| HP 80  | 3.35 sq x 1.66   |
| HP 90  | 3.55 sq x 1.77   |
| HP 100 | 4.45 sq x 2.29   |

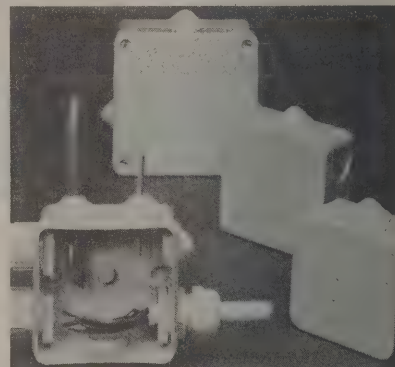
### Connector Assemblies

Includes connector, ring seal and locknut. Material: polyamide, glass-filled reinforced. Liquid-tight, strain-relief connector assemblies for use with enclosures.

| Type    | Cable Dia. Range (in.) | Thread  | Hole Dia. (in.) A | Knock out Size | Dimensions (in.) C D H |
|---------|------------------------|---------|-------------------|----------------|------------------------|
| 227-037 | 0.16-0.32              | NPT3/8" | 0.69              | Pg11           | 1.46 59 0.95           |
| 227-050 | 0.24-0.47              | NPT1/2" | 0.85              | Pg16           | 1.57 51 1.14           |
| 227-075 | 0.51-0.71              | NPT3/4" | 1.06              | Pg21           | 1.69 51 1.54           |
| 227-100 | 0.71-0.98              | NPT1"   | 1.32              | Pg29           | 2.24 75 1.81           |
| 225-402 | 0.20-0.40              | Pg11    | 0.75              | NPT3/8"        | 1.26 32 0.95           |
| 225-404 | 0.39-0.55              | Pg16    | 0.91              | NPT1/2"        | 1.50 39 1.18           |
| 225-405 | 0.51-0.71              | Pg21    | 1.14              | NPT3/4"        | 1.61 43 1.42           |
| 225-406 | 0.71-0.98              | Pg29    | 1.50              | NPT1"          | 1.93 43 1.81           |



TK Variety Enclosures



HP Economy Junction Boxes



EK Quick Access Enclosures

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR CIRCUIT BREAKERS IN SECTION B-4300 / SEE OUR TERMINAL BLOCKS IN SECTION C-2100



# Altech Corp.

35 Royal Road • Flemington, NJ 08822-6000  
Phone (908) 806-9400 • Fax (908) 806-9490

## NONMETALLIC ENCLOSURES DIN RAIL MOUNT

Altech's contemporary nonmetallic enclosures are designed to help you package your devices for the world market. Compact in size, they are ideal for housing electrical, electronic, electromechanical devices such as electronic transducers and converters, process controllers, monitoring devices, printed circuit boards and more! Quick and easy front wiring with 4 to 144 ready-to-wire terminals. Snap onto standard DIN rail or panel mount.

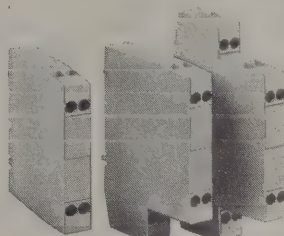
- Complete With Terminals
- Several Terminal-to-Board Connection Options
- Integral PC Board Guides
- Beryllium Copper Contacts

- Up to 25A, 300V; 18-12 AWG
- UL94V0 Materials
- Wide Range of Sizes, Designs
- Easily Customized, Imprinted
- International Acceptance

### K70

Cost effective kits have snap on covers for easy insertion and removal of PC boards. Integral PC board guides. Pressure plate terminals, fixed and pluggable terminal-to-board connections.

- 6 to 32 Terminals
- Housing Material: Polycarbonate
- Cover Material: ABS
- Standard Color: Gray
- Up to 25A (Pluggable to 10A)
- Terminal Covers Optional



### KO4070

Compact, cost effective, snap together kits. Removable cage clamp terminals with dual solder pins are machine solderable. Horizontal and vertical PC board positions. Funnel shaped wire entries.

- 4 to 16 Cage Clamp Terminals
- Material: Polyamide
- Standard Color: Gray
- Up to 16A
- Extended Length Pins Available

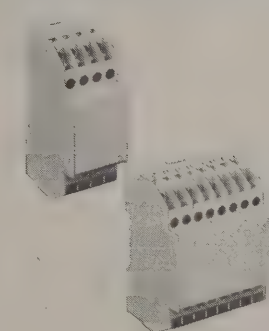
| Type     | Max. # of Terminals | Terminal-to-Bd. Connection* | Housing Dimensions mm** |      |       |
|----------|---------------------|-----------------------------|-------------------------|------|-------|
|          |                     |                             | W                       | H    | D     |
| K7022.5A | 8                   | WJ, FO                      | 22.5                    | 75.0 | 97.0  |
| K7045C   | 10                  | WJ, MS                      | 45.0                    | 75.0 | 112.0 |
| K7022.5B | 12                  | WJ, FO                      | 22.5                    | 75.0 | 97.0  |
| K7022.5C | 12                  | WJ, MS                      | 22.5                    | 75.0 | 97.0  |
| K7055    | 12                  | WJ                          | 55.0                    | 73.0 | 114.0 |
| K7075P   | 16                  | WJ, ST, CE                  | 55.0                    | 73.0 | 114.0 |
| K7045D1  | 20                  | WJ, FO                      | 45.0                    | 74.0 | 124.0 |
| K7045D2  | 20                  | WJ, FO                      | 45.0                    | 74.0 | 124.0 |
| K70100A  | 20                  | WJ, FO                      | 100.0                   | 73.0 | 114.0 |
| K70100P  | 20                  | WJ, ST, CE                  | 100.0                   | 73.0 | 114.0 |
| K70150P  | 32                  | WJ, ST, CE                  | 150.0                   | 73.0 | 113.0 |

| Type   | Max. # of Terminals | Terminal-to-Bd. Connection* | Housing Dimensions mm** |      |      |      |      |
|--------|---------------------|-----------------------------|-------------------------|------|------|------|------|
|        |                     |                             | W                       | H1   | H2   | D1   | D2   |
| K04071 | 4                   | SP                          | 12.5                    | 60.0 | —    | 60.0 | —    |
| K04072 | 6                   | SP                          | 12.5                    | 60.0 | 75.0 | 60.0 | 31.0 |
| K04074 | 6                   | SP                          | 20.5                    | 60.0 | —    | 60.0 | —    |
| K04073 | 8                   | SP                          | 12.5                    | 60.0 | 90.0 | 60.0 | 31.0 |
| K04077 | 8                   | SP                          | 28.5                    | 60.0 | —    | 60.0 | —    |
| K04075 | 9                   | SP                          | 20.5                    | 60.0 | 75.0 | 60.0 | 31.0 |
| K04076 | 12                  | SP                          | 20.5                    | 60.0 | 90.0 | 60.0 | 31.0 |
| K04078 | 12                  | SP                          | 28.5                    | 60.0 | 75.0 | 60.0 | 31.0 |
| K04079 | 16                  | SP                          | 28.5                    | 60.0 | 90.0 | 60.0 | 31.0 |

### K04700

A wide range of sizes and cover designs. Pressure plate or cage clamp terminals, fixed and pluggable terminal-to-board connections. Pluggable connection helps to eliminate wiring mistakes.

- Housing Material: Polycarbonate
- Cover Material: Glass Filled Polycarbonate
- Std. Color: Black Housing; Tan Cover
- Up to 25A (Pluggable to 10A)
- Enclosures with Removable Cover Panels Available



### KU4000

Versatile enclosures provide ample internal space for wiring and electronic components. Kits consist of snap-in double level terminals, cover and base, with integral PC board guides. Machine solderable straight or right angle pins, pressure plate terminals. Fit standard 45mm DIN cutout in larger enclosures like Altech's EK Series.

- 8 to 84 Terminals
- Material: Polycarbonate
- Standard Color: Gray
- Up to 10A

| Type     | Max. # of Terminals | Terminal-to-Bd. Connection* | Housing Dimensions mm** |       |       |       |       |
|----------|---------------------|-----------------------------|-------------------------|-------|-------|-------|-------|
|          |                     |                             | W                       | H1    | H2    | D1    | D2    |
| K04762   | 10                  | WJ, FO                      | 45.0                    | 74.0  | —     | 119.0 | —     |
| K04763A  | 16                  | MS                          | 45.0                    | 74.0  | —     | 119.0 | —     |
| K04763P  | 16                  | CE                          | 45.0                    | 74.0  | —     | 119.0 | —     |
| K04718P  | 20                  | WJ, ST, CE                  | 100.0                   | 74.0  | —     | 119.0 | —     |
| K04713A  | 22                  | MS                          | 75.0                    | 74.0  | —     | 119.0 | —     |
| K04713P  | 22                  | CE                          | 75.0                    | 74.0  | —     | 119.0 | —     |
| K04717A  | 30                  | MS                          | 100.0                   | 74.0  | —     | 119.0 | —     |
| K04717P  | 30                  | CE                          | 100.0                   | 74.0  | —     | 119.0 | —     |
| K04719P  | 32                  | WJ, ST, CE                  | 152.0                   | 71.0  | —     | 118.0 | —     |
| K04720P  | 42                  | WJ, ST, CE                  | 200.0                   | 73.0  | —     | 118.0 | —     |
| K04722SP | 42                  | WJ, ST, CE                  | 200.0                   | 122.0 | —     | 118.0 | —     |
| K04721P  | 66                  | WJ, CE                      | 200.0                   | 72.0  | —     | 118.0 | —     |
| K04723SP | 66                  | WJ, ST, CE                  | 200.0                   | 123.0 | —     | 118.0 | —     |
| K04722DP | 84                  | WJ, ST, CE                  | 200.0                   | 82.0  | 123.0 | 118.0 | 136.0 |
| K04723DP | 132                 | WJ, ST, CE                  | 200.0                   | 82.0  | 123.0 | 118.0 | 136.0 |

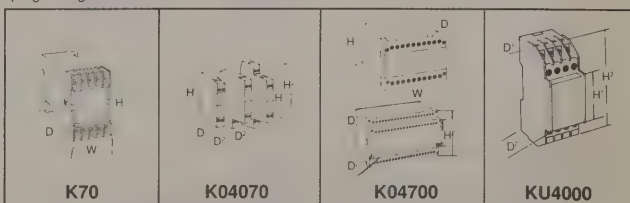
| Type     | Max. # of Terminals | Terminal-to-Bd. Connection* | Housing Dimensions mm** |      |      |      |      |
|----------|---------------------|-----------------------------|-------------------------|------|------|------|------|
|          |                     |                             | W                       | H1   | H2   | D1   | D2   |
| KU4001B† | 8                   | WJ                          | 17.5                    | 45.0 | 89.7 | 47.4 | 57.7 |
| KU4002C  | 16                  | WJ, MS                      | 35.3                    | 45.0 | 89.7 | 47.4 | 58.0 |
| KU4002B† | 16                  | WJ, MS                      | 35.3                    | 45.0 | 89.7 | 47.4 | 58.0 |
| KU4003C  | 32                  | WJ, MS                      | 71.7                    | 45.0 | 89.7 | 47.8 | 58.6 |
| KU4003B† | 32                  | WJ, MS                      | 71.7                    | 45.0 | 89.7 | 47.8 | 58.6 |
| KU4011C  | 32                  | WJ, MS                      | 140.0                   | 44.6 | 88.6 | 47.5 | 59.5 |
| KU4011B† | 32                  | WJ, MS                      | 140.0                   | 44.6 | 88.6 | 47.5 | 59.5 |
| KU4012C  | 32                  | WJ, MS                      | 140.3                   | 44.6 | 88.6 | 48.0 | 59.0 |
| KU4012B† | 32                  | WJ, MS                      | 140.3                   | 44.6 | 88.6 | 48.0 | 59.0 |
| KU4013C  | 64                  | WJ, MS                      | 140.3                   | 44.6 | 88.6 | 48.0 | 59.0 |
| KU4013B† | 64                  | WJ, MS                      | 140.3                   | 44.6 | 88.6 | 48.0 | 59.0 |

†Right Angle Pins

#### \* Terminal-to-Board Connection

WJ = Wire Jumper  
CE = Card Edge (Plug.)  
ST = Solder Tab  
SP = Solder Pin  
FO = Fast on Tab  
MS = Machine Solderable Pins

| **Dimensions |      |      |      |      |      |       |      |       |      |
|--------------|------|------|------|------|------|-------|------|-------|------|
| mm           | in.  | mm   | in.  | mm   | in.  | mm    | in.  | mm    | in.  |
| 17.5         | .69  | 55.0 | 2.17 | 72.0 | 2.83 | 97.0  | 3.82 | 123.0 | 4.84 |
| 22.5         | .89  | 57.7 | 2.27 | 73.0 | 2.87 | 100.0 | 3.94 | 124.0 | 4.88 |
| 31.0         | 1.22 | 58.0 | 2.28 | 74.0 | 2.91 | 112.0 | 4.41 | 136.0 | 5.35 |
| 35.3         | 1.39 | 59.0 | 2.32 | 75.0 | 2.95 | 113.0 | 4.45 | 140.0 | 5.51 |
| 44.6         | 1.76 | 59.5 | 2.34 | 82.0 | 3.23 | 114.0 | 4.49 | 140.3 | 5.52 |
| 45.0         | 1.77 | 60.0 | 2.36 | 86.6 | 3.49 | 118.0 | 4.65 | 150.0 | 5.91 |
| 47.4         | 1.87 | 71.0 | 2.80 | 89.7 | 3.53 | 119.0 | 4.69 | 152.0 | 5.98 |
| 47.8         | 1.89 | 71.7 | 2.82 | 90.0 | 3.54 | 122.0 | 4.80 | 200.0 | 7.87 |



Note: For printed circuit board dimensions, contact factory

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR CIRCUIT BREAKERS IN SECTION B-4300 / SEE OUR TERMINAL BLOCKS IN SECTION C-2100





## MINIGLOSSARY CONNECTORS

**Connector terminology** is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double readout PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

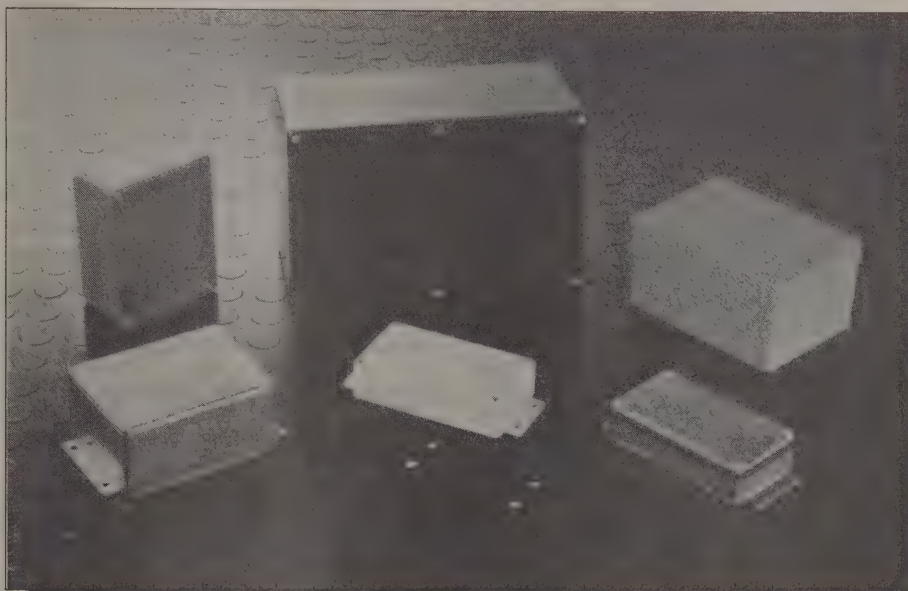
**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.



# AlumaPak

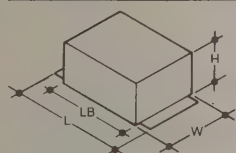
## ALUMINUM DIECAST ENCLOSURES

Three attractive styles of high-quality aluminum diecast boxes with close fitting lids are now available in our AlumaPak line. These lightweight enclosures provide excellent screening against EMI/RFI and are therefore ideal housings for electronic components and circuits. Integral PCB guides are incorporated in some of the styles.

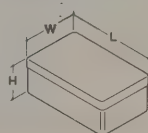


Flanged and general purpose enclosures can be supplied in three finishes: A) Plain, to accept most finishes with a minimum amount of preparation; B) Stove enamel grey texture; C) Nylon coated. The nylon coated boxes can be drilled or machined without affecting the finish. Colors available: grey, blue, yellow, brown, black. Enclosures with gasket available with plain finish only.

| FLANGED<br>MODEL<br>UNPAINTED<br>WITH GASKET | FLANGED<br>MODEL<br>UNPAINTED | EXTERIOR DIMENSIONS<br>W x LB x H x L<br>(Inches) |
|----------------------------------------------|-------------------------------|---------------------------------------------------|
| UEGF-141-900*                                | UEF-141-900*                  | 1.37 x 3.50 x 1.16 x 4.50                         |
| UEGF-351-900*                                | UEF-351-900*                  | 2.50 x 4.50 x 1.16 x 5.50                         |
| UEGF-452-900*                                | UEF-452-900*                  | 3.50 x 4.50 x 2.16 x 5.50                         |
| UEGF-352-900*                                | UEF-352-900*                  | 2.50 x 4.50 x 2.16 x 5.50                         |
| UEGF-572-900*                                | UEF-572-900*                  | 4.75 x 6.75 x 2.16 x 7.95                         |
| UEGF-574-900*                                | UEF-574-900*                  | 4.75 x 6.75 x 4.16 x 7.95                         |
| UEGF-692-900*                                | UEF-692-900*                  | 5.75 x 8.75 x 2.16 x 9.92                         |
| UEGF-463-900*                                | UEF-463-900*                  | 3.94 x 5.51 x 2.95 x 6.69                         |
| UEGF-573-900*                                | UEF-573-900*                  | 5.00 x 6.50 x 2.95 x 7.68                         |
| UEGF-451-900*                                | UEF-451-900*                  | 3.94 x 4.72 x 1.38 x 5.90                         |



\*Internal  
Guide Slots



| MODEL<br>UNPAINTED | MODEL<br>UNPAINTED<br>WITH GASKET | EXTERIOR DIMENSIONS<br>W x L x H<br>(Inches) |
|--------------------|-----------------------------------|----------------------------------------------|
| UE-221-900         | Not Available                     | 2.16 x 2.36 x 1.18                           |
| UE-231-900         | Not Available                     | 2.16 x 3.14 x .98                            |
| UE-141-900         | UEG-141-900                       | 1.37 x 3.50 x 1.16                           |
| UE-351-900         | UEG-351-900                       | 2.50 x 4.50 x 1.16                           |
| UE-452-900         | UEG-452-900                       | 3.50 x 4.50 x 2.16                           |
| UE-352-900         | UEG-352-900                       | 2.50 x 4.50 x 2.16                           |
| UE-572-900         | UEG-572-900                       | 4.75 x 6.75 x 2.16                           |
| UE-574-900         | UEG-574-900                       | 4.75 x 6.75 x 4.16                           |
| UE-692-900         | UEG-692-900                       | 5.75 x 8.75 x 2.16                           |
| UE-694-900         | UEG-694-900                       | 5.75 x 8.75 x 4.16                           |
| UE-7113-900*       | UEG-7113-900*                     | 6.89 x 10.83 x 2.56                          |
| UE-463-900*        | UEG-463-900*                      | 3.94 x 5.51 x 2.95                           |
| UE-573-900*        | UEG-573-900*                      | 5.00 x 6.50 x 2.95                           |
| UE-451-900*        | UEG-451-900*                      | 3.94 x 4.72 x 1.38                           |
| UE-10104-900*      | UEG-10104-900*                    | 9.84 x 9.84 x 3.94                           |

Alumapak engineering will provide design support, if required, for modifications to standard enclosures. Modifications, by CNC machining can be made to top and bottom covers for positioning of PCB's, LCD's, controls and access points for Input/Output devices.

# 800-775-6077

## AlumaPak

Largo, Florida



# MODULAR

**A** MCO's Modular Enclosure Systems have set a standard in electronic enclosures for over 50 years.

Built to meet your changing needs and most demanding applications, our modular enclosures are distinguished

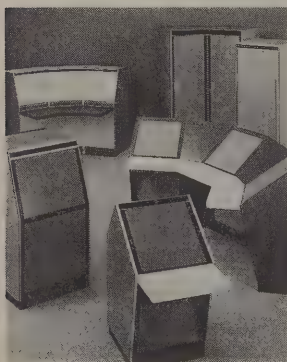
by remarkable design and execution.

The AMCO Style and Design System features:

- Structurally integrated styling to enable you to coordinate type, color, and configuration of all non-structural cabinet components.
- A rainbow of colors. AMCO's standard color palette has 19 distinct choices—from russet to pearl! Vinyl inlays are available in woodgrains or black textured leather.
- Configuration flexibility. AMCO offers vertical, sloped front, and low silhouette enclosure configurations.



## commercial & shielded enclosures



### Quality Construction.

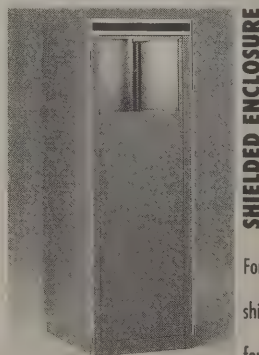
AMCO gives a choice of structural frame design—the FX or F Series frames.

High strength characteristics make the FX Series frame ideal for virtually any commercial or OEM need, in addition to many mil-spec applications. The compact design of the

F-Series frame makes it ideal for series applications where space is limited.

### Call today for Catalog 800A!

122 pages of the enclosures which have set the standard in electrical and electronic protection. This is a must for the file of any design or electronic engineer. Price list and easy-order guide accompany this important catalog.

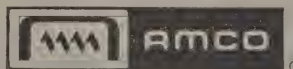


SHIELDED ENCLOSURE

For information on AMCO shielded enclosures, ask for Catalogs 650 and 204.

## CALL AMCO 1-800-833-3156

In Illinois call 708-671-6670 or FAX: 708-671-9469

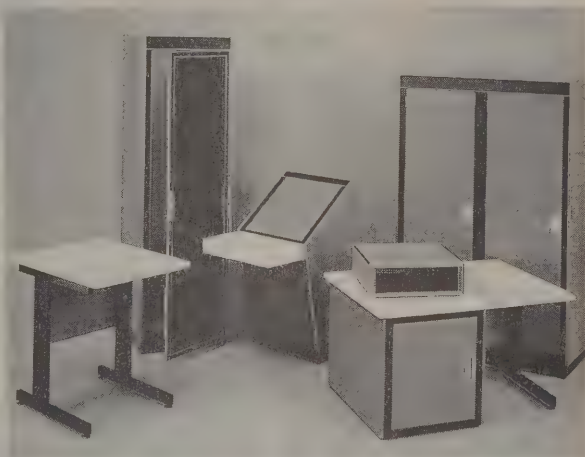




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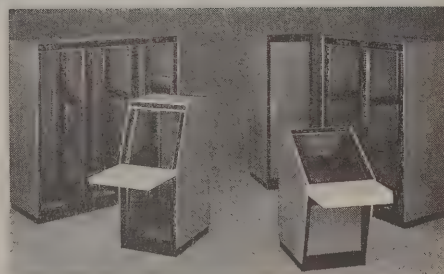
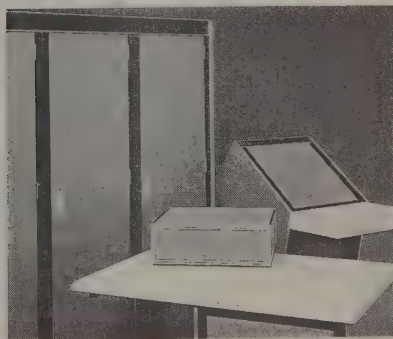
**W**hatever your urgent needs—from consoles, computer desks, and desktop cabinets to hardware, accessories, or cooling devices—AMCO can ship from stock within 5 days. In your choice of 19 colors from black to cranberry!

- 19" or 24" Panel Width Vertical or Sloped Consoles in Two-Tone Textured Black Frames & Cowlings with Panels and Doors in Your Choice of AMCO Colors.
- 19" or 24" Panel Width Desks, Desktop Cabinets, Blowers, Fans, and Accessories.
- Available in Plain, Square, or Radius styling.



### Call and ask for Catalog 500B

Forty-four problem solving pages of the industry's finest stock electronic enclosures awaits you. In an industry where changes—and unexpected demands—accelerate daily, you can't afford to be without this resource!



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For over 50 years, AMCO Engineering has meant quality in electronic enclosures. Our stock products proudly reflect that reputation—as does our ability to get them to you in 5 working days! Give us a call today.

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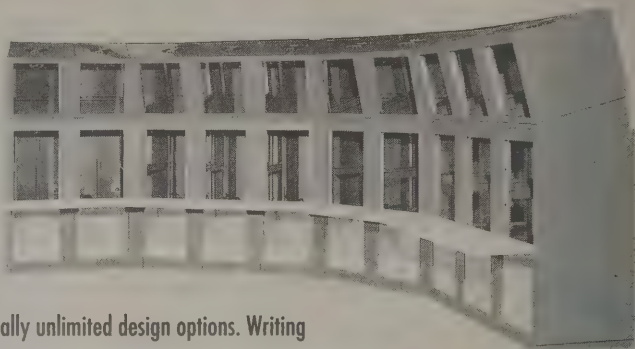




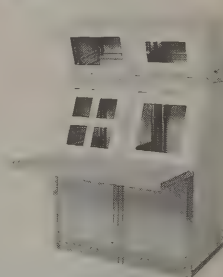
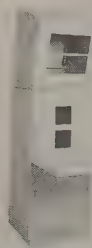
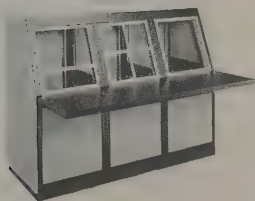
## consoles unparalleled for performance

**O**ur unique modular design concept allows you to design a single console or room encompassing system with the same style and efficiency.

- Base units are vertical, sloped front, or low silhouette.
- Instrument and monitor cabinets come in a wide range of styles and sizes.
- Available in 19 AMCO standard colors from gold to gunmetal!
- Monitoring consoles come in an array of configurations with virtually unlimited design options. Writing surfaces are provided in single or multiple bay widths. Multiple style edges available.



# MONITORING



### Ask for Catalog 450!

24 pages include technical drawings, dimensional charts, and part numbers for system components. Use Catalog 450 in conjunction with AMCO General Product Line Catalog 800A.

### 50 Years of Excellence

For over half-a-century, AMCO Engineering has been building electronic enclosure systems for the world's most exacting applications. Our broadcast and security consoles uphold this tradition beautifully.

**CALL AMCO 1-800-833-3156**

In Illinois call 708-671-6670 or FAX: 708-671-9469

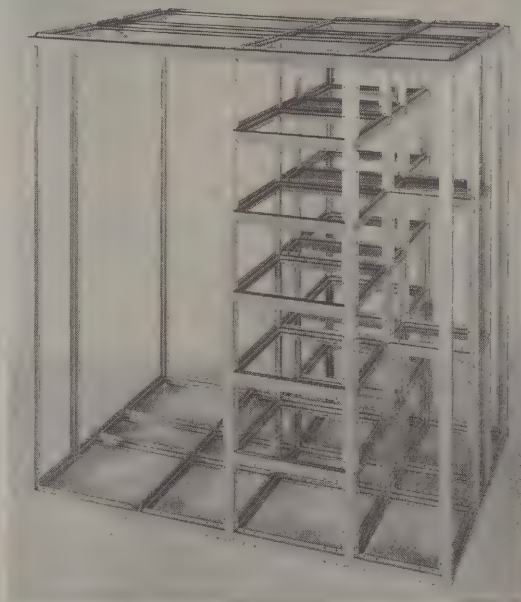




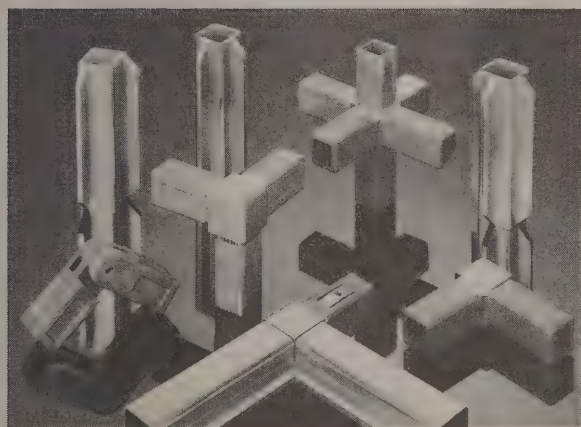
## aluminum framing for tough applications

**S**imple. Strong. Remarkably versatile. With AMCO's heavy-duty aluminum framing system, all you need is a mallet, a few wrenches, and a little design imagination for tough enclosures built specifically to your needs.

- Easy to assemble, the AMCO aluminum framing system makes specialized and non-standard enclosures a snap to design.
- Our patented corner locking method actually exceeds welding!
- Field tested in applications like NASA installations and missile launch systems.



# HEAVY-DUTY



### You Decide the Configuration

You can build enclosures from ten inches to twenty feet in any 90° plane. Use non-locking or locking clips for prototyping or permanent assemblies. To add extra strength, add bolted corner gussets.

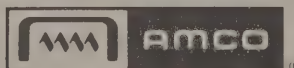
### Call today for Catalog 203!

8 pages of simple solutions to complex enclosure problems. Construction methods

detailed, as are tubing and casting specifications. Detailed diagrams of extrusions for flush mounting flat or formed panels, recessing flat panels, and mounting accessory channels. With AMCO-engineered aluminum framing, quality is no accident!

## CALL AMCO 1-800-833-3156

In Illinois call 708-671-6670 or FAX: 708-671-9469





# GREAT VARIETY OF RACK-MOUNT CHASSIS

## from STANDARD ENCLOSURES

Series 10 have steel top, bottom and side covers all 0.045" thick and grided for excellent heat dissipation, aluminum front (0.125", anodized) and back (0.06" painted) covers that facilitate making of holes.

Note: Our Series 11 (Gray color) has been combined with Series 10. To order a gray enclosure, just add the -G suffix. For example, 10-19082-G (old model #11-19082) is gray and 10-19082-B is black, everything else the same.

Series 12 are all aluminum with 0.06" thick panels and anodized standard finish. An additional second front panel for mounting meters or switches is included for improving the flexibility and strength of the chassis.

Note: Our Series 13 (Clear Anodize) has been combined with Series 12. To order a clear anodized enclosure, just add the -C suffix. For example, 12-19122-C (old model #13-19122) and 12-19122-B is the same enclosure except in black.

Series 14 are all aluminum with standard alodine finish, EMI/RFI shielded and are available in many sizes with 0.09" material. Optional custom hole punching, anodization, color painting, and silk screening. Series 14 is constructed for heavy duty use.

Series 15 are specially made rack-mount cases for PC, XT and AT computers. Stock models include front and rear slotted panels with 1 to 3 disk drive spaces. Custom modifications are available for reasonable prices. High quality UL listed power supply and 2nd fan are optional. Other chassis for disk drives and monitors can be altered to meet your specifications.

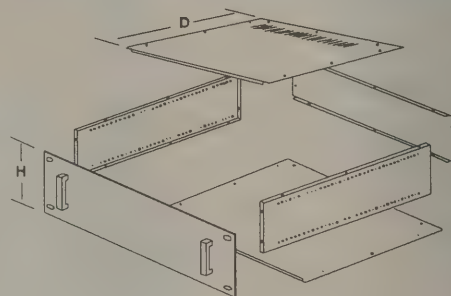
Our Series 16 are custom rack mount chassis that offer our customers the most flexible manufacturing available in the industry. We can manufacture any size enclosure with no minimum quantity. We provide unlimited options including computerized hole punching with pin point accuracy. Please call for more details about our new line of enclosures.

Other accessories include: Support rails/plates, 2nd front panels for meters or switches, aluminum blank panels with sizes from 1U to 7U high and all types of finishes. Vent panels are also available from stock.

Call for free catalog, quantity discount or other products. Specs. and prices are subject to change without prior notice.



EIA STANDARD 19" RACK MOUNT CHASSIS



| HEIGHT<br>H | SERIES 10 |          |       | SERIES 12 |          |       | SERIES 14 |          |        | SERIES 16 |          |        | FRONT PANEL |       |          |       |
|-------------|-----------|----------|-------|-----------|----------|-------|-----------|----------|--------|-----------|----------|--------|-------------|-------|----------|-------|
|             | D         | Part #   | Price | D         | Part #   | Price | D         | Part #   | Price  | D         | Part #   | Price  | Part #      | Price | Part #   | Price |
| 1U 1.75     | 8         | 10-19082 | 41.50 | 7         | 12-19072 | 46.80 | 6         | 14-19061 | 79.50  |           |          |        | 150-1902    | 7.75  | 153-1902 | 17.50 |
| 1U          | 11        | 10-19112 | 44.75 | 11.5      | 12-19122 | 56.50 | 10        | 14-19101 | 84.00  |           |          |        |             |       |          |       |
| 1U          | 14        | 10-19142 | 47.25 |           |          |       |           |          |        |           |          |        |             |       |          |       |
| 2U 3.50     | 8         | 10-19083 | 47.50 | 7         | 12-19073 | 56.50 | 6         | 14-19062 | 84.50  |           |          |        | 150-1903    | 10.50 | 153-1903 | 22.50 |
| 2U          | 11        | 10-19113 | 49.50 | 11.5      | 12-19123 | 63.80 | 10        | 14-19102 | 92.25  | 18        | 16-19182 | 109.00 |             |       |          |       |
| 2U          | 14        | 10-19143 | 53.25 |           |          |       | 16        | 14-19162 | 98.50  | 20        | 16-19202 | 118.50 |             |       |          |       |
| 2U          | 17        | 10-19173 | 59.50 |           |          |       |           |          |        | 22        | 16-19222 | 129.00 |             |       |          |       |
| 3U 5.25     | 8         | 10-19085 | 53.45 | 11.5      | 12-19125 | 70.25 | 10        | 14-19103 | 116.00 | 18        | 16-19183 | 115.00 | 150-1905    | 13.50 | 153-1905 | 27.00 |
| 3U          | 11        | 10-19115 | 56.50 | 15        | 12-19155 | 78.50 | 16        | 14-19163 | 125.50 | 20        | 16-19203 | 124.00 |             |       |          |       |
| 3U          | 14        | 10-19145 | 59.75 |           |          |       |           |          |        | 22        | 16-19223 | 135.00 |             |       |          |       |
| 3U          | 17        | 10-19175 | 62.75 |           |          |       |           |          |        | 24        | 16-19243 | 142.00 |             |       |          |       |
| 4U 7.00     | 14        | 10-19147 | 63.50 | 11.5      | 12-19127 | 77.50 | 10        | 14-19104 | 130.00 | 18        | 16-19184 | 122.00 | 150-1907    | 16.75 | 153-1907 | 31.50 |
| 4U          | 17        | 10-19177 | 67.75 | 15        | 12-19157 | 81.75 | 16        | 14-19164 | 141.60 | 20        | 16-19204 | 131.50 |             |       |          |       |
| 4U          |           |          |       |           |          |       | 22        | 14-19224 | 149.00 | 24        | 16-19244 | 148.25 |             |       |          |       |
| 5U 8.75     |           |          |       | 11.5      | 12-19129 | 84.50 | 16        | 14-19165 | 152.50 | 18        | 16-19185 | 127.00 | 150-1909    | 20.00 |          |       |
| 5U          |           |          |       | 15        | 12-19159 | 90.50 | 22        | 14-19225 | 161.90 | 24        | 16-19245 | 152.50 |             |       |          |       |
| 6U 10.50    |           |          |       |           |          |       | 16        | 14-19166 | 158.00 | 18        | 16-19186 | 135.00 | 150-1910    | 23.50 |          |       |
| 6U          |           |          |       |           |          |       | 22        | 14-19226 | 165.00 | 24        | 16-19246 | 155.50 |             |       |          |       |
| 7U 12.25    |           |          |       |           |          |       |           |          |        | 18        | 16-19187 | 143.00 | 150-1912    | 27.75 |          |       |
| 7U          |           |          |       |           |          |       |           |          |        | 24        | 16-19247 | 159.50 |             |       |          |       |



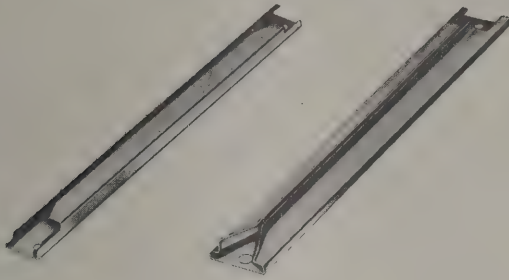
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# ATLEE CARD GUIDES

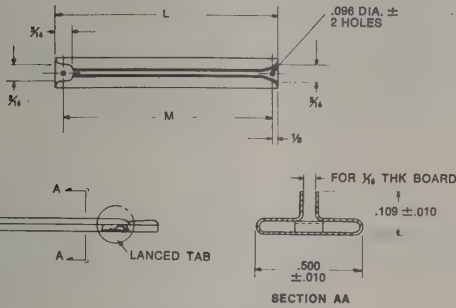


## FEATURES

- High retention of printed circuit board under severe shock and vibration.
- Easily installed by welding or riveting.
- Quick and simple board insertion and withdrawal.
- Rigidly mounted printed-circuit board in racks and other types of assemblies.

**MATERIAL:** \*Stainless Steel available MIL-S-5059  
\*beryllium copper, .010 thick, alloy 25, per QQ-C-533a, condition 1/4 hard.

**PLATING:** .0003 thick cadmium per QQ-P-416, type II, class 2, among others.

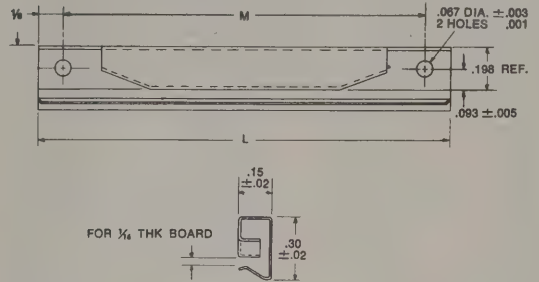


\*11903-3\*\*

|   | L<br>±.02 | M<br>±.005 |    | L<br>±.02 | M<br>±.005 |
|---|-----------|------------|----|-----------|------------|
| 2 | 2 1/2     | 2.250      | 7  | 5         | 4.750      |
| 3 | 3         | 2.750      | 8  | 5 1/2     | 5.250      |
| 4 | 3 1/2     | 3.250      | 9  | 6         | 5.750      |
| 5 | 4         | 3.750      | 10 | 6 1/2     | 6.250      |
| 6 | 4 1/2     | 4.250      | 11 | 7         | 6.750      |

\* Standard in beryllium copper and stainless steel.

\*\* Material thickness can be .008 or .010



\*11909-3\*\*

|   | L<br>±.02 | M<br>±.005 |   | L<br>±.02 | M<br>±.005 |
|---|-----------|------------|---|-----------|------------|
| 1 | 2         | 1.750      | 6 | 4 1/2     | 4.250      |
| 2 | 2 1/2     | 2.250      | 7 | 5         | 4.750      |
| 3 | 3         | 2.750      | 8 | 5 1/2     | 5.250      |
| 4 | 3 1/2     | 3.250      | 9 | 6         | 5.750      |
| 5 | 4         | 3.750      |   |           |            |

\* Standard in beryllium copper and stainless steel.

\*\* Material thickness can be .008 or .010



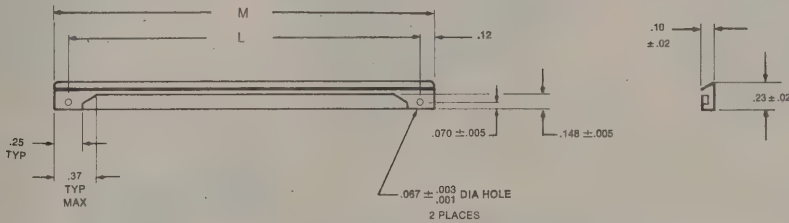
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**MATERIAL:** \*Stainless Steel available MIL-S-5059  
\*beryllium copper, .005 thick, alloy 25, per QQ-C-533, condition 1/4 hard.

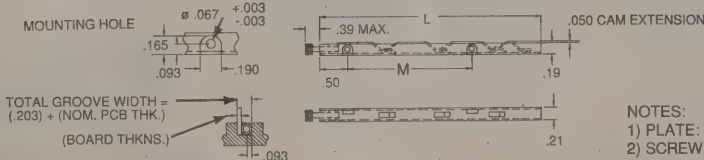
**PLATING:** .0003 thick cadmium per QQ-P-416, type II, class 2, among others.



- Card guides available for 1/32 and 3/32 thick printed circuit boards.
- Flared card guides also available.

- Refer to Atlee Cross Reference for additional card guides we manufacture.
- Card guides designed and manufactured to your specifications.

## Call About Atlee's New PC Board Locking Retainer



- NOTES:
- 1) PLATE: CADMIUM FREE QQ-P-416, TYPE II, CLASS 2.
  - 2) SCREW: STAINLESS STEEL, PASSIVATED FINISH.

Please consult factory for additional card guide requirements.

10 BAYFIELD DRIVE, NORTH ANDOVER BUSINESS PARK, NORTH ANDOVER, MA 01845  
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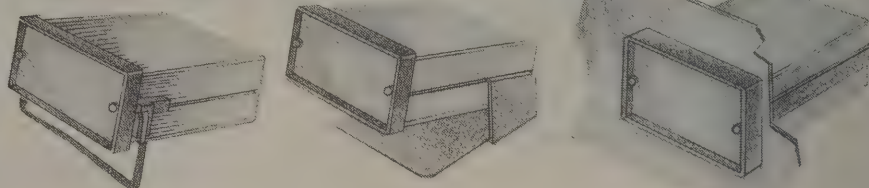
**ATLEE**



# "Putting The Customer First"

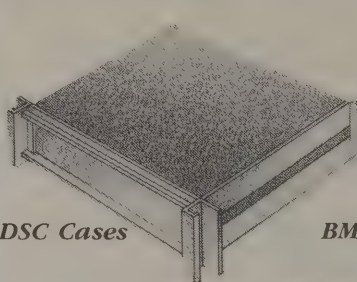
## "E" SERIES — DIN STANDARD

*Panel-mount • Stand-alone • Portable*  
Extruded aluminum enclosures with integral tracks allow board loading on .200" centers, horizontal or vertical. Five DIN standard sizes; 44 x 91 mm, 67 x 136 mm, 91 x 184 mm, 91 x 91 mm and 184 x 184 mm. Mounting stands, handles and modifications are options.

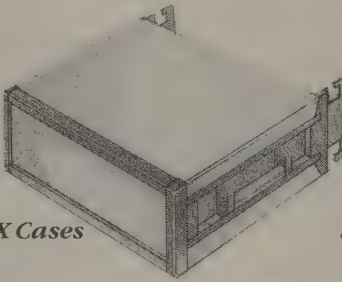


## CASES

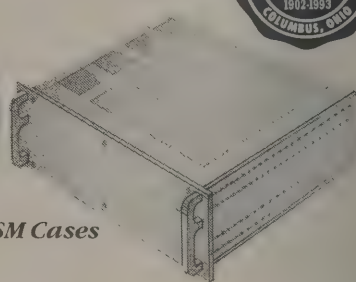
Buckeye cases are in 15 different styles. Widths are 5 1/4", 8 1/2", 11 1/3" and 17". Heights are 3 1/2", 5 1/4", 7", 8 3/4", 10 1/2" and 12 1/4". Standard depths are 10", 13", 16" and 20".



DSC Cases



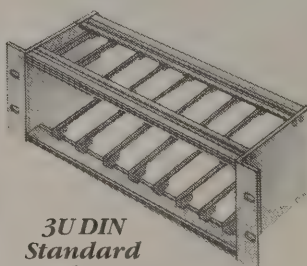
BMX Cases



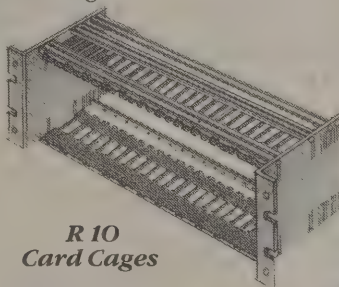
SM Cases

## CARD CAGES & GUIDES

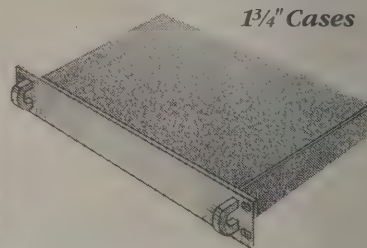
Circuit Board Card Cages with guide spacing either .500 or .750. Modular guides hold 2, 8 or 12 cards. Also new DIN standard cages in 3 sizes.



3U DIN  
Standard  
Card Cages



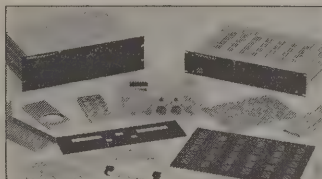
R 10  
Card Cages



1 1/4" Cases

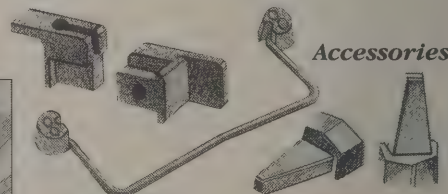


Knobs



Modifications

Screen and pad printing, custom painting, piercing or punching of panels, CNC milling and custom lengths.



Accessories

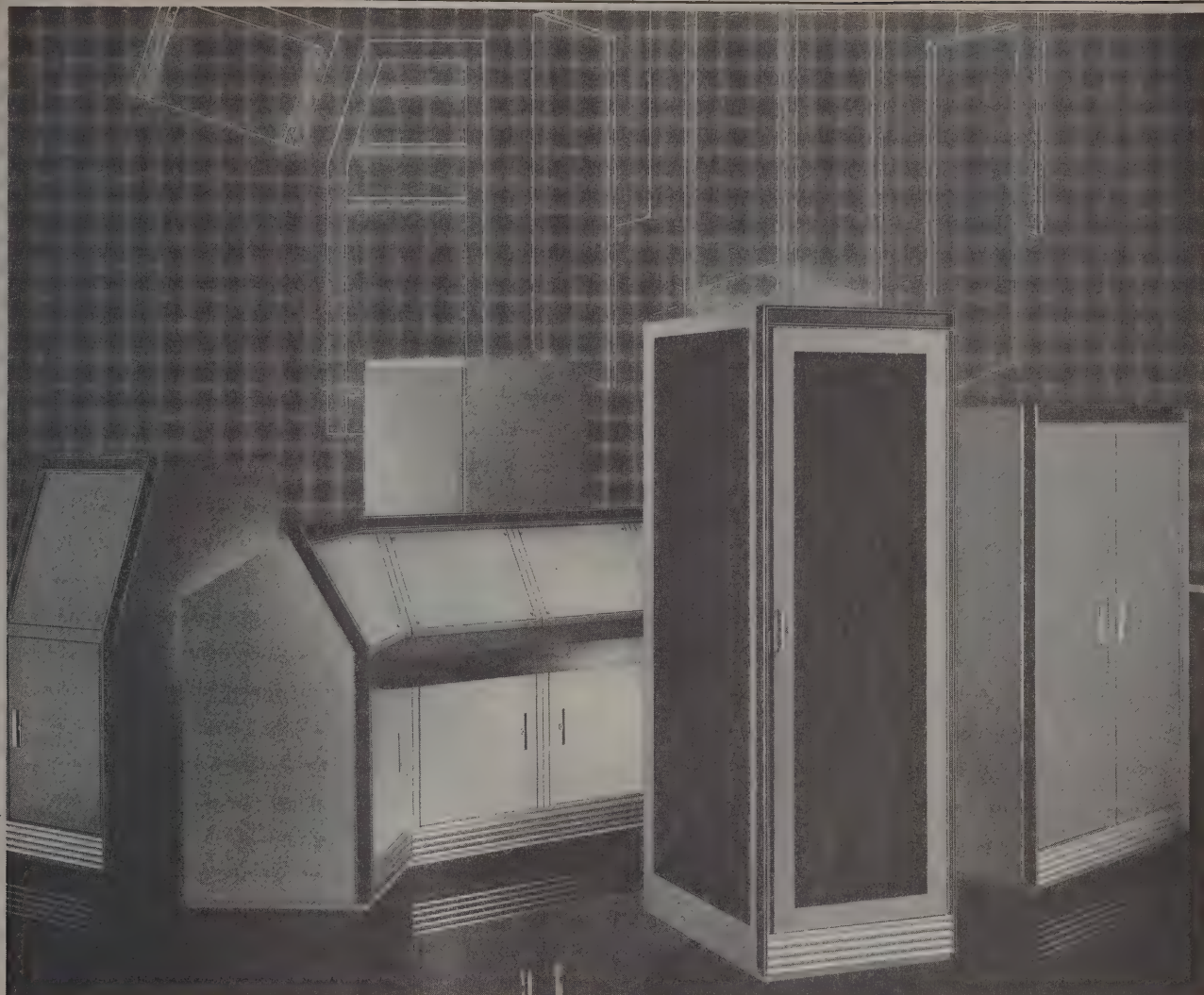
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*Buckeye*



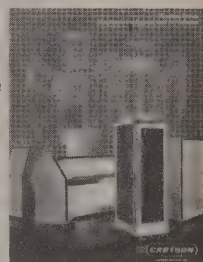


## Standard or Modified — Cabtron has the enclosures to make *your* designs work.

Cabtron's electronic enclosures are designed for maximum efficiency—whether used for automatic test equipment, communications, military, security, video, medical, industrial, or other applications. Our large selection of standard sizes, coupled with distinctive styling and a fully integrated, modular parts system, offer you the ultimate design flexibility required in today's market.

Cabtron also offers one of the largest selections of accessories in the industry, while attractive trim packages help you finish your enclosures in style. In addition, our skilled technicians will match any color, punch any size hole, or assemble any cabinet configuration to meet your specifications.

perience in electronic enclosures to work for you. For the name of your local representative and your FREE Firstline catalog, contact Cabtron at:

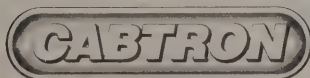


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### Standard Features

- 12, 14, or 16 gauge steel frame.
- 11 gauge corner gussets for added strength on vertical rack and console models.
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- Choose from 10 standard textured finishes. Combinations of standard colors available at no additional cost.



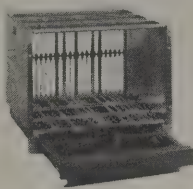
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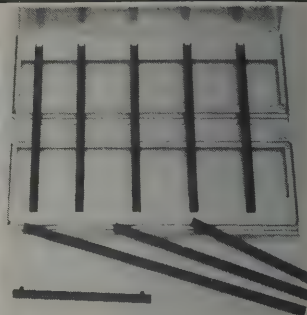
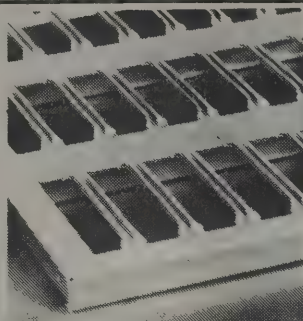
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### CARD CAGES

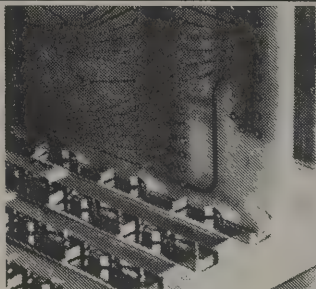
Custom designed and fabricated to meet customer requirements.  
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Metal louver and nylon snap-in.

NEW Conductive Series C120  
Guide for maximum ESD protection.

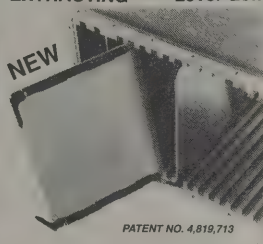


### CARD RETAINERS

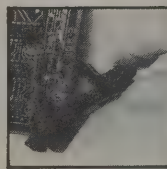
Excellent thermal and electrical conductivity,  
plus protection against shock and vibration.

### CARD-LOKS

Series LE260  
"EXTRACTING" Lever-Lok



NEW



Series 107-70  
Positive Locking  
PC Inserter-Extractor



Patent No.  
4,975,073

### CARD INSERTERS & EXTRACTORS

For easy insertion and extraction of cards.

- Available in colors for coding
- Generous area for hot stamp marking.
- U.L. Approved
- Available with pre-started assembly pins.

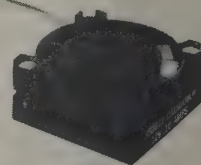
### SERIES 350 - COOLING ASSEMBLY (MICROPROCESSOR)

Series 350 Cooling Assembly designed to provide critically needed cooling to state-of-the-art Microprocessor chips such as the Intel 486.

#### Features:

- Maintains greatly reduced case temperatures.
- Low profile.
- Low noise level.
- Low power draw.

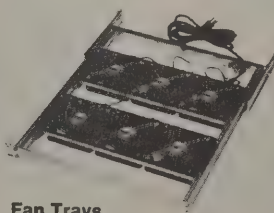
NEW



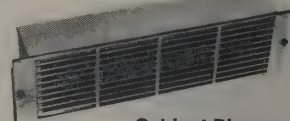
Special termination options available on request.

### ELECTRONIC COOLING PRODUCTS

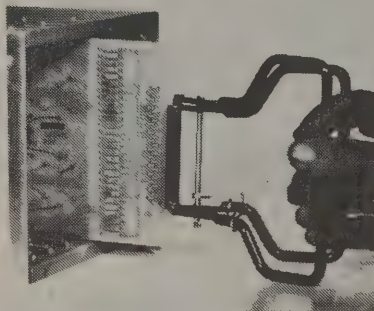
Fan Tray Assemblies offer standard mounting with multiple and adjustable fan locations. Cabinet Blowers for cooling of electronic rack equipment. For Special Applications Calmark will design an airmover to meet specific requirements.



Fan Trays

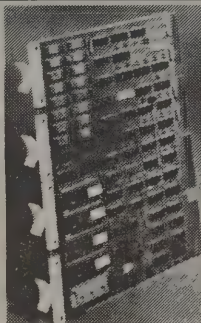


Cabinet Blowers



### CARD PULLERS

For easy PC card extraction.



### PCB HANDLING TRAYS

Trays for safe and efficient handling, transport, and storage of PC boards during all stages of production. Available with static resistant or conductive material.

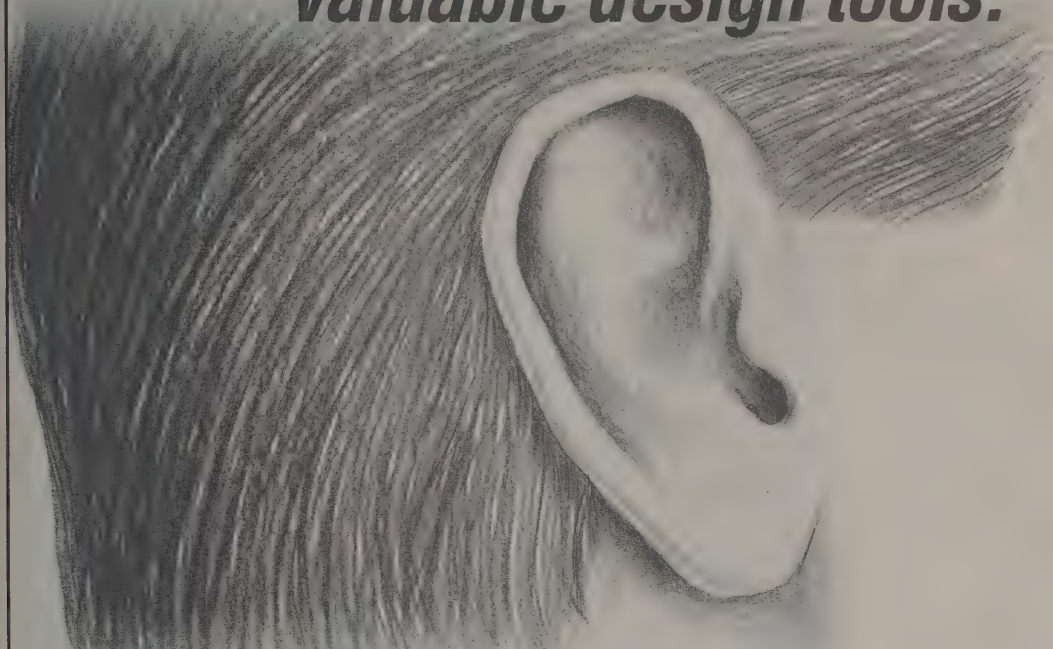


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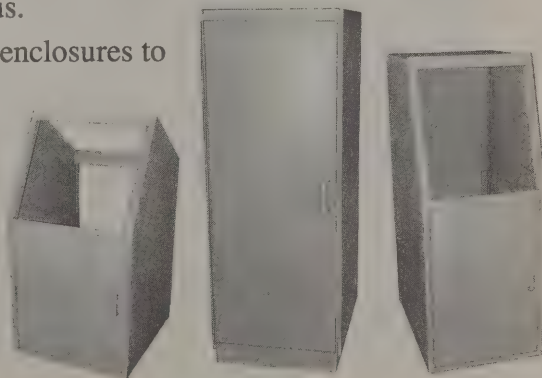
# *When it comes to your enclosures, this is one of our most valuable design tools.*



At CMP, we put a lot of time and thought into the design of our standard enclosures. We wanted to make them as structurally sound, aesthetically pleasing and useful as possible. We even created a modular parts system that makes it easy to specify your enclosure from stock.

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need better than you do. And no one can help you achieve it better than we can.

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**FAX: 1-708-662-5292**

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- 11 gauge corner gussets
- Horizontal and vertical members seam welded
- 11 gauge adjustable mounting angles
- Wide variety of sizes and configurations from stock

**CMP**

## *Enclosures*

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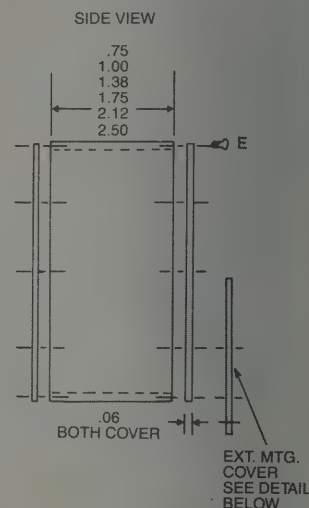
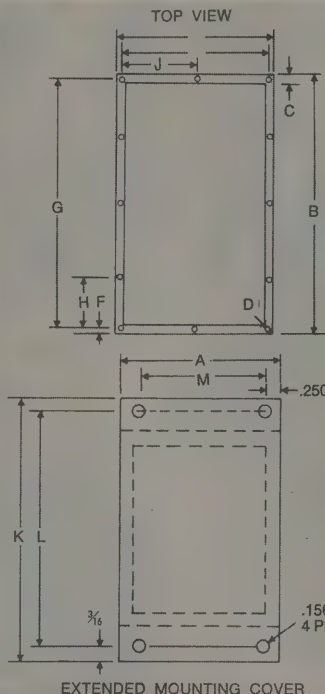
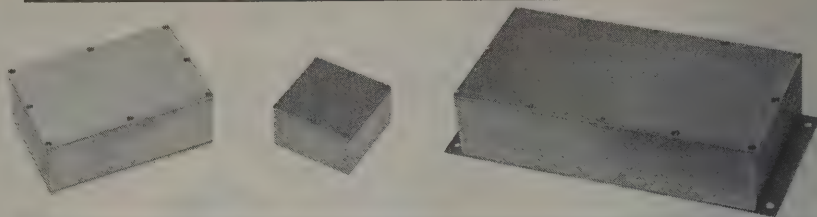


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HOLBROOK, NEW YORK 11741  
TELEPHONE (516) 585-3400  
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## COMPAC ENCLOSURES

- Offer over 500 Standard sizes "Off the Shelf" for prototyping or production.
- Standard Enclosures can be modified to prints, including finishing and hardware so that you receive a finished enclosure.
- Custom designs available.
- Complete machining and fabrication capabilities. Send prints or drawings for quotation.
- Compac Encl. Construction Specs:  
Frames: 6063T52 Aluminum  
Covers: 5052H32 Aluminum  
Finish: Irridite Chem Film to MIL C5541 CL 3.  
Quality: Conformance to MIL 45208A.



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RFT Series - (shown)  
provides 60 dB @ 3 GHz.

SRF Series -  
provides 80 dB @ 20 GHz.

Blank Series -  
provides 100 dB @ 100 MHz.

FLT Series -  
Board mountable

Standard Series - with pre-mounted  
connectors and filters also available.

Complete line of accessories  
also available

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COMPLETE CATALOGUE.**

## AVAILABLE HEIGHTS:

0.750  
1.00  
1.38  
1.75  
2.00  
2.12  
2.50

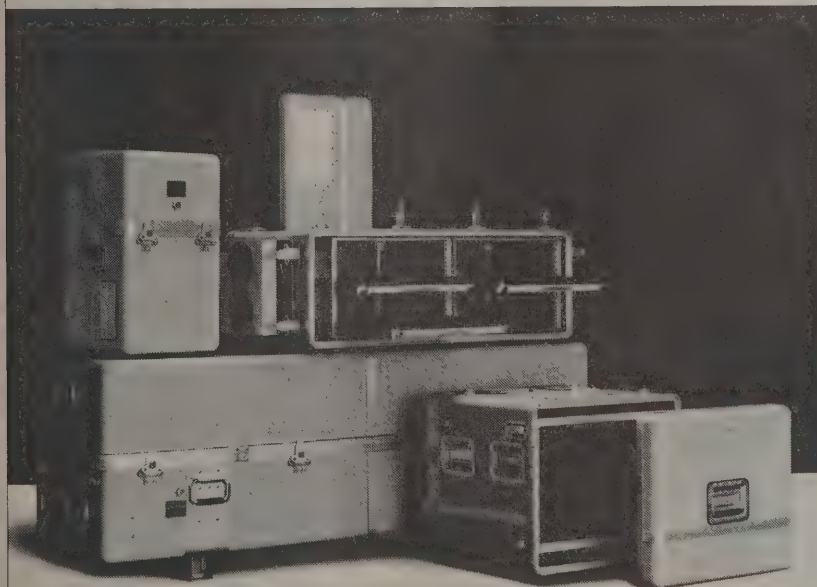
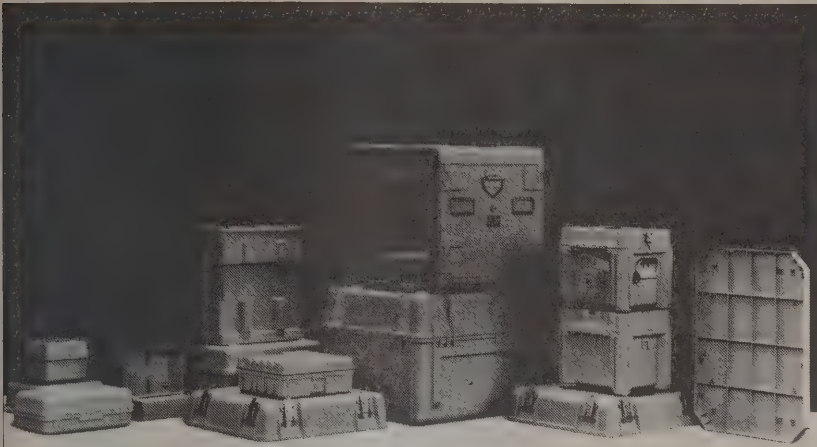
Custom Heights available

|        | A    | B     | C    | D* | E    | F    | G     | H     | I     | J     | K      | L      | M    |
|--------|------|-------|------|----|------|------|-------|-------|-------|-------|--------|--------|------|
| R51080 | 1.00 | 1.00  | .125 | 4  | 0-80 | .070 | .860  | —     | .860  | —     | 1.75   | 1.375  | .50  |
| R51090 | 1.25 | 1.25  | .125 | 4  | 0-80 | .070 | 1.110 | —     | 1.110 | —     | 2.00   | 1.625  | .75  |
| R51095 | 1.25 | 2.50  | .125 | 6  | 0-80 | .070 | 2.360 | 1.180 | 1.110 | —     | 3.25   | 2.875  | .75  |
| R51100 | 1.50 | 1.50  | .125 | 6  | 0-80 | .070 | 1.360 | .680  | 1.360 | —     | 2.25   | 1.875  | 1.00 |
| R51110 | 1.50 | 2.00  | .125 | 6  | 0-80 | .070 | 1.860 | .930  | 1.360 | —     | 2.75   | 2.375  | 1.00 |
| R51120 | 1.50 | 2.50  | .125 | 6  | 0-80 | .070 | 2.360 | 1.180 | 1.360 | —     | 3.25   | 2.875  | 1.00 |
| R51125 | 1.50 | 3.25  | .125 | 6  | 0-80 | .070 | 3.110 | 1.555 | 1.360 | —     | 4.00   | 3.625  | 1.00 |
| R51130 | 1.50 | 6.00  | .125 | 10 | 0-80 | .070 | 5.860 | 1.465 | 1.360 | —     | 6.75   | 6.375  | 1.00 |
| R51140 | 1.75 | 1.75  | .125 | 6  | 0-80 | .070 | 1.610 | .805  | 1.610 | —     | 2.50   | 2.125  | 1.25 |
| R51150 | 1.75 | 3.00  | .125 | 6  | 0-80 | .070 | 2.860 | 1.430 | 1.610 | —     | 3.75   | 3.375  | 1.25 |
| R51160 | 2.00 | 2.00  | .125 | 8  | 0-80 | .070 | 1.860 | .930  | 1.860 | .930  | 2.75   | 2.375  | 1.50 |
| R51170 | 2.00 | 3.00  | .125 | 8  | 0-80 | .070 | 2.860 | 1.430 | 1.860 | .930  | 3.75   | 3.375  | 1.50 |
| R51180 | 2.00 | 4.00  | .125 | 10 | 0-80 | .070 | 3.860 | 1.286 | 1.860 | .930  | 4.75   | 4.375  | 1.50 |
| R51190 | 2.00 | 5.00  | .125 | 12 | 0-80 | .070 | 4.860 | 1.215 | 1.860 | .930  | 5.75   | 5.375  | 1.50 |
| R51200 | 2.00 | 6.00  | .125 | 12 | 0-80 | .070 | 5.860 | 1.465 | 1.860 | .930  | 6.75   | 6.375  | 1.50 |
| R51205 | 2.50 | 2.50  | .125 | 8  | 0-80 | .070 | 2.360 | 1.180 | 2.360 | 1.180 | 3.25   | 2.875  | 2.00 |
| R51210 | 3.00 | 3.00  | .125 | 8  | 0-80 | .070 | 2.860 | 1.430 | 2.860 | 1.430 | 3.75   | 3.375  | 2.50 |
| R54030 | 3.00 | 4.00  | .125 | 10 | 0-80 | .070 | 3.860 | 1.287 | 2.860 | 1.430 | 4.750  | 4.375  | 2.50 |
| R51235 | 4.00 | 4.00  | .125 | 12 | 0-80 | .070 | 3.860 | 1.287 | 3.860 | 1.287 | 4.750  | 4.375  | 3.50 |
| R51220 | 3.00 | 5.00  | .125 | 12 | 0-80 | .070 | 4.860 | 1.215 | 2.860 | 1.430 | 5.75   | 5.375  | 2.50 |
| R51225 | 3.00 | 5.00  | .188 | 12 | 2-56 | .094 | 4.812 | 1.203 | 2.812 | 1.406 | 5.75   | 5.375  | 2.50 |
| R51230 | 3.00 | 6.00  | .188 | 12 | 2-56 | .094 | 5.812 | 1.453 | 2.812 | 1.406 | 6.75   | 6.375  | 2.50 |
| R51250 | 5.00 | 6.00  | .188 | 14 | 2-56 | .094 | 5.812 | 1.453 | 4.812 | 1.604 | 6.75   | 6.375  | 4.50 |
| R57050 | 5.00 | 7.00  | .188 | 16 | 2-56 | .095 | 6.810 | 1.362 | 4.812 | 1.604 | 7.750  | 7.375  | 4.50 |
| R58060 | 6.00 | 8.00  | .188 | 18 | 2-56 | .095 | 7.810 | 1.562 | 5.812 | 1.453 | 8.750  | 8.375  | 5.50 |
| R58010 | 8.00 | 10.00 | .187 | 22 | 2-56 | .095 | 9.810 | 1.635 | 7.810 | 1.562 | 10.750 | 10.375 | 7.50 |

\*D = Number of cover screws

Specifications subject to change without notice.





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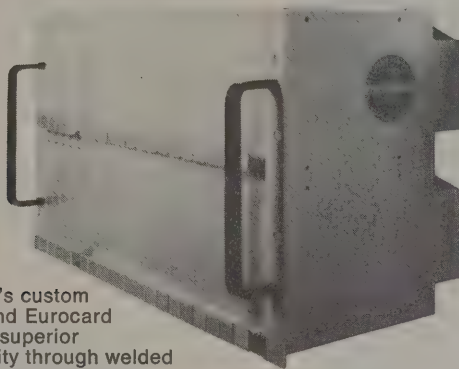
## LEADERSHIP IN PC BOARD RETAINER TECHNOLOGY

**EG&G Birtcher** is a manufacturer of high quality custom and standard products for the electronics industry. We are the leading manufacturer of precision retentive and locking card guides and custom sheet metal racks, chassis and enclosures. We fabricate custom extruded aluminum heat sinks and thermally conductive MIL-grade enclosures.

### QUALITY ASSURANCE

The EG&G Birtcher quality assurance program is in compliance with MIL-I-45208A and MIL-STD-45662. Inspection personnel are trained in Statistical Process Control (SPC). Expertly trained personnel inspect all phases of work to maintain EG&G Birtcher's high quality standards. Receiving, in-process and final inspection are all part of our rigorous quality assurance program.

### CUSTOM 6U VME SUBRACK



EG&G Birtcher's custom rugged VME and Eurocard subracks offer superior structural rigidity through welded construction. The subracks meet documented VME Product Specifications per the VMEbus Manual, Revisions C.1. Euro-subracks meet specifications per IEC 297-3/3A and DIN 41494, Parts 1 and 5.

### SHEET METAL CAPABILITIES

Available to all EG&G Birtcher customers are the combined resources of the Birtcher facilities and broad spectrum of technical and manufacturing knowledge.

Our fully equipped 60,000 square-foot plant with its top-of-the-line equipment enables us to fill almost any customer requirement including design, shearing, piercing, bending, milling, welding, chemical finishing and painting, silk screening and assembly of hardware.

### CUSTOM FABRICATION POWER SUPPLY CHASSIS

This custom power supply chassis is fabricated from cold rolled steel and perforated sheet metal, complete with formed metal guides, weld studs, self clinching fasteners, grommets, spring clips, hinges and a zinc-plated finish. The chassis is manufactured at a rate of 400 per week utilizing sophisticated numerically controlled punch presses and forming machinery plus welding, stamping, machining and plating.

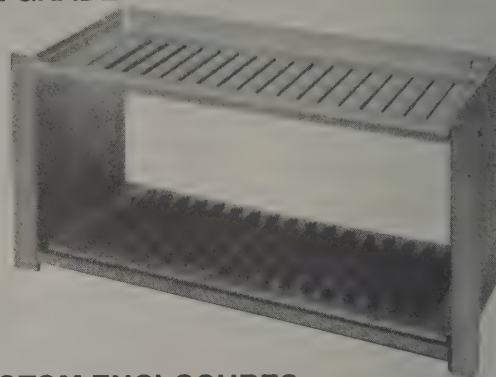


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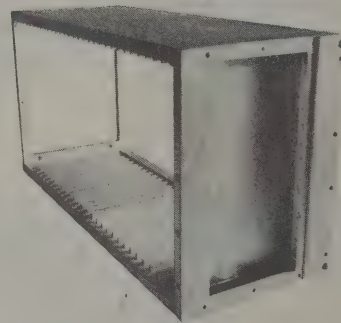
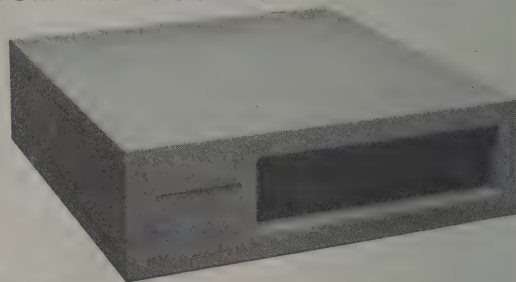
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### MIL-GRADE CARD CAGES



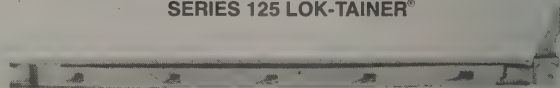
### CUSTOM ENCLOSURES



This custom milled and brazed aluminum chassis with five-piece, self-aligning Wedge-Lok™ retainers is an example of the type of Hi-Rel products produced by EG&G Birtcher.

### LEVER-ACTUATED HIGH PERFORMANCE SERIES 125 LOK-TAINER®

#### LEVER-ACTUATED SERIES 125 LOK-TAINER®



PATENT PENDING

RIGHT HAND MODEL SHOWN

#### FEATURES

- No Tools Required To Lock Or Unlock PC Board
- Unique Cam Detent Prevents Unlocking During Shock and Vibration
- Visual Locking Indicator With Failsafe Design
- Constant Pressure Insures Uniform Heat Transfer

- Field Repairable
- Low Thermal Resistance (< 2° C/Watt/In)

#### APPLICATIONS

- Shipboard-Airborne-Space
- Designed To Meet Requirements Of MIL-STD-901 And MIL-STD-810
- SEM-D&E
- 1/4, 1/2, 3/4, And Full ATR Modules
- Line Replaceable Modules (LRM)

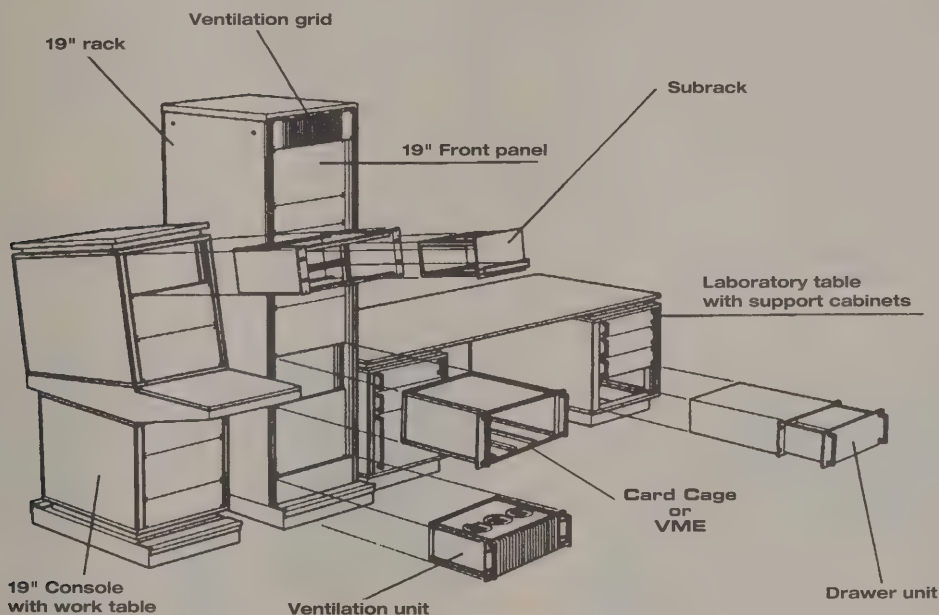


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# MAXIMUM CURRENT CAPACITY— CONDUCTORS

| Size,<br>AWG | MIL-W-5088      |                  |                 |                  | National<br>Electrical<br>Code | Underwriters<br>Laboratory |      | American<br>Insurance<br>Association | 500<br>c mils/A |
|--------------|-----------------|------------------|-----------------|------------------|--------------------------------|----------------------------|------|--------------------------------------|-----------------|
|              | Copper          |                  | Aluminum        |                  |                                | 60°C                       | 80°C |                                      |                 |
|              | Single-<br>wire | Wire-<br>bundled | Single-<br>wire | Wire-<br>bundled |                                |                            |      |                                      |                 |
| 30           | ...             | ...              | ...             | ...              | ...                            | 0.2                        | 0.4  | ...                                  | 0.20            |
| 28           | ...             | ...              | ...             | ...              | ...                            | 0.4                        | 0.6  | ...                                  | 0.32            |
| 26           | ...             | ...              | ...             | ...              | ...                            | 0.6                        | 1.0  | ...                                  | 0.51            |
| 24           | ...             | ...              | ...             | ...              | ...                            | 1.0                        | 1.6  | ...                                  | 0.81            |
| 22           | 9               | 5                | ...             | ...              | ...                            | 1.6                        | 2.5  | ...                                  | 1.28            |
| 20           | 11              | 7.5              | ...             | ...              | ...                            | 2.5                        | 4.0  | 3                                    | 2.04            |
| 18           | 16              | 10               | ...             | ...              | 6                              | 4.0                        | 6.0  | 5                                    | 3.24            |
| 16           | 22              | 13               | ...             | ...              | 10                             | 6.0                        | 10.0 | 7                                    | 5.16            |
| 14           | 32              | 17               | ...             | ...              | 20                             | 10.0                       | 16.0 | 15                                   | 8.22            |
| 12           | 41              | 23               | ...             | ...              | 30                             | 16.0                       | 26.0 | 20                                   | 13.05           |
| 10           | 55              | 33               | ...             | ...              | 35                             | ...                        | ...  | 25                                   | 20.8            |
| 8            | 73              | 46               | 58              | 36               | 50                             | ...                        | ...  | 35                                   | 33.0            |
| 6            | 101             | 60               | 86              | 51               | 70                             | ...                        | ...  | 50                                   | 52.6            |
| 4            | 135             | 80               | 108             | 64               | 90                             | ...                        | ...  | 70                                   | 83.4            |
| 2            | 181             | 100              | 149             | 82               | 125                            | ...                        | ...  | 90                                   | 132.8           |
| 1            | 211             | 125              | 177             | 105              | 150                            | ...                        | ...  | 100                                  | 167.5           |
| 0            | 245             | 150              | 204             | 125              | 200                            | ...                        | ...  | 125                                  | 212.0           |
| 00           | 283             | 175              | 237             | 146              | 225                            | ...                        | ...  | 150                                  | 266.0           |
| 000          | 328             | 200              | ...             | ...              | 275                            | ...                        | ...  | 175                                  | 336.0           |
| 0000         | 380             | 225              | ...             | ...              | 325                            | ...                        | ...  | 225                                  | 424.0           |



# Vector-Pak®

# System Enclosures



Series  
400

## Benchtop/Rackmount

### VME System: Rear Exhaust

- **Excellent EMI/RFI suppression specs**
- **Even cooling, rear exhaust**
- **Removable, washable air filters**
- **Cooling: Three, 106 CFM D.C. fans**

### Standard Configurations:

**410-616-212-0500** - 6U X 160MM cards, 21-slot J1/J2 VME backplane., 500 watt power supply. 19"W X 15.75" H X 21.5"D

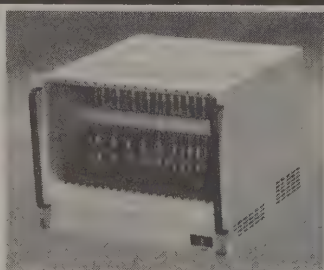
**410-940-213-0750** - 9U X 400MM cards, 21-slot, J1/J2 VME backplane & 21-slot, J3 uncommitted backplane, 750 watt power supply. 19"W X 26.50" H X 26.5" D

### Options:

**Backplane:** 2 to 21-slot, J1/J2, high performance  
J3 2 to 21-slot uncommitted, configurable

**Power Supply:** 400 to 750 Watt

Peripheral Bays, Hinged front panels, Cutout rear I/O Panel



Series  
500

## Rackmount/Desktop VME System.

### Double Entry, Direct Cooling

- **Accepts cards front and/or rear**
- **Direct cooling via fan tray**
- **Minimum profile**

### Standard Configurations:

**510-616-212-0500** - Accepts 6U X 160MM cards, 21-slot J1/J2 VME backplane., 500 watt power supply. 19"W X 14" H X 21" D

### Options:

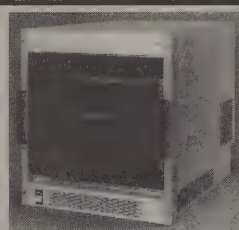
**Additional Sizes:** 6U & 9U heights, cards 160MM to 400MM

**Backplane:** 2 to 21-slot, J1/J2, high performance. J3 in 9U models, 2 to 21-slot uncommitted, S-bus configurable

**Power Supply:** 400 watt to 1000 watt. Dual supply configurable

Peripheral bays, hinged front panels, custom rear I/O panel.

Rear Entry subrack for cards or transition modules



Series  
600

## Rackmount/Desktop VXI

### System, Rear Exhaust

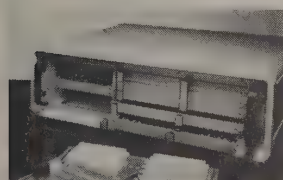
- **For "C" & "D" size modules**
- **Plenum directed rear exhaust, variable speed D.C. fans**
- **Voltage monitor panel with LED's and audio for all voltages**
- **+5V backup batteries & separate power supply**
- **Removable, washable air filters**
- **Excellent EMI/RFI suppression specs**
- **Plenum directed air assures cool operation**

### Standard Configurations:

**610-634-132-1200** - For "C" size modules, 13-slot VXI backplane, 1200 watt power supply. 19" W X 15.75" H X 26.50" D

**610-934-133-1200** - For "D" size modules, 13-slot VXI backplane, 1200 watt power supply. 19"W X 21.0" H X 26.50" D.

**630-634-052-0350** - 5-slot "C" size VXI backplane in tower/desktop configuration; 350 watt VXI power supply, variable speed fans, mounts 2 peripheral bays, positive air pressure



Series  
700

## VME System, Removable

### Subrack, Rackmount/Desktop

- **Accepts vertical or horizontal 6U X 160MM VME cards**
- **Subrack removes completely from painted enclosure**
- **Option: Rear entry cards or transition modules**
- **Mounting for 3 half - height 5.25" or 3.5" drives**

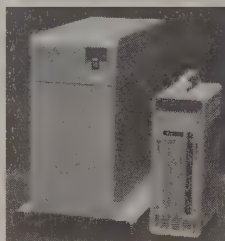
### Standard Configurations:

**710-616-052-0250** - Accepts 6U X 160MM VME cards, horizontally mounted with side-to-side air flow; 5-slot J1/J2 VME backplane; 250 watt power supply. Light gray painted enclosure with easily removable 3U subrack. 20"W X 6.4"H X 19.5"D

**720-616-122-0400** - Accepts 6U X 160MM VME cards, vertically mounted with bottom mounted fan tray for direct cooling; three, 60CFM d.c. fans; 12-slot, J1/J2 VME backplane, peripheral bay mounting for 3 half-height 5.25" or 3.5" drives; 400 watt power supply, 7U height; 20"W X 13.75" H X 19.5" D

### Options:

Can accept rear mounted cards or transition modules. Power supply options from 400 to 1000 watt available. Hinged panels, custom rear I/O panels.



Series  
800

## VME System Towers:

### Portable And Workstation

- **5 and 7-slot Portable towers**
- **Fully accessible subrack slides out completely from separable case**
- **Workstation tower for 9U X 400MM cards fully enclosed, on casters**
- **Positive air pressure from 1 to 6, 60 CFM fans**

### Standard Configurations:

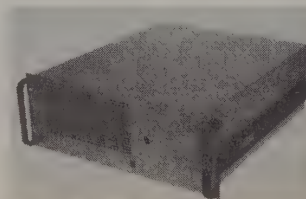
**810-616-052-0250** - Portable, accepts 6U X 160MM cards, 5-slot J1/J2 VME backplane, 250 watt power supply, accepts three, 3.5" drives. 7.0"W X 15.5" H X 13.5" D

**810-616-072-0250** - Portable, accepts 6U X 160MM cards, 7-slot J1/J2 VME backplane, 250 watt power supply. 8.6"W X 15.50" H X 14.5" D

**820-940-122-0750** - Workstation, accepts 9U X 400MM cards; 12-slot VME J1/J2 backplane, 750 watt power supply.

11.7"W X 26.5" H X 27.0" D

**Consult factory for available options**



Series  
1000

## PC Industrial Rack Systems:

### ISA & EISA

- **19" rack mountable 7" height, passive backplane**
- **Hinged, lockable door covers, drives, and power switch**
- **Designed for low MTTR (mean time to repair)**
- **Positive air flow, removable, washable air filters**

### Standard Configurations:

**1010-072-14-0300** - 14-slot passive ISA backplane, 300 watt power supply with internal fan and convenience A.C. outlets, accepts three, half-height (5.25") or 3.5" drives

**1020-072-14-0300** - 14-slot passive EISA backplane, 300 watt power supply with internal fan and convenience A.C. outlets; accepts three, half-height (5.25") or 3.5" drives

### Options:

8 or 12-slot ISA backplanes available Mounting for two internal 3.5" drives

Rack mounting chassis slides

**Call The Factory, or your local Vector representative for further information**



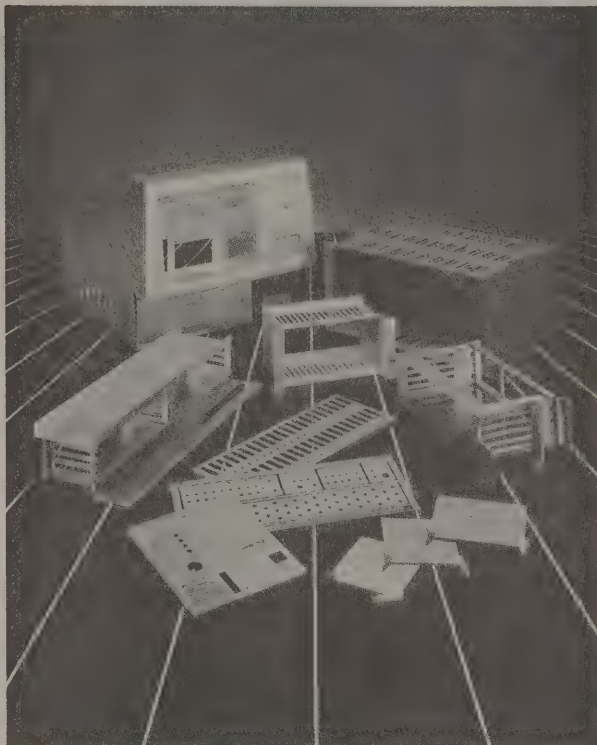
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For a complete listing of all Vector products request Vector Catalog E112



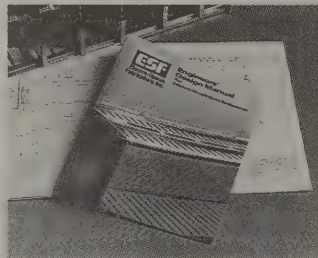
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## Free Value Analysis of Your Card Enclosure



Improved card rack design begins with in-depth value analysis. And that's a free service of the Electro-Space design group ... aimed at delivering greater strength and better tolerances at lower unit cost. Our packaging techniques place no limitations on size, card spacing, special holes and hardware, connector or backplane mounting.

If your rack requirements are 50 or 100, 500 or 5000, why not draw upon our expertise? Our present customers have done so and enjoyed significant savings, both in unit cost and on their production lines. Send us your sketches, prints or sample rack at no obligation. Or call and ask for one of our qualified design engineers.



The Engineer's Design Manual is a compilation of the latest technology and most commonly asked questions concerning card enclosure design. Send for your free copy today.

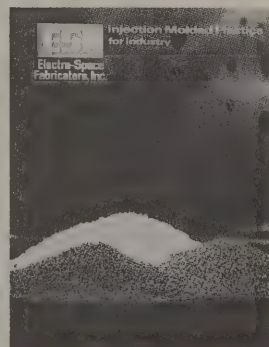
## Custom Design Service



- Complete computer-aided design and manufacturing for customized needs
- Latest design technologies
- Quick turnaround on drawings
- Advanced CAD/CAM system shortens lead times in design, speeds up manufacturing schedules
- NC programming
- Efficient file exchange system
- Results in greater structural integrity at lower unit costs

## Plastic Injection Molding

ESF's high-tech, high performance injection-molding machines are computer-controlled for fast-cycle molding capabilities and close dimensional tolerances necessary for the highest part-to-part reproducibility. Our plastic technology extends into machining, ultrasonic welding and hardware insertion, EMI/RFI shielding, painting, hot stamping and silkscreening.



### • Statistical Process Control

Quality programs can be implemented to your specific requirements

### • UL approved.

Recognized under the Component Program of Underwriters Laboratories Inc.

Write or call for our free Injection Molded Plastics brochure.

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**ESF**  
Electro-Space  
Fabricators, Inc.



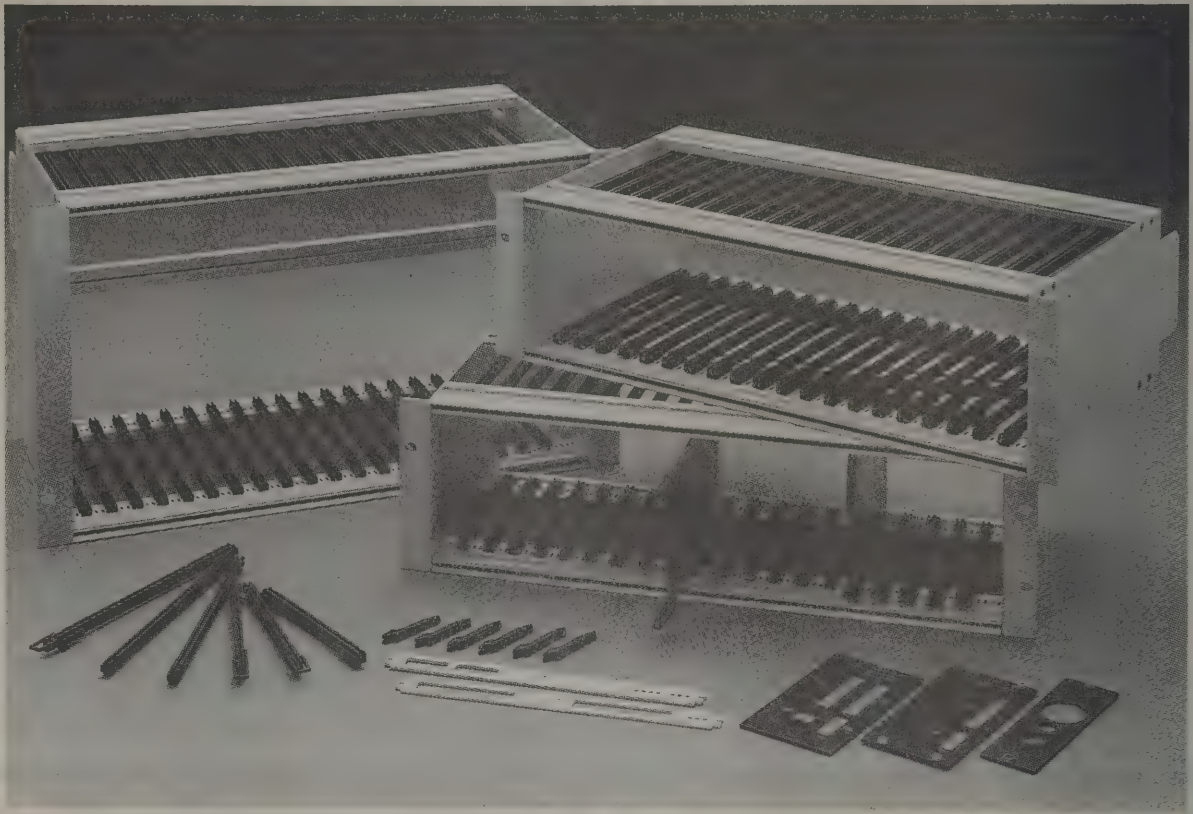






# Electro-Space Fabricators, Inc.

## EURO Packaging Systems



**Electro-Space Fabricators, the nation's leading card enclosure manufacturer, offers improved EURO Sub-Racks and Packaging Systems — which can cost 30% less.**

- **Customized designs ...** to help you develop the most economical system for your needs, and to save you valuable time and money.
- **Rugged, reliable sub-racks ...** stylized aluminum components for demanding environments, either assembled or unassembled.
- **Faster turnaround time ...** because all parts are made in-house. Customized designs do not slow the manufacturing process.
- **A large inventory to choose from ...** standard EURO sub-racks with accessories for 3U, 6U, 9U and 12U sizes are ready for "Just in Time" shipment.
- **An easy and efficient ordering system ...** six easy steps on our order form help you determine card depths, backplate insulator needs, mounting bar and card guide styles, card positions and assembly requirements.

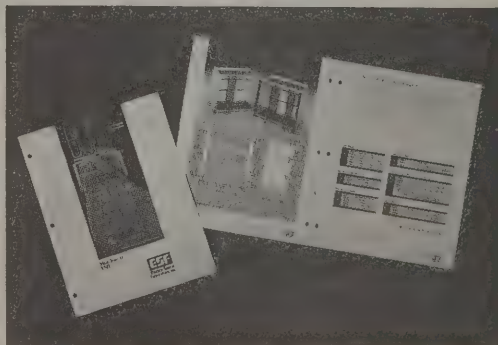
Call or write for our free "Six easy steps" manual.

### Specifications

ESF's standard Eurocard racks are made of rugged aluminum extrusions for vibration resistance. The following materials and finishes meet the highest specifications requirements for electronic equipment:

| Aluminum Extrusions |                     | Finish        |                                              |
|---------------------|---------------------|---------------|----------------------------------------------|
| Sub-Rack Rails      | 6105 T5             | Aluminum      | Clear Iridite MIL-C-5541C                    |
| Mounting Ears       | 6061 T6             | Steel         | Zinc Plate ASTM B-633-85                     |
| Slide Plates        | 5052 H32            | Plastic Parts | Type II (Yellow) Class SC-1                  |
| Front Panels        | 5052 H32 or 6061 T6 |               | Flame-Retardant Material UL94V-0             |
|                     |                     | Hardware      | Stainless Steel (unless otherwise specified) |

Specifications subject to change without notice.



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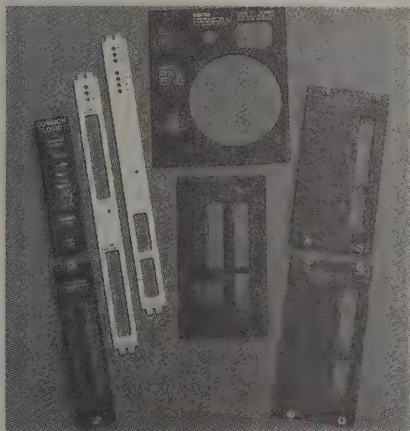
# Electro-Space Fabricators, Inc.



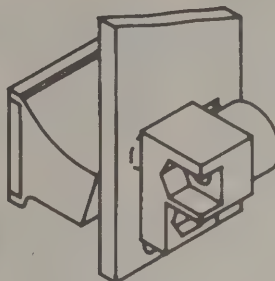
## Eurocard Accessories

### Front Panels

- Fully customized panels, complete for immediate use.
- Rapid turnaround and competitive pricing.
- Add special cut-outs, holes and hardware as needed.
- Specify desired finish — anodize, iridite or paint.
- Silkscreened — single or multi-colored.
- Material — .100 aluminum, 5052-H32, 6061-T6 or customer specified.

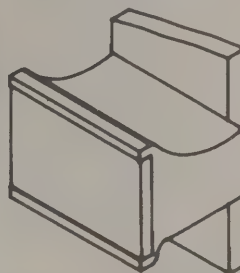


### 764 Ejector Knob 774 Panel Knob



764 Ejector Knob

- Assures easy extraction of plug-in unit.
- Available in .755 width.
- Anodized ID plate snaps into slot in knob and can be custom-marked as required.
- Black flame-retardant nylon 6/6 (UL94V-2).
- Sold in kits with all support brackets and assembly hardware.

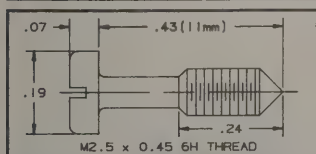
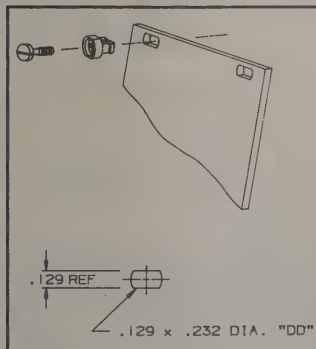


774 Panel Knob

- Available in .755 and 1.550 width.
- Anodized ID plate snaps into slot in knob and can be custom-marked as required.
- Black flame-retardant nylon 6/6 (UL94V-2).
- Sold in kits with all support brackets and assembly hardware.

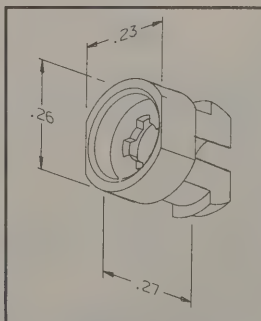
### 700 Collar Screw

- M2.5 x 11mm
- Polished 302 stainless steel ensures non-stripping of threads.
- Used for fastening front panels to EURO sub-racks.
- Works in combination with ESF's 725 plastic.

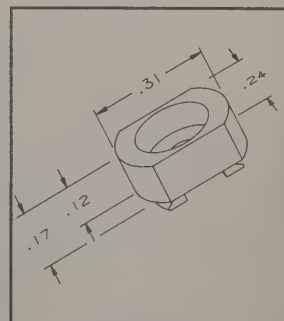


### 725 Plastic Sleeve 750 Metal Sleeve

- Used with 700 panel screw for fastening front panels to EURO sub-rack horizontal rails.
- Metal sleeve is pressed into prepunched holes in panel for positive grounding to chassis.
- Plastic sleeve snaps into prepunched holes in front panel.
- Captivate 2.5mm screw.
- Metal sleeve finish — nickel-plated.
- Plastic sleeve material — tan ABS (UL94V-0); self-extinguishing.



725 Plastic Sleeve



750 Metal Sleeve



These symbols appear on many electrical/electronic components distributed in the world market. They indicate that a country's standard-setting agency has approved the design of the component and/or a testing agency has approved the performance of the component in meeting the standard. This page lists only those countries that have a *symbol* to represent their authority.

|                                                                                    |                                                                                                                                                                      |                                                                                     |                                                                                                                      |                                                                                     |                                                                                                                               |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|    | <b>Argentina (IRAM)</b> Instituto Argentino de Racionalization de Materiales                                                                                         |    | <b>Hong Kong</b> Hong Kong Standards & Testing Centre                                                                |    | <b>Poland</b> Polski Komitet Normalizacji Miar i Jakosci (Polish Committee for Standardization, Measures and Quality Control) |
|    | <b>Australia (SAA)</b> Standards Association of Australia                                                                                                            |    | <b>Hungary (MSZH)</b> Magyar Szabvanyugi Hivatal (Hungarian Office for Standardization)                              |    | <b>Portugal (CEP)</b> Comissao Electrotecnica Portuguesa                                                                      |
|    | <b>Austria (ÖVE)</b> Österreichischer Verband für Elektrotechnik                                                                                                     |    | <b>India (ISI)</b> Indian Standards Institute "Manak Bhavan"                                                         | <b>STAS</b>                                                                         | <b>Romania</b> Institutul Roman de Standardizare (Romanian Standards Institute)                                               |
|    | <b>Belgium (CEB)</b> Comité Electrotechnique Belge                                                                                                                   |    | <b>Indonesia</b> Badan Kerjasama Standardisasi LIPI-YDNI (LIPI-YDNI Joint Standardization Committee)                 |    | <b>Singapore</b> Singapore Institute of Standards and Industrial Research                                                     |
| <b>ABNT</b>                                                                        | <b>Brazil (ABNT)</b> Associação Brasileira de Normas Tecnicas                                                                                                        |    | <b>Iran</b> Institute of Standards and Industrial Research of Iran                                                   |    | <b>South Africa (SABS)</b> South African Bureau of Standards                                                                  |
|    | <b>Canada (CSA)</b> Canadian Standards Association                                                                                                                   |    | <b>Ireland (IIRS)</b> Institute for Industrial Research and Standards                                                |    | <b>Spain (IRANOR)</b> Instituto Nacional de Racionalización y Normalización                                                   |
|    | <b>Czechoslovakia</b> Urad pro Normalizaci a Mereni (Office for Standards and Measurements)                                                                          | <b>SII</b>                                                                          | <b>Israel (SII)</b> Standards Institution of Israel                                                                  |    | <b>Sweden (SEK)</b> Svenska Elektriska Kommissionen (Swedish Electrotechnical Commission)                                     |
|  | <b>Denmark (DEK)</b> Dansk Elektroteknisk Komite (Danish Electrotechnical Committee)                                                                                 |  | <b>Italy (CEI)</b> Comitato Elettrotecnico Italiano (Italian Electrotechnical Committee)                             |  | <b>Switzerland (SEV)</b> Schweizerischer Elektrotechnischer Verein Postfach                                                   |
|  | <b>Egypt (EOS)</b> Egyptian Organization for Standardization and Quality Control                                                                                     |  | <b>Japan (JISC)</b> Japanese Industrial Standards Committee Agency of Industrial Science and Technology              |  | <b>Turkey (TSE)</b> Turk Standardlari Enstitusu (Turkish Standards Institution)                                               |
|  | <b>Finland (SETI)</b> Electrical Inspectorate                                                                                                                        |  | <b>Korea, Republic of (South)</b> Industrial Advance Administration                                                  |  | <b>United Kingdom (BSI)</b> British Standards Institution                                                                     |
|  | <b>France (UTE)</b> Union Technique de l'Électricité                                                                                                                 |  | <b>Mexico (DGN)</b> Dirección General de Normas Secretaria de Patrimonio y Fomento Industrial Puente de Tecamachalco |  | <b>United States</b> Underwriters Laboratories Inc. Recognized Component Mark                                                 |
|  | <b>Germany, Democratic Republic of (East) (ASMW)</b> Amt für Standardisierung Messwesen und Warenprüfung (Office for Standardization, Metrology and Quality Control) |  | <b>Netherlands (NÉC)</b> Nederlands Elektrotechnisch Comité                                                          |  | <b>United States</b> Underwriters Laboratories Inc.                                                                           |
|  | <b>Germany, Federal Republic of (West) (DKE)</b> Deutsche Elektrotechnische Kommission im DIN und VDE (German Electrotechnical Commission of DIN and VDE)            |  | <b>New Zealand (SANZ)</b> Standards Association of New Zealand                                                       |  | <b>Venezuela</b> CODELECTRA en Conjunto con COVENIN Avda. Ppal.                                                               |
|  | <b>Greece (ELOT)</b> The Hellenic Organization of Standardization                                                                                                    |  | <b>Norway (NEK)</b> Norsk Elektroteknisk Komite (Norwegian Electrotechnical Committee)                               |  | <b>Yugoslavia</b> Federal Institute of Standardization                                                                        |
|                                                                                    |                                                                                                                                                                      |  | <b>Pakistan</b> Pakistan Standards Institution                                                                       |                                                                                     |                                                                                                                               |



# Your electronics deserve an ELMA case!

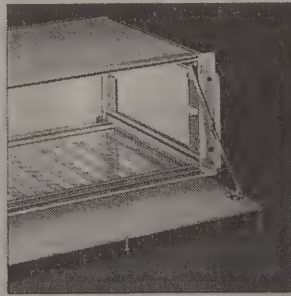
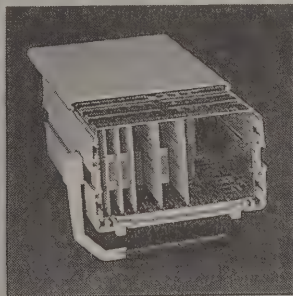
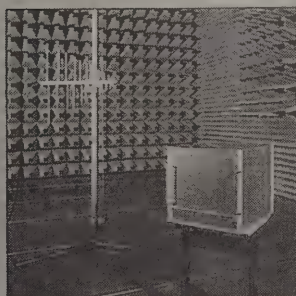


What enclosure? Which cabinet? What sub-rack? Which shelf? What type of protection? Which accessories? What colour? Which...?

Your questions call for expert answers. And if you involve us in your projects in good time, your end product will come onto the market on time

and expertly "packaged". Your electronics deserve an ELMA case. An aluminium case direct from the manufacturer!

Ask for the new ELMASET catalogue!



## ELMA

**ELMA Electronic INC.**  
44350 Grimmer Blvd  
Fremont, CA 94538  
Ø 510/656-3400  
Fax 510/656-3783





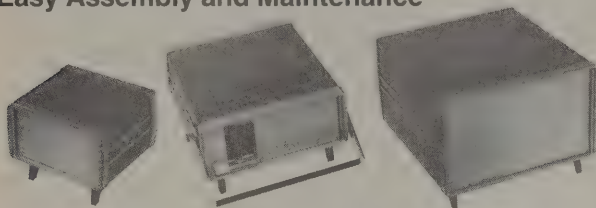
# Packaging Enclosures

ELMA Electronic Inc.

A Member Of The Sulzer Group, 44350 Grimmer Blvd.  
Fremont, CA 94538 • (510) 656-3400, Fax: 510-656-3783

## Custom or Standard Modular Enclosures

### Desk Top Case, Model 32 Easy Assembly and Maintenance



Two sectional supports running full depth carry all inserts. These special supports permit versatile mounting with only simple assembly gear. The actual enclosure, which consists of front and rear frames and a top and base plate, has no supporting function. These parts are mounted on the mentioned supports using only four screws after the components have been inserted, wired-up and functional tests carried out. Therefore, no damage can be done to the cover plates during assembly. The cover plates are of scratch-resistant Sinaplast and are available in neutral umbra-brown. Unfinished aluminum plates for customer painting can also be furnished.

| Heights:                       | Widths:                 | Depths:                          |
|--------------------------------|-------------------------|----------------------------------|
| 5.25", 10.50",<br>3.50", 7.00" | 8.43", 12.62"<br>16.82" | 9.02", 12.17",<br>15.31", 18.46" |

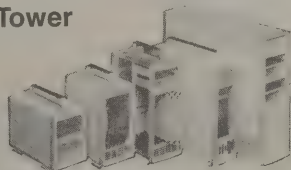
### Portable Detached Keyboard Unit Model 32



#### Features:

- Optimal flexibility
- Easy removal of keyboard from case
- Designed for numerous applications
- Sturdy construction for rugged field service use
- Accepts mountings per DIN 41494
- Mounting kits for 9" CRT monitors available
- Standard or custom front panel design
- Accepts standard PC, PC-XT, PC-AT keyboards

### Type 32 Modular Tower

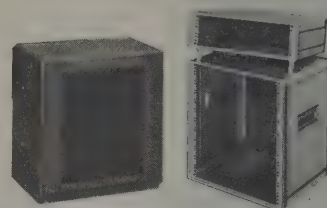


**Application:** The construction of these towers is identical to that of the basic model 32. The special feet that are attached to the depth section allow the case to be used in the vertical tower position. The tower handle makes it convenient for portable application.

These towers have the heights of 8.4", 12.6" and 17" which makes them easily portable like an attache case. Typical applications include VMEbus (3-12 slots), VXI, MULTibus II, etc.

| Heights:            | Widths:                                  | Depths:                          |
|---------------------|------------------------------------------|----------------------------------|
| 8.4", 12.6",<br>17" | 3.5"(2U), 5.25"(3U)<br>7"(4U), 10.5"(6U) | 10.23", 13.38"<br>16.53", 19.68" |

### Cabinates Model 47, 48 and Type 38 - 19" Enclosure

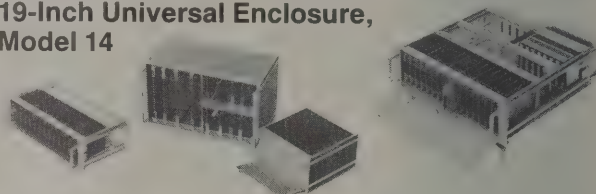


The Enclosure accommodates 19" subtracks, card cages as well as accepts 19" Plug-in units designed according to DIN 41494. It can be used as a table top model or as a stand-alone cabinet. Various models and colors available.

|                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------|
| <b>Heights:</b> 3, 3u, 4, 4u, 5, 6, 7u, 8u, 9, 9u, 10, 10u, 12, 12u, 14, 15, 15u, 20, 26, 36, 39, 41, 46 U       |
| <b>Acceptance Depth:</b> 12.59", 16.53", 20.47", 24.40", 235, 289, 355, 379, 469, 470, 475, 495, 600, 670, 800mm |
| <b>Widths:</b> 19"                                                                                               |

**Accessories:** Telescoping rails, castors, bases, leveling feet, lifting eyes, grounding sets, slide/glide rails, coupling sets, drawers, pull-out trays, top covers with fan, slide-in fan trays, sealing kits, etc.

### 19-Inch Universal Enclosure, Model 14



**Application:** Model 14 Enclosures feature extrusion construction with scratch resistant top and bottom cover plates. They are available in rack-mount and desktop configurations from 1.75" (1u) to 21" (12u) in height and from 9" to 26" deep. These enclosures can be used to house any electronic components as well as VME Systems. Accepts card sizes of 3u, 6u, 9u, 4.4", 4.5", 9.65" and card depths of up to 400 mm.

| Heights:                                      | Widths:                                        | Depths:                      |
|-----------------------------------------------|------------------------------------------------|------------------------------|
| 3.50", 5.25", 7.00",<br>8.75", 10.50", 15.75" | 8.4"(42T), 12.6(63T)<br>16.2"(81T), 16.8"(84T) | 9.17", 11.53"<br>16.25", 21" |

### Ruggedized Case Model 33



This all aluminum instrument case consists of U-shaped extrusion which defines the width and height of the case. As the whole case is an extrusion, this compact case is highly stable and rugged. Mounting grooves in the bottom and on the sides allow parts to be mounted directly, without any extra hardware. The sealed aluminum construction guarantees good screening, shielding and meets class IP54/NEMA standards.

| Heights:              | Widths:               | Depths:                |
|-----------------------|-----------------------|------------------------|
| 2.72", 3.37"<br>4.06" | 6.12" 8.27"<br>10.10" | 5.67", 8.03"<br>12.76" |

See Section 2400 (Panel Hardware-Bezels, Dials, Knobs, etc.), see Section 5100 (Switches), see Section 5150 (Keyboards & Keypads) for additional products.





# Modular System Enclosures

ELMA Electronic Inc.

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Fremont, CA 94538 • (510) 656-3400, Fax: 510-656-3783

**Consistent High Quality For Over 30 Years**

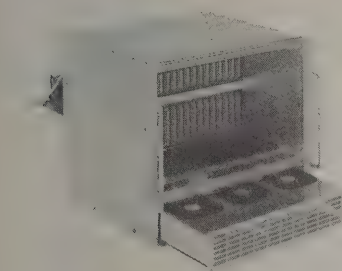
ELMA offers both standard and custom solutions for a wide variety of bus standards including VME, VXI, SUNbus, Multibus II, PC and many more. In addition, ELMA system enclosures are designed to meet most of the international standards including UL, CSA, TUV, FCC, VDE, and IEC. ELMA's

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write or call for our 450 page  
free hardbound catalog today!**



unique modular approach satisfies a wide range of applications with off-the-shelf parts, eliminating expensive and time consuming custom work. ELMA covers your requirements, starting from individual components up to fully wired and tested 'ready-to-run' systems.

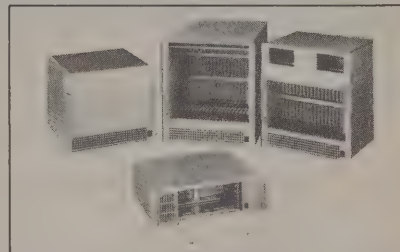
## SYSTEM 12



ELMA System 12 enclosures are fully shielded and designed to be in compliance with UL, FCC and other International standards. Products include both rackmount and desktop enclosures in sizes from 2U to 15U. A full range of depths and slot capacity are available. Designed to accept VME, VXI, Multibus II, SUN and PCbus boards.

Shown at the left is a 21 slot, 9U system which features a removable fan tray and hinged power supply for easy access. A 1U clearance on top accommodates any cable requirements.

- Designed for rackmount and desktop use
- Available in 5, 7, 12, 15, 18, and 21 slot versions
- Fully shielded with enhanced front and back shielding kits

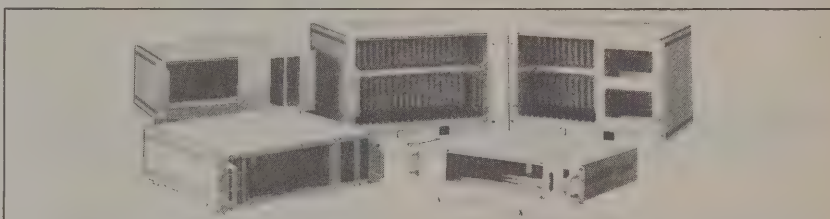


- Designed to meet military and industrial standards and UL, CSA, FCC & TUV requirements
- Available in standard and custom designs
- Excellent air flow system

## SYSTEM 14

System 14 (Universal) enclosures feature extrusion construction with scratch-resistant top and bottom cover plates. They are available in rack-mount and desktop configurations from 1U to 12U in height and from 9 to 26" deep. Boards can easily be recessed in this model. Designed to accept VME, VXI, Multibus II, SUN and PCbus boards.

Suitable for desktop or rack mount applications, the system is completely wired and tested with P1 and P2 backplanes. Includes switching power supply.



- Rackmount and desktop configuration
- Available in 3, 5, 7, 9, 12, and 21 slot versions
- Rugged extruded aluminum enclosure

- Optional, scratch-resistant top and bottom cover plates
- Recessed front for clean appearance
- Horizontal or vertical board orientation

## SYSTEM 32

The Type 32 ELMA system enclosures are designed for desktop, portable or tower use. This lightweight all-aluminum construction comes in 2U, 3U, 4U, 6U and 13U heights/widths (1U=1.75"). Depths are from 10 inches to 26 inches. Cover panels are scratch-resistant vinyl clad with a choice of several colors. This system can accept VME, Multibus II, PCbus and SUN boards up to 12 slots.

- Tower or desktop use
- 3, 5, 7, 9 and 12 slot versions
- Convenient tower handle



- Available in various depths and heights
- Standard or custom design
- Options include hood, handle or chord wrap

### SYSTEM ENCLOSURE REFERENCE GUIDE

| TYPE     | SLOTS | VERTICAL<br>ENCLOSURE<br>HEIGHT 1U = 1.75" | CONFIG-<br>URATION | CARD MOUNT |     |    | TYPE  | SLOTS                  | VERTICAL<br>ENCLOSURE<br>HEIGHT 1U = 1.75" | CONFIG-<br>URATION | CARD MOUNT |    |    |
|----------|-------|--------------------------------------------|--------------------|------------|-----|----|-------|------------------------|--------------------------------------------|--------------------|------------|----|----|
|          |       |                                            |                    | 3U         | 6U  | 9U |       |                        |                                            |                    | 3U         | 6U | 9U |
| 14,32    | 2-3   | 2U                                         | R D T              | H          | H   | H  | 12,14 | 2-21                   | 8U                                         | R D                | V          | V  | H  |
| 12,14,32 | 2-5   | 3U                                         | R D T              | V          | H   | H  | 12,14 | 2-21                   | 9U                                         | R D                | V          | V  | V  |
| 12,14,32 | 2-7   | 4U                                         | R D T              | V          | H   | H  | 12,14 | 2-21                   | 10U                                        | R D                | V          | V  | V  |
| 14       | 2-9   | 5U                                         | R D                | V          | H   | H  | 14    | 2-21                   | 11U                                        | R D                | V          | V  | V  |
| 14,32    | 2-12  | 6U                                         | R D T              | V          | V/H | H  | 14    | 2-21                   | 12U                                        | R D                | V          | V  | V  |
| 12,14    | 2-21  | 7U                                         | R D                | V          | V   | H  | 12,14 | Dual chassis Up to 42U |                                            | R D                | V          | V  | V  |

SYMBOLS: Card Mount: H = Horizontal V = Vertical Configuration: R = Rack mount D = Desktop T = Tower Board/Card depth can be up to 400mm.

See Section 2400 (Panel Hardware-Bezels, Dials, Knobs, etc.), see Section 5100 (Switches),  
see Section 5150 (Keyboards & Keypads) for additional products.



# Emcor Enclosures... A Choice for You!

- SELECTION –** Emcor features over 9,000 catalog items from five unique enclosure lines; the broadest assortment of component accessories and stock options in the industry.
- FLEXIBILITY –** Emcor offers unmatched modification and custom fabrication capabilities using the latest CAD/CAM technology to provide enclosures and consoles exactly to your specifications.
- SERVICE –** Emcor provides personal attention to every detail of your enclosure requirement. Qualified technical assistance is available at anytime just for the asking.
- DELIVERY –** Proven experience, efficient manufacturing processes and unmatched attention to detail result in over 99% of all customer orders shipping on schedule.

**EMCOR®**
*See which enclosure meets your needs...*

## INSTANT EMCOR ENCLOSURE STOCKING PROGRAM

Emcor offers the largest and most flexible **ship from stock** program in the industry. With Instant Emcor, you receive enclosures just the way you want them: **fast**, with **unequaled quality**.

### Instant Emcor Program Features

- Shipment in **5 working days** in pre-selected smooth finish colors.
- Shipment in **10 working days** in either a smooth or textured paint finish. Select from 16 contemporary colors.
- Vertical, slope front, low silhouette, turret and instrument style frames.
- Computer support furniture
- Plexiglass window doors
- Packaged blowers and fan trays
- Electrical plug strips and bus bars
- A full complement of **component accessory items** to meet your packaging requirements including steel doors, multi-bay writing tops, closure panels, chassis guides and more...

### Instant Emcor Product Lines

- **ESQ...** our **most popular** enclosure line offering the **widest selection** of stocked frames and components. Many different frame and console configurations are available in both the five and ten day shipment programs. Choose from vertical, slope front, low silhouette and turret frames.
- **10 Series®...** Emcor's **most rugged** enclosure, with fully welded and seamless frame corner construction. Our fastest growing line is available in both our 5 and 10 day shipment programs. Select from vertical and slope front frames.
- **Emcor I...** the **original** Emcor enclosure system, offers 10 day shipment of vertical frames with a stylish radiused appearance.
- **CompuDesk®...** Emcor's quality line of **computer support furniture**, available from our 5 day shipment program. Desks and auxiliary electronic pedestals include provisions for **19" equipment mounting**.



**Today, speed often means success. You can't afford to wait for enclosures. With Instant Emcor, order on a Monday, and we'll assemble and ship by Friday.**

EMCOR PRODUCTS/CRENLO, INC. ROCHESTER, MN 507-289-3371



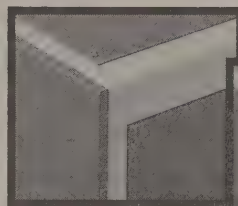
**EMCOR**®

## ESQ and EMCOR I ENCLOSURE SYSTEMS

The **ESQ enclosure system** should be your choice for applications requiring a clean contemporary appearance and an efficient means for housing your electronic equipment.

The **Emcor I enclosure system** should be your choice for applications when a rounded or **soft, radiused**

**appearance** is preferred. Both enclosures provide the benefits of **economy, style** and **quality** along with substantial load capacity, fully welded construction and the proven built-in dependability of Emcor Products.



ESQ



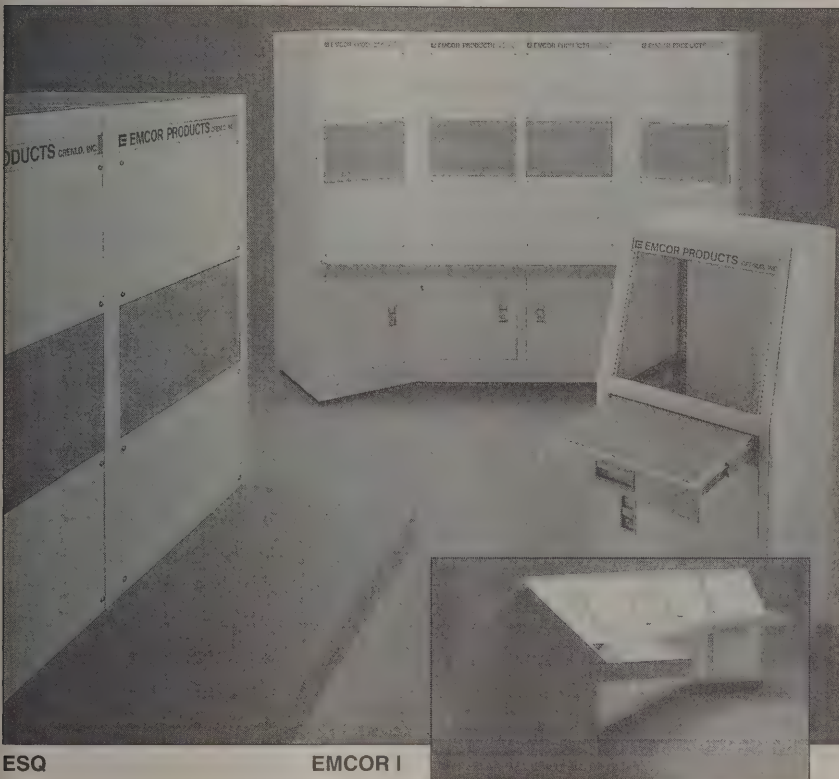
EMCOR I

### ESQ / Emcor I Construction Features

- **Fully modular systems** offering unlimited console configurations and a full complement of accessory options.
- Every frame is **fully welded** using quality **14 and 16 gauge steel** material.
- Quality construction offers up to **800 pounds** of evenly distributed equipment mounting in static load conditions.
- All items utilize high quality alkyd base **baking enamel paint** in a smooth or textured finish.

### ESQ / Emcor I Component Features

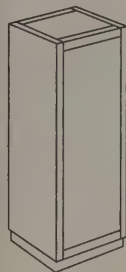
To complete your enclosure system, you can select from an extensive line of **accessory items** such as side panels, steel doors, window doors, closure panels, drawers, shelves, writing tops, fan trays, fan panels, blowers, filter assemblies...and much more.



ESQ

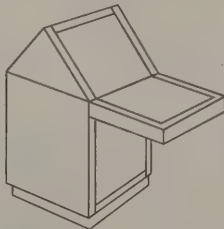
EMCOR I

### ESQ / Emcor I Design Features



Seven ESQ frame styles and eight Emcor I frame styles, available in 19", 24", and 30" panel widths.

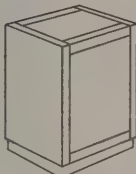
**ESQ / EMCOR I VERTICAL FRAMES**  
7 SIZES: 35" to 78-3/4" USABLE PANEL HEIGHT.  
22", 25-1/2", 30-3/4" IN DEPTH.



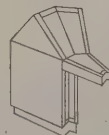
**ESQ / EMCOR I LOW SILHOUETTE FRAMES**  
19-1/4" and 21" SLOPE OPENINGS.  
22", 25-1/2" BASE UNIT DEPTHS.



**ESQ & EMCOR I SLOPE FRONT FRAMES**  
10-1/2", 17-1/2" and 24-1/2" SLOPE OPENINGS.  
22", 25-1/2", 30-3/4" IN DEPTH.

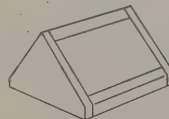


**ESQ / EMCOR I DESK AND COUNTER HEIGHT FRAMES**  
21" and 28" USABLE PANEL HEIGHT.  
18-1/2", 22", 25-1/2", 30-3/4" IN DEPTH.



**ESQ WEDGE FRAMES:**  
30°, 45°, 60°  
FOR USE WITH VERTICAL, SLOPE FRONT, LOW SILHOUETTE, DESK & COUNTER HEIGHT FRAMES.

**EMCOR I WEDGE FRAMES**  
30°, 45°, 60°, 90°  
FOR USE WITH VERTICAL, SLOPE FRONT, LOW SILHOUETTE, DESK & COUNTER HEIGHT FRAMES.



**ESQ / EMCOR I TURRET FRAMES:** 19°, 35°, 55°  
10-1/2", 14", 17-1/2" and 21" SLOPE OPENINGS.



**ESQ / EMCOR I WORK WRITING TOP FRAMES**  
15", 18-1/2", 22", 25-1/2" WRITING TOP DEPTHS.



**EMCOR I INSTRUMENT FRAMES**  
8-3/4" to 21" USABLE PANEL HEIGHT.  
16-5/16" IN DEPTH.



**EMCOR**®

## 10 SERIES® ENCLOSURE SYSTEM

The **10 Series**® enclosure system is your choice for applications requiring **exceptional strength** and weight load capacities while providing contemporary styling at a **reasonable cost**.

### 10 Series Construction Features

- 10 Series frames are constructed from high quality **14 gauge** cold rolled steel that is **multi-formed** into a 1-3/4" wide frame channel. All corner joint seams are **fully welded** for strength and metal finished for a **clean appearance**.
- **11 gauge** corner gussets are welded in the bottom of all 10 Series floor standing frames. Designed to add **rigidity** to the frame structure, these gussets also provide for floor tie down or caster and leveler mounting without the use of an optional pontoon base.
- 10 Series fully welded heavy-duty construction offers up to **3,500 pounds** of evenly distributed equipment mounting in static load conditions.
- All 10 Series floor standing frames are equipped with two pairs of plated **multi-formed** 14 gauge **adjustable** panel mounting angles and an applicable hardware kit.

- All 10 Series parts are painted with a high quality alkyd base **baking enamel paint** in a smooth or textured finish.

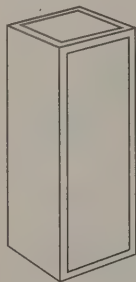
### 10 Series Component Features

To complete your 10 Series enclosure system, you can select from a comprehensive line of **accessory items** such as side panels, steel doors, window doors, lift kits, closure panels, drawers, shelves, writing tops, fan trays,... and much more.



### 10 Series Design Features

Five frame styles, available in 19" and 24" panel widths.



#### 10 SERIES VERTICAL FRAMES

8 SIZES: 35" to 78-3/4"  
USABLE PANEL HEIGHT.  
26-5/16", 31-9/16", 36-7/8"  
IN DEPTH.

#### 10 SERIES DESK & COUNTER HEIGHT FRAMES

26-1/4" and 33-1/4" USABLE PANEL HEIGHT.  
26-5/16", 31-9/16", 36-7/8" IN DEPTH.

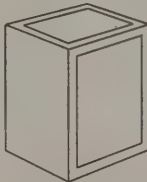


10 SERIES TURRET  
FRAMES: 45°, 90°  
MULTI-SLOPE DESIGNS.

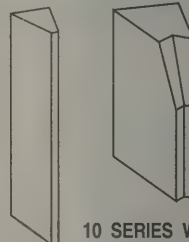


#### 10 SERIES SLOPE FRONT FRAMES

17-1/2" and 21" SLOPE  
OPENINGS.  
26-5/16", 31-9/16"  
IN DEPTH.



10 SERIES WEDGE  
FRAMES: 30°, 45°  
FOR USE WITH VERTICAL,  
SLOPE FRONT, DESK &  
COUNTER HEIGHT FRAMES.



## COMPUDESK® WORKSTATION SYSTEM

**CompuDesk**® is a comprehensive line of high quality heavy-duty terminal work stations and single unit assemblies. The basic desk unit is configured by selecting **modular** pedestal options and accessory items to accommodate your system's function. Also available in the Instant Emcor Program, our most popular CompuDesk units and accessory items are **stocked** to meet your immediate work station needs.

### CompuDesk Construction Features

- All CompuDesk components are constructed of **14 and 16 gauge** high quality steel.
- Options include **19" rack mountable** electronic pedestals as well as utility storage drawer styles.
- Three distinctive **desk top styles** - plain, accent edge or inlay to match your particular interior decor.





**EMCOR®**

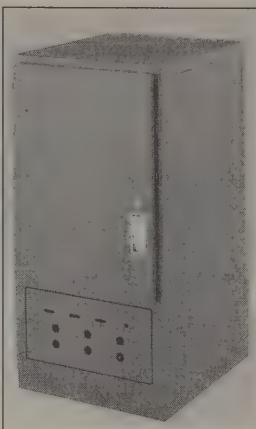
# EMISSION CONTROL SHIELDED ENCLOSURES

## FCC STYLE

Emcor's complete line of **modular** EMI/RFI FCC level **shielded enclosures** and accessories is a perfect combination of quality and styling. **Tested to MIL-STD 285** at a certified test facility, this Emcors shielded enclosure line provides **44DB attenuation at 800 MHZ.**

### Construction Features

- Fully welded **14 gauge** steel **multi-formed 1-3/4"** wide frame channel. All corner joint seams are welded and metal finished.
- Heavy duty construction offers up to **3,500 pounds** of evenly distributed static loaded equipment mounting.
- Frames, doors and all bolt-on components are **fully zinc plated** for electrical conductivity.
- Rigid door design with a **multi-point latching** system.
- A highly conductive, galvanically compatible **wire mesh gasket** is used on all bolt-on items.



## MILITARY/TEMPEST STYLE

Emcor's complete line of EMI/RFI shielded Military/Tempest Style enclosures offers the flexibility of a **modular** enclosure system along with **superior shielding** performance not available from other manufacturers. **Tested to MIL-STD 285** at a certified test facility, this Emcors shielded enclosure line provides **84DB attenuation at 1GHZ** and has been **tested up through 10 GHZ.**

### Construction Features

- Superior strength - with **12 gauge** steel, **fully welded** and metal finished for strength and a clean appearance.
- Heavy-duty construction - offers up to **4,000 pounds** of evenly distributed static loaded equipment mounting.
- **Fully nickel plated** - for superior conductivity and hardness.
- **Patented door design.**
- **Beryllium copper** spring-finger gasketing.

### FCC Emission Control Design Features

Two frame styles, available in 19" and 24" panel widths.



#### FCC VERTICAL FRAMES

10 SIZES: 26-1/4" to 78-3/4" USABLE PANEL HEIGHT. 26-5/16", 31-9/16" IN DEPTH.



#### FCC SLOPE FRONT FRAMES

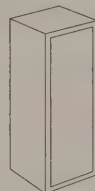
17-1/2" AND 21" SLOPE OPENINGS 26-5/16", 31-9/16" IN DEPTH.

### Military/Tempest Style Design Features

Available in 19" and 24" panel widths.

#### MILITARY/TEMPEST VERTICAL FRAMES

6 SIZES: 26 1/4" to 78-3/4" USABLE PANEL HEIGHT. 28-5/16", 33 9/16", 38-7/8" IN DEPTH.



## MODIFICATION AND CUSTOM DESIGN

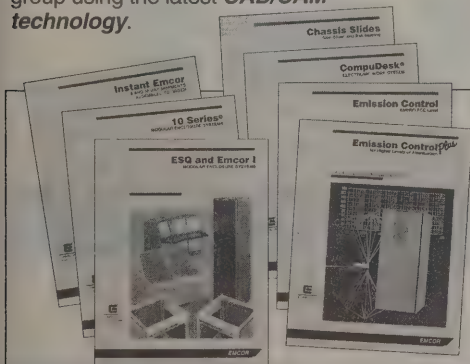
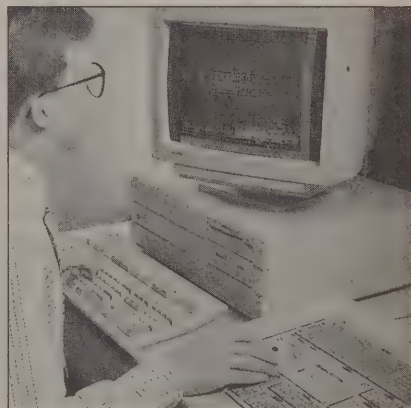
No one is better suited to provide enclosures and consoles **exactly to your specifications** than Emcors. From holes, cutouts and knockouts to special configurations, sizes and shapes - Emcors will solve your unique electronic enclosure needs.

Emcor's **full service design** capability starts with a factory sales staff and field representatives who understand your enclosure needs. Then you'll benefit from our experienced design engineering group using the latest **CAD/CAM technology.**

Emcor has a group of **skilled metal fabrication craftsmen** dedicated to custom work. Lower volume requirements are handled in one of two specialty shops; higher volume requirements are run through our modern **600,000 square foot** production facilities.

**Get exactly what you want from Emcors.**

Emcor engineers utilize multiple **CAD/CAM workstations** in support of product design needs, as well as in the production of NC tapes for our tape controlled punch presses.

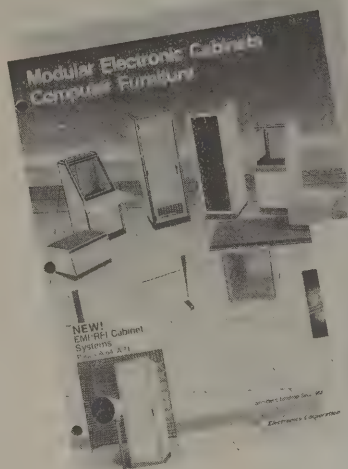


### Call or FAX Emcors for more information

Complete, full color catalogs are available for each of our product lines. Call **1-507-289-3371** or FAX **1-507-287-3405** for **free** copies of the catalogs you need:

- Instant Emcors
- ESQ/Emcors I
- 10 Series
- CompuDesk
- FCC Emission Control
- Military/Tempest Style





## Standard, Modified or Custom Electronic Cabinets . . .

*Equipto Electronics  
meets the challenge*

Equipto Electronics' wide variety of cabinet lines, with their numerous sizes and features, meet a wide array of requirements. This means you can receive proven quality and versatility without the expense of custom designed systems . . . and, many of our products are available in "5 Day Express" service.

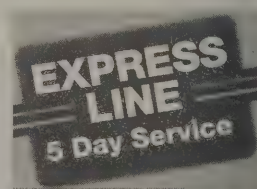
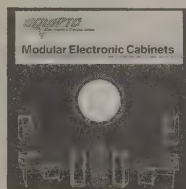
However, if modifications or custom design is required, our experienced engineers will personally consult with you. They'll furnish reproducible drawings showing inside clearances, panel areas, overall heights and widths, and other required information. Provided at no charge, this service can take the entire design load off your shoulders.

The cabinets, desks and computer furniture we manufacture are shown and briefly described here. For complete details, or our printed and electronic catalogs, call today (708) 897-4691.

## Heavy Duty Modular Electronic Cabinets

The "top of our line." Total quality. Very rugged ... probably the strongest cabinet available anywhere. Can be gasketed against dust or moisture. Double-ledge, double-plane corners give sway proof stability; sag proof doors. Rugged EIA mounting angles and support channels can be moved or removed to accommodate equipment changes. Custom modifications are available.

The Heavy Duty line is also available in two designs with shielding to suppress EMI/RFI and a model that is seismic hardened and successfully tested through Zone 4, the most severe test.



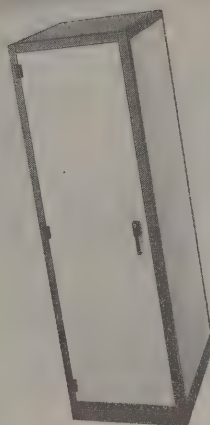
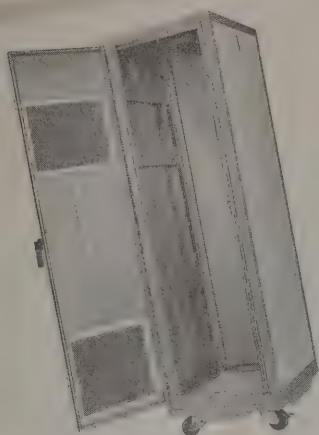
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**EQUIPTO**  
Electronics Corporation

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## Heavy Duty EMI/RFI High Reliability Stainless Steel Modular Electronic Cabinets

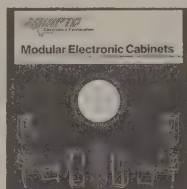
Our unique stainless steel cabinet design, with the application of gasketing material, provides the most advanced electronics cabinets available for suppression of radio frequency interference (EMI/RFI).

These High Reliability cabinets overcome the problems inherent in other shielding systems, where galvanic reaction between dissimilar metals used causes rapid deterioration of shielding effectiveness.

Equipto Electronics' EMI/RFI design eliminates the need for special hardware that restricts access to the cabinet interior. Cabinets are offered with modularity and custom modifications.

## Heavy Duty FCC/VDE Level Shielded Modular Cabinets

A rugged, modular EMI/RFI cabinet that provides high attenuation at low cost. Meets FCC/VDE or other EMI requirements making it ideal for a variety of commercial and industrial requirements. Built to the specifications and with the features of Equipto Electronics' "top of the line" Heavy Duty cabinets. Easily holds over 3,000 pounds of equipment. The top choice for strength, versatility and reliability, plus cost efficiency in EMI/RFI shielding.



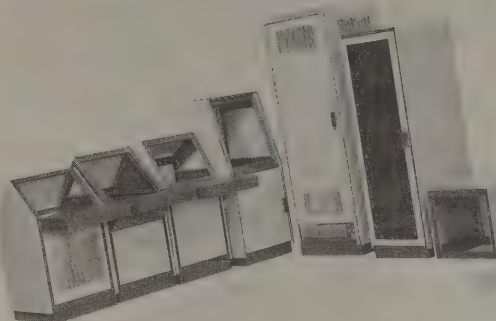
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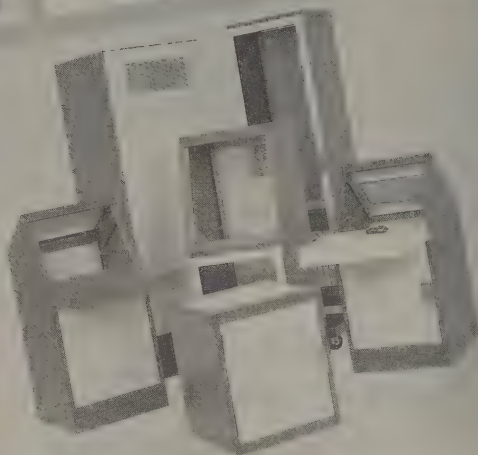
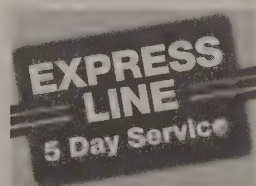
351 Woodlawn Avenue Aurora, Illinois 60506-9988 Telephone (708) 897-4691 Fax (708) 897-5314





## Challenger Commercial Duty Modular Electronic Cabinets

Designed to be functional — priced to be competitive! Challenger takes on all other cabinets for modularity, versatility, function and economy. The Challenger line offers big size selection, modular design, all welded construction, EIA panel mounting angles that can be recessed, and mar-proof mounting screws. With no charge for special colors and custom modifications, Challenger is your best buy.



## Solid System Economical Modular Electronic Cabinets

Our most economical vertical racks and sloped front consoles. Features a "solid" non-removable side panel, wide variety of sizes and configurations plus a complete accessory selection, including blowers and fans. Versatile with custom modifications available.



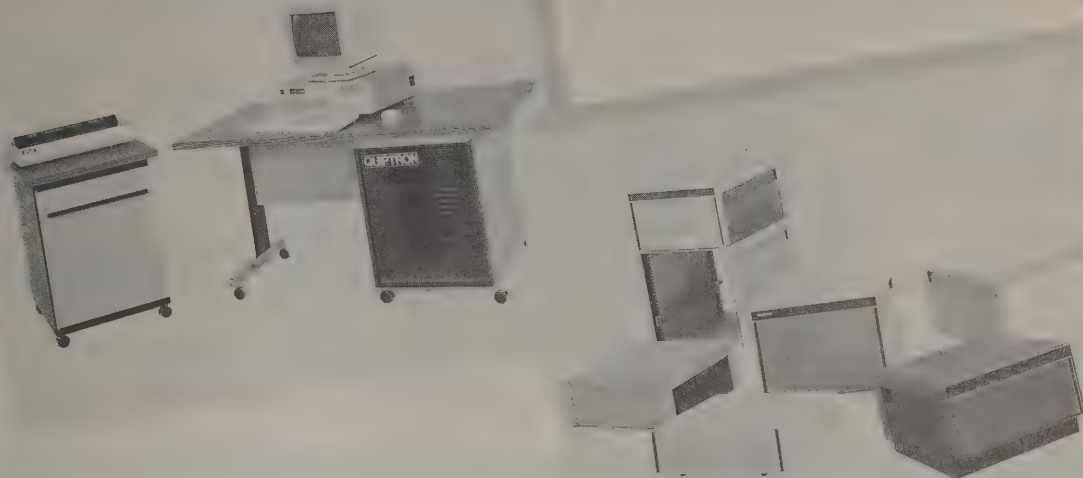
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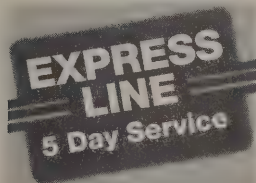
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## Quiptron® Modular Electronic Work Stations

Quiptron brings the advantages of modular design to increase a data processing department's productivity. Products include modular work stations, CRT stands, printer stands, storage drawer compartments, pedestal compartments, work stations with electronic compartments, angular work stations and a wide array of accessories. Electronic compartments feature adjustable mounting angles with EIA hole spacing. Custom modifications are available.



## Economical Instrument Cabinets

Available in all-aluminum or all-steel construction, these economical instrument and equipment cabinets are available in 60 standard sizes, two widths, three depths, 10 heights and unlimited "custom-made" sizes in 12 standard colors or your custom colors. The clean, contemporary styling is modular with standard EIA mounting angles. Features the same quality and strength which made Equipto Electronics the industry pacesetter for electronic cabinets and desks.



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*Committed to Excellence Since 1960*

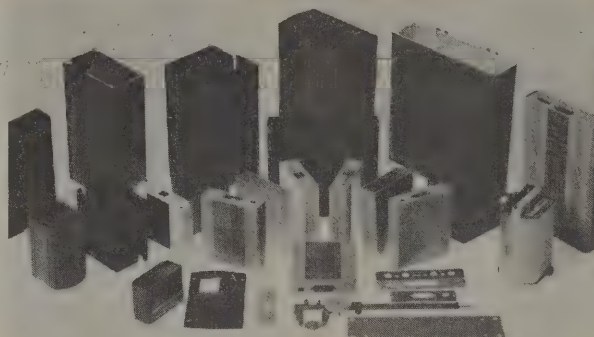
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# EXTRUDED ALUMINUM "TECH-BOX" STANDARD & CUSTOM ENCLOSURES

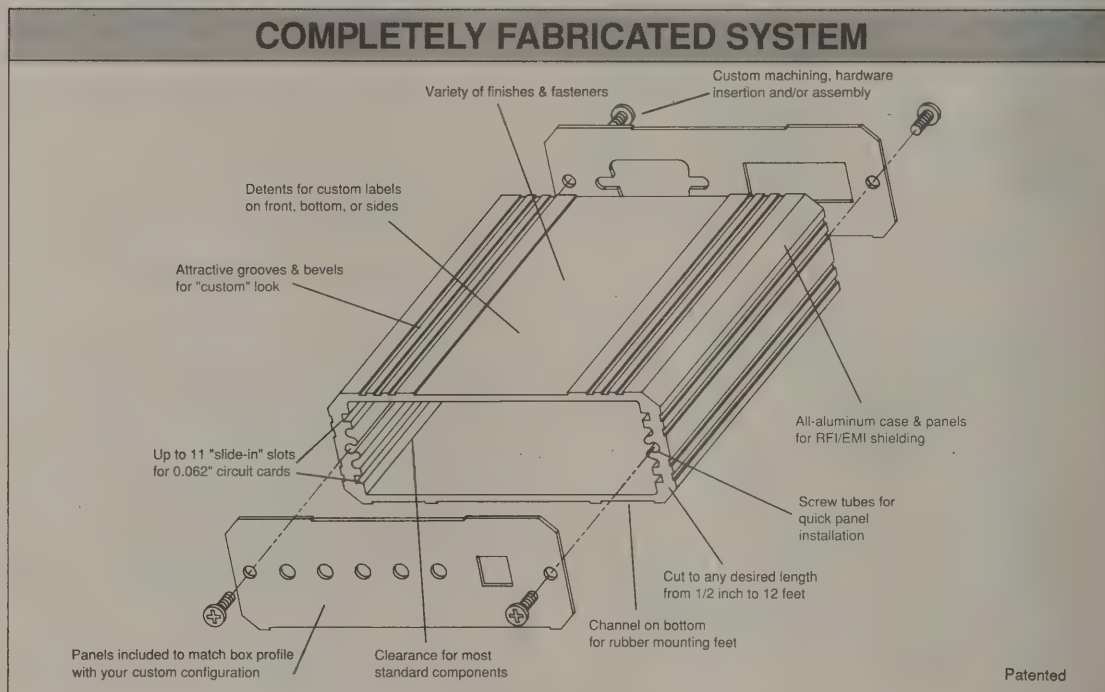
MODEMS

COMPUTER  
PERIPHERALSMEDICAL  
ELECTRONICSELECTRONIC  
INSTRUMENTSINSTRUMENT  
CASES

KEYPADS

HAND HELD  
CONTROLLERSRUGGED  
CONNECTORS

## COMPLETELY FABRICATED SYSTEM



## THE BEST SOLUTION FOR ELECTRONICS PACKAGING

"TECH-BOX" is the solution to many of your electronic enclosure concerns. Produced in eight different profiles that fit most standard applications. "TECH-BOX" Enclosures are available off-the-shelf for quick delivery, even when customized to your requirements.

Since there are no die tooling charges, TECH-BOX ensures that the cost is also designed to suit your budget. TECH-BOX includes the features important to critical electronics applications, and is ideal for prototyping and beta testing, as well as full production.

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EXTRUSION TECHNOLOGY, INC. 83 TRIM WAY, RANDOLPH, MASSACHUSETTS 02368

TEL: (617)-963-7200

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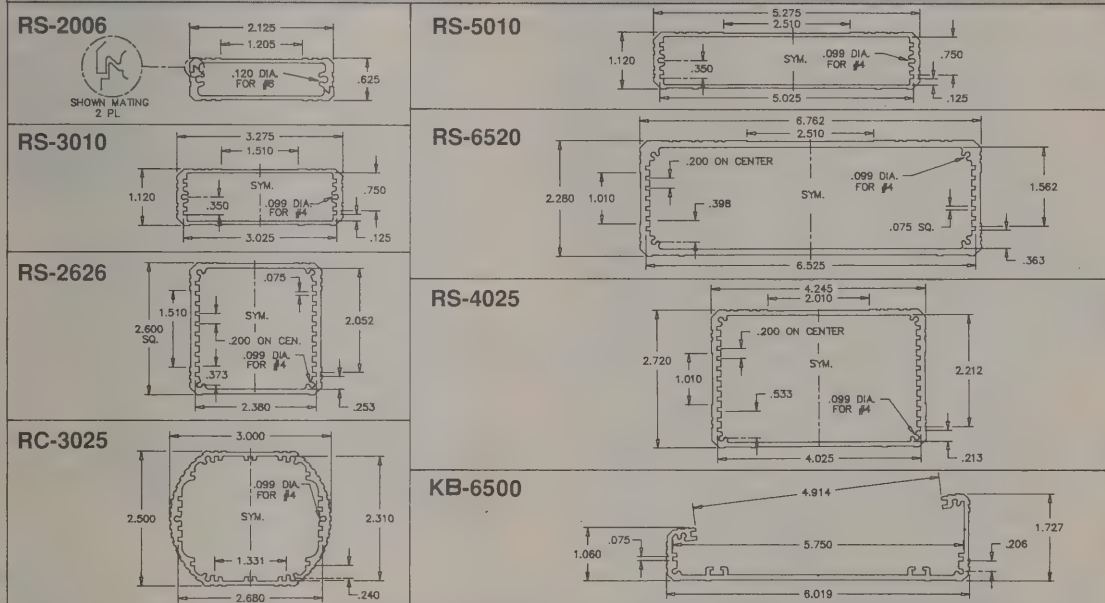


# EXTRUDED ALUMINUM "TECH-BOX" STANDARD & CUSTOM ENCLOSURES

## "TECH-BOX" – SPECIFICATIONS

| MODEL   | OVERALL |        | CARD<br>WIDTH | CLEARANCE |       | CARD<br>SLOTS | LABEL<br>WIDTH | FEET<br>WIDTH | SCREW<br>HOLES |
|---------|---------|--------|---------------|-----------|-------|---------------|----------------|---------------|----------------|
|         | WIDTH   | HEIGHT |               | BELOW     | TOP   |               |                |               |                |
| RC-3025 | 3.313"  | 2.500" | 2.68"         | .240"     | 2.00" | 9             | 0.87"          | 0.50"         | 6              |
| RS-2006 | 2.125"  | 0.625" | N/A           |           | N/A   | N/A           | 1.20"          | N/A           | 2              |
| RS-2626 | 2.600"  | 2.600" | 2.38"         | .253"     | 2.05" | 10            | 1.50"          | N/A           | 4              |
| RS-3010 | 3.275"  | 1.120" | 3.00"         | .125"     | .75"  | 2             | 1.50"          | 0.50"         | 2              |
| RS-4025 | 4.245"  | 2.720" | 4.00"         | .213"     | 2.21" | 11            | 2.00"          | 0.50"         | 4              |
| RS-5010 | 5.275"  | 1.120" | 5.00"         | .125"     | 0.75" | 2             | 2.50"          | 0.50"         | 2              |
| RS-6520 | 6.762"  | 2.280" | 6.50"         | .363"     | 1.56" | 7             | 2.50"          | 0.50"         | 4              |
| KB-6500 | 6.017"  | 1.727" | 5.75"         | .200"     | 1.00" | 1+            | 4.91"          | 0.50"         | 4              |

## "TECH-BOX" DIMENSIONAL CHARACTERISTICS



## ADVANTAGES "TECH-BOX" EXTRUDED ENCLOSURES

- Cut to any desired length
- Circuit card slides into slots
- Panels included – custom configuration
- Variety of finishes & fasteners
- No extrusion tooling/die charges
- Integral RFI/EMI shielding
- Attractive & lightweight
- Grooves for rubber feet
- Detents for applying label
- Ship from stock

## WE ALSO OFFER CUSTOM SHAPE PROFILES TO YOUR OWN SPECIFICATIONS

| Standard Rectangle | Cover & Base | Matched Angles | Open Ended |
|--------------------|--------------|----------------|------------|
|                    |              |                |            |

See our other listing  
in EEM under  
Keyboards, Section 5150

**extrusion technology**  
ALUMINUM EXTRUSIONS AND EXTRUSION-BASED COMPONENT PARTS

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FAX: (617)-963-7203



# ANGLE-TECH<sup>®</sup> by Flexible Furniture

Manufacturers of Quality Angle Steel Furniture

## Compare these Angle-Tech<sup>®</sup> features before you make your final decision:

**1** All metal is high-quality furniture grade cold rolled steel, free of defects and in U.S. gauges.

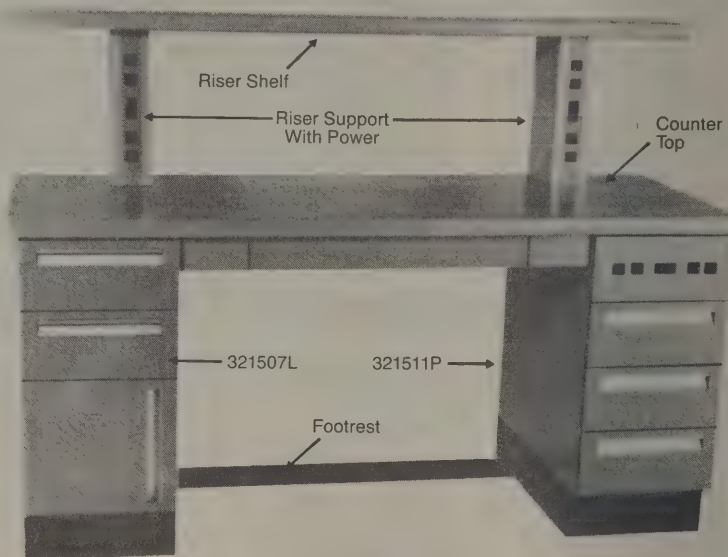
**2** All components are produced on precision tooling, jigs and fixtures to provide consistent high quality product with uniform dimensions and clearances.

**3** Angle-Tech<sup>®</sup> Electronic Workbenches offer the quality, durability, beauty, and functional efficiency you desire to bring pride to the tech area.

**4** Angle-Tech<sup>®</sup> combines quality materials, creative engineering, experienced manufacturing personnel, and factory trained sales and design force for an unbeatable end result.

**5** Drawer suspension is comprised of two-member ball bearing slides, allowing 80% clear access to the drawer body. File drawers project beyond the pedestal for maximum access to contents. All drawers and doors have bumpers for quiet operation. All pulls recessed for safety and convenience.

**6** Fabricated steel parts and assemblies are pre-treated in a five-stage spray cleaner and bonderizing unit, heat dried, then fully immersed in an electrodeposition water-based epoxy resin paint and baked to obtain a uniform base coat. A finished coat of baked-on electro-static applied alkyd base enamel paint in standard Angle-Tech<sup>®</sup> colors or special colors is applied to exterior surfaces. Standard underbase color is black.



**The AT8AM**  
Angle-Tech Electronic Workbench

## The AT8AM Angle-Tech Electronic Workbench - One of a Multitude of Configurations Available

*Whether your need is for a single workstation or a complete multi-room facility, we are capable of meeting your needs. Our staff is unsurpassed in its ability to answer your questions and assist you with a layout and design to meet your specific needs. To find out more about our quality product and dedication to service, please call or write to receive our catalog and specifications.*



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- **PRICE**
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# STANDARD & CUSTOMIZED CASES

## HEAVY DUTY TRANSIT CASES

| MODEL      | W        | L        | H1                 | H2                 | AVAIL.<br>FOR<br>W & H | MODEL      | W        | L        | H1               | H2               | AVAIL.<br>FOR<br>W & H |
|------------|----------|----------|--------------------|--------------------|------------------------|------------|----------|----------|------------------|------------------|------------------------|
| GH0508RP-1 | 5        | 8        | 2-1/8 to 2-1/2     | 2-1/8 to 3-1/2     |                        | GH1420RP-2 | 14       | 20       | 4-3/16 to 5-1/2  | 4-3/16 to 5-1/2  |                        |
| GH0608RP-1 | 6-7/8    | 8-7/8    | 3-1/4 to 5-3/4     | 3-1/4 to 5-3/4     |                        | GH1421RP-2 | 14-1/8   | 21-1/2   | 4-3/4 to 5-3/4   | 4-3/4 to 5-3/4   |                        |
| GH0710RP-3 | 7-1/8    | 10-3/4   | 2-3/8 to 5-1/2     | 2-3/8 to 5-1/2     |                        | GH1423RP-2 | 14-7/16  | 23-3/4   | 3-1/8 to 5-1/2   | 3-1/8 to 5-1/2   | X                      |
| GH0710RP-2 | 7-3/16   | 10-1/2   | 2-1/4 to 4         | 2-1/4 to 4         |                        | GH1435RP-2 | 14       | 35       | 4-3/16 to 6-5/16 | 4-3/16 to 6-5/16 | X                      |
| GH0713RP-1 | 7-1/16   | 13       | 2-1/4 to 4         | 2-1/4 to 4         |                        | GH1617RP-2 | 16-1/2   | 17-3/4   | 3-1/8 to 4-3/8   | 3-1/8 to 4-3/8   |                        |
| GH0715RP-2 | 7-3/16   | 15-1/16  | 2-1/8 to 3-1/4     | 2-1/8 to 3-1/4     |                        | GH1622RP-2 | 16-1/2   | 22-3/8   | 3-1/2 to 4       | 3-1/2 to 4       |                        |
| GH0716RP-1 | 7-5/16   | 16-13/16 | 1-1/2 to 1-7/8     | 1-1/2 to 1-7/8     |                        | GH1624RP-2 | 16-3/8   | 24-3/4   | 4-1/2 to 5-3/4   | 4-1/2 to 5-3/4   | X                      |
| GH0718RP-1 | 7        | 18-1/16  | 4-1/2 to 6-3/4     | 4-1/2 to 6-3/4     |                        | GH1626RP-2 | 16-3/8   | 26       | 3-3/4 to 5       | 3-3/4 to 5       | X                      |
| GH0818RP-1 | 8-3/4    | 18-7/8   | 4-3/8 to 7         | 4-3/8 to 7         |                        | GH1727RP-2 | 17-13/16 | 27-3/4   | 3-3/4 to 4-3/8   | 3-3/4 to 4-3/8   | X                      |
| GH0912RP-1 | 9        | 12-1/2   | 4 to 5             | 4 to 5             |                        | GH1749RP-2 | 17       | 49-1/2   | 4 to 6           | 4 to 6           | X                      |
| GH0933RP-1 | 9-5/8    | 33-5/8   | 4-1/2 to 6-1/2     | 4-1/2 to 6-1/2     |                        | GH1752RP-2 | 17-9/16  | 52-3/4   | 3 to 5           | 3 to 5           | X                      |
| GH1012RP-1 | 10-3/8   | 12-7/8   | 2 to 4, 5-1/2 to 7 | 2 to 4, 5-1/2 to 7 |                        | GH1823RP-2 | 18-1/8   | 23-7/8   | 3-3/4 to 5-3/8   | 3-3/4 to 5-3/8   | X                      |
| GH1016RP-2 | 10-5/8   | 16-9/16  | 2-3/4 to 4         | 2-3/4 to 4         |                        | GH2020RP-2 | 20-13/16 | 20-13/16 | 4-1/2 to 5       | 4-1/2 to 5       | X                      |
| GH1120RP-2 | 11-1/2   | 20-11/16 | 3 to 5-3/8         | 3 to 5-3/8         |                        | GH2031RP-2 | 20       | 31       | 5-1/2 to 7-1/2   | 5-1/2 to 7-1/2   | X                      |
| GH1128RP-2 | 11-3/4   | 28-3/4   | 2-1/2 to 4-1/2     | 2-1/2 to 4-1/2     |                        | GH2122RP-2 | 21-3/16  | 22-5/8   | 2 to 3           | 2 to 3           | X                      |
| GH1217RP-2 | 12-7/16  | 17-7/16  | 2-1/4 to 3-1/2     | 2-1/4 to 3-1/2     |                        | GH2126RP-2 | 21-1/2   | 26-1/2   | 2-1/4 to 4       | 2-1/4 to 4       | X                      |
| GH1218RP-2 | 12-15/16 | 18-1/8   | 2-1/4 to 3-11/16   | 2-1/4 to 3-11/16   |                        | GH2236RP-2 | 22       | 38-13/16 | 4 to 6-1/2       | 4 to 6-1/2       | X                      |
| GH1219RP-2 | 12-1/16  | 19-13/16 | 2 to 4             | 2 to 4             |                        | GH2325RP-2 | 23       | 25       | 5-1/4 to 7-3/16  | 5-1/4 to 7-3/16  | X                      |
| GH1220RP-2 | 12-7/16  | 20-7/16  | 2-1/2 to 5-1/4     | 2-1/2 to 5-1/4     |                        | GH2424RP-2 | 24-3/4   | 24-3/4   | 4 to 6           | 4 to 6           | X                      |
| GH1313RP-1 | 13-5/8   | 13-7/8   | 4-3/8 to 5-1/4     | 4-3/8 to 5-1/4     |                        | GH2433RP-2 | 24-1/2   | 33-1/2   | 2-1/2 to 3-1/8   | 2-1/2 to 3-1/8   | X                      |
| GH1314RP-2 | 14-7/16  | 13-7/8   | 3-1/8 to 4         | 3-1/8 to 4         |                        | GH2440RP-2 | 24-3/4   | 40-3/4   | 3-1/4 to 4-1/2   | 3-1/4 to 4-1/2   | X                      |
| GH1317RP-2 | 13-3/4   | 17       | 3-1/4 to 4         | 3-1/4 to 4         |                        | GH2448RP-2 | 24-3/4   | 48-3/4   | 3 to 5           | 3 to 5           | X                      |
| GH1319RP-1 | 13       | 19-3/8   | 3-7/8 to 5         | 3-7/8 to 5         |                        | GH2530RP-2 | 25-1/8   | 30-1/8   | 5-1/4 to 7       | 5-1/4 to 7       | X                      |
| GH1330RP-2 | 13-7/8   | 30-7/8   | 4 to 6-7/16        | 4 to 6-7/16        | X                      | GH2841RP-2 | 28       | 41       | 5 to 7           | 5 to 7           | X                      |
| GH1419RP-2 | 14       | 19-7/16  | 3-1/4 to 3-3/4     | 3-1/4 to 3-3/4     |                        | GH2929RP-2 | 29       | 29       | 10 to 13         | 10 to 13         | X                      |
|            |          |          | 4-1/4 to 6         | 4-1/4 to 6         |                        | GH4048RP-2 | 40-3/4   | 48-3/4   | 2-1/2 to 4-1/2   | 2-1/2 to 4-1/2   | X                      |
|            |          |          | 7-5/8 to 9-1/2     | 7-5/8 to 9-1/2     |                        |            |          |          |                  |                  |                        |

## HEAVY DUTY CARRYING CASE

| MODEL     | W       | L        | H1               | H2               | MODEL     | W        | L        | H1                 | H2                 |
|-----------|---------|----------|------------------|------------------|-----------|----------|----------|--------------------|--------------------|
| GH0511R-1 | 5-7/8   | 11-3/8   | 3 to 3-3/4       | 3 to 3-3/4       | GH1123R-2 | 11-11/16 | 23-3/4   | 1-1/4 to 2-1/4     | 1-1/4 to 2-1/4     |
| GH0617R-1 | 6-1/8   | 17-1/8   | 2-5/8 to 2-15/16 | 2-5/8 to 2-15/16 | GH1137R-2 | 11-7/8   | 37-3/4   | 1-1/4 to 2-1/4     | 1-1/4 to 2-1/4     |
| GH0710R-1 | 7-1/2   | 10       | 3-1/8 to 3-3/8   | 3-1/8 to 3-3/8   | GH1212R-2 | 12       | 12       | 3-9/16 to 4-1/4    | 3-9/16 to 4-1/4    |
| GH0813R-2 | 8-5/8   | 13-7/8   | 4-3/16 to 5-3/8  | 4-3/16 to 5-3/8  | GH1217R-3 | 12-3/4   | 17-3/4   | 2 to 3-1/2         | 2 to 3-1/2         |
| GH0814R-2 | 8-11/16 | 14       | 2-1/2 to 3-1/4   | 2-1/2 to 3-1/4   | GH1220R-2 | 12-7/16  | 20-5/16  | 3-1/8 to 4         | 3-1/8 to 4         |
| GH0830R-1 | 8-13/16 | 30-11/16 | 1-1/4 to 2-3/4   | 1-1/4 to 2-3/4   | GH1316R-1 | 13-13/16 | 16-13/16 | 2-5/16 to 3-1/8    | 2-5/16 to 3-1/8    |
| GH0909R-1 | 9-7/8   | 9-7/8    | 2-1/2 to 3-9/16  | 2-1/2 to 3-9/16  | GH1318R-2 | 13       | 18       | 3-3/4 to 5-1/4     | 3-3/4 to 5-1/4     |
| GH0912R-1 | 9-1/16  | 12-1/16  | 1-1/2 to 1-3/4   | 1-1/2 to 1-3/4   | GH1319R-2 | 13-13/16 | 19-3/4   | 2-3/4 to 3-5/8     | 2-3/4 to 3-5/8     |
| GH0914R-1 | 9-1/4   | 14       | 2-1/2 to 2-3/4   | 2-1/2 to 2-3/4   | GH1319R-2 | 13-7/8   | 19-5/8   | 3 to 3-3/4         | 3 to 3-3/4         |
| GH0916R-2 | 9-3/4   | 16-13/16 | 1-3/4 to 2-1/8   | 1-3/4 to 2-1/8   | GH1322R-2 | 13-1/4   | 22-3/4   | 1-1/2 to 2-3/4     | 1-1/2 to 2-3/4     |
| GH0918R-1 | 9       | 18-15/16 | 2-1/2 to 3-1/2   | 2-1/2 to 3-1/2   | GH1417M-1 | 14-7/8   | 17-3/4   | 3-3/4 to 5-1/8     | 3-3/4 to 5-1/8     |
| GH0918R-2 | 8-1/8   | 18-1/8   | 1-3/4 to 4       | 1-3/4 to 4       | GH1419R-2 | 14-1/4   | 19-15/16 | 1-1/8 to 1-9/16    | 1-1/8 to 1-9/16    |
| GH0922R-1 | 9-5/8   | 22-11/16 | 2 to 3-1/16      | 2 to 3-1/16      | GH1523R-2 | 15-1/8   | 23-7/16  | 2-5/8 to 4-5/8     | 2-5/8 to 4-5/8     |
| GH0924R-1 | 9       | 42-5/8   | 1-1/4 to 2       | 1-1/4 to 2       | GH1528R-2 | 15-1/4   | 28-1/16  | 2-5/8 to 4-3/4     | 2-5/8 to 4-3/4     |
| GH1013R-1 | 10      | 13-1/8   | 2-3/4 to 3-1/2   | 2-3/4 to 3-1/2   | GH1631R-2 | 16       | 31       | 4-3/8 to 6-7/8     | 4-3/8 to 6-7/8     |
| GH1016R-1 | 10      | 16-1/16  | 1-3/4 to 2       | 1-3/4 to 2       | GH1721R-2 | 17       | 21       | 3-1/8 to 5-1/8     | 3-1/8 to 5-1/8     |
| GH1021R-1 | 10-1/4  | 21-15/16 | 2-1/4 to 3-1/4   | 2-1/4 to 3-1/4   | GH1733R-2 | 17-13/16 | 33-3/4   | 2-1/8 to 2-9/16    | 2-1/8 to 2-9/16    |
| GH1113R-1 | 11      | 13       | 2-1/4 to 2-3/4   | 2-1/4 to 2-3/4   | GH1820R-2 | 18       | 20       | 2 to 3-1/2         | 2 to 3-1/2         |
| GH1116R-2 | 11      | 16-1/2   | 2-5/8 to 3-15/16 | 2-5/8 to 3-15/16 | GH1825R-2 | 18       | 25-3/4   | 1-13/16 to 2-13/16 | 1-13/16 to 2-13/16 |
| GH1117R-2 | 11-5/8  | 17-1/2   | 2 to 3-1/4       | 2 to 3-1/4       | GH1924R-1 | 19       | 24       | 1-3/4 to 2-3/8     | 1-3/4 to 2-3/8     |
| GH1119R-1 | 11-5/16 | 19-5/8   | 2-3/16 to 2-5/8  | 2-3/16 to 2-5/8  | GH2121R-2 | 21-1/4   | 21-1/4   | 5-5/16 to 6-11/16  | 5-5/16 to 6-11/16  |
| GH1212R-2 | 11-7/16 | 20-5/16  | 3-1/16 to 4-1/16 | 3-1/16 to 4-1/16 | GH2131R-2 | 21       | 31       | 3 to 5             | 3 to 5             |
|           |         |          | 6-5/8 to 8-13/16 | 6-5/8 to 8-13/16 | GH2339R-2 | 26-13/16 | 39-3/16  | 1-1/4 to 2-13/16   | 1-1/4 to 2-13/16   |
|           |         |          |                  |                  |           |          |          | 4-11/16 to 5-7/16  | 4-11/16 to 5-7/16  |

## HEAVY DUTY RACK MOUNT CASE

| MODEL   | STANDARD<br>PANEL | W       | L        | C     | D     |
|---------|-------------------|---------|----------|-------|-------|
| GH0514M | -                 | 5-5/16  | 14-3/16  | -     | -     |
| GH0519M | 5.219 x 19        | 5-5/16  | 19-1/4   | 2-1/4 | -     |
| GH0714M | -                 | 6-15/16 | 13-11/16 | -     | -     |
| GH0719M | 6.969 x 19        | 7-1/16  | 19-1/4   | 4     | -     |
| GH0919M | 8.719 x 19        | 8-13/16 | 19-1/4   | 5-3/4 | -     |
| GH1119M | 10.469 x 19       | 10-9/16 | 19-1/4   | 2-1/4 | 3     |
| GH1219M | 12.219 x 19       | 12-5/16 | 19-1/4   | 3-1/2 | 2-1/4 |

Gemini specializes in custom designed cases for industry. We have the capability to design a case specifically for your product and follow through from prototypes to production. If you are currently purchasing a standard case from another manufacturer, we may be able to duplicate that case at a lower cost. We welcome the opportunity to quote your case requirements and to work with you on design.

## REUSABLE SHIPPING CONTAINERS Engineered Protection

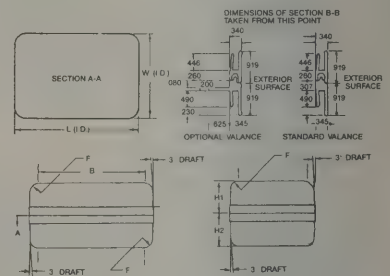
| MODEL       | INSIDE DIMENSIONS |
|-------------|-------------------|
| GT2122RP-RM | 5 12              |
| GT1320RP-RM | 3 9-1/2           |
| GT1418RP-RM | 4 5               |
| GT1436-RM   | 3 5-1/2           |

## RUGGED RACK

| MODEL     | WIDTH   | LENGTH  | END CAPS       | SECTION CENTER   |
|-----------|---------|---------|----------------|------------------|
| GH0719RRM | 7-1/16  | 19-1/16 | 3-3/8 to 3-5/8 | 12-1/4 to 13-1/4 |
| GH0919RRM | 8-31/32 | 19-1/16 | 3-1/8 to 4-1/4 | 16-1/2 to 19     |

The above sizes are only a partial list, contact GEMINI for a complete catalog. **CALL TOLL FREE: 1-800-533-3631**

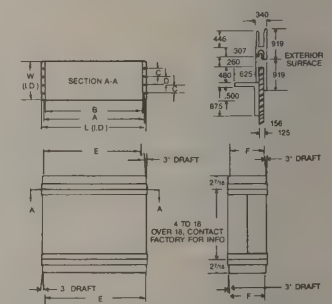
Gemini's standard line of **HEAVY DUTY TRANSIT CASES** are constructed from high density polyethylene, and extremely tough and resilient material ideally suited to the abuses transit cases are subjected to. The heavy wall (.100" nominal) shells and heavy duty 1.838" wide #6063 T52 aluminum valance combine to form a container capable of transporting delicate portable instruments under the most adverse conditions. Available with recessed wheels and folding handle.



Gemini's standard line of **HEAVY DUTY CARRYING CASES** are constructed from rugged A.B.S. and feature a heavy wall aluminum valance to provide an extremely rugged case with contemporary lines for transporting delicate portable instruments under the most demanding conditions.

## Standard Features Include:

- .100" to .150" nominal wall black A.B.S. shells
- variable case depth
- heavy wall 1.838" wide #6063 T52 aluminum valance with dust seal
- choice of handle, latch, hinge and bumpers

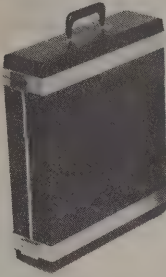




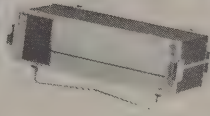
# STANDARD & CUSTOMIZED CASES



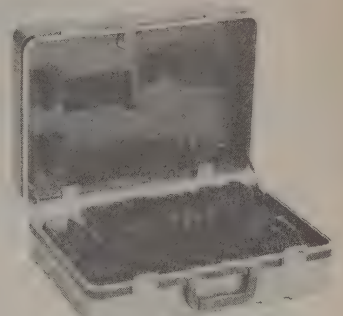
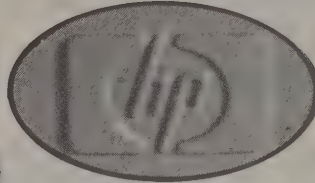
**RUGGED RACK**



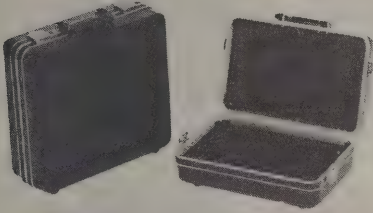
**EIA RACK MOUNT CASE**



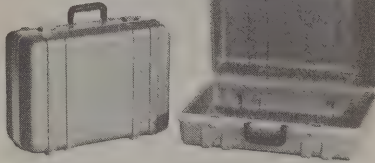
**MOLDED LOGOS**



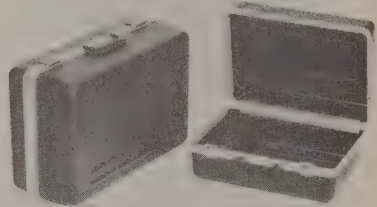
**TOOL CASE**



**ATTACHE STYLE CASE**



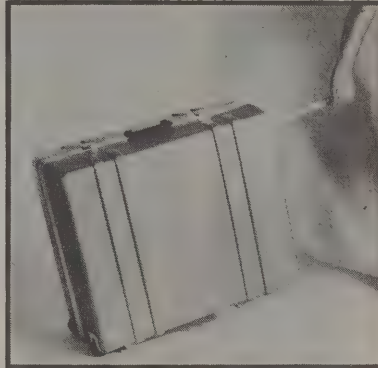
**TRANSIT CASE**



**HEAVY DUTY CARRYING CASE**



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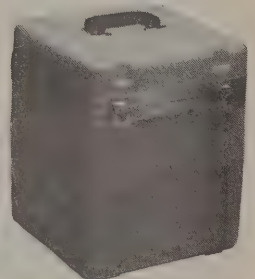
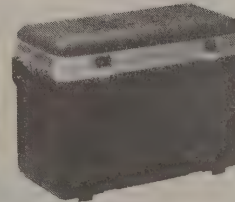
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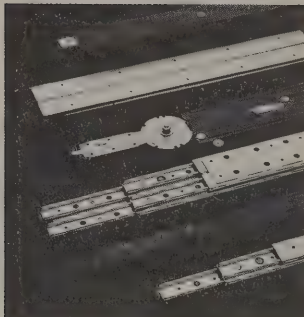


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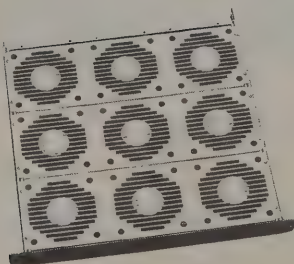
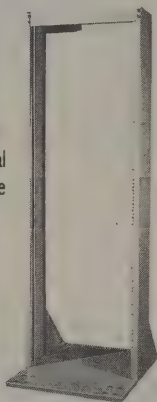
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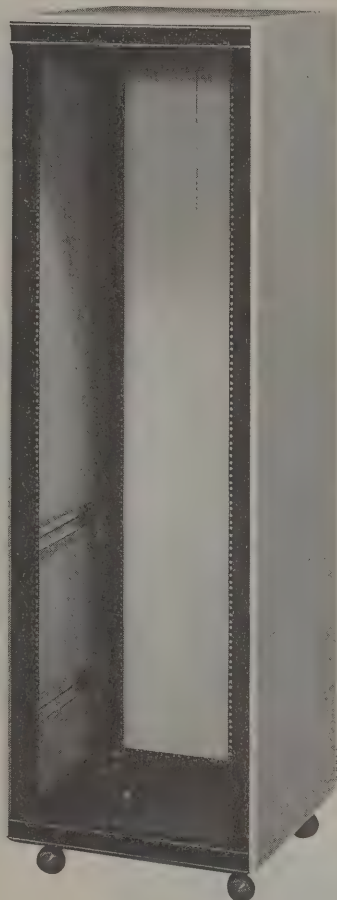
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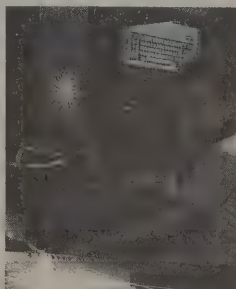
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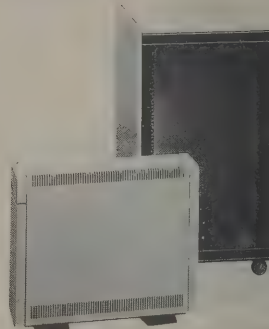
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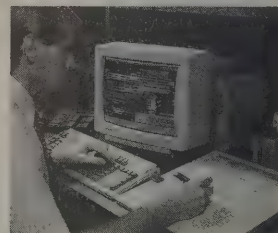
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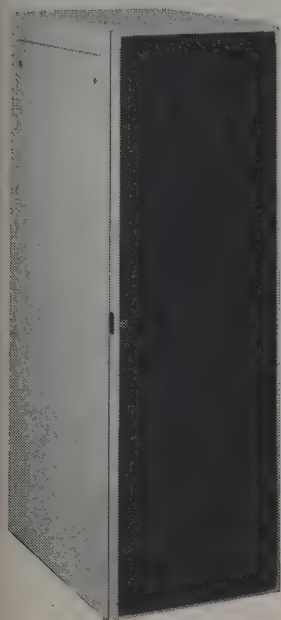
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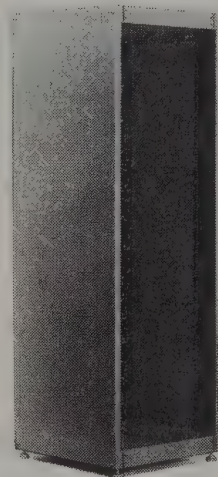
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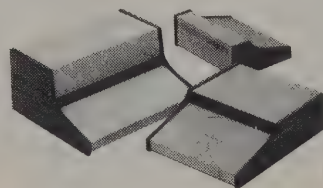
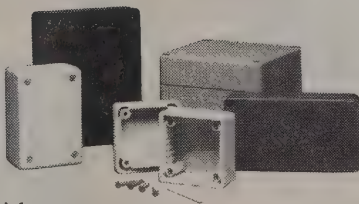
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- Hundreds of models in a wide range of colors and materials
- SCED and SCEH consoles shown here feature real walnut wood sides

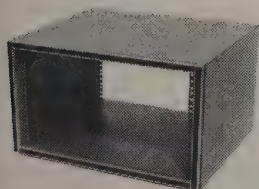


## ABS Plastic Instrument Cases

- Available in 4 colors and multiple sizes
- Flame retardant ABS plastic
- Integral P.C. mounting slots
- Two piece construction

## 19" Panel Mount Rack Cases

- Panel heights 3.25" to 28.0"
- Depths 13.5" and 17.5"
- Available in a wide range of colors
- Many Universal 19" Accessories
- Integral front and rear panel rails use 10-32 clipnuts or panel mounting



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## KNURR USA INC.

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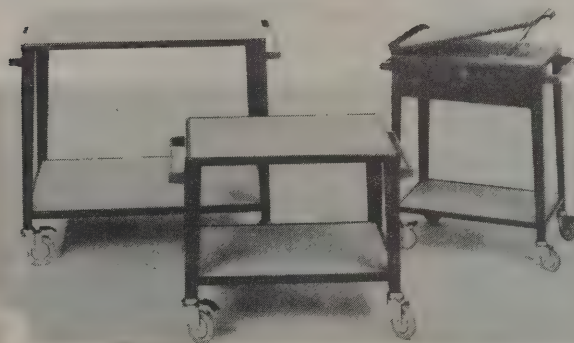
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# Dacobas

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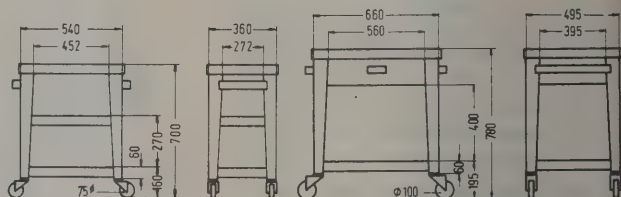
## Our Blue Ones



### Junior

Laboratory Trolley with fixed intermediate shelf.

| Load capacity | Weight  | Order No.   | 10-24  |
|---------------|---------|-------------|--------|
| 1500 N        | 14,5 kg | 0.002.122.2 | 276.87 |

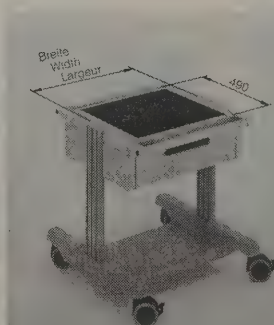
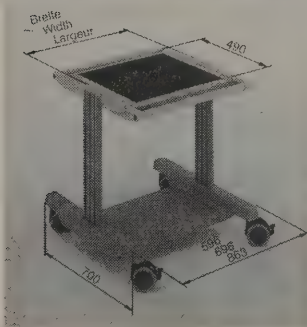


### Standard

Laboratory Trolley with drawer (and handle).

| Load capacity | Weight | Order No.   | 10-24  |
|---------------|--------|-------------|--------|
| 1800 N        | 27 kg  | 0.012.222.2 | 435.32 |

# dacomobile



## Standard Features

Basic frame  
Height 720 mm

1 Table top with  
2 handles

### Without Drawer

| Width mm | Order Number | 10-24  |
|----------|--------------|--------|
| 496      | 0.112.527.3  | 532.97 |
| 596      | 0.112.627.3  | 584.45 |
| 763      | 0.112.827.3  | 610.88 |

### With Drawer

| Width mm | Order Number | 10-24  |
|----------|--------------|--------|
| 496      | 0.112.517.3  | 822.79 |
| 596      | 0.112.617.3  | 879.91 |
| 763      | 0.112.817.3  | 919.98 |

Basic frame  
Height 720 mm

1 Table top with  
2 handles  
1 Drawer



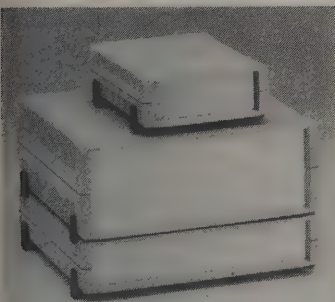


KNURR USA INC.

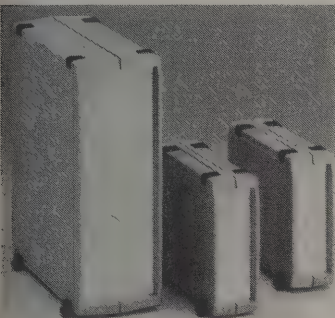
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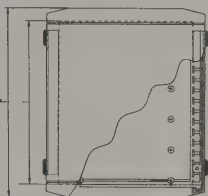
Plastic Enclosures



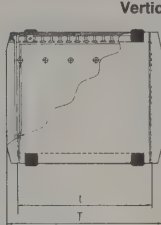
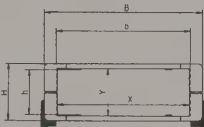
Horizontal Model



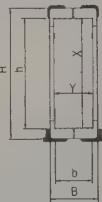
Vertical Model



Horizontal Model



Vertical Model



Horizontal Model

| Description          | Nominal Depth | For front-panel sections |      | Dimensions |      |     |     |     |    |       |     | Order Number        |             |                  |             |             |             |
|----------------------|---------------|--------------------------|------|------------|------|-----|-----|-----|----|-------|-----|---------------------|-------------|------------------|-------------|-------------|-------------|
|                      |               | X 1)                     | Y 2) | X          | Y    | H   | B   | T   | h  | b     | t   | Without Ventilation | Price 10-24 | With Ventilation | Price 10-24 | IP54        | Price 10-24 |
|                      |               |                          |      |            |      |     |     |     |    |       |     |                     |             |                  |             |             |             |
| Optibox 5000         | 160           | 3                        | 9    | 129,4      | 46,4 | 56  | 155 | 187 | 44 | 129,4 | 163 | 5.050.016.9         | 27,68       | 5.051.016.9      | 26,87       | 5.052.016.9 | 32,95       |
|                      | 220           | 3                        | 9    | 129,4      | 46,4 | 56  | 155 | 247 | 44 | 129,4 | 223 | 5.050.022.9         | 28,95       | 5.051.022.9      | 30,41       | 5.052.022.9 | 33,52       |
|                      | 220           | 3                        | 18   | 129,4      | 92,4 | 102 | 155 | 247 | 90 | 129,4 | 223 | 5.050.122.9         | 34,56       | 5.051.122.9      | 34,89       | 5.052.122.9 | 42,02       |
| horizontal flat-pack | 220           | 6                        | 9    | 262,8      | 46,4 | 56  | 288 | 247 | 44 | 262,8 | 223 | 5.050.023.9         | 35,29       | 5.051.023.9      | 35,79       | 5.052.023.9 | 41,88       |
|                      | 220           | 6                        | 18   | 262,8      | 92,4 | 102 | 288 | 247 | 90 | 262,8 | 223 | 5.050.123.9         | 40,51       | 5.051.123.9      | 41,01       | 5.052.123.9 | 49,08       |
| mod. horiz.          | 280           | 6                        | 9    | 262,8      | 46,4 | 56  | 288 | 307 | 44 | 262,8 | 283 | 5.050.029.9         | 39,83       | 5.051.029.9      | 40,50       | 5.052.029.9 | 47,44       |
|                      | 280           | 6                        | 18   | 262,8      | 92,4 | 102 | 288 | 307 | 90 | 262,8 | 283 | 5.050.129.9         | 46,24       | 5.051.129.9      | 47,09       | 5.052.129.9 | 55,87       |

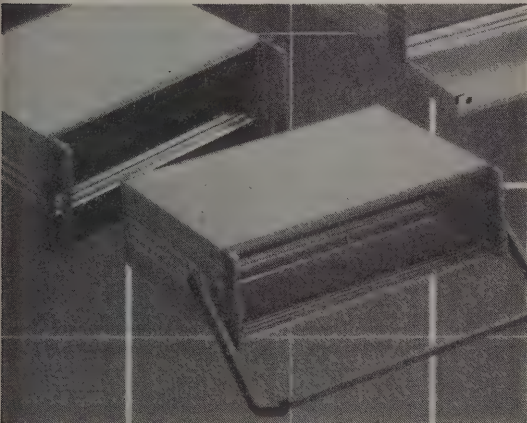
Vertical Model

| Description          | Nominal Depth | For front-panel sections |      | Dimensions |      |     |     |     |       |    |     | Order Number        |             |                  |             |             |             |
|----------------------|---------------|--------------------------|------|------------|------|-----|-----|-----|-------|----|-----|---------------------|-------------|------------------|-------------|-------------|-------------|
|                      |               | X 1)                     | Y 2) | X          | Y    | H   | B   | T   | h     | b  | t   | Without Ventilation | Price 10-24 | With Ventilation | Price 10-24 | IP54        | Price 10-24 |
|                      |               |                          |      |            |      |     |     |     |       |    |     |                     |             |                  |             |             |             |
| Optibox 5000         | 160           | 3                        | 9    | 129,4      | 46,4 | 155 | 56  | 187 | 129,4 | 44 | 163 | 5.050.216.9         | 26.51       | 5.051.216.9      | 26.87       | 5.052.216.9 | 32.95       |
|                      | 220           | 3                        | 9    | 129,4      | 46,4 | 155 | 56  | 247 | 129,4 | 44 | 223 | 5.050.222.9         | 28.95       | 5.051.222.9      | 30.41       | 5.052.222.9 | 33.52       |
|                      | 220           | 3                        | 18   | 129,4      | 92,4 | 155 | 102 | 247 | 129,4 | 90 | 223 | 5.050.322.9         | 34.56       | 5.051.322.9      | 34.89       | 5.052.322.9 | 42.02       |
| horizontal flat-pack | 220           | 6                        | 9    | 262,8      | 46,4 | 288 | 56  | 247 | 262,8 | 44 | 223 | 5.050.223.9         | 35.29       | 5.051.223.9      | 35.79       | 5.052.223.9 | 41.88       |
|                      | 220           | 6                        | 18   | 262,8      | 92,4 | 288 | 102 | 247 | 262,8 | 90 | 223 | 5.050.323.9         | 40.51       | 5.051.323.9      | 41.01       | 5.052.323.9 | 49.08       |
| mod. horiz.          | 280           | 6                        | 9    | 262,8      | 46,4 | 288 | 56  | 307 | 262,8 | 44 | 283 | 5.050.229.9         | 39.92       | 5.051.229.9      | 40.50       | 5.052.229.9 | 47.44       |
|                      | 280           | 6                        | 18   | 262,8      | 92,4 | 288 | 102 | 307 | 262,8 | 90 | 283 | 5.050.329.9         | 46.24       | 5.051.329.9      | 47.09       | 5.052.329.9 | 55.87       |

1) Specified in HE/U = 1 3/4" = 44.45 mm  
2) Specified in TE/HP = Horizontal pitch = 5.08 mm



19" Mountable/Benchtop Enclosure



Modular case with vent slots in bottom cover and rear panel

Standard features

- 2 Side extrusions
- 2 Cross extrusions, front
- 2 Cross extrusions, rear
- 4 Seals
- 2 Adaptors, front
- 2 Adaptors, rear
- 2 Side covers (only in version without handle)
- 2 Handles (only in version with handle)
- 1 Bottom cover with vent slots (sheet steel)
- 1 Top cover (sheet steel)

| Description                              | NT 2)<br>ND 2)<br>(mm) | HE/<br>U 1) | Order number<br>assembled | Price<br>10-24 | Order number<br>flat-pack | Price<br>10-24 |
|------------------------------------------|------------------------|-------------|---------------------------|----------------|---------------------------|----------------|
| Modular case<br>with front<br>handles    | 220                    | 3           | 2.310.023.3               | 141.87         | 2.310.123.3               | 132.41         |
|                                          |                        | 4           | 2.310.024.3               | 155.89         | 2.310.124.3               | 146.75         |
|                                          |                        | 6           | 2.310.026.3               | 178.47         | 2.310.126.3               | 169.21         |
|                                          |                        | 7           | 2.310.027.3               | 193.89         | 2.310.127.3               | 184.76         |
|                                          | 280                    | 3           | 2.310.083.3               | 149.16         | 2.310.183.3               | 139.88         |
|                                          |                        | 4           | 2.310.084.3               | 164.13         | 2.310.184.3               | 154.98         |
|                                          |                        | 6           | 2.310.086.3               | 188.63         | 2.310.186.3               | 179.37         |
|                                          |                        | 7           | 2.310.087.3               | 201.59         | 2.310.187.3               | 192.43         |
|                                          | 380                    | 3           | 2.310.043.3               | 164.91         | 2.310.143.3               | 157.06         |
|                                          |                        | 4           | 2.310.044.3               | 179.04         | 2.310.144.3               | 170.99         |
|                                          |                        | 6           | 2.310.046.3               | 202.41         | 2.310.146.3               | 199.80         |
|                                          |                        | 7           | 2.310.047.3               | 230.03         | 2.310.147.3               | 222.18         |
|                                          | 480                    | 3           | 2.310.103.3               | 176.68         | 2.310.203.3               | 168.85         |
|                                          |                        | 4           | 2.310.104.3               | 193.63         | 2.310.204.3               | 188.93         |
|                                          |                        | 6           | 2.310.106.3               | 231.92         | 2.310.206.3               | 224.13         |
|                                          |                        | 7           | 2.310.107.3               | 245.91         | 2.310.207.3               | 238.13         |
| Modular case<br>without front<br>handles | 220                    | 3           | 2.310.223.3               | 146.07         | 2.310.323.3               | 136.61         |
|                                          |                        | 4           | 2.310.224.3               | 158.19         | 2.310.324.3               | 149.04         |
|                                          |                        | 6           | 2.310.226.3               | 182.76         | 2.310.326.3               | 173.50         |
|                                          |                        | 7           | 2.310.227.3               | 195.94         | 2.310.327.3               | 186.81         |
|                                          | 280                    | 3           | 2.310.283.3               | 153.15         | 2.310.383.3               | 143.87         |
|                                          |                        | 4           | 2.310.284.3               | 166.43         | 2.310.384.3               | 157.28         |
|                                          |                        | 6           | 2.310.286.3               | 192.92         | 2.310.386.3               | 183.66         |
|                                          |                        | 7           | 2.310.287.3               | 203.95         | 2.310.387.3               | 194.80         |
|                                          | 380                    | 3           | 2.310.243.3               | 167.50         | 2.310.343.3               | 159.64         |
|                                          |                        | 4           | 2.310.244.3               | 180.11         | 2.310.344.3               | 172.06         |
|                                          |                        | 6           | 2.310.246.3               | 210.53         | 2.310.346.3               | 202.67         |
|                                          |                        | 7           | 2.310.247.3               | 230.98         | 2.310.347.3               | 223.13         |
|                                          | 480                    | 3           | 2.310.263.3               | 179.25         | 2.310.273.3               | 171.41         |
|                                          |                        | 4           | 2.310.264.3               | 191.37         | 2.310.274.3               | 186.67         |
|                                          |                        | 6           | 2.310.266.3               | 234.79         | 2.310.276.3               | 227.00         |
|                                          |                        | 7           | 2.310.267.3               | 246.88         | 2.310.277.3               | 239.10         |

1) 1 HE/U = 1 3/4" = 44, 45 mm  
2) ND - Nominal depth





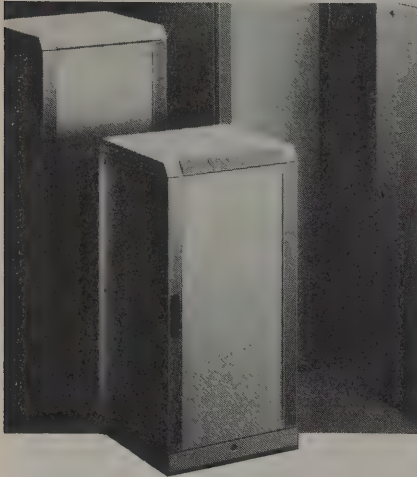
# KNURR USA INC.

1890 North Voyager Avenue, Simi Valley, CA 93063

Tel. (805) 526-7733 • FAX (805) 584-8371

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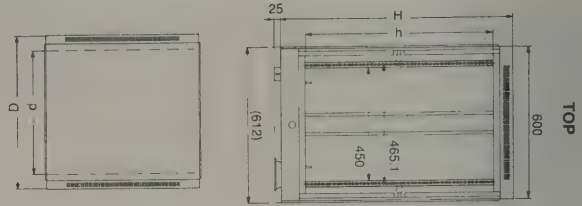
**temprack** Listed



**19" Steel rack**  
for electronic equipment  
to DIN 41494.

## Standard features

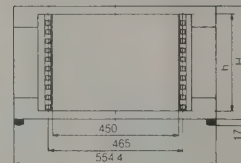
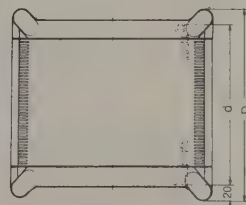
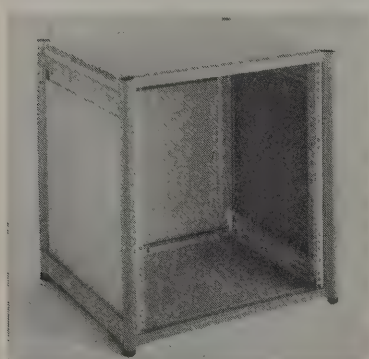
- 1 Basic rack with side panels and rear panel
- 1 Top cover with vent slots
- 2 Vertical extrusions, rear
- 2 19" Vertical extrusions, front, with mounting holes
- 2 Softline extrusions.



| Rack height (H) / Installation height (h) |                    |        |        | Rack depth D / Chassis depth d (mm) |             |              |             |              |             |
|-------------------------------------------|--------------------|--------|--------|-------------------------------------|-------------|--------------|-------------|--------------|-------------|
|                                           |                    |        |        | 600/450                             |             | 800/650      |             | 900/750      |             |
| Description                               | HE/U <sup>1)</sup> | H (mm) | h (mm) | Order number                        | Price 10-24 | Order number | Price 10-24 | Order number | Price 10-24 |
| 19" Steel rack, W 600                     | 12                 | 708    | 536    | 1.113.312.3                         | 762.50      | 1.113.412.3  | 791.32      | 1.113.512.3  | 877.79      |
|                                           | 23                 | 1197   | 1025   | 1.113.323.3                         | 873.97      | 1.113.423.3  | 921.05      | 1.113.523.3  | 985.23      |
|                                           | 27                 | 1375   | 1203   | 1.113.327.3                         | 915.79      | 1.113.427.3  | 970.81      | 1.113.527.3  | 1025.84     |
|                                           | 32                 | 1597   | 1425   | 1.113.632.3                         | 952.35      | 1.113.832.3  | 1014.88     | 1.113.932.3  | 1055.59     |
|                                           | 36                 | 1775   | 1603   | 1.113.636.3                         | 1009.06     | 1.113.836.3  | 1073.04     | 1.113.936.3  | 1115.19     |
| Stationary, load rating to 5000 N         | 41                 | 1997   | 1825   | 1.113.641.3                         | 1067.22     | 1.113.841.3  | 1134.11     | 1.113.941.3  | 1179.17     |
|                                           | 45                 | 2175   | 2003   | 1.113.645.3                         | 1122.47     | 1.113.845.3  | 1192.26     | 1.113.945.3  | 1237.33     |
|                                           | 12                 | 708    | 536    | 1.113.313.3                         | 771.67      | 1.113.413.3  | 801.80      | 1.113.513.3  | 888.27      |
|                                           | 23                 | 1197   | 1025   | 1.113.324.3                         | 883.03      | 1.113.424.3  | 930.20      | 1.113.524.3  | 995.70      |
|                                           | 27                 | 1375   | 1203   | 1.113.328.3                         | 924.96      | 1.113.428.3  | 979.99      | 1.113.528.3  | 1036.32     |
| Mobile, load rating to 2000 N             | 32                 | 1597   | 1425   | 1.113.633.3                         | 961.08      | 1.113.833.3  | 1022.14     | 1.113.933.3  | 1062.85     |
|                                           | 36                 | 1775   | 1603   | 1.113.637.3                         | 1016.33     | 1.113.837.3  | 1081.76     | 1.113.937.3  | 1122.47     |
|                                           | 41                 | 1997   | 1825   | 1.113.642.3                         | 1074.49     | 1.113.842.3  | 1141.36     | 1.113.942.3  | 1187.90     |
|                                           | 45                 | 2175   | 2003   | 1.113.646.3                         | 1132.65     | 1.113.846.3  | 1199.52     | 1.113.946.3  | 1246.06     |
|                                           | 12                 | 708    | 536    | 1.113.314.3                         | 907.92      | 1.113.414.3  | 950.28      | 1.113.514.3  | 936.75      |
| With plinth, load rating to 5000 N        | 23                 | 1197   | 1025   | 1.113.325.3                         | 999.63      | 1.113.425.3  | 995.70      | 1.113.525.3  | 1028.45     |
|                                           | 27                 | 1375   | 1203   | 1.113.329.3                         | 1024.53     | 1.113.429.3  | 1038.94     | 1.113.529.3  | 1088.72     |
|                                           | 32                 | 1597   | 1425   | 1.113.634.3                         | 1014.88     | 1.113.834.3  | 1087.58     | 1.113.934.3  | 1135.55     |
|                                           | 36                 | 1775   | 1603   | 1.113.638.3                         | 1070.13     | 1.113.838.3  | 1145.74     | 1.113.938.3  | 1195.17     |
|                                           | 41                 | 1997   | 1825   | 1.113.643.3                         | 1128.29     | 1.113.843.3  | 1205.34     | 1.113.943.3  | 1260.59     |
|                                           | 45                 | 2175   | 2003   | 1.113.647.3                         | 1186.45     | 1.113.847.3  | 1264.96     | 1.113.947.3  | 1318.75     |

1) 1 HE/U = 1 3/4" = 44, 45 mm

**double pro rack?**



| HE/U <sup>1)</sup> | H mm   | H mm   |
|--------------------|--------|--------|
| 3                  | 177.8  | 132.5  |
| 4                  | 222.3  | 177.0  |
| 5                  | 266.7  | 221.4  |
| 6                  | 322.2  | 265.9  |
| 7                  | 355.6  | 310.3  |
| 8                  | 400.1  | 354.8  |
| 9                  | 444.5  | 399.2  |
| 10                 | 489.0  | 443.7  |
| 12                 | 577.9  | 532.6  |
| 15                 | 711.4  | 666.1  |
| 18                 | 844.6  | 799.3  |
| 21                 | 978.1  | 932.8  |
| 24                 | 1111.3 | 1066.0 |

| Description                      |    | Enclosure depth D / Chassis depth d (mm) |             |             |             |             |             |             |             |             |             |
|----------------------------------|----|------------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                                  |    | 400/360                                  |             | 500/460     |             | 600/560     |             | 700/660     |             | 800/760     |             |
|                                  |    | Order no.                                | Price 10-24 | Order no.   | Price 10-24 | Order no.   | Price 10-24 | Order no.   | Price 10-24 | Order no.   | Price 10-24 |
| 19" Enclosure without front door | 3  | 1.243.403.3                              | 349.27      | 1.243.503.3 | 357.80      | 1.243.603.3 | 377.18      |             |             |             |             |
|                                  | 4  | 1.243.404.3                              | 361.03      | 1.243.504.3 | 371.58      | 1.243.604.3 | 389.20      |             |             |             |             |
|                                  | 5  | 1.243.405.3                              | 369.43      | 1.243.505.3 | 380.64      | 1.243.605.3 | 398.12      |             |             |             |             |
|                                  | 6  | 1.243.406.3                              | 369.27      | 1.243.506.3 | 380.77      | 1.243.606.3 | 399.23      |             |             |             |             |
|                                  | 7  | 1.243.407.3                              | 381.53      | 1.243.507.3 | 392.95      | 1.243.607.3 | 411.14      | 1.243.707.3 | 426.72      | 1.243.807.3 | 441.46      |
|                                  | 8  | 1.243.408.3                              | 387.20      | 1.243.508.3 | 399.82      | 1.243.608.3 | 418.78      | 1.243.708.3 | 438.73      | 1.243.808.3 | 452.01      |
|                                  | 9  | 1.243.409.3                              | 397.57      | 1.243.509.3 | 409.57      | 1.243.609.3 | 429.64      | 1.243.709.3 | 448.81      | 1.243.809.3 | 460.99      |
|                                  | 10 | 1.243.410.3                              | 434.21      | 1.243.510.3 | 449.40      | 1.243.610.3 | 470.23      | 1.243.710.3 | 487.79      | 1.243.810.3 | 509.55      |
|                                  | 12 | 1.243.412.3                              | 442.89      | 1.243.512.3 | 476.93      | 1.243.612.3 | 501.86      | 1.243.712.3 | 523.46      | 1.243.812.3 | 537.04      |
|                                  | 15 | 1.243.415.3                              | 489.74      | 1.243.515.3 | 501.10      | 1.243.615.3 | 527.06      | 1.243.715.3 | 551.42      | 1.243.815.3 | 566.20      |
|                                  | 18 | 1.243.418.3                              | 511.14      | 1.243.518.3 | 531.86      | 1.243.618.3 | 550.24      | 1.243.718.3 | 573.76      | 1.243.818.3 | 605.60      |
|                                  | 21 | 1.243.421.3                              | 533.75      | 1.243.521.3 | 551.65      | 1.243.621.3 | 581.61      | 1.243.721.3 | 596.49      | 1.243.821.3 | 631.68      |
|                                  | 24 | 1.243.424.3                              | 557.20      | 1.243.524.3 | 573.47      | 1.243.624.3 | 601.72      | 1.243.724.3 | 628.39      | 1.243.824.3 | 646.63      |

1) 1 HE/U = 1 3/4" = 44, 45 mm

Temprack and Double Pro rack are also available in EMI/RFI and Nema models.



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# LANSING

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**Lansing Enclosures save you time.** Their proven, pretested designs deliver ready-to-use, reliable performance, reducing lead time, prototyping, and production problems. And they're designed for fast, efficient assembly.

**Lansing Enclosures save you money.** Low-volume buyers benefit from our economical, established designs and proven performance; high-volume buyers save even more. Either way, we'll work with you to achieve the most economical solution for your situation — a solution that takes into account both purchase price and related production costs.

**Lansing Enclosures meet your specific requirements.** They're designed to make the addition of your product details fast and economical throughout prototyping and production.

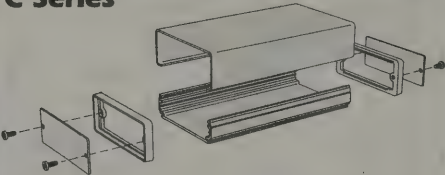
**Lansing Enclosures add value to your product.** The sturdy, carefully engineered designs and quality construction afford maximum protection to your electronics. And best of all, Lansing Enclosures give your product a solid, precision-manufactured look and feel that tells your customers — in a way facts and figures

### MicroPak™

**For small freestanding, rack-mounted, or hand-held instruments.**

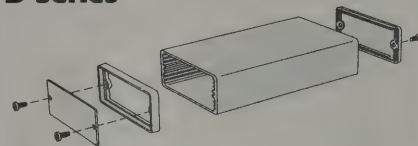
Extruded aluminum bases incorporate an integral circuit board mounting system.

#### C Series



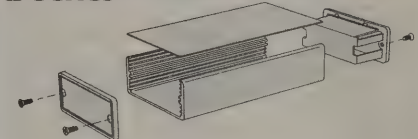
Extruded aluminum base with non-skid feet, vinyl-clad steel cover, plastic bezels, and aluminum end panels.

#### D Series



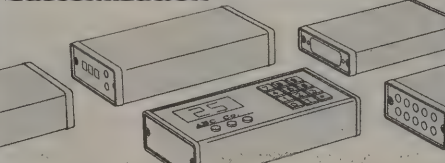
Extruded tubular aluminum body and a variety of end configurations, including battery compartment. Non-skid feet optional.

#### E Series



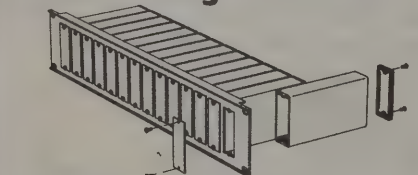
Extruded aluminum base with non-skid feet, slide-in top panel, and a variety of end configurations, including battery compartment.

#### Customization



Call Technical Support to discuss custom machining, finishes, and graphics.

#### Rack-Mounting Accessories



Available in a variety of configurations to hold multiple MicroPak Enclosures in a standard 19" rack.

| Width     | Height | Depth** | Model No.* |
|-----------|--------|---------|------------|
| 2.75<br>N | 1.12   | 5.00    | CN2X50     |
|           |        | 6.00    | CN2X60     |
| 4.17<br>Q | 1.52   | 5.00    | CQ1X50     |
|           |        | 6.00    | CQ1X60     |
|           | 2.52   | 5.00    | CQ2X50     |
|           |        | 6.00    | CQ2X60     |
| 5.57<br>T | 1.52   | 5.00    | CT1X50     |
|           |        | 6.00    | CT1X60     |
|           |        | 7.00    | CT1X70     |
|           |        | 8.50    | CT1X85     |
|           | 2.52   | 5.00    | CT2X50     |
|           |        | 6.00    | CT2X60     |
|           |        | 7.00    | CT2X70     |
|           |        | 8.50    | CT2X85     |
| 7.29<br>W | 1.52   | 9.00    | CW1X90     |
|           | 2.52   | 9.00    | CW2X90     |
| 5.75<br>S | 1.52   | 6.95    | CS1X70     |
|           |        | 8.50    | CS2X85     |

|           |      |      |        |
|-----------|------|------|--------|
| 2.75<br>N | .75  | 5.00 | DN1X50 |
|           |      | 6.00 | DN1X60 |
|           | 1.12 | 5.00 | DN2X50 |
|           |      | 6.00 | DN2X60 |

|           |      |      |        |
|-----------|------|------|--------|
| 2.75<br>N | .75  | 5.00 | EN1X50 |
|           |      | 6.00 | EN1X60 |
|           | 1.12 | 5.00 | EN2X50 |
|           |      | 6.00 | EN2X60 |

\* This is an abbreviated Model Number indicating size only. Contact Lansing for complete information.

\*\* Depth is measured by length of cover/base only. Overall depth is dependent on end configuration selected. Contact Lansing for complete information.

| Mounting Capacity |     |         | Model No.  |
|-------------------|-----|---------|------------|
| Size              | Qty | Orient† |            |
| N1                | 6   | HOR     | K1PN1-H06A |
|                   | 18  | HOR     | K2PN1-H18A |
|                   | 20  | VER     | K2PN1-V20A |
| N2                | 6   | HOR     | K2PN2-H06A |
|                   | 12  | HOR     | K2PN2-H12A |
|                   | 14  | VER     | K2PN2-V14A |
| O1                | 4   | HOR     | K1PQ1-H04A |
| T1                | 3   | HOR     | K1PT1-H03A |
| W1                | 2   | HOR     | K1PW1-H02A |
|                   | 1   | HOR     | K1PW1-H01A |

† Indicates mounting orientation of enclosures.

(All dimensions in inches.)



# for Electronic Instruments

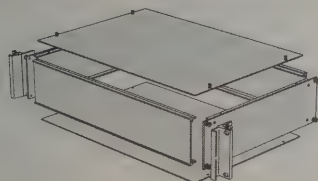
# LANSING

## GrayBox™

For larger rack-mounted or freestanding instruments.

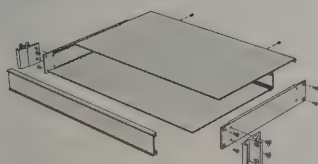
Modified I-beam extruded sides and front/rear panels form a solid structural frame.

### B Series



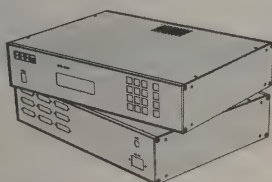
Removable, flush-mount, screw-on covers.

### P Series



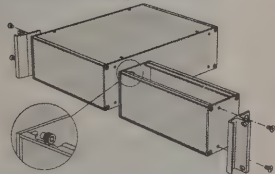
Slide-in top cover and captured, recessed bottom cover.

### Customization



Call Technical Support to discuss custom machining, finishes, and graphics.

### Rack-Mounting Kits



A full complement of rack-mounting accessories supports the GrayBox Enclosure line.

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| Height           | Width     | Depth | Model No.  |
|------------------|-----------|-------|------------|
| One Rack Unit    | Half Rack | 8.00  | B1H08-001A |
|                  |           | 10.00 | B1H10-001A |
|                  |           | 12.00 | B1H12-001A |
|                  |           | 14.00 | B1H14-001A |
|                  |           | 16.00 | B1H16-001A |
|                  |           | 18.00 | B1H18-001A |
|                  |           | 20.00 | B1H20-001A |
|                  | Full Rack | 22.00 | B1H22-001A |
|                  |           | 8.00  | B1F08-001A |
|                  |           | 10.00 | B1F10-001A |
|                  |           | 12.00 | B1F12-001A |
|                  |           | 14.00 | B1F14-001A |
|                  |           | 16.00 | B1F16-001A |
|                  |           | 18.00 | B1F18-001A |
|                  |           | 20.00 | B1F20-001A |
| Two Rack Units   | Half Rack | 22.00 | B1F22-001A |
|                  |           | 8.00  | B2H08-001A |
|                  |           | 10.00 | B2H10-001A |
|                  |           | 12.00 | B2H12-001A |
|                  |           | 14.00 | B2H14-001A |
|                  |           | 16.00 | B2H16-001A |
|                  |           | 18.00 | B2H18-001A |
|                  | Full Rack | 20.00 | B2H20-001A |
|                  |           | 22.00 | B2H22-001A |
|                  |           | 8.00  | B2F08-001A |
|                  |           | 10.00 | B2F10-001A |
|                  |           | 12.00 | B2F12-001A |
|                  |           | 14.00 | B2F14-001A |
|                  |           | 16.00 | B2F16-001A |
| Three Rack Units | Half Rack | 18.00 | B2F18-001A |
|                  |           | 20.00 | B2F20-001A |
|                  |           | 22.00 | B2F22-001A |
|                  | Full Rack | 8.00  | B3H08-001A |
|                  |           | 10.00 | B3H10-001A |
|                  |           | 12.00 | B3H12-001A |
|                  |           | 14.00 | B3H14-001A |
|                  |           | 16.00 | B3H16-001A |
|                  |           | 18.00 | B3H18-001A |
|                  | Full Rack | 20.00 | B3H20-001A |
|                  |           | 22.00 | B3H22-001A |
|                  |           | 8.00  | B3F08-001A |
|                  |           | 10.00 | B3F10-001A |
|                  |           | 12.00 | B3F12-001A |
|                  |           | 14.00 | B3F14-001A |
|                  |           | 16.00 | B3F16-001A |
| One Rack Unit    | Half Rack | 18.00 | B3F18-001A |
|                  |           | 20.00 | B3F20-001A |
|                  |           | 22.00 | B3F22-001A |
|                  | Full Rack | 8.00  | P1H08-001A |
|                  |           | 10.00 | P1H10-001A |
|                  |           | 12.00 | P1H12-001A |
|                  |           | 14.00 | P1H14-001A |
|                  |           | 16.00 | P1H16-001A |
|                  |           | 18.00 | P1H18-001A |
| Two Rack Units   | Half Rack | 20.00 | P1H20-001A |
|                  |           | 22.00 | P1H22-001A |
|                  | Full Rack | 8.00  | P1F08-001A |
|                  |           | 10.00 | P1F10-001A |
|                  |           | 12.00 | P1F12-001A |
|                  |           | 14.00 | P1F14-001A |
|                  |           | 16.00 | P1F16-001A |
| Three Rack Units | Half Rack | 18.00 | P1F18-001A |
|                  |           | 20.00 | P1F20-001A |
|                  |           | 22.00 | P1F22-001A |
|                  | Full Rack | 8.00  | P2H08-001A |
|                  |           | 10.00 | P2H10-001A |
|                  |           | 12.00 | P2H12-001A |
|                  |           | 14.00 | P2H14-001A |
|                  |           | 16.00 | P2H16-001A |
|                  |           | 18.00 | P2H18-001A |
| One Rack Unit    | Half Rack | 20.00 | P2H20-001A |
|                  |           | 22.00 | P2H22-001A |
|                  | Full Rack | 8.00  | P2F08-001A |
|                  |           | 10.00 | P2F10-001A |
|                  |           | 12.00 | P2F12-001A |
|                  |           | 14.00 | P2F14-001A |
|                  |           | 16.00 | P2F16-001A |
| Two Rack Units   | Half Rack | 18.00 | P2F18-001A |
|                  |           | 20.00 | P2F20-001A |
|                  |           | 22.00 | P2F22-001A |
|                  | Full Rack | 8.00  | K1RMH-001A |
|                  |           | 10.00 | K1RMX-001A |
|                  |           | 12.00 | K1RMH-001A |
|                  |           | 14.00 | K1RMX-001A |
|                  |           | 16.00 | K2RMH-001A |
|                  |           | 18.00 | K2RMX-001A |
|                  |           | 20.00 | K2RMH-001A |
| Three Rack Units | Half Rack | 22.00 | K2RMX-001A |
|                  |           | 8.00  | K3RMH-001A |
|                  |           | 10.00 | K3RMX-001A |
|                  |           | 12.00 | K3RMH-001A |
|                  |           | 14.00 | K3RMX-001A |
|                  |           | 16.00 | K3RMH-001A |
|                  |           | 18.00 | K3RMX-001A |
|                  | Full Rack | 20.00 | K3RMH-001A |
|                  |           | 22.00 | K3RMX-001A |
|                  |           | 8.00  | K3RMH-001A |
|                  |           | 10.00 | K3RMX-001A |
|                  |           | 12.00 | K3RMH-001A |
|                  |           | 14.00 | K3RMX-001A |
|                  |           | 16.00 | K3RMH-001A |

(All dimensions in inches.)

never can — that yours is a quality instrument. Yet the basic design is simple and unobtrusive — it's your choice of configuration, special fabrications, finish, and graphics that determines your product's "personality."

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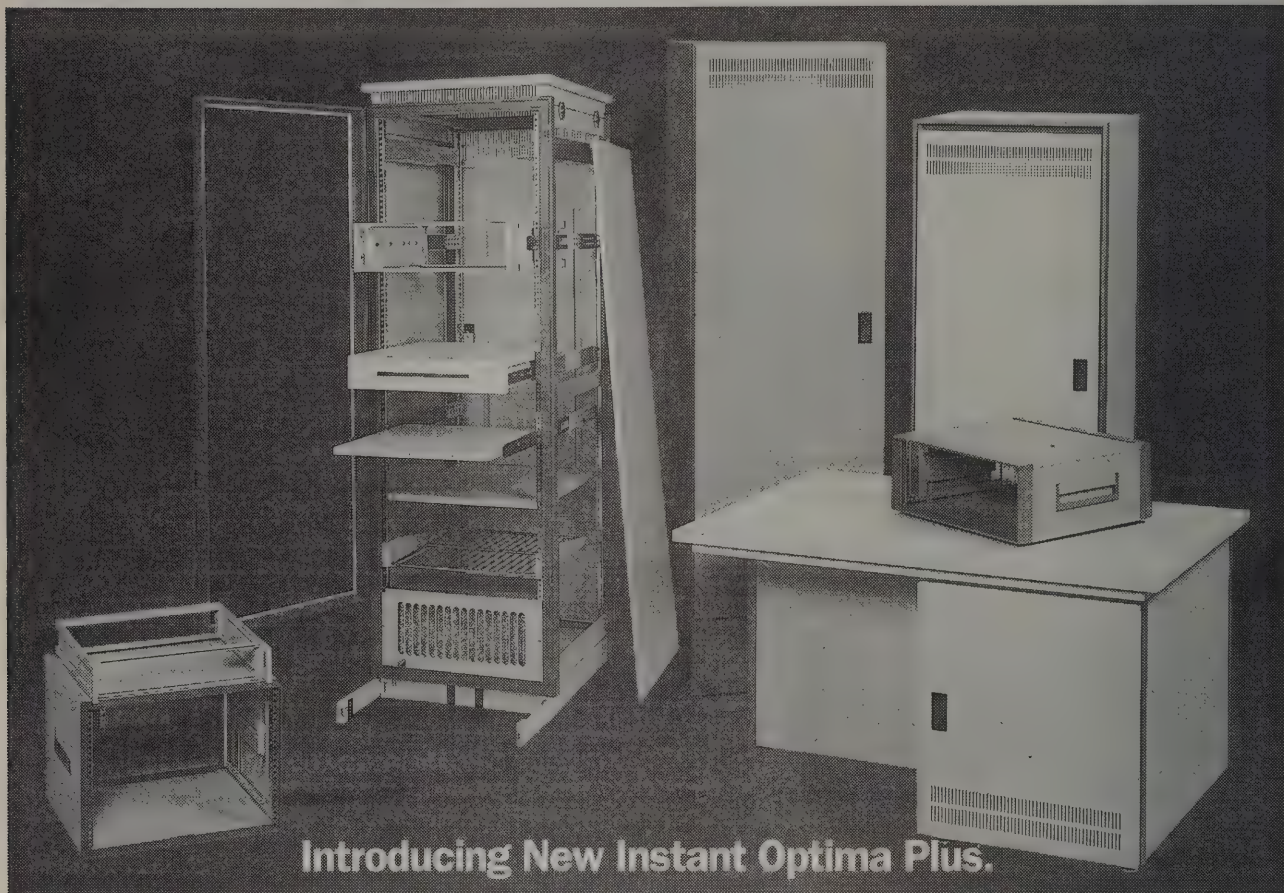
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## Get the options you want with the professional look you need.

**You'll get a wide selection of design options, plus features you expect in a quality cabinet.**

Optima Quality Design Features:

- Exclusive extruded aluminum (alloy 6063-T5) frame designs make your system look more professional
- Side panels are independent of framework for easy assembly and equipment service
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- Front and rear panel/chassis mounting rails (14 ga. CRS) with standard EIA spacing; also available as adjustable-recessed or heavy-duty (11 ga. CRS)
- Top panels available solid, ventilated or with exhaust fan provision
- Doors feature multi-point locking system with keylock; in solid, ventilated and acrylic
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- Choose contemporary standard colors in smooth or textured finishes. Custom color-matching available
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### Standard Sizes

Widths: 19", 24"

Depths: 24", 30", 36"

Heights: 21" (12U)

28" (16U)

35" (20U)

42" (24U)

52.5" (30U)

61.25" (35U)

70" (40U)

77" (44U)

**QUALIFIED  
GSA  
VENDOR**

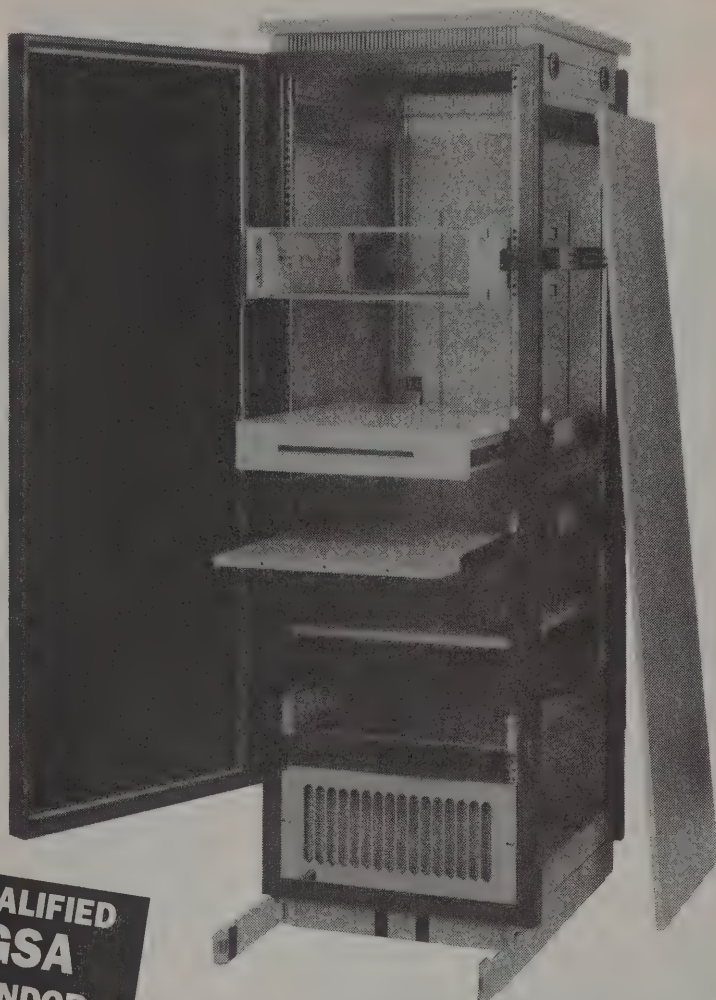
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For demanding applications and use in extreme environments we also offer the "Optima R Series" welded vertical cabinet. Please call for our catalog.

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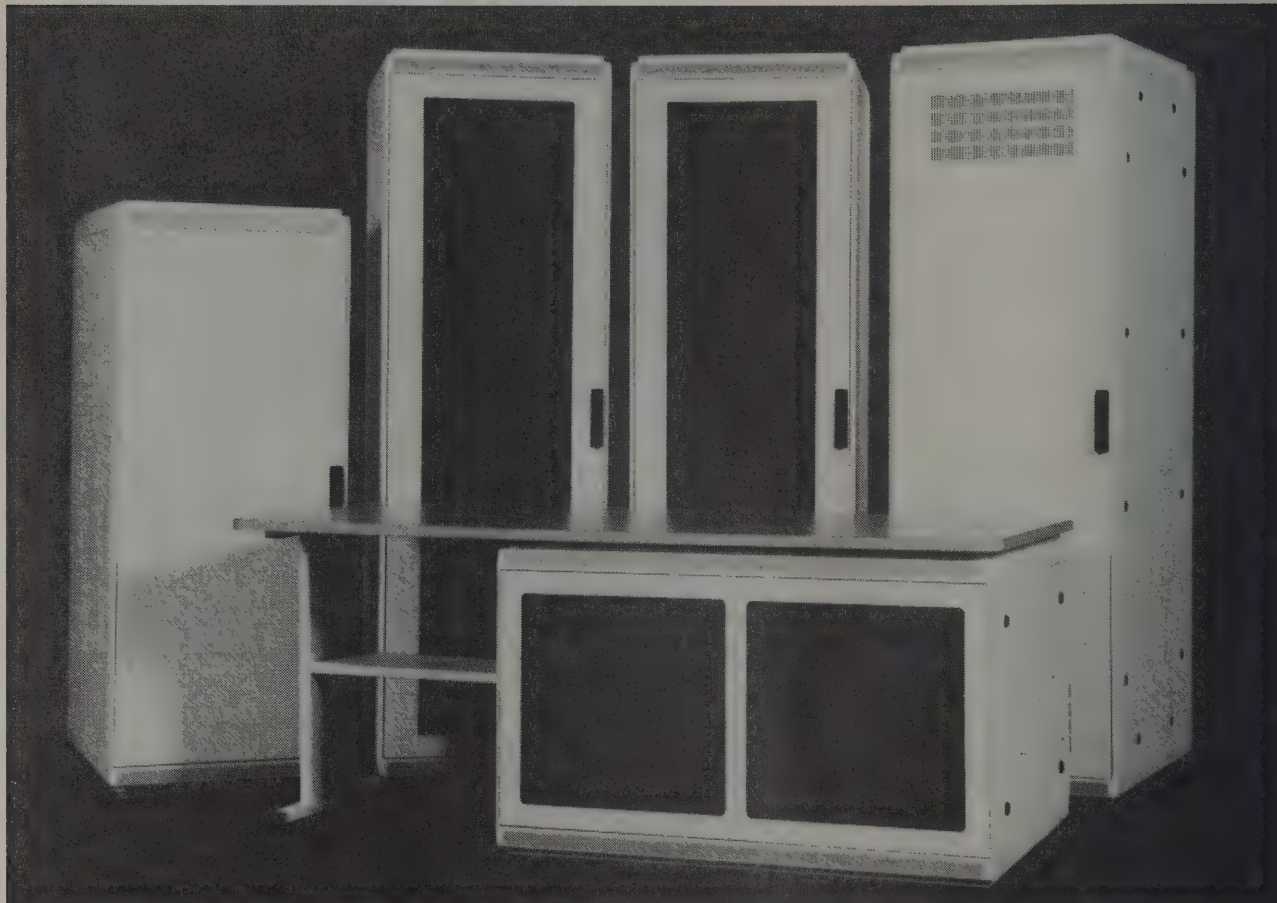
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EMI/RFI Shielded Cabinets

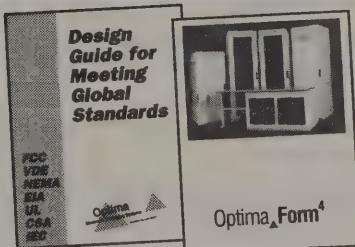
# Your system should look as good as it performs.



## There is a new standard for style and performance: Optima Form<sup>4</sup>.

New Optima Form<sup>4</sup> offers you a high performance, flexible packaging system to meet tough global EMC standards without sacrificing style.

Patented Form<sup>4</sup> features custom-engineered, shielded interfaces and



Call now for your copy of this important Design Guide and Optima Form<sup>4</sup> brochure.

advanced door closure techniques to yield independent RFI test levels in excess of 100dB from 10KHz to 1MHz.

Form<sup>4</sup> also meets UL 508-Type 12 spec, which makes it an effective barrier against dust and moisture. Its extruded aluminum frame is welded to provide a high strength-to-weight ratio.

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**FCC  
VDE  
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Form<sup>4</sup> meets U.S. and international EMC, safety, environmental and dimensional standards.

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## EMI/RFI Shielded Cabinets

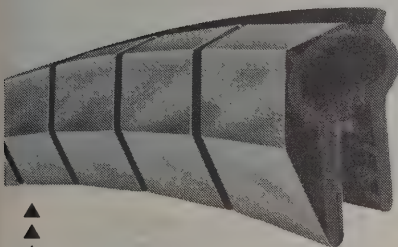
Optima® EPS

# Exceed global EMC standards with Optima's advanced design.

**Get peak attenuation levels in excess of 100dB.**

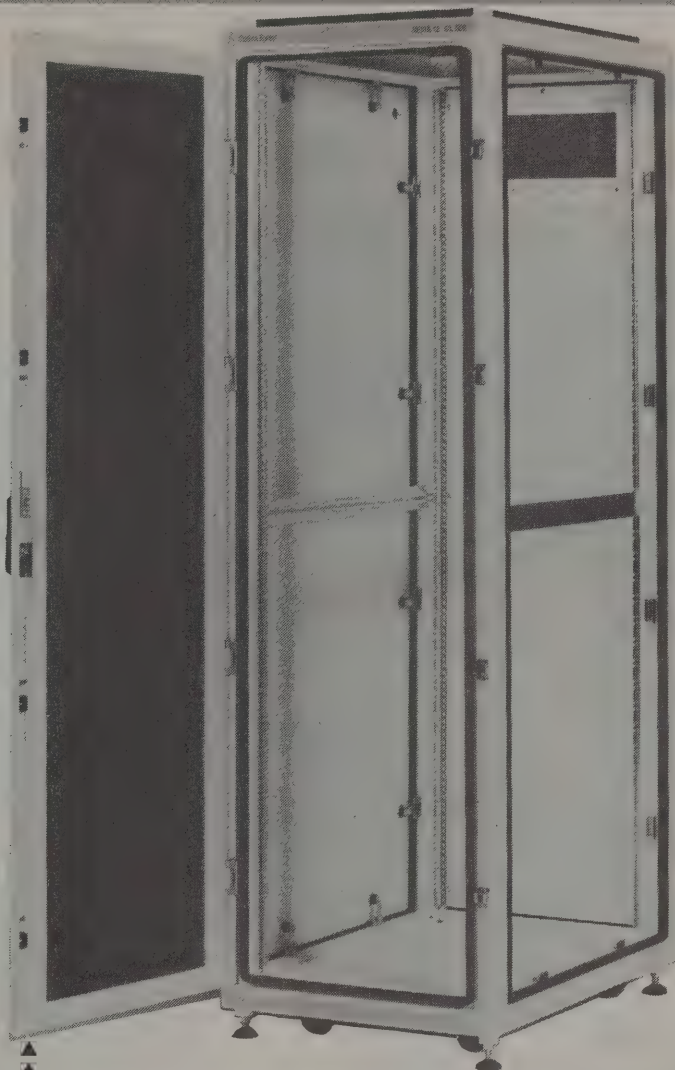
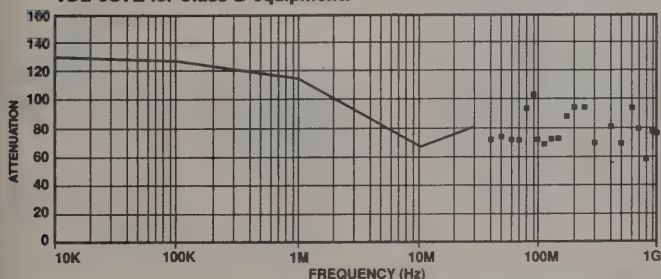
Optima EMC Performance Features:

- Welded interior corner joints provide strength and rigidity – eliminate RFI noise, dust, or moisture leaks.
- Even compression on all doors is assured with steel reinforcement and multi-point locking design
- Dual purpose EMC/UL 508 Type 12 gasketing protects sensitive electronics
- All hinges and locks are external to the continuous perimeter of gasketing
- Ventilated doors provide EMI/RFI protection at top, bottom or both
- Optional quick release sides feature multi-point fasteners distributed for even compression and quick access to cabinet interior



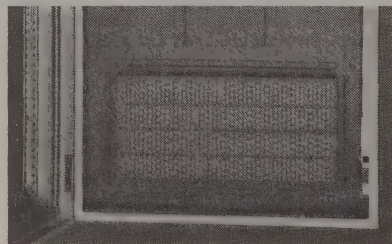
▲  
▲  
▲  
Optima's custom-engineered EMC gasket features independent spring-fingers of Beryllium Copper formed and fitted to the contour of a NEMA spec rubber gasket. Installation or on-site replacement is easy.

**RFI** cabinet attenuation levels for Optima Form® model #701930RF measured in accordance with the F.C.C. Docket Part 15, Subpart J for Class A equipment and VDE 0871 for Class B equipment.



▲  
▲  
▲  
Demanding EMC applications require an enclosure design with the structural integrity to withstand harsh environments, plus the flexibility to meet custom design modifications.

Proven BeCu gasketing is specifically ►►► design for each panel-frame interface to insure a continuous conductive path. Note: all Optima doors are designed to conceal gasketing when viewed from front.



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Electronic Packaging Systems  
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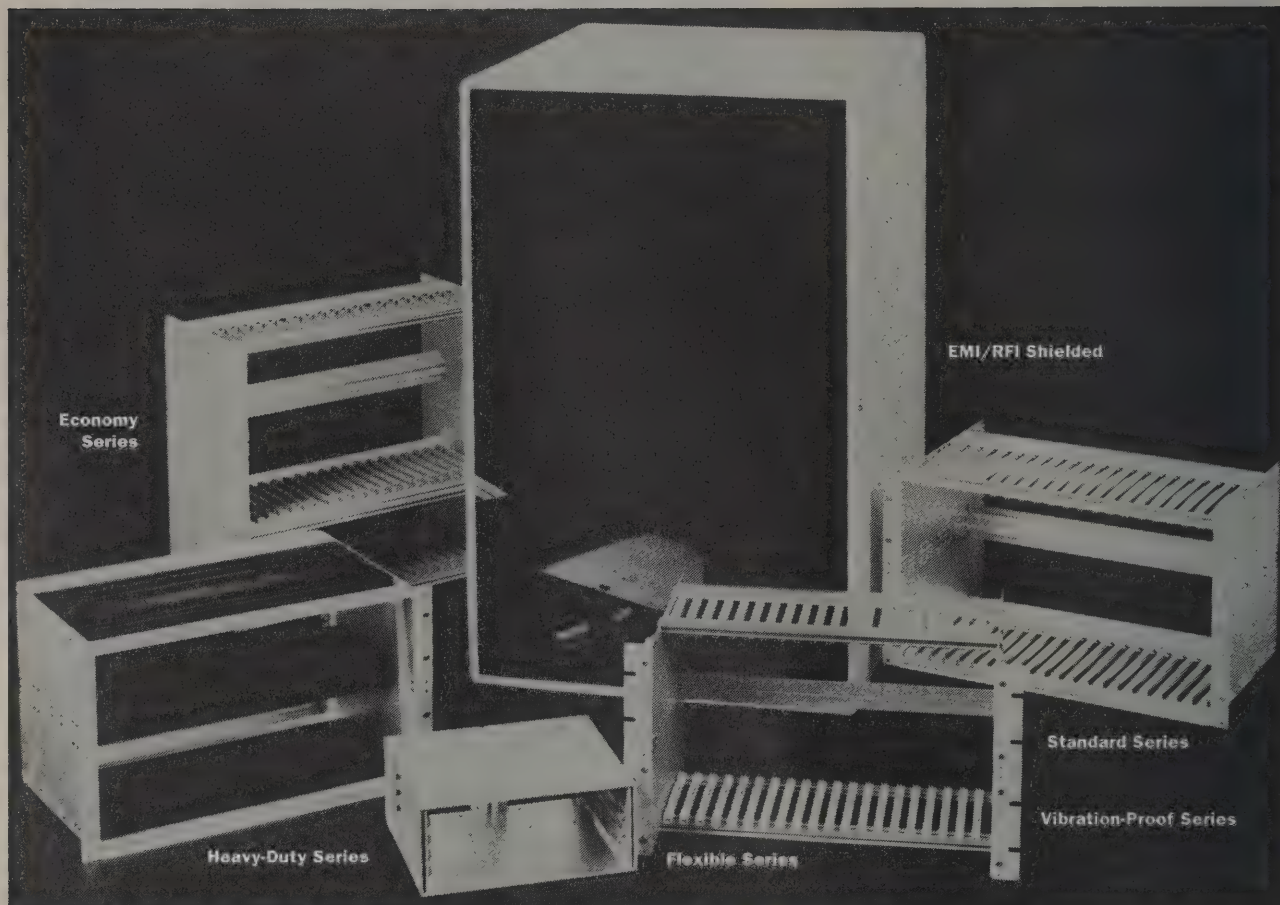
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**Eurocard Packaging****Optima® EPS**

# Solve your VME/VXI bus packaging problems fast, with Optima.



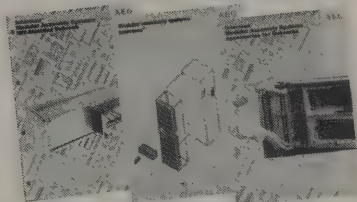
**Call Optima for fast delivery and technical support on your VME/VXI and Multibus II applications.**

From high-vibration environments to low-budget applications—Optima can meet your toughest requirements with AEG Intermas® subracks and complete electronic packaging systems.

You'll get prompt delivery on cost-efficient, off-the-shelf designs—each tailored to your needs and budget.

**Economy Series  
Flexible Series  
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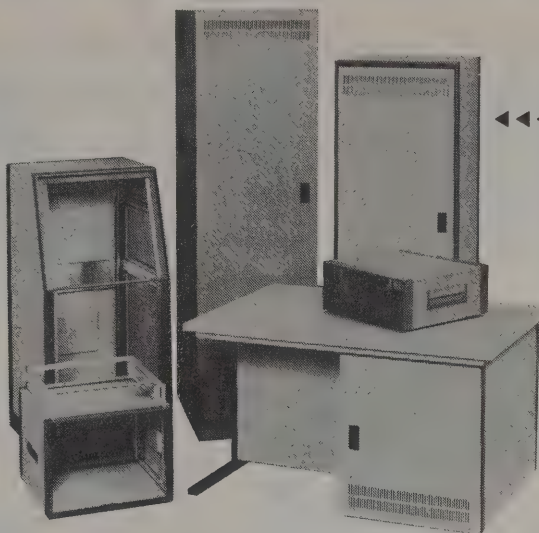
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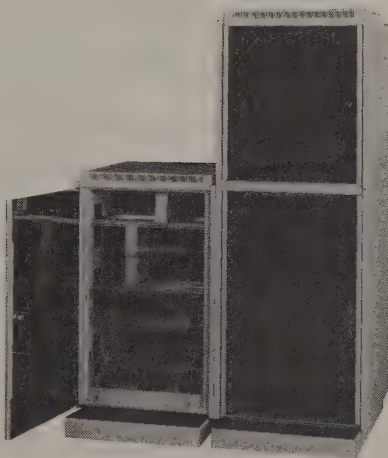
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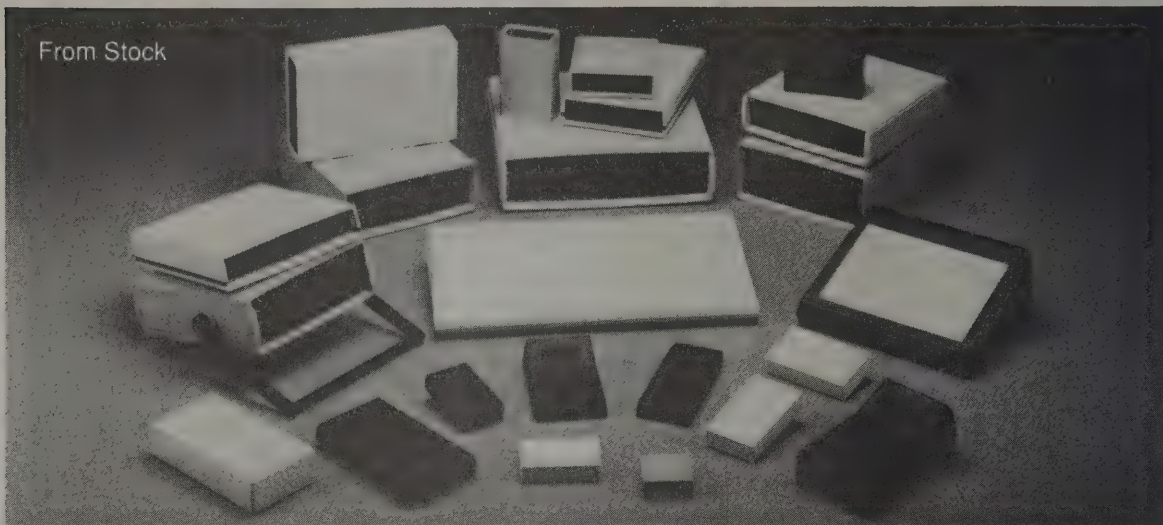
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- Available in kits and production quantities.
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## Feature Highlights:

- Many new, ergonomic, high-style designs added!
- DESIGN TEAM will enhance and customize your design! See the information on our Product Selection Page and the beginning of this section, Page C-1002.

PacTec standard enclosures are stocked around the world.  
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# Easy Reference Size Guide

## PacTec Standard Enclosures Size Ranges Of Models Within Series (Exterior Dimensions)

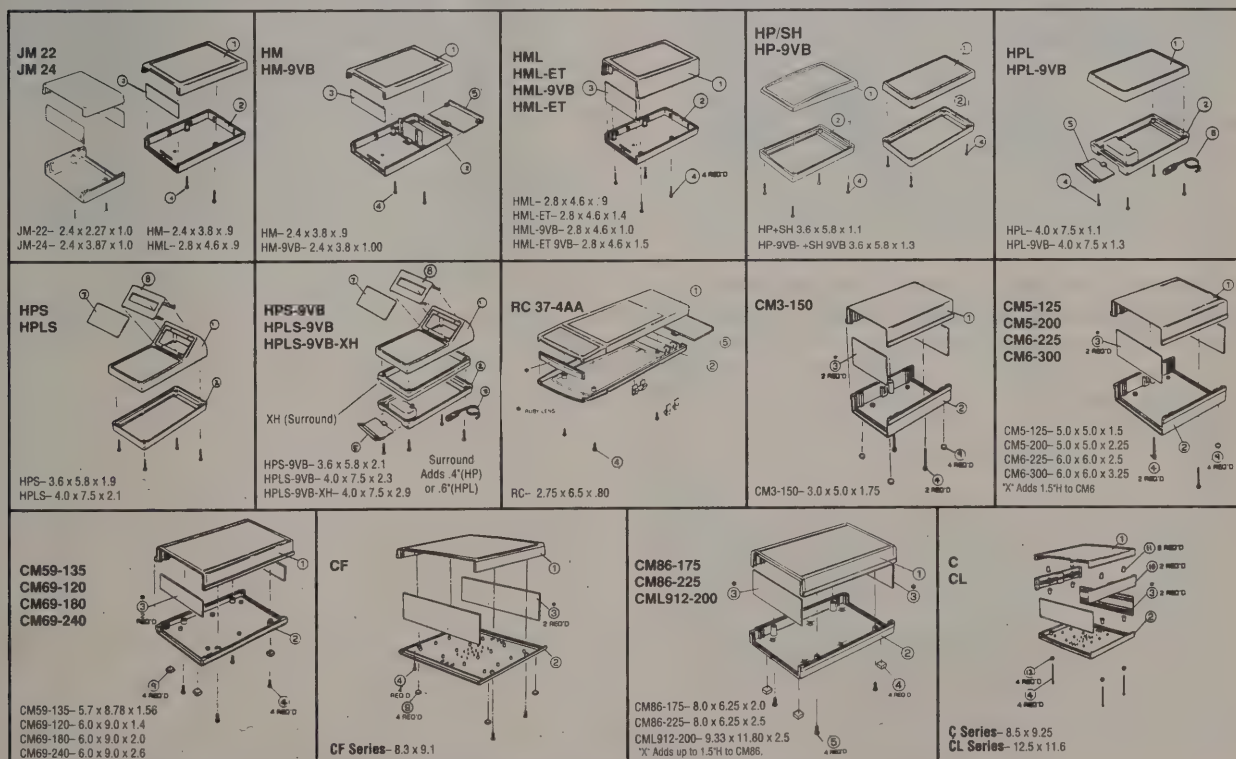
| MODEL         | MINIMUM DIMENSIONS |        |        | MAXIMUM DIMENSIONS |        |        | STANDARD COLORS |         |      |     |
|---------------|--------------------|--------|--------|--------------------|--------|--------|-----------------|---------|------|-----|
|               | WIDTH              | LENGTH | HEIGHT | WIDTH              | LENGTH | HEIGHT | BLACK           | PC BONE | GRAY | TAN |
| JM Series     | 2.40               | 2.27   | 1.00   | 2.40               | 3.80   | 1.00   | X               | X       |      |     |
| HM Series     | 2.40               | 2.27   | .90    | 2.75               | 4.60   | 1.50   | X               | X       | X    | X   |
| HP/SH Series  | 3.60               | 5.75   | 0.81   | 4.00               | 7.50   | 2.26   | X               | X       | X    | X   |
| RC 37 Remote  | 2.75               | 6.50   | 0.80   | 2.75               | 6.50   | 0.80   | X               | X       |      |     |
| CM-Series     | 3.33               | 5.25   | 1.75   | 6.08               | 6.25   | 4.75   | X               | X       | X    | X   |
| CM59-Series   | 5.57               | 8.78   | 1.56   | 5.57               | 8.78   | 1.56   | X               | X       |      |     |
| CM69-Series   | 6.33               | 9.50   | 1.38   | 6.33               | 9.50   | 3.47   | X               | X       | X    | X   |
| CM86-Series   | 8.08               | 6.25   | 2.00   | 8.08               | 6.25   | 4.00   | X               | X       | X    | X   |
| CML912-Series | 9.33               | 11.80  | 2.25   | 9.33               | 11.80  | 2.25   | X               | X       |      |     |
| CF-Series     | 8.36               | 9.11   | 1.65   | 8.36               | 9.11   | 3.90   | X               | X       | X    | X   |
| C-Series      | 8.50               | 9.25   | 2.44   | 8.50               | 9.25   | 6.44   | X               | X       | X    | X   |
| CL-Series     | 12.52              | 11.64  | 3.51   | 12.52              | 11.64  | 8.75   | X               | X       | X    | X   |
| KEU-Series    | 7.00               | 5.00   | 2.90   | 10.00              | 8.03   | 4.00   | X               | X       |      |     |
| KE-Series     | 17.08              | 8.68   | 2.67   | 20.08              | 8.68   | 2.67   |                 | X       |      |     |
| DE-Series     | 19.63              | 15.50  | 6.43   | 19.63              | 20.01  | 7.10   |                 | X       |      |     |

\*CM69 and CF-Series may be ordered with mixed top and bottom colors.

**NOTE** All models are available as Prototype Kits or Production Units. Prototype Kits are individually packaged and include all parts and hardware necessary for assembly. Production Units include all parts and hardware necessary for assembly, packaged in bulk with the exception of removable panels which are ordered separately.

## Key To PacTec Basic Designs

- |                |                     |               |                   |
|----------------|---------------------|---------------|-------------------|
| 1 Top Cover    | 4 Screws            | 7 Blank Panel | 10 Side Expanders |
| 2 Bottom Cover | 5 Battery Door      | 8 Bezel Panel | 11 Spacers        |
| 3 Panel        | 6 Battery Connector | 9 Rubber Feet | 12 Plastic Feet   |



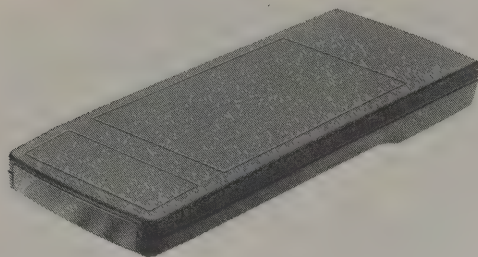
All dimensions in inches (Width x Length x Height) NOTE: HP enclosures with 9 volt battery compartment also available to hold 4 AA size batteries

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# Model RC

## Hand Held Remote Control



### Features:

- Sleek, hi-tech, low-profile styling
- Molded through color ensures long life and attractive appearance
- Ergonomically designed for a "friendly," well-balanced feel
- Easy to design into—simple to assemble using four screws (provided)
- Standard colors: black and PC bone
- Insert tooling areas provide for design and function features at a fraction of the cost of custom enclosures
- Built-in ruby infrared lens for IR transmitters
- Battery compartment for two AA batteries...snap fit sliding door and battery clips included

- Designed with two card fixing positions so that PC boards are secured in place when covers are assembled, without the need for extra hardware or assembly steps
- Designed with ample area for connectors, power supply and charger jacks, telephone jacks, wire/cable attachment, and flat ribbon cable openings
- PacTec can provide custom membrane switch and panel overlays, taking single source responsibility for your design

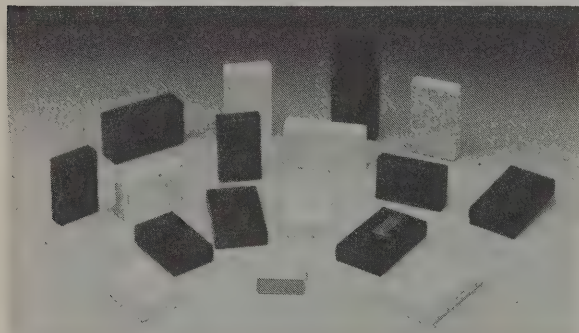
### Typical Applications:

- Remote actuators and controls
- Inventory control systems, bar code scanners
- Telecommunications controls
- Receivers, transmitters
- Alarms and security systems
- Audio and video controls
- IR, RF, and wired-in controls
- Medical remote control panels
- Products downsized through the use of surface mount technology (SMT)

| DIMENSIONS |       |        |       |
|------------|-------|--------|-------|
|            | Width | Length | Depth |
| Model RC   | 2.75" | 6.50"  | .80"  |

All models are available as prototyping kits — add the prefix "K" to the model order number

## JM/HM Series



- The smallest enclosures in the PacTec line, Model HM and JM series are ideal for keypads, pagers, transmitters, computer interfaces, controllers, pocket modems, remote actuators and controls, receivers, transmitters, and more.
- "9VB" denotes an internal 9-volt battery compartment; "L" designates longer length units; "ET" designates extra height.
- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. Production units include top and bottom covers, appropriate hardware, packaged in bulk. Panels for HM production units may be ordered separately. All models are available as prototyping kits — add the prefix "K" to the model order number.

| HM/JM SERIES | WIDTH | LENGTH | HEIGHT | BELT CLIP     |
|--------------|-------|--------|--------|---------------|
| JM22         | 2.40  | 2.27   | 1.00   |               |
| JM24         | 2.40  | 3.80   | 1.00   |               |
| HM           | 2.40  | 3.80   | .90    | HM-BC         |
| HM-9VB       | 2.40  | 3.80   | 1.00   | HM-9VB-BC     |
| HML          | 2.75  | 4.60   | .90    | HML-BC        |
| HML-9VB      | 2.75  | 4.60   | 1.00   | HML-9VB-BC    |
| HML-ET       | 2.75  | 4.60   | 1.40   | HML-ET-BC     |
| HML-ET-9VB   | 2.75  | 4.60   | 1.50   | HML-ET-9VB-BC |

Add a "K" prefix to standard model numbers for the prototyping kit version.



## HP/SH Series



- HP and SH handheld enclosures are available in 18 basic models, with a host of variations possible. The SH sloped top enclosure offers an attractive, sleek, ergonomic design. HP and SH enclosures are ideal for keypads, controllers, test equipment, data-entry devices, remote actuators and controls, alarms and security systems, and much more.
- Model HP and SH are base models. HP- "S" designates a sloped display area. "L" designates elongated versions. "LP" designates low profile designs. "XH" designates an expander that increases the overall height .40" or .60", depending on unit. "9VB" and "4AA" designate internal battery compartments for one 9-volt battery or four size AA batteries, respectively.
- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. Production units include top and bottom covers, appropriate hardware, packaged in bulk.

| HP SERIES     | WIDTH | LENGTH | HEIGHT    | BELT CLIP         | EXTRA HEIGHT        |
|---------------|-------|--------|-----------|-------------------|---------------------|
| SH            | 3.60  | 5.75   | 1.12      | SH-BC             | SH-XH •             |
| SH-LP         | 3.60  | 5.75   | .81       |                   | SHLP-XH •           |
| SH-9VB/-4AA   | 3.60  | 5.75   | 1.29      | SH-(9VB)(4AA)-BC  | SH-(9VB)(4AA)-XH •  |
| HP            | 3.60  | 5.75   | 1.12      | HP-BC             | HP-XH •             |
| HP-9VB/-4AA   | 3.60  | 5.75   | 1.29      | HP-(9VB)(4AA)-BC  | HP-(9VB)(4AA)-XH •  |
| HPS           | 3.60  | 5.75   | 1.12/1.92 |                   | HPS-XH •            |
| HPS-9VB/-4AA  | 3.60  | 5.75   | 1.12/2.09 |                   | HPS-(9VB)(4AA)-XH • |
| HPL           | 4.00  | 7.50   | 1.12      | HPL-BC            | HPL-XH+             |
| HPL-9VB/-4AA  | 4.00  | 7.50   | 1.29      | HPL-(9VB)(4AA)-BC | HPL-(9VB)(4AA)-XH+  |
| HPLS          | 4.00  | 7.50   | 1.12/2.09 |                   | HPLS-XH+            |
| HPLS-9VB/-4AA | 4.00  | 7.50   | 1.29/2.26 |                   | HPLS-(9VB)(4AA)-XH+ |
| HP-LP         | 3.60  | 5.75   | .81       |                   |                     |
| HPS-LP        | 3.60  | 5.75   | .81/1.61  |                   |                     |

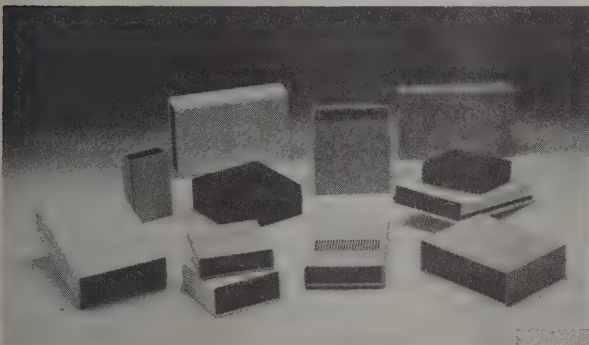
All dimensions are outside dimensions-in inches

• Extra height adds .40"

+ Extra height adds .60"

Add a "K" prefix to standard model numbers for the prototyping kit version.

## CM Series



- The very popular CM Series includes over 40 basic models that can be customized for an extraordinary range of products. These include test equipment, medical electronics, modems and other computer accessories, receivers, transmitters, alarms and security systems, and much more.
- EE Series is the Eurocard format, complete with dual slot card guides, connector panel, and two mounting plates.
- Extra-height expander, designated by "X", adds additional height that ranges from 0.3" to 1.5".
- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. Production units include top and bottom covers, appropriate hardware, packaged in bulk. Panels for production units may be ordered separately.

| CM SERIES   | WIDTH | LENGTH | HEIGHT | BAIL/TILT STAND | VENTS     | BAIL & VENTS | EXTRA HEIGHT |
|-------------|-------|--------|--------|-----------------|-----------|--------------|--------------|
| CM3-150     | 3.33  | 5.25   | 1.75   | CMB3-150        |           |              |              |
| CM5-125     | 5.08  | 5.25   | 1.50   | CMB5-125        |           |              |              |
| CM5-200     | 5.08  | 5.25   | 2.25   | CMB5-200        | CMV5-200  | CMBV5-200    |              |
| CM6-225     | 6.08  | 6.25   | 2.50   | CMB6-225        |           |              | CM6-X375 +   |
| CM6-300     | 6.08  | 6.25   | 3.25   | CMB6-300        |           |              | CM6-X450 +   |
| CM59-135    | 5.57  | 8.78   | 1.56   | CMB59-135       |           |              |              |
| EE59-135    | 5.57  | 8.78   | 1.56   | EEB59-135       |           |              |              |
| CM69-120    | 6.33  | 9.50   | 1.38   | CMB69-120       | CMV69-120 | CMBV69-120   | CM69-X150 •  |
| CM69-180    | 6.33  | 9.50   | 1.99   | CMB69-180       | CMV69-180 | CMBV69-180   | CM69-X210 •  |
| CM69-240    | 6.33  | 9.50   | 2.59   | CMB69-240       | CMV69-240 | CMBV69-240   | CM69-X270 •  |
| CM69-300    | 6.33  | 9.50   | 3.17   |                 | CMV69-300 | CMBV69-300   | CM69-X330 •  |
| CM86-175    | 8.084 | 6.25   | 2.00   | CMB86-175       | CMV86-175 | CMBV86-175   | CM86-X325 +  |
| CM86-225    | 8.084 | 6.25   | 2.50   | CMB86-225       | CMV86-225 | CMBV86-225   | CM86-X300 ++ |
| CM86-X375   | 8.084 | 6.25   | 4.00   |                 |           |              |              |
| CML-912-200 | 9.334 | 11.80  | 2.25   |                 |           |              |              |

All dimensions are outside dimensions-in inches

• Extra height adds 0.3"

+ Extra height adds 1.50"

++ Extra height adds 0.75"

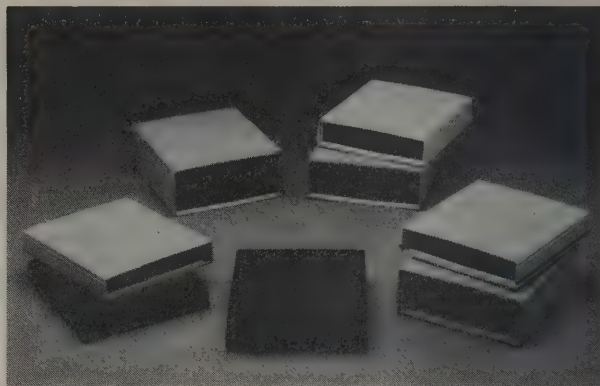
Add a "K" prefix to standard model numbers for the prototyping kit version.

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## CF Series

- The CF Designer Series, available in over 35 models, is a popular choice for analytical instrumentation, test equipment, medical instruments, modems and other computer accessories, communications devices, and alarm and security systems.
- "X" designation adds 0.25" extra height.
- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. Production units include top and bottom covers, appropriate hardware, packaged in bulk. Panels for production units may be ordered separately.

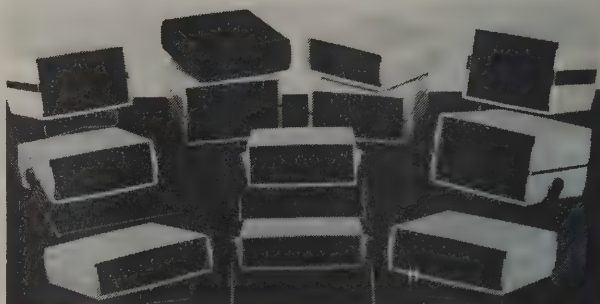


| CF SERIES | WIDTH | LENGTH | HEIGHT | BAIL    | VENTS   | BAIL & VENTS | EXTRA HEIGHT |
|-----------|-------|--------|--------|---------|---------|--------------|--------------|
| CF-125    | 8.36  | 9.11   | 1.65   | CFB-125 | CFV-125 | CFBV-125     | CF-X150 *    |
| CF-175    | 8.36  | 9.11   | 2.15   | CFB-175 | CFV-175 | CFBV-175     | CF-X200 *    |
| CF-225    | 8.36  | 9.11   | 2.65   | CFB-225 | CFV-225 | CFBV-225     | CF-X250 *    |
| CF-275    | 8.36  | 9.11   | 3.15   | CFB-275 | CFV-275 | CFBV-275     | CF-X300 *    |
| CF-325    | 8.36  | 9.11   | 3.65   | CFB-325 | CFV-325 | CFBV-325     | CF-X350 *    |

All dimensions are outside dimensions-in inches \* Extra height adds 0.25"  
Add a "K" prefix to standard model numbers for the prototyping kit version.

## C Series

- The C Series encompasses an exceptionally flexible line of enclosures. A wide assortment of component and board mounting features and customization options are available to suit a limitless number of end products. C Series enclosures are ideal for test instruments, medical and scientific equipment, control systems, computer accessories, alarm and security systems, and many other applications.
- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. A special kit, K-C23, can be assembled into six different height units, ranging from 1.68" through 2.93" in increments of .25", and constitutes the kit version of models C-200 through C-325. Production units include top and bottom covers, appropriate hardware, packaged in bulk. Panels for production units may be ordered separately.

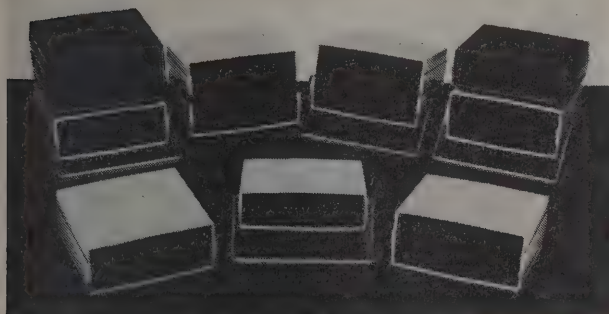


| C SERIES | WIDTH | LENGTH | HEIGHT | BAIL    | HANDLE  | VENTS   | BAIL & VENTS | HANDLE & VENTS |
|----------|-------|--------|--------|---------|---------|---------|--------------|----------------|
| C-200    | 8.50  | 9.25   | 2.44   | CB-200  | CH-200  | CV-200  | CBV-200      | CHV-200        |
| C-225    | 8.50  | 9.25   | 2.69   | CB-225  | CH-225  | CV-225  | CBV-225      | CHV-225        |
| C-250    | 8.50  | 9.25   | 2.94   | CB-250  | CH-250  | CV-250  | CBV-250      | CHV-250        |
| C-275    | 8.50  | 9.25   | 3.19   | CB-275  | CH-275  | CV-275  | CBV-275      | CHV-275        |
| C-300    | 8.50  | 9.25   | 3.44   | CB-300  | CH-300  | CV-300  | CBV-300      | CHV-300        |
| C-325    | 8.50  | 9.25   | 3.69   | CB-325  | CH-325  | CV-325  | CBV-325      | CHV-325        |
| CS-400   | 8.50  | 9.25   | 4.43   | CBS-400 | CHS-400 | CSV-400 | CBSV-400     | CHSV-400       |
| CS-500   | 8.50  | 9.25   | 5.43   | CBS-500 | CHS-500 | CSV-500 | CBSV-500     | CHSV-500       |
| CS-600   | 8.50  | 9.25   | 6.43   | CBS-600 | CHS-600 | CSV-600 | CBSV-600     | CHSV-600       |

Add a "K" prefix to standard model numbers for the prototyping kit version, except as noted above.



## CL Series



- The CL Series encompasses a complete range of extremely useful larger enclosures. A wide assortment of component and board mounting features and customization options are available. CL Series enclosures are ideal for test instruments, medical and scientific

equipment, industrial control systems, computer equipment, communications equipment, alarm and security systems, and many other applications.

- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. Two special kits, K-CLLP-34 and K-CL-45, can be assembled into different height units. The K-CLLP-34 ranges from 2.50" through 3.25" in increments of .25", and constitutes the kit version of models CLLP-300 through CLLP-375. The K-CL-45 kit ranges from 3.50" through 4.75" in increments of .25", and constitutes the kit version of models CL-400 through CL-525. Production units include top and bottom covers, appropriate hardware, packaged in bulk. Panels for production units may be ordered separately.
- Extra-height units utilize an expander panel which increases the height of the unit.

| CL SERIES | WIDTH | LENGTH | HEIGHT | BAIL      | HANDLE    | EXTRA HEIGHT |
|-----------|-------|--------|--------|-----------|-----------|--------------|
| CLLP-300  | 12.52 | 11.64  | 3.51   | CLLPB-300 | CLLPH-300 |              |
| CLLP-325  | 12.52 | 11.64  | 3.76   | CLLPB-325 | CLLPH-325 |              |
| CLLP-350  | 12.52 | 11.64  | 4.01   | CLLPB-350 | CLLPH-350 |              |
| CLLP-375  | 12.52 | 11.64  | 4.26   | CLLPB-375 | CLLPH-375 |              |
| CL-400    | 12.52 | 11.64  | 4.51   | CLB-400   | CLH-400   |              |
| CL-425    | 12.52 | 11.64  | 4.76   | CLB-425   | CLH-425   |              |
| CL-450    | 12.52 | 11.64  | 5.01   | CLB-450   | CLH-450   |              |
| CL-475    | 12.52 | 11.64  | 5.26   | CLB-475   | CLH-475   |              |
| CL-500    | 12.52 | 11.64  | 5.51   | CLB-500   | CLH-500   |              |
| CL-525    | 12.52 | 11.64  | 5.76   | CLB-525   | CLH-525   |              |
| CLS-625   | 12.52 | 11.64  | 6.75   | CLBS-625  | CLHS-625  | •            |
| CLS-725   | 12.52 | 11.64  | 7.75   | CLBS-725  | CLHS-725  | •            |
| CLS-825   | 12.52 | 11.64  | 8.75   | CLBS-825  | CLHS-825  | •            |

All dimensions are outside dimensions-in inches \*S" denotes height expander (filler panel)  
Add a "K" prefix to standard model numbers for the prototyping kit version, except as noted above.



## KE KEU DE Series

- KE (Keyboard), KEU (Keyboard/Utility), and DE (Desktop enclosure) units are ideally suited to a wide range of benchtop, desktop, and vertically-mounted devices. Their uses are virtually limitless, and many innovative product designs employ these enclosures — including data entry and card reading equipment, test equipment, control panels, scientific and medical devices, man/machine interfaces, keyboards and displays, communications systems, PA systems, computer accessories, and more.
- All models are available as prototyping kits or as production units. Prototyping kits are individually packaged and include all parts and hardware necessary for assembly. Production units include top and bottom covers, appropriate hardware, packaged in bulk.

| KE/KEU SERIES | WIDTH | LENGTH | HEIGHT* |
|---------------|-------|--------|---------|
| KEU-7         | 7.00  | 5.00   | 3.10    |
| KEU-10        | 10.00 | 8.03   | 4.20    |
| KE-17         | 17.08 | 8.68   | 2.79    |
| KE-20         | 20.08 | 8.68   | 2.79    |

| SYSTEMS | WIDTH | LENGTH | HEIGHT |
|---------|-------|--------|--------|
| DE-620  | 19.63 | 15.50  | 6.65   |
| DE-720  | 19.63 | 20.01  | 7.22   |

All dimensions are outside dimensions-in inches \* Feet height included  
Add a "K" prefix to standard model numbers for the prototyping kit version.

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## SWITCH-PAC™

### High-Quality Enclosures and Standard Membrane Switches Available From Stock!

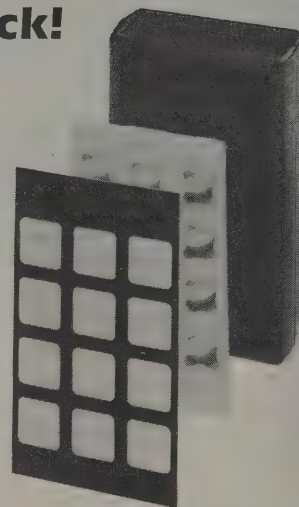
- Economical — no set up costs
- Long life, reliable switch operation
- High quality construction
- Steel dome switches/tactile feel
- 100% tested
- Very simple to assemble
- Switch design and layout coordinates with PacTec standard enclosures
- Custom printed overlays available (in production runs of 250 or more)

#### Ideal for:

- Prototyping & evaluation
- Short-run programs
- Full production runs

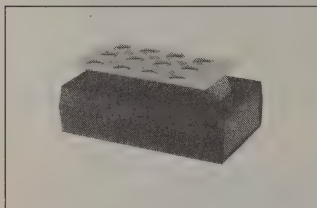
Includes full-size polyester overlays.

Print...screen...type...transfer...or write your own legends.

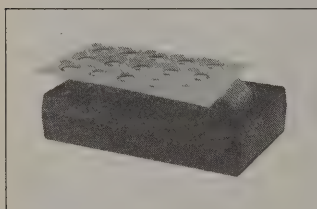


SWITCH-PACs include everything necessary for a complete prototype or small production run: a high quality ABS plastic enclosure with 9-volt battery compartment, standard membrane switch with ribbon cable and connector, blank overlay suitable for printing, screening, typing, or written legends, and user diagram.

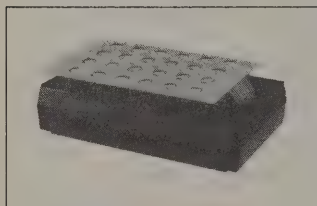
#### Select from three popular sizes and switch configurations:



**3 x 4 Switch**  
**Model SS-T-HM**  
**with Model HM Enclosure**  
12 switch contacts; 1.950" x 3.345"  
overall switch size. See Series HM  
section for enclosure specifications.



**3 x 5 Switch**  
**Model SS-T-HML**  
**with Model HML Enclosure**  
15 switch contacts; 2.300" x 4.140"  
overall switch size. See Series HM  
section for enclosure specifications.



**4 x 6 Switch**  
**Model SS-T-HP**  
**with Model HP Enclosure**  
24 switch contacts; 3.080" x 5.230"  
overall switch size. See Series HP  
section for enclosure specifications.

#### Design Hint:

PacTec Membrane Switches can be modified by deleting any of the keys in the standard configuration. In combination with a new overlay you can achieve the benefits of a custom switch without set up expenses or lead time.

#### Specifications

##### Materials of Construction

Silver contacts  
Steel dome construction  
Polyester overlay

##### Electrical

|                     |                                                             |
|---------------------|-------------------------------------------------------------|
| Contact rating:     | 20mA at 30Vdc                                               |
| Maximum rating:     | 100mA with maximum power of 1.5 watts (50Vdc max.)          |
| Circuit resistance: | <100 ohms (ON), 10 megohms (OFF)                            |
| Contact resistance: | <8 milliohms per square inch (silver)                       |
| Open circuit        | >20 megohms                                                 |
| Termination:        | Flexible ribbon cable with contact tracks on 0.100" centers |

##### Physical

|                                        |                                                          |
|----------------------------------------|----------------------------------------------------------|
| Life expectancy:                       | million-plus actuations                                  |
| Activation force:                      | 4-8 oz nominal                                           |
| Travel:                                | .009" - .014"                                            |
| Bounce:                                | 1-10 msec nominal                                        |
| Operating temperature:                 | -40 to +85 degrees C                                     |
| Moisture transmission rate:            | 0                                                        |
| Electrostatic interference resistance: | optional; shielding can be incorporated on custom orders |

|                | <u>WIDTH</u> | <u>LENGTH</u> | <u>HEIGHT</u> |
|----------------|--------------|---------------|---------------|
| <b>HM-9VB</b>  | 2.40         | 3.80          | 1.00          |
| <b>HML-9VB</b> | 2.75         | 4.60          | 1.00          |
| <b>HP-9VB</b>  | 3.60         | 5.75          | 1.29          |



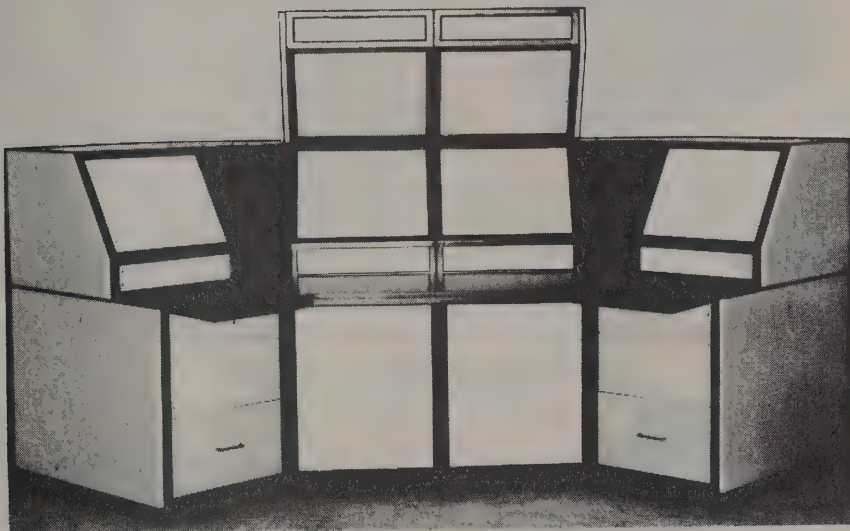
SINCE 1922



# PAR-METAL

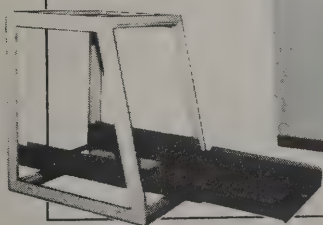
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- Our Standard Products
- Our Modified Standards
- Our Full Line of Accessories
- Our Customizing
- Our Low Competitive Prices
- Our Accommodating Delivery Service



### NEW!

Sliding and fixed shelves for sloping cabinets.



Specializing in enclosures for the telecommunications, aerospace, and electronics industries, including all branches of the military

SINCE 1922



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PRODUCTS, INC.

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# Plastic Enclosures

# POLYCASE<sup>®</sup>

## PRODUCTS

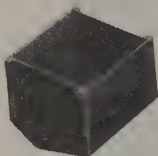
### NEW! TX Series

### Low-Cost, Textured Enclosures

When external appearances are crucial, try our new TX Series enclosures with textured surfaces and rounded corners. Internal ledges make gluing the flush-mount cover neat and simple. Ideal for the enclosure of small assemblies or potting applications. Black or custom colors. ABS plastic with UL Flame Rating of 94-V0.

**5 Sizes:** From 1.5" x 2.0" x 1.0" To 3.0" x 3.0" x 1.5"

**2 Styles:** Plain or with Top Mounting Feet

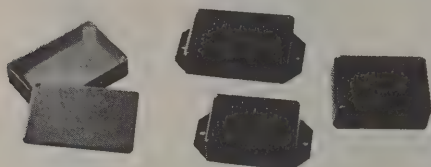


### Encapsulation/Potting

Low-cost boxes with polished surfaces suitable for potting. Covers in all sizes. ABS Plastic with UL Flame Rating of 94-V0

**5 Sizes:** From 1.0" x 1.0" x 0.75" To 3.0" x 3.0" x 1.5"

**1 Style:** Bottom Mounting Feet

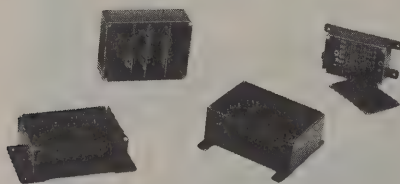


### LP SERIES-Low Profile

For small to medium-sized electronics. Optional internal bosses for mounting PCBs. Contemporary textured finish in light grey, black or custom color. Covers are fastened by screws. ABS Plastic with UL Flame Rating of 94-V0

**5 Sizes:** From 3.25" x 2.375" x 1.0" To 5.5" x 3.75" x 1.25"

**2 Styles:** Plain or Mounting Feet

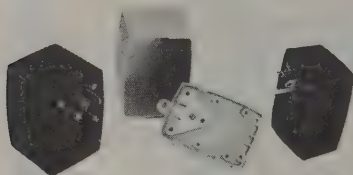


### EP SERIES-General Purpose

Enclosures for small to medium-sized electronics. Internal bosses for PCB mounting. Internal slots for vertical PCBs or potting dividers. High-gloss black or custom colors. Covers are fastened by screws to brass inserts. ABS Plastic with UL Flame Rating of 94-V0

**4 Sizes:** From 4.5" x 3.0" x 1.75" To 7.5" x 4.5" x 2.25"

**2 Styles:** Plain or Mounting Feet

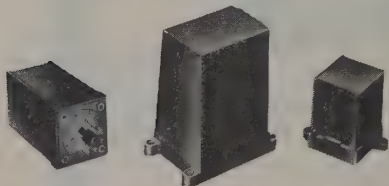


### PI SERIES-Plug-In Modules

Underwriters' Laboratories Recognized Component plugs into standard 120V electrical outlet. Can be potted. Integral hold-down tab for securing module to wall receptacle. Beige, black or custom color. ABS Plastic with UL Flame Rating of 94-V0

**4 Sizes:** 2.0" x 2.0" x 2.0" To 2.0" x 3.0" x 2.5"

**2 Styles:** 2 or 3 Pole



### 15 & 23 SERIES

Enclosures for PCBs or sub-assemblies. Internal slots for PCBs, perfboards, or potting dividers. Several bases to choose from. 23 Series has optional external tracks (single or double) for heat sinks or accessories. Nylon or Polypropylene with UL Flame Rating of 94-V0

**3 Sizes:** From 1.625" x 1.625" x 2.0" To 2.125" x 2.625" x 3.5"

**2 Styles:** Plain or Mounting Feet

**4 Bases:** Plain, 8 Pin, 11 Pin, and 12 Pin

### Special Machining Available!

Short-run custom machining, punching and milling services.  
All products American-made.

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# POLYCASE<sup>®</sup>

## PRODUCTS

E-C-P CORPORATION

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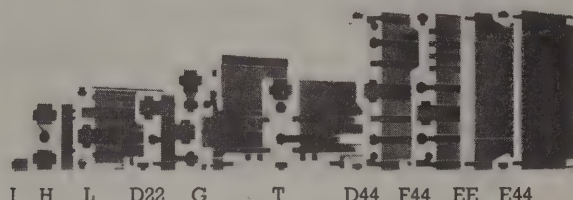
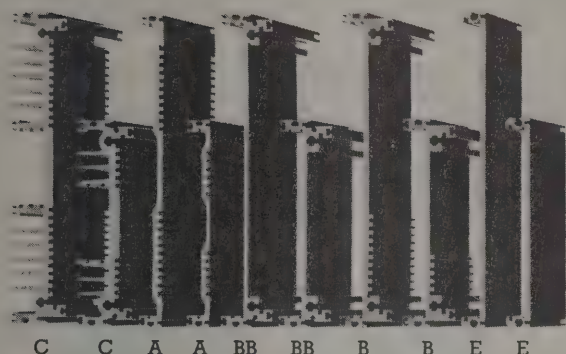


Save Design And Assembly Time With

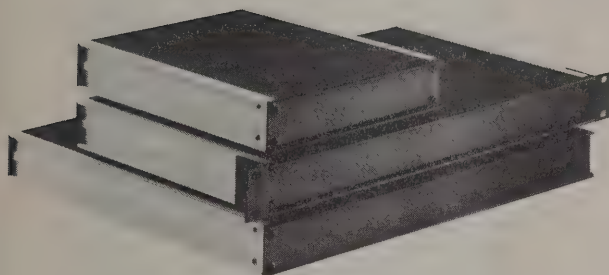
# Flexibox

From Powerbox Enclosure Systems.

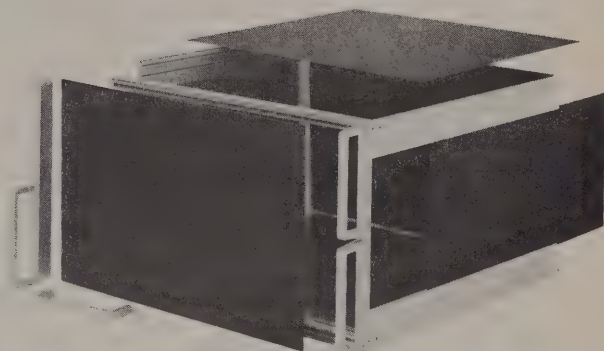
INSTRUMENT CASES BASED ON UNIQUE EXTRUSIONS



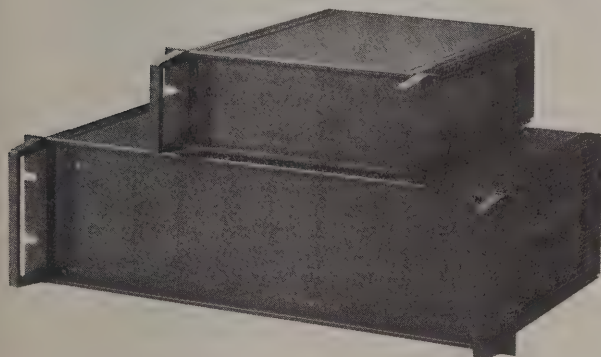
## FEATURING:



**THE MICROBOX**  
The 1-3/4" (1U) Tall Case Series



**THE MACROBOX**  
In Sizes 3 1/2" (2U) To 14" (8U) Tall.  
Can Hold Up To 70 lbs.



**THE MULTIBOX**  
With Built-In Heat Sink Panels On Its Sides

... AND 3 OTHER DESK-TOP OR  
RACK-MOUNTABLE CASE STYLES.

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TOLL-FREE: (800) 444-1461.





# MINIGLOSSARY

## BASIC

## ASCII CODE

|    |    |    |    |    |     |     |    |   |   |   |   |     |
|----|----|----|----|----|-----|-----|----|---|---|---|---|-----|
| b7 | 0  | 0  | 0  | 0  | 1   | 1   | 1  | 1 |   |   |   |     |
| b6 | 0  | 0  | 1  | 1  | 0   | 0   | 1  | 1 |   |   |   |     |
| b5 | 0  | 1  | 0  | 1  | 0   | 1   | 0  | 1 |   |   |   |     |
| b4 | b3 | b2 | b1 |    | 0   | 1   | 2  | 3 | 4 | 5 | 6 | 7   |
| 0  | 0  | 0  | 0  | 0  | NUL | DLE | SP | 0 | @ | P | ` | p   |
| 0  | 0  | 0  | 1  | 1  | SOH | DC1 | !  | 1 | A | Q | a | q   |
| 0  | 0  | 1  | 0  | 2  | STX | DC2 | "  | 2 | B | R | b | r   |
| 0  | 0  | 1  | 1  | 3  | ETX | DC3 | #  | 3 | C | S | c | s   |
| 0  | 1  | 0  | 0  | 4  | EOT | DC4 | \$ | 4 | D | T | d | t   |
| 0  | 1  | 0  | 1  | 5  | ENQ | NAK | %  | 5 | E | U | e | u   |
| 0  | 1  | 1  | 0  | 6  | ACK | SYN | &  | 6 | F | V | f | v   |
| 0  | 1  | 1  | 1  | 7  | BEL | ETB | '  | 7 | G | W | g | w   |
| 1  | 0  | 0  | 0  | 8  | BS  | CAN | (  | 8 | H | X | h | x   |
| 1  | 0  | 0  | 1  | 9  | HT  | EM  | )  | 9 | I | Y | i | y   |
| 1  | 0  | 1  | 0  | 10 | LF  | SUB | *  | : | J | Z | j | z   |
| 1  | 0  | 1  | 1  | 11 | VT  | ESC | +  | ; | K | [ | k | {   |
| 1  | 1  | 0  | 0  | 12 | FF  | FS  | ,  | < | L | \ | l |     |
| 1  | 1  | 0  | 1  | 13 | CR  | GS  | -  | = | M | ] | m | }   |
| 1  | 1  | 1  | 0  | 14 | SO  | RS  | .  | > | N | ^ | n | ~   |
| 1  | 1  | 1  | 1  | 15 | SI  | US  | /  | ? | O | _ | o | DEL |

### Control Character Representations

|     |                            |     |                                |
|-----|----------------------------|-----|--------------------------------|
| NUL | Null                       | DLE | Data Link Escape (CC)          |
| SOH | Start of Heading (CC)      | DC1 | Device Control 1               |
| STX | Start of Text (CC)         | DC2 | Device Control 2               |
| ETX | End of Text (CC)           | DC3 | Device Control 3               |
| EOT | End of Transmission (CC)   | DC4 | Device Control 4               |
| ENQ | Enquiry (CC)               | NAK | Negative Acknowledge (CC)      |
| ACK | Acknowledge (CC)           | SYN | Synchronous Idle (CC)          |
| BEL | Bell                       | ETB | End of Transmission Block (CC) |
| BS  | Backspace (FE)             | CAN | Cancel                         |
| HT  | Horizontal Tabulation (FE) | EM  | End of Medium                  |
| LF  | Line Feed (FE)             | SUB | Substitute                     |
| VT  | Vertical Tabulation (FE)   | ESC | Escape                         |
| FF  | Form Feed (FE)             | FS  | File Separator (IS)            |
| CR  | Carriage Return (FE)       | GS  | Group Separator (IS)           |
| SO  | Shift Out                  | RS  | Record Separator (IS)          |
| SI  | Shift In                   | US  | Unit Separator (IS)            |
|     |                            | DEL | Delete                         |

(CC) Communication Control  
(FE) Format Effector  
(IS) Information Separator

### Special Graphic Characters

|    |                        |   |                                                                            |
|----|------------------------|---|----------------------------------------------------------------------------|
| SP | Space                  | < | Less Than                                                                  |
| !  | Exclamation Point      | = | Equals                                                                     |
| !  | Logical OR             | > | Greater Than                                                               |
| "  | Quotation Marks        | ? | Question Mark                                                              |
| #  | Number Sign            | @ | Commercial At                                                              |
| \$ | Dollar Sign            | [ | Opening Bracket                                                            |
| %  | Percent                | \ | Reverse Slant                                                              |
| &  | Ampersand              | ] | Closing Bracket                                                            |
| '  | Apostrophe             | ^ | Circumflex                                                                 |
| (  | Opening Parenthesis    | ~ | Logical NOT                                                                |
| )  | Closing Parenthesis    | — | Underline                                                                  |
| *  | Asterisk               | ` | Grave Accent                                                               |
| +  | Plus                   | { | Opening Brace                                                              |
| ,  | Comma                  |   | Vertical Line (This graphic is stylized to distinguish it from Logical OR) |
| -  | Hyphen (Minus)         | } | Closing Brace                                                              |
| .  | Period (Decimal Point) | ~ | Tilde                                                                      |
| /  | Slant                  |   |                                                                            |
| :  | Colon                  |   |                                                                            |
| ;  | Semicolon              |   |                                                                            |



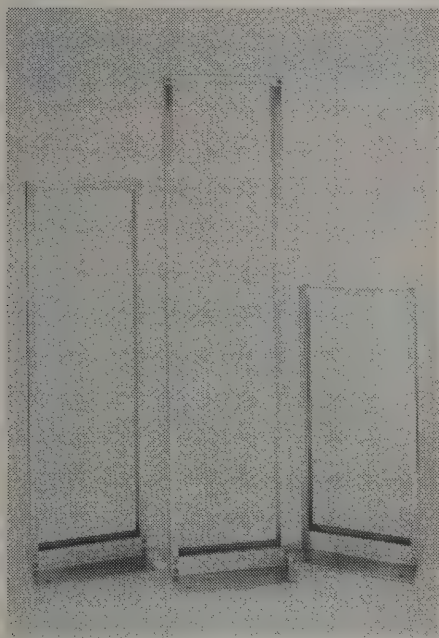
# PFT MODULAR NETWORKING FRAMES

Now available from PFT - Modular Networking Frames that are UPS shippable! These all aluminum open frame racks are available in 19" and 24" rack mount widths with standard heights of 78", 70", 61" and 42". Each unit is drilled and tapped with universal EIA hole spacing. Refer to dimensional chart for detailed specifications.

PFT Modular Networking Frames are ideal for mounting electronic and test equipment, patch panels, shelves, data communication and telecommunication products as well as other cabling and rack mount products.

PFT Modular Networking Frames offer an economical alternative to your rack mount needs at a fraction of the cost of a fully enclosed vertical enclosure. These frames are ideal when a fully enclosed cabinet is not required.

All PFT Modular Networking Frames are shipped knocked down for a significant freight savings. Assembly is easily accomplished in a matter of minutes using standard socket or adjustable wrenches. Frames are designed to bolt to the floor for extra stability.



## PFT Special Features:

- ☒ Heavy duty aluminum extrusion construction utilizing 6105-T6 aluminum alloy
- ☒ 10—32 dia. tapped holes on front and rear flanges
- ☒ EIA hole spacing full height of vertical uprights
- ☒ Available in smooth black oven baked or standard mil finish
- ☒ Designed for multi-bay configurations
- ☒ UPS shippable for economical freight costs
- ☒ Designed to accommodate a variety of PFT accessories
- ☒ Pre-threaded holes allow for quick and easy assembly

## Each PFT Modular Networking Frame Consists of:

- ☒ 2 fully tapped vertical uprights
- ☒ 2 mounting bases (front and rear)
- ☒ top angle
- ☒ assembly hardware

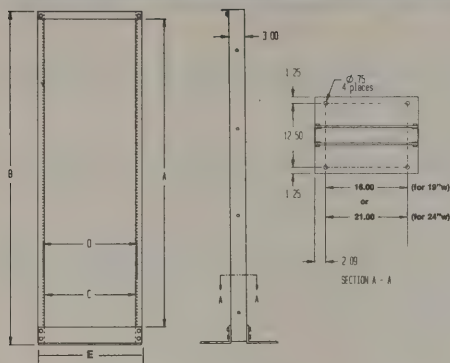


**For current pricing and availability, call your local PFT Distributor or call PFT toll free at 1-800-558-7297.**



# PFT MODULAR NETWORKING FRAMES

## TECHNICAL DATA



### DIMENSIONAL AND COLOR CHART

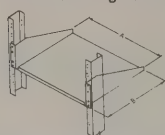
| PFT #    | A<br>Vertical<br>Opening | B<br>Overall<br>Height | C<br>Inside<br>Width | D<br>Hole-To-Hole<br>Centers | E<br>Overall<br>Width | Rack<br>Units | Finish |
|----------|--------------------------|------------------------|----------------------|------------------------------|-----------------------|---------------|--------|
| MNF1978A | 78.125                   | 84.00                  | 17.81                | 18.31                        | 20.18                 | 45 U          | Black  |
| MNF1978U | 78.125                   | 84.00                  | 17.81                | 18.31                        | 20.18                 | 45 U          | Mil    |
| MNF1970A | 70.125                   | 75.25                  | 17.81                | 18.31                        | 20.18                 | 40 U          | Black  |
| MNF1970U | 70.125                   | 75.25                  | 17.81                | 18.31                        | 20.18                 | 40 U          | Mil    |
| MNF1961A | 61.375                   | 66.50                  | 17.81                | 18.31                        | 20.18                 | 35 U          | Black  |
| MNF1961U | 61.375                   | 66.50                  | 17.81                | 18.31                        | 20.18                 | 35 U          | Mil    |
| MNF1942A | 42.125                   | 47.25                  | 17.81                | 18.31                        | 20.18                 | 24 U          | Black  |
| MNF1942U | 42.125                   | 47.25                  | 17.81                | 18.31                        | 20.18                 | 24 U          | Mil    |
| MNF2478A | 78.125                   | 84.00                  | 22.81                | 23.31                        | 25.18                 | 45 U          | Black  |
| MNF2478U | 78.125                   | 84.00                  | 22.81                | 23.31                        | 25.18                 | 45 U          | Mil    |
| MNF2470A | 70.125                   | 75.25                  | 22.81                | 23.31                        | 25.18                 | 40 U          | Black  |
| MNF2470U | 70.125                   | 75.25                  | 22.81                | 23.31                        | 25.18                 | 40 U          | Mil    |
| MNF2461A | 61.375                   | 66.50                  | 22.81                | 23.31                        | 25.18                 | 35 U          | Black  |
| MNF2461U | 61.375                   | 66.50                  | 22.81                | 23.31                        | 25.18                 | 35 U          | Mil    |
| MNF2442A | 42.125                   | 47.25                  | 22.81                | 23.31                        | 25.18                 | 24 U          | Black  |
| MNF2442U | 42.125                   | 47.25                  | 22.81                | 23.31                        | 25.18                 | 24 U          | Mil    |

ALL DIMENSIONS IN INCHES

## ACCESSORIES

### CANTILEVERED EQUIPMENT SHELVES

- 16 gauge steel
- Rated for 50 lbs. capacity
- Smooth black finish
- 10-32 mounting hardware included



| PART<br>NUMBER | TYPE  | A<br>WIDTH | B<br>DEPTH |
|----------------|-------|------------|------------|
| CS1914SA       | Solid | 19"        | 14"        |
| CS1914PA       | Perf. | 19"        | 14"        |
| CS2414SA       | Solid | 24"        | 14"        |
| CS2414PA       | Perf. | 24"        | 14"        |

### CONVERSION ADAPTER BRACKETS

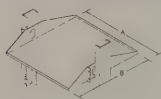
- 14 gauge steel
- Zinc plated
- 10/32 tapped holes
- Hole pattern meets EIA standard



| PART<br>NUMBER | A      | B      | RACK<br>UNITS |
|----------------|--------|--------|---------------|
| AB01           | 1.719" | 3.125" | 1U            |
| AB02           | 3.469" | 3.125" | 2U            |
| AB03           | 5.219" | 3.125" | 3U            |
| AB04           | 6.969" | 3.125" | 4U            |
| AB05           | 8.719" | 3.125" | 5U            |

### CENTER WEIGHT EQUIPMENT SHELVES

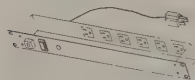
- 16 gauge steel
- Rated for 50 lbs. capacity
- Rated for 75 lbs. capacity with optional mounting brackets (included with each shelf)
- 10-32 Mounting hardware included



| PART<br>NUMBER | TYPE  | A<br>WIDTH | B<br>DEPTH |
|----------------|-------|------------|------------|
| CWS1919SA      | Solid | 19"        | 19"        |
| CWS1919PA      | Perf. | 19"        | 19"        |
| CWS2419SA      | Solid | 24"        | 19"        |
| CWS2419PA      | Perf. | 24"        | 19"        |

### RACK MOUNT POWER STRIP

- Meets UL Standard 1363
- 15A 125V receptacle
- Color - black



- All units include:
  - switch
  - pilot light
  - circuit breaker
  - 15' power cord

| PART<br>NUMBER | NUMBER<br>OF OUTLETS |
|----------------|----------------------|
| PS1906         | 6                    |

### CUP HEAD SCREWS

- 10/32 cup head screws
- Nickel plated or black oxide with nylon washer
- Twenty per kit



| PART<br>NUMBER | SIZE                              |
|----------------|-----------------------------------|
| CHS1032F       | 10/32 x 5/8" long                 |
| CHS1032K       | 10/32 x 1 1/8" long               |
| CHS1032FA      | 10/32 x 5/8" long - black oxide   |
| CHS1032KA      | 10/32 x 1 1/8" long - black oxide |

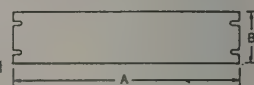
### GROUNDING BAR

- 1/4" thick x 1" tall copper bar
- Six 10-32 tapped grounding holes
- Hardware pack included to allow grounded or isolated mounting
- 19" rack mount (can be used to mount to 24" racks and cabinets utilizing PFT Adapter Brackets)

| PART NUMBER | GB190106 |
|-------------|----------|
|-------------|----------|

### FLAT FILLER PANELS

- .125 thick aluminum
- Textured black finish in stock
- 10-32 Mounting hardware included



| PART NUMBERS FOR<br>SOLID FILLER PANELS |     |        | PART NUMBERS FOR<br>PERFORATED FILLER PANELS |     |        |
|-----------------------------------------|-----|--------|----------------------------------------------|-----|--------|
|                                         | A   | B      |                                              | A   | B      |
| FL1901A                                 | 19" | 1.75"  | FL1901PA                                     | 19" | 1.75"  |
| FL1903A                                 | 19" | 3.50"  | FL1903PA                                     | 19" | 3.50"  |
| FL1905A                                 | 19" | 5.25"  | FL1905PA                                     | 19" | 5.25"  |
| FL1907A                                 | 19" | 7.00"  | FL1907PA                                     | 19" | 7.00"  |
| FL1908A                                 | 19" | 8.75"  | FL1908PA                                     | 19" | 8.75"  |
| FL1910A                                 | 19" | 10.50" | FL1910PA                                     | 19" | 10.50" |
| FL2401A                                 | 24" | 1.75"  | FL2401PA                                     | 24" | 1.75"  |
| FL2403A                                 | 24" | 3.50"  | FL2403PA                                     | 24" | 3.50"  |
| FL2405A                                 | 24" | 5.25"  | FL2405PA                                     | 24" | 5.25"  |
| FL2407A                                 | 24" | 7.00"  | FL2407PA                                     | 24" | 7.00"  |
| FL2408A                                 | 24" | 8.75"  | FL2408PA                                     | 24" | 8.75"  |
| FL2410A                                 | 24" | 10.50" | FL2410PA                                     | 24" | 10.50" |

### CASTERS

PART NUMBER  
MNFA75L

- 2" diameter
- Matte black plastic caster and cover
- Each caster rated for 75 lbs.
- Each kit includes four locking casters and special mounting hardware

For current pricing and availability, call your local PFT Distributor or call PFT toll free at 1-800-558-7297.



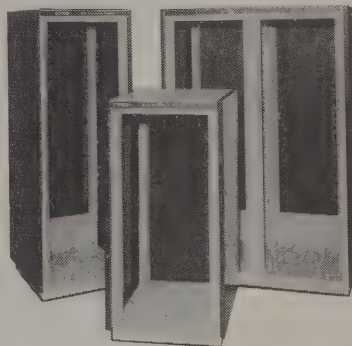
# PFT MODULAR ENCLOSURES

## MODULAR VERTICAL ENCLOSURES

"Tough as welded" with the cost savings and versatility of knock down enclosures.

### FEATURES:

- **Construction** - Heavy duty steel construction ensures durability. Corner Posts - 13 gauge C.R.S. Top and bottom assemblies - 14 gauge C.R.S. All other components - 18 gauge C.R.S. All metal forming, welding and painting is done in PFT manufacturing facilities.
- **Ease of Assembly** - PFT's self-registration design enables quick and routine assembly. One person can assemble these vertical enclosures in minutes. Unique tab and slot engineering ensures all parts accurately self-align.
- **Knock Down Units Reduce Shipping Costs** - PFT Modular Enclosures save up to 66% in shipping costs - savings which are passed on to you.
- **Modular Construction Reduces Parts Replacement Costs** - Never replace an entire enclosure again. All PFT cabinet parts, including frame components, are removable, interchangeable and replaceable.
- **Colors and Finish** - Enclosures are finished with oven-baked, EPA - approved paint. Rear door and side panels have a textured Royal Blue finish. All other components are textured in Ash White. This color combination harmonizes with standard electronics industry products. Other colors are available as modifications.
- **Multi-Bay Add-Ons** - Modular enclosures are designed to bolt together easily and securely to form multi-bay configurations in any quantity. A variety of special multi-bay accessories is available. Turn two pages under **VERTICAL ENCLOSURE ACCESSORIES** for a complete list.
- **Full Line of Accessories** - A full line of accessories to add versatility and to enhance the performance of your vertical enclosures are available. The line includes: plexiglass doors, casters, blower unit, door locks, drawers and more. Turn two pages under the **VERTICAL ENCLOSURE ACCESSORIES** heading for a complete list. Note: 17" wide Mod-u-line with rack side panels fits 19" vertical enclosures.
- **Modifications** - PFT will make in-plant modifications to your specifications.



To use the chart below, identify the size of the cabinet you wish to order with the 6 digits in the left hand column. The first 4 digits are from the top and bottom pack you wish to order and the last 2 digits are from the corner post pack you wish to order.

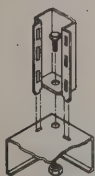
### CABINET SIZE

| W<br>I<br>D<br>T<br>H | D<br>E<br>P<br>T<br>H | H<br>E<br>I<br>G<br>H<br>T | VERTICAL<br>OPENING | OVERALL<br>HEIGHT | INSIDE<br>DEPTH | SIDE PANEL<br>DEPTH | SHORT DOOR<br>HEIGHT | TOP PANEL<br>DEPTH | TOP PANEL<br>WIDTH | INSIDE<br>CORNER POST<br>OPENING | FRONT OPENING<br>HOLE CENTERS |
|-----------------------|-----------------------|----------------------------|---------------------|-------------------|-----------------|---------------------|----------------------|--------------------|--------------------|----------------------------------|-------------------------------|
| A                     | B                     | C                          | D                   | E                 | F               | G                   | H                    | I                  |                    |                                  |                               |
| 19                    | 25                    | 42                         | 42.125              | 48.125            | 25.25           | 27.25               | 34.88                | 20.95              | 19.00              | 17.81                            | 18.31                         |
| 19                    | 30                    | 42                         | 42.125              | 48.125            | 31.25           | 33.25               | 34.88                | 26.95              | 19.00              | 17.81                            | 18.31                         |
| 24                    | 25                    | 42                         | 42.125              | 48.125            | 25.25           | 27.25               | 34.88                | 20.95              | 24.00              | 22.81                            | 23.31                         |
| 24                    | 30                    | 42                         | 42.125              | 48.125            | 31.25           | 33.25               | 34.88                | 26.95              | 24.00              | 22.81                            | 23.31                         |
| 19                    | 25                    | 61                         | 61.375              | 67.375            | 25.25           | 27.25               | 54.13                | 20.95              | 19.00              | 17.81                            | 18.31                         |
| 19                    | 30                    | 61                         | 61.375              | 67.375            | 31.25           | 33.25               | 54.13                | 26.95              | 19.00              | 17.81                            | 18.31                         |
| 24                    | 25                    | 61                         | 61.375              | 67.375            | 25.25           | 27.25               | 54.13                | 20.95              | 24.00              | 22.81                            | 23.31                         |
| 24                    | 30                    | 61                         | 61.375              | 67.375            | 31.25           | 33.25               | 54.13                | 26.95              | 24.00              | 22.81                            | 23.31                         |
| 19                    | 25                    | 70                         | 70.125              | 76.125            | 25.25           | 27.25               | 62.88                | 20.95              | 19.00              | 17.81                            | 18.31                         |
| 19                    | 30                    | 70                         | 70.125              | 76.125            | 31.25           | 33.25               | 62.88                | 26.95              | 19.00              | 17.81                            | 18.31                         |
| 24                    | 25                    | 70                         | 70.125              | 76.125            | 25.25           | 27.25               | 62.88                | 20.95              | 24.00              | 22.81                            | 23.31                         |
| 24                    | 30                    | 70                         | 70.125              | 76.125            | 31.25           | 33.25               | 62.88                | 26.95              | 24.00              | 22.81                            | 23.31                         |
| 19                    | 25                    | 77                         | 77.125              | 83.125            | 25.25           | 27.25               | 69.88                | 20.95              | 19.00              | 17.81                            | 18.31                         |
| 19                    | 30                    | 77                         | 77.125              | 83.125            | 31.25           | 33.25               | 69.88                | 26.95              | 19.00              | 17.81                            | 18.31                         |
| 24                    | 25                    | 77                         | 77.125              | 83.125            | 25.25           | 27.25               | 69.88                | 20.95              | 24.00              | 22.81                            | 23.31                         |
| 24                    | 30                    | 77                         | 77.125              | 83.125            | 31.25           | 33.25               | 69.88                | 26.95              | 24.00              | 22.81                            | 23.31                         |

All Dimensions in inches



### UNIQUE CORNER POST DESIGN



CORNER FRAME  
DETAIL

PFT combines two unique design features to provide strength and rigidity previously associated only with more expensive welded units. Interlocking tab and slot construction in the corner joints eliminates torsional movement of the corner posts. Secondly, a heavy gauge mounting plate is welded, slightly recessed, into the top and bottom of each corner post. Thus, when the corner bolt is tightened, the cabinet base (or top) flexes slightly, ensuring that the joint is always preloaded in tension, providing additional rigidity.

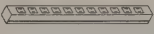
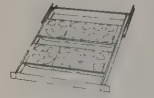
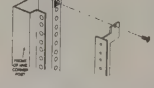
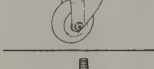
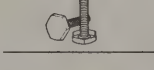
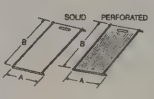
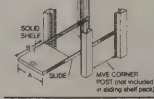
| CODE | COLOR CHART | FED STD #  |
|------|-------------|------------|
| R    | Royal Blue  | 595A-25045 |
| H    | Ash White   | 595A-26622 |
| W    | Off White   | 595A-27722 |
| B    | Sky Blue    | 595A-25109 |
| A    | Black       | 595A-27038 |
| C    | Charcoal    | 595A-26081 |
| G    | Light Grey  | 595A-26493 |
| T    | Tan         | 595A-23448 |

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# PFT MODULAR ENCLOSURES

## MODULAR VERTICAL ENCLOSURE ACCESSORIES

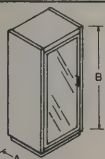
|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                    |                                                                                                  |                                                                                                                                                            |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>ELECTRICAL OUTLET STRIPS</b> <ul style="list-style-type: none"> <li>• Components all UL approved</li> <li>• 15A, 125V receptacles</li> <li>• 6' power cord</li> <li>• Attach to MVE corner posts</li> <li>• OS2408 has on/off switch</li> </ul>                                                                                                                                                                                                                                                          | <b>PART NUMBER</b><br>OS2408<br>OS6006                                                                                                                                             | <b>LENGTH</b><br>24"<br>60"                                                                      | <b>NUMBER OF OUTLETS</b><br>8<br>6                                                                                                                         |
|    | <b>630 CFM FAN TRAY ASSEMBLY</b> <ul style="list-style-type: none"> <li>• Uses 1.75" of panel space</li> <li>• Designed for front mount racking into any standard 19" or 24" EIA rack. To mount in 24" rack use AB630 adapter bracket</li> <li>• Exhausts air through the top of the MVE</li> <li>• Specify louvered top panel if this fan tray assembly is desired</li> <li>• 6' long 115V power cord</li> <li>• Consists of 6-105 CFM muffin fans</li> <li>• 18" actual depth/17" actual width</li> </ul> | <b>PART NUMBER</b><br>FN630                                                                                                                                                        |                                                                                                  |                                                                                                                                                            |
|    | <b>HORIZONTAL MOUNTING RAIL KIT</b> <ul style="list-style-type: none"> <li>• 16 gauge cold rolled steel channels</li> <li>• Used in conjunction with 90° tapped mounting rails, multi-formed rails, and vertical conversion rail kits</li> <li>• Zinc plated with gold chromate finish</li> <li>• Sold in pairs</li> </ul>                                                                                                                                                                                  | <b>PART NUMBER</b><br>HMR25<br>HMR30                                                                                                                                               | <b>RAIL LENGTH</b><br>20.25"<br>26.25"                                                           | <b>CABINET DEPTH</b><br>25"<br>30"                                                                                                                         |
|    | <b>90° TAPPED MOUNTING RAIL KIT</b> <ul style="list-style-type: none"> <li>• 12 gauge cold rolled steel</li> <li>• Must be used in conjunction with horizontal mounting rail kits</li> <li>• 19<sub>32</sub> tapped holes</li> <li>• Zinc plated with gold chromate finish</li> <li>• Fully adjustable from front to rear of cabinet</li> <li>• Sold in pairs</li> </ul>                                                                                                                                    | <b>PART NUMBER</b><br>VMR42<br>VMR61<br>VMR70<br>MVR77                                                                                                                             | <b>RAIL LENGTH</b><br>41.93"<br>61.18"<br>69.93"<br>76.93"                                       | <b>CABINET HEIGHT</b><br>42"<br>61"<br>70"<br>77"                                                                                                          |
|    | <b>BALL BEARING SLIDES</b> <ul style="list-style-type: none"> <li>• Sold in pairs; hardware included in kit</li> <li>• Front and rear mounting brackets included</li> <li>• Slide length is 18"; slide travel is 19"</li> </ul>                                                                                                                                                                                                                                                                             | <b>PART NUMBER</b><br>BBS01                                                                                                                                                        |                                                                                                  |                                                                                                                                                            |
|    | <b>VERTICAL CORNER TAPPED MOUNTING RAIL KIT</b> <ul style="list-style-type: none"> <li>• 12 gauge cold rolled steel</li> <li>• Zinc plated with gold chromate finish</li> <li>• Rails attach to inside of MVE corner post</li> <li>• Vertical tapped rails permit use of cup head screws without clipnuts or cage nuts</li> <li>• 10/32 tapped holes</li> <li>• Sold in pairs</li> </ul>                                                                                                                    | <b>PART NUMBER</b><br>CTR42<br>CTR61<br>CTR70<br>CTR77                                                                                                                             | <b>RAIL LENGTH</b><br>41.93"<br>61.18"<br>69.93"<br>76.93"                                       | <b>CABINET HEIGHT</b><br>42"<br>61"<br>70"<br>77"                                                                                                          |
|  | <b>EQUIPMENT MOUNTING ANGLE KIT</b> <ul style="list-style-type: none"> <li>• 11 gauge cold rolled steel</li> <li>• Zinc plated with gold chromate finish</li> <li>• Rated for 400 lb. load capacity</li> <li>• Attach directly to MVE corner posts</li> <li>• Sold in pairs</li> </ul>                                                                                                                                                                                                                      | <b>PART NUMBER</b><br>EMA25<br>EMA30                                                                                                                                               | <b>RAIL LENGTH</b><br>20.25"<br>26.31"                                                           | <b>CABINET DEPTH</b><br>25"<br>30"                                                                                                                         |
|  | <b>CASTERS</b> <ul style="list-style-type: none"> <li>• 3.5" diameter</li> <li>• Hard rubber wheels</li> <li>• Each caster rated for 200 lbs. capacity</li> <li>• Sold in sets of four</li> </ul>                                                                                                                                                                                                                                                                                                           | <b>PART NUMBER</b><br>CA200                                                                                                                                                        |                                                                                                  |                                                                                                                                                            |
|  | <b>LEG LEVELERS</b> <ul style="list-style-type: none"> <li>• Threaded, steel construction</li> <li>• Nickel plated</li> <li>• 3" tall</li> <li>• Sold in sets of four</li> </ul>                                                                                                                                                                                                                                                                                                                            | <b>PART NUMBER</b><br>LL03S                                                                                                                                                        |                                                                                                  |                                                                                                                                                            |
|  | <b>EQUIPMENT SHELVES</b> <ul style="list-style-type: none"> <li>• 16 gauge cold rolled steel</li> <li>• Smooth ash white finish in stock</li> <li>• Rated at 200 lbs. capacity</li> <li>• Mounts to MVE cabinet corner posts</li> <li>• Hardware included in pack</li> <li>• Perforated shelves have three 5" wide bands of .250" diamond shaped perforations on .50" centers</li> <li>• 1"x6" obround cable opening in rear</li> </ul>                                                                     | <b>PART NUMBER</b><br>ES192SSH (Solid)<br>ES193SSH (Solid)<br>ES192SPH (Perf.)<br>ES193SPH (Perf.)<br>ES242SSH (Solid)<br>ES243SSH (Solid)<br>ES242SPH (Perf.)<br>ES243SPH (Perf.) | <b>"A" WIDTH</b><br>17.72"<br>17.72"<br>17.72"<br>17.72"<br>22.72"<br>22.72"<br>22.72"<br>22.72" | <b>"B" DEPTH</b><br>24.50"<br>30.50"<br>24.50"<br>30.50"<br>24.50"<br>30.50"<br>24.50"<br>30.50"                                                           |
|  | <b>SLIDING DRAWERS</b> <ul style="list-style-type: none"> <li>• 18 gauge cold rolled steel</li> <li>• Smooth ash white finish in stock</li> <li>• All front panels to standard 19" EIA specifications</li> <li>• Rated for 200 lbs. capacity</li> <li>• Brackets, slides and hardware included</li> <li>• Writing shelf size is 16.25" wide by 15.00" deep</li> </ul>                                                                                                                                       | <b>PART NUMBER</b><br>SD1903WH<br>SD1907OH<br>SD1910OH                                                                                                                             | <b>WITH WRITING SHELF</b><br>Yes<br>No<br>No                                                     | <b>ACTUAL HEIGHT</b><br>3.43"<br>6.93"<br>10.43"<br><b>ACTUAL WIDTH</b><br>15.67"<br>15.67"<br>15.67"<br><b>ACTUAL DEPTH</b><br>16.00"<br>16.00"<br>16.00" |
|  | <b>IDENTIFICATION STRIP</b> <ul style="list-style-type: none"> <li>• Royal blue formica to accent side panels</li> <li>• Ideal for silkscreening</li> <li>• Other standard colors available</li> <li>• Strip fits into aluminum extrusion</li> </ul>                                                                                                                                                                                                                                                        | <b>PART NUMBER</b><br>ID01-For single bay<br>ID02-For double bay<br>ID03-For triple bay                                                                                            |                                                                                                  |                                                                                                                                                            |
|  | <b>SLIDING SHELVES</b> <ul style="list-style-type: none"> <li>• 16 gauge cold rolled steel</li> <li>• Smooth ash white finish in stock</li> <li>• Rated for 85 lbs. capacity</li> <li>• Slides have lock out feature</li> <li>• Brackets, hardware, slides and shelf included in kit</li> </ul>                                                                                                                                                                                                             | <b>PART NUMBER</b><br>SS1918SH<br>SS1922SH<br>SS2418SH<br>SS2422SH                                                                                                                 | <b>"A" WIDTH</b><br>16.75"<br>16.75"<br>21.75"<br>21.75"                                         | <b>"B" DEPTH</b><br>18.00"<br>22.00"<br>18.00"<br>22.00"                                                                                                   |

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# PFT MODULAR ENCLOSURES

## MODULAR VERTICAL ENCLOSURE ACCESSORIES



### PLEXIDOORS

- Lift-off hinge design
- $\frac{3}{16}$ " thick acrylic plexiglass
- Full length magnetic strip
- Clear (C) or smoked (S) plexiglass
- Locking (L) or non-locking (N) styles

- Mounts on either side of frame
- Panel clearance of .88" is provided; VMR rail series should be used if a bezel or knob exceeding .88" exists on the rack mount equipment

| PART NUMBER   | "A" WIDTH | "B" HEIGHT |
|---------------|-----------|------------|
| PD1942 Series | 20.12"    | 43.63"     |
| PD1961 Series | 20.12"    | 62.88"     |
| PD1970 Series | 20.12"    | 71.63"     |
| PD1977 Series | 20.12"    | 78.63"     |
| PD2442 Series | 25.12"    | 43.63"     |
| PD2461 Series | 25.12"    | 62.88"     |
| PD2470 Series | 25.12"    | 71.63"     |
| PD2477 Series | 25.12"    | 78.63"     |



### SHORT DOOR PACKS

#### SOLID SHORT DOORS

- 18 gauge cold rolled steel
- Lift-off hinge design
- Panel clearance 1.38" provided
- Solid door packs are short doors and include 8.72" access panel

- Door mounts to left corner post only
- Latch, adhesive-backed gasketing,  $\frac{9}{32}$  allen wrench, and all hardware provided in pack
- Textured royal blue finish in stock

| PART NUMBER     | "A" WIDTH | "B" HEIGHT |
|-----------------|-----------|------------|
| MVSD1942 Series | 20.12"    | 34.88"     |
| MVSD1961 Series | 20.12"    | 54.13"     |
| MVSD1970 Series | 20.12"    | 62.88"     |
| MVSD1977 Series | 20.12"    | 69.88"     |
| MVSD2442 Series | 25.12"    | 34.88"     |
| MVSD2461 Series | 25.12"    | 54.13"     |
| MVSD2470 Series | 25.12"    | 62.88"     |
| MVSD2477 Series | 25.12"    | 69.88"     |

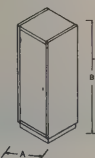


### LOUVERED SHORT DOORS

- 18 gauge cold rolled steel
- Louver size is .625"x4.50"; opening .250"
- Lift-off hinge design
- Panel clearance 1.38" provided
- Door mounts to left corner post only

- Louvered door packs are short doors and include 8.72" access panel
- Latch, adhesive-backed gasketing,  $\frac{9}{32}$  allen wrench, and all hardware provided in pack
- Textured royal blue finish in stock

| PART NUMBER     | "A" WIDTH | "B" HEIGHT |
|-----------------|-----------|------------|
| MVSD1942 Series | 20.12"    | 34.88"     |
| MVSD1961 Series | 20.12"    | 54.13"     |
| MVSD1970 Series | 20.12"    | 62.88"     |
| MVSD1977 Series | 20.12"    | 69.88"     |
| MVSD2442 Series | 25.12"    | 34.88"     |
| MVSD2461 Series | 25.12"    | 54.13"     |
| MVSD2470 Series | 25.12"    | 62.88"     |
| MVSD2477 Series | 25.12"    | 69.88"     |



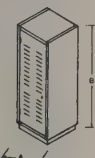
### LONG DOOR PACKS

#### SOLID LONG DOORS

- 18 gauge cold rolled steel
- Lift-off hinge design
- Panel clearance 1.38" provided
- Door mounts to left corner post only
- Can be used as a front or rear door

- Latch, adhesive-backed gasketing,  $\frac{9}{32}$  allen wrench, and all hardware provided in pack
- Textured royal blue finish in stock

| PART NUMBER      | "A" WIDTH | "B" HEIGHT |
|------------------|-----------|------------|
| MVELD1942 Series | 20.12"    | 43.63"     |
| MVELD1961 Series | 20.12"    | 62.88"     |
| MVELD1970 Series | 20.12"    | 71.63"     |
| MVELD1977 Series | 20.12"    | 78.63"     |
| MVELD2442 Series | 25.12"    | 43.63"     |
| MVELD2461 Series | 25.12"    | 62.88"     |
| MVELD2470 Series | 25.12"    | 71.63"     |
| MVELD2477 Series | 25.12"    | 78.63"     |



### LOUVERED LONG DOORS

- 18 gauge cold rolled steel
- Louver size .625"x4.50"; opening is .250"
- Lift-off hinge design
- Panel clearance 1.38" provided
- Door mounts to left corner post only

- Can be used as a front or rear door
- Latch, adhesive-backed gasketing,  $\frac{9}{32}$  allen wrench, and all hardware provided in pack
- Textured royal blue finish in stock

| PART NUMBER      | "A" WIDTH | "B" HEIGHT |
|------------------|-----------|------------|
| MVELD1942 Series | 20.12"    | 43.63"     |
| MVELD1961 Series | 20.12"    | 62.88"     |
| MVELD1970 Series | 20.12"    | 71.63"     |
| MVELD1977 Series | 20.12"    | 78.63"     |
| MVELD2442 Series | 25.12"    | 43.63"     |
| MVELD2461 Series | 25.12"    | 62.88"     |
| MVELD2470 Series | 25.12"    | 71.63"     |
| MVELD2477 Series | 25.12"    | 78.63"     |



### LOCK ASSEMBLY

- Fits in all PFT long and short door series
- Chrome plated steel

- Latch can be adjusted to create vibration free environment

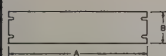
| PART NUMBER |
|-------------|
| LK01        |



### T-DOOR HANDLE

- Fits in all PFT long and short door series
- Zinc plated knurled handle

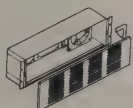
| PART NUMBER |
|-------------|
| TDH01       |



### FLAT FILLER PANELS

- .125" thick aluminum
- Textured ash white finish in stock

| PART NUMBER | "A" WIDTH | "B" HEIGHT |
|-------------|-----------|------------|
| FL1901H     | 19"       | 1.75"      |
| FL1903H     | 19"       | 3.50"      |
| FL1905H     | 19"       | 5.25"      |
| FL1907H     | 19"       | 7.00"      |
| FL1908H     | 19"       | 8.75"      |
| FL1910H     | 19"       | 10.50"     |
| FL2401H     | 24"       | 1.75"      |
| FL2403H     | 24"       | 3.50"      |
| FL2405H     | 24"       | 5.25"      |
| FL2407H     | 24"       | 7.00"      |
| FL2408H     | 24"       | 8.75"      |
| FL2410H     | 24"       | 10.50"     |



### 315 CFM FAN ASSEMBLY

- Draws air into the equipment rack
- Consists of 3-105 CFM muffin fans
- Fans mounted into a painted housing
- Utilizes washable air filter

- 5.22"x19.00" stainless steel grill
- 6' long 115V power cord
- Rack mountable on front or rear of any 19" or 24" standard EIA rack. To mount in 24" rack use AB315 adapter bracket

| PART NUMBER |
|-------------|
| FN315       |

For current pricing and availability, call your local PFT Distributor or call PFT toll free at 1-800-558-7297.



# PFT MODULAR ENCLOSURES

## MODULAR VERTICAL ENCLOSURE ACCESSORIES



### TOUCH-UP PAINT

- One ounce bottle with applicator brush

- No mixing required
- Quick drying

### PART NUMBER

TUBR  
TUBH  
TUBW  
TUBB  
TUBA  
TUBC  
TUBG  
TUBT

### PAINT COLOR

Royal Blue  
Ash White  
Off White  
Sky Blue  
Black  
Charcoal  
Light Grey  
Tan

### FED. STD. #

595A-25045  
595A-26622  
595A-27722  
595A-25109  
595A-27038  
595A-26081  
595A-26493  
595A-23448



### CAGE NUTS

- 10/32 clip nut for heavy duty applications
- Twenty per kit

- Used in conjunction with .281" EIA holes on MVE cabinet corner posts

### PART NUMBER

CAG1032



### CLIP NUTS

- 10/32 U type clip nut
- Used in conjunction with CHS1032F and CHS1032K screws (see below)

- Used in conjunction with .281" EIA holes on MVE cabinet corner posts
- Twenty per kit

### PART NUMBER

CLP1032



### CUP HEAD SCREWS

- 10/32 cup head screws
- Nickel plated with a nylon washer

- Twenty per kit

### PART NUMBER

CHS1032F  
CHS1032K

### SIZE

10/32 x 5/8" long  
10/32 x 1 1/8" long



### MULTI-BAY JOINING KIT

- Used to join equipment racks together to form double bays, triple bays, etc.

### PART NUMBER

JK01

## Mod-u-box® INSTRUMENT ENCLOSURES

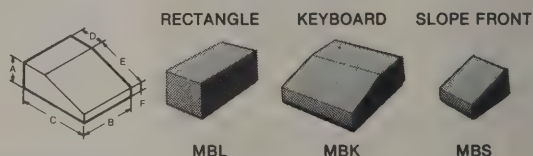
The Mod-u-box series presents a wide choice of small electronic cabinets. Distinctively styled, Mod-u-box offers rugged high quality construction at an exceptionally low price.

### OUTSIDE DIMENSIONS, INCHES

| SIDE SHAPE | PART NO.    | HEIGHT A | WIDTH B  | DEPTH C  | TOP D   | SLOPE E | FRONT F |
|------------|-------------|----------|----------|----------|---------|---------|---------|
|            | MBL 4-6-10  | 3 13/16  | 5 1/16   | 9 13/16  | NA      | NA      | NA      |
|            | MBS 3-4-6   | 2 3/4    | 4 1/4    | 6 13/16  | NA      | 6 1/8   | 1 1/4   |
|            | MBS 3-7-6   | 3 1/8    | 6 1/4    | 5 1/8    | NA      | 5 1/16  | 1 1/8   |
|            | MBS 4-10-10 | 3 1/2    | 10       | 10       | 8       | 3 1/16  | 1 1/16  |
|            | MBS 4-12-11 | 3 13/16  | 11 13/16 | 10 13/16 | 9 1/4   | 3 15/16 | NA      |
|            | MBS 5-6-6   | 4 13/16  | 5 13/16  | 5 13/16  | 4 1/2   | 4 15/16 | NA      |
|            | MBK 2-5-5   | 1 13/16  | 4 13/16  | 4 13/16  | 2 1/8   | 2 15/16 | 1 1/16  |
|            | MBK 2-7-6   | 2 1/16   | 6 1/2    | 5 13/16  | 2 15/16 | 3 1/4   | 3/8     |
|            | MBK 3-10-11 | 2 13/16  | 9 13/16  | 10 13/16 | 5       | 5 15/16 | 1 1/2   |
|            | MBK 3-13-11 | 2 15/16  | 12 13/16 | 10 13/16 | 5       | 5 15/16 | 1 1/2   |
|            | MBK 3-17-11 | 2 15/16  | 16 13/16 | 10 13/16 | 5       | 5 15/16 | 1 1/2   |
|            | MBK 3-20-11 | 2 15/16  | 19 13/16 | 10 13/16 | 5       | 5 15/16 | 1 1/2   |
|            | MBK 5-10-10 | 4 13/16  | 9 13/16  | 9 13/16  | 1 15/16 | 8 7/16  | 1 1/4   |
|            | MBK 6-12-10 | 5 1/4    | 11 13/16 | 9 13/16  | 3       | 7 13/16 | 2 1/16  |

### HOW TO ORDER

Select appropriate PFT model number and specify color combination by adding color suffix, the wrapper color first followed by the insert color. For example, an **MBS-3-4-6** with a **BLACK** wrap-around base and an **OFF-WHITE** insert is ordered as follows: "MBS 3-4-6 BLACK/OFF-WHITE".



### FEATURES:

- **Construction** - Made from aluminum for lightweight strength and ease of handling. Wrap around base is .090" aluminum; sloped or flat front insert is .062" aluminum.
- **Ease of Assembly** - Simple two piece design assembles or disassembles in minutes with just four screws. Allows easy access to your enclosed components. Individual replacement parts also may be ordered.



- **Colors & Finish** - Cabinets are finished with oven-baked, EPA-approved paint. Wrap-around base has a textured finish while front insert is smooth. Standard colors are:

#### Wrap-Around Base

\*Blue  
Charcoal  
Black  
Tan

#### Front Insert

\*Off-White  
Light Grey  
Black  
Tan

- **Note** - Blue and Off-White cabinets in stock for immediate delivery. Call for current availability of other standard color combinations.
- **Modifications** - PFT will make in-plant modifications to your specifications. Popular modifications include: silkscreening, venting, cut-outs, etc. Steel cabinets are also available through a special order.

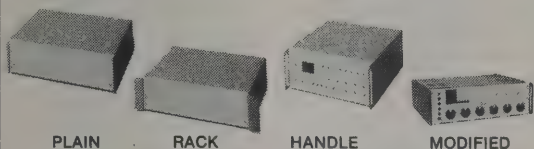
For current pricing and availability, call your local PFT Distributor or call PFT toll free at 1-800-558-7297.



# PFT MODULAR ENCLOSURES

## Mod-u-line® Chassis

Mod-u-line is a line of quality small cabinets, available in standard off-the-shelf sizes. "Value Engineered" to provide the optimum in versatility, strength and economy.



PLAIN RACK HANDLE MODIFIED

| PART NUMBER           | INSIDE DIMS. HEIGHT             | WIDTH                             | INCHES DEPTH                    | RECOMMENDED CHASSIS PLATE |
|-----------------------|---------------------------------|-----------------------------------|---------------------------------|---------------------------|
| <b>1 INCH HEIGHT</b>  |                                 |                                   |                                 |                           |
| MCLS 1-9-7            | 1 <sup>1</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 6 <sup>7</sup> / <sub>16</sub>  | CP 9-7                    |
| MCLS 1-17-7           | 1 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 6 <sup>7</sup> / <sub>16</sub>  | CP 17-7                   |
| MCLS 1-17-9           | 1 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 8 <sup>7</sup> / <sub>16</sub>  | CP 17-9                   |
| <b>2 INCH HEIGHT</b>  |                                 |                                   |                                 |                           |
| MCLS 2-8-9            | 2 <sup>1</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 8 <sup>7</sup> / <sub>16</sub>  | CP 8-9                    |
| MCLS 2-17-9           | 2 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 8 <sup>7</sup> / <sub>16</sub>  | CP 17-9                   |
| MCLS 2-17-12          | 2 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 11 <sup>7</sup> / <sub>16</sub> | CP17-12                   |
| <b>3 INCH HEIGHT</b>  |                                 |                                   |                                 |                           |
| MCLS 3-7-7            | 3 <sup>5</sup> / <sub>16</sub>  | 6 <sup>5</sup> / <sub>16</sub>    | 6 <sup>7</sup> / <sub>16</sub>  | CP 7-7                    |
| MCLS 3-9-7            | 3 <sup>5</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 6 <sup>7</sup> / <sub>16</sub>  | CP 9-7                    |
| MCLS 3-9-9            | 3 <sup>5</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 8 <sup>7</sup> / <sub>16</sub>  | CP 9-9                    |
| MCLS 3-12-7           | 3 <sup>5</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 6 <sup>7</sup> / <sub>16</sub>  | CP 12-7                   |
| MCLS 3-12-9           | 3 <sup>5</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 8 <sup>7</sup> / <sub>16</sub>  | CP 12-9                   |
| MCLS 3-12-12          | 3 <sup>5</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 11 <sup>7</sup> / <sub>16</sub> | CP 12-12                  |
| MCLS 3-17-7           | 3 <sup>5</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 6 <sup>7</sup> / <sub>16</sub>  | CP 17-7                   |
| MCLS 3-17-9           | 3 <sup>5</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 8 <sup>7</sup> / <sub>16</sub>  | CP 17-9                   |
| MCLS 3-17-12          | 3 <sup>5</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 11 <sup>7</sup> / <sub>16</sub> | CP 17-12                  |
| MCLS 3-17-14          | 3 <sup>5</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 13 <sup>7</sup> / <sub>16</sub> | CP 17-14                  |
| <b>5 INCH HEIGHT</b>  |                                 |                                   |                                 |                           |
| MCLS 5-7-7            | 5 <sup>1</sup> / <sub>16</sub>  | 6 <sup>5</sup> / <sub>16</sub>    | 6 <sup>7</sup> / <sub>16</sub>  | CP 7-7                    |
| MCLS 5-9-7            | 5 <sup>1</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 6 <sup>7</sup> / <sub>16</sub>  | CP 9-7                    |
| MCLS 5-9-9            | 5 <sup>1</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 8 <sup>7</sup> / <sub>16</sub>  | CP 9-9                    |
| MCLS 5-9-12           | 5 <sup>1</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 11 <sup>7</sup> / <sub>16</sub> | CP 9-12                   |
| MCLS 5-12-7           | 5 <sup>1</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 6 <sup>7</sup> / <sub>16</sub>  | CP 12-7                   |
| MCLS 5-12-9           | 5 <sup>1</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 8 <sup>7</sup> / <sub>16</sub>  | CP 12-9                   |
| MCLS 5-12-12          | 5 <sup>1</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 11 <sup>7</sup> / <sub>16</sub> | CP 12-12                  |
| MCLS 5-17-7           | 5 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 6 <sup>7</sup> / <sub>16</sub>  | CP 17-7                   |
| MCLS 5-17-9           | 5 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 8 <sup>7</sup> / <sub>16</sub>  | CP 17-9                   |
| MCLS 5-17-12          | 5 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 11 <sup>7</sup> / <sub>16</sub> | CP 17-12                  |
| MCLS 5-17-14          | 5 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 13 <sup>7</sup> / <sub>16</sub> | CP 17-14                  |
| <b>7 INCH HEIGHT</b>  |                                 |                                   |                                 |                           |
| MCLS 7-9-12           | 6 <sup>1</sup> / <sub>16</sub>  | 8 <sup>5</sup> / <sub>16</sub>    | 11 <sup>7</sup> / <sub>16</sub> | CP 9-12                   |
| MCLS 7-12-9           | 6 <sup>1</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 8 <sup>7</sup> / <sub>16</sub>  | CP 12-9                   |
| MCLS 7-12-12          | 6 <sup>1</sup> / <sub>16</sub>  | 11 <sup>5</sup> / <sub>16</sub>   | 11 <sup>7</sup> / <sub>16</sub> | CP 12-12                  |
| MCLS 7-17-9           | 6 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 8 <sup>7</sup> / <sub>16</sub>  | CP 17-9                   |
| MCLS 7-17-12          | 6 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 11 <sup>7</sup> / <sub>16</sub> | CP 17-12                  |
| MCLS 7-17-14          | 6 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 13 <sup>7</sup> / <sub>16</sub> | CP 17-14                  |
| <b>8 INCH HEIGHT</b>  |                                 |                                   |                                 |                           |
| MCLS 8-17-12          | 8 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 11 <sup>7</sup> / <sub>16</sub> | CP 17-12                  |
| MCLS 8-17-14          | 8 <sup>1</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> ★ | 13 <sup>7</sup> / <sub>16</sub> | CP 17-14                  |
| <b>10 INCH HEIGHT</b> |                                 |                                   |                                 |                           |
| MCLS 10-17-14         | 10 <sup>1</sup> / <sub>16</sub> | 16 <sup>1</sup> / <sub>16</sub> ★ | 13 <sup>7</sup> / <sub>16</sub> | CP 17-14                  |

\*Note - This size Mod-u-line with rack side panels is a perfect fit for 19" wide Modular Vertical Enclosures.

### HOW TO ORDER

A complete cabinet is ordered in three segments. 1) Mod-u-line Cabinet Less Sides (MCLS) includes: front, back, top and bottom panels plus interior rails. 2) Side Panels are ordered by style, Side Panel Plain (SPP) Side Panel Rack (SPR), Side Panel Handle (SPH); by size and color. Side panels are symmetrical - there are no righthand or lefthand panels. 3) Optional Chassis Plate (CP) is ordered individually according to table below. For example, a 3<sup>5</sup>/<sub>16</sub>" x 16<sup>1</sup>/<sub>16</sub>" x 11<sup>7</sup>/<sub>16</sub>" cabinet with a BLUE exterior and OFF-WHITE front panel which has BLUE RACK side panels and a 16<sup>1</sup>/<sub>16</sub>" x 11<sup>7</sup>/<sub>16</sub>" chassis plate is ordered as: MCLS 3-17-12 BLUE/OFF-WHITE, plus SPR 3-12 BLUE, CP 17-12.

**STANDARD VENTED TOP AND BOTTOM PANELS ORDERING INSTRUCTION** - A 1" wide ventilation strip comprised of 1/8" holes on 1/4" centers may be ordered on either top (VT) or bottom (VB) panels or on both (VTB), if desired. Example: An MCLS 3-17-12-VTB TAN/WHITE would be vented on both top and bottom panels.

### FEATURES:

- Construction** - Made from aluminum for lightweight strength and ease of handling. Side panels are .125" aluminum. All other components are .062" aluminum. Side panels and chassis plates are ordered separately.
- Ease of Assembly** - Mod-u-line cabinets are designed to assemble in minutes. The top cover is easily removed for complete and immediate access to the inside.
- Replacement Parts** - All components of Mod-u-line may be replaced in seconds with stock panels. This feature reduces damage or redesign costs by eliminating need to repaint or replace the entire unit.
- Colors & Finish** - Cabinets are finished with oven-baked, EPA-approved paint. All exterior parts have a textured finish, except the front panel, which has a smooth finish. Standard colors are:

#### Top, Bottom & Rear Panels

\*Blue  
Charcoal  
Black  
Tan

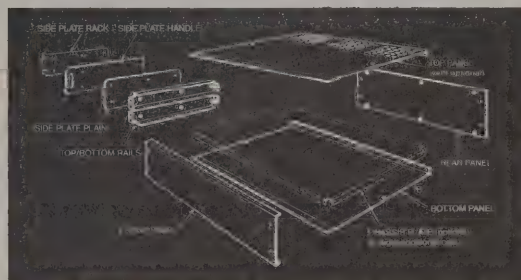
#### Front Panel

\*Off-White  
Light Grey  
Black  
Tan

#### Side Panels

\*Blue  
Charcoal  
Black  
Tan

\*Note - BLUE and OFF-WHITE components in stock for immediate delivery. Call for current availability of other standard color combinations. Chassis plate and interior rails are gold anodized.



### Mod-u-line Side Panels

| PLAIN SIDES     |             | RACK SIDES      |             | HANDLE SIDES    |             |
|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| SIZE INCHES HxD | PART NUMBER | SIZE INCHES HxD | PART NUMBER | SIZE INCHES HxD | PART NUMBER |
| 1 x 7           | SPP1-7      | 1 x 7           | SPR1-7      | —               | —           |
| 1 x 9           | SPP1-9      | 1 x 9           | SPR1-9      | —               | —           |
| 2 x 9           | SPP2-9      | 2 x 9           | SPR2-9      | —               | —           |
| 2 x 12          | SPP2-12     | 2 x 12          | SPR2-12     | —               | —           |
| 3 x 7           | SPP3-7      | 3 x 7           | SPR3-7      | 3 x 7           | SPH3-7      |
| 3 x 9           | SPP3-9      | 3 x 9           | SPR3-9      | 3 x 9           | SPH3-9      |
| 3 x 12          | SPP3-12     | 3 x 12          | SPR3-12     | 3 x 12          | SPH3-12     |
| 3 x 14          | SPP3-14     | 3 x 14          | SPR3-14     | 3 x 14          | SPH3-14     |
| 5 x 7           | SPP5-7      | 5 x 7           | SPR5-7      | 5 x 7           | SPH5-7      |
| 5 x 9           | SPP5-9      | 5 x 9           | SPR5-9      | 5 x 9           | SPH5-9      |
| 5 x 12          | SPP5-12     | 5 x 12          | SPR5-12     | 5 x 12          | SPH5-12     |
| 5 x 14          | SPP5-14     | 5 x 14          | SPR5-14     | 5 x 14          | SPH5-14     |
| 7 x 9           | SPP7-9      | 7 x 9           | SPR7-9      | 7 x 9           | SPH7-9      |
| 7 x 12          | SPP7-12     | 7 x 12          | SPR7-12     | 7 x 12          | SPH7-12     |
| 7 x 14          | SPP7-14     | 7 x 14          | SPR7-14     | 7 x 14          | SPH7-14     |
| 8 x 12          | SPP8-12     | 8 x 12          | SPR8-12     | 8 x 12          | SPH8-12     |
| 8 x 14          | SPP8-14     | 8 x 14          | SPR8-14     | 8 x 14          | SPH8-14     |
| 10 x 14         | SPP10-14    | 10 x 14         | SPR10-14    | 10 x 14         | SPH10-14    |

### Mod-u-line Chassis Plate

| PART NO. | WIDTH INCHES | DEPTH INCHES | PART NO. | WIDTH INCHES | DEPTH INCHES | PART NO. | WIDTH INCHES | DEPTH INCHES |
|----------|--------------|--------------|----------|--------------|--------------|----------|--------------|--------------|
| CP-77    | 6.63         | 5.12         | CP-127   | 11.63        | 5.12         | CP-177   | 16.63        | 5.12         |
| CP-89    | 8.19         | 7.12         | CP-129   | 11.63        | 7.12         | CP-179   | 16.63        | 7.12         |
| CP-97    | 8.63         | 5.12         | CP-1212  | 11.63        | 10.12        | CP-1712  | 16.63        | 10.12        |
| CP-99    | 8.63         | 7.12         | CP-1714  | 16.63        | 12.12        |          |              |              |
| CP-912   | 8.63         | 10.12        |          |              |              |          |              |              |

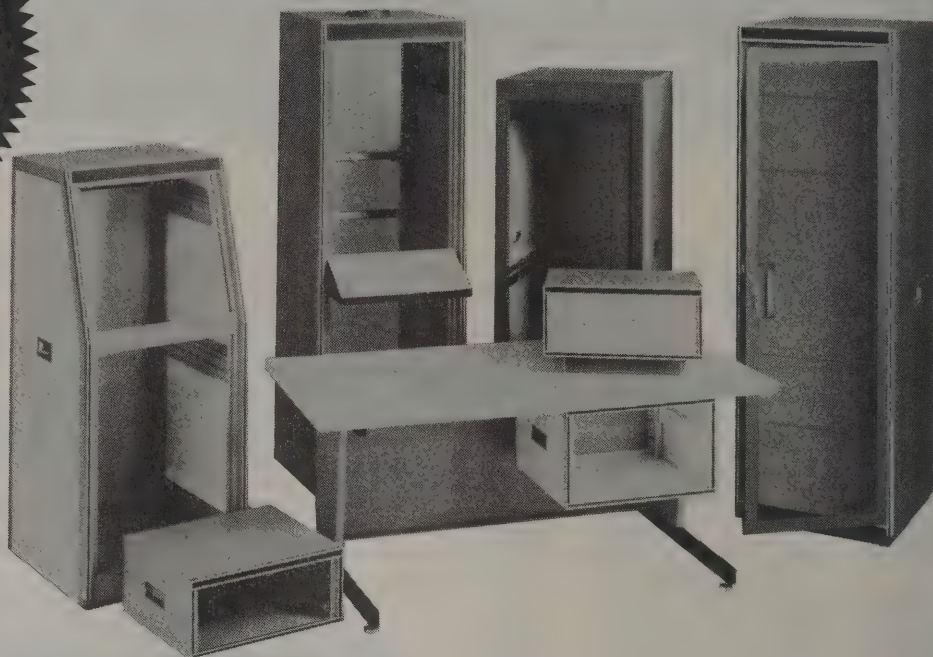
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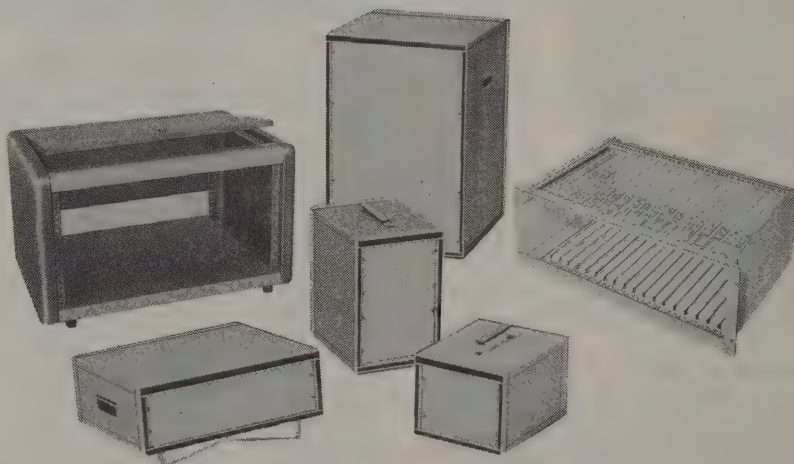
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- Base Station Power Supplies
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## PAINTING AND SILK/SCREENING FACILITIES

**Surface Preparation**

Steel — Iron Phosphate wash - creates a phosphate surface layer to ward off corrosion, and promote adhesion

Aluminum — Etching wash - penetrates surface of the aluminum to improve bonding of coatings

**Painting****TYPES OF SPRAY EQUIPMENT**

- Air Spray
- Airless Spray
- Hot Airless Spray
- Electrostatic Spray

**TYPES OF COATINGS**

- Baking Enamels
- Urethanes
- Lacquers
- Chromates

**Silk/Screening**

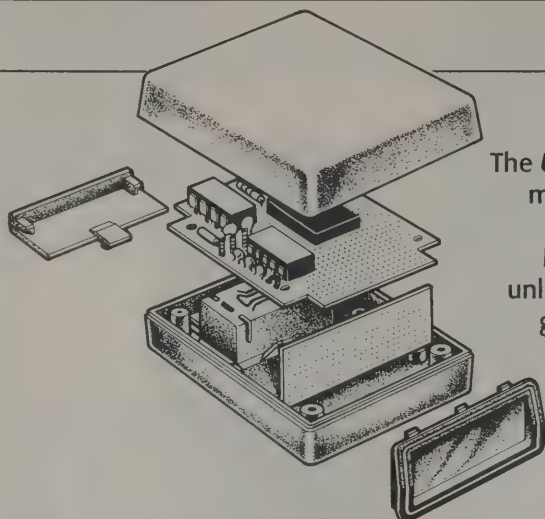
Types of Materials — Painted Metals • Plated Metals • Unfinished Metals • Finished Woods • Plastics  
Types of Finishes — Baking Epoxies • Air Cure Epoxies • Lacquers • Enamels • Metallics • Plasti-Vac




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 (805) 544-2500 FAX (805) 544-3109  
 863 Via Esteban, San Luis Obispo, CA 93401

**unibox®** PACKAGING SYSTEM

**1-800-426-3739**


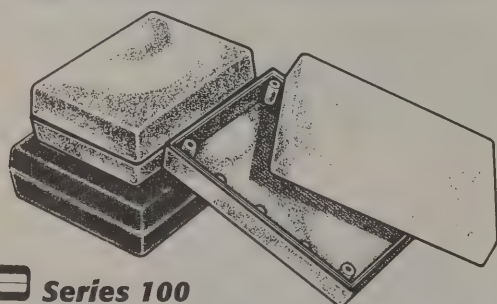
## Ideas... Options... Solutions...

The **Unibox Packaging System** offers innovative solutions to meet the challenge of successful product packaging. Enclosures are molded from high impact, UL rated, ABS plastic. Modular accessories and low-cost custom services provide unlimited design options. The **S&S Product Design Team** will guide you through the enclosure design process and offers turn-key engineering services, and more... *We can help!*



-  **Series 100 - Standard Enclosures**
-  **Series 170 - Battery Compartment Enclosures**
-  **Series 180 & 190 - Speaker Grill Enclosures**
-  **Series 200 & 300 - Accessories** (Call For Details)
-  **Series 500 - Desktop Enclosures**

-  **Series 700 - Wall Mount Enclosures**
-  **Series 800 - Instrument Enclosures**
-  **Series 900 - Digibezels®** (See section 2400)
-  **Series 2000 - Proline Enclosures**
-  **Custom Options & Services**



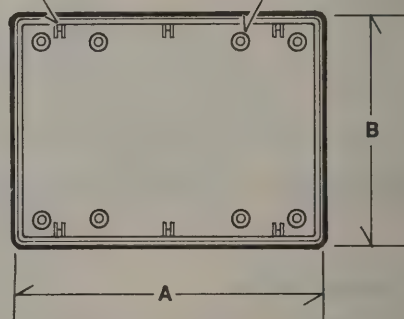
### **Series 100**

Our Standard Enclosures are available from stock in a variety of sizes and colors. Attractive styling features a scratch resistant texture and offers compatibility with a variety of accessories. Contact the factory for more information on the available options.

#### **SERIES 100 - STANDARD ENCLOSURES**

| PART<br>NUMBER | DIMENSIONS (INCHES) |      |      | STYLE |
|----------------|---------------------|------|------|-------|
|                | A                   | B    | C    |       |
| 108            | 2.77                | 2.07 | 0.70 | A     |
| 110            | 2.77                | 2.07 | 1.30 | B     |
| 118            | 3.75                | 2.65 | 0.87 | A     |
| 120            | 3.75                | 2.65 | 1.50 | B     |
| 127            | 4.37                | 3.25 | 0.87 | A     |
| 128            | 4.37                | 3.25 | 1.37 | A     |
| 130            | 4.37                | 3.25 | 1.50 | B     |
| 133            | 4.37                | 3.25 | 2.00 | B     |
| 137            | 5.30                | 4.00 | 0.87 | A     |
| 138            | 5.30                | 4.00 | 1.37 | A     |
| 140            | 5.30                | 4.00 | 1.50 | B     |
| 142            | 5.30                | 4.00 | 1.85 | B     |
| 144            | 5.30                | 4.00 | 2.00 | B     |
| 146            | 5.30                | 4.00 | 2.35 | B     |
| 150            | 7.00                | 4.00 | 1.50 | B     |
| 155            | 7.00                | 4.00 | 2.00 | B     |

COLORS: WHITE, GRAY, BLUE, BONE, BLACK

 VERTICAL CARD GUIDE  
 CIRCUIT BOARD MOUNTING BOSSSES

 STYLE  
A

COVER

BASE


 STYLE  
B

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**ASK ABOUT OUR FREE SAMPLES... CALL 1-800-426-3739**

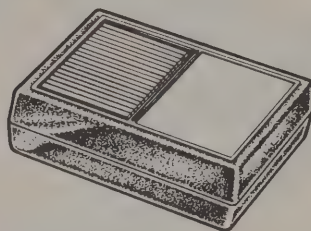
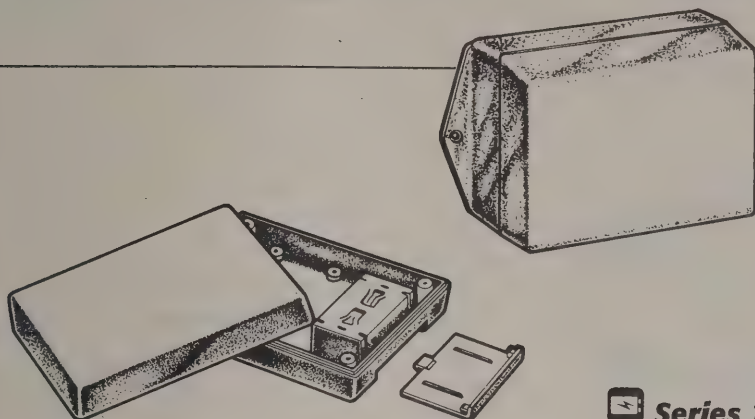


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### Series 170

Battery Compartment Enclosures accommodate a single 9-volt battery in addition to other standard 100 Series features. The design incorporates a unique battery support spring and a snap-in lid. Battery compartment also available with Speaker Grill Models #188, 192, and 195. See below.

#### SERIES 170 - BATTERY ENCLOSURES

| PART NUMBER | DIMENSIONS (INCHES) |      |      |
|-------------|---------------------|------|------|
|             | A                   | B    | C    |
| 171         | 4.37                | 3.25 | 1.50 |
| 172         | 4.37                | 3.25 | 2.00 |
| 175         | 5.30                | 4.00 | 1.50 |
| 176         | 5.30                | 4.00 | 2.00 |

COLORS: WHITE, GRAY, BONE, BLACK



### Series 180 & 190

This Enclosure Series provides an attractive solution to the problem of mounting a speaker in a product. The design includes internal posts for installation of a standard 2.5" square mount speaker with a stylish exterior grill detail.

#### SERIES 180 / 190 - SPEAKER GRILL ENCLOSURES

| PART NUMBER                   | DIMENSIONS (INCHES)               |      |      |
|-------------------------------|-----------------------------------|------|------|
|                               | A                                 | B    | C    |
| WITH STANDARD BASE            |                                   |      |      |
| 184                           | 4.37                              | 3.25 | 1.50 |
| 187                           | 4.37                              | 3.25 | 2.00 |
| 191                           | 5.30                              | 4.00 | 1.50 |
| 194                           | 5.30                              | 4.00 | 2.00 |
| WITH BATTERY COMPARTMENT BASE |                                   |      |      |
| 188                           | 4.37                              | 3.25 | 2.00 |
| 192                           | 5.30                              | 4.00 | 1.50 |
| 195                           | 5.30                              | 4.00 | 2.00 |
| SPEAKER                       |                                   |      |      |
| 241                           | 2.5", 8 OHM, SQUARE MOUNT SPEAKER |      |      |

COLORS: WHITE, GRAY, BONE, BLACK



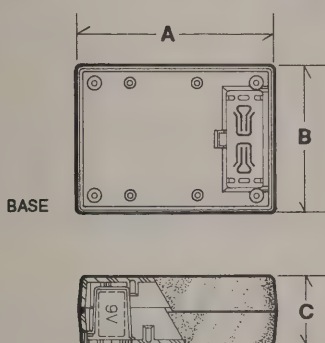
### Series 700

The Wall Mount base design permits easy mounting of the enclosure assembly to any flat surface. Internal details feature rear knock-out plugs for exiting of wires and cables.

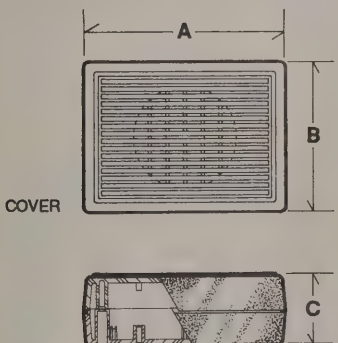
#### SERIES 700 - WALL MOUNT ENCLOSURES

| PART NUMBER              | DIMENSIONS (INCHES) |      |      |      |
|--------------------------|---------------------|------|------|------|
|                          | A                   | B    | C    | D    |
| 730                      | 4.37                | 3.25 | 1.25 | 5.63 |
| 733                      | 4.37                | 3.25 | 1.75 | 5.63 |
| WITH SPEAKER GRILL COVER |                     |      |      |      |
| 784                      | 4.37                | 3.25 | 1.25 | 5.63 |
| 787                      | 4.37                | 3.25 | 1.75 | 5.63 |

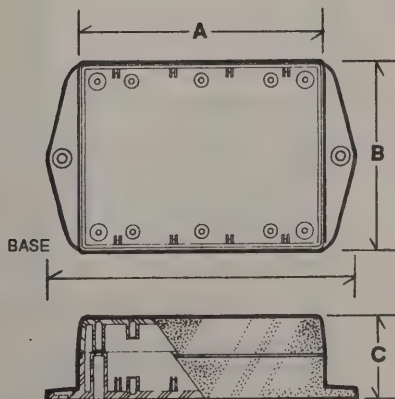
COLORS: WHITE, GRAY, BONE, BLACK



BASE



COVER

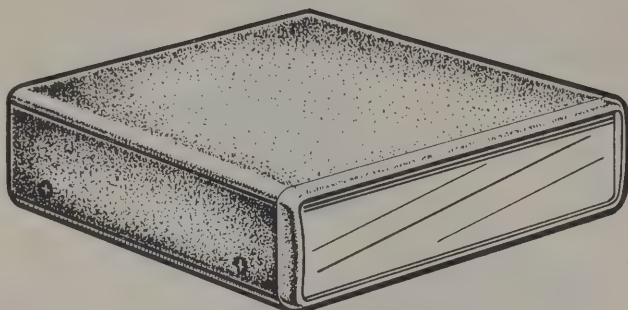


BASE




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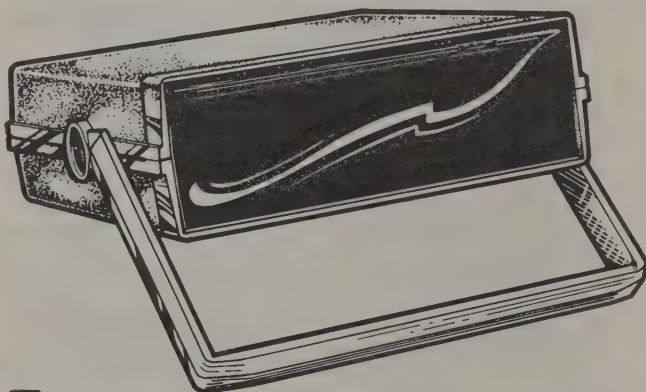
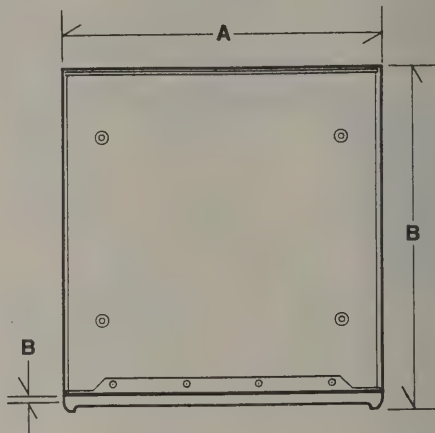
### Series 550

This Desktop Enclosure features a new designer styled removable front bezel and an optional aluminum rear panel. Rugged construction and exacting attention to detail reflect the quality of this enclosure. Low cost custom panels are available for fast delivery.

#### SERIES 550 - DESKTOP ENCLOSURES

| PART NUMBER | DESCRIPTION           | DIMENSIONS (INCHES) |       |      |
|-------------|-----------------------|---------------------|-------|------|
|             |                       | A                   | B     | C    |
| 550         | DESKTOP ENCLOSURE     | 9.50                | 10.20 | 2.50 |
| 551         | FRONT PANEL - PLASTIC | 9.50                | 0.09  | 2.50 |
| 554         | REAR PANEL - ALUMINUM | 9.33                | 0.09  | 2.33 |

COLORS: BONE ENCLOSURE WITH TAUPE BEZEL, BLACK WITH BLACK BEZEL  
 REAR PANEL: ALUMINUM



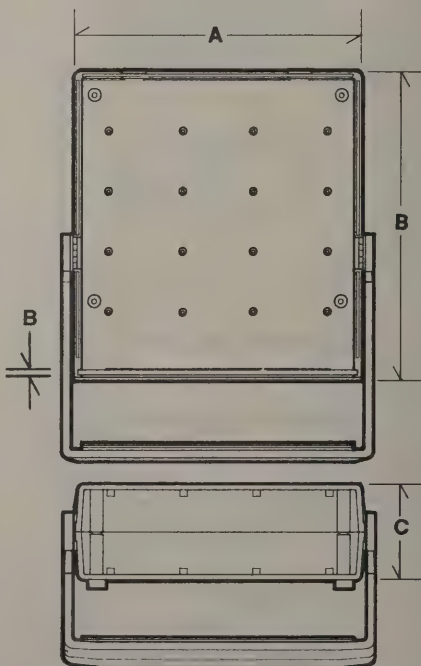
### Series 570

This Desktop Enclosure features a removable front panel and multi-position handle. Rugged construction and exacting attention to detail reflect the quality of the enclosure. Low cost custom panels are available for fast delivery.

#### SERIES 570 - DESKTOP ENCLOSURES

| PART NUMBER | DESCRIPTION            | DIMENSIONS (INCHES) |      |      |
|-------------|------------------------|---------------------|------|------|
|             |                        | A                   | B    | C    |
| 570         | DESKTOP WITH HANDLE    | 8.36                | 8.98 | 2.75 |
| 574         | FRONT PANEL - PLASTIC  | 8.08                | 0.09 | 2.50 |
| 575         | FRONT PANEL - ALUMINUM | 8.08                | 0.09 | 2.50 |

COLORS: BONE WITH TAUPE HANDLE, BLACK WITH BLACK HANDLE



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**WIDE VARIETY OF NON-CATALOG CONFIGURATIONS AVAILABLE**

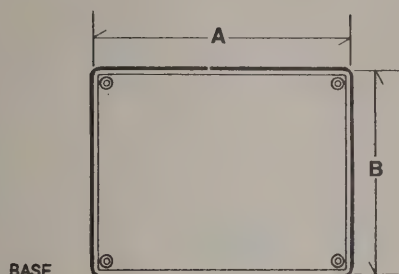


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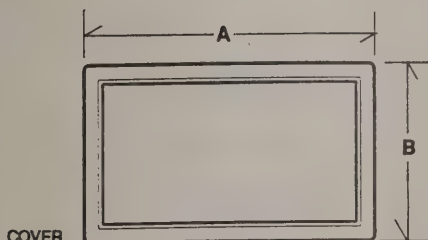


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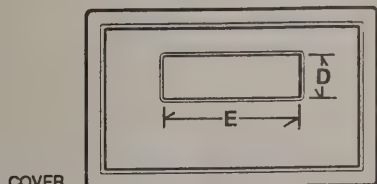
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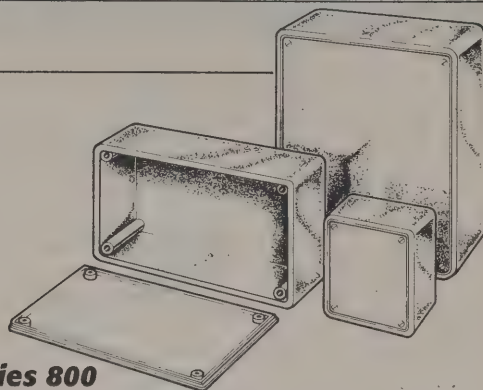
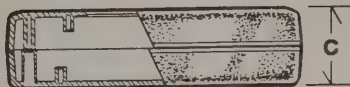
BASE



COVER



COVER



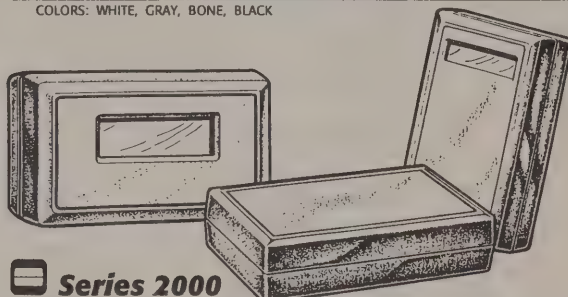
### Series 800

The Unibox Instrument Enclosures feature a flat top panel and a smooth exterior finish. The design permits easy machining and the top panel is well suited for installation of meters, readouts, and other controls.

#### SERIES 800 - INSTRUMENT ENCLOSURES

| PART NUMBER | DIMENSIONS (INCHES) |      |      |
|-------------|---------------------|------|------|
|             | A                   | B    | C    |
| 822         | 3.00                | 2.50 | 1.50 |
| 845         | 6.25                | 3.75 | 2.16 |
| 867         | 6.63                | 5.25 | 2.43 |

COLORS: WHITE, GRAY, BONE, BLACK



### Series 2000

The Proline Enclosures offer enhanced styling and durability. This series features rounded corners with a bevel edged cover for a customized look. This enclosure is available with or without a built-in window display suitable for the installation of LCD's and other readouts.

#### SERIES 2000 - PROLINE ENCLOSURES

| PART NUMBER         | DIMENSIONS (INCHES) |      |      |                 |      |
|---------------------|---------------------|------|------|-----------------|------|
|                     | ENCLOSURE           |      |      | VIEWING AREA    |      |
|                     | A                   | B    | C    | D               | E    |
| WITH STANDARD COVER |                     |      |      |                 |      |
| 2145                | 6.20                | 3.80 | 1.60 | X               | X    |
| WITH WINDOW DISPLAY |                     |      |      |                 |      |
| 2245-A              | 6.20                | 3.80 | 1.60 | .90             | 2.90 |
| 2245-B              | 6.20                | 3.80 | 1.60 | CONTACT FACTORY |      |

COLORS: WHITE, GRAY, BONE, BLACK

- Low Cost Molded-In Modifications
- CNC Machined Modifications
- CAD Based Mechanical Engineering
- Screen Printing / Hot Stamping
- Custom Colors & Materials
- Artwork Development & Graphic Overlays
- Turn-key Industrial Design

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### Custom Options & Services

When it's time to transform a standard enclosure into a finished product there are many decisions to be made. This is when the S&S Product Design Team can really help. Offering a broad scope of support services, they will explain the many options and provide examples of different techniques that may enhance your product's final appearance. Call today for more information.

**QUICK RESPONSE, ENGINEERING SUPPORT, & CUSTOM OPTIONS... 1-800-426-3739**



### RELATIVE QUANTITY SYMBOLS

|              |                            |
|--------------|----------------------------|
| $\neq$       | not equal to               |
| $\approx$    | approximately equal to     |
| $\propto$    | proportional to            |
| $<$          | smaller than               |
| $\leq$       | smaller than or equal to   |
| $\ll$        | much smaller than          |
| $>$          | larger than                |
| $\geq$       | larger than or equal to    |
| $\gg$        | much larger than           |
| $\equiv$     | identical to or equivalent |
| $\uparrow$   | increases                  |
| $\downarrow$ | decreases                  |

### PREFIXES FOR SI UNITS

| Multiple   | Prefix | Symbol |
|------------|--------|--------|
| $10^{12}$  | tera   | T      |
| $10^9$     | giga   | G      |
| $10^6$     | mega   | M      |
| $10^3$     | kilo   | k      |
| $10^{-3}$  | milli  | m      |
| $10^{-6}$  | micro  | $\mu$  |
| $10^{-9}$  | nano   | n      |
| $10^{-12}$ | pico   | p      |

| Quantity                    | Symbol                       | SI Unit                           | Symbol              | Derivation                      |
|-----------------------------|------------------------------|-----------------------------------|---------------------|---------------------------------|
| acceleration                | $a$                          | $\text{m s}^{-2}$                 | —                   | velocity/time                   |
| acceleration due to gravity | $g$                          | $\text{m s}^{-2}$                 | —                   | velocity/time                   |
| amount of substance         | $n$                          | mole                              | mol                 | mole fraction (n) used          |
| amplification factor        | $\mu$                        | <i>a ratio</i>                    | —                   | —                               |
| angle                       | $\theta_1, \phi_1, \alpha_1$ | —                                 | —                   | —                               |
| angle of incidence          | $i$                          | degree or radian                  | $^\circ$            | —                               |
| angle of refraction         | $r$                          | degree or radian                  | $^\circ$            | —                               |
| angle, Bragg                | $\theta$                     | number                            | —                   | —                               |
| angle, critical             | $c$                          | degree or radian                  | $^\circ$            | —                               |
| anode slope resistance      | $R_A$                        | ohm                               | $\Omega$            | $\Delta V_a / \Delta I_a$       |
| area                        | $A$                          | metres squared                    | $\text{m}^2$        | $l \times b$                    |
| atomic number               | $Z$                          | a number                          | —                   | number of protons               |
| Avogadro constant           | $L, N_A$                     | number                            | —                   | —                               |
| breadth                     | $b$                          | metre                             | m                   | fundamental unit                |
| capacitance                 | $C$                          | farad                             | F                   | charge/p.d.                     |
| charge, electric            | $Q$                          | coulomb                           | C                   | current $\times$ time           |
| charge on electron          | $e$                          | coulomb                           | C                   | $1.6 \times 10^{-19} \text{ C}$ |
| conductance                 | $G$                          | $\text{ohm}^{-1}$                 | $\Omega^{-1}$       | reciprocal of resistance        |
| current, electric           | $I$                          | ampere                            | A                   | fundamental unit                |
| decay constant              | $\lambda$                    | <i>a ratio</i>                    | —                   | —                               |
| density                     | $\rho$                       | $\text{kg m}^{-3}$                | —                   | $\text{m/V}$                    |
| distance along path         | $s$                          | metre                             | m                   | fundamental unit                |
| efficiency                  | $\eta$                       | <i>a ratio</i>                    | —                   | work output/work input          |
| electrochemical equiv.      | $z$                          | $\text{g C}^{-1}$                 | —                   | mass/charge                     |
| electromotive force         | $E$                          | volt                              | V                   | energy/charge                   |
| electron                    | $e$                          | —                                 | —                   | —                               |
| energy                      | $E$                          | joule                             | J                   | N m                             |
| energy, kinetic             | $E_k$                        | joule                             | J                   | N m. $E_k = 1/2 mv^2$           |
| energy, potential           | $E_p$                        | joule                             | J                   | N m. $E_p = mgh$                |
| Faraday constant            | $F$                          | coulomb $\text{mol}^{-1}$         | $\text{C mol}^{-1}$ | $96,500 \text{ C mol}^{-1}$     |
| field strength, electric    | $E$                          | $\text{V m}^{-1}$                 | —                   | potential gradient: p.d./dist.  |
| field-strength magnetic     | $H$                          | ampere-turns                      | —                   | current $\times$ no. of turns   |
| flux, magnetic              | $\Phi$                       | weber                             | Wb                  | e.m.f./rate of change of flux   |
| flux density                | $B$                          | tesla                             | T                   | flux/area                       |
| focal length                | $f$                          | metre                             | m                   | —                               |
| force                       | $F$                          | newton                            | N                   | $\text{kg m s}^{-2}$            |
| free energy                 | $\Delta G$                   | joule                             | J                   | —                               |
| frequency                   | $f$                          | hertz                             | Hz                  | oscillations/time               |
| gas constant                | $r$                          | joule                             | J                   | energy                          |
| half-life, radioactivity    | $t_{1/2}$                    | second                            | s                   | fundamental unit                |
| heat capacity               | $C$                          | $\text{J K}^{-1}$                 | —                   | quantity of heat/temp. rise     |
| heat of reaction            | $\Delta H$                   | joule                             | J                   | heat energy                     |
| heat capacity, specific     | $c$                          | $\text{J K}^{-1} \text{ kg}^{-1}$ | —                   | heat capacity/mass              |
| heat, quantity of           | $q$                          | joule                             | J                   | energy                          |



| Quantity                | Symbol             | SI Unit                 | Symbol             | Derivation                                 |
|-------------------------|--------------------|-------------------------|--------------------|--------------------------------------------|
| height                  | $h$                | metre                   | m                  | fundamental unit                           |
| image distance          | $v$                | metre                   | m                  | fundamental unit                           |
| inductance, mutual      | $M$                | henry                   | H                  | induced e.m.f./rate of change of current   |
| inductance, self        | $L$                | henry                   | H                  | —                                          |
| intensity of radiation  | $I$                | a number                | —                  | —                                          |
| latent heat             | $L$                | joule                   | J                  | quantity of heat                           |
| latent heat, specific   | $l$                | $\text{J kg}^{-1}$      | —                  | quantity of heat                           |
| latent heat, molar      | $L_m$              | $\text{joule mol}^{-1}$ | J                  | quantity of heat                           |
| length                  | $l$                | metre                   | m                  | fundamental unit                           |
| magnetizing force       | $H$                | ampere-turns            | —                  | —                                          |
| magnetic moment         | $m$                | Wb m                    | —                  | torque in unit magnetic field              |
| magnification, linear   | $m$                | a ratio                 | —                  | —                                          |
| mass                    | $m$                | kilogramme              | kg                 | fundamental unit                           |
| mass number             | $A$                | a number                | —                  | number of neutrons + protons               |
| molar volume            | $V_m$              | $(\text{dm}^3)$         | —                  | volume of 1 mole                           |
| molar solution          | $M$                | a ratio                 | —                  | $\text{moles/dm}^3$                        |
| moment of force         | —                  | N m                     | —                  | force $\times$ perp. distance              |
| neutron number          | $N$                | a number                | —                  | number of neutrons                         |
| number                  | $n$                | —                       | —                  | —                                          |
| number of molecules     | $N$                | —                       | —                  | —                                          |
| number turns on coil    | $n$                | a number                | —                  | —                                          |
| number order spectrum   | $p$                | a number                | —                  | —                                          |
| object distance         | $u$                | metre                   | m                  | fundamental unit                           |
| peak current            | $I_o$              | ampere                  | A                  | see current                                |
| peak e.m.f.             | $E_o$              | volt                    | V                  | see e.m.f.                                 |
| period                  | $T$                | second                  | s                  | fundamental unit                           |
| permeability            | $\mu$              | $\text{H m}^{-1}$       | —                  | henry/metre                                |
| permeability, vacuum    | $\mu_o$            | $\text{H m}^{-1}$       | —                  | —                                          |
| permeability, relative  | $\mu_r$            | a ratio                 | —                  | $\mu = \frac{\mu}{\mu_o}$                  |
| permittivity            | $\epsilon$         | $\text{F m}^{-1}$       | —                  | farad/metre                                |
| permittivity, vacuum    | $\epsilon_o$       | $\text{F m}^{-1}$       | —                  | farad/metre                                |
| permittivity, relative  | $\epsilon_r$       | a ratio                 | —                  | $\epsilon_r = \frac{\epsilon}{\epsilon_o}$ |
| potential, electric     | $V$                | volt                    | V                  | energy/charge                              |
| potential difference    | $V$                | volt                    | V                  | energy/charge                              |
| power                   | $P$                | watt                    | W                  | $\text{J s}^{-1}$                          |
| pressure                | $p$                | pascal                  | Pa                 | $\text{N m}^{-2}$ : force/area             |
| radius                  | $r$                | metre                   | m                  | fundamental unit                           |
| reactance               | $X$                | ohm                     | $\Omega$           | $E_o/I_o$                                  |
| refractive index        | $n$                | a ratio                 | —                  | —                                          |
| resistance              | $R$                | ohm                     | $\Omega$           | p.d./current                               |
| resistivity, electrical | $\rho$             | ohm-metre               | —                  | resistance $\times$ length                 |
| relative density        | $d$                | a ratio                 | —                  | $\rho_{\text{sub}}/\rho_{\text{water}}$    |
| r.m.s. current          | $I_{\text{r.m.s}}$ | ampere                  | A                  | see current                                |
| r.m.s. voltage          | $V_{\text{r.m.s}}$ | volt                    | V                  | see e.m.f.                                 |
| slit separation         | $s$                | metre                   | m                  | fundamental unit                           |
| tension                 | $T$                | newton                  | N                  | see force                                  |
| temperature, Celsius    | $\theta$           | degree C                | $^{\circ}\text{C}$ | from kelvin                                |
| temp. interval          | $\theta$           | degree                  | $^{\circ}$ or K    | —                                          |
| temp. absolute          | $T$                | kelvin                  | K                  | fundamental unit                           |
| thickness               | $d$                | metre                   | m                  | fundamental unit                           |
| time                    | $t$                | second                  | s                  | fundamental unit                           |
| torque                  | $T$                | Nm                      | —                  | see moment                                 |
| turns ratio             | $T$                | a ratio                 | —                  | $n_{\text{sec}}/n_{\text{prim}}$           |
| (unit of electricity)   | —                  | kW h                    | —                  | kilowatt $\times$ hour                     |
| velocity                | $u, v$             | $\text{ms}^{-1}$        | —                  | distance/time                              |
| velocity, angular       | $\omega$           | $\text{second}^{-1}$    | $\text{s}^{-1}$    | angle/time                                 |
| velocity, e.m.waves     | $c$                | $\text{m s}^{-1}$       | —                  | —                                          |
| velocity of sound       | $v$                | $\text{m s}^{-1}$       | —                  | —                                          |
| volume                  | $V$                | metre cubed             | $\text{m}^3$       | $l \times b \times h$                      |
| wavelength              | $\lambda$          | metre                   | m                  | fundamental unit                           |
| work                    | $w$                | joule                   | J                  | force $\times$ distance (Nm)               |
| weight                  | $W$                | newton                  | N                  | $\text{kg m s}^{-2}$ or $mg$               |

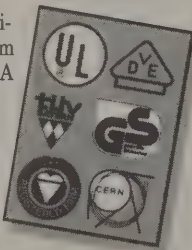




A complete line of cabinets that provide unequalled packaging flexibility and aesthetics.

**1. Engineered Cabinet Systems**

Schroff cabinets conform to ANSI/EIA standards, UL/VDE grounding requirements and IEC modularity specifications. Readily modified to your application.



...worldwide-Partners  
to the Electronics Industry

**SCHROFF, INC.**

170 Commerce Drive • Warwick, R.I. 02886

**2. Fully Assembled, In-stock**

All our standard cabinets can be shipped usually within 5 days.

**3. A Complete Range of Accessories**

- swing frames
- fan units
- telescopic slides
- shortened doors
- air conditioners
- mobile bases
- chassis shelves
- ... and more

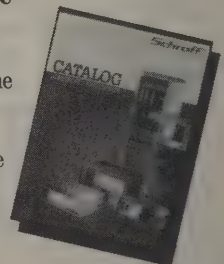


**4. Special NEMA, EMC and Network Cabinets**

Schroff has a wide range of sealed cabinets for industrial use, EMC cabinets for shielding and LAN cabinets specially designed for networking.

**5. Electronic Enclosures Catalog**

The complete line of Schroff cabinets, cases and subracks are featured with accessories.



**For your copy of our easy-to-order catalog,  
call toll-free 1-800-451-8755 or fax us at (401) 738-7988.**



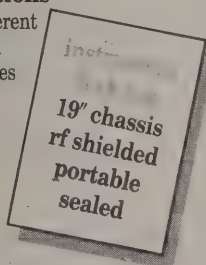
# Schroff

## An Unbeatable Case

A complete range of electronic cases  
unmatched for versatility and appearance.

### 1. A Full Line of Case Configurations

Over 100 different case sizes in a variety of styles for both desk-top and 19" rack-mountable applications. Most cases are readily adaptable to VMEbus and Multibus® II. Mounting dimension to EIA/IEC specifications.



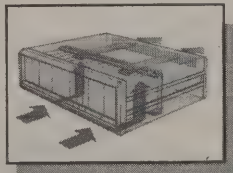
### 2. Immediate In-stock Availability

Standard cases are fully assembled and can be shipped usually within 5 days.



### 3. Designed for Maximum Versatility

Cases feature a self-supporting frame construction as well as excellent EMC shielding and heat dissipation characteristics.

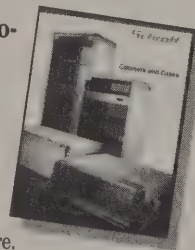


### 4. Full Range of Accessories

- acrylic doors
- tip-up handles
- built-in fans
- front panels
- hinged front doors
- tip-up feet
- ... and much more

### 5. Easy-to-order Catalog

Order your enclosure right over the phone with this new brochure.



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to the Electronics Industry

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For your copy of our easy-to-order catalog,  
call toll-free 1-800-451-8755 or fax us at (401) 738-7988.



**SERPAC™**  
Plastic Electronic Enclosures

| MODEL NO. | OUTSIDE DIMENSION |       |       |
|-----------|-------------------|-------|-------|
|           | A                 | B     | C     |
| 031       | 3.250             | 4.380 | .900  |
| 032       | 3.250             | 4.380 | 1.400 |
| 033       | 3.250             | 4.380 | 1.900 |
| 051       | 3.250             | 5.624 | .900  |
| 052       | 3.250             | 5.624 | 1.400 |
| 053       | 3.250             | 5.624 | 1.900 |
| 071       | 4.876             | 6.876 | .900  |
| 072       | 4.876             | 6.876 | 1.400 |
| 073       | 4.876             | 6.876 | 1.900 |
| 091       | 6.340             | 9.500 | .900  |
| 111       | 2.250             | 3.600 | 1.500 |
| 112       | 2.250             | 3.600 | 2.000 |
| 113       | 2.250             | 3.600 | 2.500 |
| 131       | 3.250             | 4.380 | 1.500 |
| 132       | 3.250             | 4.380 | 2.000 |
| 133       | 3.250             | 4.380 | 2.500 |
| 151       | 3.250             | 5.624 | 1.500 |
| 152       | 3.250             | 5.624 | 2.000 |
| 153       | 3.250             | 5.624 | 2.500 |
| 171       | 4.876             | 6.876 | 1.500 |
| 172       | 4.876             | 6.876 | 2.000 |
| 173       | 4.876             | 6.876 | 2.500 |
| 191       | 6.340             | 9.500 | 1.500 |

Technical drawing of a rectangular building layout. The drawing includes a plan view on the left and a side elevation on the right. The plan view shows a rectangular structure with a dashed line indicating an internal area labeled 'SV'. Dimensions are provided in meters (m) and centimeters (cm). The side elevation shows the building's profile with a central entrance and windows, with dimensions for height and width.

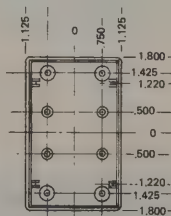
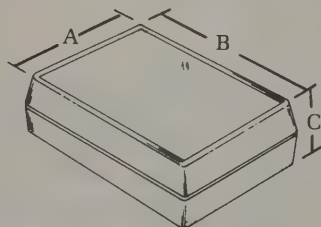
**Plan View Dimensions (Left):**

- Top edge: 2.438, 2.682, 2.438
- Right edge: 3.438, 3.028, 2.720, 2.250
- Bottom edge: 2.250, 2.720, 1.028, 2.438
- Internal dimensions: 2.250, 2.720, 1.028, 2.438
- Internal area: SV

**Side Elevation Dimensions (Right):**

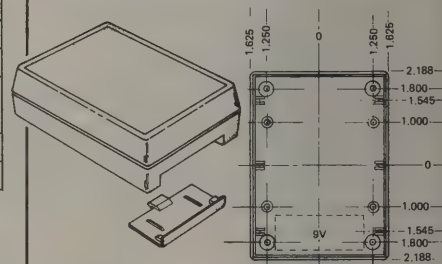
- Top edge: 2.80 d, 3.10, 3.20 d
- Bottom edge: 2.80 d, 3.10, 3.20 d
- Width: 7.90, 1.500

| MODEL NO. | OUTSIDE DIMENSION |       |       |
|-----------|-------------------|-------|-------|
|           | A                 | B     | C     |
| 211       | 2.600             | 4.100 | 1.500 |
| 231       | 3.250             | 4.380 | 1.500 |
| 232       | 3.250             | 4.380 | 2.000 |
| 233       | 3.250             | 4.380 | 2.500 |
| 251       | 3.250             | 5.624 | 1.500 |
| 252       | 3.250             | 5.624 | 2.000 |
| 253       | 3.250             | 5.624 | 2.500 |
| 271       | 4.876             | 6.876 | 1.500 |
| 272       | 4.876             | 6.876 | 2.000 |
| 273       | 4.876             | 6.876 | 2.500 |



| MODEL NO. | OUTSIDE DIMENSION |   |
|-----------|-------------------|---|
|           | A                 | B |

|         |       |       |       |
|---------|-------|-------|-------|
| 031-I   | 3.250 | 4.380 | .900  |
| 051-I   | 3.250 | 5.624 | .900  |
| 071-I   | 4.876 | 6.876 | .900  |
| 072-I   | 4.876 | 6.876 | 1.400 |
| 073-I   | 4.876 | 6.876 | 1.900 |
| 091-I   | 6.340 | 9.500 | .900  |
| 110-I   | 2.250 | 3.600 | .995  |
| 110-IPC | 2.250 | 3.600 | .995  |
| 131-I   | 3.250 | 4.380 | 1.500 |
| 151-I   | 3.250 | 5.624 | 1.500 |
| 171-I   | 4.876 | 6.876 | 1.500 |
| 172-I   | 4.876 | 6.876 | 2.000 |
| 173-I   | 4.876 | 6.876 | 2.500 |
| 191-I   | 6.340 | 9.500 | 1.500 |



| MODEL NO. | OUTSIDE DIMENSION |       |       |
|-----------|-------------------|-------|-------|
|           | A                 | B     | C     |
| 211-I     | 2.600             | 4.100 | 1.500 |
| 231-I     | 3.250             | 4.380 | 1.500 |
| 251-I     | 3.250             | 5.624 | 1.500 |
| 271-I     | 4.876             | 6.876 | 1.500 |
| 272-I     | 4.876             | 6.876 | 2.000 |
| 273-I     | 4.876             | 6.876 | 2.500 |

# SERCO

612 Commercial Ave., Covina, CA 91723

(818) 331-0517, or CA only (800) 843-8172

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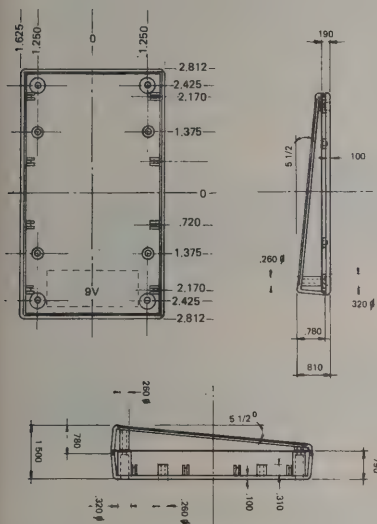
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# SERPAC<sup>TM</sup>

## Plastic Electronic Enclosures

### Standard Slant

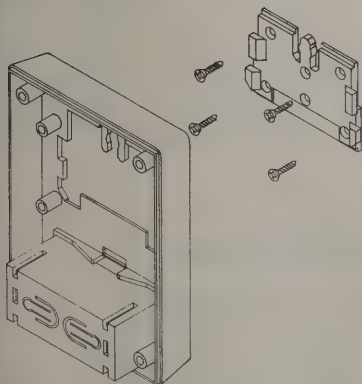


| MODEL NO. | A     | B     | C     | C'    |
|-----------|-------|-------|-------|-------|
| 05-S      | 3.250 | 5.624 | .900  | .368  |
| 15-S      | 3.250 | 5.624 | 1.500 | .968  |
| 07-S      | 4.876 | 6.876 | 1.880 | .900  |
| 17-S      | 4.876 | 6.876 | 2.480 | 1.500 |

### 9 Volt Slant

| MODEL NO. | A     | B     | C     | C'    |
|-----------|-------|-------|-------|-------|
| 25-S      | 3.250 | 5.624 | 1.500 | .968  |
| 27-S      | 4.876 | 6.876 | 2.480 | 1.500 |

### Wall Mount and Wall Mount With Insert



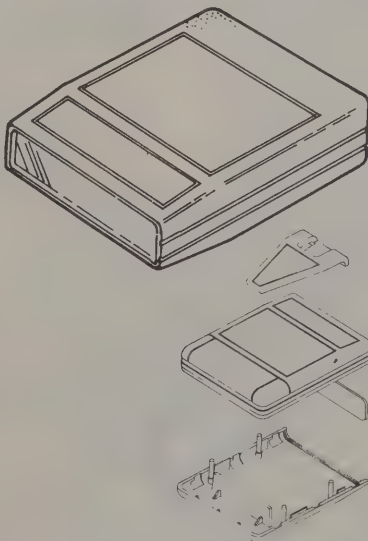
| MODEL NO. | A     | B     | C     | C'   |
|-----------|-------|-------|-------|------|
| 05-SW     | 3.250 | 5.624 | .900  | .368 |
| 15-SW     | 3.250 | 5.624 | 1.500 | .968 |
| 031-W     | 3.250 | 4.380 | .900  |      |
| 031-WI    | 3.250 | 4.380 | .900  |      |
| 032-W     | 3.250 | 4.380 | 1.400 |      |
| 033-W     | 3.250 | 4.380 | 1.900 |      |
| 051-W     | 3.250 | 5.624 | .900  |      |
| 051-WI    | 3.250 | 5.624 | .900  |      |
| 052-W     | 3.250 | 5.624 | 1.400 |      |
| 053-W     | 3.250 | 5.624 | 1.900 |      |

### 9 Volt Wall Mount and 9 Volt Wall Mount With Insert

| MODEL NO. | A     | B     | C     |
|-----------|-------|-------|-------|
| 231-W     | 3.250 | 4.380 | 1.500 |
| 231-WI    | 3.250 | 4.380 | 1.500 |
| 232-W     | 3.250 | 4.380 | 2.000 |
| 233-W     | 3.250 | 4.380 | 2.500 |
| 251-W     | 3.250 | 5.624 | 1.500 |
| 251-WI    | 3.250 | 5.624 | 1.500 |
| 252-W     | 3.250 | 5.624 | 2.000 |
| 253-W     | 3.250 | 5.624 | 2.500 |

### M-Series

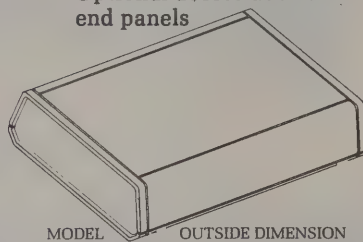
- Interlocking assembly
- Interchangeable front panel
- Battery area



| MODEL NO. | A     | B     | C    |
|-----------|-------|-------|------|
| M4        | 2.200 | 2.280 | .700 |
| M4-PC     | 2.200 | 2.280 | .700 |
| M6        | 2.400 | 4.150 | .850 |
| M6-PC     | 2.400 | 4.150 | .850 |
| M-8       | 2.400 | 6.974 | .860 |

### A Series

- Clam shell design
- Interchangeable end panels
- Insertable molded areas
- Optional access door on end panels



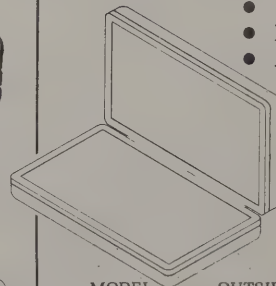
| MODEL NO. | A     | B     | C     |
|-----------|-------|-------|-------|
| A-20      | 2.600 | 4.250 | .875  |
| A-21      | 2.600 | 4.250 | 1.120 |
| A-27      | 3.350 | 5.300 | 1.500 |
| A-31      | 5.100 | 5.300 | 1.750 |
| A-41      | 5.000 | 7.100 | 1.300 |
| A-42      | 5.000 | 7.100 | 1.620 |

### 9 Volt A Series

| MODEL NO. | A     | B     | C     |
|-----------|-------|-------|-------|
| A-219V    | 2.600 | 4.250 | 1.120 |
| A-279V    | 3.350 | 5.300 | 1.500 |
| A-319V    | 5.100 | 5.300 | 1.750 |

### V Series

- Lexan<sup>TM</sup> outer shell
- Valox<sup>TM</sup> internal face plates
- Dual pivot hinge
- Snap lock
- End panel option
- Access internal face plate



| MODEL NO. | A     | B     | C     |
|-----------|-------|-------|-------|
| V-15      | 3.250 | 5.500 | 1.200 |

**SERCO**

PRODUCTS DIVISION

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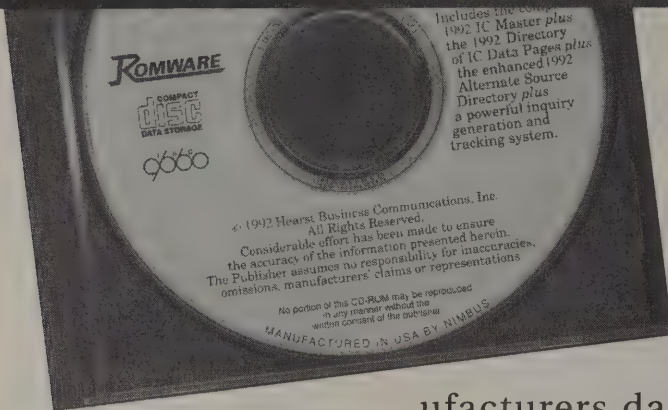
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# SHEET METAL BOXES

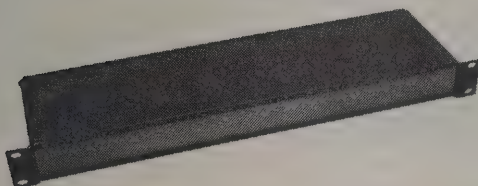
## FOR ENGINEERING PROTOTYPES AND SMALL PRODUCTION RUNS

### Construction Features:

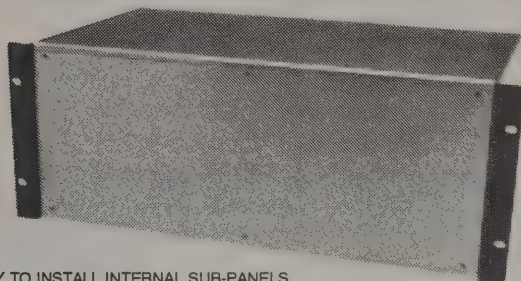
- All boxes shipped flat
- Panels pre-anodized
- Aluminum construction
- Low cost

### Four Types of Boxes Available

- Rack boxes — standard duty
- Rack boxes — heavy duty
- Metal cabinets
- Dual slope cabinets



FRONT AND REAR PANELS .063" CLEAR ALUMINUM  
TOP AND BOTTOM PANELS .063" BLACK ALUMINUM



EASY TO INSTALL INTERNAL SUB-PANELS  
FRONT AND REAR PANELS ARE CLEAR ALUMINUM  
TOP AND BOTTOM PANELS ARE BLACK ALUMINUM  
PANELS ARE .080" ALUMINUM AND ARE FIELD REMOVABLE

### RACK CHASSIS

| MODEL | DESCRIPTION    |                             |  | PRICE |
|-------|----------------|-----------------------------|--|-------|
|       | inches         | WIDTH x DEPTH x HEIGHT (mm) |  |       |
| 1RU5  | 19 x 5 x 1.7   | (482.6 x 127 x 44.45)       |  | 30.85 |
| 1RU7  | 19 x 7 x 1.7   | (482.6 x 177 x 44.45)       |  | 33.10 |
| 1RU10 | 19 x 10 x 1.7  | (482.6 x 254 x 44.45)       |  | 35.25 |
| 2RU5  | 19 x 5 x 3.35  | (482.6 x 127 x 88.9)        |  | 33.10 |
| 2RU7  | 19 x 7 x 3.35  | (482.6 x 177 x 88.9)        |  | 35.25 |
| 2RU10 | 19 x 10 x 3.35 | (482.6 x 254 x 88.9)        |  | 37.50 |
| 3RU5  | 19 x 5 x 5.2   | (482.6 x 127 x 133.35)      |  | 41.90 |
| 3RU7  | 19 x 7 x 5.2   | (482.6 x 177 x 133.35)      |  | 44.10 |
| 3RU10 | 19 x 10 x 5.2  | (482.6 x 254 x 133.35)      |  | 46.30 |

FRONT AND REAR PANELS ARE .063" CLEAR ALUMINUM  
TOP AND BOTTOM PANELS ARE .063" BLACK ALUMINUM

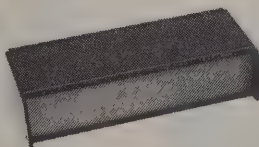
### HEAVY DUTY RACK CHASSIS

| MODEL      | DESCRIPTION   |                             |  | PRICE  |
|------------|---------------|-----------------------------|--|--------|
|            | inches        | WIDTH x DEPTH x HEIGHT (mm) |  |        |
| 3 RU 7 HD  | 19 x 7 x 5.2  | (482.6 x 177 x 133.35)      |  | 115.00 |
| 3 RU 10 HD | 19 x 10 x 5.2 | (482.6 x 254 x 133.35)      |  | 121.00 |
| 3 RU 14 HD | 19 x 14 x 5.2 | (482.6 x 355.6 x 177.8)     |  | 134.00 |
| 4 RU 7 HD  | 19 x 7 x 7.0  | (482.6 x 177 x 177.8)       |  | 121.00 |
| 4 RU 10 HD | 19 x 10 x 7.0 | (482.6 x 254 x 177.8)       |  | 129.00 |
| 4 RU 14 HD | 19 x 14 x 7.0 | (482.6 x 355.6 x 177.8)     |  | 134.00 |
| 5 RU 7 HD  | 19 x 7 x 8.7  | (482.6 x 177 x 222.25)      |  | 126.00 |
| 5 RU 10 HD | 19 x 10 x 8.7 | (482.6 x 254 x 222.25)      |  | 133.00 |
| 5 RU 14 HD | 19 x 14 x 8.7 | (482.6 x 355.6 x 222.25)    |  | 143.00 |

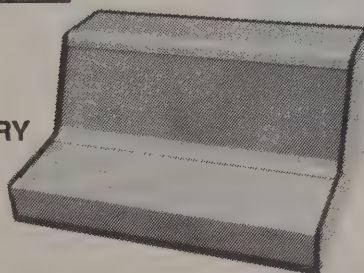
EASY TO INSTALL SUB-PANELS  
TOP AND BOTTOM PANELS .063" BLACK ALUMINUM  
FRONT AND SLOPE PANELS ARE .063" CLEAR ALUMINUM

### METAL CABINETS

| MODEL | DESCRIPTION |                             |  | PRICE |
|-------|-------------|-----------------------------|--|-------|
|       | inches      | WIDTH x DEPTH x HEIGHT (mm) |  |       |
| MC-1A | 4 x 3 x 2   | (101.6 x 76.2 x 50.8)       |  | 16.50 |
| MC-2A | 6 x 3 x 2   | (152.4 x 76.2 x 50.8)       |  | 18.75 |
| MC-3A | 8 x 3 x 2   | (203.2 x 76.2 x 50.8)       |  | 20.95 |
| MC-4A | 4 x 4 x 3   | (101.6 x 101.6 x 76.2)      |  | 18.75 |
| MC-5A | 6 x 4 x 3   | (152.4 x 101.6 x 76.2)      |  | 20.95 |
| MC-6A | 8 x 4 x 3   | (203.2 x 127 x 76.2)        |  | 23.15 |
| MC-7A | 4 x 7 x 4   | (101.6 x 177.8 x 101.6)     |  | 20.95 |
| MC-8A | 6 x 7 x 4   | (152.4 x 177.8 x 101.6)     |  | 23.15 |
| MC-9A | 8 x 7 x 4   | (203.2 x 177.8 x 101.6)     |  | 25.75 |



**ALL BOXES IN  
STOCK FOR  
IMMEDIATE DELIVERY**



### DUAL SLOPE METAL CABINETS

| MODEL | DESCRIPTION                         |                | PRICE  |
|-------|-------------------------------------|----------------|--------|
|       | MAJOR DIM.                          | SECONDARY DIM. |        |
|       | W x D x H x H1 x S1 x S2 x D1 (in.) |                | \$     |
| DS-1  | 4 x 6 x 4 x 1.2 x 1.9 x 2.4 x 1.6   |                | 59.00  |
| DS-2  | 6 x 6 x 4 x 1.2 x 1.9 x 2.4 x 1.6   |                | 63.25  |
| DS-3  | 8 x 6 x 4 x 1.2 x 1.9 x 2.4 x 1.6   |                | 67.50  |
| DS-4  | 10 x 6 x 4 x 1.2 x 1.9 x 2.4 x 1.6  |                | 71.50  |
| DS-5  | 12 x 6 x 4 x 1.2 x 1.9 x 2.4 x 1.6  |                | 76.00  |
| DS-6  | 18 x 6 x 4 x 1.2 x 1.9 x 2.4 x 1.6  |                | 81.00  |
| DS-7  | 4 x 8 x 6 x 2 x 3.1 x 3.5 x 1.9     |                | 69.00  |
| DS-8  | 6 x 8 x 6 x 2 x 3.1 x 3.5 x 1.9     |                | 73.00  |
| DS-9  | 8 x 8 x 6 x 2 x 3.1 x 3.5 x 1.9     |                | 78.00  |
| DS-10 | 10 x 8 x 6 x 2 x 3.1 x 3.5 x 1.9    |                | 82.75  |
| DS-11 | 12 x 8 x 6 x 2 x 3.1 x 3.5 x 1.9    |                | 87.75  |
| DS-12 | 18 x 8 x 6 x 2 x 3.1 x 3.5 x 1.9    |                | 100.75 |

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PRICES EFFECTIVE THROUGH 12-31-94

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## DRESS IT WITH A SIMCO HOUSING

The housing for an instrument or product is an integral part of its design, playing a key role in its looks, presentation, value and quality perception. It should compliment and enhance the product in every possible way.

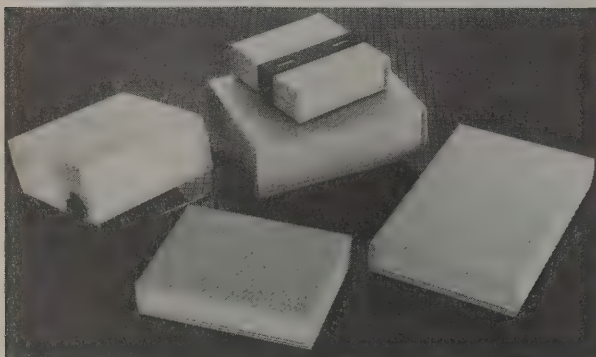
Success of a new or redesigned product depends not only on the purpose, function, and reliability of the product, but on the aesthetics as well. The enclosure that houses a product is its first (visual) introduction. That is why it's important to choose an enclosure that creates and projects the right image for both the product and the company it represents.

The beauty and durability of molded ABS are qualities that are appreciated by today's consumer. SIMCO enclosures are

manufactured using only the finest grades of material and are molded to strict specifications. Our enclosures are rugged, yet attractive. They can be found in many diverse applications, such as test, measurement, instrumentation, medical, communications and consumer markets to name a few.

In addition, SIMCO provides off-the-shelf inventory, short lead times, and on-time delivery. That is why more and more companies are using SIMCO enclosures. The prices are right. The quality is high. These advantages make SIMCO enclosures the smart and most logical choice for all your enclosure needs – from prototype to production.

### THE CHALLENGER SERIES



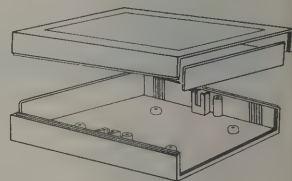
#### Features

- High Impact ABS Material
- Attractive Soft Suede Finish
- Molded-in card guides and mounting bosses
- Complete w/case screws and self adhesive rubber feet
- In-stock availability
- Colors: Black, Beige, Dark Grey and PC Bone Grey

The Challenger Series is ideal for most any portable instrument housing. Five popular sizes are offered in four standard colors, Black, Beige, Dark Grey and PC Bone Grey

#### Available Options

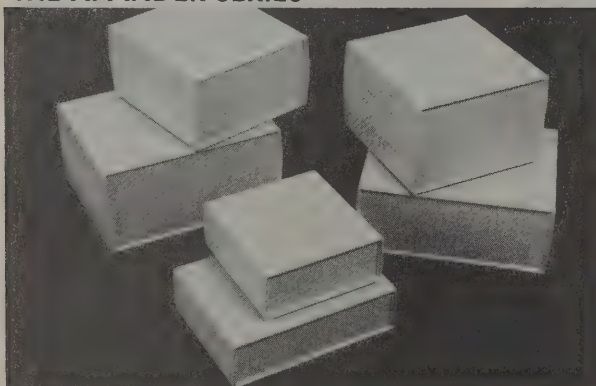
- Custom colors
- Flame retardant material, meets UL approval
- EMI/RFI shielding
- Custom designs
- Tilt stand/carrying handle
- Universal mounting brackets
- Front and rear panels



#### Enclosures

| Model Number | Outside Dimensions (Inches) |
|--------------|-----------------------------|
| 150X5        | 1.53H x 5.08W x 5.30D       |
| 150X75       | 1.53H x 7.06W x 5.30D       |
| 150X69       | 1.55H x 6.33W x 9.62D       |
| 250X6        | 2.52H x 6.12W x 6.32D       |
| 250X86       | 2.52H x 8.10W x 6.32D       |

### THE XPANDER SERIES



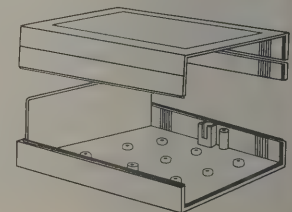
#### Features

- High Impact ABS Material
- Attractive Soft-suede finish
- Molded-in card guides & mounting bosses
- Complete with stainless steel case screws and rubber feet
- In-stock availability
- 4 Standard colors: Black, Beige, Dark Grey, PC Bone Grey

The Xpander Series is created using side xpander panels to increase the height of a standard enclosure. Available in six sizes.

#### Available Options

- Custom colors
- Flame retardant material, meets UL approval
- EMI/RFI shielding
- Custom designs
- Tilt stand/carrying handle
- Universal mounting brackets
- Front and rear panels



#### Enclosures

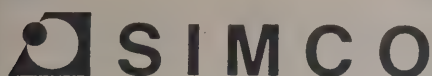
| Model Number | Outside Dimensions (Inches) |
|--------------|-----------------------------|
| 200XP5       | 2.04H x 5.08W x 5.30D       |
| 200XP75      | 2.04H x 7.06W x 5.30D       |
| 325XP6       | 3.30H x 6.12W x 6.32D       |
| 325XP86      | 3.30H x 8.10W x 6.32D       |
| 400XP6       | 4.04H x 6.12W x 6.32D       |
| 400XP86      | 4.04H x 8.10W x 6.32D       |

**STANDARD INJECTION MOLDING CO., INC./DBA SIMCO**

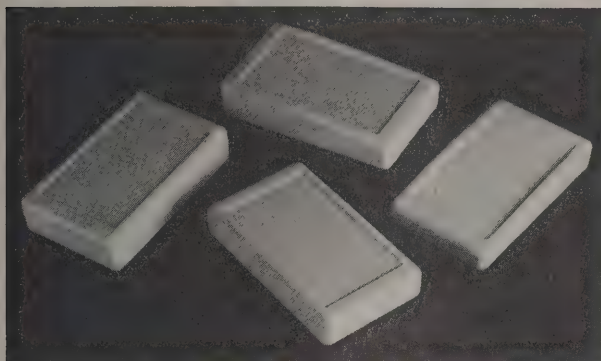
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TEL: (305) 233-9900 • FAX: (305) 233-1990 • 1-800-780-9090





## THE DISCOVERY SERIES



### Features

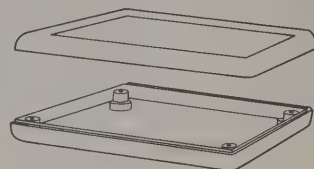
- High Impact ABS Material
- Attractive appearance
- Complete with stainless steel screws and self-adhesive transparent non-skid feet
- In-stock availability
- Easily machined
- Tops and bottoms interchange to create four distinctive styles
- Four standard colors: Black, Beige, Dark Grey, PC Bone Grey

Small hand-held enclosures in four distinctive styles. Choose from a plain utility top or graceful sloped top with or without 9-volt battery compartment

**Compact size 1.15 to 1.40H x 3.75W x 6.30L (inches)**

### Available Options

- Custom colors
- Flame retardant material, meets UL approval
- EMI/RFI shielding
- Low-cost tooling insert to customize tops or bottoms



**36SB** – A sloped top, plain bottom unit with sleek flowing lines. Perfect for products with high visibility.

**36S9VB** – Sloped top unit with molded-in 9 volt battery compartment. Has positive lock removable battery door.

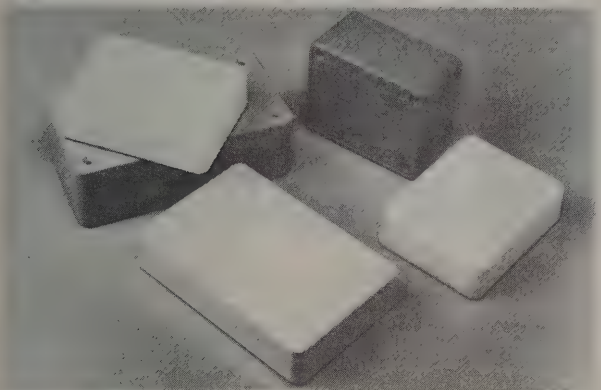
**36TB** – A plain top, plain bottom unit, well suited for general purpose applications.

**36T9VB** – Plain top unit with 9-volt battery compartment.

### Enclosures

| Model Number | Description                |
|--------------|----------------------------|
| 36SB         | Sloped Top, Plain Bottom   |
| 36S9VB       | Sloped Top, Battery Bottom |
| 36TB         | Plain Top, Plain Bottom    |
| 36T9VB       | Plain Top, Battery Bottom  |

## THE NEW SATURN SERIES



The smallest enclosures in the SIMCO line, these mini-boxes offer a practical, economical packaging solution for small electronic devices or circuitry.

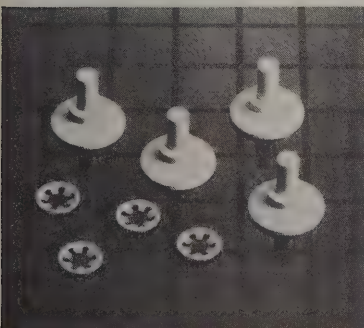
Molded tops and flat bottoms feature a smooth, matte finish and have internal provisions for PC board mounting.

Impact resistant ABS material and flame retardant to meet UL94V-O standards.

They are available in four standard colors: Black, Beige, Dark Grey, and PC Bone Grey.

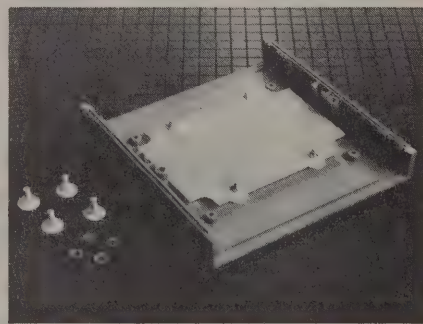
| Model Number | Outside Dimensions (Inches) |
|--------------|-----------------------------|
| 100X23       | 1.00H x 2.49W x 2.99D       |
| 100X25       | 1.00H x 2.50W x 5.00D       |
| 160X23       | 1.60H x 2.49W x 2.99D       |
| 160X25       | 1.60H x 2.50W x 5.00D       |

## UNIVERSAL MOUNTING BOSSSES



PC board mounting boss location need not be a concern with SIMCO's new Universal Mounting Bosses. Designed to bond securely to a ABS enclosure with MEK or other bonding agent, the bosses can be located wherever needed within an enclosure. The PC board is then held in place with easy to use push-on fasteners, or removable spring clips.

| Model Number | Description                                         |
|--------------|-----------------------------------------------------|
| PMB-125      | PC Board Mounting Bosses and Clips                  |
| PMB-125R     | PC Board Mounting Bosses and Removable Spring Clips |

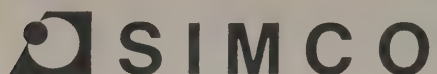


## STANDARD INJECTION MOLDING CO., INC./DBA SIMCO

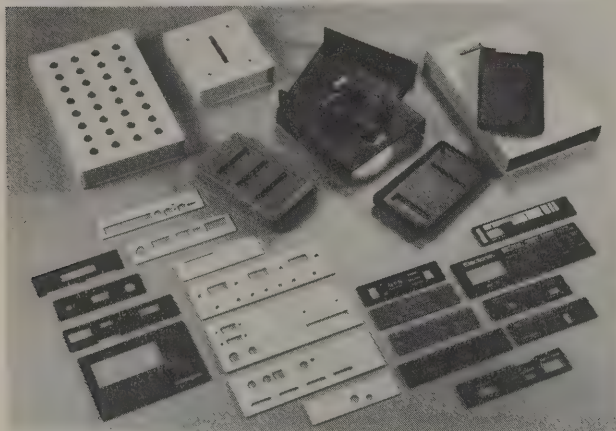
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## CUSTOM MACHINING & MOLDING

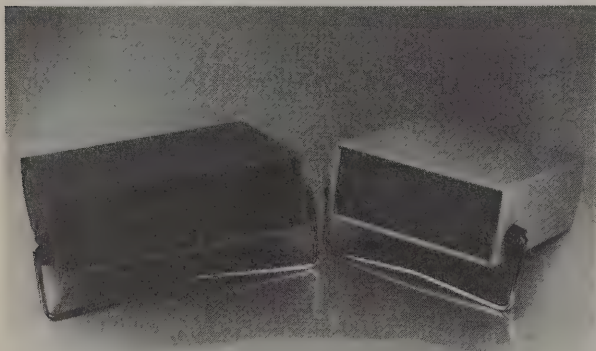


SIMCO enclosures and panels are easily machined or drilled. Do it yourself or let SIMCO quote your custom modifications. Work is done from your prints or to your specifications and with short lead times. Some SIMCO enclosures can be custom molded using our "insert" technique to create openings and assembly requirements where needed.

Front and rear panels can also be custom molded. A special, low-cost panel mold is constructed to your specifications. Silk-screening is also available through SIMCO.

Send us your drawing or print today and let SIMCO quote on your custom requirements.

## TILT STAND/HANDLE KIT



SIMCO's 3 locking position handle kits are attractive, yet functional.

### Features

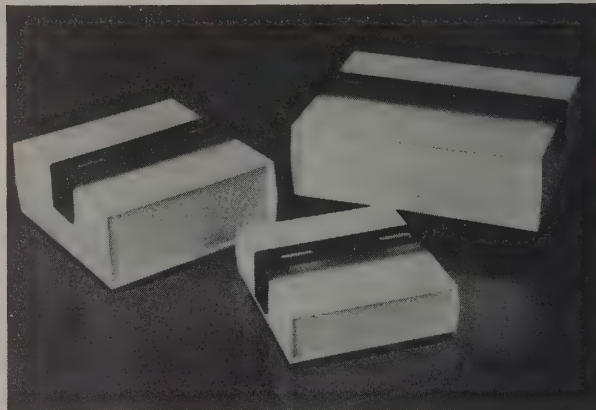
- Heavy-duty chrome plated steel
- Molded ABS side attachment buttons
- Provides easy viewing and accessibility to any benchtop instrument.
- Adds portability and folds out of the way when not in use.
- Easily installed and economically priced.
- Each kit includes mounting screws and over-size rubber feet.
- Low cost . . . Compare our prices.

#### Tilt/Stand Handle Kits

HK-6 - to fit 6" enclosure

HK-86 - to fit 8" enclosure

## MOUNTING BRACKETS



SIMCO's attractive mounting brackets install easily.

### Features

- Durable 16 gauge CRS 1010
- Polane, 2 part epoxy, black textured coating is long-wearing and attractive
- Adjustable height and tilt angle
- Versatile design allows bracket to be installed over or under the enclosure
- Includes 2 neoprene washers and 3/16-24 x 1/2" black machine screws
- Assembles easily. Molded-in nut pockets accept 3/16 nuts, also included
- Off-shelf availability. No costly tooling charges

#### Mounting Brackets

MBK-5 - to fit 5" enclosure

MBK-6 - to fit 6" enclosure

MBK-7 - to fit 7" enclosure

MBK-8 - to fit 8" enclosure

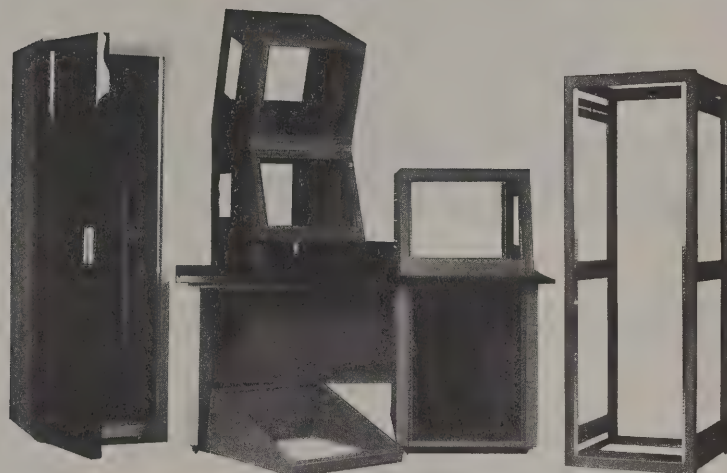
## STANDARD INJECTION MOLDING CO., INC./DBA SIMCO

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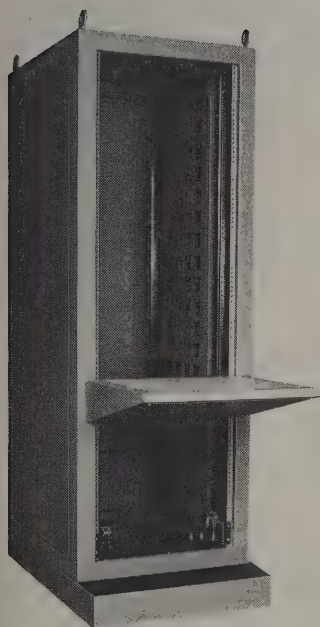
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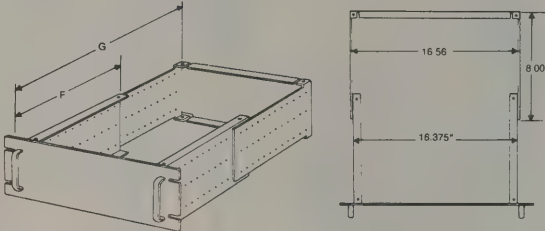


# THE STRONGBOX®

## E-SERIES EXTENSION KITS

E-Series depth Extension kits are user adjustable in 1/2" increments for intermediate and extended chassis depth. Thus any chassis depth from 9 1/2" to 26" is available off-the-shelf.

E-Series kits contain 2 Extension Side Panels and 2 Extension Perforated Covers.



## EXTENSION RANGE

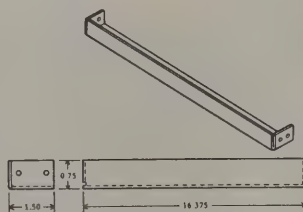
| Kit Number | F      | +E-Series = G   |
|------------|--------|-----------------|
| SB9-       | 9.50"  | 9.50" - 16.50"  |
| SB12-      | 12.00" | 12.00" - 19.00" |
| SB19-      | 19.00" | 19.00" - 26.00" |

## E-SERIES DEPTH EXTENSION KITS

| Extension Kit Number | Mates With |         |         | Price  |
|----------------------|------------|---------|---------|--------|
| E-3                  | SB9-3      | SB12-3  | SB19-3  | 137.00 |
| E-5                  | SB9-5      | SB12-5  | SB19-5  | 140.00 |
| E-7                  | SB9-7      | SB12-7  | SB19-7  | 143.50 |
| E-8                  | SB9-8      | SB12-8  | SB19-8  | 144.70 |
| E-10                 | (NONE)     | SB12-10 | SB19-10 | 159.10 |

Add dash "—SAC" to kit number to get Solid instead of Perforated covers (deduct \$20.00 from kit price). Add dash "—SAC 1" to kit number to get one, each, Solid and Perforated cover (deduct \$10.00 from kit price).

## MA-1.5 MOUNTING ANGLE



The Mounting Angle is used to attach card guides and other interior parts when a full-length, -height, or -width platform is not required or would impede the flow of cooling air. It also adds torsional stiffness to chassis used in extremely demanding environments.

Each heavy-duty MA-1.5 is made of 0.090"-thick, clear-iridized aluminum, and is supplied with captive attachment hardware. It is an "L"-shaped solid which mounts to pre-drilled chassis holes in any of four useful orientations.

Order SB9-, SB12-, and SB19-Series parts from this table. Parts in each column mate with others of the same depth.

| PARTS                   | KIT DEPTH | KIT DASH NUMBER |        |        |        |        |         |         |
|-------------------------|-----------|-----------------|--------|--------|--------|--------|---------|---------|
|                         |           | -1              | -3     | -5     | -7     | -8     | -10     | -12     |
| Handle                  | ALL       | (none)          | SBH-3  | SBH-5  | SBH-7  | SBH-8  | SBH-10  | SBH-12  |
| Front Panel             | ALL       | FP-1            | FP-3   | FP-5   | FP-7   | FP-8   | FP-10   | FP-12   |
| Interior Mounting Panel | ALL       | IMP-1           | IMP-3  | IMP-5  | IMP-7  | IMP-8  | IMP-10  | IMP-12  |
| Side Panel              | SP9-      | CHA9-1          | SP9-3  | SP9-5  | SP9-7  | SP9-8  | (none)  | (none)  |
|                         | SP12-     | CHA12-1         | SP12-3 | SP12-5 | SP12-7 | SP12-8 | SP12-10 | (none)  |
|                         | SB19-     | (none)          | SP19-3 | SP19-5 | SP19-7 | SP19-8 | SP19-10 | SP19-12 |
| Perforated Cover        | SB9-      | PAC-9           | PAC-9  | PAC-9  | PAC-9  | PAC-9  | (none)  | (none)  |
|                         | SB12-     | PAC-12          | PAC-12 | PAC-12 | PAC-12 | PAC-12 | PAC-12  | (none)  |
|                         | SB19-     | (none)          | PAC-19 | PAC-19 | PAC-19 | PAC-19 | PAC-19  | PAC-19  |
| Solid Cover             | SB9-      | SAC-9           | SAC-9  | SAC-9  | SAC-9  | SAC-9  | (none)  | (none)  |
|                         | SB12-     | SAC-12          | SAC-12 | SAC-12 | SAC-12 | SAC-12 | SAC-12  | (none)  |
|                         | SB19-     | (none)          | SAC-19 | SAC-19 | SAC-19 | SAC-19 | SAC-19  | SAC-19  |
| Bottom Mounting Plate   | SB9-      | (none)          | IMP-8  | IMP-8  | IMP-8  | IMP-8  | (none)  | (none)  |
|                         | SB12-     | (none)          | BMP-12 | BMP-12 | BMP-12 | BMP-12 | BMP-12  | (none)  |
|                         | SB19-     | (none)          | BMP-19 | BMP-19 | BMP-19 | BMP-19 | BMP-19  | BMP-19  |
| Heavy Cover Plate       | SB9-      | HCP-9           | HCP-9  | HCP-9  | HCP-9  | HCP-9  | (none)  | (none)  |
|                         | SB12-     | HCP-12          | HCP-12 | HCP-12 | HCP-12 | HCP-12 | HCP-12  | (none)  |
|                         | SB19-     | (none)          | HCP-19 | HCP-19 | HCP-19 | HCP-19 | HCP-19  | HCP-19  |
| Mounting Angle          | ALL       | MA-1.5          | MA-1.5 | MA-1.5 | MA-1.5 | MA-1.5 | MA-1.5  | MA-1.5  |
| Depth Extension Kit     | ALL       | (none)          | E-3    | E-5    | E-7    | E-8    | E-10    | (none)  |
| Slide Kit               | SB9       | SLD-9           | SLD-9  | SLD-9  | SLD-9  | SLD-9  | (none)  | (none)  |
|                         | SB12      | SLD-12          | SLD-12 | SLD-12 | SLD-12 | SLD-12 | SLD-12  | (none)  |
|                         | SB19      | (none)          | SLD-19 | SLD-19 | SLD-19 | SLD-19 | SLD-19  | SLD-19  |

## RACK-MOUNT CHASSIS KITS AND PRICE LIST

| Kit Dash Number | Number of Rack Units | Front Panel Height | Price  |        |        |
|-----------------|----------------------|--------------------|--------|--------|--------|
|                 |                      |                    | SB9-   | SB12-  | SB19-  |
| -1              | 1                    | 1.72               | 106.00 | 111.00 | (none) |
| -3              | 2                    | 3.47               | 220.00 | 226.00 | 235.00 |
| -5              | 3                    | 5.22               | 226.50 | 232.50 | 241.50 |
| -7              | 4                    | 6.97               | 238.00 | 240.50 | 249.50 |
| -8              | 5                    | 8.72               | 245.50 | 246.50 | 256.00 |
| -10             | 6                    | 10.47              | (none) | 303.50 | 311.00 |
| -12             | 7                    | 12.22              | (none) | (none) | 320.00 |

Add dash "—SAC" to kit number to get Solid instead of Perforated covers (deduct \$20.00 from kit price). Add dash "—SAC 1" to kit number to get one, each Solid and Perforated cover (deduct \$10.00 from kit price).

Detailed drawings available on request. Other sizes available; call for quote.

Prices subject to change.

Order Bottom Mounting Plates, Slides and additional Interior Mounting Panels as separate items.

# STRONGBOX®

P.O. Box 2726, Culver City, CA 90231  
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# THE STRONGBOX® HEAVY-DUTY RACK-MOUNT CHASSIS

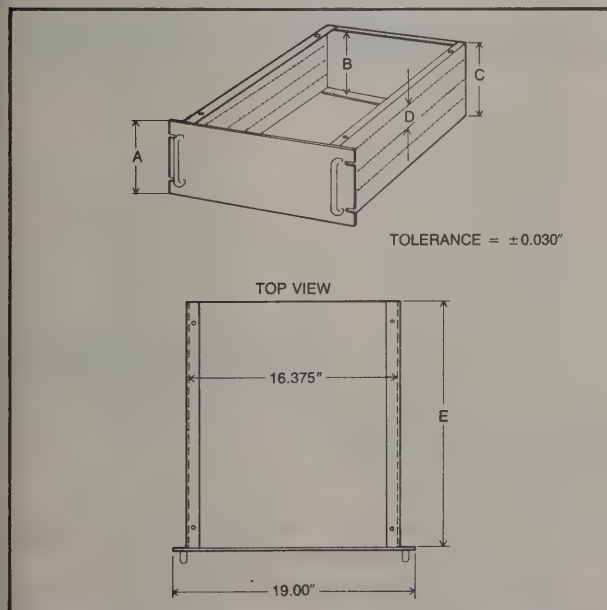
## SB9-, SB12-, SB19-SERIES

Seven EIA Front Panel heights: 1 $\frac{3}{4}$ ", 3 $\frac{1}{2}$ ", 5 $\frac{1}{4}$ ", 7", 8 $\frac{3}{4}$ ", 10 $\frac{1}{4}$ ", and 12 $\frac{1}{2}$ " (1, 3, 5, 7, 8, 10, 12 nominal).

Three-standard depths: 9 $\frac{1}{2}$ " (SB9-Series), 12" (SB12-Series), and 19" (SB19-Series).

Components can be ordered as complete kits or by the part. See kit and parts table. Kits and parts come with all required captive machine hardware. Front, Side, and Mounting Panels are clear iridized. Covers and handles are clear anodized. All surfaces are satin grained.

Each kit (except SB9-1 and SB12-1) contains 1 Front Panel, 2 Handles, 2 Side Panels, 2 Perforated Covers, and 1 Interior Mounting Panel.



## SPECIFICATIONS

### PARTS

FRONT PANEL — 0.125" thick, 19.00" wide. 6061-T6 aluminum. EIA notched.

SIDE PANEL — 0.090" thick, 5052-H32 aluminum. Three rows of holes on  $\frac{1}{2}$ " centers for mounting panels, card cages, etc.

INTERIOR MOUNTING PANEL — 0.090" thick, 16.37" wide. 5052-H32 aluminum. For use as a rear panel or vertical or horizontal mounting panel.

PERFORATED ALUMINUM COVER — 0.063" thick. 16.85" wide. 3003 aluminum. Assembles with four screws and captive stainless steel nuts.

STRONGBOX® HANDLE — Standard aluminum handle.

### ACCESSORIES

BOTTOM MOUNTING PLATE — 0.090" thick, 16.37" wide. 5052-H32 aluminum. For mounting heavy components. Clear iridite finish.

SOLID BEARING SLIDE — .38" thick. Cad plated steel. Adjustable brackets for assembling to EIA tapped-rail.

SOLID ALUMINUM COVER — 0.063" thick, 16.85" wide. 5052-H32 aluminum. Clear anodize finish.

HEAVY COVER PLATE — 0.090" thick, 16.88" wide. 5052-H32 aluminum. For mounting heavy components flush with chassis bottom. Clear iridite finish.

Detailed drawings available on request. Other sizes available; call for quote.

### DIMENSIONS

| Kit Number | A     | B     | C     | D    | E     |
|------------|-------|-------|-------|------|-------|
| SB9-1      | 1.72  | 1.22  | 1.40  | 0.50 | 9.50  |
| SB9-3      | 3.47  | 2.91  | 3.15  | 0.75 | 9.50  |
| SB9-5      | 5.22  | 4.66  | 4.90  | 1.50 | 9.50  |
| SB9-7      | 6.97  | 6.41  | 6.65  | 2.00 | 9.50  |
| SB9-8      | 8.72  | 8.16  | 8.40  | 3.00 | 9.50  |
| SB12-1     | 1.72  | 1.22  | 1.40  | 0.50 | 12.00 |
| SB12-3     | 3.47  | 2.91  | 3.15  | 0.75 | 12.00 |
| SB12-5     | 5.22  | 4.66  | 4.90  | 1.50 | 12.00 |
| SB12-7     | 6.97  | 6.41  | 6.65  | 2.00 | 12.00 |
| SB12-8     | 8.72  | 8.16  | 8.40  | 3.00 | 12.00 |
| SB12-10    | 10.47 | 9.91  | 10.15 | 3.50 | 12.00 |
| SB19-3     | 3.47  | 2.91  | 3.15  | 0.75 | 19.00 |
| SB19-5     | 5.22  | 4.66  | 4.90  | 1.50 | 19.00 |
| SB19-7     | 6.97  | 6.41  | 6.65  | 2.00 | 19.00 |
| SB19-8     | 8.72  | 8.16  | 8.40  | 3.00 | 19.00 |
| SB19-10    | 10.47 | 9.91  | 10.15 | 3.50 | 19.00 |
| SB19-12    | 12.22 | 11.66 | 11.90 | 4.00 | 19.00 |

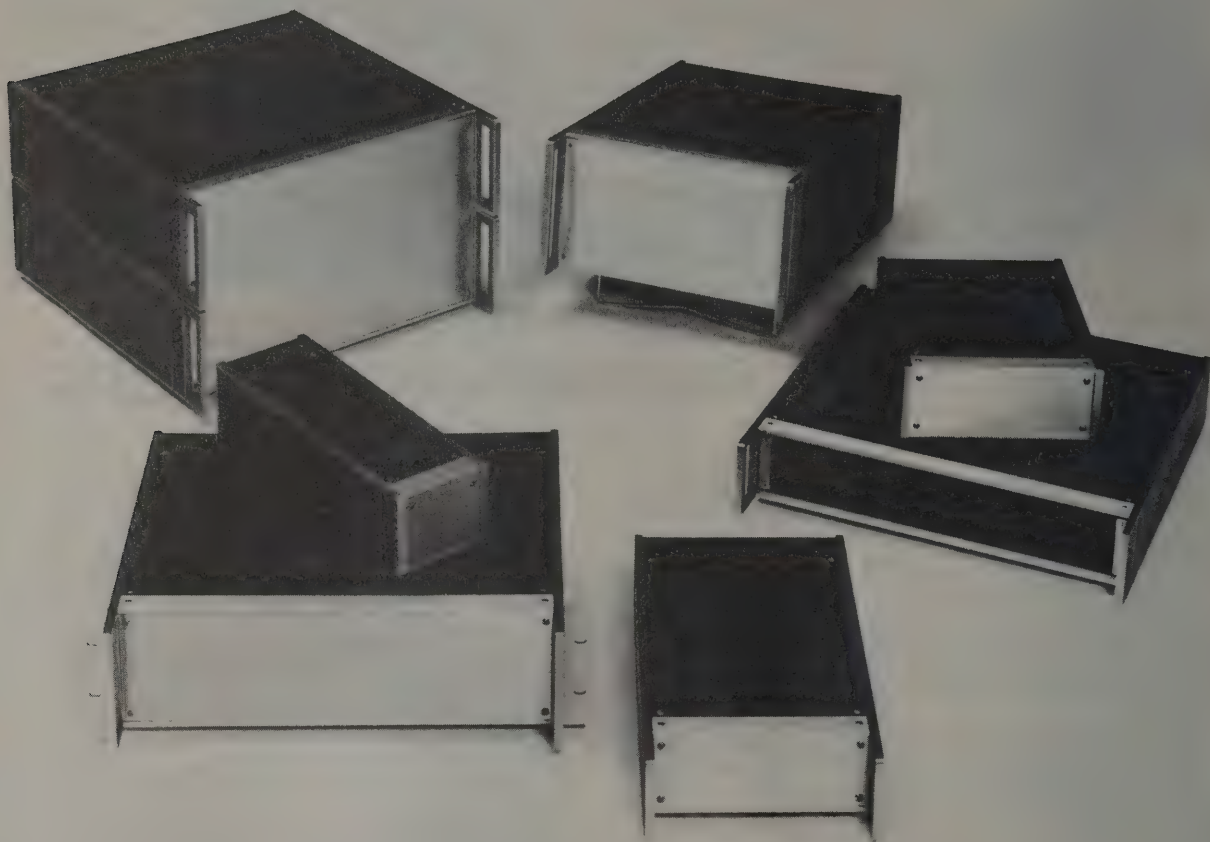
# STRONGBOX®

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# TDJ Company, Inc. Instrument Enclosures



**Available With or Without  
Handles**

**Easily Assembled**

**Sliding Top and Bottom  
Covers for Maximum  
Accessibility**

**Convenient Side Frame  
Mounting Hole Pattern**

**Will Accept Your Custom  
Removable Front and Rear  
Panels**

**Standard Colors-Black, Blue,  
Brown, Grey and Off-White**

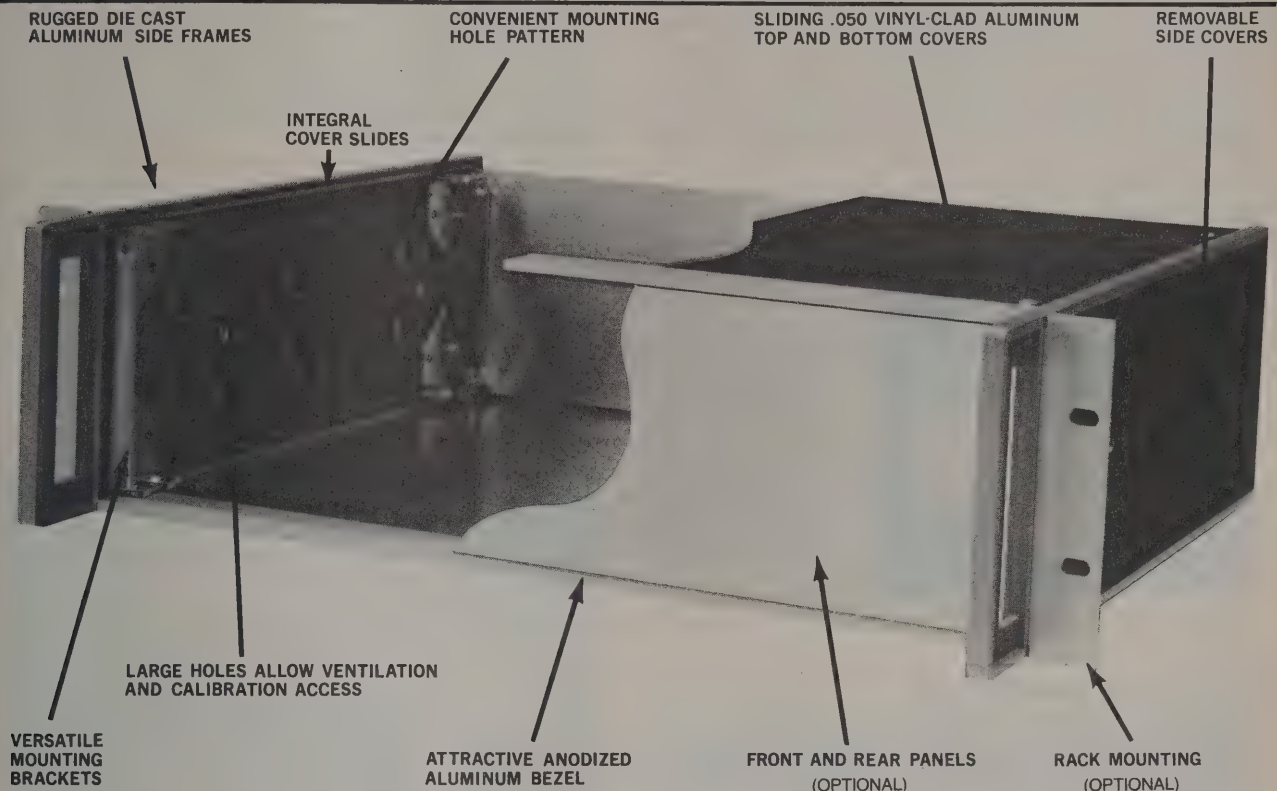
## **Modular Instrument Enclosures**

The BETA-LINE Series of Modular Instrument Enclosures offer the ultimate in quality and versatility and provide an extensive range of standard packaging dimensions. This flexible component approach offers a custom-designed appearance that permits expansion of a product line while maintaining the continuity of a design standard. The rugged die cast aluminum side frames are uniquely engineered to provide strength and durability and the top and bottom as well as the side covers are easily removed for quick internal access. The finished side frames and vinyl clad aluminum covers combine to produce a superbly crafted enclosure. Standard vinyl colors include black, blue, brown, grey and off white. A full complement of optional accessories include instrument bails, rack mounting kits, rack mounting slides and aluminum front or rear panels. A retractable instrument bail is available for bench mounting applications.

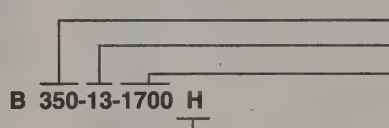


# TDJ Company, Inc.

## Instrument Enclosures



Model number is determined by outside dimensions of enclosure. Example for Model **B-350-13-1700** is:



3.5 inches High  
13.0 inches Deep  
17.0 inches Wide

Add "H" to Model No. to indicate "With Handle"

| 3.5 Inch Height                                                                                                                                                                                                                      | 5.25 Inch Height                                                                                                                                                                                                                               | 7 Inch Height                                                                                                                                                                    | 8.75 Inch Height                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B-350-13-1700H<br>B-350-13-1275<br>B-350-13-0850<br>B-350-13-0425<br>B-350-15-1700H<br>B-350-15-1275<br>B-350-15-0850<br>B-350-15-0425<br>B-350-17-1700H<br>B-350-17-1275<br>B-350-17-0850                                           | B-525-13-1700H<br>B-525-13-1275<br>B-525-13-0850<br>B-525-13-0425<br>B-525-15-1700H<br>B-525-15-1275<br>B-525-15-0850<br>B-525-15-0425<br>B-525-17-1700H<br>B-525-17-1275<br>B-525-17-0850<br>B-525-21-1700H<br>B-525-21-1275<br>B-525-21-0850 | B-S700-13-1700H<br>B-S700-13-1275<br>B-S700-13-0850<br>B-S700-13-0425<br>B-S700-15-1700H<br>B-S700-15-1275<br>B-S700-15-0850<br>B-700-17-1700H<br>B-700-17-1275<br>B-700-17-0850 | B-S875-13-1700H<br>B-S875-13-1275<br>B-S875-13-0850<br>B-S875-15-1700H<br>B-S875-15-1275<br>B-S875-15-0850<br>B-S875-17-1700H<br>B-S875-17-1275<br>B-S875-17-0850 |
| 10.5 Inch Height                                                                                                                                                                                                                     | 12.25 Inch Height                                                                                                                                                                                                                              | 14 Inch Height                                                                                                                                                                   | 15.75 Inch Height                                                                                                                                                 |
| B-S1050-13-1700H<br>B-S1050-13-1275<br>B-S1050-13-0850<br>B-S1050-15-1700H<br>B-S1050-15-1275<br>B-S1050-15-0850<br>B-S1050-17-1700H<br>B-S1050-17-1275<br>B-S1050-17-0850<br>B-S1050-21-1700H<br>B-S1050-21-1275<br>B-S1050-21-0850 | B-S1225-13-1700H<br>B-S1225-13-1275<br>B-S1225-13-0850<br>B-S1225-15-1700H<br>B-S1225-15-1275<br>B-S1225-15-0850<br>B-S1225-17-1700H<br>B-S1225-17-1275<br>B-S1225-17-0850                                                                     | B-S1400-13-1700H<br>B-S1400-13-1275<br>B-S1400-13-0850<br>B-S1400-15-1700H<br>B-S1400-15-1275<br>B-S1400-15-0850<br>B-S1400-17-1700H<br>B-S1400-17-1275<br>B-S1400-17-0850       | B-S1575-17-1700<br>B-S1575-17-1275<br>B-S1575-17-0850<br>B-S1575-21-1700<br>B-S1575-21-1275<br>B-S1575-21-0850                                                    |

TDJ COMPANY INC. 1154 Morena Boulevard San Diego, CA 92110 (619) 276-5920 FAX (619) 276-5960 Toll Free Number: 1-800-241-5920



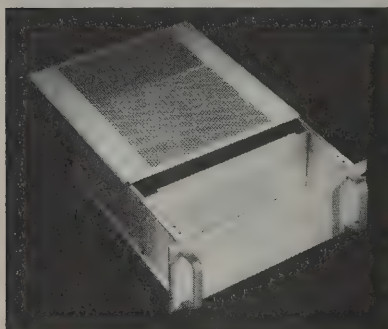
## SRK/CRK series

### Seven-eighths-spacing Rack-mounting Kits

Stocked for one-day shipping in your choice of 28 combinations of seven heights and four front-to-back depths, and with  $7/8$ " vertical and  $1/2$ " horizontal hole pattern, this SRK/CRK line of chassis drawers can be assembled in a vast variety of configurations without special hole drilling or punching. Double bends in side

frame flanges & heavy-duty aluminum materials make them extra sturdy. Order today, and they're on their way to you tomorrow! Phone toll-free number below and request your free full-color SRK/CRK catalog, which includes slides, card cages and many other mounting accessories.

### SRK Kits and Parts



A basic SRK kit is ordered by adding dash numbers for any of seven heights and four depths. The kit will consist of one FP Front Panel; two OSH Oval-Section Handles, [clear or black anodized]; two SF-SE Side Frames with Seven-eighths-inch [vert-spacing] hole pattern; two HMP Heavy-duty Mounting Panels [one for use as a rear panel, the other as an internal mounting panel];

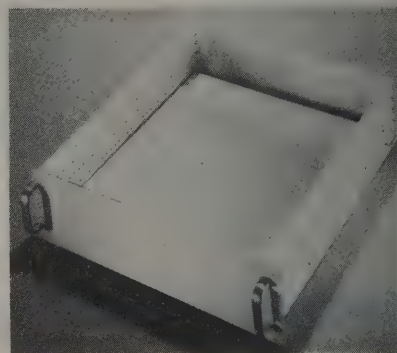
two PANC Perforated Aluminum Non-sliding Covers [top/bottom]; and all assembly hardware. Drop down front panels, card cages, full-bottom plates & thousands of other variations of parts and accessories can be ordered by adding dash numbers; or for even wider varieties & more combinations, order by individual part numbers from our complete inventory.

### CRK Kits and Parts

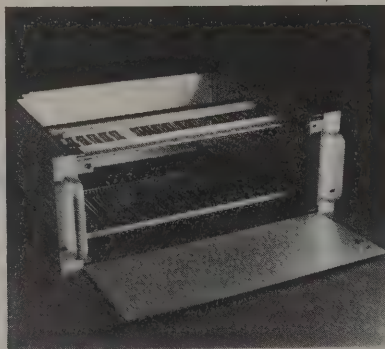
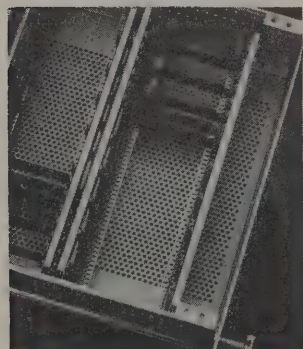
A basic CRK kit consists of one FP Front Panel, which like the SRK line is notched for assembling to tapped rails of rack; two OSH Oval Section Handles, clear anodized; two SF-SE Side Frames with Seven-eighths vert-spaced hole pattern; one HMP Heavy-Duty Mounting Panel [for use as rear panel]; one FBP Full-Bottom Plate for use as a chassis base, and cap-

tive nuts [pre-installed]. All parts except handles and covers are clear-chem-filmed [clear iridized]. All assembly hardware included.

As with the SRK line, thousands of options can be ordered by the use of dash numbers. For example, use kit number CRK-8H-15D to obtain the kit for the assembly shown at right.



### QCC Card Cage Kits and Parts



One of the most popular series of auxiliary parts of the SRK/CRK line are these QCC Quarter-inch Card Cage kits & parts with .25-inch pitch. They include connector rails which will accommodate almost any card connectors & backplanes, guide frames and snap-in card guides in your choice of three guide lengths: 3.15", 4.65" and 6.15". They assemble for front, back, top or bottom loading. Because the assembly method permits much variability, a large selection of card lengths and widths can be accommodated.

**Techmar Corporation, 4150-A Glencoe Avenue, Marina Del Rey, CA 90292**  
**Phone (310) 827-8897, 800-TECHMAR (832-4627), FAX No. 310-827-2572**

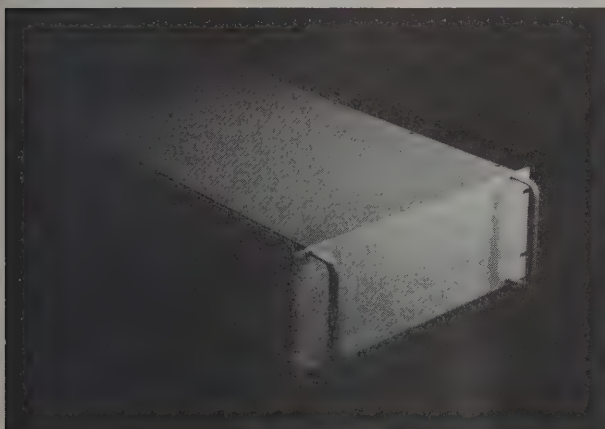


## BKCD series BasiKit Chassis Drawer

**We Are Proud to Introduce** the most recent member of the Techmar family of product lines: the BasiKit Chassis Drawer. This new enclosure line is the result of feedback from our customers, who have asked us to design a simpler and more economical packaging system. The BasiKit is just that, and more...it offers the same quality of design and materials, ease of assembly, strength and flexibility as all of our other products. And it is even less expensive, because we designed it to be exactly what it implies: BASIC. These sturdy aluminum kits include the standard EIA-notched, .125" thick horizontal-grained front panel; two side panels available from stock with or without rows of assembly holes, so you can either drill your own right

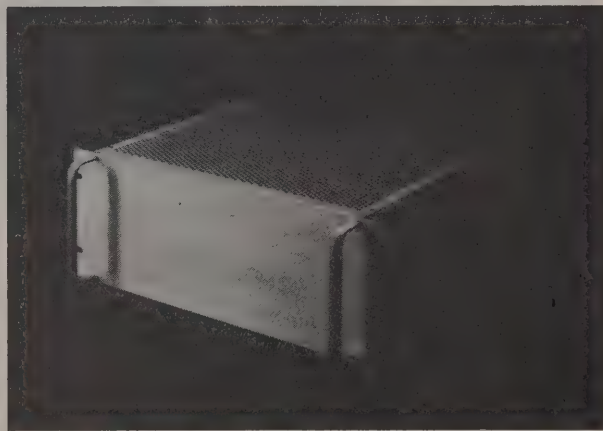
where you want them or utilize our pre-punched hole pattern; a rear panel of .090 thick heavy-duty alu-malloy, with no flanges (for easy machining) and with six mounting holes for assembly to side panels and covers for added stability; top and bottom covers are .063 thick alu-malloy, available from stock with or without an all-over perforated hole pattern—the solid cover is less expensive, and many customers prefer to punch their own slots or holes in the areas where cooling is needed. Extra sturdy .090 CHASSIS BASES (solid alu-malloy bottom plates) also available from stock. Each kit includes two satin-grained oval-section handles, finished in either clear or black anodize; they are cost-effective, functional and attractive. All kits and parts include assembly hardware.

**15 Combinations In Stock for Same or Next Day Shipping:** 3, 5, 7, 8 & 10" nom. heights; 12, 18 & 24" nom. depths.

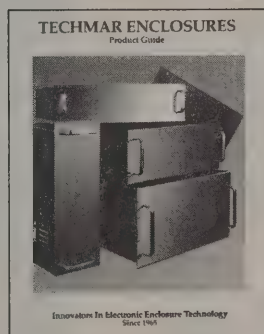


Kit shown above: **BK-7H-18D** with solid side panels (no assy. hole rows), solid top/bottom covers (no perforations), standard EIA front panel, heavy-duty rear panel (no flanges), & clear-anodized oval-section handles.

Kit shown at right: **BK-8H-24D-WHR-2PC** With Hole Rows in side panels, and Two Perforated Covers.



Or you may choose to **ORDER A LA CARTE** BY INDIVIDUAL PART NUMBERS for an even wider range of designs and configurations.



# TECHMAR

For catalog & applications assistance: 1-800-TECHMAR

FAX

310-827-2572



## VCD series

### Variable Chassis Drawer

**V for VARIABLE:** VCDs can be assembled into even more thousands of configurations than any of Techmar's previous widely used enclosure lines.

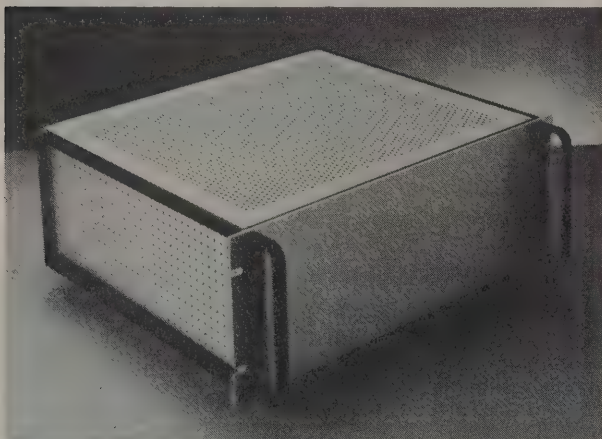
**CD for CHASSIS DRAWERS:** VCDs are for assembly in EIA racks and rack cabinets. Among many new design improvements:

- Assembly-hole pattern is on  $7/16$ " centers both vertically and horizontally,  $1/4$  of the EIA height increment.

**FOR YOUR CONVENIENCE:** This 90-degree symmetry allows you to mount card cages for front, rear, top or bottom loading, without having to drill special holes, while retaining Techmar's long-time previous hole pattern's advantage of regularizing the locatability of internal parts relative to

tops, bottoms & centers of your chassis drawers. And the new hole patterns give you the help of smaller pitches for locating internal parts.

- Your choice of color combinations: all clear (silver), clear/black or all black.
- You can machine your mounting surfaces in the flat before you assemble edge-stiffeners.
- Convertibility between VCD rackmount and VSA stand-alone models for benchtop applications. [see below].
- General purpose card cages, slides and many other mounting accessories available.



## VCD Kits

If you order a standard kit by height, depth and color but no other dash or dot numbers, you will receive the parts & hardware for an assembly which includes a 12-piece frame of extrusions, standard front panel, handles, structural side panels with assembly-hole pattern, top/bottom perforated covers, & outside back panel, all in whatever color combination you specify. By adding a dot SC, you also receive Side Covers to hide the assembly holes and screwheads on the side panels. Some of the thousands of other kit options ready for immediate shipment are shown in our catalog, including the much larger number of configurations that are available to you whether you choose to order as kits or as individual parts.

## VSA series

### Variable StandAlones

This is an exceptionally sturdy and decorative enclosure line for benchtop/desktop instrumentation. Its parts are the same as for a VCD kit of the same height, depth and colors, with the following exceptions: The front panel is normally 17 wide and recessed instead of 19 wide; handles are backed by spacers instead of panel ears; side covers & rubber feet are included; one-third perforated covers are standard unless otherwise specified. And as with the VCD line, you can choose from a large variety of options & accessories, including card cages & other internal mounting parts. Call the number below for free catalog and/or applications assistance.



# TECHMAR

For catalog & applications assistance: 1-800-TECHMAR

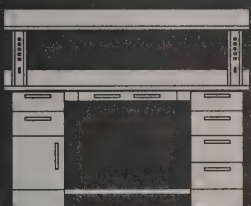
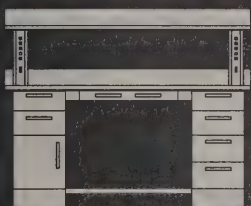
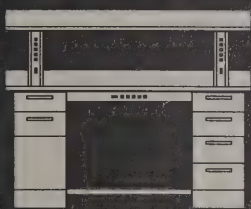
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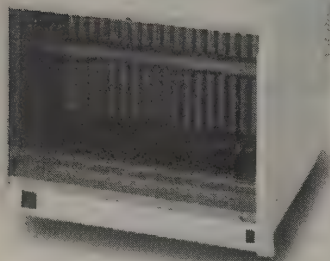
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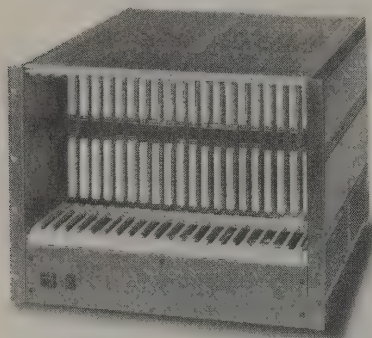


**TRACEWELL***Rack-Mount / Bench Top***VME** systems packaging**20 Slot, 6U and 9U subrack System 21**

Type 1 shown

|                  | Type 1          |            | Type 2          |            |
|------------------|-----------------|------------|-----------------|------------|
|                  | Standard        | Optional   | Standard        | Optional   |
| Card size:       | 6u x 160mm      | Variable   | 9u x 400mm      | Variable   |
| Subrack size:    | 85 hp           | ---        | 85 hp           | ---        |
| Backplane slots: | 20              | 21 Max     | 20              | 21 Max     |
| Power supply:    | 500W            | 1000W Max  | 500W            | 1500W Max  |
| Drive holders:   | 0               | drive tray | 0               | drive tray |
| Cooling:         | (3) 95 CFM fans |            | (3) 95 CFM fans |            |

**Features:** •Filtered, plenum directed cooling with front/side intake, rear exhaust •Front-mounted power and Micro Reset Module •Recessed subrack with smoked Lexan front panel •.125" aluminum side plates •Front to rear cableway •I/O panel •Subdivides into multiple configurations •Fully wired and tested

**20 Slot, 6U subrack System 22**

Type 1 shown

|                  | Type 1          |               | Type 2          |               |
|------------------|-----------------|---------------|-----------------|---------------|
|                  | Standard        | Optional      | Standard        | Optional      |
| Card size:       | 6u x 160mm      | 6u x variable | 6u x 160mm      | 6u x variable |
| Subrack size:    | 85 hp           | ---           | 85 hp           | ---           |
| Backplane slots: | 20              | 21 Max        | 20              | 42 Max        |
| Power supply:    | 500W            | 700W Max      | 500W            | 700W Max      |
| Drive holders:   | 0               | drive tray    | 0               | drive tray    |
| Cooling:         | (3) 90 CFM fans |               | (6) 90 CFM fans |               |

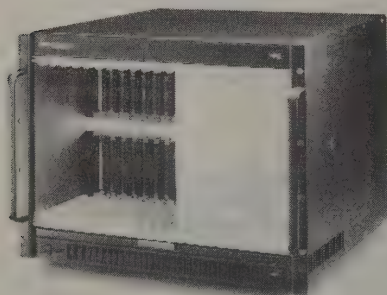
**Features:** •Heavy-duty unit with .250" machined side plates (.125" optional) •Front mounted power and Micro Reset Module •Rear transition rack optional •Cooling has bottom/side intake, top exhaust •Removable rack-mount ears and concealed hardware for attractive bench/tabletop use •Dual backplanes optional •Fully wired and tested

**7 Slot, 6U subrack System 20**

Type 1 shown

|                  | Type 1          |            | Type 2               |            |
|------------------|-----------------|------------|----------------------|------------|
|                  | Standard        | Optional   | Standard             | Optional   |
| Card size:       | 6u x 160mm      | 6u x 220mm | 6u x 160mm           | 6u x 220mm |
| Subrack size:    | 29 hp           | 37 hp Max  | 37 hp                | ---        |
| Backplane slots: | 7               | 9 Max      | 7                    | 9 Max      |
| Power supply:    | 500W            | 750W Max   | 500W                 | 750W Max   |
| Drive holders:   | 3               | 0-3        | 4                    | 0-4        |
| Cooling:         | (2) 90 CFM fans |            | (2) 90 CFM fans      |            |
| Other:           |                 |            | Rear loading subrack |            |

**Features:** • Precision die cast handles act as structural members, and permit removal of the top, front, and rear panel while leaving the sub-assembly intact • Filtered, plenum directed cooling with side intake, side exhaust • Front-mounted power and system reset • I/O panel

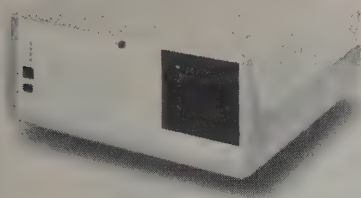
**12 Slot, 6U subrack System 27**

|                  | Type 1          |            |
|------------------|-----------------|------------|
|                  | Standard        | Optional   |
| Card size:       | 6u x 160mm      | 6u x 220mm |
| Subrack size:    | 85 hp           | ---        |
| Backplane slots: | 12              | 12 Max     |
| Power supply:    | 500W            | 500W Max   |
| Drive holders:   | 0               | 2          |
| Cooling:         | Two 95 CFM fans |            |

**Features:** •Lower priced unit with quality features. •Front-mounted power and Micro Reset Module •Filtered, plenum directed cooling with front/side intake, rear exhaust • 12 slot, 6U x 100mm transition rack •Fully wired and tested •Handles optional



## 7 and 9 Slot, 6U subrack System 17

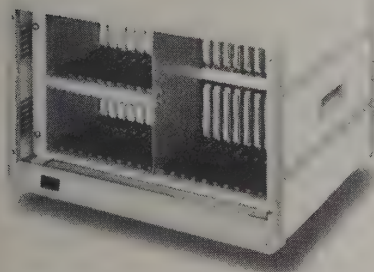


Type 1 shown

|                  | Type 1         |          | Type 2         |          |
|------------------|----------------|----------|----------------|----------|
|                  | Standard       | Optional | Standard       | Optional |
| Card size:       | 6u x 160mm     | ---      | 6u x 160mm     | ---      |
| Subrack size:    | 29 hp          | ---      | 37 hp          | ---      |
| Backplane slots: | 7              | 7 Max    | 9              | 9 Max    |
| Power supply:    | 500W           | 500W Max | 500W           | 500W Max |
| Drive holders:   | 3              | 0-3      | 4              | 0-4      |
| Cooling:         | (1) 95 CFM fan |          | (1) 95 CFM fan |          |

**Features:** •Attractive, injection-molded glass-reinforced polycarbonate enclosure, electroless-plated for EMI suppression •Filtered, plenum directed cooling with rear intake, rear/bottom exhaust •Front mounted power and system reset •I/O panel •Fully wired and tested

## 20 Slot, 6U and 9U subrack System 19



Type 1 shown

|                  | Type 1          |               | Type 2          |            |
|------------------|-----------------|---------------|-----------------|------------|
|                  | Standard        | Optional      | Standard        | Optional   |
| Card size:       | 6u x 160mm      | 6U x variable | 9u x 160mm      | 9U x 400mm |
| Subrack size:    | 85 hp           | ---           | 85 hp           | ---        |
| Backplane slots: | 20              | 21 Max        | 20              | 21 Max     |
| Power supply:    | 500W            | 750W Max      | 500W            | 1000W Max  |
| Drive holders:   | 0               | drive tray    | 0               | drive tray |
| Cooling:         | (3) 90 CFM fans |               | (6) 90 CFM fans |            |

**Features:** •Die cast aluminum bezels •Adjustable recess subrack •Filtered cooling with bottom intake, top exhaust •Front-mounted power and system reset •I/O panel •Subdivides into multiple height and width configurations •Fully wired and tested

## 7-12 Slot, 6U subrack System 24

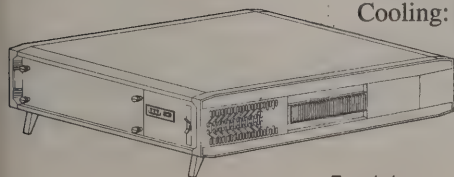


System 24 VXI shown

|                  | Type 1         |            | Type 2          |            |
|------------------|----------------|------------|-----------------|------------|
|                  | Standard       | Optional   | Standard        | Optional   |
| Card size:       | 6u x 160mm     | ---        | 6u x 160mm      | ---        |
| Subrack size:    | 29 hp          | variable   | 48 hp           | variable   |
| Backplane slots: | 7              | 7 Max      | 12              | 12 Max     |
| Power supply:    | ###W           | ###W       | ###W            | ###W       |
| Drive holders:   | 0              | drive tray | 0               | drive tray |
| Cooling:         | (1) 90 CFM fan |            | (2) 90 CFM fans |            |

**Features:** •Front-mounted power and Micro Reset Module •Rear transition rack optional •Cooling has bottom/side intake, top exhaust •Attractive bench/tabletop use •Non-skid retractable tilt feet •Front panel voltage indicators LEDs •Fully wired and tested

## 1-9 Slot, 6U subrack System 25



Type 1 shown

|                  | Type 1          |          | Type 2         |          | Type 3         |          |
|------------------|-----------------|----------|----------------|----------|----------------|----------|
|                  | Standard        | Optional | Standard       | Optional | Standard       | Optional |
| Card size:       | 6u x 160mm      | ---      | 6u x 160mm     | ---      | 6u x 160mm     | ---      |
| Subrack size:    | 12 hp           | ---      | 21 hp          | ---      | 29 hp          | ---      |
| Backplane slots: | 3               | 3 Max    | 5              | 5 Max    | 7              | 7 Max    |
| Power supply:    | 65W             | 100W Max | 200W           | 200W Max | 220W           | 350W Max |
| Drive holders:   | 0               | 2        | 0              | 4        | 0              | 4        |
| Cooling:         | (2) 23 CFM fans |          | (1) 51 CFM fan |          | (1) 90 CFM fan |          |

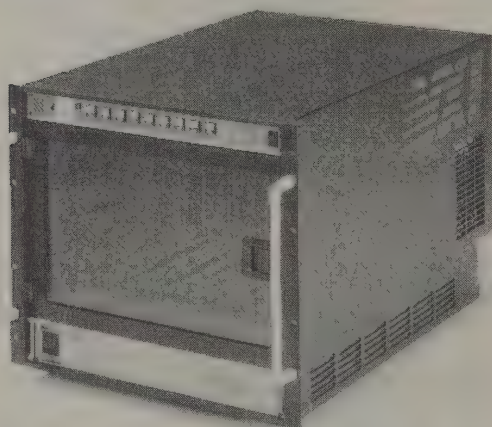
**Features:** •Front-mounted Micro Reset Module •Rear transition rack •Filtered, plenum directed temperature-controlled cooling with side intake, side/rear exhaust •All aluminum construction with die cast sides and concealed fasteners •Retractable side handles and non-skid tilt feet • Rack mounting flanges optional •Fully wired and tested



**TRACEWELL****VMEbus** **Tower Systems System 33**

|                  | <i>Shown</i>    | <i>Optional</i> |
|------------------|-----------------|-----------------|
| Card size:       | 6u x 160mm      | 9u x 400mm      |
| Subrack size:    | 28 hp           | ## hp Max       |
| Backplane slots: | 7               | 12 Max          |
| Power supply:    | 500W            | 750W Max        |
| Drive holders:   | 0               | 2               |
| Cooling:         | (2) 90 CFM fans |                 |

Standard system designs can be reconfigured into vertical stand-alone packages. The enclosure features a retractable handle on top, and large rubber-covered feet for excellent stability. Contact Tracewell for complete details.

** 13 Slot, C/Dsize System 90 Intelligent Main Frame®**

Type 1 shown

|                  | <b>Type 1</b>    |                 | <b>Type 2</b>    |                 |
|------------------|------------------|-----------------|------------------|-----------------|
|                  | <i>Standard</i>  | <i>Optional</i> | <i>Standard</i>  | <i>Optional</i> |
| Card size:       | C size           | ---             | D size           | ---             |
| Subrack size:    | 85 hp            | 85 hp Max       | 85 hp            | 85 hp Max       |
| Backplane slots: | 13               | 13 Max          | 13               | 13 Max          |
| Power supply:    | 1200W            | Custom          | 1200W            | Custom          |
| Drive holders:   | 0                | drive tray      | 0                | drive tray      |
| Cooling:         | (3) 100 CFM fans |                 | (3) 100 CFM fans |                 |

**Features:** • The first VXI system package to safeguard test modules through automatic monitoring of power supply outputs, airflow, and standby power • A supervisory panel compares readings with stored limits and triggers visual and audible alarms in the event of an out-of-spec condition • 1200 watt power supply, temperature-controlled fans, front-mounted debounced power-on and reset, plenum directed cooling with filter • Fully wired and tested

United States Patent: 5,168,171

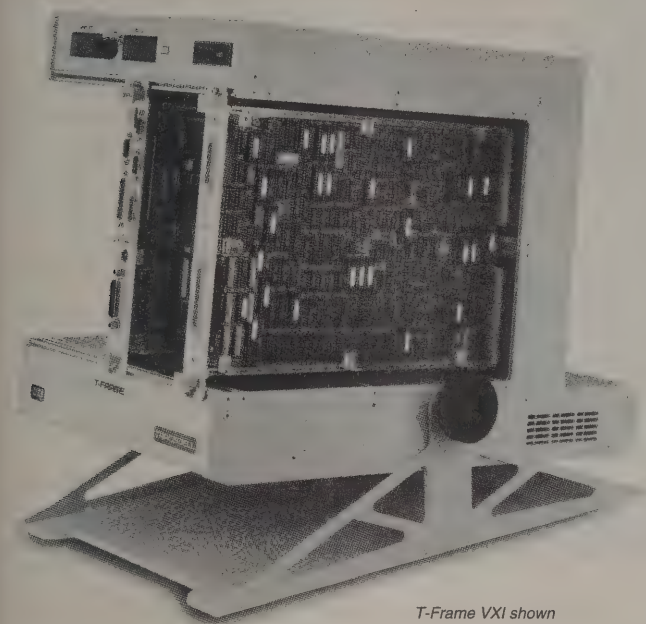
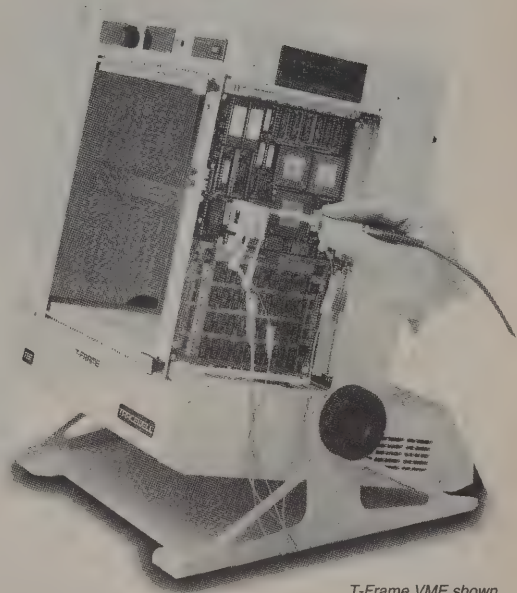
** 5 Slot, C size System 24**

Type 1 VXI shown

|                  | <b>Type 1</b>   |                 | <b>Type 2</b>   |                 |
|------------------|-----------------|-----------------|-----------------|-----------------|
|                  | <i>Standard</i> | <i>Optional</i> | <i>Standard</i> | <i>Optional</i> |
| Card size:       | C size          | ---             | D size          | ---             |
| Subrack size:    | 33 hp           | ---             | 33 hp           | ---             |
| Backplane slots: | 5               | 5 Max           | 5               | 5 Max           |
| Power supply:    | 750W            | 1200W Max       | 750W            | 1200W Max       |
| Drive holders:   | 0               | drive tray      | 0               | drive tray      |
| Cooling:         | (2) 90 CFM fans |                 | (2) 90 CFM fans |                 |

**Features:** • Complete access to the backplane and power supply outputs • Forced air cooling permits boards to be tested under operating conditions • Front-mounted debounced reset and voltage indicator LEDs • Operates vertically and horizontally • Fully wired or tested



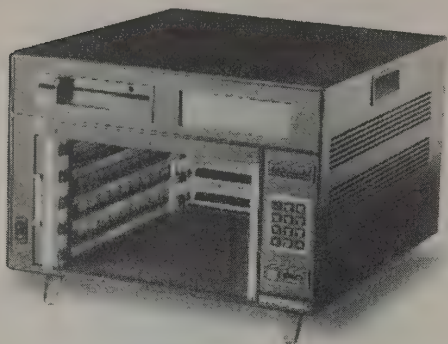
**T-FRAME™ High-Access Test Stand for VME, VXI and Multibus II***T-Frame VXI shown**T-Frame VME shown***United States Patent: Pending**

Available models:

**VXI:** 5 slot, C size with 750 watt power supply**VME:** 12 slot, 6U x 160mm and 9U x 400mm with 500 watt power supply**Multibus II:** 8 slot, 6U x 220mm with 500 watt power supply**Features:**

- Cutaway design eliminates the need for extender boards by offering unrestricted access to all areas of installed modules
- Front-mounted digital meters display the voltage and current to the backplane for each switch-selectable power supply output
- Sliding thermistor mounted above the card cage provides temperature readout above individual cards in the system to front panel display
- Concealed power supply and the use of bus bars allows full access to rear of backplane
- Heavy, skid-resistant base tilts and locks the frame at varying angles to elevate test points and improve viewing angles
- Removable translucent polycarbonate panels protect installed boards and the rear of the backplane
- Double-bolted profiles and heavy .250" aluminum side frames help ensure durability
- Built-in instrumentation and controls increase efficiency
- Null offset switch changes ammeter reading to include or exclude the current drawn by terminating resistor networks
- Airflow analysis is made possible by six fan speed settings: 50, 60, 70, 80, 90, and 100%
- Filtered, positive-pressure cooling is provided by two 82 CFM variable speed fans
- "MicroReset" module provides power-on reset, debounced reset switch, and indicates System Fail and power-on status
- The all-stripline 8 layer VME (10 layer VXI) backplane is individually tested and certified for low cross-talk and EMI emission
- High-current power supply with universal input, .99 power factor correction, power fail, and remote sense on the 5V output delivers 80A of 5V, 20A of +12V, and 20A of -12V (VME) (500 watt maximum combined)



**TRACEWELL****Design, Test and Development Systems****System 26 VMEbus  Multibus II PCAT**

System 26 VXI shown

**Features:**

Versatile package has one-piece top/sides that removes easily and allows complete access to the interior • Plenum-directed cooling works even with cover removed • Drive holders for two 5.25" half-heights, convenient cableway, and "MicroReset" debounced power-on and reset • Unique features include programmable interactive LCD analysis screen with built-in software, and modular power supply with active power factor correction, universal AC, and more.

**26-VME:** 7 slot, 6U x 160mm, 600 watt power supply.

**26-VXI:** 5 slot, C size, 600 watt power supply.

**26-Multibus II:** 8 slot, 6U x 220mm, 300 watt power supply. Accepts live insertion/20MHz enhancement.

**26-PC:** 8 slots for PC bus boards, 250 watt power supply.

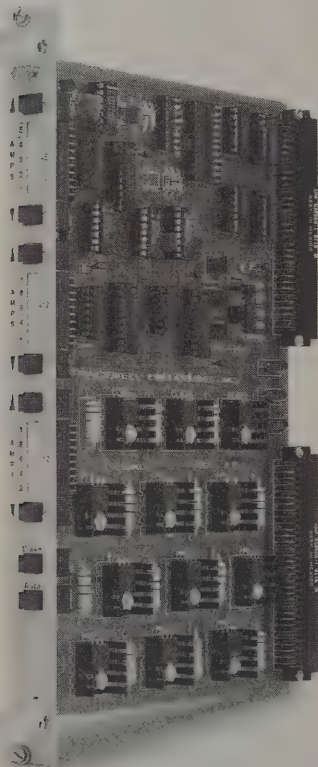
**Variable Current Load Board for VME & Multibus II****T-LOAD****Application:**

T-Load™ allows engineers to simulate and evaluate the operational environment of a VME or Multibus II® system design in a number of areas:

- **Evaluate Temperature** characteristics of the electronic packaging system design
- **Burn-in Cycles** can be automatically sequenced by establishing a master board
- **Measure voltage drops** in the backplane and wiring harnesses under various load conditions
- **Check power supply** specifications at changing loads for hold-up time, regulation, ripple, power factor, and efficiency
- **Simulate load conditions** without using expensive system boards for evaluation
- **Independent current readings** of each load board clearly displayed on LED bar graph

**Features:**

- **Active Load** allows current changes to be made while the system is powered thus eliminating the need to shut down the system to remove the board to make changes.
- **Current settings** are expressed on an LED bar graph and can be automatically sequenced or changed manually one step at a time.
- **Master/Slave Mode** is established by engaging or disengaging the slave buttons on the T-Load™ boards in the system (Only the slot 0 board can be a master) Boards without their slave button engaged remain independent and can be set-up individually.
- **Automatic cycle mode** is created by pressing the "Auto" button on the master board. Individual boards with their slave buttons active will follow the program of the master. The automatic mode can be changed to either a long burn-in cycle or quick demo routine by setting an internal switch on the master board.
- **Reset Capability** by the system reset will bring all boards to zero when activated. Each T-Load™ board has a reset switch for individual reset to zero.
- **Current Load** is set-up on the +5 volt in 1 amp steps (5 amp total) and on the +12 and -12 volt in .2 amp steps (total 1 amp each)



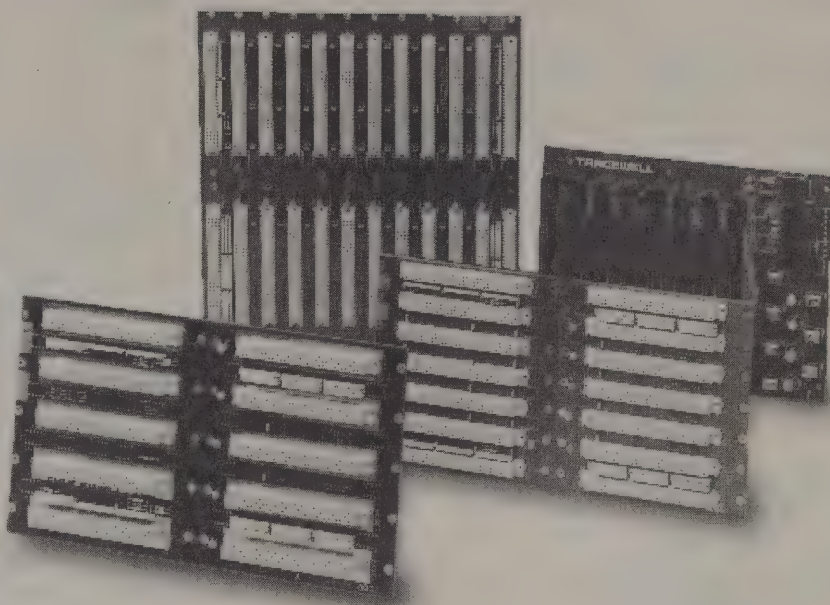


## Backplanes

# TRACEWELL

## VMEbus MultibusII PCAT

Tracewell offers a complete line of high-speed backplanes that are built to meet or exceed all current bus performance specifications. Our proprietary design provides exceptional signal integrity, low noise, and minimum EMI output --- all at an affordable price.



### Features:

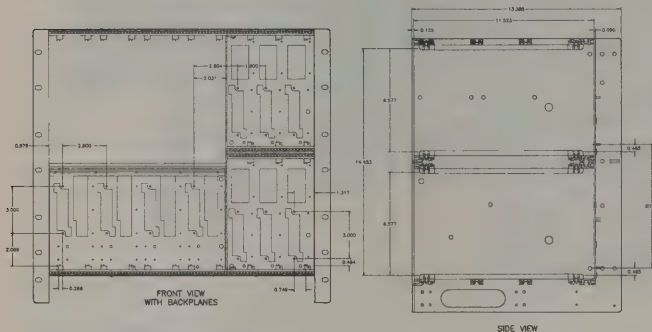
- 8 layer VME, 10 layer VXI all-stripline design
- Daisy chain jumper pins accessible front and rear
- Ground plane between outer layers, and true ground return planes adjacent to all signal layers for embedded RFI/EMI control
- Proprietary conformance testing on every unit at board level and on full backplane assembly
- All gas tight press fit assembly
- Bus bars on +5 VDC and ground are designed for clear access to rear of backplane and provide a 'clean' wire harness
- On-board signal termination for minimal reflection
- Decoupling capacitors at each slot; high pass (.01uF ceramic) low pass (22uF tantalum)
- Impedance: 73Ω unloaded, 55Ω with connectors loaded
- Propagation delay: 2.26 ns/ft
- Crosstalk 1.27mV (typical line)
- UL approved to Level 796
- Multiple Vcc and Gnd planes provide uniform power distribution (<.0078 voltage gradient 1-12 slots)

| Bus    | Type                   | Slots               |
|--------|------------------------|---------------------|
| VME    | J1/J2 Monolithic       | 5, 7, 9, 12, 15, 20 |
| VME    | J1                     | 5, 7, 9, 12, 15, 20 |
| VME    | J2                     | 5, 7, 9, 12, 15, 20 |
| VME    | J2 Power & Ground only | 5, 7, 9, 12, 15, 20 |
| VME    | Universal (undefined)  | 5, 7, 9, 12, 15, 20 |
| VME 64 | J1/J2 Monolithic       | 20                  |
| Sun    | J3                     | 5, 7, 9, 12, 15, 20 |
| VS     | Overlay Module         | 2, 3, 4, 6          |
| VM     | Overlay Module         | 2, 3, 4, 6          |
| VXI    | C Size                 | 5, 13               |
| VXI    | D Size                 | 13                  |
| PC     | ISA                    | 8                   |
| MB II  | J1 (PSB)               | 8                   |



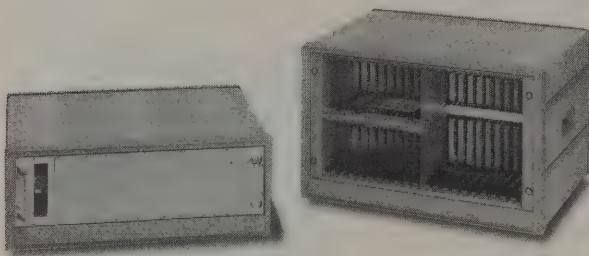
## Sub racks

Custom designed and built subracks constructed of heavy duty aluminum and double-bolted profiles to insure structural rigidity. Available in Eurocard form factor or designed to meet an application-specific requirement. Offered in a clear chromate finish, features include: power distribution, customized I/O, provisions for EMI suppression. Available in various depths and heights.



## E Series

### Desktop Enclosures for 19" Sub-Racks



All-aluminum construction for light weight, good heat dissipation, and superior shielding and grounding characteristics. Subracks may be mounted flush with the front or rear of the enclosure, or recessed to any depth.

**Sizes.** Available in 3U (5.25"), 6U (10.50"), and 9U (15.75") heights, and in standard depths of 12", 16", and 21" (other depths may be ordered).

**Standard Components.** Solid top and bottom covers, side panels with recessed handles, rear panel, pull-down feet, internal mounting rails, and EIA mounting hardware.

**Options:** Vented top and bottom covers, fan tray holding up to nine 1" thick fans, air filter removable from bottom, aluminum or translucent plastic front cover panel, rear I/O panels, support rails, grounding kit, and recessed mounting frames.

## CH Series

### 19" Rack-Mount

Heavy duty aluminum chassis enclosures with precision die cast handles that act as both structural members and as EIA mounting brackets. Panels remove easily while leaving the sub-assembly intact.

**Sizes.** Heights are 1U (1.75"), 2U (3.50"), 3U (5.25"), 4U (7.00"), and 5U (8.75"). Standard depths are 12" and 19", with custom depths available.

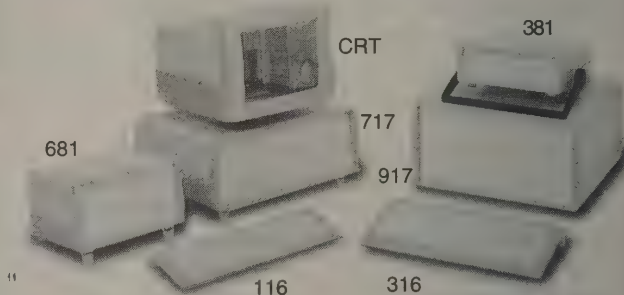
**Standard Components.** Solid top and bottom covers, die cast handles, punched sides, front and rear panels, mounting rails, and assembly hardware.

**Options.** Ventilated covers, horizontal and vertical mounting plates, and slides for rack mounting.



## NC Series

### Molded Plastic Systems Enclosures



Durable, attractive enclosures are injection molded in glass-filled polycarbonate, and finished in mar-resistant textured polyurethane. Optional EMI shielding available.

**NC917.** Holds 12" CRT, two 5 1/4" disk drives, power supply, and 5U card cage. Also accepts 19" components.

**NC717.** Accepts 9" CRT, one disk drive, power supply, and 4U card cage. Also holds 19" hardware.

**NC681.** For 7" CRT and one disk drive or power supply.

**NC381.** Accommodates 5" CRT and 3 1/2" disk drive.

**CRT.** Sized for 14" or 15" chassis- or kit-mounted CRTs.

**NC316.** 7-row full travel keyboard.

**NC116.** 5-row low profile keyboard.

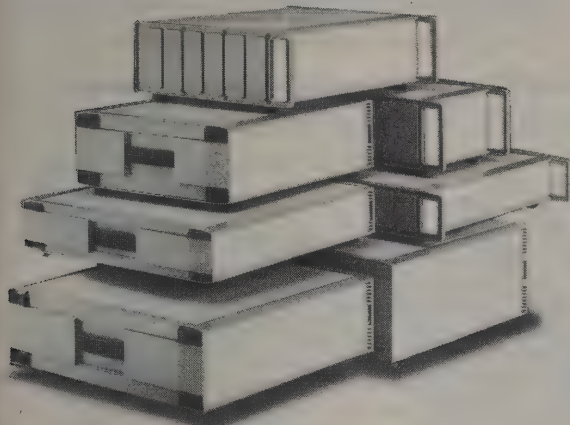


## Enclosures

# TRACEWELL

### R/SR Series

#### Full and Half Rack Enclosures



All-aluminum enclosures feature die cast sides for super rigidity. R Series has integral front handles; SR Series has retractable side handles. Unique front bezel design conceals fasteners, yet provides easy access to interior.

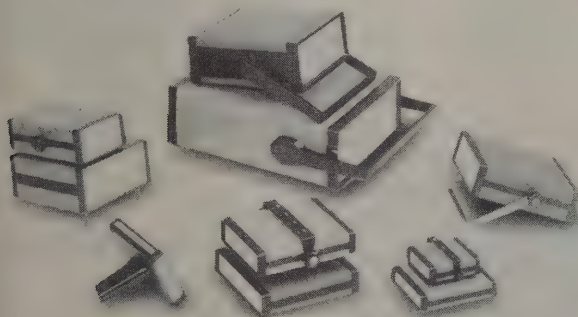
**SR Sizes:** 8.59" and 17.20" widths standard (custom widths available), 2U (3.50"), 3U (5.25"), and 4U (7.00") heights, and 12" and 16" depths. **R Sizes:** Same as SR except not available in 4U height or 16" depth.

**Standard Components:** Solid top and bottom covers, die cast sides, front and rear panels, bezels, and mounting rails.

**Options:** Vented covers, pull-down feet, EIA brackets.

### L/SL Series

#### Small Aluminum Enclosures



Ideal for bench/portable applications. Side extrusions have built-in slots for PC boards and plates. Vinyl clad top and bottom are easily removable.

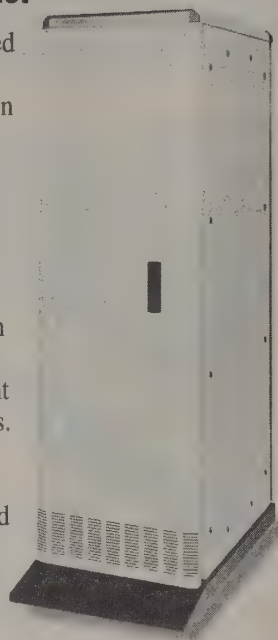
**Sizes.** Nine sizes from 2.70"w x .98"h x 3.70"d to 11.34"w x 4.32"h x 10.00"d.

**Standard Components.** Solid top and bottom covers, side extrusions, front and rear panels, bezels, and mounting rails.

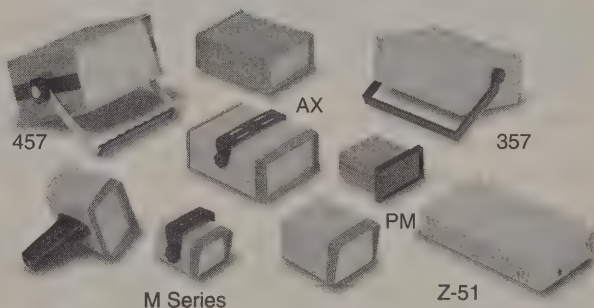
**Options.** Vented covers, handles, mounting bracket, and belt clip.

### EMI Shielded 19" Cabinet

Elegantly styled with contoured panels and identification header. Aluminum construction for light weight. Choice of copper finger stock or braided mesh gasketing, depending on desired attenuation level. Multiple side latches and rack and pinion door handles increase EMI integrity through uniform gasket compression. Base features tip-resistant front extension, casters, and levelers. Options include fans, removable air filter, ganging and grounding kits, and customized power distribution panel. Available in EIA standard heights and variable depths.



### Other Enclosures



**357/457.** Molded-in card grooves, horizontal mounting bosses, vented bottom. 7.50"w x 3.00/4.00"h x 6.50"d.

**AX.** Two-piece extruded aluminum housing, front & rear panels and plastic bezels. 5.50"w x 2.50"h x 6.00"d\*.

**Z-51.** One-piece extruded aluminum housing, front & rear panels and plastic bezels. 5.88"w x 1.75" h x 7.25"d\*.

**M.** Housing is .050" deep drawn aluminum. Plastic front bezel and aluminum front panel. 3.00"w x 2.00"h x 3.25"d and 4.00"w x 2.50"h x 4.00"d.

**PM31.** Extruded aluminum housing, rear panel. Plastic bezel with red Lexan filter. 3.60"w x 1.75" h x 3.31"d\*.

\* Other lengths available on special order.



**UNITRACK®****P.C. CARD GUIDES****NEW LOCATION...  
NEW PHONE NUMBER****UNITRACK INDUSTRIES INC.**

967 East Masten Circle • Milford, DE 19963

Tel: (302) 424-5050 • FAX: (302) 424-5055

**PLASTIC****METAL****VIBRATION and SHOCK  
DAMPING P.C. CARD  
GUIDES**

Cantilever springs grip cards firmly. Spring gripping action prevents looseness which often results from board warpage or thickness variations.

Cools card and card components efficiently. Free flow of air through open area design.

Dampens severe vibrations up to 2000 cps without adverse effect to the cards or components.

Dimensional stability and strength provided by Polycarbonate resin under pressures of up to 2000 psi.

Polycarbonate resin virtually unaffected by moisture or humidity. Performs at temperatures ranging from -60° to +250°F without degradation of elasticity, strength or other physical properties.

No other p.c. card guides offer the features of Unitrack. Precision molded of dimensionally stable polycarbonate... complete line of sizes... snap-in buttons or countersunk holes for easy, quick mounting... free air flow thru card guide... vibration and shock damping with viscoelastic fingers gripping p.c. card.

**ESD GUIDES (Electrostatic discharge)**

All sizes of Unitrack card guides are molded in conductive plastic for users who need protection against damage to static susceptible devices.

Chart below gives part numbers and sizes of Unitrack Vibration and Shock Damping card guides.

| Part Number<br>Polycarbonate | Part Number<br>ESD Plastic <sup>1</sup> | Dimensions |      |
|------------------------------|-----------------------------------------|------------|------|
|                              |                                         | L          | M    |
| 2500-38                      | ED5250                                  | 2.50       | 2.20 |
| 2500-384                     | ED52504                                 | 2.50       | 2.20 |
| SPC3000                      | ED5350                                  | 3.50       | 3.00 |
| 583040                       | ED5412                                  | 4.12       | 3.82 |
| RAD4125                      | ED5413                                  | 4.12       | 3.82 |
| RAD5500                      | ED5550                                  | 5.50       | 5.00 |
| RAD6375                      | ED5638                                  | 6.38       | 5.98 |
| RAD6875                      | ED5687                                  | 6.88       | 6.48 |
| RAD7000                      | ED5700                                  | 7.00       | 3.25 |
| 2500-38-CB                   | ED5250-CB                               | 2.50       | 2.20 |
| 2500-384-CB                  | ED5250-4CB                              | 2.50       | 2.20 |
| SPC3000-CB                   | ED5350-CB                               | 3.50       | 3.00 |
| 583040-CB                    | ED5412-CB                               | 4.12       | 3.82 |
| RAD4125-CB                   | ED5413-CB                               | 4.12       | 3.82 |
| WEL437H                      | ED5637                                  | 6.38       | 5.98 |

Products shown herein are covered by patents and/or pending patent applications of Unitrack Industries, Inc.

<sup>1</sup> Copyright 1992 Unitrack Industries, Inc.

<sup>2</sup> Registered Trademark of Unitrack Industries, Inc.

**SLOTTED P.C. CARD  
GUIDES****SERIES 250**

Molded of dimensionally stable polycarbonate these p.c. card guides can be mounted on .250 centers for dense packaging. Chart below gives sizes.

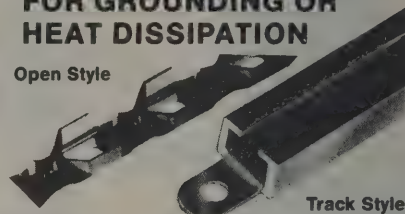
**SERIES 300**

Available molded in non-conductive polycarbonate or conductive (ESD) plastic. This series of slotted p.c. card guides mounts on .300 centers. Chart below gives sizes.

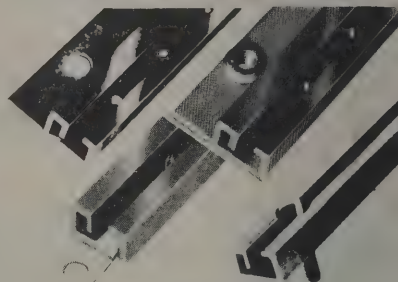
**SERIES 400**

This series of slotted p.c. card guides is available in both conductive ESD and non-conductive plastic. The wide range of sizes is shown in chart below.

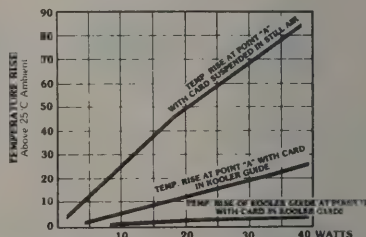
| Part Number<br>Polycarbonate | Part Number<br>ESD Plastic <sup>1</sup> | Dimensions |     |
|------------------------------|-----------------------------------------|------------|-----|
|                              |                                         | B          | D   |
| S250-2.5                     |                                         | 2.00       | .13 |
| S250-3                       |                                         | 2.50       | .13 |
| S250-4                       |                                         | 3.50       | .13 |
| S250-6                       |                                         | 5.50       | .13 |
| S250-7                       |                                         | 6.50       | .13 |
| S250-8.5                     |                                         | 8.00       | .13 |
| S300-3.5                     | ED3350                                  | 3.00       | .11 |
| S300-4                       | ED3400                                  | 3.50       | .11 |
| S300-4.25                    | ED3425                                  | 3.75       | .11 |
| S300-5                       | ED3500                                  | 4.50       | .11 |
| S300-6                       | ED3600                                  | 5.50       | .11 |
| S300-8                       | ED3800                                  | 7.50       | .11 |
| S300-10                      | ED3100                                  | 9.00       | .11 |
| S300-12.2                    | ED3122                                  | 11.20      | .11 |
| PRD3500                      | ED4350                                  | 3.00       | .11 |
| S5830 40                     | ED4412                                  | 3.825      | .11 |
| PRD6880                      | ED4688                                  | 6.375      | .11 |
| PRD6875                      | ED4687                                  | 6.375      | .11 |
| PRD8500                      | ED4850                                  | 8.00       | .11 |

**FOR GROUNDING OR  
HEAT DISSIPATION****Open Style****Track Style**

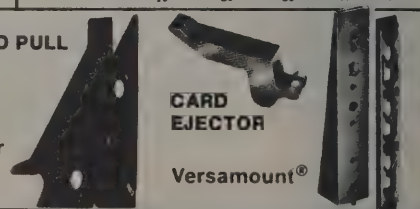
For p.c. card applications requiring grounding or heat dissipation (p.c. card - to guide - to chassis). Metal card guides are the solution. Choice of beryllium copper, stainless steel or phosphor bronze is available formed in the spring fingered action. Both open or track styles offer excellent electrical conductivity and good heat transfer.

**KOOLER GUIDE® - THE  
HEAT SINK CARD GUIDE!**

The metal spring fingers press the p.c. card against the aluminum track the full length of the guide for heat dissipation (see chart below). Available in beryllium copper, stainless steel and phosphor bronze and in mounting styles which provide intimate contact of the guide to chassis. For cards .040 to .095 thick to any length.

**Accessories:**

Both card pulls and ejectors are available in 10 colors for circuitry identification. Versamount for mounting isolated cards on chassis or mother boards.

**CARD PULL****CARD  
EJECTOR****Versamount®**



**UNITRACK®**

# P.C. Card Cooling Units and Subrack 90 VME™ & ADJ

**NEW LOCATION...  
NEW PHONE NUMBER**

## UNITRACK INDUSTRIES INC.

967 East Masten Circle • Milford, DE 19963

Tel: (302) 424-5050 • FAX: (302) 424-5055

## FAN-PAK® 3120

**YOUR BEST BUY.**  
*Famous Unitrack quality  
in a high volume unit!*



**\$99.00**  
complete

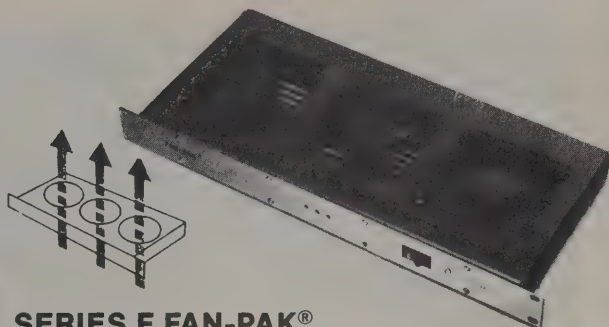
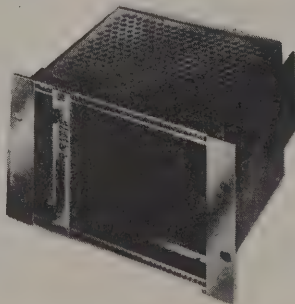
Ready to plug in.  
Power cord included.  
Stock these and get  
this great quantity  
discount!\*

\*\$123.75 in single units.

Here is the cooling package priced for high volume users! Fan-Pak 3120 has three fans each delivering 100 cfm air. Packaged in 1U (1¾") high sturdy, clear finish aluminum case to be used in 19" cabinetry. The front panel has a lighted OFF/ON switch and fuse holder. Back panel has AC receptacle for power cable and a switchable socket to supply power for companion equipment when fans are ON. Ready for immediate shipment from stock!

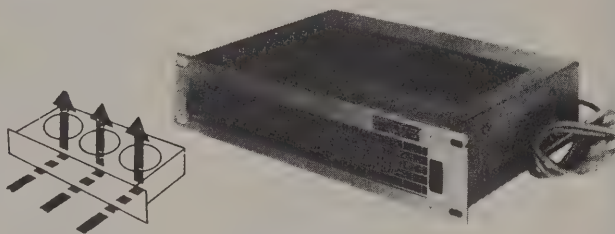
## SUBRACK 90 VME™

The Subrack 90 VME was developed for those using Eurocard based systems and VME bus systems. The basic Subrack 90 VME is available for single or double high boards, 3U to 9U heights and up to 84 HP width. The variations such as divided subracks for 3U and 6U cards in the same subrack, hinged or fixed front panels, top, bottom and back panels, insulator strip, etc., are available. Subrack 90 VME uses attractive brushed aluminum finish parts that are sturdy, accurately punched, drilled and tapped. Subrack 90 VME is available assembled or unassembled.



## SERIES F FAN-PAK®

These Fan-Paks are one U height (1¾") compact, sturdy clear finished aluminum holding rows of three fans (up to 12) which can be rack mounted into standard 19" or 24" cabinetry. The fans each deliver 100 cfm air for cooling and are usually mounted below the p.c. cards to move air up and around the cards. Standard package includes replaceable fuse and 6' line cord or terminal block. Options available are: pilot light, power switch, Fan Alarm™ circuit, filter and silk screening panel legend.

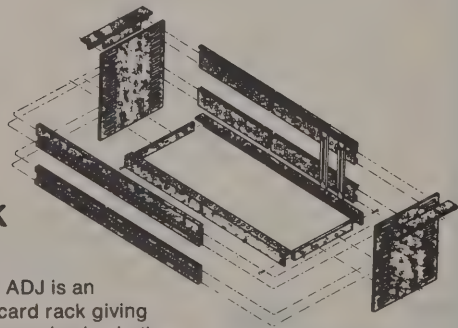


## SERIES RA FAN-PAK®

The Series RA Fan-Pak draws air through the front grill with one, two or three 100 cfm quiet, long-life fans. This type of cooling is especially useful when the p.c. card cage is isolated from the flow of cabinet cooling. The RA Fan-Pak is also available as an integral part of a standard or special Unitrack card cage. The options for Series F (above) are available with this series also.

## SUBRACK 90 ADJ

The Subrack 90 ADJ is an adjustable p.c. card rack giving great flexibility to packaging both large and small p.c. cards. Subrack 90 ADJ is designed for quick, easy assembly and sold unassembled (also available assembled) with all parts also available separately. Subrack 90 ADJ fits 19" cabinetry or can be used as a stand-alone rack.



Unitrack also manufactures special card cages to meet customer requirements. Mail or fax drawings... we'll promptly respond with a quote. Unitrack has a line of card cages for Multibus I & II, STD bus and for other bus systems. Consult factory for details.



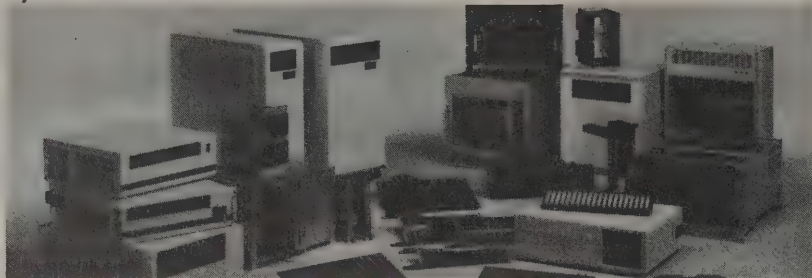


# ELECTRONIC SOLUTIONS

6790 Flanders Drive, San Diego, CA 92121 • Tel: 619-452-9333 • FAX: 619-452-9464

## SYSTEM ENCLOSURES • CARD CAGES • COMPONENTS

### System Enclosures



#### The Omega

- Table top, Rack Mount, or DeskMate™ configurations.
- 3-14 Slots, VME or 4-18 Slots Multibus.
- Up to 1000 Watts.
- Front, Rear, or Top Card Loading with Many Peripheral Mounting Options.
- UL Listed, CSA Certified, and GS Approved through TUV Certification.
- Designed to Meet FCC Class A EMI/RFI.

#### The Volksclosure

- Table top configurations.
- 6 Slots, VME Multibus II.
- 190 or 270 Watts.
- Front Card Loading and Accepts up to 3 Half-Height 5 1/4" Peripherals.
- UL and CSA Recognized.
- Designed to Meet FCC Class A EMI/RFI.

#### The MaxChassis II

- Table top, or Rack Mount configurations.
- 12 or 20 Slots VME or Multibus II.
- Up to 1000 Watts.
- Front Card Loading, Accepts up to 4 Half-Height 5 1/4" Peripherals and a Variety of Peripheral Mounting Adapters.
- UL Listed, CSA Certified, and GS Approved through TUV Certification.
- Designed to Meet FCC Class A EMI/RFI.

#### The Epsilon

- Table top configurations.
- 3 Slots VME.
- 175 Watts (Auto ranging).
- Front Card Loading, Accepts up to 2 Half-Height 5 1/4" or 3 1/2" Peripherals and up to 6 Motorola Transition Cards.
- UL Recognized and CSA Certified.
- Designed to Meet FCC Class B and VDE 0871/6, 78 Class B EMI/RFI.

Whether you're looking for a standard package, off-the-shelf or something designed from the ground up to meet your specific application, Electronic Solutions is the manufacturer of choice. We have a broad array of standard system enclosures to meet a variety of packaging requirements. Yet less than 20% of the enclosures we ship are found among them. That's because we modify the vast majority of our products to meet our customers' requirements - from custom paint or silk screening to entirely new concepts in system packaging. In order to meet these requirements, we have the ability to perform backplane design analysis, empirical backplane tests, safety agency approvals (most of our enclosures are UL Listed, CSA Certified, and GS Approved through TUV Certification), airflow analysis, EMI/RFI testing - and many other capabilities. Standard enclosures include:

#### The TeleChassis

- Bellcore NEBS Rack Mount configurations.
- 20 Slots VME.
- 150 Watts accepts telecommunications -48Vdc input.
- Front Card Loading and Accepts a Variety of Peripheral Mounting Adapters.

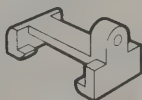
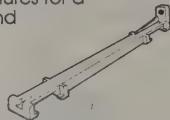
### Card Cage Components

Build your own card cage from these five basic parts - card guides, mounting bars, spacers, mounting feet and end plates. Thousands of possible combinations can be assembled.

All items can be color coded (12 colors) and/or hot ID stamped. Ask for the "Here's How" and "Snap File Card Mounting System" brochures for a complete description and ordering guide.

#### Card Guides

The patented "T" series guides have integral connector mounting feet or are available as Thru-Guides for separate connector mounting components. Lengths 2.750" to 12.815". Also Snap-in Guides 2.500" to 12.000".



#### Connector Mounting

Thru-hole or with 4-40 threaded brass or stainless steel inserts. Available as "A" Series nylon mounting feet that slide on mounting bars, or as a connector mounting bar for high insertion force connectors.

#### Mounting Bars

For "T" Series Guides and "A" Series mounting feet, up to 24" length, for single and multiple card rows. For Snap-in guides mounting bars are pre-punched with .5, .6, .7 or .75" centers. 17" length standard, but can be cut to length.

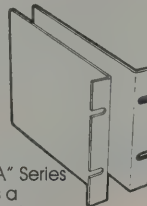


#### Spacers

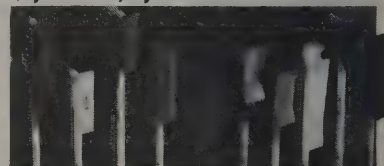
Adjust the nominal .500" width of "T" Series card guides to your card spacing. Spacers 0.031" to 1.000" for card spacing 0.531" to 1.500".

#### Endplates

Mate with mounting bars and provide ears for rack or panel mounting. Heights 5.22" to 17.47", depths 8.25" to 11.25".



### Injectors/Ejectors



Electronic Solutions circuit card ejectors fit virtually all card support systems. They easily attach by means of roll pins to cards either 0.062" or 0.093" thickness, and operate by lever action against the card guide or mounting bar.

Styles:

- S-200 Single action, .375" wide
- S-202 Slim line single action, .250" wide
- S-203 Low profile (.125") single action
- S-205 Single action, offset
- S-206 Locking ejector for "T" series guides
- S-208 Low Profile tabbed
- S-209 Double action injector/ejector
- S-211 Single action, medium length
- S-212 Single action, for larger cards
- S-213 Ultra long for maximum leverage
- S-214 Double action for sheet metal cage
- S-216 E-Z-Ject VME panel ejector
- S-217 Eurocard injector/ejector

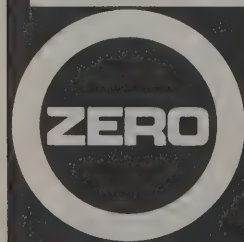
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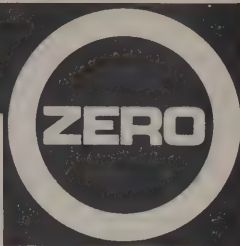




# ELECTRONIC SOLUTIONS

6790 Flanders Drive, San Diego, CA 92121 • Tel: 619-452-9333 • FAX: 619-452-9464

## SYSTEM ENCLOSURES • CARD CAGES • COMPONENTS



### Peripheral Modules

Here is a convenient and cost effective way to add disk/tape drives or other 5 1/4" peripherals to your Eurocard system. The peripheral modules mount directly in 6U 12-slot Vertical Rack Mount VME or Multibus II card cages.



| Disk drive slots                          | Part No. |
|-------------------------------------------|----------|
| 4 half-height (or 2 full height)          | 32013-1  |
| 3 half-height (or 1 full & 1 half height) | 32013-2  |
| 2 half-height                             | 32013-3  |

### E-Z-JECT VME Ejectors and Panels

The E-Z-Ject™ has become the industry standard ejector for VMEbus boards, providing a quick and easy



method of removal from Eurocard format card cages. The standard E-Z-Ject front panel assembly includes the front panel, the handle(s) and the corresponding hardware. Custom panel labeling as well as custom ID panels for E-Z-Ject handles are readily available.

| Size                     | Part No.    |           |
|--------------------------|-------------|-----------|
|                          | Unassembled | Assembled |
| 3U x 4HP                 | 32025       | 32005     |
| 6U x 4HP (lower bracket) | 32030       | 32010     |
| 6U x 4HP (upper bracket) | 32028       | 32027     |
| 6U x 8HP (std.)          | 32094       | 32091     |
| 6U x 8HP (wire wrap)     | 32152       | 32011     |
| 9U x 4HP                 | 32035       | 32014     |
| 9U x 8HP (wire wrap)     | 32153       | 32128     |
| 9U x 8HP (deep comp.)    | 32226       | 32186     |

**Component Kits — without front panel**  
Includes handle(s), I.D. plates, bracket(s), and corresponding hardware:

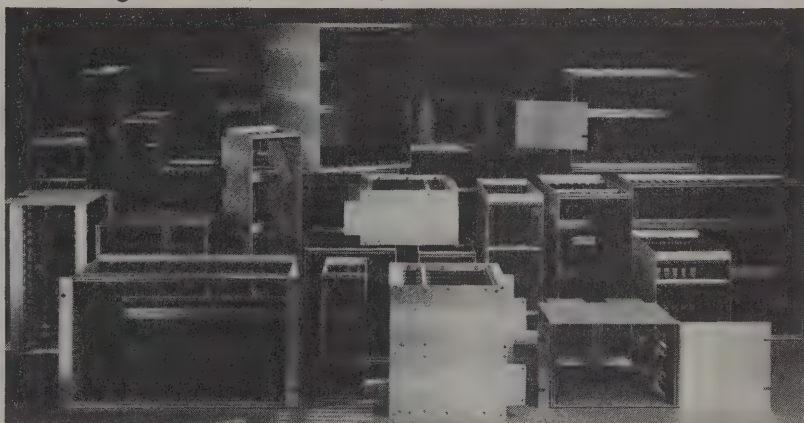
| Size     | Part No. |
|----------|----------|
| 3U x 4HP | S216-311 |
| 6U x 4HP | S216-611 |
| 9U x 4HP | S216-911 |

**Eurocard (VME) Filler Panels**  
Filler panels are prepunched, anodized, vertical grained, .090" thick aluminum covers that fasten to card cage extrusions to cover openings in the front of a card cage. Mounting hardware is included, but not handles.

Include both main part no. for height, dash no. for width

| Height/Part no. | Width/dash no. |             |
|-----------------|----------------|-------------|
| 3U 32145-       | 2HP            | -01 6HP -14 |
| 6U 32146        | 3HP            | -02 8HP -11 |
| 9U 32251-       | 4HP            | -03         |

### Card Cages - VME / Multibus / Eurocard



All Electronic Solutions' Card Cages are fully assembled and tested.

Electronic Solution's Eurocard cages come in hundreds of combinations from 3U to 9U heights, 100mm to 400mm depths, and from 3 to 21 slots. Universal mount, vertical rack mount and horizontal rack mount are available.

For VMEbus or Multibus II, high quality J1 backplanes are installed and tested — J2 backplanes are optional.

#### Universal Mount

For use inside enclosures, equipment drawers, towers and subsystems. End plates have captive fasteners for easy installation.

#### VME

3Ux160mm: 9, 12, 16, 20 slots  
6Ux160mm: 3, 5, 7, 9, 12, 16, 20, 21 slots  
9Ux400mm: 12, 16, 20 slots

#### Multibus II

6Ux220mm: 3, 5, 7, 9, 12, 16, 20 slots

#### Vertical Rack Mount

Standard 19" rack mounting unit with cards vertically oriented.

#### VME

3Ux160mm: 9, 12, 16, 20 slots  
6Ux160mm: 9, 12, 16, 20, 21 slots  
9Ux400mm: 12, 16, 20 slots

#### Multibus II

6Ux220mm: 9, 12, 16, 20 slots

#### Horizontal Rack Mount

Save rack space on cages with 9 slots or less.

#### VME

6Ux160mm: 3, 5, 7, 9 slots

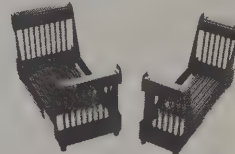
#### Multibus II

6Ux220mm: 3, 5, 7, 9 slots

#### Accessories

Center adapter 60475-01 divides a 6Ux160 slot into two 3U slots. Fans, covers, J2 and J1/J2 monolithic backplanes are all available.

### Multibus I



The MICRO-FILE™ line of Multibus cages is available with 4 to 26 slots, with or without low noise backplanes, and in universal mount, vertical rack mount or horizontal rack mount.

#### Standard Mounting

0.60" Card Centers: 4, 5, 6, 8, 9, 10, 12, 13, 14, 15, 16, 20, 24 or 26 slots.  
0.75" Card Centers: 3, 4, 5, 7, 9, 12, 16, or 21 slots.  
4- or 9-slot versions available with female bus extension on connector.

#### Vertical Rack Mount

0.60" Card Centers: 12, 14, 15, 16, 20, 24 or 26 slots.  
0.75" Card Centers: 12, 16, or 21 slots.  
Rack Height 15.72" on all vertical rack mount cages.

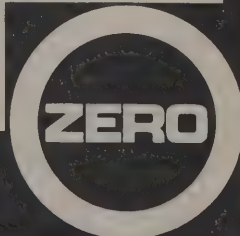
#### Horizontal Rack Mount

0.60" Card Centers: 4, 5, 6, 8, 9, 10, 12, 14, or 15 slots.  
0.75" Card Centers: 3, 4, 5, 7, 9, or 12 slots.  
Rack Height ranges from 3.47" to 10.47".  
See our catalog for details.

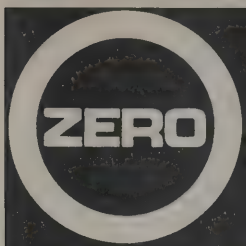
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Zero Enclosures, Refer to Cabinets & Enclosures Section 1400







# ZERO CABINETS

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## EPOCH 2000

### EPOCH 2000



### ZERO CABINETS INTRODUCES EPOCH 2000

A unique modular system that allows you to design cabinet assemblies to meet your special needs. The strong visual appearance of the **EPOCH 2000** reflects quality, enhances systems integration and reinforces the high technology trend combining form and function. The sculptured appearance with soft edges marks a

significant step forward in the styling of computer and electronic cabinets.

With over 35 years of extensive manufacturing experience we have designed the **EPOCH 2000** to meet the highest standard of precision and for maximum flexibility requested by our valued customer.

- Side Panels—Vertical
  - Plain
  - Vented
- Side Panels—Sloping Front
  - Plain
    - for: 300 Series
    - 400 Series
    - 800 Series
  - Vented
    - for: 300 Series
    - 400 Series
    - 800 Series
- Face Mounted Doors
  - Plain—Vented—
  - Louvered—Plexiglass—
- Top Panels
  - for: Vertical & Sloping
- Lower Front Panels
  - for: Sloping Cabinets
- Formed Panels
- Plexiglass Panels
- Writing Desk w/Tray
- Retractable Writing Surface
- Writing Shelves w/Drawers
- Equipment Drawer
- Sliding Shelf (Vented)
- Fixed Shelf (Vented)
- Supporting Angles
- Mounting Angles
- Cooling Accessories
  - Packaged Blowers
  - Fan Panels
  - Fan Tray
  - Exhaust/Intake Fans
- Electrical Accessories
  - Power Panels/Strips
  - Buss Bars
- Hardware/Misc. Accessories
  - Nuts
  - Bolts
  - Screws
  - Lock
  - Casters
- 22 Paint Casters & Laminates

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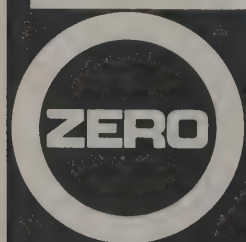
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# ZERO CABINETS

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## ZERO MATRIX IV SERIES 101 & 404

### Heavy Duty Commercial Cabinet



Modularized **Series 101** cabinets are the most flexible models in the Matrix IV line. Their wide-open design provides access on both sides, front, and back. Instruments are easy to install and simple to service. Series 101 units are easily expanded from one to two or more bays—you simply bolt them together.

The standard Series 101 includes a basic frame, two lift-off side panels, your choice of flush or pagoda top, a surface-mounted auxiliary hinged rear door with magnetic latch, four leveling feet, and two mounting rails. Extra sets of mounting rails are available as an option.

Side panels and rear doors are painted with a light beige baked, textured finish. Tops and frame are black. Other colors are available on special order.

In quantity orders, **Series 404** is the most economical Matrix IV cabinet and is ideally suited to applications that do not require lateral enclosure access. For high strength and rigidity, the space-saving Series 404 uses side panels that function as stationary frame members.

The standard Series 404 cabinets consist of a basic frame, your choice of a flush or pagoda top, a surface-mounted auxiliary hinged rear door with magnetic latch, four leveling feet, and two mounting rails. Extra sets of mounting rails are available as an option.

Cabinet frame and top are painted black. Rear door is painted with a light beige baked, textured finish. Other colors are available on special order.

#### For reference only:

approximate weight:

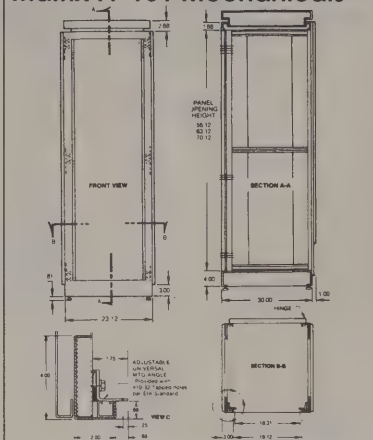
|             |          |
|-------------|----------|
| 56" cabinet | 232 lbs. |
| 63" cabinet | 245 lbs. |
| 70" cabinet | 258 lbs. |

Mounting angles are 12 GA. steel. Drilled and tapped for #10-32 screw to E.I.A. Standard hold pattern.

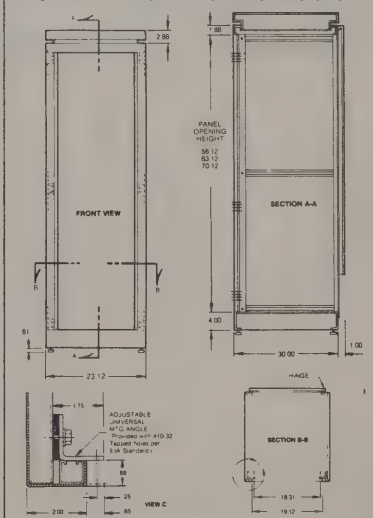
#### Standard Finish:

Painted with minimum 2 mils of polyester coating. Hardware, including 10-32 tapped mounting angles, are plated. Matrix IV cabinets come with your choice of top styles. The flush-mounted top is ideal for applications where overhead clearances may be a problem. Pagoda tops provide an interesting styling alternative and the functional benefits of an integral cooling pattern. (Vent holes on underside.)

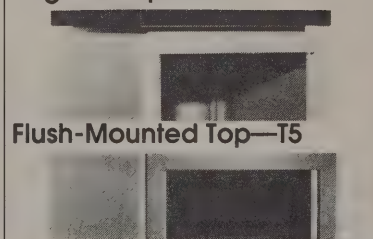
### Matrix IV 101 Mechanicals



### Matrix IV 404 Mechanicals



### Pagoda Top—T2



### Flush-Mounted Top—T5

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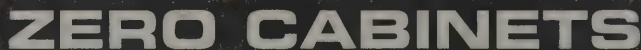
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# ZERO





# ZERO ALUMA-TRAK® CHASSIS SLIDES

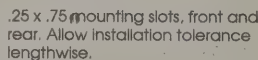
### Tilt-Type/Quick Disconnect Slide Locks in Extended Position



### Non-Tilt/Quick Disconnect Slide Locks in Extended Position



14 GA. Steel Cad. Plate  
Our quick mounting bracket is an exclusive design that makes it easy and quick to mount all Zero ALUMA-TRAK slides. It is designed so that slides can be mounted to compensate for rack misalignment. The reverse channel on the bracket eliminates fumbling and time lost in securing the slide cabinet section to the cabinet rails. Slides can be mounted from either the front or rear of the cabinet, thus providing easiest access.



.25 x .50 mounting slots, 4 places.  
Allow installation tolerance on  
cabinet and chassis width. No  
shims required.

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Facilities on the East and West Coast.**



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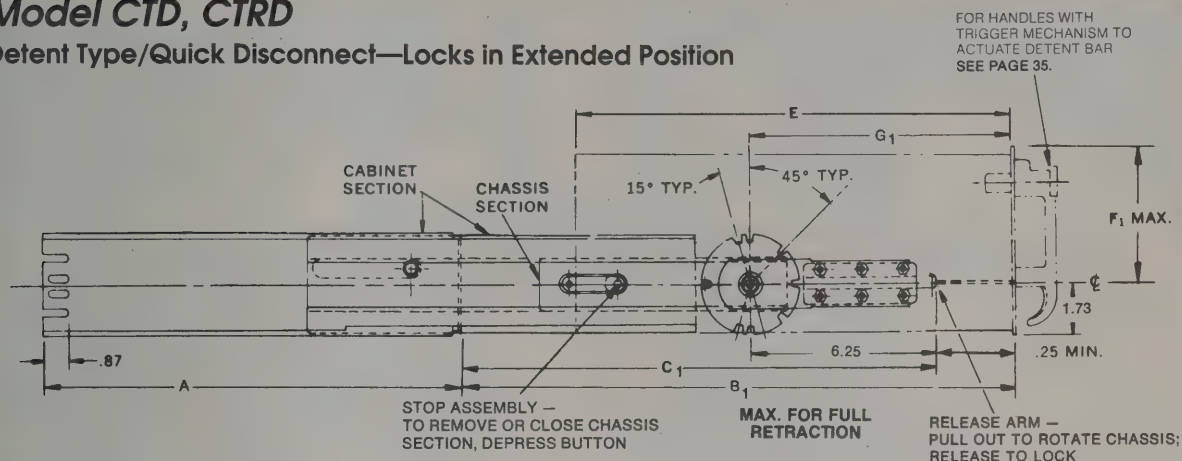
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## ZERO-TRAK® CHASSIS SLIDES

# ZERO

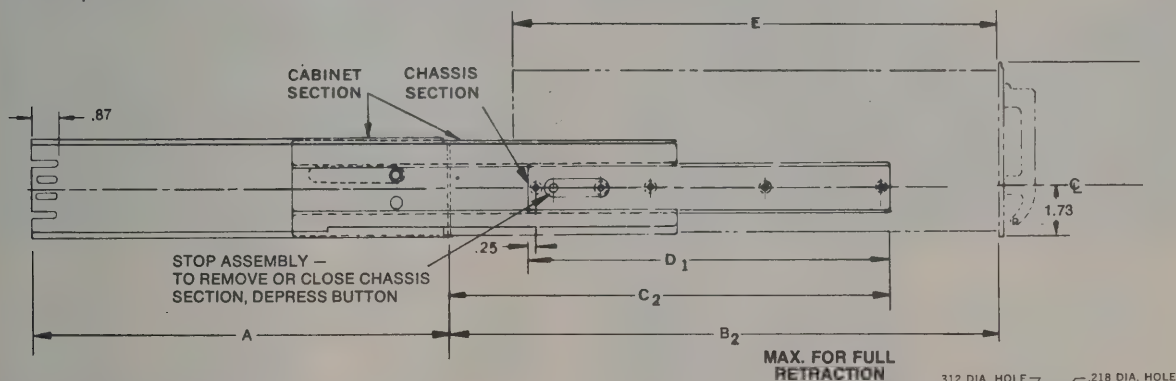
### Model CTD, CTRD

Detent Type/Quick Disconnect—Locks in Extended Position



### Model CTN, CTRN

Non-Tilt/Quick Disconnect—Locks in Extended Position



### Stock Slide Dimensions

| A      | B <sub>1</sub> | B <sub>2</sub> | C <sub>1</sub> | C <sub>2</sub> | D <sub>1</sub> | E     | F <sub>1</sub> | G <sub>1</sub> | J | K | L    |
|--------|----------------|----------------|----------------|----------------|----------------|-------|----------------|----------------|---|---|------|
| *12.00 | —              | 12.75          | —              | 10.75          | 8.25           | 11.00 | —              | —              | 3 | 2 | 2.25 |
| *14.00 | —              | 14.94          | —              | 14.81          | 12.12          | 13.00 | —              | —              | 4 | 3 | .25  |
| 16.00  | 18.56          | 17.81          | 18.69          | 15.69          | 12.12          | 15.00 | 9.31           | 7.12           | 4 | 3 | 2.25 |
| 18.00  | 22.56          | 21.81          | 20.69          | 21.56          | 16.00          | 17.00 | 11.78          | 8.12           | 5 | 4 | .50  |
| 20.00  | 26.56          | 25.81          | 22.69          | 23.56          | 16.00          | 19.00 | 14.12          | 10.12          | 5 | 4 | 2.50 |
| 22.00  | 30.56          | 29.81          | 25.56          | 25.56          | 16.00          | 21.00 | 16.88          | 11.25          | 5 | 4 | 4.50 |
| 24.00  | 33.56          | 32.81          | 26.56          | 26.56          | 16.00          | 23.00 | 18.06          | 13.25          | 5 | 4 | 6.50 |

Tolerances unless otherwise specified

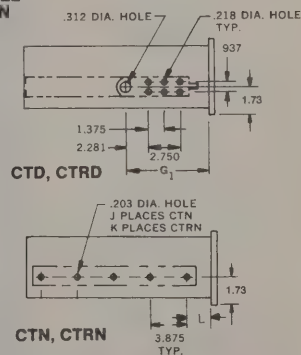
Decimals: .XX±.03

Angles: ±1°

.XXX±.010

\*Not available in CTD, CTRD (Detent type)

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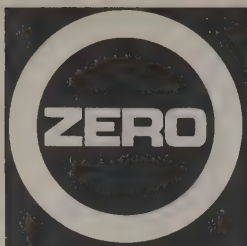
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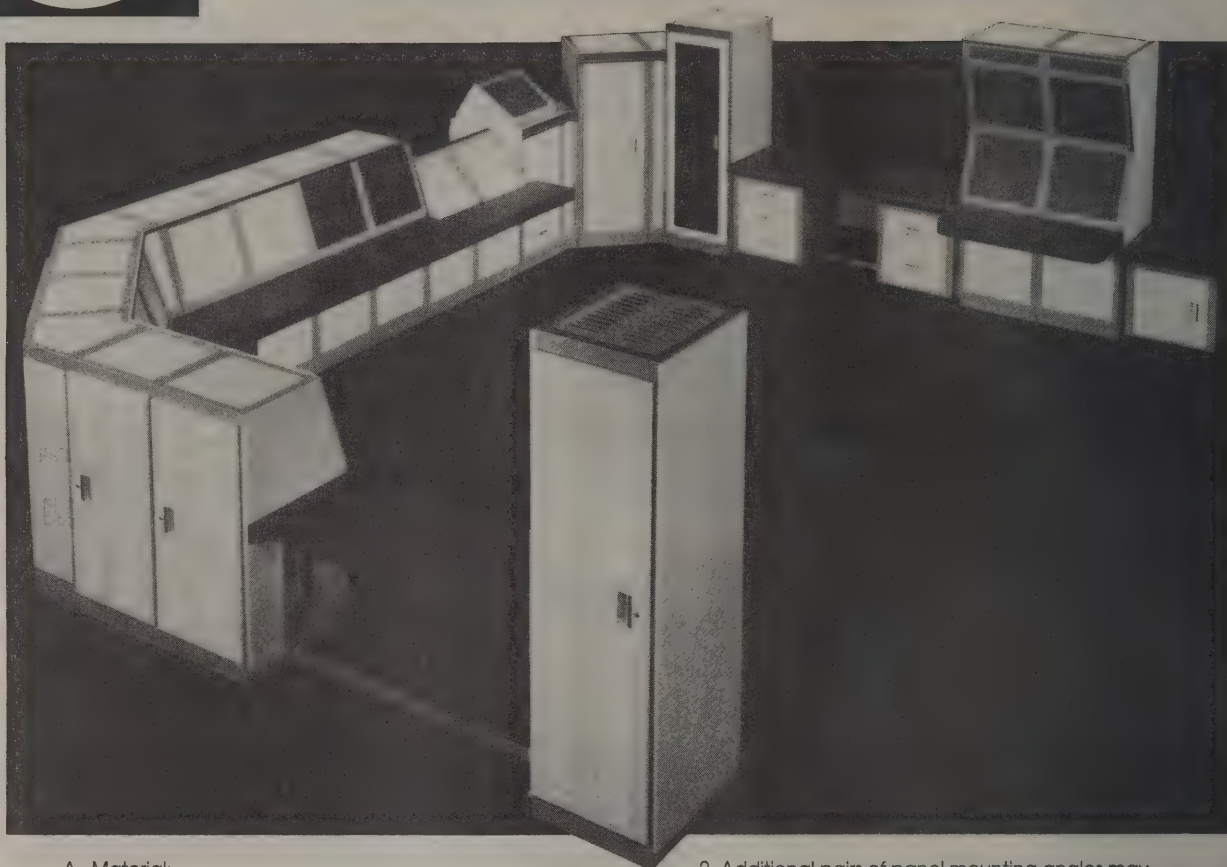




# ZERO CABINETS

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## MODULAR ELECTRONIC CABINETS



### A. Material:

1. Cabinet-corner post: 14 ga. steel
2. Mouldings and braces: 16 ga. steel
3. Panel mounting angles: 12 ga. steel.

### B. Manufacturing/assembly procedure:

1. "Butt-welding" and seam welding
2. Electronically-controlled spot-welding

### C. Design features:

1. "Four-sided" cabinet-corner posts
2. 19" or 24" wide panel space (for standard 19" and 24" formed or flat panels) available at front, rear and top.
3. Panel mounting hole spacing: EIA and WE
4. Panel mounting holes **TAPPED** 10-32 thread
5. May be bolted together in any quantity for multiple installation or developing console assemblies.

### D. Panel mounting angles:

1. Two pair provided, fully adjustable front to rear on **STANTRON'S "UNI-CHANNEL"**

2. Additional pairs of panel mounting angles may be purchased.

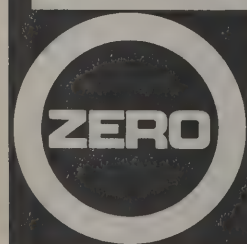
### E. Cabinet bottom opening may be enclosed with standard 19" or 24" wide plain, perforated or louvered panels.

### F. Pontoon base features:

1. Bolted to cabinet bottom
2. Will accept casters
3. Has provisions for bolting to floor. (Order inverted base)

### G. Enclosure accessories:

1. Doors, Sides and Panels
2. Work/Writing Surfaces
3. Accessories:  
Drawers, slides, writing shelves, chassis guides, card cages, fans, blowers, ventilation grills, hardware, and casters.  
Available in 22 standard colors.



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## CABINET STYLE SELECTION CHART

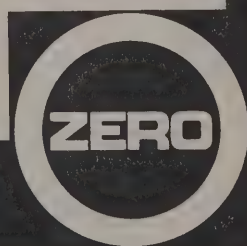


|  |                                                          |  |                                                                 |
|--|----------------------------------------------------------|--|-----------------------------------------------------------------|
|  | <br>"200" VERTICAL SERIES                                |  | <br>"300", "400" & "800"<br>SLOPED FRONT SERIES                 |
|  | <br>"100" & "1500" DESK HEIGHT/<br>COUNTER HEIGHT SERIES |  | <br>"1700" & "2200"<br>LOW SILHOUETTE SERIES                    |
|  | <br>"1400" & "1600"<br>PROJECTED TOP SERIES              |  | <br>"2100" & "2300"<br>"K" SERIES DESK<br>HEIGHT/COUNTER HEIGHT |
|  | <br>"2000" "K" SERIES                                    |  | <br>"1800" "K" SERIES                                           |
|  | <br>"1900" "K" SERIES                                    |  | <br>DATA DESKS &<br>"2400" INSTRUMENT SERIES                    |

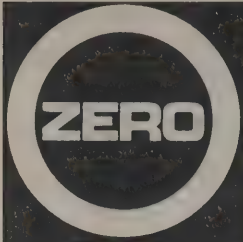
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**ZERO**

# ZERO EAST

288 Main Street, Monson, MA 01057 • Tel: 413-267-5561 • FAX: 413-267-5569

## INTRODUCING THE ZERO GUARDIAN™ EXTRA DUTY CABINET...

Do you need a catalog EIA rack with no modifications in four days?

☐ Yes ☐ No

Do you need a catalog EIA rack with modifications?

☐ Yes ☐ No

Do you need a noncatalog rack to fit your special application?

☐ Yes ☐ No

Do you need a special enclosure to fit your product concept?

☐ Yes ☐ No

 Do you need all of the above with not much difference in cost and no NR costs? ☐ Yes ☐ No

### You No Longer Have to Conform To Someone Else's Design or Catalog!

#### SUITS YOUR DESIGN

The frame consists of four components. A top, bottom, and two side structures which are welded together as shown in figure 1, along with tolerances and weld information. The dimensions of the frame openings and of the component parts can be changed to suit your design with only a few limitations. The size must fit into a maximum envelope of 48x 72x84 inches and the Vertical side panel face must be 1.44" wide when a shielded and/or environmentally sealed door is required.

#### FLEXIBLE IN CONFIGURATION AND DIMENSION

The two photographs in the upper portion of the facing page are examples of applications that took advantage of this flexibility. Also note that slopes are available and you are not restricted to the angle of the slope.

The ZERO GUARDIAN is not the usual catalog enclosure. It was developed to fulfill your need for the flexibility in enclosure design that will make your product distinctive. This is especially important in today's economy in

which defense companies need to develop and deliver product to the commercial markets, not to any set specification as in the military, but to their own individual concepts. The ZERO GUARDIAN's design flexibility, being based upon Concept Engineering, gives you the freedom to develop an individual and unique product. You no longer have to conform to someone else's design or catalog.

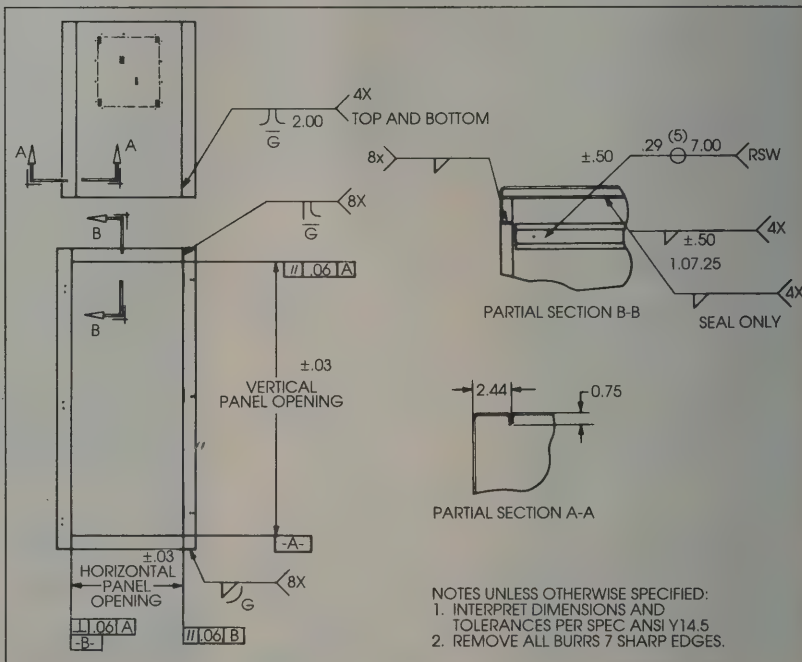
#### CHOOSE YOUR MATERIALS

The Guardian enclosures are available in steel and aluminum. The frames are .125 aluminum or 12

gage steel and the doors are .063 aluminum or 16 gage steel.

#### MULTIPLE BAYS?

Baying can be accomplished by bolting together individual bays or by making multiple bays in a one piece construction as shown in the photograph. This is restricted to three bays in length. If your requirement is for more than three bays, multiple one pieces can be bolted together. The benefits of the one piece construction are lower cost and ease of shielding or environmental sealing since the seams between bays are eliminated.



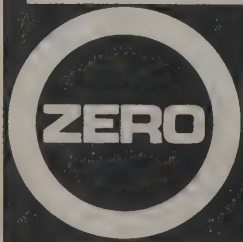
## FOR FAST RESPONSE CALL (800) 584-4848

### Other Zero Companies Eager to Satisfy Your Needs

McLean Engineering, Refer to Fans & Blowers Section 2600

McLean Midwest, Refer to Fans & Blowers Section 2600

Nielsen Hardware, Refer to Hardware & Mechanical Components Section 2500

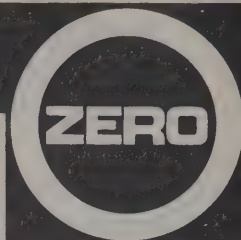

**ZERO**



# ZERO EAST

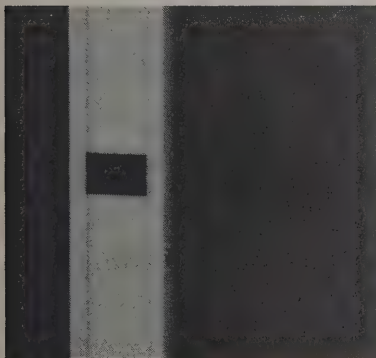
288 Main Street, Monson, MA 01057 • Tel: 413-267-5561 • FAX: 413-267-5569

## CHOOSE YOUR OWN SIZE, FINISH AND CONFIGURATION



### CHOOSE YOUR DOORS

The photograph below shows the Zero patented "Paddle" latch. Zero also offers the "Flush" latch and both latching systems are multipoint and are used on both mid and high shielded units, as well as drip proof doors. The paddle latch is suggested for applications where two gaskets are being compressed as in the case of a combination shielded and drip proof enclosure. There is also an unshielded door latching system we call the "Slam" latch which automatically latches when the door is closed. This is a two point latching system.



### EMI SHIELDING?

Figure 2 shows the shielding effectiveness levels achieved by the ZERO GUARDIAN. The Tests were performed per MIL STD 285 and reports are available. The gasket material is tin plated copper clad steel wire mesh over a neoprene sponge core.

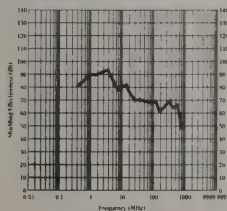
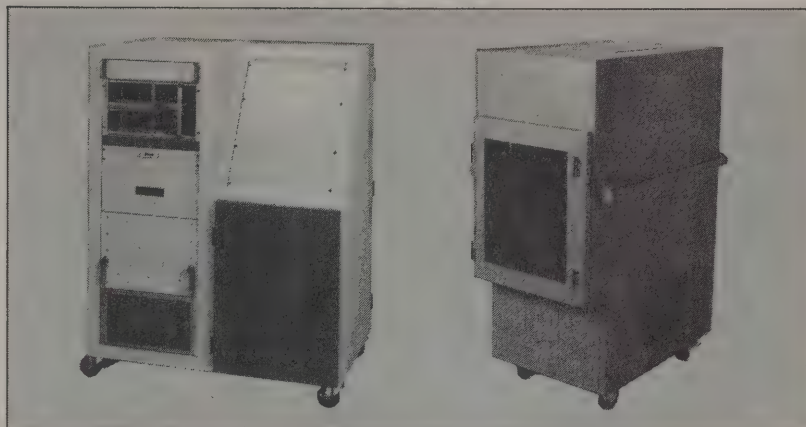


FIGURE 2



The gasket is stuffed into a groove on the door, so there is little effort in changing a gasket if it ever becomes necessary. There is no glue separation or special fasteners to worry about.

### FINISH?

All finishes unless otherwise specified will be a water base textured bake top coat. This is for environmental purposes as well as it being more economical. All other coatings must have a VOC content of 3.0 pounds per gallon of coating or less. Pretreatment for aluminum is a chemical film per Mil-C-5541 and an iron phosphate per TT-C-490 for steel. In the case of a steel shielded unit, the gasket areas are arc sprayed with a .008 thick coating of a Tin/Zinc alloy. This also achieves electrolytic compatibility.

### CHOOSE YOUR ACCESSORIES

The following is a list of some of the many accessories available:

- Leveling feet
- Casters
- Dollies and bases with fork lift provisions
- Packaged blowers
- Fan trays
- Chassis slides
- Buss bars
- Power strips
- Connector panels

- Air conditioning units
- Writing surfaces
- Drawers
- Blank panels
- Equipment shelf angles
- Desk top cabinets (27 sizes)

### 4-DAY QUICK SHIP NEEDED?

We ship 19" opening models in 4 working days - ask for "Quick-Ship." We ship custom designs in as little as 6 weeks - ask for "Prelim. Spec. Sheet."

| Table 1 - "Quick Ship" Models |       |
|-------------------------------|-------|
| Front Opening                 | Depth |
| 19.00 x 52.62                 |       |
| 19.00 x 61.38                 | 30.00 |
| 19.00 x 70.12                 | or    |
| 19.00 x 78.88                 | 36.00 |

Call Today For  
the Zero Guardian  
Preliminary Spec Sheet or  
the 4 Day Quick Ship Flyer  
413-267-5561

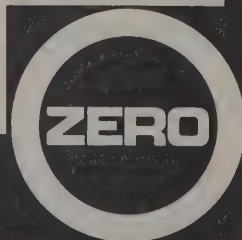
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**Other Zero Companies Eager to Satisfy Your Needs**

Electronic Solutions, Refer to Cabinets & Enclosures Section 1400

Zero Cabinets, Refer to Cabinets & Enclosures Section 1400

Zero Enclosures, Refer to Cabinets & Enclosures Section 1400







# ZERO PLASTICS

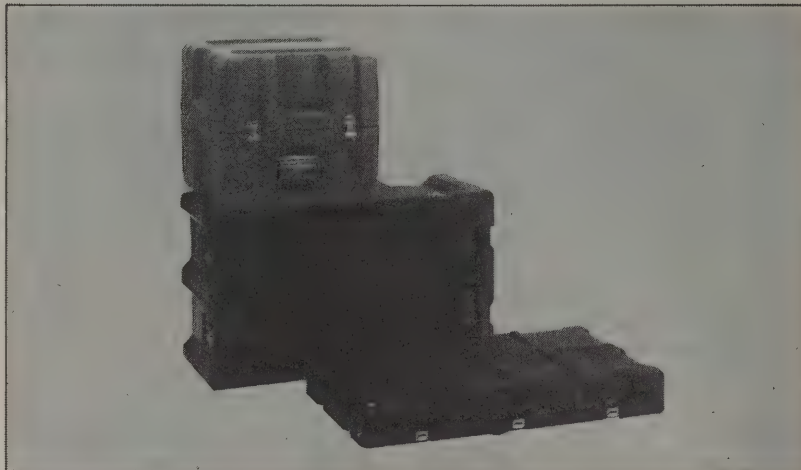
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## CASE TECHNOLOGY EXPERTS FOR OVER 40 YEARS

Whether you need...small, compact, portable cases for personal utility or larger cases for protection, transport and storage, Zero has the case you need. Here are the experienced case design engineers who

understand the technologies critical to performance in any environment...who know how and when to use plastics for maximum utility...who can design just the right configuration to protect your products.

### Transitainer Roto-Molded Cases



#### Applications:

- Field portable
- Test equipment

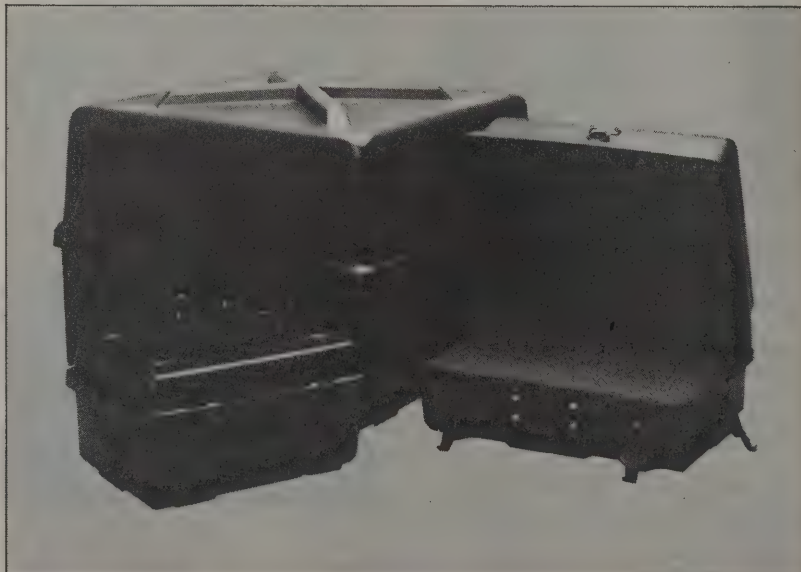
#### Benefits:

- Total packaging
- Resists most chemicals
- Gasketed for weathertight protection

#### Features:

- Made from rotationally molded polyethylene plastic
- Compounded color impregnated directly into durable polyethylene plastic shells
- Recessed hardware for added protection
- Numerous sizes available from 6x6x10 to 48x52x19 from stock

### Valulite Shipping/Carrying Cases:



#### Applications:

- Meets tough military specs at a low cost
- Makes your equipment transportable via common carrier, truck, airline or hand carry

#### Benefits:

- High density polyethylene plastic
- Weathertight seal for equipment protection
- Proven performance and reliability

#### Features:

- Polyethylene thermoformed with molded-in closure area and gray molded-in color shells
- Cam action, positive locking, black latches
- Raintight, shock resistant and vibration, dust and humidity protected.
- Standard options available: colors, foam



**FOR FAST RESPONSE CALL (800) 291-1119**

**Other Zero Companies Eager to Satisfy Your Needs**

McLean Engineering, Refer to Fans & Blowers Section 2600

McLean Midwest, Refer to Fans & Blowers Section 2600

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# ZERO PLASTICS

**ZERO**

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## TRANSIT CASES • INSTRUMENT CASES • CARRYING CASES • COMBINATION TRANSIT/INSTRUMENTATION CASES

### Rotorack Versatile Instrument Cases

#### Applications:

- Field portable, sensitive electronic instruments
- Military applications, monitoring equipment
- Seismic, pollution control instrumentation
- Various test equipment
- Field computer and communications systems

#### Benefits:

- Quick and easy installation of rack-mounted equipment
- Total accessibility from front and rear to instruments and contents
- Specially designed for stacking

#### Features:

- Rotationally molded shell and covers of high density polyethylene
- 19" rack frame on shock mounts provide 30G forces of protection
- Newly engineered latch allows covers to be removed or replaced while stacked
- Equipment design load 80 lbs.



### Style-Life Cases

#### Applications:

- Transport computers, electronic instrumentation, medical electronics, electrocommunications, and sensitive electromechanical devices.
- Portable unit for testing and diagnostic equipment
- Product display and samples

#### Benefits:

- Multiple sizes on both standard and heavy duty styles
- Lightweight and durable
- High impact plastic shells

#### Features:

- Constructed from textured ABS thermoformed plastic
- Black or grey morocco grain outside, smooth finish inside
- Available options include separable hinged cover, inner lid assembly, flanged closure, flange hole patterns with floating #10-32 threaded inserts and gaskets. (All flange hole patterns must be supplied by customer.)
- Standard foam packs and diced foam packs available
- Panel mounting brackets and locking latches



**CALL TODAY FOR SPECIAL AND CUSTOM ORDERS (413) 267-5561  
FAST SHIPPING**

Stock items ship in 1 to 5 days.

Non-stock cases require 4 to 6 weeks

Custom cases ship in 8 to 10 weeks

All shipments are F.O.B. Zero Plastics, Monson, Massachusetts

We'll ship your cases any way you specify!

#### Government Orders

Zero Plastics is certified as a qualified source by the Defense Contractor Management Area Operations (DCMAO). All manufacturing operations are in compliance with MIL-I-45208 quality standards. Equipment calibration is to MIL-STD-45662, with color matches FED-STD-595.

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Zero East, Refer to Cabinets & Enclosures Section 1400

Zero Enclosures, Refer to Cabinets & Enclosures Section 1400

**ZERO**

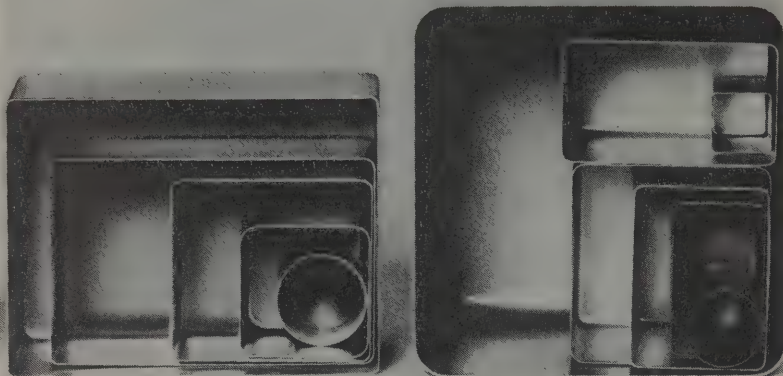


# ZERO ENCLOSURES

200 North 500 West, North Salt Lake, UT 84054 • Tel: 801-298-5900 • FAX: 801-292-9450

## STANDARD DEEP DRAWN ENCLOSURES

### DEEP DRAWN ALUMINUM ENCLOSURES



Zero Corporation is the leader in quantity, quality and delivery of deep drawn aluminum enclosures. Offering over 75,000 sizes pretooled, each is created with a standard tool ensuring consistency. For seamless, draft-free construction in aluminum enclosures look to Zero!

**Size Range:** 1 cubic inch to 8 cubic feet (height in 1/16" increments)

**Material:** Selected aluminum alloys and gauge designations are used. Different aluminum alloys can be drawn on special order.

**Heat Treated:** Available as a special order item.

**Accessories:** Various covers are available.

### PRECISION MINIATURES



Zero Corporation also now offers precision deep drawn miniature enclosures in a multitude of materials. Still featuring the same seamless deep drawn construction.

**Size Ranges:**

**Round Enclosures:** enclosures and covers are offered from 0.375" to 3.375", in depths up to 3.875".

**Rectangular Enclosures:** enclosures and covers are available ranging in size from 0.19" wide x 0.80" long to 3.938" wide x 4.625" long, in depths to 3.7".

**Square Enclosures:** enclosures and covers measure from 0.531" x 0.531" to 3.016" x 3.016" in depths to 3.00".

**Materials:** Aluminum, cold-rolled steel, brass, mu-metal and copper.

**Accessories:** Various covers are available.

*For complete information contact: ZERO ENCLOSURES*

## FOR FAST RESPONSE CALL (800) 209-9922

**Other Zero Companies Eager to Satisfy Your Needs**

McLean Engineering, Refer to Fans & Blowers Section 2600

McLean Midwest, Refer to Fans & Blowers Section 2600

Nielsen Hardware, Refer to Hardware & Mechanical Components Section 2500



# ZERO ENCLOSURES

**ZERO**

200 North 500 West, North Salt Lake, UT 84054 • Tel: 801-298-5900 • FAX: 801-292-9450

## CUSTOM DEEP DRAWN/MODIFIED ALUMINUM ENCLOSURES AND PRECISION MINIATURES

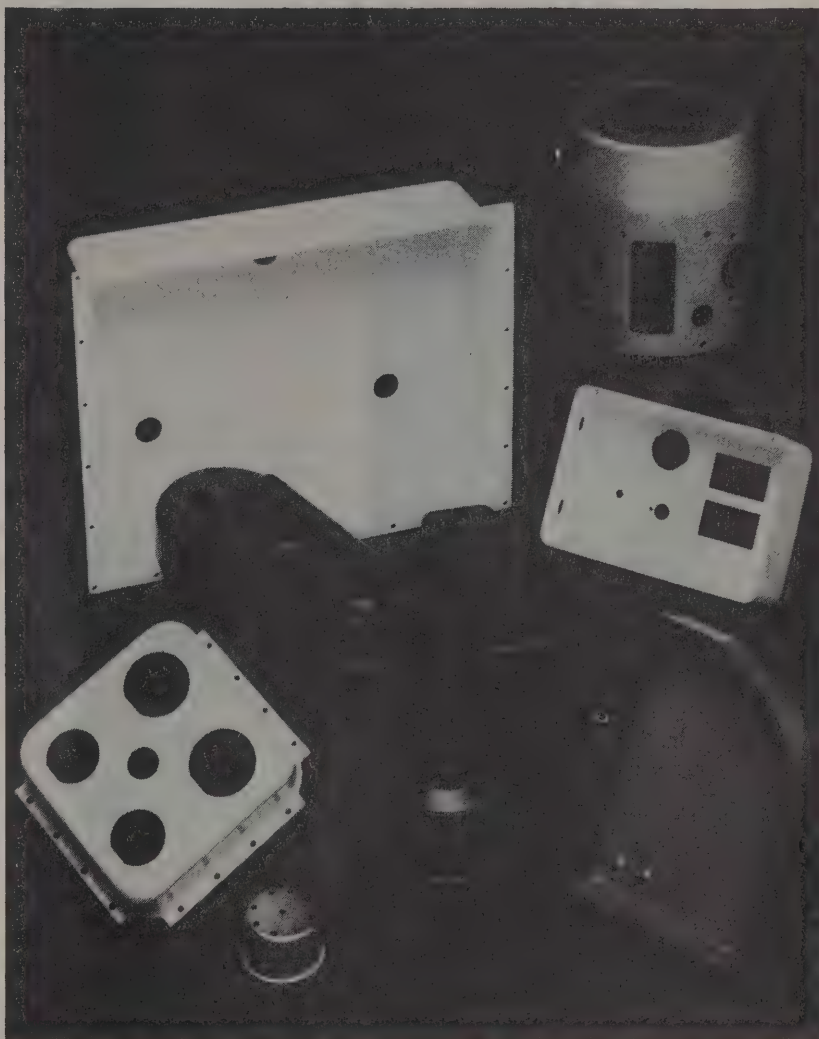
Zero Corporation is also the source for total custom draw or modification capabilities. For strictly aluminum deep drawn enclosures, or precision miniatures in a multitude of materials call Zero Corporation first.

### DEEP DRAWN ALUMINUM ENCLOSURES

- Secondary Operations Available: piercing, welding, trimming, louvers, painting, anodizing, silk screening or engraving.
- Custom sizes and shapes available on special order.
- Complete fabrication and assembly available.
- Accessories include nutplate assemblies, gaskets and various covers.
- Heat treat also available.

### PRECISION MINIATURES

- Secondary Operations Available: piercing, soldering, welding, brazing and special finishes.
- Custom sizes and shapes on special order.



**FOR DEEP DRAWN ALUMINUM ENCLOSURES  
OR PRECISION MINIATURES CONTACT:**

ZERO ENCLOSURES  
200 North 500 West, North Salt Lake, UT 84054  
Tel: 801-298-5900 • FAX: 801-292-9450

**FOR FAST RESPONSE CALL (800) 209-9922**

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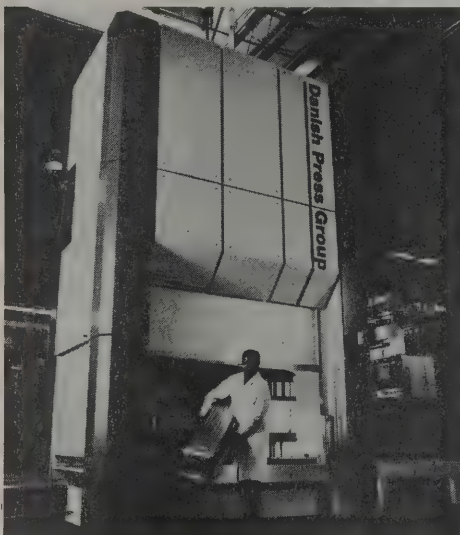
# ZERO ENCLOSURES

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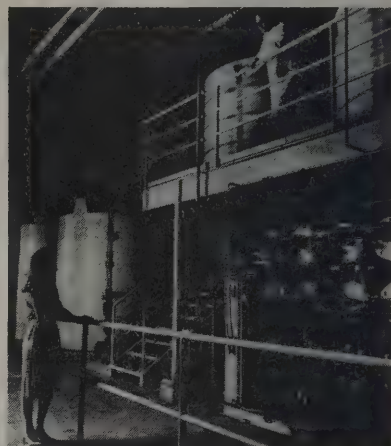
**For your application to be number one,  
choose ZERO**  
**THE WORLD LEADER IN DEEP DRAWN ENCLOSURES**

Over 75,000 sizes available with no tooling cost.

Large, modern manufacturing facility  
with new state-of-the-art equipment.



Sophisticated  
Management  
Information Systems  
link material inventory,  
production, scheduling  
and shipping to provide  
accuracy and faster  
delivery.



Zero is positioned to protect the environment through  
investment in the best available technology waste  
water treatment facility. Allows for water purification  
and recycling.

## SIZES:

From less than a cubic inch to over eight cubic feet (smaller  
than a thimble or larger than a bathtub!)

### Rectangular standard sizes from

.19" x .80" to 27.25" x 37.25". Covers available.

### Square standard sizes from

.531" to 28.25". Covers available.

### Round standard sizes from

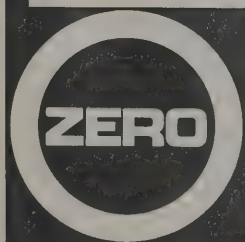
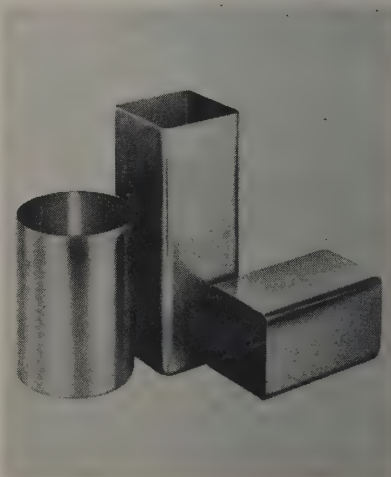
.375" to 13.09". Covers available.

### FOR DEEP DRAWN ALUMINUM ENCLOSURES OR PRECISION MINIATURES CONTACT:

ZERO ENCLOSURES

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Tel: 801-298-5900 • FAX: 801-292-9450



**FOR FAST RESPONSE CALL (800) 209-9922**

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*McLean Midwest, Refer to Fans & Blowers Section 2600*

*Nielsen Hardware, Refer to Hardware & Mechanical Components Section 2500*



# ZERO ENCLOSURES

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## Special DEEP DRAWN Applications



**ZERO**



### **CUSTOM:**

While there are over 75,000 pretooled sizes, our engineers, with the support of our CAD system, can assist you to satisfy your specific requirements.

### **THICKNESSES:**

.020" to .125"

### **METALS:**

Aluminum—6061, 1100, 3003  
Cold-Rolled Steel  
Brass  
Mu-Metal  
Copper

### **SECONDARY OPERATIONS:**

Piercing, soldering, welding, brazing, slots, holes, dimples, angle trims, louvres, irregular cut outs, flanges, pemserts, nutplate assemblies, gaskets and more!

### **FINISHING SERVICES:**

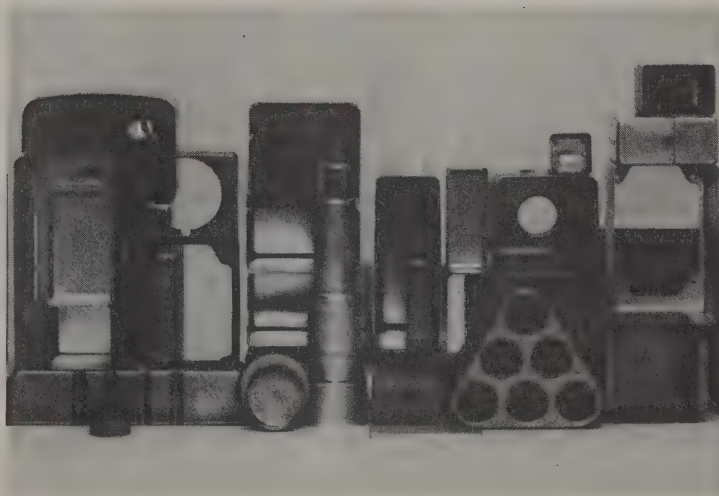
Paint, anodize, Iridite, alodine, heat treat, powder-coat paint and more!

### **COVERS:**

Covers may be selected from five styles, including inside fit, flush fit or outside fit covers.

### **CHOOSE ZERO:**

ZERO ENCLOSURES  
200 North 500 West,  
North Salt Lake, UT 84054  
Tel: 801-298-5900  
FAX: 801-292-9450



### **WHY BUY DEEP DRAWN ENCLOSURES?**

- Seamless design insuring dust proof and water proof
- High structural integrity
- Permits a variety of secondary operations
- Pre-Engineered
- No tooling or set-up costs (Standard); Low tooling costs (Custom)
- Low minimum order (\$50.00)
- Free trimming to your height specifications

**FOR FAST RESPONSE CALL (800) 209-9922**

**Other Zero Companies Eager to Satisfy Your Needs**

Electronic Solutions, Refer to Cabinets & Enclosures Section 1400  
Zero Cabinets, Refer to Cabinets & Enclosures Section 1400  
Zero East, Refer to Cabinets & Enclosures Section 1400



**ZERO**



# ZERO ENCLOSURES

200 North 500 West, North Salt Lake, UT 84054 • Tel: 801-298-5900 • FAX: 801-292-9450

## ALUMINUM CASES 335 STANDARD SIZES IN 14 STYLES

### Carrying Cases



#### PERFORMANCE REQUIREMENTS

|                 | ZC7000                         | ZIP800                          | Centurion® Elite                 | Centurion® Divider                | Centurion® Polaris               | Val-An                           |
|-----------------|--------------------------------|---------------------------------|----------------------------------|-----------------------------------|----------------------------------|----------------------------------|
| Watertight      |                                |                                 |                                  |                                   | X                                | X                                |
| Splash Proof    |                                |                                 |                                  |                                   | X                                | X                                |
| Drip Proof      |                                | X                               | X                                | X                                 | X                                | X                                |
| Salt Exposure   |                                |                                 |                                  |                                   | X                                | X                                |
| Dust Proof      | X                              | X                               | X                                | X                                 | X                                | X                                |
| Stock Available | X                              | X                               | X                                | X                                 |                                  |                                  |
| Shipped Within  | 3 Days                         | 3 Days                          | 1 Wk                             | 1 Wk                              | 6 Wks                            | 5 Wks                            |
| Size Ranges     | 4.00 x 7.00 to<br>9.19 x 13.25 | 6.00 x 9.00 to<br>10.00 x 16.00 | 9.00 x 12.00 to<br>20.00 x 29.00 | 13.00 x 18.00 to<br>13.00 x 21.00 | 9.00 x 12.00 to<br>20.00 x 29.00 | 5.25 x 18.00 to<br>29.00 x 19.00 |
| Number of Sizes | 11                             | 6                               | 20                               | 2                                 | 20                               | 52                               |

### Instrument Cases



#### PERFORMANCE REQUIREMENTS

|                 | ZIC 400                        | ZIP 800                         | ZIC 600                         | ZDE                              | Centurion® Elite                 | Valuline III                    | Val-An                          | Ruggedized                      | Val-An 900                   | Modular                            | Zero-Ply                           |
|-----------------|--------------------------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------|------------------------------------|------------------------------------|
| Watertight      |                                |                                 |                                 |                                  |                                  |                                 | X                               | X                               | X                            | X                                  | X                                  |
| Splash Proof    |                                |                                 |                                 |                                  | X                                |                                 | X                               | X                               | X                            | X                                  | X                                  |
| Drip Proof      |                                | X                               |                                 |                                  | X                                |                                 | X                               | X                               | X                            | X                                  | X                                  |
| Salt Exposure   | X                              |                                 |                                 |                                  |                                  |                                 | X                               | X                               | X                            | X                                  | X                                  |
| Dust Proof      |                                | X                               | X                               | X                                | X                                |                                 | X                               | X                               | X                            | X                                  | X                                  |
| Stock Available | X                              | X                               | X                               | X                                | X                                |                                 |                                 |                                 |                              |                                    |                                    |
| Shipped Within  | 3 Days                         | 3 Days                          | 3 Days                          | 3 Days                           | 1 Wk                             | 6 Wks                           | 5 Wks                           | 7 Wks                           | 7 Wks                        | 7 Wks                              | 8 Wks                              |
| Size Ranges     | 4.00 x 7.00 to<br>7.00 x 11.00 | 6.00 x 9.00 to<br>10.00 x 16.00 | 7.00 x 8.00 to<br>10.00 x 16.00 | 8.50 x 20.50 to<br>11.62 x 20.12 | 9.00 x 12.00 to<br>20.00 x 29.00 | 5.22 x 8.43 to<br>10.47 x 16.88 | 4.00 x 7.00 to<br>27.25 x 37.25 | 3.83 x 6.84 to<br>28.00 x 54.19 | 3U x 19.00 to<br>16U x 19.00 | 36.00 x 36.00 to<br>60.00 x 120.00 | 24.00 x 24.00 to<br>48.00 x 120.00 |
| Number of Sizes | 4                              | 6                               | 7                               | 4                                | 20                               | 6                               | 52                              | 146                             | 9                            | UL                                 | UL                                 |

**Choose a Carrying Case if** your total carrying weight does not exceed 45 pounds. Carrying Cases pass requirements for various drop test heights. Typical application examples are:

- Personal Transport
- Small, Sensitive Electronics
- Product Display
- Sales Presentations
- Cameras and Video Equipment
- Special Sports Equipment
- Courier Transport
- Field Diagnostics Equipment
- Portable Testing
- Tool or Technician Cases

#### Case Performance Specifications

**Drop:** Carrying and Instrument Cases are tested to perform at a 12" drop; Transit and Combination Cases at an 18" drop.

**Choose an Instrument Case if** the case needs to protect an instrument or even become part of the instrument. These cases pass requirements for various drop test heights. Many Zero Instrument Cases are stackable with protected hardware. Typical applications are:

- Monitoring Systems
- Medical Instrumentation
- Telecommunications
- Environmental Measurement Devices
- Electronic Testing
- Geophysical Instrumentation
- Computer Products

#### Case Performance Specifications

**Watertight:** Water directed at the case from any angle does not enter. Suitable for weather exposure and transient submergence.

**Splash Proof:** Water spray or solid particles directed at the enclosed equipment or its mounting surface have no harmful effect on operation.

## FOR FAST RESPONSE CALL (800) 209-9922

**Other Zero Companies Eager to Satisfy Your Needs**

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McLean Midwest, Refer to Fans & Blowers Section 2600

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# ZERO ENCLOSURES

**ZERO**

200 North 500 West, North Salt Lake, UT 84054 • Tel: 801-298-5900 • FAX: 801-292-9450

## ALUMINUM CASES 335 STANDARD SIZES IN 14 STYLES

### Choose a Transit Case if

you are shipping and storing equipment. Zero Transit Cases pass requirements for various drop test heights. Typical applications are:

- Field Portable Instrumentation
- Sensitive Electronics
- Test Equipment
- Diagnostic Equipment
- On-location Broadcast Systems
- Airport and Flight Guidance Systems
- Field Computer Systems

### Case Performance Specifications

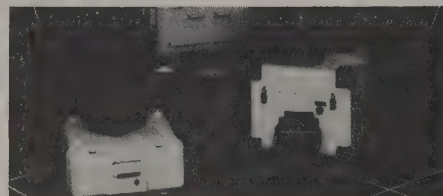
**Drip Proof:** Water or solid particles falling on the case under most conditions have no harmful effect on equipment operation.

**Salt Exposure:** Salt spray resistance.

### Transit Cases

#### PERFORMANCE REQUIREMENTS

|                 | Val-An                          | Ruggedized                      | Val-An 900                       | Modular                            | Zero-Ply                           |
|-----------------|---------------------------------|---------------------------------|----------------------------------|------------------------------------|------------------------------------|
| Watertight      | x                               | x                               | x                                | x                                  | x                                  |
| Splash Proof    | x                               | x                               | x                                | x                                  | x                                  |
| Drip Proof      | x                               | x                               | x                                | x                                  | x                                  |
| Salt Exposure   | x                               | x                               | x                                | x                                  | x                                  |
| Dust Proof      | x                               | x                               | x                                | x                                  | x                                  |
| Stock Available |                                 |                                 |                                  |                                    |                                    |
| Shipped Within  | 5 Wks                           | 7 Wks                           | 7 Wks                            | 7 Wks                              | 8 Wks                              |
| Size Ranges     | 4.00 x 7.00 to<br>27.25 x 37.25 | 3.83 x 6.84 to<br>16.00 x 64.19 | 3.00 x 19.00 to<br>28.00 x 19.00 | 36.00 x 36.00 to<br>60.00 x 120.00 | 24.00 x 24.00 to<br>48.00 x 120.00 |
| Number of Sizes | 52                              | 146                             | 9                                | UL                                 | UL                                 |



### Choose a Combination Transit / Instrument Case if

you need to select both features. The Combination Case will protect the instrument and its accessories from environmental conditions during operation, shipment or in storage. Combination cases pass requirements for various drop test heights. Typical applications are:

- Space Exploration & Controls
- Emergency Telecommunications
- Weapon Systems
- Radar Systems
- Aircraft Ground Support Test Equipment
- Shipboard Equipment

### Case Performance Specifications

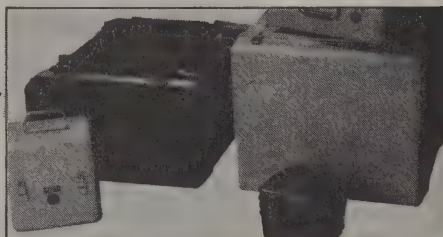
**Dust Proof:** Enclosure prevents entry of dust.

**Temperature:** -20°F to >160°F

### Combination Transit/Instrument Cases

#### PERFORMANCE REQUIREMENTS

|                 | Val-An                          | Ruggedized                      | Val-An 900                       | Centurion®<br>Polaris            | Modular                            | Zero-Ply                           |
|-----------------|---------------------------------|---------------------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|
| Watertight      | x                               | x                               | x                                | x                                | x                                  | x                                  |
| Splash Proof    | x                               | x                               | x                                | x                                | x                                  | x                                  |
| Drip Proof      | x                               | x                               | x                                | x                                | x                                  | x                                  |
| Salt Exposure   | x                               | x                               | x                                | x                                | x                                  | x                                  |
| Dust Proof      | x                               | x                               | x                                | x                                | x                                  | x                                  |
| Stock Available |                                 |                                 |                                  |                                  |                                    |                                    |
| Shipped Within  | 5 Wks                           | 7 Wks                           | 7 Wks                            | 6 Wks                            | 7 Wks                              | 8 Wks                              |
| Size Ranges     | 4.00 x 7.00 to<br>27.25 x 37.25 | 3.83 x 6.84 to<br>28.00 x 64.19 | 3.00 x 19.00 to<br>16.00 x 19.00 | 9.00 x 12.00 to<br>20.00 x 29.00 | 36.00 x 36.00 to<br>60.00 x 120.00 | 24.00 x 24.00 to<br>48.00 x 120.00 |
| Number of Sizes | 52                              | 146                             | 9                                | 20                               | UL                                 | UL                                 |



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**ZERO**



**NYE**  
Designer  
Lubricants

# ELECTRIC CONTACT LUBRICANTS

**NYE**  
Designer  
Lubricants

Lubricants are insulators in bulk. When one is faced with the need to lubricate an electrical contact, a first reaction might be that an electrically conductive lubricant is required. However, this is not the case. Under the boundary conditions present in contact lubricant sliding, sufficient metal contact occurs to provide electrical continuity when opposing contacts are mated. When in operation, sliding induces film formation, the dielectric properties of the lubricant tend to dampen arcing, and both friction and wear are reduced.

## Switch Contact Greases

Greases for lubrication of sliding electrical contacts, as in electric switches, should have the same qualities as required for straight-forward mechanical sliding: good film strength, appropriate high and low temperature fluid range and 'stay-in-place' capability. These greases are relatively 'additive-clean' to simplify the chemistry of grease degradation, which will inevitably occur if there is arcing in the lubricant's presence. Butt contacts, where no sliding takes place, are best left unlubricated.

| Product               | Temperature Range, °F | Characteristics                                                                         |
|-----------------------|-----------------------|-----------------------------------------------------------------------------------------|
| Rheolube 362          | -65 to 250            | Light, synthetic hydrocarbon-based grease for wide temperature applications.            |
| NyoGel® 782D          | -10 to 200            | Non-melting polyether gel which degrades to volatiles with arcing.                      |
| Instrument Grease 737 | -65 to 225            | Light, synthetic hydrocarbon-grease for automotive instrumentation. Resists salt-water. |
| Rheolube 789DM        | -40 to 300            | Non-melting, polyol ester-based grease for higher temperature switch needs.             |
| NyoGel® 760D          | -20 to 250            | Synthetic hydrocarbon-based heavy gel for distribution switchgear.                      |

## Potentiometer Lubricants

A potentiometer is a variable resistor, usually with low voltage and very low current; arcing is not likely. A sliding electrical contact is inherently involved. Oils and light greases based on synthetic esters have shown good performance, especially in wire-wound potentiometers. With many newer designs, using unusual material combinations, such as metal wipers on a conductive plastic or ceramic-metal matrix, special silicone formulations have provided the only workable solutions, especially when very low or very high operating temperatures are encountered.

| Product                 | Temperature Range, °F | Characteristics                                                                      |
|-------------------------|-----------------------|--------------------------------------------------------------------------------------|
| Synthetic Oil 203       | -65 to 250            | Polyol ester contact oil with additives for wire-wound pots.                         |
| Fluoroether Grease 833B | -40 to 300            | Wide temperature fluoroalkyl polyether grease with resistance to fuels and solvents. |
| Rheolube 799            | -65 to 250            | Light polyol ester-based grease with lubricity additives.                            |
| Fluorocarbon Gel 813    | -100 to 400           | Soft, non-melting silicone grease for extreme temperature needs.                     |

## Electrical Connector Lubricants

For stationary separable electric contacts, or connectors, the purpose of a lubricant is to reduce wear from repeated insertions and withdrawals and, equally important, to prevent tarnish of a pollution-vulnerable contact surface. Heavy oils applied from dilute solutions in selected solvents are used on noble-metal connectors. Where fretting corrosion occurs, as may happen with tin-lead, a relatively thick film of thixotropic grease has proved useful. The 500-series products listed below are applied from volatile solvent dispersions.

| Product                                | Characteristics                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------|
| NyeTact 568<br>NyeTact 570             | High performance fluorinated ether oil/gel dispersions using an ozone-safe solvent.         |
| Synthetic Oil 438<br>Synthetic Oil 439 | 5-Ring and 6-Ring polyphenyl ether oils each available in a variety of solvent dispersions. |
| Synthetic Oil 174A<br>NyeTact 517M     | Oil/solvent dispersion based on synthetic hydrocarbons providing thin protective film.      |
| NyoGel 759G<br>NyeTact 502M            | Soft, thixotropic synthetic grease/dispersion for tin-lead/fretting corrosion problems.     |

## Damping Greases

"Controlled-shear" gels or damping greases are frequently used to reduce free motion and to quiet operating noise of loosely-fitting components in electro-mechanical devices, including the mechanical elements of electrical switches and potentiometers. These greases work as "motion-control compounds" where damping of free motion is needed. They have proved especially useful on the shafts of hand-operated potentiometers where they can provide a "velvet feel" and can eliminate coasting. They are all tacky or adhesive to a greater or lesser degree.

## NyeBar® Barrier Films to prevent oil creep

Certain types of electrical contacts must be protected from lubricant films. Examples are the relay contacts of telephone systems or butt contacts where no sliding occurs during actuation. The NyeBar barrier films are fluorinated polymers applied from very dilute solvent solutions which, by covering a surface with an ultra-thin film of extremely low surface energy, can render that surface non-wettable by oils or other fluids. Oil creep from nearby lubricated areas can be controlled or eliminated. Current flow and signal integrity are not affected by the presence of a very thin NyeBar film.

Send details of your product application and a sample of a recommended lubricant will be sent at no charge. Write for Nye's 12-page summary catalog describing specialty products for electrical contacts.

**NYE®**  
Designer  
Lubricants

William F. Nye, Inc.  
P.O. Box 8927, New Bedford, MA 02742-8927  
**Tel: (508) 996-6721 Telex: 940807**  
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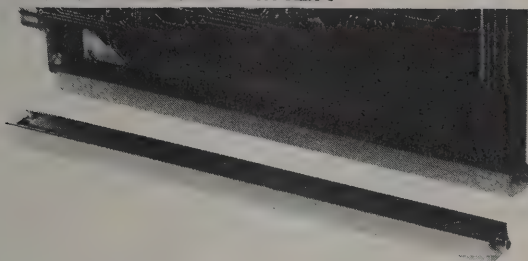




LEADERSHIP IN PC BOARD RETAINER TECHNOLOGY

- Electronic Packaging Products
- Custom Metal Fabrication
- Printed Circuit Board Hardware

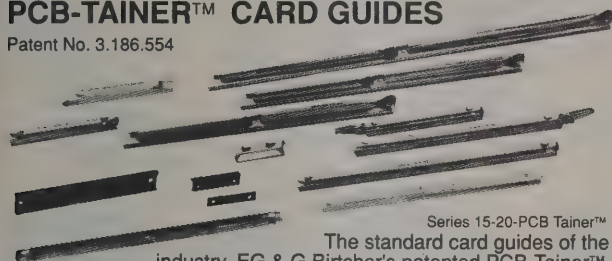
## SERIES 340-WEDGE-TAINER™



EG&G BIRTCHER'S Series 340 Wedge-Tainer™ locking retainers are designed for heavy shock, vibration, and heat dissipation, in cold plate/heat sinking applications.

## PCB-TAINER™ CARD GUIDES

Patent No. 3,186,554



The standard card guides of the industry, EG & G Birtcher's patented PCB-Tainer™ card guides provide an economical way of securely fastening PC boards. EG & G Birtcher PCB-Tainer™ card guides come in standard or made-to-spec versions. They are made of cold rolled steel or beryllium copper for rivet, weld or adhesive bonding installation. They provide heat dissipation, electrical grounding, retention in shock and vibration applications.

## LOK-TAINER® RETAINERS

Pat. No. 3,970,198



Series 24  
Lever Actuated  
Lok-Tainer®

Series 127  
Screw Actuated Lok-Tainer®

EG&G Birtcher patented screw and lever actuated Lok-Tainer® locking retainers are designed to provide high resistance to heavy shock and vibration while maintaining maximum contact for heat dissipation.

## SERIES 40 WEDGE LOK™

Meets or exceeds the performance requirements of drawing 84103 Rev. E, Defense Electronics Supply Center, Dayton, OH 45444.



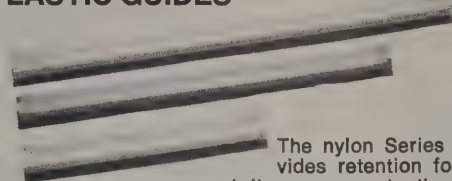
## EXTRACTORS CARD HANDLES, AND INJECTOR/EXTRACTORS FOR PC BOARDS



Injectors/Extractors

Extractors provide for quick, damage free, removal of PC card. Injector/Extractors function in two different directions allowing the card to be easily inserted into the connector as well as providing quick removal.

## PLASTIC GUIDES

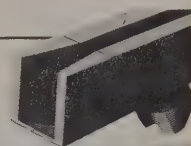


Series 26  
Plastic Guides

The nylon Series 26 Guide provides retention for the PC card and its components through a unique gripping action. It is self-lubricating, non conductive with superior strength and durability.

## DEEP CHANNEL GUIDES

Nylon Type 6/6  
For 1/8" and 1/2" P.C.B.'s



## SPACE SAVER GUIDES

Nylon Type 6/6  
For 1/8" P.C.B.'s



## WEDGE-LOK™ LOCKING RETAINERS

For high-rel performance in commercial, industrial or military applications, secure PC boards with Wedge-Lok™ locking card retainers. **LOW COST STANDARD VERSIONS ARE AVAILABLE FROM STOCK.**

## SERIES 41 WEDGE-LOK™ RETAINERS LOW PROFILE VERSION OF 40 SERIES



## SELF-ALIGNING FIVE-PIECE WEDGE-LOK™ RETAINERS



Pat. No. 4,823,951

EG&G Birtcher offers self-aligning Wedge-Lok™ Series, 40-5 and 42-5 designed for heavy shock, vibration and heat dissipation, in cold plate/heat sinking applications. Features zero entry force for insertion and removal of PC boards. Other standard and custom styles available. Visual indicator for locked and unlocked position available as an option.

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### UNCOATED

| Copper Thickness |       | CEM Cat. Nos. |            | FR4 Cat. Nos. |         | Copper Thickness |       | CEM Cat. Nos. |        | FR4 Cat. Nos. |       | Copper Thickness |         | FR4 Cat. Nos. |         | Copper Thickness |        | FR4 Cat. Nos. |        |
|------------------|-------|---------------|------------|---------------|---------|------------------|-------|---------------|--------|---------------|-------|------------------|---------|---------------|---------|------------------|--------|---------------|--------|
| Size             |       | 1 side        | 2 sides    | 1 side        | 2 sides |                  |       | 1 side        | 1 side | 2 sides       |       | 1 side           | 2 sides |               | 2 sides |                  | 1 side | 2 sides       |        |
| 3x4.5            | 1 oz. | PC1-CEM       | PC9-CEM    | PC5           | PC40    | 2 oz.            | 1/16" | PC5-CEM       | PC9    | PC51          | 1 oz. | PC55             | PC44    | 2 oz.         | PC64    |                  | PC64   | 1/2 oz.       | PC74   |
| *4.5x5.5         | 1/16" |               |            | PC6A          | PC41A   |                  |       | PC10A         | PC52A  | 1/32"         | PC56A | PC45A            | 1/32"   | PC65A         | 1/16"   | PC74             |        | PC75A         |        |
| 4x6              |       | PC2-CEM       | PC10-CEM   | PC6           | PC41    |                  |       | PC6-CEM       | PC10   | PC52          |       | PC56             | PC45    |               | PC65    |                  | PC65   |               | PC75   |
| 6x9              |       | PC3-CEM       | PC11-CEM   | PC7           | PC42    |                  |       | PC7-CEM       | PC11   | PC53          |       | PC57             | PC46    |               | PC66    |                  | PC66   |               | PC76   |
| *4.5x9.5         |       |               |            | PC6B          | PC41B   |                  |       | PC10B         | PC52B  |               | PC56B | PC45B            |         | PC65B         |         | PC66             |        | PC75B         |        |
| 12x18            |       | PC4-CEM       | PC12-CEM   | PC8           | PC43    |                  |       | PC8-CEM       | PC12   | PC54          |       | PC58             | PC47    |               | PC67    |                  | PC67   |               | PC77   |
| 24x36            |       | PC4-CEM-1     | PC12-CEM-1 | PC8-1         | PC43-1  |                  |       | PC8-CEM-1     | PC12-1 | PC54-1        |       | PC58-1           | PC47-1  |               | PC67-1  |                  | PC67-1 |               | PC77-1 |
| 36x48            |       | PC4-CEM-2     | PC12-CEM-2 | PC8-2         | PC43-2  |                  |       | PC8-CEM-2     | PC12-2 | PC54-2        |       | PC58-2           | PC47-2  |               | PC67-2  |                  | PC67-2 |               | PC77-2 |

### NEGATIVE RESIST BOARDS (BLACK BAG—GREEN HEADER)

#### DRY FILM

#### USE WITH INJECTORALL D1 DEVELOPER

|          |       |          |           |        |       |       |          |        |        |       |        |        |       |        |         |        |
|----------|-------|----------|-----------|--------|-------|-------|----------|--------|--------|-------|--------|--------|-------|--------|---------|--------|
| 3x4.5    | 1 oz. | PC1-CEMF | PC9-CEMF  | PC17F  | PC40F | 2 oz. | PC5-CEMF | PC9F   | PC51F  | 1 oz. | PC55F  | PC44F  | 2 oz. | PC64F  | 1/2 oz. | PC74F  |
| *4.5x6.5 | 1/16" | PC2-CEMF | PC10-CEMF | PC18F  | PC41F | 1/16" | PC6-CEMF | PC10AF | PC52AF | 1/32" | PC56AF | PC45AF | 1/32" | PC65AF | 1/16"   | PC75AF |
| 4x6      |       | PC3-CEMF | PC11-CEMF | PC19F  | PC42F |       | PC7-CEMF | PC10F  | PC52F  |       | PC56F  | PC45F  |       | PC65F  |         | PC75F  |
| 6x9      |       |          |           | PC19F  | PC42F |       |          | PC11F  | PC53F  |       | PC57F  | PC46F  |       | PC66F  |         | PC76F  |
| *4.5x9.5 |       |          |           | PC19F  | PC42F |       |          | PC10BF | PC52BF |       | PC56BF | PC45BF |       | PC65BF |         | PC75BF |
| 12x18    |       | PC4-CEMF | PC12-CEMF | PC19AF | PC43F |       | PC8-CEMF | PC12F  | PC54F  |       | PC58F  | PC47F  |       | PC67F  |         | PC77F  |

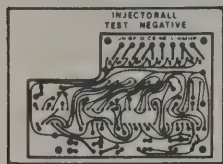
### POSITIVE RESIST BOARDS (BLACK BAG—BLUE HEADER)

#### USE WITH INJECTORALL D3 DEVELOPER

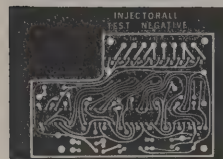
|          |       |          |           |        |        |       |          |        |        |       |        |        |       |        |         |        |
|----------|-------|----------|-----------|--------|--------|-------|----------|--------|--------|-------|--------|--------|-------|--------|---------|--------|
| 3x4.5    | 1 oz. | PCI-CEMP | PC9-CEMP  | PC17P  | PC40P  | 2 oz. | PC5-CEMP | PC9P   | PC51P  | 1 oz. | PC55P  | PC44P  | 2 oz. | PC64P  | 1/2 oz. | PC74P  |
| *4.5x6.5 | 1/16" | PC2-CEMP | PC10-CEMP | PC18P  | PC41P  | 1/16" | PC6-CEMP | PC10AP | PC52AP | 1/32" | PC56AP | PC45AP | 1/32" | PC65AP | 1/16"   | PC75AP |
| 4x6      |       | PC3-CEMP | PC11-CEMP | PC19P  | PC42P  |       | PC7-CEMP | PC10P  | PC52P  |       | PC56P  | PC45P  |       | PC65P  |         | PC75P  |
| 6x9      |       |          |           | PC19P  | PC42P  |       |          | PC11P  | PC53P  |       | PC57P  | PC46P  |       | PC66P  |         | PC76P  |
| *4.5x9.5 |       |          |           | PC68P  | PC418P |       |          | PC10BP | PC52BP |       | PC56BP | PC45BP |       | PC65BP |         | PC75BP |
| 12x18    |       | PC4-CEMP | PC12-CEMP | PC19AP | PC43P  |       | PC8-CEMP | PC12P  | PC54P  |       | PC58P  | PC47P  |       | PC67P  |         | PC77P  |

### \* NOTCHED TO FIT 22/44 CARD EDGE CONNECTOR. NOTCHED BOARDS AVAILABLE IN ANY SIZE.

Special cuts available in sensitized boards to 12" x 18", non-sensitized boards available to 36" x 48". There is no charge for special cuts. Please specify coating and type from above chart. Perforated breadboards available in various sizes and patterns: .042, .062, .093. MICROWAVE MATERIAL AVAILABLE.



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Copper clad laminates available as:

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### NEW

#### POSITIVE PHOTO RESIST #PC197

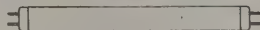
A liquid Positive Photo Resist which is used to coat your own materials in order to make them photo-sensitive. A high quality Positive Resist which will cause less pinholing. Available in 2 oz., 8 oz., 16 oz., 32 oz., 1 gal. sizes.

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Use to expose positive or negative sensitized material. 15W 18" bi-pin

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Specially designed for smooth, burr-free drilling in printed circuit boards. Made of high speed tool steel or CARBIDE.

| Drill Bit     | Diameter | No. PC300-80       |
|---------------|----------|--------------------|
| 80            | .0135    | 10 pcs. of #80     |
| 75            | .021     | No. PC300-75       |
|               |          | 10 pcs. of #75     |
| 69            | .029     | No. PC300-69       |
|               |          | 10 pcs. of #69     |
| 66            | .033     | No. PC300-66       |
|               |          | 10 pcs. of #66     |
| 60            | .040     | No. PC300-60       |
|               |          | 10 pcs. of #60     |
| 55            | .052     | No. PC300-55       |
|               |          | 10 pcs. of #55     |
| 52            | .062     | No. PC300-52       |
|               |          | 10 pcs. of #52     |
| No. PC300-Kit |          | 5 bits (1 of each) |

### CARBIDE BITS AVAILABLE IN THE ABOVE SIZES

### KIT 551



Photo reversing kit produces professional positives or negatives: 3 sheets 4" x 6" film, developer, fixer, toner, 75W black light bulb and instructions.

### NEW CLEAR FILM

### KIT 650



Photo-etch kit using boards with negative DRY FILM resist: 2-3" x 4" neg. sensitized single side boards, exposure glass, tray, chemicals, drill bit, spring clips and complete instructions and exposure lamp.

### NEW KIT 750



Photo-etch kit using 2 sided boards with either negative Dry Film or Positive Acting Resist. Specify 750F or 750P. Contains: 2-3x4"sens. boards, exposure glass, spring clips, chemicals, exposure lamp, drill bit, and more. Complete instructions.

### KIT 850



Photo-etch kit using boards with positive resist: 2-3" x 4" pos. sensitized single side boards, glass, tray, pen, art aids, chemicals, clips, drill bit, exposure lamp and complete instructions.

### NEW

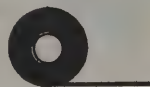
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 #999-6P 6 oz.  
**PENETRATING OIL**  
 #818-16P 16 oz.

### DRAFTING AIDS

#### PC22



#### DRAFTING TAPE

648" rolls of etch resist tape in widths of: .031, .040, .062, .080, .093, .125, .156, .200 and .250 inches. Pressure sensitive.

#### PC23



#### DONUT TERMINAL PADS

Pressure sensitive, etch resistant in sizes from .062" with .031 hole up to .500" with .062" hole in ten sizes. Pkgs of 40, 250 or 1000 depending on size.

#### PC28



#### DUAL IN-LINES

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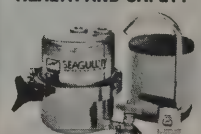
#### SUPER JET AIR

No. 9 E 10 oz. spray can

#### No CFCs



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# The OMNI Switch PCB

## Membrane Switches Flexible Printed Circuits Printed Circuit Boards

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- Silver Ink Jumper PCB

Besides the good quality, price, and delivery of OSI, there's more you can rely on:

### • Fast Shipping

You can receive the board in two days by airfreight. (Production time is three weeks.)

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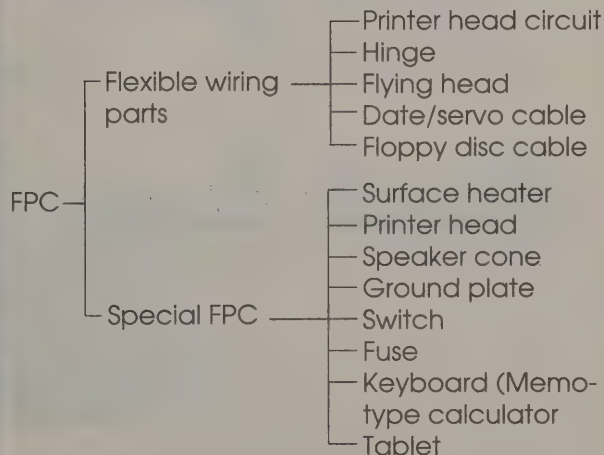
Although you won't have a problem with OSI, we still guarantee you the full replacement or compensation of loss for defective PCB.

## Membrane Switch

**Examples of what OMNI Does On Membrane Switches:**

- Embossed Overlays
- Polyester and Metal domes
- UV Curing on face
- EMI, REI, and ESD shielding
- Graphics in Polyester or Polycarbonate
- Keyboard
- Solder pin Attachment
- Multi-color, reverse side printing

## Flexible Printed Circuit (F.P.C.)



# OSI

## OMNI SWITCH INC.

### U.S.A. Office:

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P.O. Box 86220, Phoenix AZ 85080-6220  
Tel.: 602-582-0629 • FAX: 602-582-0665



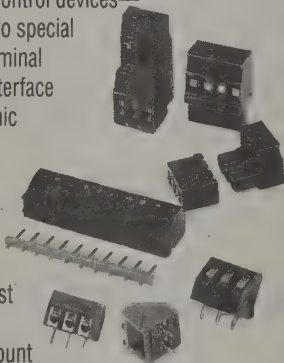


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We offer a wide variety of snap-on DIN rail mount control devices—from basic to special function terminal blocks to interface and electronic modules, circuit breakers and more—as well as a host of products for panel mount and printed circuit board applications.



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- ▶ Enclosures
- ▶ Circuit Breakers
- ▶ Custom-Built DIN Rail Assemblies



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## Altech Corp.

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**Information on our Terminal Blocks can be found on the following EEM pages.**

|                           |               |                             |               |                                |               |
|---------------------------|---------------|-----------------------------|---------------|--------------------------------|---------------|
| Pluggable Terminal Blocks | <b>C-1152</b> | DIN Rail Mt Terminal Blocks | <b>C-1156</b> | Interface & Electronic Modules | <b>C-1158</b> |
| Fixed Terminal Blocks     | <b>C-1154</b> | Panel Mount Terminal Blocks | <b>C-1157</b> | Eurostrips®                    | <b>C-1159</b> |



## SOCKETS

| Manufacturer                         | Starting EEM Page No. | IC | DIP/SIP | Pin Grid Array | Carrier | Transistor | Crystal | Battery/Lamp | Relay | Tube | Test | Adapter |
|--------------------------------------|-----------------------|----|---------|----------------|---------|------------|---------|--------------|-------|------|------|---------|
| AMP Incorporated                     | C•1161                | ✓  | ✓       | ✓              | ✓       |            |         |              |       |      |      |         |
| Andon Electronics                    | C•1256                | ✓  | ✓       | ✓              | ✓       |            |         |              |       |      |      |         |
| Aries Electronics                    | C•1260                | ✓  | ✓       | ✓              | ✓       | ✓          |         | ✓            |       |      | ✓    | ✓       |
| Circuit Assembly                     | C•1280                | ✓  | ✓       |                | ✓       |            |         |              |       |      |      |         |
| Concord Electronics Corp.            | C•1290                |    |         |                |         | ✓          |         |              |       |      | ✓    | ✓       |
| Connector Corp.                      | C•1292                |    |         |                |         | ✓          | ✓       | ✓            | ✓     | ✓    |      | ✓       |
| Consolidated Electric Wire and Cable | C•1294                | ✓  | ✓       |                |         |            |         |              |       |      |      |         |
| E-Cam Technology                     | C•1310                | ✓  | ✓       | ✓              | ✓       |            | ✓       |              |       |      |      | ✓       |
| Elastomeric Technologies             | C•1314                |    |         |                | ✓       |            |         |              |       |      |      |         |
| Emulation Technology                 | C•1321                | ✓  | ✓       | ✓              |         |            |         |              |       |      | ✓    | ✓       |
| Globtek Inc.                         | C•1340                |    |         |                |         |            |         | ✓            | ✓     | ✓    |      | ✓       |
| Grayhill                             | C•1341                |    |         |                |         | ✓          |         | ✓            |       |      |      |         |
| Hypertronics Corp.                   | C•1348                |    |         |                |         | ✓          | ✓       | ✓            | ✓     |      | ✓    |         |
| International Configurations         | C•1353                |    |         |                |         |            |         |              |       |      |      | ✓       |
| ITT Pomona                           | C•1355                | ✓  |         |                |         |            |         |              |       |      | ✓    | ✓       |
| Jolo Industries                      | C•1360                | ✓  | ✓       |                |         |            |         |              |       |      |      |         |
| Kycon Cable and Connectors           | C•1364                | ✓  |         | ✓              | ✓       |            |         |              |       |      |      |         |
| Leoco Corp.                          | C•1382                | ✓  | ✓       | ✓              | ✓       |            |         |              |       |      |      |         |
| McKenzie Technology                  | C•1415                | ✓  |         | ✓              |         |            |         |              |       |      |      | ✓       |
| Mill-Max                             | C•1421                | ✓  | ✓       | ✓              | ✓       | ✓          |         |              | ✓     |      |      | ✓       |
| Omega Engineering, Inc.              | C•1547                |    |         |                |         |            |         |              |       | ✓    |      |         |
| Schurter Inc.                        | C•1450                |    |         |                |         |            |         |              |       |      | ✓    |         |
| Shogyo International Corp.           | C•1457                |    |         |                |         |            |         | ✓            |       |      |      |         |
| Shokai Far East Ltd.                 | C•1460                | ✓  | ✓       | ✓              | ✓       | ✓          |         | ✓            |       |      |      |         |
| SMK Corp.                            | C•1461                | ✓  | ✓       |                |         |            |         |              |       | ✓    |      |         |
| Texas Instruments                    | C•1493                | ✓  | ✓       |                |         |            |         |              |       |      | ✓    |         |



## TERMINALS, TERMINAL BOARDS, BLOCKS, ETC.

| Manufacturer                    | Starting EEM Page No. | Barrier Blocks | Terminal Boards | Terminal Strips | Terminals |     |     |          |          |           |             |                          |        |
|---------------------------------|-----------------------|----------------|-----------------|-----------------|-----------|-----|-----|----------|----------|-----------|-------------|--------------------------|--------|
|                                 |                       |                |                 |                 | Feed-thru | Lug | PCB | Standoff | Threaded | Wire-wrap | Solder-less | Push-on/Quick Disconnect | Turret |
| Alden Products                  | C•1148                |                |                 |                 | √         |     |     |          |          |           |             |                          |        |
| Altech Corp.                    | C•1152                |                |                 | √               | √         |     | √   |          |          |           |             |                          |        |
| AMP Incorporated                | C•1161                | √              |                 |                 | √         | √   | √   |          |          |           | √           | √                        |        |
| Andon Electronics               | C•1256                |                |                 |                 | √         |     | √   | √        | √        | √         |             | √                        | √      |
| Beau Products Div.              | C•1269                | √              | √               | √               |           |     | √   |          |          | √         |             | √                        | √      |
| Caton Connector Corp.           | C•1275                | √              | √               | √               |           |     |     |          |          |           |             |                          |        |
| Concord Electronics Corp.       | C•1290                |                |                 | √               | √         | √   | √   | √        | √        | √         | √           | √                        | √      |
| E-Cam Technology                | C•1310                | √              |                 | √               |           |     | √   |          |          | √         | √           |                          |        |
| Electronic Precision Technology | C•1315                |                |                 |                 |           |     |     |          |          |           |             | √                        |        |
| Giobtek Inc.                    | C•1340                | √              | √               | √               | √         | √   | √   | √        | √        | √         | √           | √                        |        |
| Jolo Industries                 | C•1360                | √              |                 | √               |           |     | √   |          |          |           |             |                          |        |
| LMI Connectors, Inc.            | C•1394                | √              | √               | √               | √         |     | √   | √        |          | √         | √           | √                        |        |
| Omega Engineering, Inc.         | C•1547                | √              | √               | √               | √         | √   |     |          |          |           | √           | √                        |        |
| Mill-Max                        | C•1421                |                |                 |                 |           |     | √   |          |          | √         |             |                          | √      |
| RIA Electronics                 | C•1442                |                |                 | √               | √         |     | √   |          |          |           |             |                          |        |
| Schurter Inc.                   | C•1450                | √              |                 |                 |           |     | √   |          |          |           |             |                          |        |
| Shogyo International Corp.      | C•1457                |                | √               | √               |           | √   | √   |          |          |           | √           |                          |        |
| Shokai Far East Ltd.            | C•1460                | √              | √               | √               |           |     |     |          |          |           |             |                          |        |
| SMK Corp.                       | C•1461                | √              |                 | √               |           | √   | √   |          |          |           |             | √                        |        |
| Stocko Connectors               | C•1470                |                |                 | √               |           | √   |     | √        |          |           | √           | √                        |        |
| Weco Electrical Connectors      | C•1510                | √              |                 | √               | √         |     | √   |          |          |           |             | √                        |        |



## CONNECTORS, CABLE-TO-CABLE/PANEL

| Manufacturer                         | Starting EEM Page No. | Series Model No.               | Type Connector |                 |               |                       |                              | Connection  |                      | No. Conductors |       | Angle          |               | Special Features                                                                                                                                                                                 |
|--------------------------------------|-----------------------|--------------------------------|----------------|-----------------|---------------|-----------------------|------------------------------|-------------|----------------------|----------------|-------|----------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      |                       |                                | Cir-<br>cular  | Coax/<br>Triax. | Flat<br>Cable | Rect-<br>an-<br>gular | D-<br>Sub-<br>mini-<br>ature | Sol-<br>der | Sol-<br>der-<br>less | Single         | Multi | Right<br>Angle | Par-<br>allel |                                                                                                                                                                                                  |
| Alden Products                       | C•1148                |                                | ✓              |                 |               |                       |                              |             |                      | ✓              | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| AMP Incorporated                     | C•1161                |                                | ✓              | ✓               | ✓             | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Aries Electronics                    | C•1260                | 152FB, 171                     |                |                 | ✓             |                       |                              | ✓           |                      | ✓              | ✓     | ✓              |               |                                                                                                                                                                                                  |
| C & C Jetronic                       | C•1274                |                                | ✓              | ✓               |               |                       |                              | ✓           |                      | ✓              | ✓     | ✓              |               |                                                                                                                                                                                                  |
| Caton Connector Corp.                | C•1275                |                                | ✓              | ✓               |               | ✓                     |                              | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             | High voltage assemblies, molded-on connectors, special silicone inserts.                                                                                                                         |
| Ceramaseal                           | C•1279                |                                | ✓              |                 |               |                       |                              | ✓           |                      |                | ✓     |                | ✓             | Bakeable up to 450°C (with plug disconnected); UHV compatible - 10 <sup>-10</sup> torr.; available weldable or mounted in a 150 NW or any ConFlat flange; 700 V AC; max. loaded current 50 Amps. |
| Circuit Assembly                     | C•1280                | D-SUB Ribbon                   |                |                 | ✓             | ✓                     | ✓                            | ✓           | ✓                    |                | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Coax Connection                      | C•1287                |                                |                | ✓               |               |                       |                              | ✓           | ✓                    |                |       |                |               |                                                                                                                                                                                                  |
| Comm Con Connectors                  | C•1289                |                                |                |                 | ✓             |                       |                              |             |                      |                |       |                |               |                                                                                                                                                                                                  |
| Concord Electronics Corp.            | C•1290                |                                |                | ✓               |               |                       |                              | ✓           | ✓                    | ✓              |       |                |               |                                                                                                                                                                                                  |
| Connectronics Corp.                  | C•1293                |                                | ✓              |                 |               |                       |                              |             |                      | ✓              | ✓     |                |               | High voltage, high current, underwater, altitude and temperature extremes.                                                                                                                       |
| Consolidated Electric Wire and Cable | C•1294                |                                |                | ✓               | ✓             |                       | ✓                            |             |                      |                |       |                |               |                                                                                                                                                                                                  |
| CUI/Stack                            | C•1303                |                                | ✓              |                 |               |                       |                              | ✓           | ✓                    |                | ✓     |                |               | Molding type                                                                                                                                                                                     |
| C.W. Industries                      | C•1304                |                                |                |                 |               |                       | ✓                            |             | ✓                    |                | ✓     | ✓              | ✓             | IDC.                                                                                                                                                                                             |
| Dale Electronics                     | C•1306                | Several                        | ✓              | ✓               | ✓             | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Direct Sound Corp.                   | C•1309                |                                | ✓              | ✓               |               |                       |                              | ✓           | ✓                    | ✓              | ✓     | ✓              |               | Waterproof, quick connect/disconnect, miniature.                                                                                                                                                 |
| EDAC                                 | C•1311                |                                |                |                 |               | ✓                     |                              | ✓           | ✓                    |                |       |                |               |                                                                                                                                                                                                  |
| Elastomeric Technologies             | C•1314                | STAX Matrix MOE, Dedicated MOE |                |                 |               |                       |                              |             | ✓                    |                | ✓     |                |               |                                                                                                                                                                                                  |
| Electronic Precision Technology      | C•1315                | DIN                            |                |                 | ✓             |                       |                              | ✓           | ✓                    |                |       |                |               |                                                                                                                                                                                                  |
| W.W. Fischer Co.                     | C•1322                |                                | ✓              | ✓               |               |                       |                              | ✓           | ✓                    | ✓              | ✓     | ✓              |               |                                                                                                                                                                                                  |
| Fujiopoly America Corp.              | C•1330                | All                            |                |                 |               |                       |                              |             | ✓                    |                | ✓     |                |               |                                                                                                                                                                                                  |
| Globtek Inc.                         | C•1340                | PX680                          | ✓              |                 | ✓             |                       | ✓                            | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Harting Elektronik                   | C•1343                |                                |                |                 | ✓             |                       |                              | ✓           |                      |                | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Richard Hirschmann of America        | C•1347                | MAS/MAK, GDM, CM/CA            | ✓              |                 |               | ✓                     |                              | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             | UL recognition, CSA approval, IP 67, Mil C 5015 compatibility.                                                                                                                                   |
| Hypertronics Corp.                   | C•1348                |                                | ✓              |                 |               | ✓                     |                              | ✓           |                      | ✓              | ✓     |                |               |                                                                                                                                                                                                  |
| ISL Products International Ltd.      | C•1354                |                                | ✓              | ✓               |               |                       | ✓                            | ✓           |                      | ✓              | ✓     | ✓              |               | Locking phone plug custom adapter code, F connector to RCA type.                                                                                                                                 |
| ITT Pomona                           | C•1355                |                                |                | ✓               |               |                       |                              |             |                      |                |       |                |               |                                                                                                                                                                                                  |
| JAE Electronics, Inc.                | C•1356                |                                |                | ✓               | ✓             | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Jettron Products                     | C•1358                |                                | ✓              |                 |               |                       |                              | ✓           | ✓                    | ✓              | ✓     |                |               | CRT Anode connectors.                                                                                                                                                                            |
| JST Corp.                            | C•1362                |                                | ✓              |                 | ✓             |                       | ✓                            | ✓           | ✓                    | ✓              | ✓     | ✓              |               |                                                                                                                                                                                                  |
| Kycon Cable and Connectors           | C•1364                | K22, K42, K44, K66             |                |                 |               |                       | ✓                            | ✓           |                      |                | ✓     | ✓              | ✓             | With ferrite, high density.                                                                                                                                                                      |
| LEMO U.S.A.                          | C•1368                |                                |                |                 |               |                       |                              |             |                      |                |       |                |               | Quick connector-disconnect connectors.                                                                                                                                                           |
| Leoco Corp.                          | C•1382                |                                |                |                 | ✓             | ✓                     | ✓                            | ✓           | ✓                    |                | ✓     | ✓              |               |                                                                                                                                                                                                  |
| LMI Connectors, Inc.                 | C•1394                | HR-10-D Sub                    |                |                 | ✓             |                       | ✓                            | ✓           | ✓                    |                |       | ✓              | ✓             | Screw and wire on the same plane.                                                                                                                                                                |
| LZR Electronics Inc.                 | C•1400                | DJ/SJ                          | ✓              | ✓               | ✓             | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓     | ✓              | ✓             |                                                                                                                                                                                                  |
| Metuchen Capacitors                  | C•1416                | All                            |                | ✓               | ✓             |                       | ✓                            | ✓           | ✓                    |                | ✓     | ✓              | ✓             | Locking inserts, EMI filtered.                                                                                                                                                                   |
| Multi-Contact USA                    | C•1422                |                                | ✓              | ✓               |               |                       |                              | ✓           | ✓                    | ✓              | ✓     |                |               | Locking; floating; blind mate; low insertion force; high connection cycles.                                                                                                                      |
| Murata Erie North America            | C•1425                |                                |                | ✓               |               |                       | ✓                            |             |                      |                |       |                |               |                                                                                                                                                                                                  |



## CONNECTORS, CABLE-TO-CABLE/PANEL (cont'd)

| Manufacturer               | Starting EEM Page No. | Series Model No.                                                                                        | Type Connector |                |               |                       |                              | Connection  |                      | No. Conductors |             | Angle          |               | Special Features                                                                                                                                                                                                                                                                                         |
|----------------------------|-----------------------|---------------------------------------------------------------------------------------------------------|----------------|----------------|---------------|-----------------------|------------------------------|-------------|----------------------|----------------|-------------|----------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                       |                                                                                                         | Cir-<br>cular  | Cosm/<br>Triax | Flat<br>Cable | Rect-<br>an-<br>gular | D-<br>Sub-<br>mini-<br>ature | Sol-<br>der | Sol-<br>der-<br>less | Single         | Multi       | Right<br>Angle | Par-<br>allel |                                                                                                                                                                                                                                                                                                          |
| Omega Engineering, Inc.    | C•1547                |                                                                                                         | ✓              |                |               | ✓                     | ✓                            | ✓           | ✓                    |                | ✓           |                | ✓             | Low noise designs. Quick wiring designs. Receptacles that accept subminiature or standard TC plugs. "Write identification" designs. Dual circuit designs. High temperature designs. Circuit board designs. Conduit box designs.                                                                          |
| RDI Electronics            | C•1440                |                                                                                                         | ✓              | ✓              | ✓             | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓           | ✓              | ✓             | PCMCIA overmolded connector.                                                                                                                                                                                                                                                                             |
| Schurter Inc.              | C•1450                |                                                                                                         |                |                |               | ✓                     |                              | ✓           | ✓                    |                |             | ✓              | ✓             |                                                                                                                                                                                                                                                                                                          |
| Shogyo International Corp. | C•1457                |                                                                                                         | ✓              | ✓              |               | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓           |                |               |                                                                                                                                                                                                                                                                                                          |
| Shokai Far East Ltd.       | C•1460                |                                                                                                         | ✓              | ✓              | ✓             | ✓                     | ✓                            | ✓           | ✓                    | ✓              | ✓           | ✓              | ✓             |                                                                                                                                                                                                                                                                                                          |
| SMK Corp.                  | C•1461                |                                                                                                         | ✓              |                |               |                       | ✓                            | ✓           | ✓                    | ✓              | ✓           |                |               |                                                                                                                                                                                                                                                                                                          |
| Spectrum Control Inc.      | C•1468                |                                                                                                         |                | ✓              |               |                       | ✓                            | ✓           | ✓                    | ✓              | ✓           |                |               |                                                                                                                                                                                                                                                                                                          |
| Stewart Connector Systems  | C•1469                | SS80                                                                                                    |                |                |               |                       |                              |             |                      |                |             |                |               | IDC type connection. 8 or 10 contacts. Round cable max. conductor dia. to .047".                                                                                                                                                                                                                         |
| Stocko Connectors          | C•1470                | 5 mm power connector System 19000<br><br>.100 double row system ZIF-1.25 mm<br><br>2.5 mm IDC and crimp |                |                |               | ✓<br>✓<br>✓           |                              | ✓<br><br>✓  |                      | ✓<br>✓<br>✓    | ✓<br>✓<br>✓ | ✓<br>✓<br>✓    | ✓<br>✓<br>✓   | IDC direct and indirect connector. UL, CSA, VDE internal locking device.<br>Molex compatible, low profile crimp, 2-20 positions.<br>Shrouded headers with board retention clips, strain relief.<br>Versions for .1 mm and .3 mm, thick FPC/FFC. 3-35 positions.<br>1-step termination, shrouded headers. |
| Superior Electric Co.      | C•1475                | Supercon                                                                                                |                |                |               |                       |                              | ✓           | ✓                    | ✓              |             |                |               |                                                                                                                                                                                                                                                                                                          |
| Switchcraft Inc.           | C•1476                |                                                                                                         | ✓              |                |               |                       |                              | ✓           |                      |                |             | ✓              |               |                                                                                                                                                                                                                                                                                                          |
| Texas Instruments          | C•1493                |                                                                                                         |                |                |               | ✓                     | ✓                            | ✓           |                      |                | ✓           | ✓              | ✓             | Hi-Rel.                                                                                                                                                                                                                                                                                                  |
| Trompeter Electronics      | C•1499                |                                                                                                         |                | ✓              |               |                       |                              | ✓           | ✓                    |                | ✓           | ✓              |               |                                                                                                                                                                                                                                                                                                          |
| Tru-Connector Corp.        | C•1507                |                                                                                                         | ✓              |                |               |                       |                              | ✓           |                      | ✓              |             | ✓              |               |                                                                                                                                                                                                                                                                                                          |

## CONNECTORS, RACK AND PANEL

| Manufacturer                    | Starting EEM Page No. | Series/Model No. | Terminals |                 | Two Piece Mating | Special Features |               |               |                   |         |       |               |                 |
|---------------------------------|-----------------------|------------------|-----------|-----------------|------------------|------------------|---------------|---------------|-------------------|---------|-------|---------------|-----------------|
|                                 |                       |                  | Pin       | Canti-<br>lever |                  | Crimp            | Wire-<br>wrap | DIP<br>Solder | Cup/Eye<br>Solder | Locking | Heads | Jack<br>Screw | Hi Rel/<br>Mil. |
| AMP Incorporated                | C•1161                |                  | ✓         | ✓               | ✓                | ✓                | ✓             | ✓             | ✓                 | ✓       |       | ✓             | ✓               |
| Caton Connector Corp.           | C•1275                |                  |           |                 |                  | ✓                |               |               |                   |         |       |               | ✓               |
| Comm Con Connectors             | C•1289                |                  | ✓         |                 |                  |                  |               |               |                   |         |       |               |                 |
| CW Industries                   | C•1304                |                  | ✓         |                 |                  | ✓                | ✓             |               |                   |         |       | ✓             | ✓               |
| Dale Electronics                | C•1306                | Several          | ✓         | ✓               | ✓                | ✓                | ✓             | ✓             | ✓                 | ✓       | ✓     | ✓             |                 |
| E-Cam Technology                | C•1310                |                  | ✓         |                 |                  |                  | ✓             | ✓             | ✓                 |         |       |               |                 |
| EDAC                            | C•1311                |                  |           |                 | ✓                |                  | ✓             | ✓             |                   |         |       |               |                 |
| Electronic Precision Technology | C•1315                | DIN              |           |                 |                  |                  | ✓             | ✓             | ✓                 |         |       |               |                 |
| Fujitsu Microelectronics        | C•1334                |                  | ✓         | ✓               | ✓                | ✓                |               | ✓             |                   | ✓       | ✓     | ✓             |                 |
| Globtek Inc.                    | C•1340                | P1905            | ✓         |                 |                  | ✓                | ✓             |               |                   | ✓       |       | ✓             |                 |
| Hypertronics Corp.              | C•1348                |                  |           |                 |                  | ✓                | ✓             | ✓             | ✓                 | ✓       |       | ✓             | ✓               |
| Harting Elektronik              | C•1343                |                  | ✓         |                 |                  | ✓                |               |               |                   |         |       |               |                 |
| Kycon Cable and Connectors      | C•1364                | 37               | ✓         |                 | ✓                |                  |               |               | ✓                 | ✓       |       | ✓             |                 |
| LMI Connector, Inc.             | C•1394                | 207-307          |           |                 |                  |                  | ✓             | ✓             |                   | ✓       |       | ✓             |                 |



## CONNECTORS, RACK AND PANEL (cont'd)

| Manufacturer               | Starting EEM Page No. | Series/Model No.                             | Terminals |            | Two Piece Mating | Special Features |           |            |                |         |       |            |              |
|----------------------------|-----------------------|----------------------------------------------|-----------|------------|------------------|------------------|-----------|------------|----------------|---------|-------|------------|--------------|
|                            |                       |                                              | Pin       | Cantilever |                  | Crimp            | Wire-wrap | DIP Solder | Cup/Eye Solder | Locking | Heads | Jack Screw | Hi Rel/ Mil. |
| Metuchen Capacitors        | C•1416                | All                                          |           |            |                  |                  | ✓         |            | ✓              | ✓       |       |            |              |
| Multi-Contact USA          | C•1422                |                                              | ✓         |            | ✓                | ✓                |           |            |                | ✓       |       | ✓          | ✓            |
| Omega Engineering, Inc.    | C•1547                |                                              | ✓         |            | ✓                |                  |           |            |                |         |       |            |              |
| Panel Components           | C•1426                |                                              |           |            | ✓                |                  |           |            |                | ✓       |       |            |              |
| Shogyo International Corp. | C•1457                |                                              | ✓         |            | ✓                | ✓                |           |            | ✓              |         |       | ✓          |              |
| SMK Corp.                  | C•1461                |                                              | ✓         | ✓          |                  | ✓                | ✓         |            |                |         |       |            |              |
| Stocko Connectors          | C•1471                | 5 mm power connector<br>Solderless terminals |           |            |                  |                  |           |            |                | ✓       |       |            |              |
| Sullins Electronics        | C•1472                | Supercon                                     | ✓         |            | ✓                |                  |           |            |                |         |       | ✓          |              |
| Superior Electric Co.      | C•1475                | Supercon                                     |           |            | ✓                |                  |           |            |                |         |       |            |              |
| Texas Instruments          | C•1493                |                                              |           |            | ✓                |                  |           |            |                |         |       |            |              |

## CONNECTORS, PCB/FLAT CABLE

| Manufacturer                         | Starting EEM Page No. | Series/Model No.               | Board to Chassis/<br>Mother Board |           | Board to Cable/<br>I/O |           | For Ext. Board | Type or Feature                     | Contact Style |     |         | Special Features                                                                          |
|--------------------------------------|-----------------------|--------------------------------|-----------------------------------|-----------|------------------------|-----------|----------------|-------------------------------------|---------------|-----|---------|-------------------------------------------------------------------------------------------|
|                                      |                       |                                | One Piece                         | Two Piece | One Piece              | Two Piece |                |                                     | Cantilever    | Pin | Bel-low |                                                                                           |
| Airborn, Inc.                        | C•1147                |                                |                                   | ✓         |                        | ✓         |                |                                     | ✓             |     |         |                                                                                           |
| AMP Incorporated                     | C•1161                |                                | ✓                                 | ✓         | ✓                      | ✓         | ✓              |                                     | ✓             | ✓   |         | Press-fit ACTION pin contacts.<br>Planar ribbon cable.                                    |
| Caton Connector Corp.                | C•1275                |                                | ✓                                 | ✓         | ✓                      | ✓         |                |                                     |               |     |         |                                                                                           |
| Circuit Assembly                     | C•1280                | Nanoflex IDC                   |                                   |           | ✓                      | ✓         |                | Socket & plug.                      |               |     |         | Mass terminates with .025 pitch ribbon cable.<br>High density.                            |
|                                      |                       | Nanoflex B/M                   |                                   | ✓         |                        | ✓         |                | Shrouded header, box header socket. |               |     |         | Straight/right angle tail exits.                                                          |
|                                      |                       | Headers                        |                                   | ✓         |                        | ✓         |                | Shrouded low profile strip.         |               |     |         |                                                                                           |
|                                      |                       | IDC 2PC                        |                                   |           |                        | ✓         |                | Socket & header.                    |               |     |         |                                                                                           |
|                                      |                       | IDC 1PC                        |                                   |           | ✓                      | ✓         |                | Transition plug & edge card.        |               |     |         |                                                                                           |
|                                      |                       | Strip IDC Striplines           | ✓                                 | ✓         |                        | ✓         |                | Socket plug.                        |               |     |         | 2mm or .100 centres.                                                                      |
| Comm Con Connectors                  | C•1289                | SIMM                           | ✓                                 |           |                        |           |                | Socket, plug, & shorting jumpers.   |               |     | ✓       | Mates with .050 or .100 SIMMs.                                                            |
|                                      |                       | Edge cards                     | ✓                                 |           |                        |           |                | 30 & 72 modules.                    |               |     |         | .460 or .610 height.                                                                      |
|                                      |                       | Expansion cards.               | ✓                                 |           |                        |           |                | .100 center.                        |               |     |         |                                                                                           |
|                                      |                       |                                |                                   |           |                        |           |                | PC-AT & EISA.                       | ✓             |     |         |                                                                                           |
| Consolidated Electric Wire and Cable | C•1294                |                                | ✓                                 | ✓         | ✓                      | ✓         |                |                                     |               |     |         |                                                                                           |
| CW Industries                        | C•1304                |                                | ✓                                 |           | ✓                      | ✓         |                |                                     | ✓             | ✓   |         |                                                                                           |
| Dale Electronics                     | C•1306                | Several                        | ✓                                 | ✓         |                        |           |                | Several.                            | ✓             | ✓   | ✓       |                                                                                           |
| Direct Sound Corp.                   | C•1309                |                                |                                   |           |                        |           |                |                                     |               | ✓   |         |                                                                                           |
| EDAC                                 | C•1311                |                                | ✓                                 | ✓         | ✓                      | ✓         | ✓              |                                     |               | ✓   |         |                                                                                           |
| Elastomeric Technologies             | C•1314                | STAX Matrix Moe, Dedicated MOE | ✓                                 |           |                        |           |                | Elastomeric.                        |               |     |         | Surface-to-surface solderless connectors for high density and/or high speed applications. |
| Electronic Precision Technology      | C•1315                | DIN                            |                                   |           |                        |           |                |                                     |               |     |         |                                                                                           |
| Globtek Inc.                         | C•1340                | EL 7000                        | ✓                                 | ✓         | ✓                      | ✓         | ✓              |                                     | ✓             | ✓   | ✓       |                                                                                           |
| Harting Elektronik                   | C•1343                |                                |                                   | ✓         |                        | ✓         |                |                                     |               | ✓   |         |                                                                                           |
| Richard Hirschmann of America        | C•1347                | Various                        | ✓                                 | ✓         | ✓                      | ✓         |                |                                     |               | ✓   |         | UL recognition, CSA approval, IP 67, Mil C 5015 compatibility.                            |



## CONNECTORS, PCB/FLAT CABLE (cont'd)

| Manufacturer                 | Starting EEM Page No. | Series/ Model No.            | Board to Chassis/ Mother Board |           | Board to Cable/ I/O |           | For Ext. Board | Type or Feature                 | Contact Style |     |       | Special Features                                                    |
|------------------------------|-----------------------|------------------------------|--------------------------------|-----------|---------------------|-----------|----------------|---------------------------------|---------------|-----|-------|---------------------------------------------------------------------|
|                              |                       |                              | One Piece                      | Two Piece | One Piece           | Two Piece |                |                                 | Cantilever    | Pin | Below |                                                                     |
| JAE Electronics, Inc.        | C•1356                |                              |                                | ✓         | ✓                   | ✓         |                |                                 | ✓             | ✓   |       | High density.                                                       |
| Jolo Industries              | C•1360                | BB-125, 122                  |                                |           | ✓                   |           |                |                                 |               |     |       |                                                                     |
| JST Corp.                    | C•1363                |                              | ✓                              | ✓         | ✓                   | ✓         |                |                                 |               | ✓   |       |                                                                     |
| Kycon Cable and Connectors   | C•1364                | KEISA, KSL, KHDS,            |                                | ✓         |                     |           |                |                                 | ✓             | ✓   | ✓     |                                                                     |
| LEMO U.S.A.                  | C•1368                |                              |                                |           |                     |           |                |                                 |               |     |       | Quick connector-disconnect connectors.                              |
| Leoco Corp.                  | C•1382                |                              |                                | ✓         |                     |           | ✓              |                                 |               |     |       |                                                                     |
| LMI Connectors, Inc.         | C•1394                | 207-307                      | ✓                              | ✓         |                     |           |                |                                 |               |     |       |                                                                     |
| Metuchen Capacitors Inc.     | C•1416                | All                          | ✓                              |           | ✓                   |           |                |                                 |               | ✓   |       | Wirewrap.                                                           |
| Mill-Max                     | C•1421                | 800                          |                                | ✓         |                     |           |                |                                 |               | ✓   |       |                                                                     |
| Omega Engineering, Inc.      | C•1547                |                              |                                | ✓         |                     | ✓         |                | Thermocouple circuits.          |               | ✓   |       |                                                                     |
| RDI Electronics              | C•1440                |                              | ✓                              | ✓         | ✓                   | ✓         | ✓              |                                 |               |     |       |                                                                     |
| Shogyo International Corp.   | C•1457                |                              | ✓                              | ✓         | ✓                   | ✓         |                |                                 |               |     |       |                                                                     |
| SMK Corp.                    | C•1461                |                              | ✓                              | ✓         |                     |           | ✓              |                                 |               | ✓   |       |                                                                     |
| Specialty Electronics        | C•1462                |                              |                                |           |                     |           |                |                                 |               |     |       | PCB mounted connectors, pins. Receptacles: straight, right angle.   |
| Stocko Connectors            | C•1470                | 2 mm IDC and crimp .100" IDC |                                | ✓         |                     | ✓         |                |                                 |               | ✓   | ✓     |                                                                     |
| Sullins Electronics          | C•1472                |                              | ✓                              |           |                     |           |                |                                 | ✓             |     | ✓     | Low profile break-away.                                             |
| Teka Interconnection Systems | C•1484                | Card edge                    | ✓                              | ✓         |                     |           |                | .062 & .140 row-to-row spacing. |               |     |       | Right angle and retentive leads, selective pin loading and plating. |
| Telco Interconnect           | C•1490                | Several                      | ✓                              |           |                     |           |                | Header.                         |               | ✓   |       |                                                                     |
| Texas Instruments            | C•1493                |                              | ✓                              |           |                     | ✓         |                | Gold contacts.                  | ✓             |     |       |                                                                     |
| Virginia Plastics            | C•1508                |                              |                                |           |                     |           | ✓              |                                 | ✓             |     |       |                                                                     |



## JACKS, PLUGS, ADAPTERS, PINS

| Manufacturer                         | Starting EEM Page No. | Jacks | Jack Adapters | Plug & Jack Sets | Plugs, Electric | Plug Adapters | Binding Posts | Pins, Elec. Cond. | Contacts, Electrical | Plugs, Power | Modules/Receptacles, Power | Jumpers, Circuit Board | Clips, Test | Leads, Test | High Voltage |
|--------------------------------------|-----------------------|-------|---------------|------------------|-----------------|---------------|---------------|-------------------|----------------------|--------------|----------------------------|------------------------|-------------|-------------|--------------|
| Alden Products                       | C•1148                |       |               |                  | ✓               | ✓             |               | ✓                 | ✓                    |              |                            |                        |             |             | ✓            |
| AMP Incorporated                     | C•1161                | ✓     | ✓             | ✓                |                 | ✓             |               |                   |                      |              |                            |                        |             |             |              |
| Circuit Assembly                     | C•1280                | ✓     | ✓             |                  | ✓               |               |               |                   |                      |              |                            |                        |             |             |              |
| Concord Electronics Corp.            | C•1290                | ✓     | ✓             | ✓                | ✓               | ✓             | ✓             | ✓                 | ✓                    |              |                            | ✓                      |             | ✓           |              |
| Connector Corp.                      | C•1292                | ✓     |               | ✓                | ✓               | ✓             |               | ✓                 |                      | ✓            |                            |                        |             |             | ✓            |
| Consolidated Electric Wire and Cable | C•1294                | ✓     | ✓             | ✓                |                 |               |               |                   |                      |              |                            |                        | ✓           |             |              |
| Corcom                               | C•1300                | ✓     |               |                  |                 |               |               |                   |                      |              | ✓                          |                        |             |             |              |
| CUI/Stack                            | C•1303                | ✓     |               |                  |                 |               |               |                   |                      | ✓            |                            |                        |             |             |              |
| Dale Electronics                     | C•1306                |       |               |                  |                 |               |               |                   |                      |              |                            |                        |             |             | ✓            |
| E-Cam Technology                     | C•1310                |       |               |                  |                 |               |               | ✓                 |                      |              |                            | ✓                      |             |             |              |
| Emulation Technology                 | C•1321                |       |               |                  |                 | ✓             |               |                   |                      |              |                            |                        | ✓           | ✓           |              |
| Globtek Inc.                         | C•1340                | ✓     | ✓             | ✓                | ✓               | ✓             | ✓             |                   | ✓                    | ✓            | ✓                          | ✓                      | ✓           | ✓           |              |
| Grayhill                             | C•1341                |       |               |                  |                 |               | ✓             |                   |                      |              |                            |                        | ✓           |             |              |
| Richard Hirschmann of America        | C•1347                | ✓     |               |                  | ✓               |               | ✓             |                   |                      | ✓            |                            |                        | ✓           | ✓           | ✓            |
| International Configurations         | C•1353                |       |               |                  | ✓               | ✓             |               |                   |                      | ✓            | ✓                          |                        |             |             |              |
| ITT Pomona                           | C•1355                | ✓     | ✓             | ✓                |                 | ✓             | ✓             | ✓                 |                      |              |                            | ✓                      | ✓           | ✓           |              |
| Jolo Industries                      | C•1360                | ✓     |               |                  |                 |               |               |                   |                      |              |                            | ✓                      |             |             |              |
| Kycon Cable and Connectors           | C•1364                | ✓     |               |                  |                 |               |               |                   |                      | ✓            |                            |                        |             |             |              |
| LZR Electronics Inc.                 | C•1400                | ✓     | ✓             | ✓                | ✓               | ✓             |               |                   |                      | ✓            | ✓                          |                        |             |             |              |
| Mill-Max                             | C•1421                |       |               |                  |                 |               |               | ✓                 | ✓                    |              |                            | ✓                      |             |             |              |
| Multi-Contact USA                    | C•1422                | ✓     | ✓             | ✓                | ✓               | ✓             | ✓             | ✓                 | ✓                    | ✓            | ✓                          | ✓                      | ✓           | ✓           | ✓            |
| Panel Components                     | C•1426                |       |               |                  | ✓               |               |               |                   |                      | ✓            | ✓                          |                        |             |             | ✓            |
| Omega Engineering, Inc.              | C•1547                | ✓     | ✓             | ✓                | ✓               | ✓             |               | ✓                 | ✓                    |              | ✓                          |                        |             | ✓           | ✓            |
| RDI Electronics                      | C•1440                | ✓     | ✓             | ✓                |                 |               |               |                   |                      | ✓            | ✓                          |                        |             |             |              |
| Schurter Inc.                        | C•1450                | ✓     |               | ✓                |                 |               |               |                   |                      | ✓            | ✓                          |                        |             | ✓           |              |
| Shogyo Interantional Corp.           | C•1457                | ✓     | ✓             | ✓                | ✓               | ✓             | ✓             |                   |                      |              |                            |                        | ✓           |             |              |
| Shokai Far East Ltd.                 | C•1460                | ✓     | ✓             | ✓                | ✓               | ✓             | ✓             | ✓                 |                      | ✓            | ✓                          | ✓                      | ✓           |             |              |
| SMK Corp.                            | C•1461                | ✓     | ✓             | ✓                |                 |               | ✓             |                   |                      |              |                            |                        |             |             |              |
| Stocko Connectors                    | C•1470                |       |               |                  |                 |               |               |                   |                      |              |                            | ✓                      |             |             |              |
| Superior Electric                    | C•1475                |       |               | ✓                | ✓               |               | ✓             | ✓                 |                      | ✓            |                            |                        |             |             |              |
| Switchcraft Inc.                     | C•1476                | ✓     | ✓             |                  |                 |               |               |                   |                      | ✓            | ✓                          |                        |             |             |              |
| Telco Interconnect                   | C•1490                | ✓     | ✓             | ✓                |                 | ✓             |               | ✓                 | ✓                    | ✓            | ✓                          |                        |             |             |              |
| Trompeter Electronics                | C•1499                | ✓     | ✓             | ✓                |                 | ✓             |               |                   |                      |              |                            |                        |             |             |              |
| Tru-Connector Corp.                  | C•1507                | ✓     | ✓             | ✓                |                 | ✓             |               |                   |                      |              |                            |                        |             |             | ✓            |
| Virginia Plastics                    | C•1508                | ✓     |               |                  |                 |               |               |                   |                      |              |                            |                        |             |             |              |



**Connector terminology** is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact**: The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments**: Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female**: In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry**: A female contact which prevents entry of a male contact larger than a specific size.

**Open entry**: A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite**: Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal**: Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal**: May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector**: Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard**. May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece**: One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout**: Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors**: A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector**: Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal**: Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination**: A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement**: Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

**Service rating**: The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

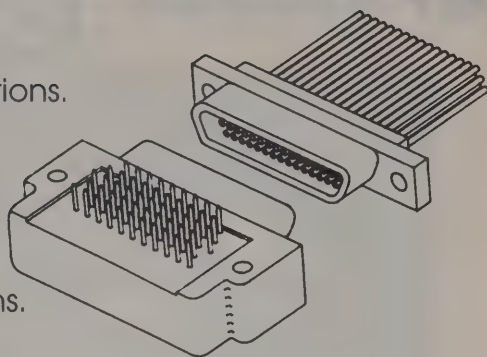
**Withstanding voltage**: Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.





# Connectors

- Printed wiring board and cable to board applications.
- Right angle and straight through pin to socket connectors to **Mil-C-55302**.
- Right angle and straight through Micro-miniature connectors to **Mil-C-83513**.
- Also designs for high reliability, custom applications.



## .100"

### W-Series

2-, 3-, and 4- row subminiature connectors on .100 centers from 6 to 200+ contacts. Qualified to **Mil-C-55302**. Many modified and custom designs available.

## .075"

### R-Series

2-, and 3- row subminiature connectors on .075" centers from 10 to 300 contacts. Qualified to **MIL-C-55302**. Also many modified and custom designs, including SMT types, available.

## .050"

### M-Series

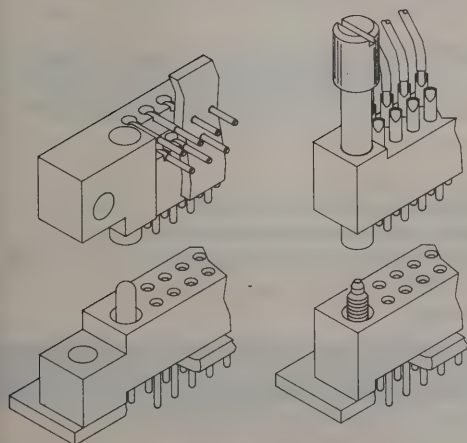
2-, 3- and 4- row microminiature connectors on .050" centers from 9 to 100 contacts. Qualified to **Mil-C-83513**. Also many modified and custom designs, including SMT and STRIP configurations, available.

## CABLE HARNESS

Military and commercial discrete wire, shielded, overmolded, cad design service and custom specification our speciality.

Distributors: Hall-Mark: .050" and .075", B.G. Electronics, Carrollton, Texas; D.C. Electronics, Timonium, Maryland; Erik-A Electronics, Monrovia, California; Gemini Electronics, Elmsford, New York; Spirit Electronics, Scottsdale, Arizona.

### AirBorn Customer Service and Application/Design Support Centers



### W-Series

AirBorn, Inc.  
4321 AirBorn Drive  
Addison, Texas 75001-0519  
Phone: 214/931-3200  
Fax: 214/931-9305

### M-Series R-Series Cable/Harness

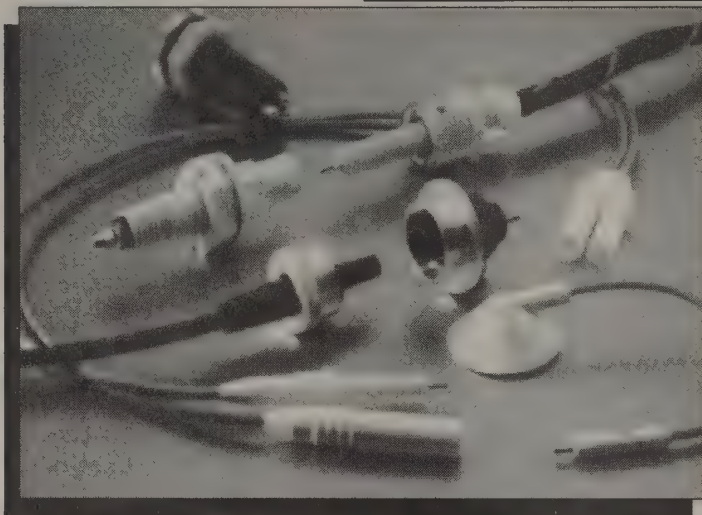
AirBorn, Inc.  
215 West Royal Drive  
Georgetown, Texas 78626  
Phone: 512/863-5585  
Fax: 512/863-8259



# ALDEN

## Standard Products

Alden Products Company has been designing, tooling, and producing quality standard and custom insert molded products since 1929. We are innovative pacesetters combining interconnect expertise and advanced molding technology to serve customers in the medical, environmental, military, instrumentation, laser, and business equipment markets worldwide.



### CRT Anode Connectors

Standard and low profile connectors for most applications.

### High Voltage Connectors

A complete line of connectors for applications to 75KVDC.

### Detachable Feedthroughs

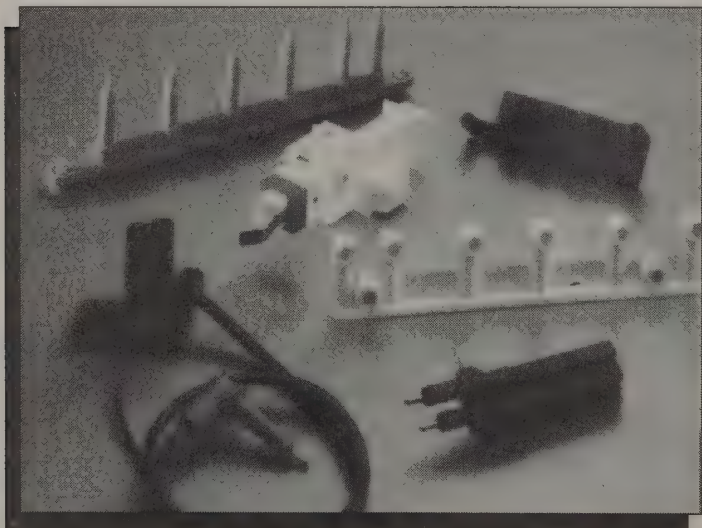
Dielectric oil-immersible feedthrough connectors.

### Environmental Connectors

Autocoupling and sealing connectors for signal, high voltage, and high amperage.

## Custom Products

Alden also specializes in developing problem-solving connectors and devices. Our custom designed solutions include molded circuitry, ozone exhaust systems, EMI/RFI suppressors, adapters, electro-mechanical devices, molded housings, and specialized cable assemblies. Often many functions can be combined into unitized assemblies for lower acquisition costs and single-sourcing.



### Connectors and Contacts

Complete capabilities from concept to production to fulfill any interconnect or contact requirement.

### Encapsulated Circuitry

Molded components, circuits and networks, or combined with other functions.

### Cables and Electromechanical Assemblies

Complete harnessing and fabrication capabilities for standard terminations and custom cables.

### Prototypes

Fast delivery of machined or liquid resin cast functional prototypes for developmental or short run parts.

*To obtain a custom product from Alden, simply fax your electrical, mechanical, and environmental requirements for our review. We will provide a prompt quote and design concept for your consideration. Skilled craftspeople using advanced equipment produce quality prototypes for functional testing in the shortest possible time at minimal cost, and allows for design modifications prior to production tooling.*

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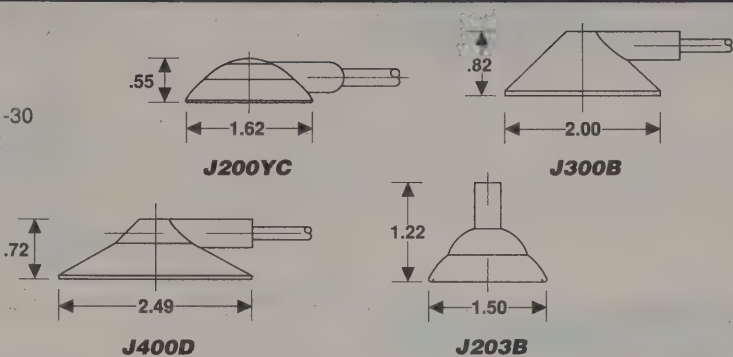


ALDEN

All dimensions are in inches

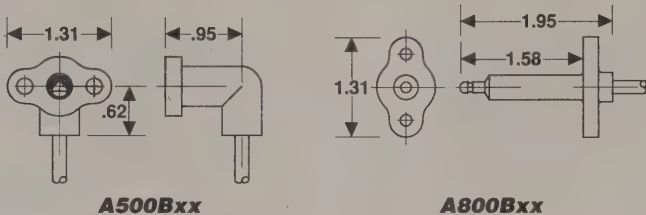
CRT Anode Connectors

- J200YCxx** For JEDEC styles J1-21, J1-22, J1-30  
Silicone rubber insert molded boot
- J300Bxx** For JEDEC style J1-21
- J400Bxx** Thermoplastic elastomer cap
- J203Bxx** For JEDEC style J1-21  
Silicone rubber cap



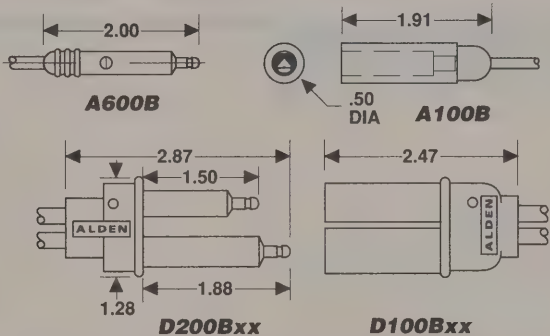
10KVDC

- Molded in 94V-O flame retardant polypropylene
- 30 KVDC UL/CSA listed wire (xx specifies length)
- Molded directly to wire for optimum performance
- Other styles and custom modifications available



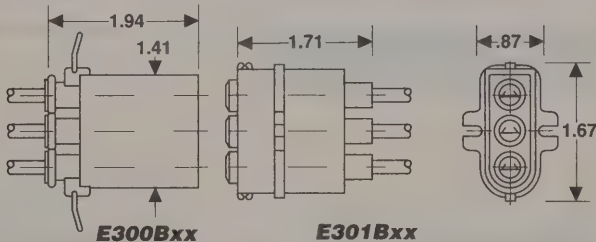
15KVDC

- Molded in 94V-O flame retardant polypropylene
- 30 KVDC UL/CSA listed wire (xx specifies length)
- Molded directly to wire for optimum performance
- Other styles and custom modifications available
- Industry standard for HeNe lasers
- Panel mount styles available



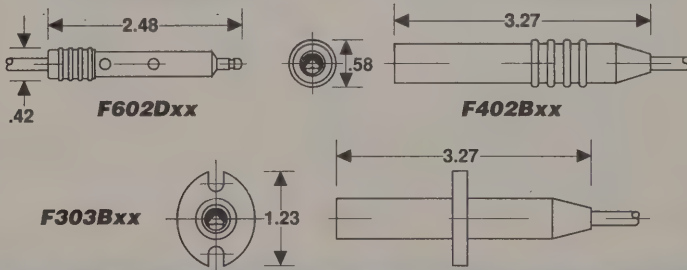
20KVDC

- Polarized 2 and 3 circuit connectors
- Molded in 94V-O flame retardant polypropylene
- 30 KVDC UL/CSA listed wire (xx specifies length)
- Molded directly to wire for optimum performance
- Locking rings for added retention
- Custom modifications available



25KVDC

- Molded in 94V-O flame retardant polypropylene
- 30 KVDC UL/CSA listed wire (xx specifies length)
- Molded directly to wire for optimum performance
- Other styles and custom modifications available



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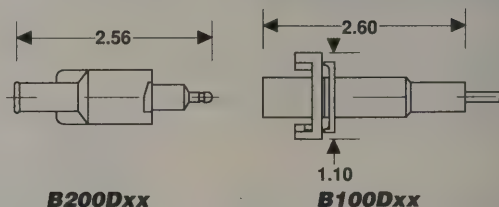


# ALDEN

All dimensions are in inches

## 35KVDC

- Twist-locking with moisture resistant seal
- 40 KVDC UL/CSA listed wire (xx specifies length)
- Molded directly to wire for optimum performance
- Other wires and custom modifications available

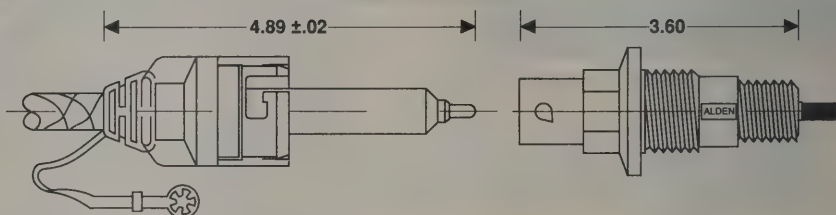


B200Dxx

B100Dxx

## 55KVDC

- Oil tight receptacle
- Right angle plug option
- Low profile options
- J-slot mating action
- Mammography x-ray standard

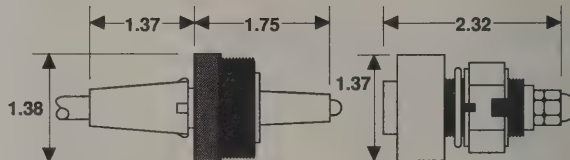


P503BHxx

P500

## 60KVDC

- Miniature size
- Oil tight receptacle
- Square or round flange option
- Self-grounded, fully shielded design
- Easily installed, no potting needed

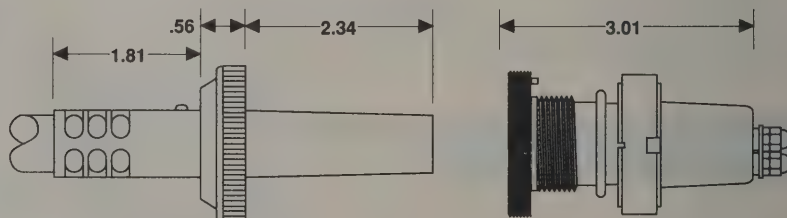


P602RSxx

P601

## 75KVDC

- Half the size of federal standard 72
- Oil tight receptacle
- Dry mate, no grease required
- 1-5 pins available
- Polarized for easy keying



P701QSxx

P700

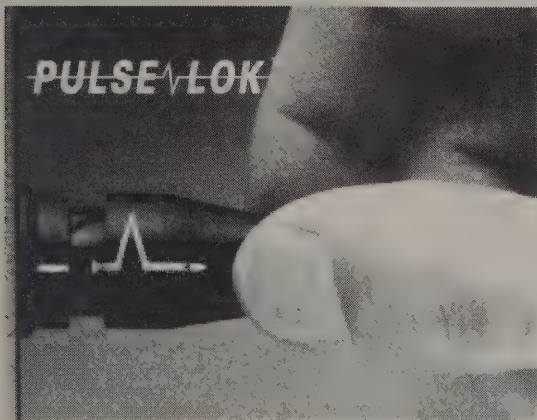
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# ALDEN

## Auto-Coupling Connector Systems

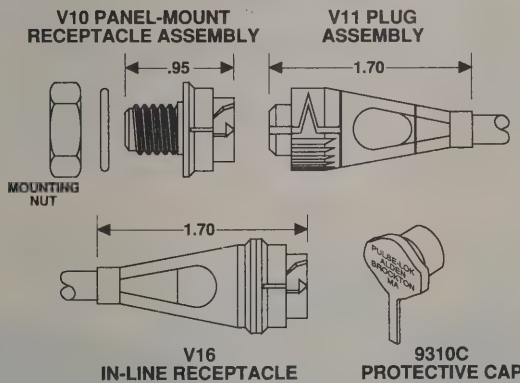


### Features

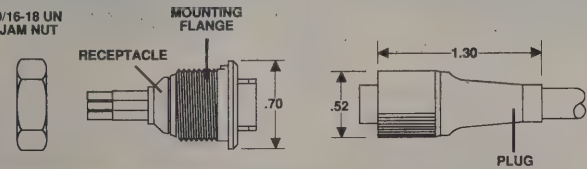
- Autocoupling self-locking, quick release
- Blind mating aids positive, sequential keying
- Environmentally sealed splash-proof, submersible
- Corrosion resistant rugged, lightweight plastic housing
- Low insertion force precision formed, gold plated contacts

## PULSE-LOK™

### AVAILABLE HOUSING STYLES



## mini-pulse



New MINI-PULSE series connector features the same autocoupling and sealing as the PULSE-LOK series in a reduced size. Consult our factory for details.

Alden Product's V1 Series, *PULSE-LOK* connector system features an innovative coupling mechanism that sets new performance standards for multi-pole interconnects. This user-friendly connector provides both audible and visible feedback that connector pairs are fully mated. Fool-proof, quick-mate features qualify this package as an ideal candidate for instrumentation, emergency medical and consumer applications.

### Our Standard, Your Custom

*PULSE-LOK* connectors are available in several standard contact and wire configurations to meet most signal, high current and high voltage applications. Custom Contact requirements are easily accommodated by the *PULSE-LOK* connector's modular construction.

### V1 and V2 Series Part Numbering Code Table

V1 0 4 JC 12

|                 |                                              |      |            |
|-----------------|----------------------------------------------|------|------------|
|                 | Load Length (of wire or cable in inches)     |      |            |
|                 | Wire Type (select style from TABLE B)        |      |            |
|                 | Pole Count (number of circuits, see TABLE A) |      |            |
|                 | Connector Housing Style                      |      |            |
|                 | Panel-mount                                  |      | In-line    |
|                 | Receptacle                                   | Plug | Receptacle |
| Signal V1, V2   | 0                                            | 1    | 6          |
| High Voltage V1 | 2                                            | 3    | 7          |
| High Current V1 | 4                                            | 5    | 8          |

V1 Pulse-Lok or V2 Mini Pulse-Lok (signal only)

Table A

| Formal                 | Contact Arrangement | # of Poles | Standard Wire Size | Operating Voltage (see TABLE B) | Contact Isolation | Operating Amperage | Receptacle P/N                                                                                                                                 | Plug P/N |
|------------------------|---------------------|------------|--------------------|---------------------------------|-------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Signal                 |                     | 1          | 24 AWG             | 300V                            | NA                | 3 AMPS             | V101                                                                                                                                           | V111     |
|                        |                     | 2          | 24 AWG             | 300V                            | 2.5KVDC           | 3 AMPS             | V102                                                                                                                                           | V112     |
|                        |                     | 3          | 24 AWG             | 300V                            | 2.5KVDC           | 3 AMPS             | V103                                                                                                                                           | V113     |
|                        |                     | 4          | 24 AWG             | 300V                            | 2.0KVDC           | 3 AMPS             | V104                                                                                                                                           | V114     |
|                        |                     | 5          | 24 AWG             | 300V                            | 2.0KVDC           | 3 AMPS             | V105                                                                                                                                           | V115     |
|                        |                     | 6          | 24 AWG             | 300V                            | 2.0KVDC           | 3 AMPS             | V106                                                                                                                                           | V116     |
|                        |                     | 7          | 24 AWG             | 300V                            | 2.0KVDC           | 3 AMPS             | V107                                                                                                                                           | V117     |
| High-Voltage to 15KVDC |                     | 1          | 22 AWG             | 15KVDC*                         | NA                | 5 AMPS             | V121                                                                                                                                           | V131     |
|                        |                     | 2          | 22 AWG             | 12KVDC*                         | 12KVDC*           | 5 AMPS             | V122                                                                                                                                           | V132     |
| High-Current to 35AMPS |                     | 1          | 16 AWG             | 300V                            | NA                | 20 AMPS**          | V141(TC)                                                                                                                                       | V151(TC) |
|                        |                     | 2          | 16 AWG             | 300V                            | 2.0KVDC           | 13 AMPS**          | V142                                                                                                                                           | V152     |
|                        |                     | 1          | 12 AWG             | 600V                            | NA                | 30 AMPS**          | V141(YA)                                                                                                                                       | V151(YA) |
| Custom                 |                     |            |                    |                                 |                   |                    | Circuit configurations displayed above represent Alden's standard formats. Custom configurations are available to address unique requirements. |          |

Table B

| Application  | Wire Code | No. of Conductors | AWG          | Nom. O.D. | Insulation             | Voltage | Standards                   |
|--------------|-----------|-------------------|--------------|-----------|------------------------|---------|-----------------------------|
| Signal       | JC        | 1                 | 22 (7x30TC)  | .050"     | PVC TEFLON             | 600V    | MIL-W-16878E/4 200°C        |
|              | LC        | 2                 | 24 (7x32TC)  | .156"     | PVC JKT/Foil Shld./PVC | 300V    | UL2464,CSA 80°C             |
|              | MC        | 3                 | 24 (7x32TC)  | .188"     | PVC JKT/Foil Shld./PVC | 300V    | UL2464,CSA 80°C             |
|              | NC        | 4                 | 24 (7x32TC)  | .190"     | PVC JKT/Foil Shld./PVC | 300V    | UL2464,CSA 80°C             |
|              | QC        | 5                 | 24 (7x32TC)  | .195"     | PVC JKT/Foil Shld./PVC | 300V    | UL2464,CSA 80°C             |
|              | RC        | 6                 | 24 (7x32TC)  | .215"     | PVC JKT/Foil Shld./PVC | 300V    | UL2464,CSA 80°C             |
|              | SC        | 7                 | 24 (7x32TC)  | .215"     | PVC JKT/Foil Shld./PVC | 300V    | UL2464,CSA 80°C             |
| High-Voltage | GA        | 1                 | 22 (7x30TC)  | .103"     | CROSS LINKED PVC       | 15KVDC  | UL3239VAV1 & CSA15-15 105°C |
| High-Current | TC        | 1                 | 10 (26x30TC) | .094"     | PVC                    | 300V    | UL1007,CSA 80°C             |
|              | UC        | 2                 | 16 (26x30TC) | .240"     | PVC/SHIELD/PVC         | 350V    | UL2095 80°C                 |
|              | YA        | 1                 | 12 (65x30TC) | .158"     | PVC                    | 800V    | UL1015,CSA 105°C            |

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# Altech Corp.

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Phone (908) 806-9400 • Fax (908) 806-9490

## THE RIGHT CONNECTION

Today's design engineer can achieve modern, reliable, cost-effective wire terminations with Altech's terminal blocks. As systems and equipment have become more sophisticated, barrier strips and wire lugs are no longer efficient for electrical connections. Altech's terminal blocks meet today's requirements for high density, dead front safety, modularity, flexibility, reliability, reduced cost, plus national and international acceptance. Altech will make your design and selection process an easy one.

- PC Board - Pluggable
- PC Board - Fixed
- Eurostrips®
- Panel Mount
- DIN Rail Mount
- Interface and Electronic Modules

At Altech, we work closely with our customers to provide tailor-made solutions that meet stringent individual requirements. Superior products, state-of-the-art technology, and helpful people. Whether your application calls for standard or custom designs, Altech provides cost effective solutions in a timely manner.

## PRINTED CIRCUIT BOARD TERMINAL BLOCKS - PLUGGABLE

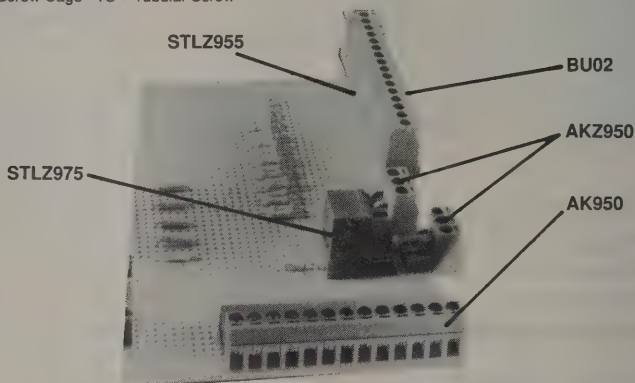
Two-piece plug and header design "pluggables" speed and simplify board and device replacement, and reduce costly downtime and misconnections. Altech offers a wide selection of single mold and modular terminal blocks with screw-cage or economical tubular screw clamps.

- Single Mold or Modular Construction
- Screw-Cage or Tubular Screw Clamps
- Front and Top Wire Entry
- Metric and Inch Spacings
- Optional Keying, Factory Marking
- UL/CSA Recognized, IEC/VDE

### Quick Reference to Pluggable Terminal Blocks

| Terminal Block Type  | AK950 | AKZ950 | BU02 | BU04 | AK130 |
|----------------------|-------|--------|------|------|-------|
| Pin Spacing (mm)     | 5.0   | 5.08   | 5.08 | 5.08 | 5.0   |
| Pin Spacing (in.)    | .197  | .200   | .200 | .200 | .197  |
| Voltage (UL/CSA)     | 300   | 300    | 300  | 300  | 300   |
| Current (UL/CSA)     | 15    | 15     | 15   | 15   | 10    |
| Max. Wire Size (AWG) | 12    | 12     | 10   | 10   | 14    |
| Clamp Design         | SC    | SC     | SC   | SC   | TS    |
| Max. No. of Poles    | 24    | 24     | 16   | 16   | 12    |

SC = Screw Cage TS = Tubular Screw

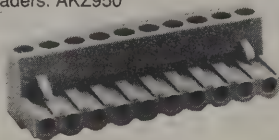


Screw-Cage Clamp Design Pluggable Terminal Blocks

## PLUGS

### AK950, AKZ950 Plugs

Wire entry in same direction as plug-in. 5mm (.197") or 5.08mm (.200") pin spacing. 22-12 AWG. AK950 mates with STL950, STLZ955, STLZ975 headers.



### AK950 Plug 5mm (.197") pin spacing

| No. of Poles* | Type     | Length mm (in.) |
|---------------|----------|-----------------|
| 2             | AK950/2  | 10.0 (.39)      |
| 3             | AK950/3  | 15.0 (.59)      |
| 4             | AK950/4  | 20.0 (.79)      |
| 5             | AK950/5  | 25.0 (.99)      |
| 6             | AK950/6  | 30.0 (1.18)     |
| 7             | AK950/7  | 35.0 (1.38)     |
| 8             | AK950/8  | 40.0 (1.58)     |
| 10            | AK950/10 | 50.0 (1.97)     |
| 12            | AK950/12 | 60.0 (2.36)     |
| 14            | AK950/14 | 70.0 (2.76)     |
| 15            | AK950/15 | 75.0 (2.95)     |

### AKZ950 Plug 5.08mm (.200") pin spacing

| No. of Poles* | Type      | Length mm (in.) |
|---------------|-----------|-----------------|
| 2             | AKZ950/2  | 10.16 (.40)     |
| 3             | AKZ950/3  | 15.24 (.60)     |
| 4             | AKZ950/4  | 20.32 (.80)     |
| 5             | AKZ950/5  | 25.40 (1.00)    |
| 6             | AKZ950/6  | 30.48 (1.20)    |
| 7             | AKZ950/7  | 35.56 (1.40)    |
| 8             | AKZ950/8  | 40.64 (1.60)    |
| 10            | AKZ950/10 | 50.80 (2.00)    |
| 12            | AKZ950/12 | 60.96 (2.40)    |
| 14            | AKZ950/14 | 71.14 (2.80)    |
| 15            | AKZ950/15 | 76.22 (3.00)    |

\* Available in up to 24 poles by special order.

## PLUGGABLE, SCREW-CAGE CLAMP DESIGN

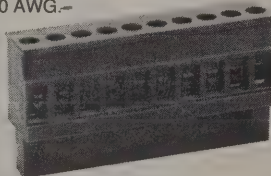
For industrial applications and/or applications where frequent wire terminations occur. Single mold offers maximum strength. Plugs mate with headers listed below. UL, CSA, IEC/VDE, 15A, 300V. Standard Color: Green.

- Industry Standard Compatible
- Horizontal or Vertical, Open or Closed End Headers
- Single and Double Level Headers
- Captive Screws

### BU02 Plug

Vertical construction with grip top makes it easy to insert and remove plug. Wire entry perpendicular to plug-in direction, on locking tab side. 5.08mm (.200") pin spacing. 22-10 AWG.

Mate with STLZ950, STLZ955, STLZ970, STLZ975 headers.



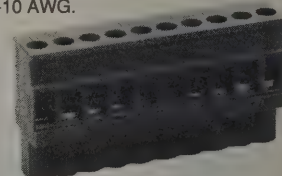
| No. of Poles* | Type    | Length mm (in.) |
|---------------|---------|-----------------|
| 2             | BU02/2  | 10.16 (.40)     |
| 3             | BU02/3  | 15.24 (.60)     |
| 4             | BU02/4  | 20.32 (.80)     |
| 5             | BU02/5  | 25.40 (1.00)    |
| 6             | BU02/6  | 30.48 (1.20)    |
| 7             | BU02/7  | 35.56 (1.40)    |
| 8             | BU02/8  | 40.64 (1.60)    |
| 10            | BU02/10 | 50.80 (2.00)    |
| 12            | BU02/12 | 60.96 (2.40)    |
| 14            | BU02/14 | 71.14 (2.80)    |
| 15            | BU02/15 | 76.22 (3.00)    |

\* Available in up to 16 poles

### BU04 Plug

Vertical construction with grip top makes it easy to insert and remove plug. Wire entry perpendicular to plug-in direction, opposite locking tab side. 5.08mm (.200") pin spacing. 22-10 AWG.

Mate with STLZ950, STLZ955, STLZ970, STLZ975 headers.



| No. of Poles* | Type    | Length mm (in.) |
|---------------|---------|-----------------|
| 2             | BU04/2  | 10.16 (.40)     |
| 3             | BU04/3  | 15.24 (.60)     |
| 4             | BU04/4  | 20.32 (.80)     |
| 5             | BU04/5  | 25.40 (1.00)    |
| 6             | BU04/6  | 30.48 (1.20)    |
| 7             | BU04/7  | 35.56 (1.40)    |
| 8             | BU04/8  | 40.64 (1.60)    |
| 10            | BU04/10 | 50.80 (2.00)    |
| 12            | BU04/12 | 60.96 (2.40)    |
| 14            | BU04/14 | 71.14 (2.80)    |
| 15            | BU04/15 | 76.22 (3.00)    |

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300



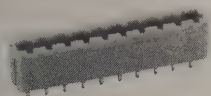
# Altech Corp.

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## HEADERS FOR SCREW-CAGE CLAMP PLUGS

### STL950/STL2950 Headers Horizontal Closed End\*\*

Industry standard compatible, single mold construction; color: green. STL950 mates with AK950. STL2950 mates with BU04, BU02, AKZ950 Plugs. 5.00mm (.197") and 5.08mm (.200") pin spacing. (Also available with open ends.)



#### STL950 5.00mm (.197") pin spacing

| No. of Poles* | Type        | Length mm (in.) |
|---------------|-------------|-----------------|
| 2             | STL950/2-w  | 11.20 (.44)     |
| 3             | STL950/3-w  | 16.20 (.64)     |
| 4             | STL950/4-w  | 21.20 (.84)     |
| 5             | STL950/5-w  | 26.20 (1.03)    |
| 6             | STL950/6-w  | 31.20 (1.23)    |
| 7             | STL950/7-w  | 36.20 (1.43)    |
| 8             | STL950/8-w  | 41.20 (1.62)    |
| 10            | STL950/10-w | 51.20 (2.02)    |
| 12            | STL950/12-w | 61.20 (2.40)    |
| 14            | STL950/14-w | 71.20 (2.80)    |
| 15            | STL950/15-w | 76.20 (3.00)    |

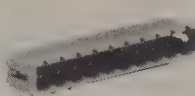
#### STL2950 5.08mm (.200") pin spacing

|    |              |              |
|----|--------------|--------------|
| 2  | STL2950/2-w  | 11.36 (.45)  |
| 3  | STL2950/3-w  | 16.44 (.65)  |
| 4  | STL2950/4-w  | 21.52 (.85)  |
| 5  | STL2950/5-w  | 26.60 (1.05) |
| 6  | STL2950/6-w  | 31.68 (1.25) |
| 7  | STL2950/7-w  | 36.76 (1.45) |
| 8  | STL2950/8-w  | 41.84 (1.65) |
| 10 | STL2950/10-w | 52.00 (2.05) |
| 12 | STL2950/12-w | 62.16 (2.45) |
| 14 | STL2950/14-w | 72.32 (2.85) |
| 15 | STL2950/15-w | 77.40 (3.05) |

\* Available in up to 24 poles by special order  
\*\* Open-End Available

### STL955/STL2955 Headers Vertical Closed End\*\*

Industry standard compatible, single mold construction; color: green. STL955 mates with AK950. STL2955 mates with BU04, BU02, AKZ950 Plugs. 5.00mm (.197") and 5.08mm (.200") pin spacing. (Also available with open ends.)



#### STL955 5.00mm (.197") pin spacing

| No. of Poles | Type        | Length mm (in.) |
|--------------|-------------|-----------------|
| 2            | STL955/2-w  | 11.20 (.44)     |
| 3            | STL955/3-w  | 16.20 (.64)     |
| 4            | STL955/4-w  | 21.20 (.84)     |
| 5            | STL955/5-w  | 26.20 (1.03)    |
| 6            | STL955/6-w  | 31.20 (1.23)    |
| 7            | STL955/7-w  | 36.20 (1.43)    |
| 8            | STL955/8-w  | 41.20 (1.62)    |
| 10           | STL955/10-w | 51.20 (2.02)    |
| 12           | STL955/12-w | 61.20 (2.40)    |
| 14           | STL955/14-w | 71.20 (2.80)    |
| 15           | STL955/15-w | 76.20 (3.00)    |

#### STL2955 5.08mm (.200") Pin spacing

|    |              |              |
|----|--------------|--------------|
| 2  | STL2955/2-w  | 11.36 (.45)  |
| 3  | STL2955/3-w  | 16.44 (.65)  |
| 4  | STL2955/4-w  | 21.52 (.85)  |
| 5  | STL2955/5-w  | 26.60 (1.05) |
| 6  | STL2955/6-w  | 31.68 (1.25) |
| 7  | STL2955/7-w  | 36.76 (1.45) |
| 8  | STL2955/8-w  | 41.84 (1.65) |
| 10 | STL2955/10-w | 52.00 (2.05) |
| 12 | STL2955/12-w | 62.16 (2.45) |
| 14 | STL2955/14-w | 72.32 (2.85) |
| 15 | STL2955/15-w | 77.40 (3.05) |

### STL2970/STL2975 Headers Vertical and Horizontal Open End

Double level, industry standard compatible, modular construction; color: green. Mates with AKZ950 and BU02, BU04 Plugs. 5.08mm (.200") pin spacing.



#### STL2970 5.08mm (.200") pin spacing

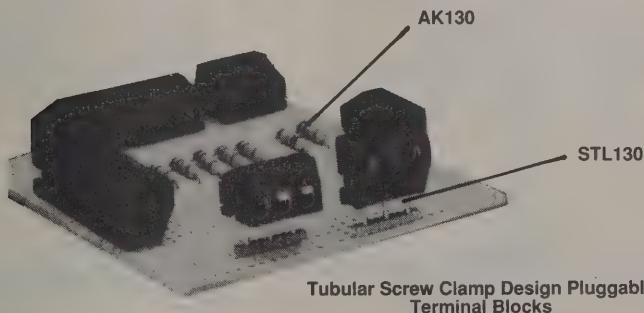
| No. of Poles* | Type       | Length mm (in.) |
|---------------|------------|-----------------|
| 4             | STL2970/4  | 12.26 (.48)     |
| 6             | STL2970/6  | 17.34 (.68)     |
| 8             | STL2970/8  | 22.42 (.88)     |
| 10            | STL2970/10 | 27.50 (1.08)    |
| 12            | STL2970/12 | 32.58 (1.28)    |
| 14            | STL2970/14 | 37.66 (1.48)    |
| 16            | STL2970/16 | 42.74 (1.68)    |
| 18            | STL2970/18 | 47.82 (1.88)    |
| 20            | STL2970/20 | 52.90 (2.08)    |
| 22            | STL2970/22 | 57.98 (2.28)    |
| 24            | STL2970/24 | 63.06 (2.48)    |

#### STL2975 5.08mm (.200") pin spacing

|    |            |              |
|----|------------|--------------|
| 4  | STL2975/4  | 12.26 (.48)  |
| 6  | STL2975/6  | 17.34 (.68)  |
| 8  | STL2975/8  | 22.42 (.88)  |
| 10 | STL2975/10 | 27.50 (1.08) |
| 12 | STL2975/12 | 32.58 (1.28) |
| 14 | STL2975/14 | 37.66 (1.48) |
| 16 | STL2975/16 | 42.74 (1.68) |
| 18 | STL2975/18 | 47.82 (1.88) |
| 20 | STL2975/20 | 52.90 (2.08) |
| 22 | STL2975/22 | 57.98 (2.28) |
| 24 | STL2975/24 | 63.06 (2.48) |

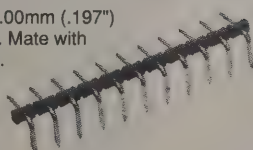
## PLUGGABLE, TUBULAR SCREW CLAMP DESIGN

For cost sensitive, lighter duty requirements. Modular construction offers convenience of simplified ordering and reduced inventory. Interlock 2 and 3 pole modules for multipole assemblies. Standard wire protectors. Dual contact system provides optional front and top wire entry. UL, CSA, IEC/VDE. 5.00mm (.197") pin spacing. 22-14 AWG, 10A, 300V, Standard Color: Gray. Straight and right angle open pin headers are supplied in strips up to 12 poles, or in 24 pole strips for field cutting.



### STL140 Right Angle Header

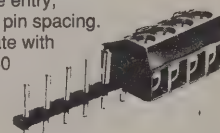
Pin-Type, 5.00mm (.197") pin spacing. Mate with AK130 plug.



| No. of Poles | Type      | Length mm (in.) |
|--------------|-----------|-----------------|
| 2            | STL140/2  | 10.0 (.39)      |
| 3            | STL140/3  | 15.0 (.59)      |
| 4            | STL140/4  | 20.0 (.79)      |
| 5            | STL140/5  | 25.0 (.99)      |
| 6            | STL140/6  | 30.0 (1.18)     |
| 7            | STL140/7  | 35.0 (1.38)     |
| 8            | STL140/8  | 40.0 (1.58)     |
| 9            | STL140/9  | 45.0 (1.77)     |
| 24           | STL140/24 | 120.0 (4.72)    |

### AK130 Plug

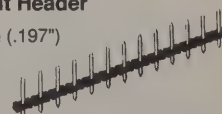
Front or top wire entry, 5.00mm (.197") pin spacing. Color: Gray. Mate with STL130, STL140 headers.



| No. of Poles | Type      | Length mm (in.) |
|--------------|-----------|-----------------|
| 2            | AK130/2wp | 10.0 (.39)      |
| 3            | AK130/3wp | 15.0 (.59)      |
| 4            | AK130/4wp | 20.0 (.79)      |
| 5            | AK130/5wp | 25.0 (.99)      |
| 6            | AK130/6wp | 30.0 (1.18)     |
| 7            | AK130/7wp | 35.0 (1.38)     |
| 8            | AK130/8wp | 40.0 (1.58)     |
| 9            | AK130/9wp | 45.0 (1.78)     |

### STL130 Straight Header

Pin-Type, 5.00mm (.197") pin spacing. Mate with AK130 plug.



| No. of Poles | Type      | Length mm (in.) |
|--------------|-----------|-----------------|
| 2            | STL130/2  | 10.0 (.39)      |
| 3            | STL130/3  | 15.0 (.59)      |
| 4            | STL130/4  | 20.0 (.79)      |
| 5            | STL130/5  | 25.0 (.99)      |
| 6            | STL130/6  | 30.0 (1.18)     |
| 7            | STL130/7  | 35.0 (1.38)     |
| 8            | STL130/8  | 40.0 (1.58)     |
| 9            | STL130/9  | 45.0 (1.77)     |
| 24           | STL130/24 | 120.0 (4.72)    |

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300



# Altech Corp.

35 Royal Road • Flemington, NJ 08822-6000  
Phone (908) 806-9400 • Fax (908) 806-9490

## PRINTED CIRCUIT BOARD TERMINAL BLOCKS - FIXED

Altech's terminal blocks for fixed mounting provide the optimum selection to meet your application requirements. We offer both screw-cage clamp and cost-effective tubular screw clamp designs which provide high density, dead front safety and flexibility. Their modular construction offers the convenience of simplified ordering and reduced inventory. Interlock 2 and 3 pole modules to create multipole assemblies. Order preassembled or assemble yourself. Several wire entry options facilitate wiring and increase accessibility.

### Quick Reference to Fixed Terminal Blocks

| Terminal Block Type (AK) | 100  | 110  | Z120 | Z125 | 300  | 350  | Z350 | 500  | Z500 | 505  | 550  | 555  | 700  | Z700 | 750  | Z750 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Pin Spacing (mm)         | 5.0  | 7.5  | 5.08 | 5.08 | 5.0  | 5.0  | 5.08 | 5.0  | 5.08 | 5.0  | 3.5  | 3.5  | 5.0  | 5.08 | 5.0  | 5.08 |
| Pin Spacing (in.)        | .197 | 2.95 | .200 | .200 | .197 | .197 | .200 | .197 | .200 | .197 | .138 | .138 | .197 | .200 | .197 | .200 |
| Voltage (UL/CSA)         | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  | 300  |
| Current (UL/CSA)         | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 15   | 10   | 10   | 15   | 15   | 15   | 15   |
| Max. Wire Size (AWG)     | 14   | 14   | 14   | 14   | 12   | 12   | 12   | 14   | 14   | 14   | 16   | 16   | 12   | 12   | 12   | 12   |
| Wire Entry               | F    | F    | F    | T    | 45°  | F    | F    | F    | T    | T    | F    | T    | F    | F    | F    | F    |
| Clamp Design             | TS   | TS   | TS   | TS   | SC   | SC   | SC   | TS   | TS   | SC   | TS   | TS   | SC   | SC   | SC   | SC   |

F = Front; T = Top; 45 = 45° Degrees; SC = Screw-Cage; TS = Tubular Screw; S = Single Level; D = Double Level.

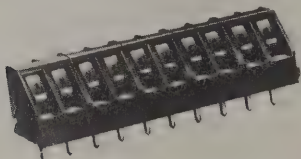
### FIXED, SCREW-CAGE CLAMP DESIGN

Rock solid, reliable connections for demanding industrial applications and applications where frequent wire terminations occur. Modular 45°, front or top wire entry. Closed bottom. UL, CSA, IEC/VDE. 22-12AWG, 15A, 300V. Standard Color: Type AK300 is dark gray, all other types are green.

- Front, Top or 45° Wire Entry
- Single and Double Level

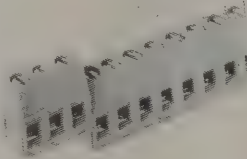
#### AK300

45° wire entry; 12.5mm (.49") high; x 12.5mm (.49") deep; 5.0mm (.197") pin spacing; color: gray.



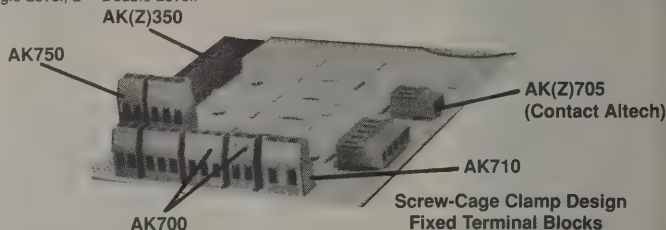
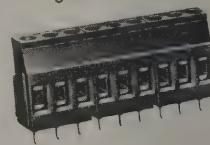
#### AK350

Front wire entry; 13.5mm (.53") high; x 9.0mm (.35") deep; 5.0mm (.197") pin spacing; color: green.



#### AK700

Front wire entry; 19.0mm (.75") high; x 10.5mm (.41") deep; 5.0mm (.197") pin spacing; color: green.



| No. of Poles* | Type     | Length mm (in.) |
|---------------|----------|-----------------|
| 2             | AK300/2  | 10.0 (.39)      |
| 3             | AK300/3  | 15.0 (.59)      |
| 4             | AK300/4  | 20.0 (.79)      |
| 5             | AK300/5  | 25.0 (.99)      |
| 6             | AK300/6  | 30.0 (1.18)     |
| 7             | AK300/7  | 35.0 (1.38)     |
| 8             | AK300/8  | 40.0 (1.58)     |
| 9             | AK300/9  | 45.0 (1.77)     |
| 10            | AK300/10 | 50.0 (1.97)     |
| 12            | AK300/12 | 60.0 (2.36)     |

| No. of Poles* | Type     | Length mm (in.) |
|---------------|----------|-----------------|
| 2             | AK350/2  | 10.0 (.39)      |
| 3             | AK350/3  | 15.0 (.59)      |
| 4             | AK350/4  | 20.0 (.79)      |
| 5             | AK350/5  | 25.0 (.99)      |
| 6             | AK350/6  | 30.0 (1.18)     |
| 7             | AK350/7  | 35.0 (1.38)     |
| 8             | AK350/8  | 40.0 (1.58)     |
| 9             | AK350/9  | 45.0 (1.77)     |
| 10            | AK350/10 | 50.0 (2.97)     |
| 12            | AK350/12 | 60.0 (2.36)     |

| No. of Poles* | Type     | Length mm (in.) |
|---------------|----------|-----------------|
| 2             | AK700/2  | 10.0 (.39)      |
| 3             | AK700/3  | 15.0 (.59)      |
| 4             | AK700/4  | 20.0 (.79)      |
| 5             | AK700/5  | 25.0 (.99)      |
| 6             | AK700/6  | 30.0 (1.18)     |
| 7             | AK700/7  | 35.0 (1.38)     |
| 8             | AK700/8  | 40.0 (1.58)     |
| 9             | AK700/9  | 45.0 (1.77)     |
| 10            | AK700/10 | 50.0 (1.97)     |
| 12            | AK700/12 | 60.0 (2.36)     |

#### AK400 10mm (.394") pin spacing

|    |          |              |
|----|----------|--------------|
| 2  | AK400/2  | 15.0 (.59)   |
| 3  | AK400/3  | 25.0 (.99)   |
| 4  | AK400/4  | 35.0 (1.38)  |
| 5  | AK400/5  | 45.0 (1.77)  |
| 6  | AK400/6  | 55.0 (2.17)  |
| 7  | AK400/7  | 65.0 (2.56)  |
| 8  | AK400/8  | 75.0 (2.95)  |
| 9  | AK400/9  | 85.0 (3.35)  |
| 10 | AK400/10 | 95.0 (3.74)  |
| 12 | AK400/12 | 115.0 (4.53) |

#### AKZ350 5.08mm (.200") pin spacing.

|    |           |              |
|----|-----------|--------------|
| 2  | AKZ350/2  | 10.16 (.40)  |
| 3  | AKZ350/3  | 15.24 (.60)  |
| 4  | AKZ350/4  | 20.32 (.80)  |
| 5  | AKZ350/5  | 25.40 (1.00) |
| 6  | AKZ350/6  | 30.48 (1.20) |
| 7  | AKZ350/7  | 35.56 (1.40) |
| 8  | AKZ350/8  | 40.64 (1.60) |
| 9  | AKZ350/9  | 45.72 (1.80) |
| 10 | AKZ350/10 | 50.80 (2.00) |
| 12 | AKZ350/12 | 60.96 (2.40) |

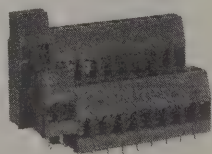
#### AKZ700 5.08mm (.200") pin spacing.

|    |           |              |
|----|-----------|--------------|
| 2  | AKZ700/2  | 10.16 (.40)  |
| 3  | AKZ700/3  | 15.24 (.60)  |
| 4  | AKZ700/4  | 20.32 (.80)  |
| 5  | AKZ700/5  | 25.40 (1.00) |
| 6  | AKZ700/6  | 30.48 (1.20) |
| 7  | AKZ700/7  | 35.56 (1.40) |
| 8  | AKZ700/8  | 40.64 (1.60) |
| 9  | AKZ700/9  | 45.72 (1.80) |
| 10 | AKZ700/10 | 50.80 (2.00) |
| 12 | AKZ700/12 | 60.96 (2.40) |

\* Available in up to 24 poles by special order

#### AK750/AKZ750

Front wire entry; double level, 2nd level offset 2.54mm (.10") left; 34.0mm (1.339") high x 21.5mm (.845") deep; 5.0mm (.197") and 5.08mm (.200") pin spacing; color: green.



| No. of Poles† | Type     | Length mm (in.) |
|---------------|----------|-----------------|
| 4             | AK750/4  | 12.50 (.49)     |
| 6             | AK750/6  | 17.50 (.69)     |
| 8             | AK750/8  | 22.50 (.89)     |
| 10            | AK750/10 | 27.50 (1.08)    |
| 12            | AK750/12 | 32.50 (1.28)    |
| 14            | AK750/14 | 37.50 (1.48)    |
| 16            | AK750/16 | 42.50 (1.67)    |
| 18            | AK750/18 | 47.50 (1.87)    |
| 20            | AK750/20 | 52.50 (2.07)    |
| 24            | AK750/24 | 62.50 (2.46)    |

† Available in up to 50 poles, call factory.

| No. of Poles† | Type      | Length mm (in.) |
|---------------|-----------|-----------------|
| 4             | AKZ750/4  | 12.70 (.50)     |
| 6             | AKZ750/6  | 17.78 (.70)     |
| 8             | AKZ750/8  | 22.86 (.90)     |
| 10            | AKZ750/10 | 27.94 (1.10)    |
| 12            | AKZ750/12 | 33.02 (1.30)    |
| 14            | AKZ750/14 | 38.10 (1.50)    |
| 16            | AKZ750/16 | 43.18 (1.70)    |
| 18            | AKZ750/18 | 48.26 (1.90)    |
| 20            | AKZ750/20 | 53.34 (2.10)    |
| 22            | AKZ750/22 | 58.42 (2.30)    |
| 24            | AKZ750/24 | 63.50 (2.50)    |

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300



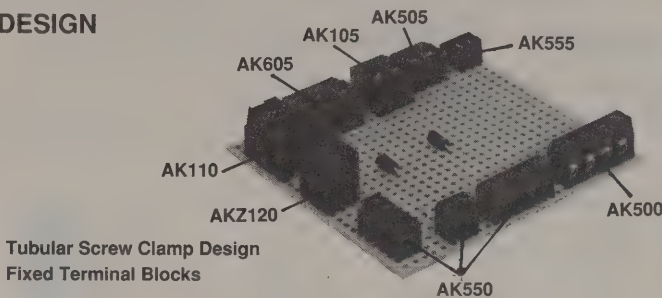
# Altech Corp.

35 Royal Road • Flemington, NJ 08822-6000  
Phone (908) 806-9400 • Fax (908) 806-9490

## FIXED, TUBULAR SCREW CLAMP DESIGN

Economical tubular screw clamps provide reliable connections for lighter duty applications with strict budgets and infrequent wire terminations. Modular construction, front or top wire entry with wire protectors. UL, CSA, IEC/VE. 300V, 15A, 22-14 AWG. Standard Color: gray

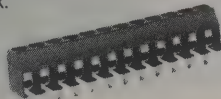
- Front and Top Wire Entry
- Wire Protector Standard (Available Without Wire Protector)



Tubular Screw Clamp Design  
Fixed Terminal Blocks

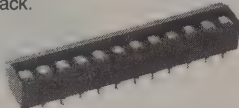
### AK550

Front wire entry; 8.3mm (.33") high x 6.5mm (.26") deep; 3.5mm (.138") pin spacing; color: black.



### AK555

Top wire entry; 6.5mm (.26") high x 8.3mm (.33") deep; 3.5mm (.138") pin spacing; color: black.



### AK110

Front wire entry; 12.5mm (.49") high x 9mm (.35") deep; 5.0mm (.197") pin spacing; color: green.



| No. of Poles** | Type     | Length mm (in.) |
|----------------|----------|-----------------|
| 2              | AK550/2  | 7.0 (.28)       |
| 3              | AK550/3  | 10.5 (.41)      |
| 4              | AK550/4  | 14.0 (.55)      |
| 5              | AK550/5  | 17.5 (.69)      |
| 6              | AK550/6  | 21.0 (.83)      |
| 7              | AK550/7  | 24.5 (.96)      |
| 8              | AK550/8  | 28.0 (1.10)     |
| 9              | AK550/9  | 31.5 (1.24)     |
| 10             | AK550/10 | 35.0 (1.38)     |
| 12             | AK550/12 | 42.0 (1.65)     |

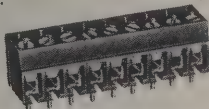
\*\*Available in up to 16 poles.

| No. of Poles** | Type     | Length mm (in.) |
|----------------|----------|-----------------|
| 2              | AK555/2  | 7.0 (.28)       |
| 3              | AK555/3  | 10.5 (.41)      |
| 4              | AK555/4  | 14.0 (.55)      |
| 5              | AK555/5  | 17.5 (.69)      |
| 6              | AK555/6  | 21.0 (.83)      |
| 7              | AK555/7  | 24.5 (.96)      |
| 8              | AK555/8  | 28.0 (1.10)     |
| 9              | AK555/9  | 31.5 (1.24)     |
| 10             | AK555/10 | 35.0 (1.38)     |
| 12             | AK555/12 | 42.0 (1.65)     |

| No. of Poles* | Type     | Length mm (in.) |
|---------------|----------|-----------------|
| 2             | AK110/2  | 15.0 (.59)      |
| 3             | AK110/3  | 22.5 (.89)      |
| 4             | AK110/4  | 30.0 (1.18)     |
| 5             | AK110/5  | 37.5 (1.48)     |
| 6             | AK110/6  | 45.0 (1.77)     |
| 7             | AK110/7  | 52.5 (2.08)     |
| 8             | AK110/8  | 60.0 (2.36)     |
| 9             | AK110/9  | 67.5 (2.66)     |
| 10            | AK110/10 | 75.0 (2.95)     |
| 12            | AK110/12 | 82.5 (3.54)     |

### AK100

Front wire entry; 12.5mm (.49") high x 9.0mm (.35") deep; 5.0mm (.197") pin spacing; color: gray.



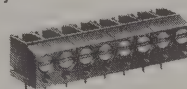
### AKZ120

Front wire entry; 13.0mm (.51") high (including 5mm standoff feet) x 9.0mm (.35") deep; 5.08mm (.200") pin spacing; color: gray.



### AKZ125

Top wire entry; 9.0mm (.35") high x 13.0mm (.51") deep; 5.08mm (.200") pin spacing; color: gray.



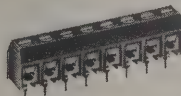
| No. of Poles* | Type       | Length mm (in.) |
|---------------|------------|-----------------|
| 2             | AK100/2WP  | 10.0 (.39)      |
| 3             | AK100/3WP  | 15.0 (.59)      |
| 4             | AK100/4WP  | 20.0 (.788)     |
| 5             | AK100/5WP  | 25.0 (.985)     |
| 6             | AK100/6WP  | 30.0 (1.18)     |
| 7             | AK100/7WP  | 35.0 (1.38)     |
| 8             | AK100/8WP  | 40.0 (1.58)     |
| 9             | AK100/9WP  | 45.0 (1.77)     |
| 10            | AK100/10WP | 50.0 (1.97)     |
| 12            | AK100/12WP | 60.0 (2.36)     |

| No. of Poles* | Type        | Length mm (in.) |
|---------------|-------------|-----------------|
| 2             | AKZ120/2WP  | 10.16 (.40)     |
| 3             | AKZ120/3WP  | 15.24 (.60)     |
| 4             | AKZ120/4WP  | 20.32 (.80)     |
| 5             | AKZ120/5WP  | 25.40 (1.00)    |
| 6             | AKZ120/6WP  | 30.48 (1.20)    |
| 7             | AKZ120/7WP  | 35.56 (1.40)    |
| 8             | AKZ120/8WP  | 40.64 (1.60)    |
| 9             | AKZ120/9WP  | 45.72 (1.80)    |
| 10            | AKZ120/10WP | 50.80 (2.00)    |
| 12            | AKZ120/12WP | 60.96 (2.40)    |

| No. of Poles* | Type        | Length mm (in.) |
|---------------|-------------|-----------------|
| 2             | AKZ125/2WP  | 10.16 (.40)     |
| 3             | AKZ125/3WP  | 15.24 (.60)     |
| 4             | AKZ125/4WP  | 20.32 (.80)     |
| 5             | AKZ125/5WP  | 25.40 (1.00)    |
| 6             | AKZ125/6WP  | 30.48 (1.20)    |
| 7             | AKZ125/7WP  | 35.56 (1.40)    |
| 8             | AKZ125/8WP  | 40.64 (1.60)    |
| 9             | AKZ125/9WP  | 45.72 (1.80)    |
| 10            | AKZ125/10WP | 50.80 (2.00)    |
| 12            | AKZ125/12WP | 60.96 (2.40)    |

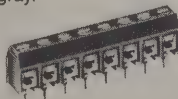
### AK500

Front wire entry; 10.0mm high (.39") x 7.5mm (.29") deep; 5.0mm (.197") pin spacing; color: gray.



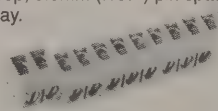
### AKZ500

Same as AK500; but 5.08mm (.200") pin spacing; color: gray.



### AK505

Top wire entry; 10.0mm high (.39") x 7.5mm (.29") deep; 5.0mm (.197") pin spacing; color: gray.



| No. of Poles* | Type       | Length mm (in.) |
|---------------|------------|-----------------|
| 2             | AK500/2WP  | 10.0 (.39)      |
| 3             | AK500/3WP  | 15.0 (.59)      |
| 4             | AK500/4WP  | 20.0 (.79)      |
| 5             | AK500/5WP  | 25.0 (.99)      |
| 6             | AK500/6WP  | 30.0 (1.18)     |
| 7             | AK500/7WP  | 35.0 (1.38)     |
| 8             | AK500/8WP  | 40.0 (1.58)     |
| 9             | AK500/9WP  | 45.0 (1.77)     |
| 10            | AK500/10WP | 50.0 (1.97)     |
| 12            | AK500/12WP | 60.0 (2.36)     |

| No. of Poles* | Type        | Length mm (in.) |
|---------------|-------------|-----------------|
| 2             | AKZ500/2WP  | 10.16 (.40)     |
| 3             | AKZ500/3WP  | 15.24 (.60)     |
| 4             | AKZ500/4WP  | 20.32 (.80)     |
| 5             | AKZ500/5WP  | 25.40 (1.00)    |
| 6             | AKZ500/6WP  | 30.48 (1.20)    |
| 7             | AKZ500/7WP  | 35.56 (1.40)    |
| 8             | AKZ500/8WP  | 40.64 (1.60)    |
| 9             | AKZ500/9WP  | 45.72 (1.80)    |
| 10            | AKZ500/10WP | 50.80 (2.00)    |
| 12            | AKZ500/12WP | 60.96 (2.40)    |

| No. of Poles* | Type       | Length mm (in.) |
|---------------|------------|-----------------|
| 2             | AK505/2WP  | 10.0 (.39)      |
| 3             | AK505/3WP  | 15.0 (.59)      |
| 4             | AK505/4WP  | 20.0 (.79)      |
| 5             | AK505/5WP  | 25.0 (.99)      |
| 6             | AK505/6WP  | 30.0 (1.18)     |
| 7             | AK505/7WP  | 35.0 (1.38)     |
| 8             | AK505/8WP  | 40.0 (1.58)     |
| 9             | AK505/9WP  | 45.0 (1.77)     |
| 10            | AK505/10WP | 50.0 (1.97)     |
| 12            | AK505/12WP | 60.0 (2.36)     |

\*Available in up to 24 poles by special order.

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300



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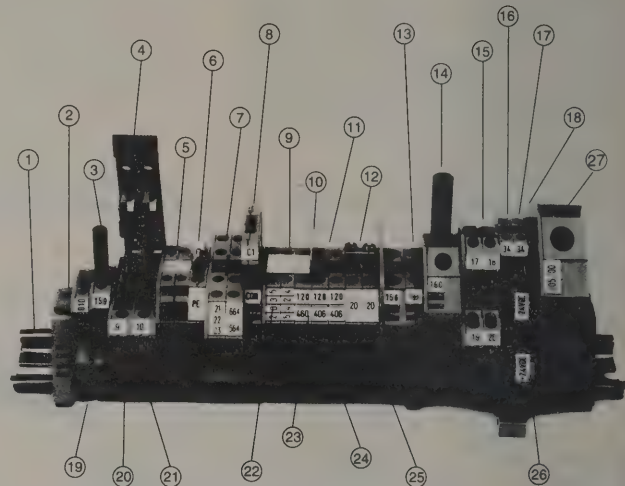
## DIN RAIL MOUNT TERMINAL BLOCKS

Altech's DIN rail mount terminal blocks combine multiple functions on a standard rail, enhancing design capabilities, saving space and reducing installation time. Screw-cage clamps increase efficiency and reliability.

- Feed-Through, High Current, Multi-Level, Ground
- Disconnect, Fuse, Thermocouple, Integrated Electronics
- Assemblies for 15, 32, and 35mm DIN Rail

The standard terminal blocks feature a universal foot for 35mm or 32mm DIN rails. Ground blocks are designed for either 35mm or 32mm rail, as indicated by the suffix in their Type designation. Designed for high density, they all feature screw-cage clamps. Material: polyamide 6.6. Voltage ratings: 600V and 300V, UL, CSA, VDE. All blocks have dead front designs to prevent dangerous electrical shocks and shorts.

Select the appropriate terminal block for your application from TABLE I in conjunction with the SELECTOR ILLUSTRATION number (SI#). Then choose the accessories required for each terminal block selected from TABLE II in conjunction with the SELECTOR ILLUSTRATION number (SI#). Select DIN Rail, Marking Tags and Ferrules as required (see next page).



### SELECTOR ILLUSTRATION (SI)

The Selector Illustration calls out the various terminal block and accessory definitions as they are shown on this and following pages.

## TERMINAL BLOCKS

TABLE I

| Type       | Part No. | SI# | Function                  | Current/Volts | Wire Size (AWG) | Height mm (in.) | Thickness mm (in.) |
|------------|----------|-----|---------------------------|---------------|-----------------|-----------------|--------------------|
| RK2.5-4    | 1001.2   | —   | Feed-Through              | 40A/600V      | 22-10           | 47 (1.85)       | 6.0 (.24)          |
| RK2.5      | 1296.2   | 11  | Feed-Through              | 26A/600V      | 22-14           | 47 (1.85)       | 5.0 (.20)          |
| RK6-10     | 1005.2   | —   | Feed-Through              | 65A/600V      | 22-6            | 47 (1.85)       | 8.0 (.31)          |
| RK16       | 1050.2   | 27  | Feed-Through              | 85A/600V      | 12-4            | 53 (2.09)       | 12.0 (.47)         |
| RKD4       | 1020.2   | 15  | Double Level              | 25A/300V      | 22-12           | 60 (2.36)       | 6.0 (.24)          |
| RKD2.5     | 1206.2   | —   | Double Level              | 20A/300V      | 22-14           | 60 (2.36)       | 5.0 (.20)          |
| TK1/STB    | 2181.2   | 6   | Knife Disconnect Isolator | 10A/600V      | 22-14           | 42 (1.65)       | 6.5 (.26)          |
| STK1       | 2190.2   | 20  | Fuse                      | 6.3A/600V     | 22-12           | 42 (1.65)       | 8.0 (.31)          |
| STK1/LED*  | 2452.2   | 21  | Fuse with Blown Fuse LED  | 6.3A/600V     | 22-12           | 42 (1.65)       | 8.0 (.31)          |
| STK1/LED** | 2449.2   | —   | Fuse with Blown Fuse LED  | 6.3A/600V     | 22-12           | 42 (1.65)       | 8.0 (.31)          |
| SL2.5/35   | 1056.2   | 13  | Ground 35mm               | Ground        | 22-12           | 47 (1.85)       | 6.0 (.24)          |
| SL4/35     | 1060.2   | —   | Ground 35mm               | Ground        | 22-10           | 47 (1.85)       | 8.0 (.31)          |
| SL2.5/32   | 1055.2   | —   | Ground 32mm               | Ground        | 22-12           | 52 (2.05)       | 6.0 (.24)          |
| SL4/32     | 1065.2   | —   | Ground 32mm               | Ground        | 22-10           | 52 (2.05)       | 8.0 (.31)          |

\*For 110 VDC.

\*\*For 24 VDC. (Both fuse blocks are for use with G-Cardridge fuses, 5 x 20mm, 1 with test sockets.)

## ACCESSORIES

TABLE II

| Description               | SI # | Terminal Block Type |                      |                     |                   |                  |                    |                 |                  |
|---------------------------|------|---------------------|----------------------|---------------------|-------------------|------------------|--------------------|-----------------|------------------|
|                           |      | RK 2.5<br>Part No.  | RK 2.5-4<br>Part No. | RK 6-10<br>Part No. | RK 16<br>Part No. | RKD4<br>Part No. | RKD2.5<br>Part No. | TK1<br>Part No. | STK1<br>Part No. |
| End Plate                 | 18   | 2001.2              | 2001.2               | 2001.2              | 2104.2            | 2101.2           | 2101.2             | 2045.2          | 2046.2           |
| Isolation Partition       | 25   | 2002.2              | 2002.2               | 2105.2              | 2105.2            | —                | —                  | —               | —                |
| Separator                 | 10   | 2566.2              | 2003.2               | 2003.2              | 2003.2            | 2566.2           | 2566.2             | —               | —                |
| End Stop 35mm Rail        | 2    | 2005.2              | 2005.2               | 2005.2              | 2005.2            | 2005.2           | 2005.2             | 2005.2          | 2005.2           |
| End Stop 32mm Rail        | 2    | 2004.2              | 2004.2               | 2004.2              | 2004.2            | 2004.2           | 2004.2             | 2004.2          | 2004.2           |
| Internal Jumper (2 pole)  | 12   | 2567.0              | 2019.0               | 2060.0              | 2112.0            | 2087.0           | 2567.0             | —               | —                |
| Internal Jumper (3 pole)  | 12   | 2568.0              | 2020.0               | 2061.0              | 2113.0            | 2088.0           | 2568.0             | —               | —                |
| Internal Jumper (4 pole)  | 12   | 2569.0              | 2021.0               | 2062.0              | 2114.0            | 2089.0           | 2569.0             | —               | —                |
| Internal Jumper (10 pole) | 12   | 2570.0              | 2022.0               | 2063.0              | 2115.0            | 2090.0           | 2570.0             | —               | —                |
| External Jumper (2 pole)  | 24   | 8879.0              | 2064.0               | 2067.0              | —                 | 2064.0           | —                  | 2064.0          | 2067.0           |
| External Jumper (3 pole)  | 24   | 8880.0              | 2065.0               | 2068.0              | —                 | 2065.0           | —                  | 2065.0          | 2068.0           |
| External Jumper (4 pole)  | 24   | 8881.0              | 2066.0               | 2069.0              | —                 | 2066.0           | —                  | 2066.0          | 2069.0           |
| Test Plug                 | 14   | 2007.0              | 2007.0               | 2051.0              | 2051.0            | 2007.0           | 2007.0             | 2007.0          | 2007.0           |

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300

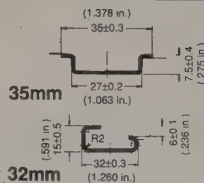


# Altech Corp.

35 Royal Road • Flemington, NJ 08822-6000  
Phone (908) 806-9400 • Fax (908) 806-9490

## DIN RAIL

Rails are made of steel and have zinc chromate plating. They are perforated for easy mounting. Rail length: 2 meters (6'-6"). Also available in 1 meter (3'-3") lengths.



| Type     | Sl# | Part No.  | Description                     |
|----------|-----|-----------|---------------------------------|
| TS35x7.5 | 1   | 2094.0/2m | Flat mounting rail 35mm         |
| TS32     | —   | 2093.0/2m | Asymmetrical mounting rail 32mm |

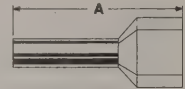
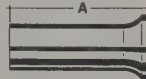
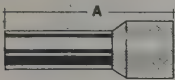
## MARKING TAGS

| Type     | Sl# | Part No. | I.D.  | Use with Terminal Block Widths |
|----------|-----|----------|-------|--------------------------------|
| SB5/10   | 23  | 2430.0   | Blank | 5mm                            |
| SB5/10FW | 23  | 2431.0   | 1-10  | 5mm                            |
| SB5/10FW | 23  | 2431.0   | 11-20 | 5mm                            |
| SB5/10FW | 23  | 2431.0   | 21-30 | 5mm                            |
| SB5/10FW | 23  | 2431.0   | 31-40 | 5mm                            |
| SB5/10FW | 23  | 2431.0   | 41-50 | 5mm                            |

| Type     | Sl# | Part No. | I.D.  | Use with Terminal Block Widths |
|----------|-----|----------|-------|--------------------------------|
| SB6/10   | 23  | 2035.0   | Blank | 6mm, 8mm, 12mm                 |
| SB6/10FW | 23  | 2036.0   | 1-10  | 6mm, 8mm, 12mm                 |
| SB6/10FW | 23  | 2036.0   | 11-20 | 6mm, 8mm, 12mm                 |
| SB6/10FW | 23  | 2036.0   | 21-30 | 6mm, 8mm, 12mm                 |
| SB6/10FW | 23  | 2036.0   | 31-40 | 6mm, 8mm, 12mm                 |
| SB6/10FW | 23  | 2036.0   | 41-50 | 6mm, 8mm, 12mm                 |
| BSTR12/6 | 26  | 2613.0   | Blank | 6mm, 8mm, 12mm                 |

A package contains 10 strips of 10 tags. The strips are blank for hand marking; or consecutively numbered 1-10, or 11-20, or 21-30, or 31-40, or 41-50 whichever you specify.

## CRIMP FERRULES



### Insulated, tin-plated copper

| Type     | Part No. | Wire AWG | Strip Length | Ferrule Length A |
|----------|----------|----------|--------------|------------------|
| H0.5/14  | 2201.0   | 26-22    | .39"         | .55"             |
| H0.75/14 | 2202.0   | 20       | .43"         | .58"             |
| H1.0/14  | 2203.0   | 18       | .43"         | .58"             |
| H1.5/14  | 2204.0   | 16       | .43"         | .58"             |
| H2.5/15  | 2206.0   | 14       | .43"         | .60"             |
| H4.0/16  | 2208.0   | 12       | .47"         | .63"             |
| H6.0/20  | 2210.0   | 10       | .79"         | .79"             |

### Uninsulated, tin-plated copper

| Type     | Part No. | Wire AWG | Strip Length | Ferrule Length A |
|----------|----------|----------|--------------|------------------|
| H0.5/6   | 2216.0   | 26-22    | .24"         | .24"             |
| H0.75/10 | 2218.0   | 20       | .39"         | .39"             |
| H1.0/10  | 2220.0   | 18       | .39"         | .39"             |
| H1.5/7   | 2221.0   | 16       | .28"         | .28"             |
| H2.5/7   | 2223.0   | 14       | .28"         | .28"             |
| H4.0/9   | 2225.0   | 12       | .35"         | .35"             |
| H6.0/12  | 2227.0   | 10       | .47"         | .47"             |

### Dual Wire, Insulated, tin-plated copper

| No. of Wires | Wire AWG | Type       | Part No. | Stripping Length | Ferrule Length A |
|--------------|----------|------------|----------|------------------|------------------|
| 2            | 22       | HH2x0.5/8  | 8951.0   | .43"             | .59"             |
| 2            | 20       | HH2x0.75/8 | 8962.0   | .43"             | .59"             |
| 2            | 18       | HH2x1.0/8  | 8964.0   | .43"             | .59"             |
| 2            | 16       | HH2x1.5/8  | 8967.0   | .47"             | .63"             |
| 2            | 14       | HH2x2.5/10 | 8969.0   | .55"             | .73"             |
| 2            | 12       | HH2x4.0/12 | 8971.0   | .63"             | .91"             |
| 2            | 10       | HH2x6.0/14 | 8975.0   | .75"             | .98"             |

## PANEL MOUNT TERMINAL BLOCKS

### Panel Mount Sectional Terminal Blocks and Assemblies

Cost effective terminal blocks and assemblies replace outdated barrier strips and eliminate the need for wire lugs. Compact and convenient to use where space is a constraint. Modular design allows for changing requirements. Snap together individual components to create multipole assemblies. Order preassembled or assemble yourself.

- Individual, Snap-Together Sections
- Standard or Custom Assemblies Available
- Jumpers Available
- 300V, 36A, 22-12 AWG
- Accepts Standard Marking System
- Screw-Cage Clamp Design
- High Density - 50 or 60 Terminations per Foot.

### BAKA2.5

Screw-Cage Clamp Terminal Blocks & Assemblies  
300V, 20A, 22-12 AWG. UL rated. 5mm (.197") pole spacing; 22mm (.866") wide x 23mm (.905") high.

| No. of Poles | Type       | Length mm (in.) |
|--------------|------------|-----------------|
| 2            | BAKA2.5/2  | 24.5 (.96)      |
| 3            | BAKA2.5/3  | 29.6 (1.17)     |
| 4            | BAKA2.5/4  | 34.6 (1.36)     |
| 5            | BAKA2.5/5  | 39.8 (1.57)     |
| 6            | BAKA2.5/6  | 44.9 (1.77)     |
| 8            | BAKA2.5/8  | 55.1 (2.17)     |
| 10           | BAKA2.5/10 | 65.3 (2.58)     |
| 11           | BAKA2.5/11 | 70.4 (2.77)     |
| 12           | BAKA2.5/12 | 75.4 (2.97)     |
| 13           | BAKA2.5/13 | 80.6 (3.17)     |
| 14           | BAKA2.5/14 | 85.7 (3.37)     |
| 15           | BAKA2.5/15 | 90.9 (3.77)     |
| 16           | BAKA2.5/16 | 95.8 (3.58)     |
| 18           | BAKA2.5/18 | 106.2 (4.18)    |
| 20           | BAKA2.5/20 | 116.2 (4.57)    |
| 24           | BAKA2.5/24 | 136.7 (5.38)    |

Single Pole BKA Section  
(use with 2 mounting sections)

|   |            |            |
|---|------------|------------|
| 1 | BAKA 2.5/1 | 5.0(.197") |
|---|------------|------------|

Mounting Section for BKA Components

|   |     |          |
|---|-----|----------|
| — | EH2 | 7.5(.29) |
|---|-----|----------|

### BAKA4

Screw-Cage Clamp Terminal Blocks & Assemblies  
300V, 20A, 22-12 AWG. UL rated. 6mm (.236") pole spacing; 22mm (.866") wide x 23mm (.905") high.

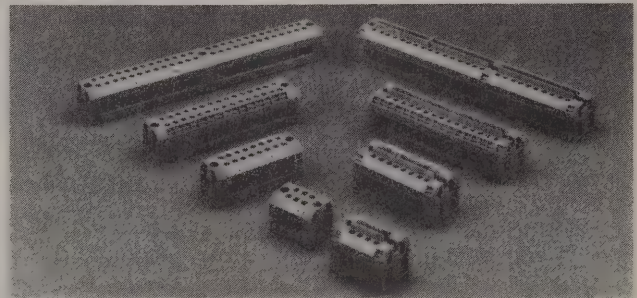
| No. of Poles | Type     | Length mm (in.) |
|--------------|----------|-----------------|
| 2            | BAKA4/2  | 26.5 (1.04)     |
| 3            | BAKA4/3  | 32.6 (1.28)     |
| 4            | BAKA4/4  | 38.7 (1.52)     |
| 5            | BAKA4/5  | 44.8 (1.76)     |
| 6            | BAKA4/6  | 50.9 (2.00)     |
| 8            | BAKA4/8  | 63.1 (2.48)     |
| 10           | BAKA4/10 | 75.3 (2.96)     |
| 11           | BAKA4/11 | 81.4 (3.20)     |
| 12           | BAKA4/12 | 87.5 (3.44)     |
| 13           | BAKA4/13 | 93.6 (3.69)     |
| 14           | BAKA4/14 | 99.7 (3.93)     |
| 15           | BAKA4/15 | 105.8 (4.17)    |
| 16           | BAKA4/16 | 111.9 (4.409)   |
| 18           | BAKA4/18 | 124.1 (4.89)    |
| 20           | BAKA4/20 | 136.3 (5.37)    |
| 24           | BAKA4/24 | 160.7 (6.33)    |

Single Pole BKA Section  
(use with 2 mounting sections)

|   |         |            |
|---|---------|------------|
| 1 | BAKA4/1 | 6.0(.236") |
|---|---------|------------|

Mounting Section for BKA Components

|   |     |          |
|---|-----|----------|
| — | EH2 | 7.5(.29) |
|---|-----|----------|



### RKB4

Screw-Cage Clamp Terminal Blocks & Assemblies  
300V, 20A, 22-12 AWG. UL rated. 6mm (.236") pole spacing; 27mm (1.063") wide x 23mm (.905") high.

| No. of Poles | Type    | Length mm (in.) |
|--------------|---------|-----------------|
| 2            | RKB4/2  | 26.5 (1.04)     |
| 3            | RKB4/3  | 32.6 (1.28)     |
| 4            | RKB4/4  | 38.7 (1.52)     |
| 5            | RKB4/5  | 44.8 (1.76)     |
| 6            | RKB4/6  | 50.9 (2.00)     |
| 7            | RKB4/7  | 57.0 (2.24)     |
| 8            | RKB4/8  | 63.1 (2.48)     |
| 9            | RKB4/9  | 69.2 (2.72)     |
| 10           | RKB4/10 | 75.3 (2.96)     |
| 11           | RKB4/11 | 81.4 (3.20)     |
| 12           | RKB4/12 | 87.5 (3.44)     |

Single Pole BKA Section (use with 2 mounting sections)

|   |        |            |
|---|--------|------------|
| 1 | RKB4/1 | 6.0(.236") |
|---|--------|------------|

Mounting Section for RKB Components

|   |     |          |
|---|-----|----------|
| — | EH1 | 7.5(.29) |
|---|-----|----------|

Internal Jumpers (only for RKB)

| Type | Cat. No. | Length mm (in.) |
|------|----------|-----------------|
| Q23  | 2087.0   | 12 (.47)        |
| Q33  | 2088.0   | 18 (.71)        |
| Q43  | 2089.0   | 24 (.94)        |
| Q103 | 2090.0   | 60 (2.36)       |

Other multipole jumpers available.

We have shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

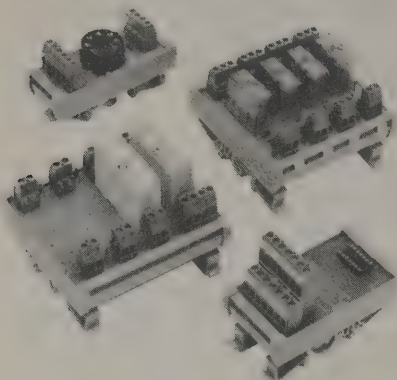
**SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300**



# Altech Corp.

35 Royal Road • Flemington, NJ 08822-6000  
Phone (908) 806-9400 • Fax (908) 806-9490

## INTERFACE AND ELECTRONIC MODULES



Link incompatible systems, or expand the capabilities of your logic system with Altech interface and electronic modules and carriers. These DIN rail or panel mounted printed circuit board modules, sub systems and carriers give design flexibility, simplify panel layouts and reduce maintenance and downtime.

Modules are supplied completely assembled, with ready to wire screw-cage clamp terminal blocks in an extruded track, and can be mounted on 35 or 32mm DIN rail or directly to panels. Order ready made modules or mount your own printed circuit boards into Altech mounting tracks.

If your needs go beyond our comprehensive range of standard interface and electronic modules, Altech can custom design modules that meet even the most sophisticated requirements.

### Interfaces

- Ribbon Cable
- Sub-D
- Eurocard Holders
- Diode
- Component Carriers
- Fuse
- Indicator
- Surge Suppressor

### Electronic Modules

- Isolated Relays (8A and 6A)
- Bussed Relays (8A and 6A)
- High Current Relays (15A)
- Cradle Relays
- Octal Socket Carriers
- I/O Module Mounting Carriers
- DIP Socket Carriers

### Power Supply Modules

### Mounting Tracks

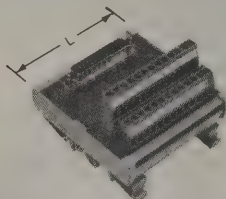
### Custom Modules

### Interfaces

Provide a flexible, cost-effective transition between high density connectors, Eurocards and high quality screw-cage clamp terminal blocks in communications, data processing, process control and other industrial applications. Equipped with component solder pads for easy insertion of circuit building components.

#### Sub D Modules

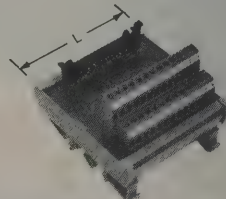
Interface between high density connectors with up to 50 poles and discrete wires. No special tools are required. Equipped with male or female connectors. All terminal blocks are individually marked to correspond to the numbers on the connector pins or sockets. 250V AC, 4A; 22-12 AWG.



| No. of Poles | Female Type | Male Type | Module Length mm (in.) |
|--------------|-------------|-----------|------------------------|
| 9            | SD-F9       | SD-M9     | 35 (1.38)              |
| 15           | SD-F15      | SD-M15    | 58 (2.28)              |
| 25           | SD-F25      | SD-M25    | 81 (3.19)              |
| 37           | SD-F37      | SD-M37    | 114 (4.49)             |
| 50           | SD-F50      | SD-M50    | 137 (5.39)             |

#### Ribbon Cable Modules

Interface between multiwire flat cables with up to 64 conductors and discrete wires. No special tools are required. Supplied with short strain relief ejector latches (long latches are available). Terminal blocks are individually marked to correspond to the numbers on the header pins. 250V AC, 3A; 22-12 AWG.



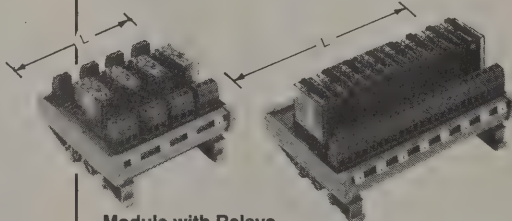
| No. of Poles | Type  | Module Length mm (in.) |
|--------------|-------|------------------------|
| 10           | FBK10 | 47 (1.85)              |
| 14           | FBK14 | 47 (1.85)              |
| 16           | FBK16 | 69 (2.72)              |
| 20           | FBK20 | 69 (2.72)              |
| 26           | FBK26 | 80 (3.15)              |
| 34           | FBK34 | 103 (4.06)             |
| 40           | FBK40 | 114 (4.49)             |
| 50           | FBK50 | 148 (5.83)             |
| 60           | FBK60 | 170 (6.68)             |
| 64           | FBK64 | 170 (6.68)             |

### Electronic Modules

Altech's electronic modules include miniature relay, optocoupler, diode, fuse, varistor and custom modules.

#### Miniature Relay Modules

Traditional relay interfaces in a high density package. Protect equipment, devices and components from feed-back and cross-system overvoltages by isolating electrical and electronic circuits. Bussed or isolated channels, with two contact configurations. Equipped with screw-cage clamp terminal blocks, LED coil voltage indicator and reverse DC polarity LED protection. Available up to 220V DC and 220V AC, with up to 16 channels. 250V, 8A (SPDT) or 6A (DPDT); 22-12 AWG.

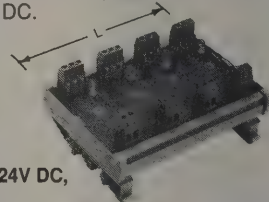


Module with Relays  
Isolated, 24V DC, Single Pole Double Throw

| No. of Channels | Type   | Module Length mm (in.) |
|-----------------|--------|------------------------|
| 1               | RM1G1  | 21 (.83)               |
| 2               | RM1G2  | 40 (1.57)              |
| 4               | RM1G4  | 79 (3.11)              |
| 8               | RM1G8  | 157 (6.18)             |
| 16              | RM1G16 | 311 (12.24)            |

#### I/O Module Mounting Carriers

Mount standard optocoupler input/output (I/O) modules in a high density arrangement for logic output to field devices, or for input of field data to the controller. I/O modules optically isolate ICs and PLCs from damaging field voltage spikes and line noise. Altech I/O carriers can accept up to 16 industry standard .6 in. (15.24mm) I/O modules in any combination: Input, Output, AC or DC from most manufacturers. 1, 2 and 4 isolated position versions with 5, 15 and 24V DC and 4, 8 and 16 bussed position versions with 5 to 24V DC.



Isolated, 24V DC, Red LED

| No. of Poles                      | Type  | Module Length mm (in.) |
|-----------------------------------|-------|------------------------|
| 1                                 | IO/1G | 34.5 (1.36)            |
| 2                                 | IO/2G | 57.8 (2.28)            |
| 4                                 | IO/4G | 114.0 (4.49)           |
| <b>Isolated, 5V DC, Green LED</b> |       |                        |
| 1                                 | IO/1B | 34.5 (1.36)            |
| 2                                 | IO/2B | 57.8 (2.28)            |
| 4                                 | IO/4B | 114.0 (4.49)           |

We have only shown a small sampling of our module line here. Please request our full line catalog.  
**SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300**



# Altech Corp.

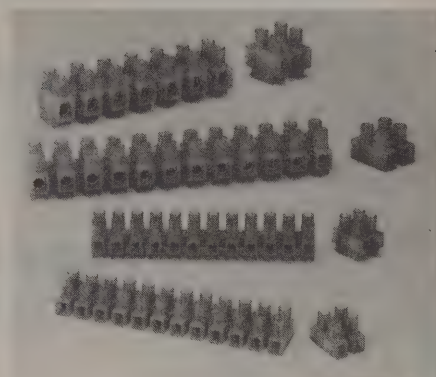
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Phone (908) 806-9400 • Fax (908) 806-9490

## EUROSTRIPS®

Compact, easy to use double row tubular screw terminal strips are a safe, cost-effective alternative to barrier strips. Ideal for HVAC, appliance, power distribution and more. Offered in standard easy-to-cut 12 pole strips or they can be ordered precut. Available with a flat base for minimum clearance applications or standoff feet for increased wiring efficiency.

- Housing: White Polyamide 6.6
- Tubular Screw Clamps
- Captive Screws and Contacts
- With or Without Stainless Steel Wire Protectors
- Panel Mount or Free Float
- UL/CSA Recognized, IEC/VDE

**Ready for immediate wire hookup.  
Just strip the wire, insert and tighten  
the screw...never use wire lugs!**



## Feed-Through Eurostrips®

### TS1.5

Flat base, pole spacing 8mm (.315")  
Mounting hole diameter 2.8mm (.11")  
Width 18.2mm (.72"). 300V, 15A, 22-16 AWG.

| No. of Poles | Type       | Length mm (in.) |
|--------------|------------|-----------------|
| 2            | TS1.5/2wp  | 15.0 (.59)      |
| 3            | TS1.5/3wp  | 23.0 (.91)      |
| 4            | TS1.5/4wp  | 31.5 (1.24)     |
| 5            | TS1.5/5wp  | 39.5 (1.56)     |
| 6            | TS1.5/6wp  | 47.5 (1.87)     |
| 7            | TS1.5/7wp  | 55.5 (2.19)     |
| 8            | TS1.5/8wp  | 64.0 (2.52)     |
| 9            | TS1.5/9wp  | 72.0 (2.84)     |
| 10           | TS1.5/10wp | 80.0 (3.15)     |
| 11           | TS1.5/11wp | 88.5 (3.48)     |
| 12           | TS1.5/12wp | 96.5 (3.80)     |

### TS2.5

Flat base, pole spacing 10mm (.394")  
Mounting hole diameter 3.5mm (.14")  
Width 20mm (.78"). 600V, 30A, 18-12 AWG.

| No. of Poles | Type       | Length mm (in.) |
|--------------|------------|-----------------|
| 2            | TS2.5/2wp  | 17.0 (.67)      |
| 3            | TS2.5/3wp  | 27.0 (1.06)     |
| 4            | TS2.5/4wp  | 37.0 (1.46)     |
| 5            | TS2.5/5wp  | 47.0 (1.85)     |
| 6            | TS2.5/6wp  | 57.0 (2.24)     |
| 7            | TS2.5/7wp  | 67.0 (2.64)     |
| 8            | TS2.5/8wp  | 77.0 (3.03)     |
| 9            | TS2.5/9wp  | 87.0 (3.43)     |
| 10           | TS2.5/10wp | 97.0 (3.82)     |
| 11           | TS2.5/11wp | 107.0 (4.21)    |
| 12           | TS2.5/12wp | 117.0 (4.61)    |

### TS6

Flat base, pole spacing 12mm (.472")  
Mounting hole diameter 4.2mm (.17")  
Width 23.5mm (.93"). 600V, 30A, 18-10 AWG.

| No. of Poles | Type     | Length mm (in.) |
|--------------|----------|-----------------|
| 2            | TS6/2wp  | 20.0 (.79)      |
| 3            | TS6/3wp  | 32.0 (1.26)     |
| 4            | TS6/4wp  | 44.0 (1.73)     |
| 5            | TS6/5wp  | 56.0 (2.21)     |
| 6            | TS6/6wp  | 68.0 (2.68)     |
| 7            | TS6/7wp  | 80.0 (3.15)     |
| 8            | TS6/8wp  | 92.0 (3.62)     |
| 9            | TS6/9wp  | 104.0 (4.09)    |
| 10           | TS6/10wp | 116.0 (4.51)    |
| 11           | TS6/11wp | 128.0 (5.04)    |
| 12           | TS6/12wp | 140.0 (5.51)    |

### TSF1.5

Standoff feet, pole spacing 8mm (.315")  
Mounting hole diameter 2.8mm (.11")  
Width 18.2mm (.72"). 300V, 15A, 22-16 AWG.

| No. of Poles | Type       | Length mm (in.) |
|--------------|------------|-----------------|
| 2            | TS1.5/2wp  | 15.0 (.59)      |
| 3            | TS1.5/3wp  | 23.0 (.91)      |
| 4            | TS1.5/4wp  | 31.5 (1.24)     |
| 5            | TS1.5/5wp  | 39.5 (1.56)     |
| 6            | TS1.5/6wp  | 47.5 (1.87)     |
| 7            | TS1.5/7wp  | 55.5 (2.19)     |
| 8            | TS1.5/8wp  | 64.0 (2.52)     |
| 9            | TS1.5/9wp  | 72.0 (2.84)     |
| 10           | TS1.5/10wp | 80.0 (3.15)     |
| 11           | TS1.5/11wp | 88.5 (3.48)     |
| 12           | TS1.5/12wp | 96.5 (3.80)     |

### TSF6

Standoff feet, pole spacing 12mm (.472")  
Mounting hole diameter 4.2mm (.17")  
Width 23.5mm (.93"). 600V, 30A, 18-10 AWG.

| No. of Poles | Type      | Length mm (in.) |
|--------------|-----------|-----------------|
| 2            | TSF6/2wp  | 20.0 (.79)      |
| 3            | TSF6/3wp  | 32.0 (1.26)     |
| 4            | TSF6/4wp  | 44.0 (1.73)     |
| 5            | TSF6/5wp  | 56.0 (2.21)     |
| 6            | TSF6/6wp  | 68.0 (2.68)     |
| 7            | TSF6/7wp  | 80.0 (3.15)     |
| 8            | TSF6/8wp  | 92.0 (3.62)     |
| 9            | TSF6/9wp  | 104.0 (4.09)    |
| 10           | TSF6/10wp | 116.0 (4.57)    |
| 11           | TSF6/11wp | 128.0 (5.04)    |
| 12           | TSF6/12wp | 140.0 (5.51)    |

### TSF16

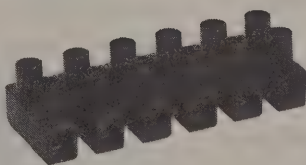
Standoff feet, pole spacing 15mm (.591")  
Mounting hole diameter 4mm (.16")  
Width 26mm (1.02"). 600V, 65A, 18-8 AWG.

| No. of Poles | Type       | Length mm (in.) |
|--------------|------------|-----------------|
| 2            | TSF16/2wp  | 25.0 (.98)      |
| 3            | TSF16/3wp  | 40.0 (1.58)     |
| 4            | TSF16/4wp  | 55.0 (2.17)     |
| 5            | TSF16/5wp  | 70.5 (2.78)     |
| 6            | TSF16/6wp  | 86.0 (3.39)     |
| 7            | TSF16/7wp  | 101.0 (3.98)    |
| 8            | TSF16/8wp  | 116.0 (4.57)    |
| 9            | TSF16/9wp  | 131.0 (5.16)    |
| 10           | TSF16/10wp | 146.0 (5.75)    |
| 11           | TSF16/11wp | 161.0 (6.34)    |
| 12           | TSF16/12wp | 176.0 (6.93)    |

## High Temperature Eurostrips®

Heat resistant, double row feed-through tubular screw terminal strips are ideal for wire-to-wire connections when temperatures exceed 130°C (265°F). Typical applications include hand dryers, ovens and hot melt guns. Offered in standard easy-to-cut 12 pole strips, or order precut.

- Housing: Black Polyphenylene Sulfide
- Temperature Resistant to 200°C (392°F)
- Flammability Rating: 94V-0
- With or Without Wire Protectors
- Captive Screws and Contacts
- Panel Mount or Free Float
- UL/CSA Recognized, IEC/VDE



### TST2.5

Flat base, pole spacing 10mm (.394")  
Mounting hole diameter 3.5mm (.14")  
Width 22.5mm (.87"). 480V, 30A, 18-12 AWG. (Also available with standoff feet.)

| No. of Poles | Type        | Length mm (in.) |
|--------------|-------------|-----------------|
| 2            | TST2.5/2wp  | 17.0 (.67)      |
| 3            | TST2.5/3wp  | 27.0 (1.06)     |
| 4            | TST2.5/4wp  | 37.0 (1.46)     |
| 5            | TST2.5/5wp  | 47.0 (1.85)     |
| 6            | TST2.5/6wp  | 57.0 (2.24)     |
| 7            | TST2.5/7wp  | 67.0 (2.64)     |
| 8            | TST2.5/8wp  | 77.0 (3.03)     |
| 9            | TST2.5/9wp  | 87.0 (3.43)     |
| 10           | TST2.5/10wp | 97.0 (3.82)     |
| 12           | TST2.5/12wp | 117.0 (4.61)    |

We have only shown a small sampling of our terminal block line here. Please request our full line catalog and free samples.

**SEE OUR ENCLOSURES IN SECTION C-1400 / SEE OUR CIRCUIT BREAKERS IN SECTION B-4300**



# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

## WHERE TO FIND THEM IN THE 93/94 EDITION OF EEM

|                                                                                 |        |                                                                                |        |
|---------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------|
| AC Power Supplies, Product Selection Guide                                      | D•2221 | Keyboards & Keypads, Product Selection Guide                                   | B•1818 |
| Batteries, Product Selection Guide                                              | D•1419 | Lamps, Lights, & Indicators, Product Selection Guide                           | B•1131 |
| Cabinets, Enclosures, Racks & Chassis, Product Selection Guide                  | C•1003 | Microwave Components, Product Selection Guide                                  | A•1719 |
| Capacitors, Product Selection Guide                                             | A•1003 | Military Qualified Products List                                               | B•1002 |
| Coils, Chokes, Inductors, Product Selection Guide                               | A•1179 | Motors, Drives, & Rotating Components, Product Selection Guide                 | B•1231 |
| Connectors, Terminals & Sockets, Product Selection Guide                        | C•1139 | Oscilloscopes, Product Selection Guide                                         | D•1402 |
| Cores, Magnets & Ferrites                                                       | A•1317 | Panel Hardware, Product Selection Guide                                        | C•1522 |
| Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide | A•1326 | Panel Meters, Analog & Digital, Product Selection Guide                        | D•1336 |
| DC-DC Converters                                                                | D•2049 | Potentiometers, Trimmers, Controls, & Rheostats, Product Selection Guide       | A•2053 |
| DC Power Supplies, Product Selection Guide                                      | D•1488 | Power Supplies, AC, Product Selection Guide                                    | D•2221 |
| Delay Lines, Product Selection Guide                                            | A•1513 | Power Supplies, DC, Product Selection Guide                                    | D•1488 |
| Discrete Semiconductors, Product Selection Guide                                | A•2130 | Protective Components (Fuses, Circuit Breakers, etc.), Product Selection Guide | B•1341 |
| Displays, Readouts, & CRTs, Product Selection Guide                             | B•1017 | Relays, Product Selection Guide                                                | B•1401 |
| Fans, Blowers, Cooling Equipment, & Heat Exchangers, Product Selection Guide    | C•1557 | Resistors, Product Selection Guide                                             | A•1859 |
| Fiber Optics, Product Selection Guide                                           | B•1200 | Solenoids, Product Selection Guide                                             | B•1626 |
| Filters, Power, Product Selection Guide                                         | A•1584 | Switches, Product Selection Guide                                              | B•1658 |
| Filters, Signal, Product Selection Guide                                        | A•1617 | Thermal Components, Product Selection Guide                                    | B•1857 |
| Instruments, Test & Measuring, Product Selection Guide                          | D•1215 | Transducers & Encoders, Product Selection Guide                                | B•1911 |
| Interconnection Systems, Product Selection Guide                                | C•1670 | Transformers, Product Selection Guide                                          | A•2229 |
|                                                                                 |        | Wire & Cable, Product Selection Guide                                          | C•1701 |



**AMP**

**G U I D E**

**P U R C H A S I N G**

**Industry  
Standard  
Products**



## Need More Information?

Call the AMP  
Product  
Information Center  
**1-800-522-6752**

The Product Information Center is staffed with specialists well versed in all AMP products worldwide. The Center can provide you with:

- Catalogs
- Technical Support
- Product Samples

### **AMP FAX Service**

Instant information by FAX,  
24 hours a day, 7 days a week.

- Catalog Pages
- Product Drawings
- Instruction Sheets (IS#)
- Product Specifications
- Application Specifications
- Latest Revision of Catalog Pages
- AMP Authorized Distributors Locations
- Instructions for AMP FAX Service

### **Tooling Assistance Center**

**1-800-722-1111**

Correspondents can provide you with:

- Tooling Recommendations for Specific Applications
- Assistance in Servicing AMP Tooling
- Spare Parts Support —Quick Solutions to Costly Down Times

**NEW**

**Electronic Application Design Systems (EADS)**  
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**FREE** 3D and 2D images for your CAD system.

- IGES CAD Models of Connectors, Footprints and Panel Cutouts
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Look for products displaying the "EADS/CD-ROM icon."



# AMP

## ***A big resource, from a local source... your AMP Sales Engineer or your AMP Authorized Distributor***

This catalog shows the most popular AMP product lines. They represent the items most often purchased and which meet a majority of your requirements. If the items shown in this catalog do not meet your application needs contact your local AMP Sales Engineer or Authorized Distributor.

### **Sales Engineer**

Thoroughly trained in the application of AMP Products, the Sales Engineer is the best source for the original equipment manufacturer (OEM) for information and assistance with your specific AMP product requirement.

### **Authorized Distributors**

AMP has established a network of local, regional and national distributors to service your needs. This select group maintains an inventory of popular AMP Products, many of them are included in this catalog. This vital source will provide fast turn-around for prototype needs through production quantities. Your local needs for inventory as well as value-added services, such as kitting, cable assemblies and packaging to name a few can be met by your local authorized distributor.

### **Field Engineering**

Our Field Engineering Department is ready to help Customers resolve any

problems regarding AMP products and application equipment. In addition they will provide training in the proper operation and maintenance of all application equipment. For immediate access to technical assistance, information or to order spare parts for application tooling, call our toll-free, nationwide Field Engineering hotline, 1-800-722-1111.

### **Regional Warehouses**

AMP maintains five regional warehouses in Pennsylvania, Illinois, North Carolina, Texas and California. These terminals can provide over-night shipping of Industry Standard Products for prototyping and other emergency needs throughout the continental United States.

### **Value-added Assemblies**

AMP provides advanced tooling to cable co-operatives, value-added distributors and custom assemblers for fast response and prototyping so that we can accommodate very high volume needs directly, or supply the machinery and components you need to do it yourself.

### **International Division**

So that we may provide complete service to our worldwide Customers, AMP has established a network of distributors, agents or direct representatives in over 30 countries.

*Specifications subject to change.*

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



**Dimensioning:**

All dimensions in inches and millimeters.  
Values in brackets are metric equivalents.

Charts contain dimensions in inches over millimeters.

**Note:** Dimensions in this catalog are for reference purposes only. Customer drawings are available upon request.

**Specifications subject to change.**

Consult AMP Incorporated for latest design specifications.

ACTION PIN, AMP, AMP-LATCH, AMPLIMITE, AMPMODU, BOMB-TAIL, CHAMP, CHAMP-LOK, COAXICON, DIPLOMATE, DUALAN, FASTON, FSD, LightCrimp, MATE-N-LOK, MICRO-EDGE, OPTIMATE, PIDG, PLASTI-GRIP, PRO-CRIMPER, RSD, TERMI-BLOK — Trademarks.

Belden — Trademark of Belden Wire and Cable of Cooper Industries.

IBM and ESCON — Trademarks of International Business Machines Corporation

Kevlar and Teflon — Trademarks of E.I. DuPont de Nemours & Co., Inc.

VALOX — Trademark of General Electric Co.

**Commercial Approvals**

Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476

- IC Sockets\*
- AMP-LATCH Connectors\*
- Standard Edge Connectors
- Mass Terminated (MTA) Connectors\*
- AMPMODU Posts, Headers and Receptacles\*
- AMPLIMITE Connectors\*
- MATE-N-LOK Connectors\*
- .093 [2.36] and .062 [1.57] Soft Shell Connectors\*
- MR Series Connectors\*
- CHAMP Connectors\*

\*CSA Certified File No. LR7189

PIDG and PLASTI-GRIP Terminals and Splices are Listed by Underwriters Laboratories Inc., File No. E13288 and Certified by the Canadian Standards Association, File No. LR7189.

PIDG Terminals meet or exceed the requirements of MIL-T-7928, Type II, Class 1 and 2.

Ultra-Fast and Ultra-Fast Plus FASTON Receptacles are Listed by Underwriters Laboratories Inc., File No. E66717 and Certified by the Canadian Standards Association, File No. LR7189.

Ultra-Fast Plus has been tested by TUV (File No. E9071003) as suitable for end product certification to the following standards:

EN 60 950/09.87  
DIN IEC 380/VDE 0806/08.81  
DIN IEC 601-1 Part 1/VDE 0750 T1/05.82  
DIN VDE 0700 T1/02.81



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| One-piece Printed Circuit Board Connectors, (Standard Edge II, Standard Edge .050 Series, Standard Edge EISA, Standard Edge Local Bus) Solder Posts and Wrap-Type Posts ..... | <b>C•1168-1169</b> |
| Two-piece Printed Circuit Board Connectors, (Eurocard, Enhanced Eurocard) compatible with DIN 41612 .....                                                                     | <b>C•1170-1171</b> |
| Two-piece Printed Circuit Board Connectors, .025 sq. Solder Post and Press-fit ACTION PIN Posts (AMPMODU) .....                                                               | <b>C•1172</b>      |
| .050" Centerline Mass-Terminated Ribbon Cable Connector Systems (AMP-LATCH, CHAMP Latch, AMPLIMITE) .....                                                                     | <b>C•1173-1181</b> |
| .100" and .156" Centerline Mass-Terminated Discrete Wire and Ribbon Cable Connector Assemblies (MTA, SL .156) .....                                                           | <b>C•1181-1186</b> |
| .025 sq. Interconnection System Board Mount Receptacles, Wire-Applied Contacts and Housings, Headers and Posts (AMPMODU, 50/50 Grid, MT) .....                                | <b>C•1187-1192</b> |
| .025 sq. Posts, Wire-to-Board, Wire-to-Wire Mass-Terminated Connectors (AMPMODU MTE) .....                                                                                    | <b>C•1193</b>      |
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Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



**EEM 1993**

AMP INCORPORATED, HARRISBURG, PA 17105

For manufacturers' sales offices, see yellow pages

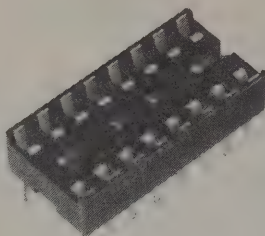
**C•1163**



## DIP Sockets

DIPLOMATE Dual Leaf (DL)  
Contact Sockets - Economy  
(Open Frame)

Socket accepts .008-.014  
[0.2-0.36] thick IC leads



## Material and Finish:

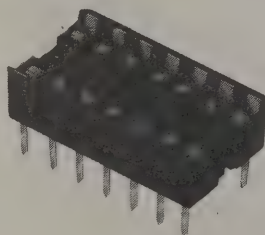
**Housing**—Glass-filled thermoplastic, black  
**Contacts**—Phosphor bronze, tinned

| Number of Positions | Part Numbers <sup>1</sup> |               |
|---------------------|---------------------------|---------------|
|                     | Straight Leg              | Retention Leg |
| 6*                  | 2-641296-5                | 2-641259-5    |
| 8*                  | 2-640463-5                | 2-641260-5    |
| 14                  | 2-641599-5                | 2-641609-5    |
| 16                  | 2-641600-5                | 2-641610-5    |
| 18                  | 2-641601-5                | 2-641611-5    |
| 20                  | 2-641602-5                | 2-641612-5    |
| 22                  | 2-641603-5                | 2-641613-5    |
| 24                  | 2-641604-5                | 2-641614-5    |
| 28                  | 2-641605-5                | 2-641615-5    |
| 40                  | 2-641606-5                | 2-641616-5    |
| 48                  | 2-643574-5                | 2-643576-5    |
| 64                  | 643575-5                  | —             |

<sup>1</sup>All parts are packaged in plastic tubes.  
<sup>2</sup>Solid body (closed frame)

DIPLOMATE Dual Leaf (DL)  
Contact Sockets - Standard  
(Open Frame)

Socket accepts .008-.014  
[0.2-0.36] thick IC leads



## Material and Finish:

**Housing**—Glass-filled thermoplastic,  
94V-0 rated, black

| Number of Positions | Part Numbers                                    |                                     |
|---------------------|-------------------------------------------------|-------------------------------------|
|                     | Sockets with Straight Solder Tails <sup>1</sup> |                                     |
|                     | Beryllium Copper Tinned <sup>2</sup>            | Phosphor Bronze Tinned <sup>2</sup> |
| 14                  | 2-641599-1                                      | 2-641599-3                          |
| 16                  | 2-641600-1                                      | 2-641600-3                          |
| 18                  | 2-641601-1                                      | 2-641601-3                          |
| 20                  | 2-641602-1                                      | 2-641602-3                          |
| 22                  | 2-641603-1                                      | 2-641603-3                          |
| 24                  | 2-641932-1                                      | 2-641932-3                          |
| 24 <sup>3</sup>     | 2-382471-1                                      | 2-382471-3                          |
| 24 <sup>4</sup>     | 2-641604-1                                      | 2-641604-3                          |
| 28                  | 2-641605-1                                      | 2-641605-3                          |
| 40                  | 2-641606-1                                      | 2-641606-3                          |
| 48                  | 2-643574-1                                      | 2-643574-3                          |
| 64                  | 643575-1                                        | 643575-3                            |

<sup>1</sup>Sockets with retention feature are also available.

<sup>2</sup>Sockets with gold plate are also available.

<sup>3</sup>.400 [10.16] centerline

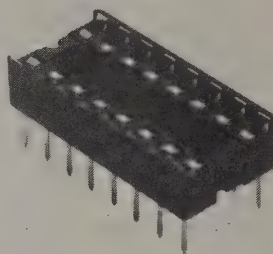
<sup>4</sup>.600 [15.24] centerline

DIPLOMATE Over-the-  
Component (OTC) Socket

Receptacle accepts .008-.014  
[0.2-0.36] thick IC leads

## Material and Finish:

**Housing**—Glass-filled thermoplastic,  
94V-0 rated, black



| No. of Pos. | Part Numbers                                    |                         |
|-------------|-------------------------------------------------|-------------------------|
|             | Sockets with Straight Solder Tails <sup>1</sup> |                         |
|             | Beryllium Copper Tinned                         | Phosphor Bronze Tinned  |
| 16          | 2-644100-1                                      | 2-644100-3              |
| 18          | 2-382060-1                                      | 2-382060-3              |
| 20          | 2-382515-1                                      | 2-382515-3              |
| 28          | 2-382415-1                                      | 2-382415-3              |
| 32          | 2-644018-1 <sup>2</sup>                         | 2-644018-3 <sup>2</sup> |
| 32*         | —                                               | 2-644018-5              |
| 40          | 2-382153-1                                      | 2-382153-3              |

<sup>1</sup>Sockets with retention feature are also available.

<sup>2</sup>Sockets with gold plate are also available in this size.

\*Economy version.

## SIP Sockets

DIPLOMATE Dual Leaf (DL)  
SIP Contact Sockets

Socket accepts .008-.015  
[0.2-0.38] thick x .030 [0.76]  
max. wide rectangular leads

## Material and Finish:

**Housing**—Glass-filled thermoplastic,  
94V-0 rated, black

**Contacts**—Phosphor bronze, tin plated



| No. of Pos. | Part Numbers |
|-------------|--------------|
| 8           | 643640-3     |
| 9           | 643641-3     |
| 10          | 643642-3     |
| 11          | 643643-3     |
| 12          | 643644-3     |
| 13          | 643645-3     |
| 14          | 643646-3     |
| 15          | 643647-3     |
| 16          | 643648-3     |
| 17          | 643649-3     |
| 18          | 643650-3     |
| 19          | 643651-3     |
| 20          | 643652-3     |
| 21          | 643653-3     |
| 22          | 643654-3     |
| 23          | 643655-3     |
| 24          | 643656-3     |
| 25          | 643657-3     |
| 26          | 643658-3     |
| 27          | 643659-3     |
| 28          | 643660-3     |
| 29          | 643661-3     |
| 30          | 643662-3     |

## ZIP Sockets

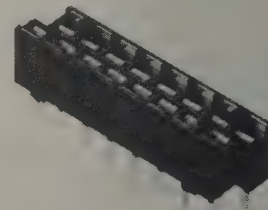
DIPLOMATE Zig-Zag  
Package (ZP) Sockets

Receptacle accepts .008-.015  
[0.2-0.38] thick x .030 [0.76]  
max. wide rectangular leads

## Material and Finish:

**Housing**—Glass-filled thermoplastic

**Contacts**—Phosphor bronze, tin-plated



| No. of Pos. | Part Numbers |
|-------------|--------------|
| 16          | 2-382006-3   |
| 20          | 2-382007-3   |
| 24          | 2-382008-3   |
| 28          | 2-382009-3   |
| 40          | 3-382040-3   |

Specifications subject to change.

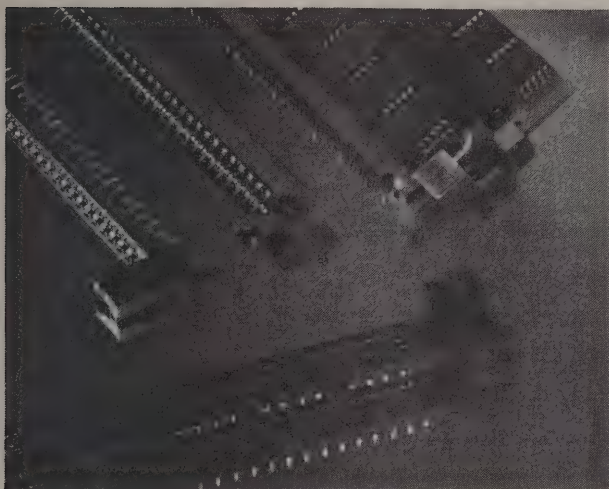
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



## SIMM Sockets



### DIPLOMATE SIMM Standard Vertical Sockets

#### Material and Finish:

**Housing**—Liquid crystal polymer (LCP), glass filled, 94V-0 rated

**Contact**—Beryllium copper, bright tin-lead plating

| Number of Positions <sup>1</sup> | Single Row | Double Row<br>.300 [7.62] Centerline |
|----------------------------------|------------|--------------------------------------|
| 22                               | 643922-1   | —                                    |
| 30                               | 643930-1   | 2-382230-1 <sup>2</sup>              |
| 35                               | 643935-1   | —                                    |
| 42                               | 643942-1   | —                                    |

<sup>1</sup>Other sizes and variations can be made available upon request.

<sup>2</sup>Packaged in slide tube for robotic assembly.

### DIPLOMATE SIMM Low Profile (Angled) Sockets

#### Material and Finish:

**Housing**—Liquid crystal polymer (LCP), glass-filled, 94V-0 rated

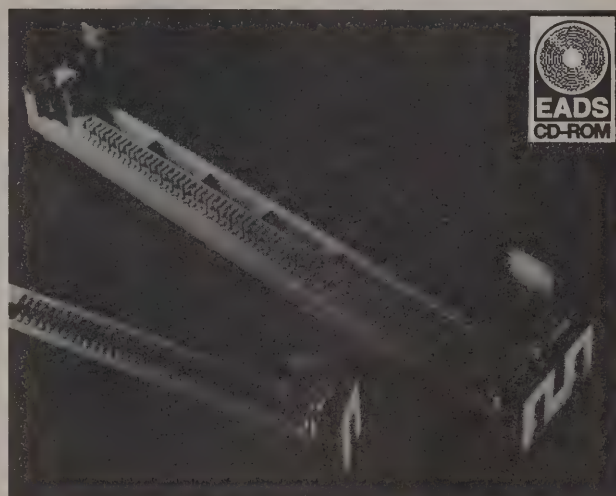
**Contact**—Beryllium copper, bright tin-lead plating

| Number of Positions <sup>1</sup> | Single Row | Double Row |
|----------------------------------|------------|------------|
| 30                               | 2-382030-1 | 2-382130-1 |
| 35                               | 382035-1   | —          |
| 42                               | 382042-1   | —          |

<sup>1</sup>Other sizes and variations can be made available upon request.

### Memory Module Extraction Tool

Part No. 382264-1



### MICRO-EDGE SIMM Connectors with Metal Latches, .050 [1.27] Centerline

#### Material and Finish:

**Housing**—Liquid crystal polymer, 94V-0 rated

**Contact**—Phosphor bronze with tin-lead plate over nickel plate

**Latch**—Brass with nickel plate

### Vertical Single Row Connectors with Center Post

#### Standard Polarization

| Number of Positions | Part Numbers |
|---------------------|--------------|
|                     | Tin Plate    |
| 40                  | 822021-1     |
| 64                  | 822021-2     |
| 68                  | 822021-3     |
| 72                  | 822021-4     |
| 80                  | 822021-5     |

**Note:** Connectors without center posts and with gold plating are also available.

#### Reverse Polarization

##### 72 Position

Part No. 822030-3

### Vertical Dual Row Connectors with Center Post

| Number of Positions | Part Numbers |
|---------------------|--------------|
|                     | Tin Plate    |
| 64                  | 822090-2     |
| 68                  | 822090-3     |
| 72                  | 822090-4     |

**Note:** Connectors without center posts and with gold plating are also available.

### MICRO-EDGE SIMM Connectors with Metal Latches, .100 [2.54] Centerline

#### Material and Finish:

**Housing**—Liquid crystal polymer, 94V-0 rated

**Contact**—Phosphor bronze with tin-lead plate over nickel plate

**Latch**—Brass with nickel plate

### Vertical Single Row Connectors

| Number of Positions | Part Numbers |
|---------------------|--------------|
|                     | Tin Plate    |
| 22                  | 822056-1     |
| 30                  | 822056-2     |
| 35                  | 822056-3     |
| 40                  | 822056-4     |
| 42                  | 822056-5     |

**Note:** Connectors with gold plating are also available.

### Vertical Dual Row Connectors

30 Position, .100 [2.54] x .300 [7.62] Centerline

Part No. 822058-2

30 Position, .100 [2.54] x .400 [10.16] Centerline

Part No. 822060-2

# AMP

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Specifications subject to change.

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

C•1165



## Square and Rectangular Sockets

### Square and Rectangular Sockets for PLCC Packages

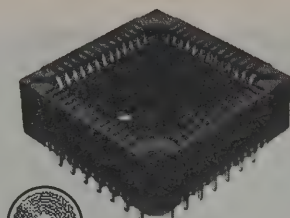
#### HPT Sockets with Solder Tails

#### Materials and Finish:

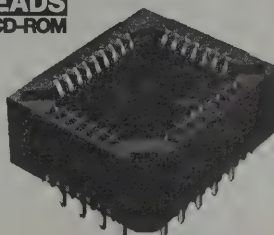
**Housing**—Polyphenylene sulfide, 40% glass-filled, 94V-0 rated, 220° C

**Contacts**—Phosphor bronze

**Plating**—.000150 [0.00381] min. tin-lead (93-7) over .000040 [0.00102] min. nickel



Square



Rectangular

| No. of Positions | Package Configuration | Part Number |
|------------------|-----------------------|-------------|
| 20               | Square                | 821815-1    |
| 28               | Square                | 821581-1    |
| 32               | Rectangular           | 821665-1    |
| 44               | Square                | 821575-1    |
| 52               | Square                | 821551-1    |
| 68               | Square                | 821574-1    |
| 84               | Square                | 821573-1    |

**Note:** Sockets with plastic polarizing pin are also available.

### Square and Rectangular Sockets for Low Profile PLCC Packages, Surface Mount

#### Materials and Finish:

**Housing**—Polyphenylene sulfide, 40% glass-filled, 94V-0 rated, 220° C

**Contacts**—Phosphor bronze with .000200 [0.00508] 93/7 tin-lead per MIL-T-10727 Type I over .000050 [0.00127] nickel per QQ-N-290



| No. of Positions | Part Numbers          |                    |
|------------------|-----------------------|--------------------|
|                  | Without Locking Posts | With Locking Posts |
| 20               | 822014-3              | 822065-4           |
| 28               | 822039-3              | 822066-4           |
| 32*              | 821977-1              | 822067-2           |
| 44               | 821979-3              | 822068-4           |
| 52               | 822041-3              | 822069-4           |
| 68               | 822029-3              | 822070-4           |
| 84               | 822151-1              | 822152-1           |

\*Rectangular

**Note:** Tape mounted sockets are also available.

### Square Sockets for LCCC Packages

#### Low Height Chip Carrier Sockets with Solder Tails

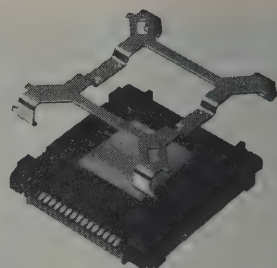
#### Materials and Finish:

**Housing**—Polyester glass filled

**Contacts**—Beryllium copper with gold over nickel plating in substrate area and tin-lead over nickel in solder tail area

**Cover**—Steel with nickel plating

**Thruster Clip**—Stainless steel



| No. of Positions | Assembly with Cover* |             |
|------------------|----------------------|-------------|
|                  | Leg Length           |             |
|                  | .140 [3.65]          | .110 [2.79] |
| 44               | 55232-1              | 55232-2     |
| 52               | 55227-1              | 55227-2     |
| 68               | 55159-1              | 55159-2     |
| 84               | 55225-1              | 55225-2     |
| 100              | 55219-1              | 55219-2     |

\*Cover and assembly available separately.

### Square Sockets for PQFP Packages

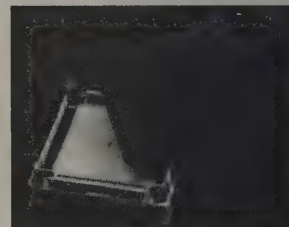
#### MICRO-PITCH Sockets for Plastic Quad Flat Pack ICs

#### Materials and Finish:

**Housing**—High temperature liquid crystal polymer (LCP), 94V-0 rated

**Cover**—Polyphenylene sulfide (PPS), 94V-0 rated

**Contacts**—Tin plated phosphor bronze



**Insertion/Extraction Tools:**  
 Tool No. 821958-1 (100 Position)  
 Tool No. 821958-2 (132 Position)  
 Tool No. 821958-3 (164 Position)

| No. of Positions | Part No.            |          |
|------------------|---------------------|----------|
|                  | Housing Subassembly | Cover    |
| 100              | 821949-4            | 821939-1 |
| 132              | 821949-5            | 821942-1 |
| 164              | 822064-6            | 822111-1 |

Specifications subject to change.

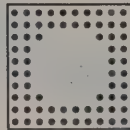
Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

# AMP

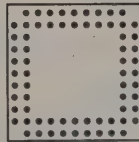
AMP INCORPORATED, HARRISBURG, PA 17105



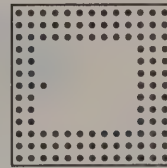
For more information request Catalog 82172

**Square Sockets for PGA Packages****Material and Finish:****Housing**—Glass filled polyester, 94V-0 rated**Contacts**—Phosphor bronze, plated gold over nickel in the contact area and tin-lead over the solder legs

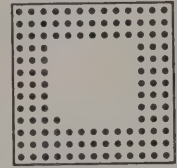
10 x 10  
68 Position  
(Symmetrical)



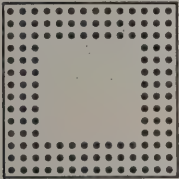
11 x 11  
68 Position  
(Symmetrical)



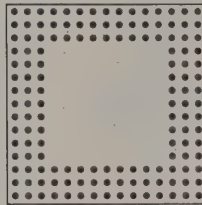
13 x 13  
114 Position  
Type II  
(Non-Symmetrical)



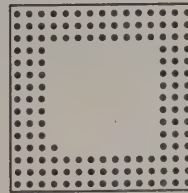
13 x 13  
121 Position  
(Non-Symmetrical)



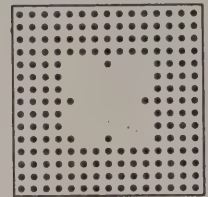
14 x 14  
132 Position  
(Symmetrical)



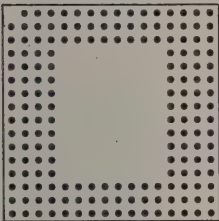
15 x 15  
144 Position  
(Symmetrical)



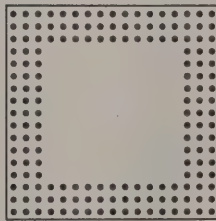
15 x 15  
145 Position  
(Non-Symmetrical)



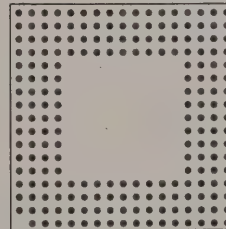
15 x 15  
181 Position  
(Symmetrical)



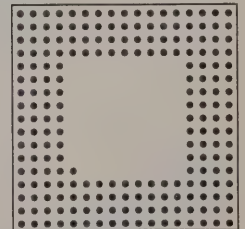
16 x 16  
175 Position  
(Non-Symmetrical)



17 x 17  
168 Position  
(Symmetrical)

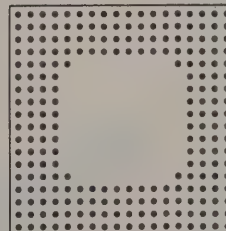


17 x 17  
207 Position  
(Non-Symmetrical)

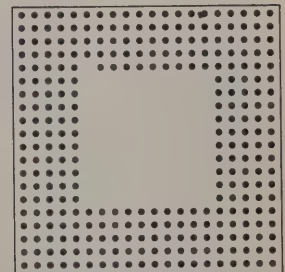


17 x 17  
209 Position  
(Non-Symmetrical)

| Configuration    | Part Numbers |            |
|------------------|--------------|------------|
|                  | Closed Frame | Open Frame |
| 10 x 10—68 Pos.  | 916220-2     | —          |
| 11 x 11—68 Pos.  | 916221-3     | —          |
| 13 x 13—114 Pos. | 916223-3     | —          |
| 13 x 13—121 Pos. | 916223-2     | 1-916223-6 |
| 14 x 14—132 Pos. | 916224-1     | 916224-8   |
| 15 x 15—144 Pos. | 916225-1     | —          |
| 15 x 15—145 Pos. | 916225-3     | —          |
| 15 x 15—181 Pos. | 916225-4     | —          |
| 16 x 16—175 Pos. | —            | 916226-6   |
| 17 x 17—168 Pos. | 916227-7     | 1-926227-2 |
| 17 x 17—207 Pos. | 916227-6     | —          |
| 17 x 17—209 Pos. | 916227-1     | —          |
| 18 x 18—179 Pos. | 916228-3     | —          |
| 20 x 20—299 Pos. | 916300-3     | —          |



18 x 18  
179 Position  
(Symmetrical)



20 x 20  
299 Positions  
(Non-Symmetrical)

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EEM 1993

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Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

C•1167



# Standard Edge II Connectors .100 [2.54] and .125 [3.18] Centerline Solder and Wrap Type Posts

## Materials and Finish:

**Housing**—94V-0 rated, glass-filled polyester, black

**Contact**—Phosphor bronze

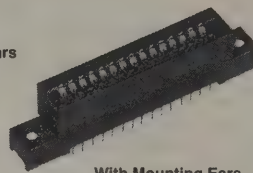
**Finish**—.000030 [0.00076] Gold over nickel unless otherwise noted

## With Mounting Ears, Wrap-Type Posts

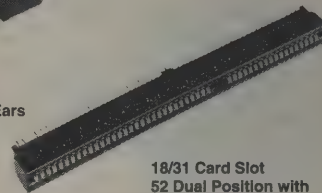
| No. of<br>Dual Positions | .100 [2.54] Centerline<br>.570 [14.48] Post Length | No. of<br>Dual Positions | .125 [3.18] Centerline<br>.570 [14.48] Post Length |
|--------------------------|----------------------------------------------------|--------------------------|----------------------------------------------------|
| 30                       | 4-530396-3                                         | 10                       | 4-530825-2                                         |
| 35                       | 4-530396-5                                         | 22                       | 4-530825-5                                         |
| 36                       | 4-530396-4                                         | 28                       | 4-530825-6                                         |
| 43                       | 4-530396-7                                         | 50                       | 5-530825-2                                         |
| 50                       | 4-530396-8                                         |                          |                                                    |



Without Mounting Ears



With Mounting Ears

18/31 Card Slot  
52 Dual Position with  
Retention Legs

| No. of<br>Dual Positions | Post<br>Length* | .100 [2.54] Centerline Solder Posts |                                 |                        | .125 [3.18] Centerline Solder Posts    |                          |
|--------------------------|-----------------|-------------------------------------|---------------------------------|------------------------|----------------------------------------|--------------------------|
|                          |                 | Without Mounting Ears               |                                 |                        | With Low<br>Mounting Ears <sup>1</sup> | Without<br>Mounting Ears |
|                          |                 | .000030 [0.00076]<br>Gold Plate     | .000015 [0.00038]<br>Gold Plate | With<br>Retention Legs |                                        |                          |
| 3                        | .125            | 7-530843-7                          | —                               | 1-645235-4             | —                                      | —                        |
|                          | .187            | —                                   | —                               | —                      | —                                      | —                        |
| 6                        | .125            | 7-530843-5                          | —                               | —                      | —                                      | 530844-1                 |
|                          | .187            | 7-530843-6                          | —                               | —                      | —                                      | 1-530844-2               |
| 8                        | .187            | 7-530843-4                          | —                               | —                      | —                                      | —                        |
|                          | .125            | 5-530843-0                          | —                               | 1-645235-6             | —                                      | 530844-2                 |
| 10                       | .187            | 4-530843-9                          | 5-530843-2                      | —                      | —                                      | 1-530844-3               |
|                          | .125            | 530843-1                            | 2-530843-5                      | 645235-6               | —                                      | —                        |
| 12                       | .187            | 1-530843-2                          | —                               | —                      | —                                      | —                        |
|                          | .125            | 530843-2                            | 2-530843-6                      | —                      | 530841-2                               | —                        |
| 15                       | .187            | 1-530843-3                          | —                               | —                      | —                                      | —                        |
|                          | .125            | 5-530843-3                          | —                               | —                      | —                                      | —                        |
| 17                       | .187            | —                                   | —                               | —                      | —                                      | —                        |
|                          | .125            | 530843-3                            | 2-530843-7                      | 645235-4               | 530841-3                               | —                        |
| 18                       | .187            | 1-530843-4                          | —                               | —                      | —                                      | 1-530844-5               |
|                          | .125            | 5-530843-4                          | —                               | 1-645235-5             | —                                      | —                        |
| 20                       | .187            | —                                   | —                               | —                      | —                                      | —                        |
|                          | .125            | 530843-4                            | 2-530843-8                      | 645235-7               | 530841-4                               | 530844-5                 |
| 22                       | .187            | 1-530843-5                          | —                               | —                      | —                                      | 1-530844-6               |
|                          | .125            | 530843-5                            | 2-530843-9                      | 1-645235-0             | 530841-5                               | —                        |
| 25                       | .187            | 1-530843-6                          | —                               | —                      | 1-530841-6                             | —                        |
|                          | .125            | 530843-6                            | —                               | —                      | 530841-6                               | —                        |
| 28                       | .187            | 1-530843-7                          | —                               | —                      | —                                      | 1-530844-7               |
|                          | .125            | 530843-7                            | —                               | 1-645235-3             | 530841-7                               | —                        |
| 30                       | .187            | 1-530843-8                          | 4-530843-2                      | —                      | 1-530841-8                             | 1-530844-8               |
|                          | .125            | 6-530843-5                          | 7-530843-0                      | 645235-1               | —                                      | —                        |
| 31                       | .187            | 6-530843-3                          | —                               | —                      | —                                      | —                        |
|                          | .125            | 2-530843-3                          | —                               | 1-645235-1             | —                                      | —                        |
| 35                       | .187            | 2-530843-4                          | —                               | —                      | —                                      | —                        |
|                          | .125            | 530843-8                            | —                               | —                      | 530841-8                               | —                        |
| 36                       | .187            | 1-530843-9                          | —                               | —                      | 1-530841-9                             | 1-530844-9               |
|                          | .125            | 530843-9                            | —                               | 645235-5               | 530841-9                               | —                        |
| 40                       | .187            | 2-530843-0                          | —                               | —                      | —                                      | 2-530844-0               |
|                          | .125            | 1-530843-0                          | —                               | —                      | —                                      | 1-530844-0               |
| 43                       | .187            | 2-530843-1                          | —                               | —                      | 2-530841-1                             | —                        |
|                          | .125            | 1-530843-1                          | —                               | 645235-3               | 1-530841-1                             | 1-530844-1               |
| 50                       | .187            | 2-530843-2                          | —                               | —                      | 2-530841-2                             | 2-530844-2               |
|                          | .125            | 7-530843-8                          | —                               | 1-645235-2             | —                                      | —                        |
| 52 (18/31)               | .125            | 645169-3                            | 645169-5                        | 645169-2               | —                                      | —                        |
|                          | .187            | 650616-1                            | —                               | —                      | —                                      | —                        |
| 60                       | .125            | 5-530843-5                          | 5-530843-7                      | 645235-8               | 5-530841-3                             | —                        |
|                          | .187            | 5-530843-6                          | 5-530843-8                      | —                      | —                                      | —                        |
| 70                       | .125            | 5-530843-9                          | 6-530843-1                      | 1-645235-7             | —                                      | —                        |

\* Metric equivalents for post length are .125 [3.18]; .187 [4.75].

<sup>1</sup>Low mounting ears .360 [9.14].

Key Plugs: 650025-2 (.100 [2.54] Centerline)  
650025-1 (.125 [3.18] Centerline)

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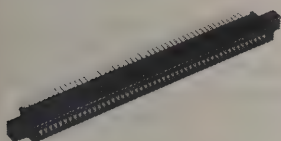
Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



For more information request Catalog 82619

# Standard Edge II Card Extenders



## .100 [2.54] Centerline

| Number of Dual Positions | Part Number |
|--------------------------|-------------|
| 30                       | 1-530826-0  |
| 36                       | 530826-1    |
| 40                       | 530826-2    |
| 43                       | 1-530826-2  |
| 50                       | 530826-3    |

## .125 [3.18] Centerline

| Number of Dual Positions | Part Number |
|--------------------------|-------------|
| 18                       | 530384-8    |
| 30                       | 530384-1    |
| 36                       | 530384-2    |
| 50                       | 530384-3    |

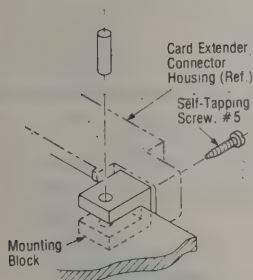
### Material and Finish:

**Housing** - 94V-0 rated, glass-filled polyester, black  
**Contacts** - Phosphor bronze  
**Finish** - Gold over nickel accu-plating in contact area, .000030 [0.00076] thick; tin plated posts

## Mounting Block

### Material and Finish:

Natural Color Nylon  
**Kit Part No. 531250-1**  
 Each kit includes 2 mounting blocks, 2 self-tapping screws, #5 x .375 [9.52] 2 roll pins, .075 x .25 [1.57 x 6.35]



Short Keying Plug Part No. 650025-2

### Material and Finish:

**Housing**—Polyphenylene sulfide  
**Contacts**—Phosphor bronze, plated gold over nickel in mating area, tin over nickel on solder tails



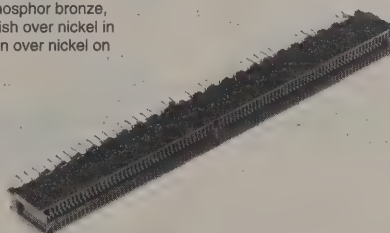
| No. of Dual Positions | Post Length* | Part Numbers | Configuration        |
|-----------------------|--------------|--------------|----------------------|
| 15                    | .100         | 650712-1     | End Key              |
| 23                    | .100         | 650090-7     | 1 Key-2 Pylons       |
|                       | .140         | 650181-3     | 1 Key-2 Pylons       |
| 25                    | .100         | 650719-1     | End Key              |
| 30                    | .100         | 650090-6     | 1 Key-2 Pylons       |
|                       | .100         | 650090-3     | 1 Key-2 Pylons       |
| 40                    | .140         | 650181-2     | 1 Key-2 Pylons       |
| 45                    | .100         | 650090-2     | 1 Key-2 Pylons       |
|                       | .100         | 650090-1     | 1 Key-2 Pylons       |
| 56                    | .140         | 650181-1     | 1 Key-2 Pylons       |
|                       | .100         | 650091-1     | 1 Key/1 Web-2 Pylons |
|                       | .140         | 650091-2     | 1 Key/1 Web-2 Pylons |
| 70                    | .100         | 650231-5     | 1 Key/1 Web-2 Pylons |
| 80                    | .100         | 650090-9     | 1 Key-2 Pylons       |
| 91                    | .100         | 650092-1     | 1 Key-2 Pylons       |
|                       | .140         | 650092-2     | 1 Key-2 Pylons       |
| 97                    | .100         | 650706-1     | 1 Key/1 Web-2 Pylons |
|                       | .140         | 650706-2     | 1 Key/1 Web-2 Pylons |
| 101                   | .100         | 650707-1     | 1 Key/1 Web-2 Pylons |
|                       | .140         | 650707-2     | 1 Key/1 Web-2 Pylons |
| 120                   | .100         | 650231-2     | 1 Key/1 Web-2 Pylons |
|                       | .140         | 650231-1     | 1 Key/1 Web-2 Pylons |

\* Metric equivalents for post length are .100 [2.54], .140 [3.56].

## Standard Edge EISA Connector .050 [1.27] Centerline (.100 [2.54] Staggered Grid)

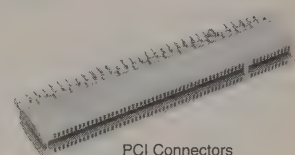
### Material and Finish:

**Housing**—Vapor phase compatible thermoplastic  
**Contacts**—Phosphor bronze, plated gold finish over nickel in mating area, tin over nickel on solder tails.



188 Position Part No. 646039-1 (with Guide Post Retention)  
 646040-1 (with Solder Tail Retention)

## Standard Edge Local Bus Connectors



PCI Connectors

| No. of Bits | No. of Dual Positions | Post Length* | Part Number |
|-------------|-----------------------|--------------|-------------|
|             |                       | .100         | 646255-1    |
| 32          | 60                    | .125         | 646255-2    |
|             |                       | .140         | 646255-3    |
|             |                       | .100         | 646253-1    |
| 64          | 92 (5 volt)           | .125         | 646253-2    |
|             |                       | .140         | 646253-3    |
|             |                       | .100         | 646254-1    |
| 64          | 92 (3 volt)           | .125         | 646254-2    |
|             |                       | .140         | 646254-3    |

\* Metric equivalents for post length are: .100 [2.54], .125 [3.18], .140 [3.56].

### Material and Finish:

**Housing**—Polyphenylene sulfide (white)  
**Contacts**—Phosphor bronze, plated gold over nickel in mating area, tin over nickel on solder tails



VL Connectors

| No. of Dual Positions | Post Length* | Part Number |
|-----------------------|--------------|-------------|
|                       | .100         | 650090-1    |
| 56                    | .125         | 650090-8    |
|                       | .140         | 650181-1    |

\* Metric equivalents for post length are: .100 [2.54], .125 [3.18], .140 [3.56].

### Material and Finish:

**Housing** - Polyphenylene sulfide  
**Contacts** - Phosphor bronze, plated gold over nickel in mating area, tin over nickel on solder tails

Specifications subject to change.

Call 1-800-522-6752 for product information  
 and 1-800-722-1111 for tooling information.



## Eurocard Connectors

### Pin and Receptacle Assemblies with Solder Posts or ACTION PIN Posts

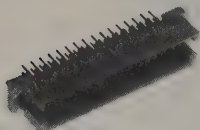
#### Type ½R Connectors

.100 [2.54] Grid

3 Row, Inverse Style

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to DIN 41612, Class II

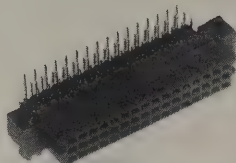


**Pin Assembly with Solder Posts**

48 Position **Part No. 650477-5**

Post length .180 [4.57]

Rows loaded A, B, C



**Receptacle Assembly with Solder Posts**

48 Position **Part No. 650868-4**

Post length .110 [2.79]

Rows loaded A, B, C

#### Standard

Type R Connectors

.100 [2.54] Grid

3 Row, Inverse Style



**Pin Assemblies with Solder Posts**

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to DIN 41612, Class II

| No. of Contacts | Rows Loaded | Post Length |
|-----------------|-------------|-------------|
|                 |             | .180 [4.57] |
| 96              | A, B, C     | 650470-5    |
| 64              | A, C        | 650934-5    |

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to DIN 41612, Class II

**Receptacle Assemblies with Solder Posts**

| No. of Contacts | Rows Loaded | Post Length |             |
|-----------------|-------------|-------------|-------------|
|                 |             | .110 [2.79] | .167 [4.24] |
| 96              | A, B, C     | 650461-4    | 650462-4    |
| 64              | A, C        | 650870-4    | 650871-4    |

#### Standard

Type R Connectors

.100 [2.54] Grid

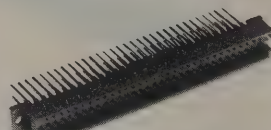
3 Row, Inverse Style

##### Pin Assemblies with

**ACTION PIN Posts**

for .093 [2.36] to .125 [3.18]

Thick Printed Circuit Boards



##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy plated as follows:

**A**—DIN 41612, Class II in contact area, tin-lead on tail

**B**—DIN 41612, Class II in contact area and last .200 [5.08] of tail

| No. of Contacts | Rows Loaded | Contact Plating | Post Length |              |              |
|-----------------|-------------|-----------------|-------------|--------------|--------------|
|                 |             |                 | .250 [6.35] | .521 [13.23] | .733 [18.62] |
| 96              | A, B, C     | A               | 650889-5    | 650909-5     | 531787-1     |
|                 |             | B               | —           | 1-650909-4   | 532525-1     |
| 64              | A, C        | B               | —           | 1-650930-4   | —            |

#### Expanded

Type R Connectors

.100 [2.54] Grid

3 Row, Inverse Style

##### Pin Assemblies with

**Solder Posts**

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to DIN 41612, Class II

| No. of Contacts | Rows Loaded | Post Length |
|-----------------|-------------|-------------|
|                 |             | .180 [4.57] |
| 120             | A, B, C     | 650910-5    |
| 150             | A, B, C     | 650911-5    |

**Receptacle Assemblies with Solder Posts**

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to DIN 41612, Class II

| No. of Contacts | Rows Loaded | Post Length |             |
|-----------------|-------------|-------------|-------------|
|                 |             | .110 [2.79] | .167 [4.24] |
| 120             | A, B, C     | 650874-4    | 650876-4    |
| 150             | A, B, C     | 650875-4    | 650877-4    |

#### Type ½C Connector

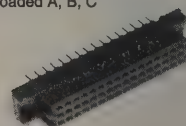
.100 [2.54] Grid

3 Row, Standard Style

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to DIN 41612, Class II

**Receptacle Assembly with Solder Posts**  
48 Contacts **Part No. 535071-4**  
Post Length .180 [4.57]  
Rows loaded A, B, C



*Specifications subject to change.*

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

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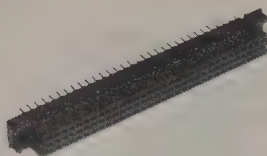
## Eurocard Connectors Pin and Receptacle Assemblies with Solder Posts or ACTION PIN Posts

### Standard Type C Connectors .100 [2.54] Grid 3 Row, Standard Style

#### Receptacle Assemblies with Solder Posts

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to  
DIN 41612, Class II



| No. of<br>Contacts | Rows<br>Loaded | Post Length |            |             |
|--------------------|----------------|-------------|------------|-------------|
|                    |                | .180 [4.57] | .130 [3.3] | .098 [2.49] |
| 96                 | A, B, C        | 535043-4    | 535090-4   | 535089-4    |
| 64                 | A, C           | 650408-4    | 650956-4   | 650458-4    |

#### Pin Assemblies with Solder Posts

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to  
<sup>1</sup>DIN 41612, Class II  
<sup>2</sup>DIN 41612, Class III

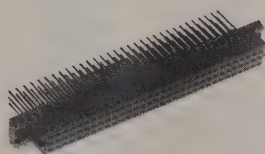


| No. of<br>Contacts | Rows<br>Loaded | Post Length           |                       |
|--------------------|----------------|-----------------------|-----------------------|
|                    |                | .104 [2.64]           | .130 [3.30]           |
| 96                 | A, B, C        | 650473-5 <sup>1</sup> | 650947-5 <sup>1</sup> |
|                    |                | 650473-9 <sup>2</sup> | 650947-9 <sup>2</sup> |
| 64                 | A, C           | 650945-5 <sup>1</sup> | 650951-5 <sup>1</sup> |

#### Receptacle Assemblies with ACTION PIN Posts

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to  
<sup>1</sup>DIN 41612, Class II in contact  
area, tin-lead on tail  
<sup>2</sup>DIN 41612, Class II in contact area  
and last .200 [5.08] of tail



| No. of<br>Contacts | Rows<br>Loaded | Post Length   |                         |                         |
|--------------------|----------------|---------------|-------------------------|-------------------------|
|                    |                | .190 [4.83]** | .512 [13]*              | .669 [17]*              |
| 96                 | A, B, C        | —             | 1-215912-4 <sup>2</sup> | 1-215614-4 <sup>2</sup> |
|                    |                | 535032-4      | 215912-4 <sup>1</sup>   | 215614-4 <sup>1</sup>   |

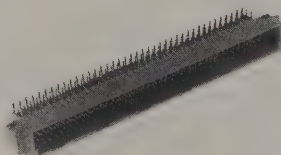
\* Use Insertion Tool No. 535072-1 for .512 [13] and .669 [17] post lengths, for .093 [2.36] printed circuit boards.

\*\* For .062 [1.57] pc boards.

### Expanded Type C Connectors Pin Assemblies with Solder Posts

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to  
DIN 41612, Class II

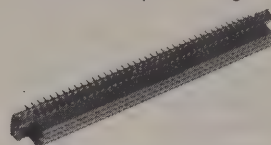


| No. of<br>Contacts | Rows<br>Loaded | Post Length |             |
|--------------------|----------------|-------------|-------------|
|                    |                | .104 [2.64] | .130 [3.30] |
| 120                | A, B, C        | 650906-5    | 650949-5    |
| 150                | A, B, C        | 650907-5    | 650950-5    |

### Expanded Type C Receptacle Assemblies with Solder Posts

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to  
DIN 41612, Class II

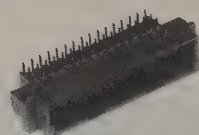


| No. of<br>Contacts | Rows<br>Loaded | Post Length |             |             |
|--------------------|----------------|-------------|-------------|-------------|
|                    |                | .098 [2.49] | .130 [3.30] | .180 [4.57] |
| 120                | A, B, C        | 535097-4    | 535098-4    | 535099-4    |
| 150                | A, B, C        | 650404-4    | 650405-4    | 650406-4    |

### Type ½C Pin Assemblies

##### Material and Finish:

**Housing**—Thermoplastic, gray  
**Contacts**—Copper alloy, plated to  
DIN 41612, Class II



| No. of<br>Contacts | Rows<br>Loaded | Post Length |             |
|--------------------|----------------|-------------|-------------|
|                    |                | .104 [2.64] | .130 [3.30] |
| 32                 | A, C           | 650946-5    | 650952-5    |
| 48                 | A, B, C        | 650478-5    | 650948-5    |

### Enhanced Eurocard Connectors

For more information  
request Catalog 82950

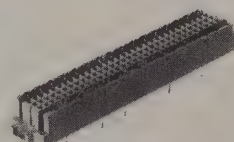
#### Standard Type C Connectors Vertical Receptacle Assemblies with Solder Posts and ACTION PIN Posts

##### Material:

**Housing**—Thermoplastic, glass-filled,  
gray, 94V-0 rated  
**Receptacle Contacts**—Copper alloy, plated to  
<sup>1</sup>DIN 41612, Class II  
<sup>2</sup>DIN 41612, Class III  
**Ground Contacts**—Phosphor bronze

Recognized  
File No. E28476

Certified  
File No. LR 7189



| Number of<br>Contacts | Rows<br>Loaded | Solder Post Length     |                        | ACTION PIN Post Length  |
|-----------------------|----------------|------------------------|------------------------|-------------------------|
|                       |                | 3.30 [.130]            | 4.57 [.180]            |                         |
| 96                    | A, B, C        | 536152-4 <sup>1</sup>  | 536153-4 <sup>1</sup>  | 650992-4 <sup>1**</sup> |
|                       |                | 536154-4 <sup>1*</sup> | 536155-4 <sup>1*</sup> |                         |
|                       |                | 536152-9 <sup>2</sup>  | 536153-9 <sup>2</sup>  | 650992-9 <sup>2**</sup> |
|                       |                | 536154-9 <sup>2*</sup> | 536155-9 <sup>2*</sup> |                         |

NOTE: ACTION PIN posts require 1.57 [.062] min. thick PC board.  
\*With Boardlocks. \*\*Flat rock assemblies; no tooling required.

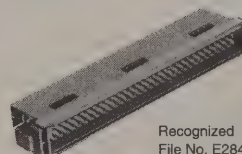
### Standard Type C Connectors Right-Angle Pin Assemblies with Solder Posts

##### Material:

**Housing**—Thermoplastic, glass-filled,  
gray, 94V-0 rated  
**Shield**—Brass  
**Pin Contacts**—Brass, plated to  
<sup>1</sup>DIN 41612, Class II  
<sup>2</sup>DIN 41612, Class III

Recognized  
File No. E28476

Certified  
File No. LR 7189



| Number of<br>Contacts | Rows<br>Loaded | Ground Plates | Post Length            |                        |
|-----------------------|----------------|---------------|------------------------|------------------------|
|                       |                |               | 2.64 [.104]            | 3.30 [.130]            |
| 96                    | A, B, C        | Upper         | 650987-5 <sup>1</sup>  | 536146-5 <sup>1</sup>  |
|                       |                | and           | 536148-5 <sup>1*</sup> | 536149-5 <sup>1*</sup> |
|                       |                | Lower         | 650987-9 <sup>2</sup>  | 536146-9 <sup>2</sup>  |
|                       |                |               | 536148-9 <sup>2*</sup> | 536149-9 <sup>2*</sup> |
|                       | A, B, C        |               | 650988-5 <sup>1</sup>  | 536147-5 <sup>1</sup>  |
|                       |                | Lower         | 536150-5 <sup>1*</sup> | 536151-5 <sup>1*</sup> |
|                       |                |               | 650988-9 <sup>2</sup>  | 536147-9 <sup>2</sup>  |
|                       |                |               | 536150-9 <sup>2*</sup> | 536151-9 <sup>2*</sup> |

\*With Boardlocks.

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

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EEM 1993

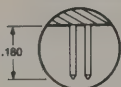
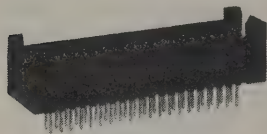
For manufacturers' sales offices, see yellow pages

C•1171

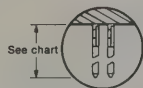


## Two-Piece Printed Circuit Board Connectors (AMPMODU)

### Solder Post and ACTION PIN Contacts (with Pin Protection and Guide Pins)



.025 [0.64] Square Solder Posts



.025 [0.64] Square ACTION PIN Posts

#### Material:

**Housing**—Glass filled thermoplastic, flame retardant

**Contacts**—Phosphor bronze, plated as follows:

**A**—.000015 [0.00038] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end, with entire contact underplated .000050 [0.00127] nickel.

**B**—.000030 [0.00076] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end, with entire contact underplated .000050 [0.00127] nickel.

#### ACTION PIN Replacement Contact Part Numbers

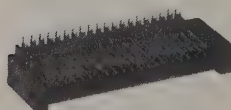
.250 [6.35] Post Length  
Plating A 102824-9  
Plating B 1-102824-0

| No. of Pos. | Header Part Numbers           |            |                       |            |
|-------------|-------------------------------|------------|-----------------------|------------|
|             | With .180 [4.57] Solder Posts |            | With ACTION PIN Posts |            |
|             | Plating A                     | Plating B  | Post Length*          | Plating B  |
| 12          | 102567-1                      | 102692-1   | .250                  | 102690-1   |
| 20          | 1-102567-1                    | 1-102692-6 | .250                  | 1-102690-3 |
| 24          | 102567-2                      | 102692-2   | .250                  | 102690-2   |
| 30          | 1-102567-3                    | 1-102692-7 | .250                  | 1-102690-5 |
| 36          | 102567-3                      | 102692-3   | .250                  | 102690-3   |
| 40          | 1-102567-2                    | 1-102692-3 | .250                  | 1-102690-6 |
| 50          | 102567-6                      | 102692-4   | .250                  | 102690-4   |
| 60          | 102567-4                      | 102692-5   | .250                  | 102690-5   |
| 70          | 1-102567-0                    | 1-102692-4 | .250                  | 1-102690-7 |
| 72          | 1-102567-6                    | 1-102692-8 | .250                  | 1-102690-8 |
| 80          | 102567-8                      | 102692-6   | .250                  | 102690-6   |
| 100         | 102567-9                      | 102692-8   | .250                  | 102690-8   |
| 120         | 102567-7                      | 102692-9   | .250                  | 102690-9   |

\*Metric equivalent for post length is .250 [6.35].

### Two-Row Headers Right-Angle Post .100 [2.54] Centers

### Card Extender (with Pin Protection and Guide Pins)



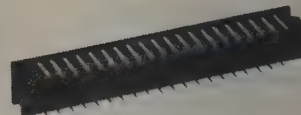
.025 [0.64] Square Solder Posts



.025 [0.64] Square Board Retention Posts

### Two-Row Closed Entry Receptacle Assemblies Board Mounted, .100 [2.54] Centers

#### Horizontal Mount (with Guide Pin Slots and Standoffs)



#### Material and Finish:

**Housing**—Polyphenylene sulfide

**Contacts**—Phosphor bronze, duplex plated as follows:

**A**—.000015 [0.00038] gold on mating area, .000050-.000100 [0.00127-0.00254] bright tin-lead on solder tail, with entire contact underplated .000050 [0.00127] nickel.

**B**—.000030 [0.00076] gold on mating area, .000050-.000100 [0.00127-0.00254] bright tin-lead on solder tail, with entire contact underplated .000050 [0.00127] nickel.



Point of Contact



Board Retention Posts

| No. of Positions | Receptacle Assembly Part Numbers |                                     |                                     |
|------------------|----------------------------------|-------------------------------------|-------------------------------------|
|                  | .115 [2.92] Solder Tail          |                                     | .145 [3.68] Solder Tail             |
|                  | Plating A                        | Plating B                           | Plating B                           |
| 12               | 532955-1                         | 532956-1                            | 533009-1                            |
| 16               | —                                | 532956-2                            | —                                   |
| 20               | 532955-3                         | 532956-3                            | —                                   |
| 24               | 532955-4                         | 532956-4                            | —                                   |
| 30               | 532955-5                         | 532956-5                            | 533009-5                            |
| 36               | 532955-6                         | 532956-6<br>534204-3 <sup>1</sup>   | —                                   |
| 40               | 532955-7                         | 532956-7                            | —                                   |
| 44               | 2-532955-4                       | 2-532956-8                          | —                                   |
| 50               | 532955-8                         | 532956-8<br>534204-1 <sup>1</sup>   | 533009-8                            |
| 60               | 532955-9                         | 532956-9<br>534204-5 <sup>1</sup>   | 533009-9                            |
| 70               | 1-532955-0                       | 1-532956-0                          | —                                   |
| 72               | 1-532955-1                       | 1-532956-1                          | —                                   |
| 80               | 1-532955-2                       | 1-532956-2<br>534204-8 <sup>1</sup> | 1-533009-2                          |
| 90               | 1-532955-4                       | 1-532956-4                          | —                                   |
| 100              | 1-532955-6                       | 1-532956-6<br>534204-6 <sup>1</sup> | —                                   |
| 120              | 1-532955-8                       | 1-532956-8<br>534204-7 <sup>1</sup> | 1-533009-8<br>534229-3 <sup>2</sup> |
| 130              | 2-532955-0                       | 2-532956-0                          | —                                   |
| 140              | 2-532955-1                       | 2-532956-1                          | 2-533009-1                          |

<sup>1</sup>Receptacle Assembly with board retention feature.

<sup>2</sup>Low-force receptacle assembly

#### Material:

**Housing**—Glass filled thermoplastic, flame retardant

**Contacts**—Phosphor bronze, duplex plated as follows:

**A**—.000015 [0.00038] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on solder tail, with entire contact underplated .000050 [0.00127] nickel.

**B**—.000030 [0.00076] gold on mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on solder tail, with entire contact underplated .000050 [0.00127] nickel.

| No. of Positions | Header Part Numbers |                                   |
|------------------|---------------------|-----------------------------------|
|                  | Plating A           | Plating B                         |
| 12               | 102589-8            | 1-102802-2                        |
| 36               | 102589-2            | 102802-3                          |
| 40               | 1-102589-3          | 102802-8                          |
| 50               | 102589-5            | 534245-1 <sup>*</sup><br>102802-4 |
| 60               | 102589-7            | 102802-9                          |
| 72               | 1-102589-7          | —                                 |
| 80               | 102589-1            | 102802-5                          |
| 100              | 102589-3            | 102802-6                          |
| 120              | 1-102589-1          | 102802-2                          |

\*Header with board retention feature.

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C•1172

For manufacturers' sales offices, see yellow pages

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

EEM 1993



## AMP-LATCH Ribbon Cable Connector System

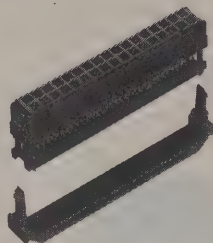
Contacts mate with  
.025 [0.64] sq. or round  
pins with .245 [6.22] max.  
and .195 [4.95] min.  
lengths.

### Novo Receptacle

#### Material and Finish:

**Housing, Cover & Strain Relief**—Black thermoplastic, 94V-0 rated

**Contacts**—Phosphor bronze, tin or duplex plated



Novo Receptacles, with Military Polarization Feature\*  
.100 x .100 [2.54 x 2.54] Centers

Novo Receptacles, Center and with Military Polarization Feature  
.100 x .100 [2.54 x 2.54] Centers

\*These receptacles can be used in applications requiring non-polarization, as well as military polarization.

Novo Receptacle (Female, .100 x .100 [2.54 x 2.54] Centers for use with .050 [1.27] Centers Ribbon Cable) (Preassembled Recessed Cover)

| No. of Positions | Contact Plating                            | Receptacle Kit No. (Preassembled)  |                                               | Strain Relief |
|------------------|--------------------------------------------|------------------------------------|-----------------------------------------------|---------------|
|                  |                                            | with Military Polarization Feature | Center and with Military Polarization Feature |               |
| 10               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-1<br>746290-1               | 746285-1<br>746288-1                          | 499252-5      |
| 14               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-2<br>746290-2               | 746285-2<br>746288-2                          | 499252-9      |
| 16               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-3<br>746290-3               | 746285-3<br>746288-3                          | 499252-8      |
| 20               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-4<br>746290-4               | 746285-4<br>746288-4                          | 499252-2      |
| 24               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-5<br>746290-5               | 746285-5<br>746288-5                          | 1-499252-0    |
| 26               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-6<br>746290-6               | 746285-6<br>746288-6                          | 499252-3      |
| 30               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-7<br>746290-7               | 746285-7<br>746288-7                          | 1-499252-2    |
| 34               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-8<br>746290-8               | 746285-8<br>746288-8                          | 499252-6      |
| 40               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 499997-9<br>746290-9               | 746285-9<br>746288-9                          | 499252-1      |
| 50               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 1-499997-0<br>1-746290-0           | 1-746285-0<br>1-746288-0                      | 499252-4      |
| 60               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 1-499997-1<br>1-746290-1           | 1-746285-1<br>1-746288-1                      | 499252-7      |
| 64               | Duplex <sup>1</sup><br>Duplex <sup>2</sup> | 1-499997-2<br>1-746290-2           | 1-746285-2<br>1-746288-2                      | 1-499252-3    |

<sup>1</sup>.000015 [0.00038] gold on post/pin mating end, .000100-.000200 [0.00254-.00508] bright tin-lead on termination end, with entire contact underplated, .000050 [0.00127] nickel.

<sup>2</sup>.000030 [0.00076] gold on post/pin mating end, .000100-.000200 [0.00254-.00508] bright tin-lead on termination end, with entire contact underplated, .000050 [0.00127] nickel.

**Keying Plug 499712-1** (Plugs into contact on mating face).

**Note:** Other sizes, plating or military approved connectors available. Contact AMP Incorporated.

### Universal I/O Pin Connectors with Slotted Mounting Ears

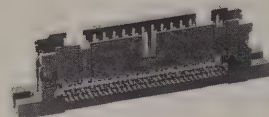
#### Material and Finish:

**Housing, Cover and Latches** — 94V-0 rated thermoplastic, black

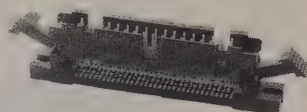
#### Contacts:

**A. Phosphor Bronze** — Duplex plated .000015 [0.00038] gold on the pin end, .000100-.000200 [0.00254-.00508] bright tin-lead on cable termination end, entire contact underplated with .000050 [0.00127] nickel

**B. Phosphor Bronze** — Duplex plated .000030 [0.00076] gold on the pin end, .000100-.000200 [0.00254-.00508] bright tin-lead on cable termination end, entire contact underplated with .000050 [0.00127] nickel



Without Latches



With Latches

| No. of Positions | Contact Plating Code | Part Numbers    |              |
|------------------|----------------------|-----------------|--------------|
|                  |                      | Pin Connectors  |              |
|                  |                      | Without Latches | With Latches |
| 10               | A                    | 111447-1        | 111493-1     |
|                  | B                    | 111448-1        | 111494-1     |
| 14               | A                    | 111447-2        | 111493-2     |
|                  | B                    | 111448-2        | 111494-2     |
| 16               | A                    | 111447-3        | 111493-3     |
|                  | B                    | 111448-3        | 111494-3     |
| 20               | A                    | 111447-4        | 111493-4     |
|                  | B                    | 111448-4        | 111494-4     |
| 24               | A                    | 111447-5        | 111493-5     |
|                  | B                    | 111448-5        | 111494-5     |
| 26               | A                    | 111447-6        | 111493-6     |
|                  | B                    | 111448-6        | 111494-6     |
| 30               | A                    | 111447-7        | 111493-7     |
|                  | B                    | 111448-7        | 111494-7     |
| 34               | A                    | 111447-8        | 111493-8     |
|                  | B                    | 111448-8        | 111494-8     |
| 40               | A                    | 111447-9        | 111493-9     |
|                  | B                    | 111448-9        | 111494-9     |
| 44               | A                    | 1-111447-0      | 1-111493-0   |
|                  | B                    | 1-111448-0      | 1-111494-0   |
| 50               | A                    | 1-111447-1      | 1-111493-1   |
|                  | B                    | 1-111448-1      | 1-111494-1   |
| 60               | A                    | 1-111447-2      | 1-111493-2   |
|                  | B                    | 1-111448-2      | 1-111494-2   |
| 64               | A                    | 1-111447-3      | 1-111493-3   |
|                  | B                    | 1-111448-3      | 1-111494-3   |

Note: Connectors without mounting ears and with mounting ears with threaded inserts are available, consult AMP Incorporated.

### Snap-In Polarizer

**Material:** Black thermoplastic, 94V-0 rated

#### Part Nos.:

**499991-2** (Packaged 50 per bag)

**499991-3** (Packaged 1000 per box)



Specifications subject to change.

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



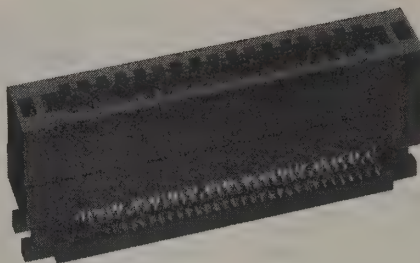
## AMP-LATCH Ribbon Cable Connector System

### Card Edge Connectors without Mounting Ears

#### Housing Assembly with Cover (Preassembled)

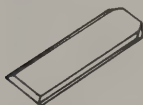
#### Material and Finish:

**Housing & Cover**—Black thermoplastic, 94V-0 rated  
**Contacts**—Phosphor bronze (Plating—See table below chart.)

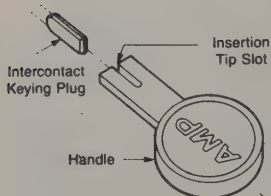


### Keying Plug

**Material:** Natural color thermoplastic, 94V-0 rated



**Intercontact Keying Plug,  
Part No. 88113-1**  
(Use insertion Tool No. 91233-1)



**Insertion Tool  
No. 91233-1**

| No. of Positions | Contact Plating | Without Mounting Ears | Without Mounting Ears With Molded Key |
|------------------|-----------------|-----------------------|---------------------------------------|
| 10               | A               | 111109-8              | 111111-8                              |
|                  | B               | 111110-8              | 111112-8                              |
| 14               | A               | 111109-9              | 111111-9                              |
|                  | B               | 111110-9              | 111112-9                              |
| 16               | A               | 1-111109-0            | 1-111111-0                            |
|                  | B               | 1-111110-0            | 1-111112-0                            |
| 20               | A               | 111109-6              | 111111-6                              |
|                  | B               | 111110-6              | 111112-6                              |
| 26               | A               | 111109-5              | 111111-5                              |
|                  | B               | 111110-5              | 111112-5                              |
| 30               | A               | 111109-4              | 111111-4                              |
|                  | B               | 111110-4              | 111112-4                              |
| 34               | A               | 111109-3              | 111111-3                              |
|                  | B               | 111110-3              | 111112-3                              |
| 40               | A               | 111109-2              | 111111-2                              |
|                  | B               | 111110-2              | 111112-2                              |
| 44               | A               | 1-111109-2            | 1-111111-2                            |
|                  | B               | 1-111110-2            | 1-111112-2                            |
| 50               | A               | 111109-1              | 111111-1                              |
|                  | B               | 1-11110-1             | 111112-1                              |
| 60               | A               | 111109-7              | 111111-7                              |
|                  | B               | 111110-7              | 111112-7                              |
| 64               | A               | 1-111109-1            | 1-111111-1                            |
|                  | B               | 1-111110-1            | 1-111112-1                            |

A—.000030 [0.00076] gold pin end; .000100-.000200 [0.00254-0.00508] bright tin-lead on cable termination end; entire contact underplated with .000050 [0.00127] nickel.  
 B—.000015 [0.00038] gold on pin end; .000100-.000200 [0.00254-0.00508] bright tin-lead on cable termination end; entire contact underplated with .000050 [0.00127] nickel.

**Note:** Intercontact keying plug is molded between positions 3, 4, 5 and 6.

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For manufacturers' sales offices, see yellow pages

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

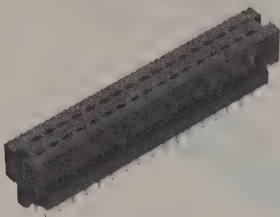
EEM 1993



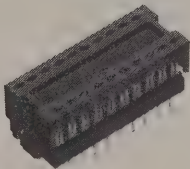
DIP Plugs

Housing Assembly  
with Cover  
(Preassembled)

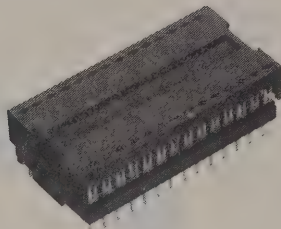
For more information request Catalog 82012



.100 x .100 [2.54 x 2.54] Centers



.100 x .300 [2.54 x 7.62] Centers



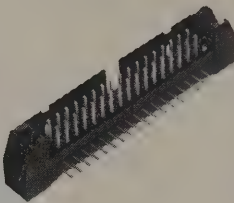
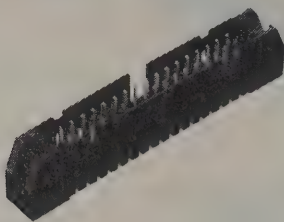
.100 x .600 [2.54 x 15.24] Centers

| No.<br>of<br>Positions | .100 x .100 [2.54 x 2.54] |             | .100 x .300 [2.54 x 7.62] |             | .100 x .600 [2.54 x 15.24] |             |
|------------------------|---------------------------|-------------|---------------------------|-------------|----------------------------|-------------|
|                        | Contact<br>Plating        | Part<br>No. | Contact<br>Plating        | Part<br>No. | Contact<br>Plating         | Part<br>No. |
| 8                      | —                         | —           | A                         | 746612-1    | —                          | —           |
|                        | —                         | —           | B                         | 746611-1    | —                          | —           |
|                        | —                         | —           | C                         | 746613-1    | —                          | —           |
| 10                     | C                         | 746610-1    | —                         | —           | —                          | —           |
| 14                     | —                         | —           | A                         | 746612-2    | —                          | —           |
|                        | —                         | —           | B                         | 746611-2    | —                          | —           |
|                        | C                         | 746610-2    | C                         | 746613-2    | —                          | —           |
| 16                     | —                         | —           | A                         | 746612-3    | —                          | —           |
|                        | —                         | —           | B                         | 746611-3    | —                          | —           |
|                        | C                         | 746610-3    | C                         | 746613-3    | —                          | —           |
| 20                     | —                         | —           | A                         | 746612-5    | —                          | —           |
|                        | —                         | —           | B                         | 746611-5    | —                          | —           |
|                        | C                         | 746610-4    | C                         | 746613-5    | —                          | —           |
| 24                     | —                         | —           | —                         | —           | A                          | 746615-1    |
|                        | —                         | —           | —                         | —           | B                          | 746614-1    |
|                        | C                         | 746610-5    | —                         | —           | C                          | 746616-1    |
| 26                     | C                         | 746610-6    | —                         | —           | —                          | —           |
| 28                     | —                         | —           | —                         | —           | A                          | 746615-2    |
|                        | —                         | —           | —                         | —           | B                          | 746614-2    |
|                        | —                         | —           | —                         | —           | C                          | 746616-2    |
| 30                     | C                         | 746610-7    | —                         | —           | —                          | —           |
| 34                     | C                         | 746610-8    | —                         | —           | —                          | —           |
| 40                     | —                         | —           | —                         | —           | A                          | 746615-3    |
|                        | —                         | —           | —                         | —           | B                          | 746614-3    |
|                        | C                         | 746610-9    | —                         | —           | C                          | 746616-3    |
| 44                     | C                         | 1-746610-3  | —                         | —           | —                          | —           |
| 50                     | C                         | 1-746610-0  | —                         | —           | —                          | —           |
| 60                     | C                         | 1-746610-1  | —                         | —           | —                          | —           |
| 64                     | C                         | 1-746610-2  | —                         | —           | —                          | —           |

A—.000015 [0.00038] gold on pin end; .000100-.000200 [0.00254-0.00508] bright tin-lead on cable termination end; entire contact underplated with .000050 [0.00127] nickel.  
B—.000030 [0.00076] gold pin end; .000100-.000200 [0.00254-0.00508] bright tin-lead on cable termination end; entire contact underplated with .000050 [0.00127] nickel.  
C—.000100-.000200 [0.00254-0.00508] bright tin-lead over .000050 [0.00127] nickel on entire contact.

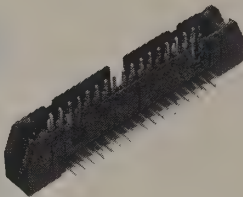
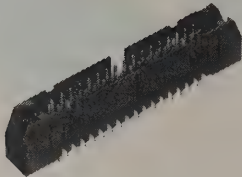


Universal Ejection Style Pin Headers, Military Style, Center and Dual Polarized .100 x .100 [2.54 x 2.54] Centers .240 [6.1] Mating Post Length



Straight-Thru, 4 Sided  
.025 [0.64] Sq. Posts

Right-Angle, 3 Sided  
.025 [0.64] Sq. Posts



Straight-Thru, 4 Sided  
.025 [0.64] Sq. ACTION PIN Posts

Right-Angle, 4 Sided  
.025 [0.64] Sq. Posts

| No. of Positions | Housing Style | Post Type           | Post Length | Plating Type | Part Numbers |
|------------------|---------------|---------------------|-------------|--------------|--------------|
| 10               | 4 Sided       | Straight            | .110        | A            | 102153-1     |
|                  |               |                     | 2.79        | B            | 102154-1     |
|                  |               |                     | .155        | A            | 102155-1     |
|                  |               |                     | 3.94        | B            | 102156-1     |
|                  |               | Right Angle         | .110        | A            | 102159-1     |
|                  |               |                     | 2.79        | B            | 102160-1     |
|                  | 3 Sided       | Right Angle         | .110        | A            | 746143-1     |
|                  |               |                     | 2.79        | B            | 746143-1     |
| 14               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-1     |
|                  |               |                     | 4.42        | B            | 499582-1     |
|                  |               |                     | .110        | A            | 102153-2     |
|                  |               |                     | 2.79        | B            | 102154-2     |
|                  |               | Straight            | .155        | A            | 102155-2     |
|                  |               |                     | 3.94        | B            | 102156-2     |
|                  |               | Right Angle         | .110        | A            | 102159-2     |
|                  |               |                     | 2.79        | B            | 102160-2     |
| 16               | 4 Sided       | Straight            | .110        | A            | 102153-3     |
|                  |               |                     | 2.79        | B            | 102154-3     |
|                  |               |                     | .155        | A            | 102155-3     |
|                  |               |                     | 3.94        | B            | 102156-3     |
|                  |               | Right Angle         | .110        | A            | 102159-3     |
|                  |               |                     | 2.79        | B            | 102160-3     |
|                  | 3 Sided       | Right Angle         | .110        | A            | 746143-3     |
|                  |               |                     | 2.79        | B            | 746143-3     |
| 20               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-2     |
|                  |               |                     | 4.42        | B            | 499582-2     |
|                  |               |                     | .110        | A            | 102153-4     |
|                  |               |                     | 2.79        | B            | 102154-4     |
|                  |               | Straight            | .155        | A            | 102155-4     |
|                  |               |                     | 3.94        | B            | 102156-4     |
|                  |               | Right Angle         | .110        | A            | 102159-4     |
|                  |               |                     | 2.79        | B            | 102160-4     |
| 24               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-3     |
|                  |               |                     | 4.42        | B            | 499582-3     |
|                  |               |                     | .110        | A            | 102153-5     |
|                  |               |                     | 2.79        | B            | 102154-5     |
|                  |               | Straight            | .155        | A            | 102155-5     |
|                  |               |                     | 3.94        | B            | 102156-5     |
|                  |               | Right Angle         | .110        | A            | 102159-5     |
|                  |               |                     | 2.79        | B            | 102160-5     |
| 26               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-4     |
|                  |               |                     | 4.42        | B            | 499582-4     |
|                  |               |                     | .110        | A            | 102153-6     |
|                  |               |                     | 2.79        | B            | 102154-6     |
|                  |               | Straight            | .155        | A            | 102155-6     |
|                  |               |                     | 3.94        | B            | 102156-6     |
|                  |               | Right Angle         | .110        | A            | 102159-6     |
|                  |               |                     | 2.79        | B            | 102160-6     |

| No. of Positions | Housing Style | Post Type           | Post Length | Plating Type | Part Numbers |
|------------------|---------------|---------------------|-------------|--------------|--------------|
| 10               | 4 Sided       | Straight            | .110        | A            | 102153-4     |
|                  |               |                     | 2.79        | B            | 102154-4     |
|                  |               |                     | .155        | A            | 102155-4     |
|                  |               |                     | 3.94        | B            | 102156-4     |
|                  |               | Right Angle         | .110        | A            | 102159-4     |
|                  |               |                     | 2.79        | B            | 102160-4     |
|                  | 3 Sided       | Right Angle         | .110        | A            | 746143-4     |
|                  |               |                     | 2.79        | B            | 746143-4     |
| 14               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-4     |
|                  |               |                     | 4.42        | B            | 499582-4     |
|                  |               |                     | .110        | A            | 102153-5     |
|                  |               |                     | 2.79        | B            | 102154-5     |
|                  |               | Straight            | .155        | A            | 102155-5     |
|                  |               |                     | 3.94        | B            | 102156-5     |
|                  |               | Right Angle         | .110        | A            | 102159-5     |
|                  |               |                     | 2.79        | B            | 102160-5     |
| 16               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-5     |
|                  |               |                     | 4.42        | B            | 499582-5     |
|                  |               |                     | .110        | A            | 102153-6     |
|                  |               |                     | 2.79        | B            | 102154-6     |
|                  |               | Straight            | .155        | A            | 102155-6     |
|                  |               |                     | 3.94        | B            | 102156-6     |
|                  |               | Right Angle         | .110        | A            | 102159-6     |
|                  |               |                     | 2.79        | B            | 102160-6     |
| 20               | 4 Sided       | Straight ACTION PIN | .174        | A            | 499984-6     |
|                  |               |                     | 4.42        | B            | 499582-6     |
|                  |               |                     | .110        | A            | 102153-7     |
|                  |               |                     | 2.79        | B            | 102154-7     |
|                  |               | Straight            | .155        | A            | 102155-7     |
|                  |               |                     | 3.94        | B            | 102156-7     |
|                  |               | Right Angle         | .110        | A            | 102159-7     |
|                  |               |                     | 2.79        | B            | 102160-7     |



AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



For more information request Catalog 82012

Universal Ejection Style Pin Headers, Military Style, Center and Dual Polarized .100 x .100 [2.54 x 2.54] Centers  
(Continued)

| No. of Positions | Housing Style | Post Type   | Post Length | Plating Type | Part Numbers |
|------------------|---------------|-------------|-------------|--------------|--------------|
| 30               | 4 Sided       | Straight    | .110        | A            | 102153-7     |
|                  |               |             | 2.79        | B            | 102154-7     |
|                  |               |             | .155        | A            | 102155-7     |
|                  |               |             | 3.94        | B            | 102156-7     |
|                  |               | Right Angle | .110        | A            | 102159-7     |
|                  |               |             | 2.79        | B            | 102160-7     |
| 34               | 4 Sided       | Straight    | .110        | A            | 102153-8     |
|                  |               |             | 2.79        | B            | 102154-8     |
|                  |               |             | .155        | A            | 102155-8     |
|                  |               |             | 3.94        | B            | 102156-8     |
|                  |               | Right Angle | .110        | A            | 102159-8     |
|                  |               |             | 2.79        | B            | 102160-8     |
| 40               | 4 Sided       | Straight    | .110        | A            | 102153-9     |
|                  |               |             | 2.79        | B            | 102154-9     |
|                  |               |             | .155        | A            | 102155-9     |
|                  |               |             | 3.94        | B            | 102156-9     |
|                  |               | Right Angle | .110        | A            | 102159-9     |
|                  |               |             | 2.79        | B            | 102160-9     |
| 50               | 4 Sided       | Straight    | .110        | A            | 102153-0     |
|                  |               |             | 2.79        | B            | 102154-0     |
|                  |               |             | .155        | A            | 102155-0     |
|                  |               |             | 3.94        | B            | 102156-0     |
|                  |               | Right Angle | .110        | A            | 102159-0     |
|                  |               |             | 2.79        | B            | 102160-0     |
| 60               | 4 Sided       | Straight    | .110        | A            | 102153-1     |
|                  |               |             | 2.79        | B            | 102154-1     |
|                  |               |             | .155        | A            | 102155-1     |
|                  |               |             | 3.94        | B            | 102156-1     |
|                  |               | Right Angle | .110        | A            | 102159-1     |
|                  |               |             | 2.79        | B            | 102160-1     |
| 64               | 4 Sided       | Straight    | .110        | A            | 102153-2     |
|                  |               |             | 2.79        | B            | 102154-2     |
|                  |               |             | .155        | A            | 102155-2     |
|                  |               |             | 3.94        | B            | 102156-2     |
|                  |               | Right Angle | .110        | A            | 102159-2     |
|                  |               |             | 2.79        | B            | 102160-2     |

A—.000015 [0.00038] gold on post/pin mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end, with entire contact underplated .000050 [0.00127] nickel.  
B—.000030 [0.00076] gold on post/pin mating end, .000100-.000200 [0.00254-0.00508] bright tin-lead on termination end, with entire contact underplated .000050 [0.00127] nickel.

Latches for Ejection Style Pin Headers and Pinless Headers

Material: Black thermoplastic, 94V-0 rated.



Latch Part No. 102320-1

For use with Recessed Cover and Strain Relief

Latch Part No. 102186-1

Latch Part No. 102312-1

For use with Recessed Cover

Latch Part No. 102185-1

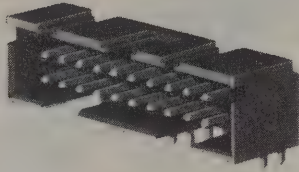
Latch Part No. 746469-1

For use with Shielded Receptacle with .240 [6.1] wide cover



For more information request Catalog 82012

# Low Profile Shrouded Headers (AMP-LATCH) Double Row .100 x .100 [2.54 x 2.54] Centers .150 [3.81] End Dimension



.025<sup>2</sup> [.04<sup>2</sup>]  
Right-Angle Posts

## Features:

- Available in .000015 [0.00038] and .000030 [0.00076] gold duplex plated posts.
- Available in .025 [0.64] square, four-sided, mateable, drawn wire posts.
- Wash out clearance for flux removal.
- Uses AMP-LATCH snap-in military polarization keys.

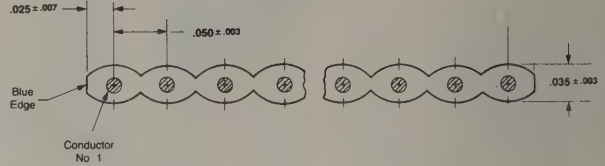
## Material and Finish:

**Housing** – Black thermoplastic, 94V-0 rated.  
**Contacts** – Copper alloy

| Number of Positions | Right-Angle Post Part Numbers |                     |
|---------------------|-------------------------------|---------------------|
|                     | Duplex <sup>1</sup>           | Duplex <sup>2</sup> |
| 10                  | 103310-1                      | 103311-1            |
| 14                  | 103310-2                      | 103311-2            |
| 16                  | 103310-3                      | 103311-3            |
| 20                  | 103310-5                      | 103311-5            |
| 26                  | 103310-6                      | 103311-6            |
| 34                  | 103310-7                      | 103311-7            |
| 40                  | 103310-8                      | 103311-8            |
| 50                  | 1-103310-0                    | 1-103311-0          |
| 60                  | 1-103310-2                    | 1-103311-2          |

1. .000015 [0.00038] gold on mating area: .000100-.000200 [0.00254-0.00508] matte tin-lead on solder area, with entire post underplated with .000050 [0.00127] nickel.  
2. .000030 [0.00076] gold on mating area: .000100-.000200 [0.00254-0.00508] matte tin-lead on solder area, with entire post underplated with .000050 [0.00127] nickel.

# Planar Ribbon Cable .050 [1.27] Centerline



**Conductors:** 28 AWG [0.08-0.09 mm<sup>2</sup>] tinned copper, 7/36 stranded  
**Insulation:** standard gray PVC, flame retardant; with blue edge on Conductor No. 1 side.  
**Temperature Rating:** -20°C to +105°C  
**Voltage Rating:** 300 volts  
**Insulation Resistance:** 10,000 megohms/10 ft. [3.05 m]

| Typical Electrical Values: | GND-SIG-GND  |
|----------------------------|--------------|
| Characteristic Impedance   | 104-106 ohms |
| Capacitance                | 13.5 pf/ft   |
| Time Delay                 | 1.44 ns/ft   |

## Crosstalk (per 9.84 ft. [3 m] section):

|          | 0.5 ns<br>Rise Time | 1 ns<br>Rise Time | 2 ns<br>Rise Time | 5 ns<br>Rise Time |
|----------|---------------------|-------------------|-------------------|-------------------|
| Near End | 2.8-3%              | 2.8-3%            | 2.8-3%            | 2.8-3%            |
| Far End  | 19%                 | 14.5%             | 9%                | 4%                |

| No. of Conductors | Reel Part Numbers      |                        |                         |                        |
|-------------------|------------------------|------------------------|-------------------------|------------------------|
|                   | 100 ft. [30.48 m] Reel | 500 ft. [152.4 m] Reel | 100 ft. [30.48 m]* Reel | 250 ft. [76.2 m]* Reel |
| 9                 | 2-499116-1             | 2-86901-2              | 1-111421-7              | 1-111420-7             |
| 10                | 499116-7               | 86901-7                | 111421-1                | 111420-1               |
| 14                | 499116-1               | 86901-1                | 111421-2                | 111420-2               |
| 15                | 2-499116-0             | 1-86901-9              | 1-111421-6              | 1-111420-6             |
| 16                | 499116-2               | 86901-2                | 111421-3                | 111420-3               |
| 18                | 1-499116-7             | 1-86901-7              | —                       | —                      |
| 20                | 499116-3               | 86901-3                | 111421-4                | 111420-4               |
| 24                | 1-499116-1             | 1-86901-1              | 111421-5                | 111420-5               |
| 25                | 1-499116-8             | 2-86901-0              | 1-111421-5              | 1-111420-5             |
| 26                | 499116-4               | 86901-4                | 111421-6                | 111420-6               |
| 30                | 1-499116-2             | 1-86901-2              | 111421-7                | 111420-7               |
| 34                | 499116-8               | 86901-8                | 111421-8                | 111420-8               |
| 36                | 1-499116-6             | 1-86901-6              | 1-111421-4              | 1-111420-4             |
| 37                | 1-499116-9             | 2-86901-1              | 1-111421-3              | 1-111420-3             |
| 40                | 499116-5               | 86901-5                | 111421-9                | 111420-9               |
| 44                | 1-499116-0             | 1-86901-0              | 1-111421-2              | 1-111420-2             |
| 50                | 499116-6               | 86901-6                | 1-111421-0              | 1-111420-0             |
| 60                | 499116-9               | 86901-9                | 1-111421-1              | 1-111420-1             |
| 64                | 2-499116-3             | 3-86901-9              | —                       | —                      |

\*Permanently marked cable with "CSA" logo.

Recognized File No. E53793,  
UL Style No. 2651  
Flammability Rating – VW-1  
In accordance with IPC-FC-222/19



AMP INCORPORATED, HARRISBURG, PA 17105



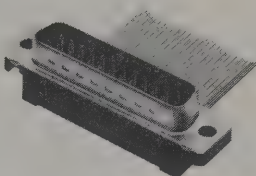
For more information request Catalog 82012

HDF-20 Low Profile Metal Shell and All Plastic Connectors  
(for Round Conductor Flat Ribbon Cable)

**Material and Finish:**  
**Front Shell**—Steel, tin-plated  
**Housing, Cover & Cable Stabilizer**—94V-0 rated thermoplastic, black  
**Threaded Inserts**—Brass, unplated  
**Threaded Self-Locking Insert**—Brass, color coded red  
**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

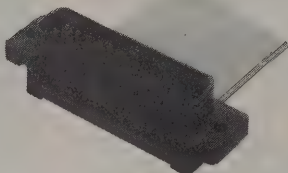
Plug Assemblies

Metal Shell Connectors  
(with Grounding Indents)



Housing and Cover are  
Preassembled; Cable Stabilizer  
is Separate

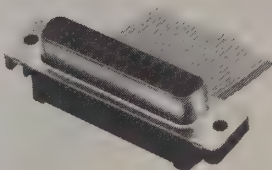
All Plastic Connectors



Housing and Cover are  
Preassembled; Cable Stabilizer  
is Separate

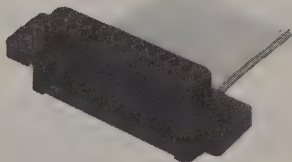
Receptacle Assemblies

Metal Shell Connectors



Housing and Cover are  
Preassembled; Cable Stabilizer  
is Separate

All Plastic Connectors



Housing and Cover are  
Preassembled; Cable Stabilizer  
is Separate

| No. of<br>Contact<br>Positions<br>(Shell Size) | Optional<br>Cable<br>Stabilizer<br>Part No. | Metal Shell Connectors                |                                       |                                               |                                       |                                       |                                               | All Plastic Connectors                |                                       |                                       |                                       |
|------------------------------------------------|---------------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
|                                                |                                             | Plug Assembly Part No.                |                                       |                                               | Receptacle Assembly Part No.          |                                       |                                               | Plug Assembly Part No.                |                                       | Receptacle Assembly Part No.          |                                       |
|                                                |                                             | With<br>Standard<br>Mounting<br>Holes | With<br>Threaded<br>Inserts<br>(Std.) | With<br>Threaded<br>Inserts<br>(Self-Locking) | With<br>Standard<br>Mounting<br>Holes | With<br>Threaded<br>Inserts<br>(Std.) | With<br>Threaded<br>Inserts<br>(Self-Locking) | With<br>Standard<br>Mounting<br>Holes | With<br>Threaded<br>Inserts<br>(Std.) | With<br>Standard<br>Mounting<br>Holes | With<br>Threaded<br>Inserts<br>(Std.) |
| 9<br>(1)                                       | 747275-4                                    | 747306-4                              | 747043-4                              | 746862-4                                      | 747303-4                              | 747052-4                              | 746861-4                                      | 747321-4                              | 747053-4                              | 747318-4                              | 747051-4                              |
| 15<br>(2)                                      | 747275-3                                    | 747306-3                              | 747043-3                              | 746862-3                                      | 747303-3                              | 747052-3                              | 746861-3                                      | 747321-3                              | 747053-3                              | 747318-3                              | 747051-3                              |
| 19*                                            | 747275-5                                    | —                                     | —                                     | —                                             | 747303-5                              | 747052-5                              | —                                             | —                                     | —                                     | —                                     | —                                     |
| 25<br>(3)                                      | 747275-2                                    | 747306-2                              | 747043-2                              | 746862-2                                      | 747303-2                              | 747052-2                              | 746861-2                                      | 747321-2                              | 747053-2                              | 747318-2                              | 747051-2                              |
| 37<br>(4)                                      | 747275-1                                    | 747306-1                              | 747043-1                              | 746862-1                                      | 747303-1                              | 747052-1                              | 746861-1                                      | 747321-1                              | 747053-1                              | 747318-1                              | 747051-1                              |
| 50<br>(5)                                      | 746785-1                                    | —                                     | 746790-1                              | —                                             | —                                     | 746789-1                              | —                                             | —                                     | —                                     | —                                     | —                                     |

\* 19-position receptacle assemblies are special connectors.



For more information request Catalog 82012

### Accessories

#### 4-40 Locking Post Assemblies (for HDF-20 Metal-Shell and All Plastic Connectors)

#### Material and Finish:

All Parts—Cold rolled steel, zinc plated (yellow chromate)

| Locking Post Assembly Kit No. |             |
|-------------------------------|-------------|
| Individual                    | Bulk Packed |
| 206514-1                      | 206514-3    |

#### Latching Blocks with Threaded Holes

Material: Zinc

| Shell Size<br>(No. of<br>Contact Pos.) | Flange<br>Mounting<br>Dimension | Thread<br>Size | Front Panel Latching Block Part No. |              |
|----------------------------------------|---------------------------------|----------------|-------------------------------------|--------------|
|                                        |                                 |                | Individual                          | Bulk Packed* |
| 1 thru 4<br>(9 thru 37)                | .250<br>6.35                    | M3<br>(Metric) | —                                   | 208101-2     |
|                                        |                                 | 4-40           | 208101-8                            | 208101-9     |

\*Bulk packed for multiple part orders.

#### Female Screwlocks (for HDF-20 Metal-Shell and All Plastic Connectors)

#### Material and Finish:

All Parts—Cold rolled steel; zinc plated (clear or yellow chromate)

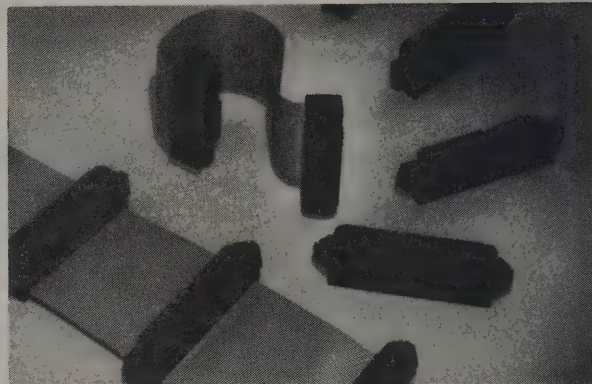
| Thread<br>Length | Thread<br>Size | Finish          | Standard Female<br>Screwlock |              | Long Female<br>Screwlock |
|------------------|----------------|-----------------|------------------------------|--------------|--------------------------|
|                  |                |                 | Individual                   | Bulk Packed* | Individual               |
| .312<br>7.92     | 4-40           | Yellow Chromate | —                            | 205817-2     | —                        |
|                  |                | Clear Chromate  | 205817-3                     | 205817-4     | —                        |
|                  | M3<br>(Metric) | Yellow Chromate | 207872-1                     | —            | —                        |
| .560<br>14.22    | 4-40           | Yellow Chromate | —                            | —            | 207719-1                 |
|                  |                | Clear Chromate  | —                            | —            | 207719-3                 |

\*Each part is individually bulk packed for multiple kit orders.

- Notes:
1. All parts are packed unassembled.
  2. Each kit includes two female screwlocks, lockwasher and hex nuts, and four flat washers.
  3. One or two flat washers may be required for panel thicknesses less than .060 [1.52]
  4. 2-56 is the male thread size. The female thread is 4-40.

### CHAMP Latch Connectors for .050 [1.27] Ribbon Cable

#### Low Profile Connectors—Standard



| Number<br>of<br>Positions | Part Numbers                  |                                |                                      |                                 |                                       |
|---------------------------|-------------------------------|--------------------------------|--------------------------------------|---------------------------------|---------------------------------------|
|                           | Bail Lock<br>Plug<br>Assembly | Screw Lock<br>Plug<br>Assembly | Screw Lock<br>Receptacle<br>Assembly | Panel Mount<br>Plug<br>Assembly | Panel Mount<br>Receptacle<br>Assembly |
| 14                        | —                             | 553596-1                       | 553597-1                             | —                               | —                                     |
| 24                        | —                             | 553598-1                       | 553599-1                             | 554103-1                        | 554088-1                              |
| 36                        | 554084-1                      | 553600-1                       | 553601-1                             | 554104-1                        | 554089-1                              |
| 50                        | 554085-1                      | 553602-1                       | 553603-1                             | 554105-1                        | 554090-1                              |

#### Cable-to-Panel Hardware Kits



For Front Panel Mount  
.062-.125 [1.57-3.18]  
Part No. 553636-2

For Rear Panel Mount  
.062-.093 [1.57-2.36]  
Part No. 553636-3

Metric Screw Lock Hardware Kit for 24-Position IEEE-488

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C•1180

For manufacturers' sales offices, see yellow pages

Specifications subject to change.

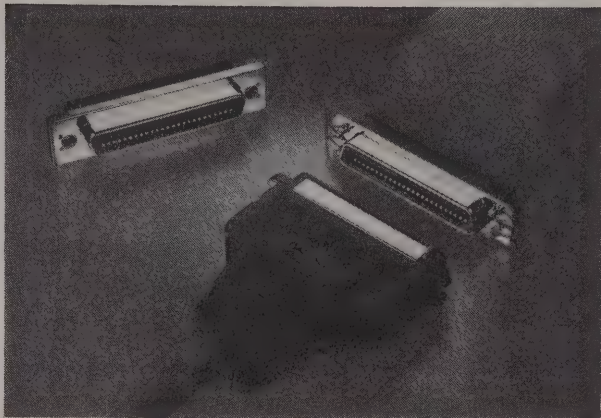
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

EEM 1993



Shielded CHAMP Latch  
Panel Mount Connectors

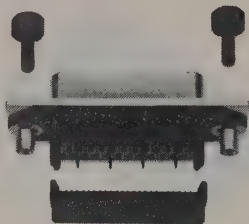
**Material:**  
**Housing and Strain Relief Clip**—Thermoplastic (black)  
**Terminals**—Gold over nickel plated high strength copper alloy on mating face and gold flash over nickel plate on terminating side  
**EMI Shield**—Nickel plated die casting



| Number of Positions | Preassembled              |                           |
|---------------------|---------------------------|---------------------------|
|                     | Bail Lock                 | Screw Lock                |
|                     | Part Numbers<br>4-40 Hole | Part Numbers<br>6-32 Hole |
| 24                  | —                         | 554434-1 <sup>2</sup>     |
| 36                  | 554346-2                  | —                         |
|                     | 555983-1 <sup>1</sup>     | —                         |
| 50                  | 554347-2 <sup>2</sup>     | —                         |
|                     | 554902-1 <sup>1,2</sup>   | —                         |

<sup>1</sup>Does not have boss feature.  
<sup>2</sup>SCSI applicable.  
<sup>3</sup>Can be used with Interface Bus Applications per IEEE-488.

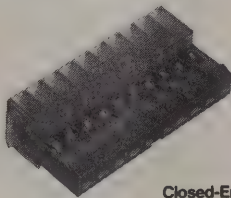
Preassembled Shield



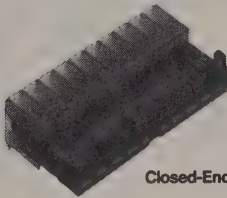
Part No. 554808-1  
(Metric Screw Lock Hardware Kit for 24-Position IEEE-488, Preassembled, Part No. 554808-1 Rear Panel Mount Only)

MTA-100 Receptacles  
.100 Centers

**Material:**  
**Housing**—Thermoplastic 94V-2 rated  
**Contacts**—Tin plated phosphor bronze



Closed-End without Polarizing Tabs



Closed-End with Polarizing Tabs

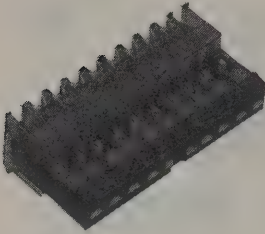
| Circuits | Without Polarizing Tabs |            |            |            | With Polarizing Tabs |            |            |
|----------|-------------------------|------------|------------|------------|----------------------|------------|------------|
|          | 28 AWG                  | 26 AWG     | 24 AWG     | 22 AWG     | 26 AWG               | 24 AWG     | 22 AWG     |
| 2        | 640443-2                | 640442-2   | 640441-2   | 640440-2   | 643815-2             | 643814-2   | 643813-2   |
| 3        | 640443-3                | 640442-3   | 640441-3   | 640440-3   | 643815-3             | 643814-3   | 643813-3   |
| 4        | 640443-4                | 640442-4   | 640441-4   | 640440-4   | 643815-4             | 643814-4   | 643813-4   |
| 5        | 640443-5                | 640442-5   | 640441-5   | 640440-5   | 643815-5             | 643814-5   | 643813-5   |
| 6        | 640443-6                | 640442-6   | 640441-6   | 640440-6   | 643815-6             | 643814-6   | 643813-6   |
| 7        | 640443-7                | 640442-7   | 640441-7   | 640440-7   | 643815-7             | 643814-7   | 643813-7   |
| 8        | 640443-8                | 640442-8   | 640441-8   | 640440-8   | 643815-8             | 643814-8   | 643813-8   |
| 9        | 640443-9                | 640442-9   | 640441-9   | 640440-9   | 643815-9             | 643814-9   | 643813-9   |
| 10       | 1-640443-0              | 1-640442-0 | 1-640441-0 | 1-640440-0 | 1-643815-0           | 1-643814-0 | 1-643813-0 |
| 11       | 1-640443-1              | 1-640442-1 | 1-640441-1 | 1-640440-1 | 1-643815-1           | 1-643814-1 | 1-643813-1 |
| 12       | 1-640443-2              | 1-640442-2 | 1-640441-2 | 1-640440-2 | 1-643815-2           | 1-643814-2 | 1-643813-2 |
| 13       | 1-640443-3              | 1-640442-3 | 1-640441-3 | 1-640440-3 | 1-643815-3           | 1-643814-3 | 1-643813-3 |
| 14       | 1-640443-4              | 1-640442-4 | 1-640441-4 | 1-640440-4 | 1-643815-4           | 1-643814-4 | 1-643813-4 |
| 15       | —                       | —          | 1-640441-5 | 1-640440-5 | —                    | —          | —          |
| 16       | —                       | —          | 1-640441-6 | 1-640440-6 | —                    | —          | —          |
| 18       | —                       | —          | 1-640441-8 | 1-640440-8 | —                    | —          | —          |
| 19       | —                       | —          | 1-640441-9 | 1-640440-9 | —                    | —          | —          |
| 20       | —                       | —          | 2-640441-0 | 2-640440-0 | —                    | —          | —          |
| 21       | —                       | —          | —          | 2-640440-1 | —                    | —          | —          |
| 24       | —                       | —          | 2-640441-4 | 2-640440-4 | —                    | —          | —          |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



**Feed-Thru Receptacle Without Polarizing Tabs**

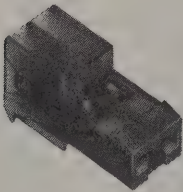


| Circuits | Without Polarizing |            |
|----------|--------------------|------------|
|          | 24 AWG             | 22 AWG     |
| 2        | 640621-2           | 640620-2   |
| 3        | 640621-3           | 640620-3   |
| 4        | 640621-4           | 640620-4   |
| 5        | 640621-5           | 640620-5   |
| 6        | 640621-6           | 640620-6   |
| 7        | 640621-7           | 640620-7   |
| 8        | 640621-8           | 640620-8   |
| 9        | 640621-9           | 640620-9   |
| 10       | 1-640621-0         | 1-640620-0 |
| 11       | 1-640621-1         | 1-640620-1 |
| 12       | 1-640621-2         | 1-640620-2 |
| 13       | 1-640621-3         | 1-650620-3 |
| 14       | 1-640621-4         | 1-640620-4 |

**Special Connectors for .014-.020 Diameter or Square Leads**

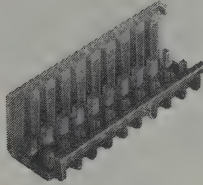
**Material:**

**Housing**—Thermoplastic 94V-2 rated  
**Contacts**—Tin plated phosphor bronze



| Wire Size<br>AWG | Closed-End Receptacles |          |
|------------------|------------------------|----------|
|                  | 2 Pos.                 | 3 Pos.   |
| 26               | 641536-2               | 641536-3 |
| 24               | 641535-2               | 641535-3 |
| 22               | 641534-2               | 641534-3 |

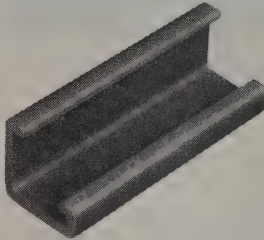
**Strain Relief Covers and Dust Covers**



**Closed End Strain Relief Cover**

**Material:**

Thermoplastic, 94V-2 rated, natural



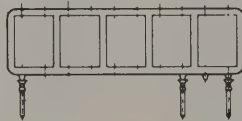
**Closed End Dust Cover**

**Material:**

Thermoplastic, 94V-0 rated, natural

| No. of Circuits | Closed-End Strain Relief Covers | Closed-End Dust Covers |
|-----------------|---------------------------------|------------------------|
| 2               | 643075-2                        | —                      |
| 3               | 643075-3                        | 640550-3               |
| 4               | 643075-4                        | 640550-4               |
| 5               | 643075-5                        | 640550-5               |
| 6               | 643075-6                        | 640550-6               |
| 7               | 643075-7                        | 640550-7               |
| 8               | 643075-8                        | 640550-8               |
| 9               | 643075-9                        | 640550-9               |
| 10              | 1-643075-0                      | 1-640550-0             |
| 12              | 1-643075-2                      | 1-640550-2             |
| 14              | 1-643075-4                      | 1-640550-4             |
| 15              | 1-643075-5                      | 1-640550-5             |
| 20              | —                               | 2-640550-0             |

**Keying Plug with Carrier Strip**



**Material:**

Thermoplastic, 94V-2 rated, natural  
**Part No. 641994-1**

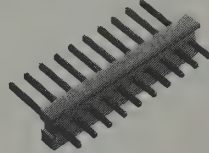
**MTA-100 Post Headers .100 [2.54] Centers, .200 [5.08] Wide**

**Flat Header**

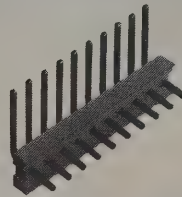
**Material:**

**Housing**—Polyester 94V-0 rated, natural  
**Posts**—Tin plated copper alloy

**Straight Post**  
 (.025 [0.64] Square)



**Right Angle Post**  
 (.025 [0.64] Square)



| No. of Pos. | Straight Post | Right Angle Post |
|-------------|---------------|------------------|
| 2           | 640452-2      | 640453-2         |
| 3           | 640452-3      | 640453-3         |
| 4           | 640452-4      | 640453-4         |
| 5           | 640452-5      | 640453-5         |
| 6           | 640452-6      | 640453-6         |
| 7           | 640452-7      | 640453-7         |
| 8           | 640452-8      | 640453-8         |
| 9           | 640452-9      | 640453-9         |
| 10          | 1-640452-0    | 1-640453-0       |
| 11          | 1-640452-1    | 1-640453-1       |
| 12          | 1-640452-2    | 1-640453-2       |
| 13          | 1-640452-3    | 1-640453-3       |
| 14          | 1-640452-4    | 1-640453-4       |

**.095 [2.41] Wide**

| No. of Pos. | Straight Post | Right Angle Post |
|-------------|---------------|------------------|
| 2           | 644456-2      | 644457-2         |
| 3           | 644456-3      | 644457-3         |
| 4           | 644456-4      | 644457-4         |
| 5           | 644456-5      | 644457-5         |
| 6           | 644456-6      | 644457-6         |
| 7           | 644456-7      | 644457-7         |
| 8           | 644456-8      | 644457-8         |
| 9           | 644456-9      | 644457-9         |
| 10          | 1-644456-0    | 1-644457-0       |
| 11          | 1-644456-1    | 1-644457-1       |
| 12          | 1-644456-2    | 1-644457-2       |
| 13          | 1-644456-3    | 1-644457-3       |
| 14          | 1-644456-4    | 1-644457-4       |

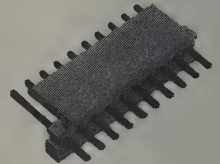
**Note:** Other configurations and gold plating available, contact AMP Incorporated.

**MTA-100 Post Headers .100 [2.54] Centers Polarized Header with Polarized Notches**

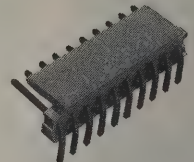
**Material:**

**Housing**—Polyester 94V-0 rated, natural  
**Post**—Tin plated copper alloy

**Straight Post**  
 (.025 [0.64] Square)



**Right Angle Post**  
 (.025 [0.64] Square)



| No. of Pos. | Straight Post | Right Angle Post |
|-------------|---------------|------------------|
| 2           | 640454-2      | 640455-2         |
| 3           | 640454-3      | 640455-3         |
| 4           | 640454-4      | 640455-4         |
| 5           | 640454-5      | 640455-5         |
| 6           | 640454-6      | 640455-6         |
| 7           | 640454-7      | 640455-7         |
| 8           | 640454-8      | 640455-8         |
| 10          | 1-640454-0    | 1-640455-0       |
| 11          | 1-640454-1    | 1-640455-1       |
| 12          | 1-640454-2    | 1-640455-2       |
| 14          | 1-640454-4    | 1-640455-4       |
| 15          | 1-640454-5    | 1-640455-5       |
| 20          | 2-640454-0    | —                |



## MTA-156 Receptacles .156 Centers

For more information request Catalog 82056

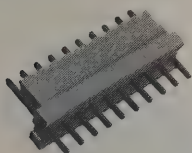
### MTA-100 Post Header .100 [2.54] Centers Friction Lock Header with Polarizing Notches

#### Material:

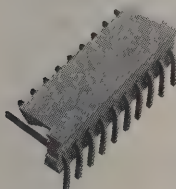
**Housing**—Polyester 94V-0 rated,  
natural

**Posts**—Tin plated copper alloy

#### Straight Post (.025 [0.64] Square)



#### Right Angle Posts (.025 [0.64] Square)



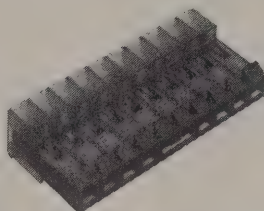
| No. of Pos. | Straight Post | Right Angle Post |
|-------------|---------------|------------------|
| 2           | 640456-2      | 640457-2         |
| 3           | 640456-3      | 640457-3         |
| 4           | 640456-4      | 640457-4         |
| 5           | 640456-5      | 640457-5         |
| 6           | 640456-6      | 640457-6         |
| 7           | 640456-7      | 640457-7         |
| 8           | 640456-8      | 640457-8         |
| 9           | 640456-9      | 640457-9         |
| 10          | 1-640456-0    | 1-640457-0       |
| 11          | 1-640456-1    | 1-640457-1       |
| 12          | 1-640456-2    | 1-640457-2       |
| 13          | 1-640456-3    | 1-640457-3       |
| 14          | 1-640456-4    | 1-640457-4       |
| 15          | 1-640456-5    | 1-640457-5       |
| 16          | 1-640456-6    | 1-640457-6       |
| 18          | 1-640456-8    | 1-640457-8       |
| 20          | 2-640456-0    | —                |
| 22          | 2-640456-2    | —                |
| 24          | 2-640456-4    | 2-640457-4       |

### Closed End With Lock, Without Polarizing Tab

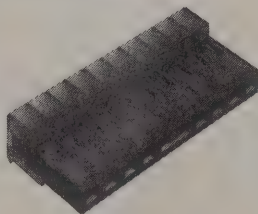
#### Material:

**Housing**—Thermoplastic 94V-2 rated

**Contacts**—Tin plated phosphor  
bronze



### Closed End Without Lock, Without Polarizing Tabs



### Feed-Thru With Lock, Without Polarizing Tabs

| No. of Circuits | 18 AWG   |
|-----------------|----------|
| 3               | 640599-3 |
| 5               | 640599-5 |
| 6               | 640599-6 |
| 9               | 640599-9 |

| No. of Circuits | Without Polarizing Tabs |                       |            |
|-----------------|-------------------------|-----------------------|------------|
|                 | 24 AWG                  | 22 AWG                | 18 AWG     |
| 2               | 640429-2                | 640428-2              | 640426-2   |
| 3               | 640429-3                | 640428-3              | 640426-3   |
| 4               | 640429-4                | 640428-4              | 640426-4   |
| 5               | 640429-5                | 640428-5<br>643193-5* | 640426-5   |
| 6               | 640429-6                | 640428-6              | 640426-6   |
| 7               | 640429-7                | 640428-7              | 640426-7   |
| 8               | 640429-8                | 640428-8              | 640426-8   |
| 9               | 640429-9                | 640428-9              | 640426-9   |
| 10              | 1-640429-0              | 1-640428-0            | 1-640426-0 |
| 11              | 1-640429-1              | 1-640428-1            | 1-640426-1 |
| 12              | 1-640429-2              | 1-640428-2            | 1-640426-2 |
| 13              | —                       | —                     | 1-640426-3 |
| 14              | —                       | —                     | 1-640426-4 |
| 15              | —                       | —                     | 1-640426-5 |

\* High Force Connector

| No. of Circuits | Without Lock and Polarizing Tabs |            |
|-----------------|----------------------------------|------------|
|                 | 22 AWG                           | 18 AWG     |
| 3               | 640433-3                         | 640431-3   |
| 4               | 640433-4                         | 640431-4   |
| 5               | 640433-5                         | 640431-5   |
| 6               | 640433-6                         | 640431-6   |
| 7               | 640433-7                         | 640431-7   |
| 8               | 640433-8                         | 640431-8   |
| 9               | 640433-9                         | 640431-9   |
| 10              | 1-640433-0                       | 1-640431-0 |
| 11              | 1-640433-1                       | 1-640431-1 |
| 12              | 1-640433-2                       | 1-640431-2 |
| 13              | 1-640433-3                       | 1-640431-3 |

### Feed-Thru Without Lock, Without Polarizing Tabs

| No. of Circuits | 22 AWG   | 18 AWG   |
|-----------------|----------|----------|
| 6               | 640606-6 | 640604-6 |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

For manufacturers' sales offices, see yellow pages

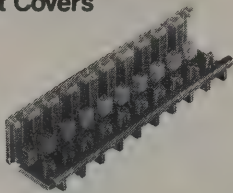
C•1183



Strain Relief Covers and Dust Covers

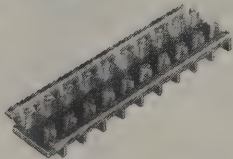
Closed-End Strain Relief

**Material:**  
Thermoplastic, 94V-2 rated, natural



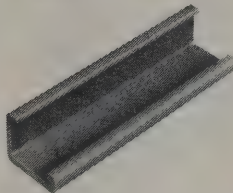
Feed-Thru Strain Relief Covers

**Material:**  
Thermoplastic, 94V-2 rated, natural



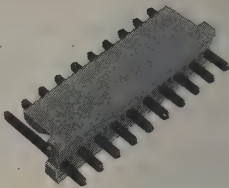
Closed-End Dust Covers

**Material:**  
Thermoplastic, 94V-0 rated, natural



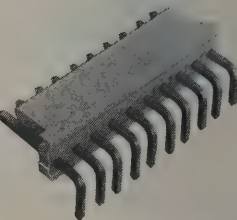
MTA-156 Post Header  
.156 [3.96] Centers  
Friction Lock Header with Polarizing Notches

**Material:**  
**Housing**—Polyester 94V-0 rated, natural  
**Posts**—Tin plated copper alloy



Straight Post  
(.045 [1.14] Square and Round)

Right Angle Post  
(.045 [1.14] Square)



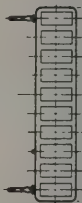
| No. of<br>Circuits | Closed-End<br>Strain Relief Covers | Feed-Thru<br>Strain Relief Covers | Closed End<br>Dust Covers |
|--------------------|------------------------------------|-----------------------------------|---------------------------|
|                    | .095 [2.41]<br>Max. O.D.           | .095 [2.41]<br>Max. O.D.          |                           |
| 2                  | 643067-2                           | 643071-2                          | —                         |
| 3                  | 643067-3                           | 643071-3                          | 640551-3                  |
| 4                  | 643067-4                           | 643071-4                          | 640551-4                  |
| 5                  | 643067-5                           | 643071-5                          | 640551-5                  |
| 6                  | 643067-6                           | 643071-6                          | 640551-6                  |
| 7                  | 643067-7                           | 643071-7                          | 640551-7                  |
| 8                  | 643067-8                           | 643071-8                          | —                         |
| 9                  | 643067-9                           | 643071-9                          | 640551-9                  |
| 10                 | 1-643067-0                         | 1-643071-0                        | 1-640551-0                |
| 12                 | 1-643067-2                         | 1-643071-2                        | 1-640551-2                |
| 13                 | 1-643067-3                         | 1-643071-3                        | 1-640551-3                |
| 15                 | 1-643067-5                         | 1-643071-5                        | —                         |
| 16                 | —                                  | —                                 | 1-640551-6                |

| No. of<br>Positions | Straight Posts Friction Lock |             | Right Angle<br>Posts |
|---------------------|------------------------------|-------------|----------------------|
|                     | Square Posts                 | Round Posts |                      |
| 2                   | 640445-2                     | 640388-2    | 640389-2             |
| 3                   | 640445-3                     | 640388-3    | 640389-3             |
| 4                   | 640445-4                     | 640388-4    | 640389-4             |
| 5                   | 640445-5                     | 640388-5    | 640389-5             |
| 6                   | 640445-6                     | 640388-6    | 640389-6             |
| 7                   | 640445-7                     | 640388-7    | 640389-7             |
| 8                   | 640445-8                     | 640388-8    | 640389-8             |
| 9                   | 640445-9                     | 640388-9    | 640389-9             |
| 10                  | 1-640445-0                   | 1-640388-0  | 1-640389-0           |
| 11                  | 1-640445-1                   | 1-640388-1  | 1-640389-1           |
| 12                  | 1-640445-2                   | 1-640388-2  | 1-640389-2           |
| 13                  | 1-640445-3                   | 1-640388-3  | 1-640389-3           |
| 14                  | 1-640445-4                   | 1-640388-4  | 1-640389-4           |
| 15                  | 1-640445-5                   | —           | 1-640389-5           |
| 16                  | 1-640445-6                   | —           | 1-640389-6           |

Loose Piece Keying Plug  
Part No. 640629-1 (flush)  
used with Keyed Headers



Keying Plug on Carrier Strip  
Part No. 641623-1 (flush)  
10 per strip



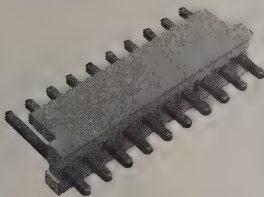


MTA-156 Post Headers .156 [3.96] Centers

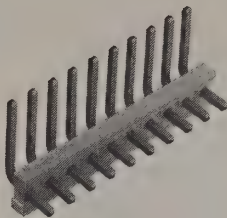
Flat Header and Polarized  
Header with Polarizing Notches



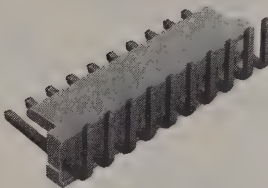
Flat Header  
Straight Posts (.045 [1.14]  
Square and Round)



Polarized Header with  
Polarizing Notches  
Straight Post (.045 [1.14]  
Square and Round)



Flat Header  
Right Angle Posts (.045 [1.14]  
Square)



Polarized Header with  
Polarizing Notches  
Right Angle Post (.045 [1.14]  
Square)

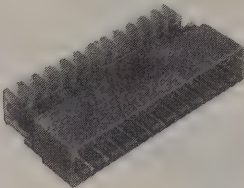
**Material:**  
**Housing**—Polyester 94V-0 rated,  
natural  
**Posts**—Tin plated copper alloy

| No. of<br>Positions | Flat Header    |             | Polarized Header With Polarizing Notches |             |
|---------------------|----------------|-------------|------------------------------------------|-------------|
|                     | Straight Posts | Right Angle | Straight Posts                           | Right Angle |
|                     | Square Posts   | Posts       | Square Posts                             | Posts       |
| 2                   | 640383-2       | 640385-2    | 640444-2                                 | 640387-2    |
| 3                   | 640383-3       | 640385-3    | 640444-3                                 | 640387-3    |
| 4                   | 640383-4       | 640385-4    | 640444-4                                 | 640387-4    |
| 5                   | 640383-5       | 640385-5    | 640444-5                                 | 640387-5    |
| 6                   | 640383-6       | 640385-6    | 640444-6                                 | 640387-6    |
| 7                   | 640383-7       | 640385-7    | 640444-7                                 | 640387-7    |
| 8                   | 640383-8       | 640385-8    | 640444-8                                 | 640387-8    |
| 9                   | 640383-9       | 640385-9    | 640444-9                                 | 640387-9    |
| 10                  | 1-640383-0     | 1-640385-0  | 1-640444-0                               | 1-640387-0  |
| 12                  | 1-640383-2     | 1-640385-2  | 1-640444-2                               | 1-640387-2  |
| 13                  | 1-640383-3     | 1-640385-3  | 1-640444-3                               | 1-640387-3  |
| 14                  | 1-640383-4     | 1-640385-4  | 1-640444-4                               | 1-640387-4  |
| 15                  | 1-640383-5     | —           | —                                        | —           |

**Note:** Other configurations and gold plating available, contact AMP Incorporated.

MTA-156 Cable-to-Cable  
Posted Connectors  
.156 [3.96] Centers

**Material:**  
**Housing**—Thermoplastic, 94V-2 rated  
**Contacts**—Tin plated copper alloy



| No. of<br>Circuits | 22 AWG   |
|--------------------|----------|
| 2                  | 641437-2 |
| 3                  | 641437-3 |
| 4                  | 641437-4 |
| 6                  | 641437-6 |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



# SL .156

## Wire-to-Board Receptacle

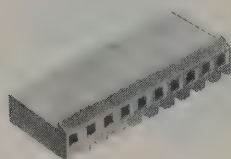
### Housing Assemblies

#### .156 [3.96] Centers

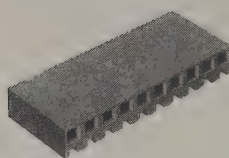
Housing with and without  
Locking Ramp

#### Material:

Thermoplastic, 94V-0 rated



With Locking Ramp



Without Locking Ramp

#### Application Note:

Contact No. 640252 has a higher mating and unmating force than contact No. 350980 and is recommended to be used only in housing with 1 through 12 positions. Contact No. 350980 can be used in any size housing but

is recommended to be used in housings with 13 through 24 positions. Contact No. 770476 is recommended for use in any size housing. Its mating force is similar to No. 350980 while unmating force is similar to No. 640252.

#### Contacts

Wire Range: 24-18 AWG  
Insulation Diameter: .100 [2.54]



**A**  
High Force  
(6.5 Amp Max. Current Rating)



**B**  
Low Force  
(6.5 Amp Max. Current Rating)



**C**  
Hooded (Dual Wipe)  
(10 Amp Max. Current Rating)

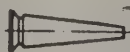
| No. of Positions | Part Numbers      |                      |
|------------------|-------------------|----------------------|
|                  | With Locking Ramp | Without Locking Ramp |
| 1                | —                 | 640251-1             |
| 2                | 640250-2          | 640251-2             |
| 3                | 640250-3          | 640251-3             |
| 4                | 640250-4          | 640251-4             |
| 5                | 640250-5          | 640251-5             |
| 6                | 640250-6          | 640251-6             |
| 7                | 640250-7          | 640251-7             |
| 8                | 640250-8          | 640251-8             |
| 9                | 640250-9          | 640251-9             |
| 10               | 1-640250-0        | 1-640251-0           |
| 11               | 1-640250-1        | 1-640251-1           |
| 12               | 1-640250-2        | 1-640251-2           |
| 13               | 1-640250-3        | 1-640251-3           |
| 14               | 1-640250-4        | 1-640251-4           |
| 15               | 1-640250-5        | 1-640251-5           |
| 16               | —                 | 1-640251-6           |
| 17               | 1-640250-7        | 1-640251-7           |
| 19               | —                 | 1-640251-9           |

| Contact Style | Material and Finish                | Part Numbers |             |
|---------------|------------------------------------|--------------|-------------|
|               |                                    | Strip        | Loose Piece |
| A             | brass, bright tin plated           | 640252-1     | 640706-1    |
|               | brass, pre-tin plated              | 640252-2     | 640706-2    |
| B             | brass, bright tin plated           | 350980-1     | 640707-1    |
|               | brass, pre-tin plated              | 350980-2     | —           |
|               | brass, gold plated                 | 350980-3     | 770258-1    |
| C             | phosphor bronze, bright tin plated | 770476-1     | 770522-1    |
|               | phosphor bronze, gold plated       | 770476-2     | 770522-2    |

#### Keying Plugs

##### Material:

UL94V-2 rated, type 6/6 nylon,  
natural color



Keying Plug  
Part No. 640254-1



Keying Pin  
Part No. 640255-1

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C-1186

For manufacturers' sales offices, see yellow pages

Specifications subject to change.

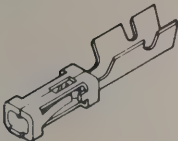
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

EEM 1993



AMPMODU Receptacles for  
.025 [0.64] Square or Round Posts

Mod. IV Receptacle Contacts



Wire Crimp Receptacle  
with Insulation Support, Snap-In

For more information request Catalog 82187

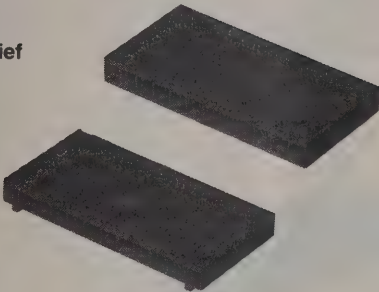
| Wire<br>Size Range<br>AWGmm <sup>2</sup> | Material    | Plating | Part Numbers      |             |                       |             |                |             |
|------------------------------------------|-------------|---------|-------------------|-------------|-----------------------|-------------|----------------|-------------|
|                                          |             |         | Standard Pressure |             | Intermediate Pressure |             | High Pressure* |             |
|                                          |             |         | Strip Form        | Loose Piece | Strip Form            | Loose Piece | Strip Form     | Loose Piece |
| 32-270.30-0.1                            | Cu-Sn-Ph Bz | B       | 102316-6          | —           | —                     | —           | —              | —           |
|                                          | Be Cu       | E       | 102917-1          | 102917-2    | 102918-1              | —           | —              | —           |
|                                          | Cu-Sn-Ph Bz | A       | 87756-6           | 87756-7     | —                     | —           | 87809-2*       | 102128-2*   |
|                                          | Cu-Sn-Ph Bz | B       | 1-87756-2         | 1-87756-6   | —                     | —           | —              | —           |
| 26-220.12-0.4                            | Cu-Sn-Ph Bz | C       | 1-87756-7         | 1-87756-8   | 103171-4              | 103171-5    | —              | —           |
|                                          | Be Cu       | A       | 87666-3           | 87667-3     | —                     | —           | —              | —           |
|                                          | Be Cu       | D       | 87666-5           | 87667-5     | 102548-1              | 102548-3    | —              | —           |
|                                          | Be Cu       | E       | 87666-2           | 87667-2     | —                     | —           | 87809-1*       | 102128-1*   |
|                                          | Cu-Sn-Ph Bz | A       | 87523-5           | 87523-6     | —                     | —           | 87309-8*       | 1-87309-3*  |
|                                          | Cu-Sn-Ph Bz | B       | 1-87523-5         | 1-87523-6   | —                     | —           | —              | —           |
| 24-200.2-0.6                             | Cu-Sn-Ph Bz | C       | 1-87523-8         | 1-87523-9   | 2-87195-0             | 2-87195-1   | —              | —           |
|                                          | Be Cu       | A       | 85969-9           | 86016-3     | 86492-9               | 87046-4     | —              | —           |
|                                          | Be Cu       | D       | 85969-6           | 86016-5     | 86492-2               | 87046-1     | —              | —           |
|                                          | Be Cu       | E       | 85969-8           | 86016-2     | 86492-6               | 87046-3     | 87309-9*       | 1-87309-4*  |
|                                          | Be Cu       | E       | 85969-8           | 86016-2     | 86492-6               | 87046-3     | 87309-9*       | 1-87309-4*  |

\*Material: Phosphor Bronze  
A—Bright tin .000100-.000200 [0.00254-0.00508] over nickel .000030 [0.00076]  
B—Duplex plated .000015 [0.00038] gold in contact area, tin plated in crimp area, with entire contact underplated .000050 [0.00127] nickel.  
C—Duplex plated .000030 [0.00076] gold in contact area, tin plated in crimp area, with entire contact underplated .000050 [0.00127] nickel.  
D—.000015 [0.00038] gold in contact area, with gold flash over .000050 [0.00127] nickel on entire contact.  
E—.000030 [0.00076] gold in contact area, with gold flash over .000050 [0.00127] nickel on entire contact.

.100 [2.54] Centers  
Mod. IV Contact Housings—  
Wire Applied, Single Row

Non-Polarized  
Without Strain Relief

Material:  
Black Thermoplastic,  
flame retardant



Polarized  
(with Detent Latching)

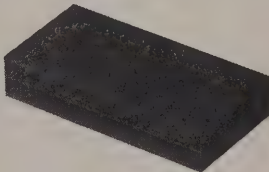
| No. of<br>Positions | Non-Polarized        |                        | Polarized              |
|---------------------|----------------------|------------------------|------------------------|
|                     | Stamped <sup>2</sup> | Unstamped <sup>1</sup> | Unstamped <sup>2</sup> |
| 1                   | 7-87499-1            | —                      | —                      |
| 2                   | 87499-3              | 87499-4                | —                      |
| 3                   | 87499-5              | 87499-6                | 102241-1               |
| 4                   | 87499-7              | 87499-8                | 102241-2               |
| 5                   | 87499-9              | —                      | 102241-3               |
| 6                   | 1-87499-1            | —                      | 102241-4               |
| 7                   | 87499-1              | 87499-2                | 102241-5               |
| 8                   | 1-87499-3            | —                      | 102241-6               |
| 9                   | 1-87499-5            | 1-87499-6              | 102241-7               |
| 10                  | 1-87499-7            | 1-87499-8              | 102241-8               |
| 12                  | 2-87499-1            | 2-87499-2              | 1-102241-0             |
| 14                  | 2-87499-5            | 2-87499-6              | 1-102241-2             |
| 16                  | 2-87499-9            | —                      | 1-102241-4             |
| 20                  | 3-87499-7            | —                      | 1-102241-8             |
| 22                  | —                    | —                      | 2-102241-0             |

<sup>1</sup>Cavity identification, AMP, Part No. and date code stamped on housing where size permits.  
<sup>2</sup>No marking on housing.

.100 [2.54] Centers  
Mod. IV Contact Housings—  
Wire Applied, Double Row

Non-Polarized  
Without Strain Relief

Material:  
Black Thermoplastic, flame retardant



| No. of<br>Pos. | Depth .600 [15.24]       |                        |
|----------------|--------------------------|------------------------|
|                | Without<br>Strain Relief |                        |
|                | Stamped <sup>1</sup>     | Unstamped <sup>1</sup> |
| 2              | —                        | 5-87456-3              |
| 4              | 5-87456-0                | 4-87456-9              |
| 6              | 87456-2                  | 87456-1                |
| 8              | 87456-4                  | 87456-3                |
| 10             | 87456-6                  | 87456-5                |
| 12             | 87456-8                  | 87456-7                |
| 14             | 1-87456-0                | 87456-9                |
| 16             | 1-87456-2                | 1-87456-1              |
| 18             | 1-87456-4                | —                      |
| 20             | 1-87456-6                | 1-87456-5              |
| 24             | 2-87456-0                | —                      |
| 26             | 2-87456-2                | 2-87456-1              |
| 28             | 2-87456-4                | —                      |
| 30             | 2-87456-6                | —                      |
| 34             | 3-87456-0                | 2-87456-9              |
| 40             | 3-87456-6                | 3-87456-5              |
| 50             | 4-87456-0                | 3-87456-9              |

<sup>1</sup>Cavity identification, AMP, Part No. and date code stamped on housing where size permits.

Specifications subject to change.

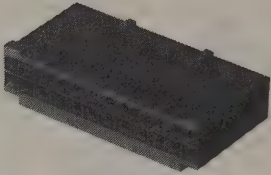
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



**Polarized with  
Detent Latching  
(with and without  
Strain Relief)**

**Material:**

Black Thermoplastic, flame retardant



| No. of<br>Positions | No. of<br>Detents | Part Numbers             |                        |                       |
|---------------------|-------------------|--------------------------|------------------------|-----------------------|
|                     |                   | Without<br>Strain Relief |                        | With<br>Strain Relief |
|                     |                   | Stamped <sup>1</sup>     | Unstamped <sup>2</sup> | Stamped <sup>1</sup>  |
| 6                   | 1                 | 87631-2                  | 87631-1                | —                     |
| 8                   | 1                 | 87631-4                  | 87631-3                | —                     |
| 10                  | 1                 | 87631-6                  | 87631-5                | 87922-1               |
| 12                  | 1                 | 87631-8                  | 87631-7                | 87922-2               |
| 14                  | 1                 | 1-87631-0                | 87631-9                | 87922-3               |
| 16                  | 1                 | 1-87631-2                | 1-87631-1              | 87922-4               |
| 18                  | 1                 | 1-87631-4                | 1-87631-3              | 87922-5               |
| 20                  | 2                 | 1-87631-6                | 1-87631-5              | 87733-1               |
| 22                  | 2                 | —                        | 1-87631-7              | —                     |
| 24                  | 2                 | 2-87631-0                | 1-87631-9              | 87733-3               |
| 26                  | 2                 | 2-87631-2                | 2-87631-1              | 87733-4               |
| 28                  | 2                 | 2-87631-4                | 2-87631-3              | —                     |
| 30                  | 2                 | 2-87631-6                | 2-87631-5              | —                     |
| 32                  | 2                 | —                        | 2-87631-7              | —                     |
| 34                  | 2                 | —                        | 2-87631-9              | 87733-8               |
| 36                  | 2                 | —                        | 3-87631-1              | —                     |
| 40                  | 2                 | 3-87631-6                | 3-87631-5              | 1-87733-1             |
| 50                  | 2                 | 4-87631-2                | 4-87631-1              | 1-87733-4             |

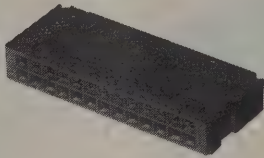
<sup>1</sup>Cavity identification, AMP, Part No. and date code stamped on housing and/or strain relief where size permits.

<sup>2</sup>No marking on housing or strain relief.

**Center Polarized  
(mate with AMP-LATCH  
Universal Ejection Headers—  
.576 [14.63] Eject Latches)**

**Material:**

Black Thermoplastic



| No. of<br>Positions | Part<br>Number |
|---------------------|----------------|
| 10                  | 102387-1       |
| 14                  | 102387-2       |
| 16                  | 102387-3       |
| 20                  | 102387-4       |
| 24                  | 102387-5       |
| 26                  | 102387-6       |
| 34                  | 102387-8       |
| 40                  | 102387-9       |
| 50                  | 1-102387-0     |
| 60                  | 1-102387-1     |

**Keying Plugs**

**Material:**

Natural Color Nylon  
**Part No. 87077-2**  
(for .600 [15.24] Housings)  
(Plug directly into Housing)



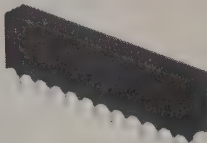


For more information request Catalog 82187

For more information request Catalog 82643

**.100 [2.54] Centers**  
**Mod. IV Receptacle Assemblies—**  
**Board Mounted, Single Row**  
**(mate with .025 [0.64] Sq. or Round Posts)**

**Material:**  
**Housing**—Black polyester, glass-reinforced, flame retardant  
**Contacts**—Phosphor bronze

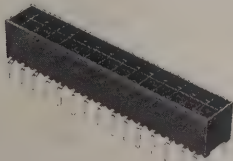


| No. of Pos. | Low Profile                          |                                            |                                               |
|-------------|--------------------------------------|--------------------------------------------|-----------------------------------------------|
|             | Single Solder Lead                   | Dual Solder Lead                           |                                               |
|             | Top Entry Duplex Plated <sup>1</sup> | Top Entry Gold/Nickel Plating <sup>1</sup> | Bottom Entry Gold/Nickel Plating <sup>2</sup> |
| 4           | 535541-2                             | 3-87334-6                                  | 3-87879-6                                     |
| 6           | 535541-4                             | 87334-1                                    | 87879-3                                       |
| 7           | 535541-5                             | 1-87334-9                                  | 87879-4                                       |
| 8           | 535541-6                             | 87334-2                                    | 87879-1                                       |
| 9           | 535541-7                             | 2-87334-0                                  | 87879-5                                       |
| 10          | 535541-8                             | 87334-3                                    | 87879-2                                       |
| 11          | 535541-9                             | 2-87334-1                                  | 87879-6                                       |
| 12          | 1-535541-0                           | 87334-4                                    | 87879-7                                       |
| 13          | 1-535541-1                           | 2-87334-2                                  | 87879-8                                       |
| 14          | 1-535541-2                           | 87334-5                                    | 87879-9                                       |
| 15          | 1-535541-3                           | 2-87334-3                                  | 1-87879-0                                     |
| 16          | 1-535541-4                           | 87334-6                                    | 1-87879-1                                     |
| 17          | 1-535541-5                           | 2-87334-4                                  | 1-87879-2                                     |
| 18          | 1-535541-6                           | 87334-7                                    | 1-87879-3                                     |
| 20          | 1-535541-8                           | 87334-8                                    | 1-87879-5                                     |
| 22          | 2-535541-0                           | 87334-9                                    | 1-87879-7                                     |
| 24          | 2-535541-2                           | 1-87334-0                                  | 1-87879-9                                     |
| 30          | 2-535541-8                           | 1-87334-3                                  | 2-87879-5                                     |

<sup>1</sup>.000030 [0.00076] gold on contact area, with gold flash over .000030 [0.00076] nickel  
<sup>2</sup>.000030 [0.00076] gold on contact area, with gold flash over .000050 [0.00127] nickel on entire contact.  
<sup>3</sup>.000030 [0.00076] gold on contact area, .000050-.000100 [0.00127-.0.00254] bright tin-lead on solder area with entire receptacle underplated .000050 [0.00127] nickel.

**.100 x .100 [2.54 x 2.54] Centers**  
**Mod. IV Receptacle Assemblies -**  
**Board Mounted, Double Row,**  
**.300 [7.62] Wide Tine Spacing**  
**(mate with .025 [0.64] Sq. or Round Posts)**

**Material and Finish:**  
**Housing** - Black thermoplastic, flame retardant  
**Contacts** - Phosphor bronze, duplex plated  
.000030 [0.00076] gold on contact area,  
.000100-.000200 [0.00254 - 0.00508] bright tin-lead on solder area, with entire receptacle underplated .000050 [0.00127] nickel

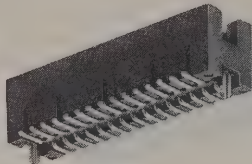


| No. of Pos | Receptacle Part Numbers Bottom Entry |
|------------|--------------------------------------|
| 2          | 1-534267-3                           |
| 6          | 1-534267-4                           |
| 8          | 534267-5                             |
| 14         | 534267-1                             |
| 18         | 1-534267-0                           |
| 20         | 534267-2                             |
| 24         | 534267-9                             |
| 26         | 534267-6                             |
| 30         | 1-534267-2                           |
| 36         | 1-534267-5                           |
| 40         | 534267-7                             |
| 48         | 1-534267-1                           |
| 60         | 534267-8                             |
| 76         | 1-534267-6                           |
| 80         | 534267-4                             |

**AMPMODU 50/50 Grid Headers,**  
**Vertical, Double Row with Standard Hold-Downs**

**Material and Finish:**

**Housing**—Black glass-filled thermoplastic, 94V-0 rated.  
**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin-lead on solder tail, with entire contact underplated .000050 [0.00127] nickel.  
**Hold-Down**—Copper alloy, plated .000150 [0.00381] tin-lead over .000050 [0.00127] nickel.



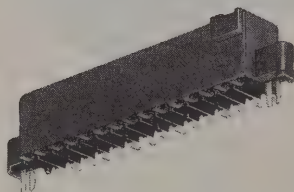
| No. of Pos. | Header Part Numbers*     |                          |                          | Loading Tool Numbers |            |
|-------------|--------------------------|--------------------------|--------------------------|----------------------|------------|
|             | .250 [6.35] Mated Height | .320 [8.13] Mated Height | .390 [9.91] Mated Height | Non-Polarized        | Polarized  |
| 10          | 104655-1                 | 104656-1                 | 104693-1                 | 104725-1             | 104726-1   |
| 20          | 104655-3                 | 104656-2                 | 104693-2                 | 104725-2             | 104726-2   |
| 30          | 104655-4                 | 104656-3                 | 104693-3                 | 104725-3             | 104726-3   |
| 40          | 104655-5                 | 104656-4                 | 104693-4                 | 104725-4             | 104726-4   |
| 50          | 104655-6                 | 104656-5                 | 104693-5                 | 104725-5             | 104726-5   |
| 60          | 104655-7                 | 104656-6                 | 104693-6                 | 104725-6             | 104726-6   |
| 70          | 104655-8                 | 104656-7                 | 104693-7                 | 104725-7             | 104726-7   |
| 80          | 104655-9                 | 104656-8                 | 104693-8                 | 104725-8             | 104726-8   |
| 90          | 1-104655-0               | 104656-9                 | 104693-9                 | 104725-9             | 104726-9   |
| 100         | 1-104655-1               | 1-104656-0               | 1-104693-0               | 1-104725-0           | 1-104726-0 |

\*UL Recognized, CSA Certified

**AMPMODU 50/50 Grid Receptacles,**  
**Vertical, Double Row with Standard Hold-Downs**  
**(for use with all headers)**

**Material and Finish:**

**Housing**—Black glass-filled thermoplastic, 94V-0 rated.  
**Contacts**—Beryllium copper, duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin-lead on solder tail, with entire contact underplated .000050 [0.00127] nickel.  
**Hold-Down**—Copper alloy, plated .000150 [0.00381] tin-lead over .000050 [0.00127] nickel.



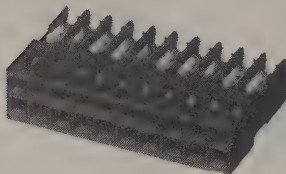
| No. of Pos. | Receptacle Part Numbers |                        | Loading Tool Numbers |            |
|-------------|-------------------------|------------------------|----------------------|------------|
|             | with Polarizing Tab*    | without Polarizing Tab | Non-Polarized        | Polarized  |
| 10          | 104652-1                | —                      | 104723-1             | 104724-1   |
| 20          | 104652-2                | —                      | 104723-2             | 104724-2   |
| 30          | 104652-3                | —                      | 104723-3             | 104724-3   |
| 40          | 104652-4                | 104803-4               | 104723-4             | 104724-4   |
| 50          | 104652-5                | 104803-5               | 104723-5             | 104724-5   |
| 60          | 104652-6                | 104803-1               | 104723-6             | 104724-6   |
| 70          | 104652-7                | —                      | 104723-7             | 104724-7   |
| 80          | 104652-8                | 104803-2               | 104723-8             | 104724-8   |
| 90          | 104652-9                | —                      | 104723-9             | 104724-9   |
| 100         | 1-104652-0              | 104803-3               | 1-104723-0           | 1-104724-0 |

\*UL Recognized, CSA Certified



## Double Row MT Receptacle Connectors

### Housings Preloaded with Standard Pressure Contacts



#### Material and Finish:

**Housing and Cover**—Black thermo-plastic, flame retardant

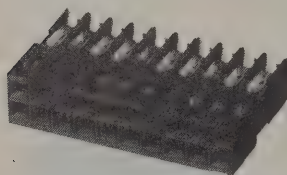
**Contacts**—Copper alloy, duplex plated with .000030 [0.00076] gold on mating area, .000050 [0.00127] min. tin-lead on termination area, all over .000050 [0.00127] nickel

**Insulation Wall Thickness:** .015 [0.038] max.

**Insulation Diameter:** .050 [1.27] max.

**Mating Post Length:** .222-.273 [5.64-6.94] max.

### Housings Preloaded with High Pressure Contacts



#### Material and Finish:

**Housing and Cover**—Black thermo-plastic, flame retardant

**Contacts**—Copper alloy, duplex plated with .000030 [0.00076] gold on mating area, .000050 [0.00127] min. tin-lead on termination area, all over .000050 [0.00127] nickel

**Insulation Wall Thickness:** .015 [0.038] max.

**Insulation Diameter:** .050 [1.27] max.

**Mating Post Length:** .200-.273 [5.08-6.94] max.

| Number of Positions | Part Numbers (Stamped <sup>1</sup> )      |                                          |                                         |
|---------------------|-------------------------------------------|------------------------------------------|-----------------------------------------|
|                     | Wire Size                                 |                                          |                                         |
|                     | 30-26 AWG<br>[0.05-0.15 mm <sup>2</sup> ] | 26-22 AWG<br>[0.12-0.3 mm <sup>2</sup> ] | 22-20 AWG<br>[0.3-0.6 mm <sup>2</sup> ] |
| 6                   | 102393-1                                  | 102398-1                                 | 102448-1                                |
| 8                   | 102393-2                                  | 102398-2                                 | —                                       |
| 10                  | 102393-3                                  | 102398-3                                 | 102448-3                                |
| 12                  | —                                         | 102398-4                                 | —                                       |
| 14                  | 102393-5                                  | 102398-5                                 | 102448-5                                |
| 16                  | 102393-6                                  | 102398-6                                 | 102448-6                                |
| 18                  | —                                         | 102398-7                                 | 102448-7                                |
| 20                  | 102393-8                                  | 102398-8                                 | 102448-8                                |
| 22                  | 102393-9                                  | 102398-9                                 | —                                       |
| 24                  | 1-102393-0                                | 1-102398-0                               | 1-102448-0                              |
| 26                  | 1-102393-1                                | 1-102398-1                               | 1-102448-1                              |
| 28                  | 1-102393-2                                | 1-102398-2                               | 1-102448-2                              |
| 30                  | 1-102393-3                                | 1-102398-3                               | —                                       |
| 32                  | 1-102393-4                                | 1-102398-4                               | —                                       |
| 34                  | 1-102393-5                                | 1-102398-5                               | 1-102448-5                              |
| 40                  | 1-102393-8                                | 1-102398-8                               | 1-102448-8                              |
| 50                  | 2-102393-3                                | 2-102398-3                               | 2-102448-3                              |
| 60                  | 2-102393-8                                | 2-102398-8                               | —                                       |

<sup>1</sup>Cavity identification—position no. 1 molded in. Date code stamped on housing.

| Number of Positions | Part Numbers (Stamped <sup>1</sup> )     |                                         |
|---------------------|------------------------------------------|-----------------------------------------|
|                     | Wire Size                                |                                         |
|                     | 26-22 AWG<br>[0.12-0.3 mm <sup>2</sup> ] | 22-20 AWG<br>[0.3-0.6 mm <sup>2</sup> ] |
| 6                   | 102694-1                                 | 102695-1                                |
| 8                   | 102694-2                                 | 102695-2                                |
| 10                  | 102694-3                                 | —                                       |
| 12                  | 102694-4                                 | —                                       |
| 14                  | 102694-5                                 | —                                       |
| 16                  | 102694-6                                 | —                                       |
| 20                  | 102694-8                                 | —                                       |

<sup>1</sup>Cavity identification—position no. 1 molded in. Date code stamped on housing.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



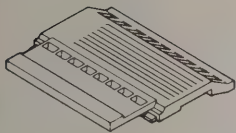
Double Row MT  
Receptacle Connectors  
(Continued)

For more information request Catalog 82104

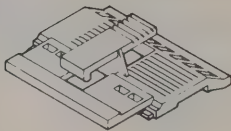
Covers for Double Row Connectors

**Material:**  
Black thermoplastic, flame retardant

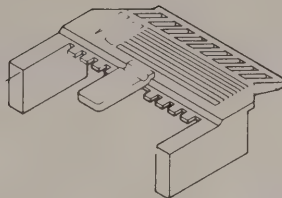
Front Covers



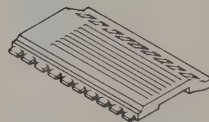
A-Low Profile Polarizing Cover



B-Low Profile Latching Cover

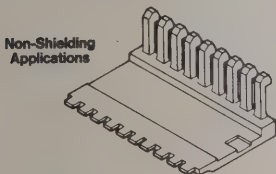


C-Low Profile Ejection Cover



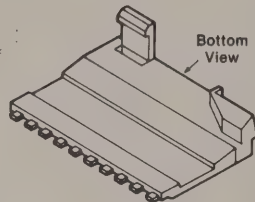
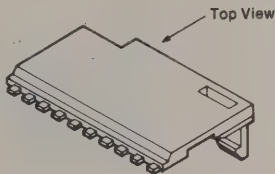
D-Low Profile Non-Polarizing Cover

E-Low Profile Back Cover



F-Standard Profile Hermaphroditic Cover

(2 Covers Required  
Per Connector)



| Number<br>of<br>Positions | Low Profile Covers |               |                |                     |                 | Standard Profile Covers |
|---------------------------|--------------------|---------------|----------------|---------------------|-----------------|-------------------------|
|                           | A<br>Polarizing    | B<br>Latching | C*<br>Ejection | D<br>Non-Polarizing | E<br>Back Cover | F<br>Hermaphroditic     |
| 6                         | 102540-1           | —             | —              | 102541-1            | 102536-1        | 102396-1                |
| 8                         | 102540-2           | —             | —              | 102541-2            | 102536-2        | 102396-2                |
| 10                        | 102540-3           | —             | 102537-3       | 102541-3            | 102536-3        | 102396-3                |
| 12                        | 102540-4           | 102681-1      | —              | 102541-4            | 102536-4        | 102396-4                |
| 14                        | —                  | 102681-2      | —              | 102541-5            | 102536-5        | 102396-5                |
| 16                        | —                  | 102681-3      | —              | 102541-6            | 102536-6        | 102396-6                |
| 18                        | —                  | 102681-4      | —              | 102541-7            | —               | —                       |
| 20                        | —                  | 102681-5      | 102537-8       | 102541-8            | 102536-8        | 102396-8                |
| 26                        | —                  | 102681-8      | 1-102537-1     | 1-102541-1          | 1-102536-1      | 1-102396-1              |
| 30                        | —                  | —             | 1-102537-3     | —                   | 1-102536-3      | —                       |
| 34                        | —                  | —             | 1-102537-5     | 1-102541-5          | 1-102536-5      | 1-102396-5              |
| 40                        | —                  | —             | 1-102537-8     | 1-102541-8          | 1-102536-8      | 1-102396-8              |
| 50                        | —                  | —             | 2-102537-3     | 2-102541-3          | 2-102536-3      | 2-102396-3              |
| 60                        | —                  | —             | —              | 2-102541-8          | 2-102536-8      | —                       |

**Note:** Some cover sizes exist (where a housing assembly size may not) for end-to-end stacking purposes only.  
\*Mates with AMP-LATCH Universal Ejection Headers with Latching Ears **Part No. 102185-2** (with push tabs) or **Part No. 102312-2** (without push tabs).

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



## AMPMODU .025 [0.64] Breakaway Headers

### Features

- Headers may be purchased in full sticks or in desired sizes from your local distributor.
- Design and inventory versatility—headers can be broken into any size needed.
- Substantial time labor savings—install all posts at one time.
- Popular sizes: 1 thru 40 positions (single row); 2 thru 80 positions (double row).
- Copper alloy, drawn wire posts.
- Flame-retardant, black thermoplastic housings; 94V-0 rated.
- Headers are available with board retention posts.



### Typical Board Retention Post Detail (Minimum 2 Posts per Header)

For available header sizes and part numbers, call the AMP Product Information Center: 1-800-522-6752.

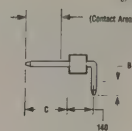
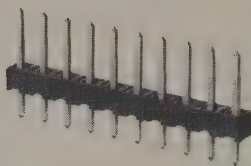
### Cutting Tools

#### Pistol Grip Cutter

- For low volume applications
- AMP Part No. 314818-1

#### Products/90 Cutter

- For mid-range volume applications
- Manually operated gang of blades
- Model No. GFHC-200
- For ordering information, call: 213-515-3425 (Products/90, CA)



For more information request Catalog 82187

### Single Row (.100 [2.54] Centerline)

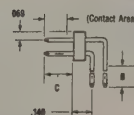
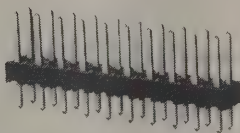
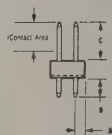
| Style       | Post Tail<br>B/C       | Plating  | Base Part Numbers |
|-------------|------------------------|----------|-------------------|
|             |                        |          | Square Post       |
| Straight    | .125/.318<br>3.18/8.08 | Tin†     | 103321            |
|             |                        | Duplex#  | 102972            |
|             |                        | Duplex\$ | 102976            |
|             | .120/.230<br>3.05/5.84 | Tin†     | 103327            |
|             |                        | Duplex#  | 103185            |
|             |                        | Duplex\$ | 103239            |
| Right Angle | .110/.318<br>2.79/8.08 | Tin†     | 103323            |
|             |                        | Duplex#  | 102974            |
|             |                        | Duplex\$ | 102978            |
|             | .120/.230<br>3.05/5.84 | Tin†     | 103329            |
|             |                        | Duplex#  | 103325            |
|             |                        | Duplex\$ | 103148            |

**Ordering Information:** Number of positions for single-row header equals prefix-suffix combination (example—8-position is XXXXXX-8; 15-position is 1-XXXXXX-5)

†.000100-.000200 [0.00254-0.00508] bright tin over .000050 [0.00127] nickel.

#Duplex plated .000015 [0.00038] gold on mating area; matte tin-lead on solder area, with entire post underplated with .000050 [0.00127] nickel.

\$Duplex plated .000030 [0.00076] gold on mating area; matte tin-lead on solder area, with entire post underplated with .000050 [0.00127] nickel.



### Double Row (.100 x .100 [2.54 x 2.54] Centerline)

| Style       | Post Tail<br>B/C       | Plating  | Base Part Numbers |
|-------------|------------------------|----------|-------------------|
|             |                        |          | Square Post       |
| Straight    | .125/.318<br>3.18/8.08 | Tin†     | 103322            |
|             |                        | Duplex#  | 102973            |
|             |                        | Duplex\$ | 102977            |
|             | .120/.230<br>3.05/5.84 | Tin†     | 103328            |
|             |                        | Duplex#  | 103186            |
|             |                        | Duplex\$ | 103240            |
| Right Angle | .110/.318<br>2.79/8.08 | Tin†     | 103324            |
|             |                        | Duplex#  | 102975            |
|             |                        | Duplex\$ | 102979            |
|             | .120/.230<br>3.05/5.84 | Tin†     | 103330            |
|             |                        | Duplex#  | 103326            |
|             |                        | Duplex\$ | 103149            |

**Ordering Information:** Number of positions for double-row header equals prefix-suffix combination times two (example—8-position is XXXXXX-4; 26-position is 1-XXXXXX-3).

†.000100-.000200 [0.00254-0.00508] bright tin over .000050 [0.00127] nickel.

#Duplex plated .000015 [0.00038] gold on mating area; matte tin-lead on solder area, with entire post underplated with .000050 [0.00127] nickel.

\$Duplex plated .000030 [0.00076] gold on mating area; matte tin-lead on solder area, with entire post underplated with .000050 [0.00127] nickel.

# AMP

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Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



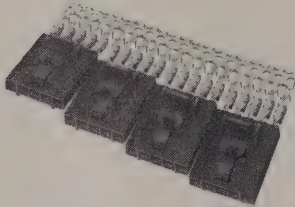
# AMPMODU MTE Interconnection System

This system offers both wire-to-board and wire-to-wire connections using .025 sq. Post Technology.

## Receptacle Assemblies— Strip Form Polarized/Latching, Single Row .100 [2.54] Centers

### Material and Finish:

**Housing**—Black thermoplastic, 94V-0 rated  
**Contact**—Copper alloy, duplex plated  
<sup>1</sup>.000015 [0.00038] gold on mating area, .000050 [0.00127] min. tin-lead termination area with entire contact underplated .000050 [0.00127] nickel.



| No. of Pos. | Housing Quantities Per Strip Segment | Unit Package Order Quantities | Strip Form Receptacle Assembly 26-22 AWG [0.12-0.3 mm <sup>2</sup> ] Wire Duplex Plating <sup>1</sup> |
|-------------|--------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------|
| 2           | 10                                   | 110                           | 103957-1                                                                                              |
| 3           | 5                                    | 70                            | 103957-2                                                                                              |
| 4           | 5                                    | 55                            | 103957-3                                                                                              |
| 5           | 4                                    | 44                            | 103957-4                                                                                              |

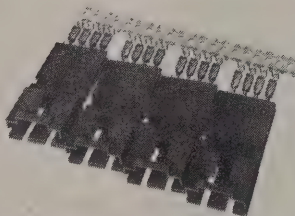
### Individual Assemblies

| Number of Positions | Unit Package Order Quantities | Individual Receptacle Assembly 26-22 AWG [0.12-0.3 mm <sup>2</sup> ] Wire Duplex Plating <sup>1</sup> |
|---------------------|-------------------------------|-------------------------------------------------------------------------------------------------------|
| 6                   | 36                            | 103957-5                                                                                              |
| 8                   | 26                            | 103957-7                                                                                              |

## Pin Assemblies, Shrouded Polarized/Latching, Single Row .100 [2.54] Centers

### Material and Finish:

**Housing**—Black thermoplastic, 94V-0  
**Contact**—Copper alloy, plated tin or gold duplex.



| No. of Pos. | Housing Quantities Per Strip Segment | Unit Package Order Quantities | Strip Form Pin Assembly 26-22 AWG [0.12-0.3 mm <sup>2</sup> ] Wire Duplex Plating <sup>1</sup> |
|-------------|--------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------|
| 2           | 5                                    | 70                            | 103945-1                                                                                       |
| 3           | 5                                    | 55                            | 103945-2                                                                                       |
| 4           | 4                                    | 44                            | 103945-3                                                                                       |
| 5           | 4                                    | 36                            | 103945-4                                                                                       |

### Individual Assembly

| Number of Pos. | Unit Package Order Quantities | Individual Pin Assembly 26-22 AWG [0.12-0.3 mm <sup>2</sup> ] Wire Duplex Plating <sup>1</sup> |
|----------------|-------------------------------|------------------------------------------------------------------------------------------------|
| 6              | 30                            | 103945-5                                                                                       |
| 8              | 24                            | 103945-7                                                                                       |

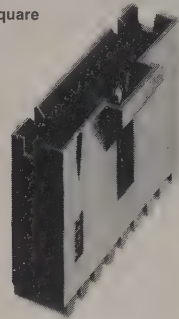
<sup>1</sup>.000015 [0.00038] gold on mating area, .000050 [0.00127] min. tin-lead termination area, with entire contact underplated .000050 [0.00127] nickel.

## Header Assemblies, Shrouded— Polarized/Latching, Single Row .100 [2.54] Centers

### Material and Finish:

**Housing**—Black thermoplastic, 94V-0 rated  
**Contact**—Copper alloy, plated tin or gold duplex.

.025 [0.64] Square  
Straight Post



| No. of Pos. | Unit Package Order Quantities | Header Assembly                            |                                               |
|-------------|-------------------------------|--------------------------------------------|-----------------------------------------------|
|             |                               | With Hold-Down Duplex Plating <sup>1</sup> | Without Hold-Down Duplex Plating <sup>1</sup> |
| 2           | 280                           | 103670-1                                   | 103638-1                                      |
| 3           | 208                           | 103670-2                                   | 103638-2                                      |
| 4           | 172                           | 103670-3                                   | 103638-3                                      |
| 5           | 140                           | 103670-4                                   | 103638-4                                      |
| 6           | 120                           | 103670-5                                   | 103638-5                                      |
| 8           | 92                            | 103670-7                                   | 103638-7                                      |

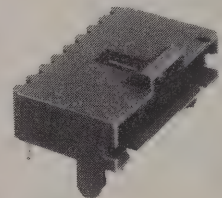
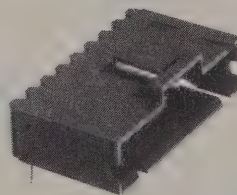
<sup>1</sup>.000015 [0.00038] gold on mating area, .000050 [0.00127] min. tin-lead on termination area with entire contact underplated .000050 [0.00127] nickel.

## Header Assemblies, Shrouded— Polarized/Latching, Single Row .100 [2.54] Centers

### Material and Finish:

**Housing**—Black thermoplastic, 94V-0 rated  
**Contact**—Copper alloy, plated tin or gold duplex.

.025 [0.64] Square  
Right Angle Post



With Hold-Down

Without Hold-Down

### Individual Assemblies

| No. of Pos. | Unit Package Order Quantity | Header Assembly                            |                                               |
|-------------|-----------------------------|--------------------------------------------|-----------------------------------------------|
|             |                             | With Hold-Down Duplex Plating <sup>1</sup> | Without Hold-Down Duplex Plating <sup>1</sup> |
| 2           | 284                         | 103673-1                                   | 103635-1                                      |
| 3           | 212                         | 103673-2                                   | 103635-2                                      |
| 4           | 172                         | 103673-3                                   | 103635-3                                      |
| 5           | 140                         | 103673-4                                   | 103635-4                                      |
| 6           | 120                         | 103673-5                                   | 103635-5                                      |
| 8           | 92                          | 103673-7                                   | 103635-7                                      |

<sup>1</sup>.000015 [0.00038] gold on mating area, .000050 [0.00127] min. tin-lead termination area, with entire contact underplated .000050 [0.00127] nickel.

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

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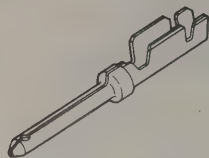
## Subminiature D Commercial Connectors (AMPLIMITE)

### Precision Formed Crimp Snap-In Contacts, Size 22 DF

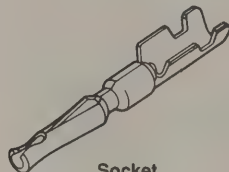
#### Material and Finish:

**Pin**—Brass

**Finish**—Duplex plated .000030  
[0.00076] gold on mating end, tin-lead  
on crimp barrel, with entire contact  
nickel underplated



Pin



Socket

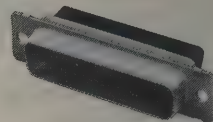
| Wire Size<br>AWG | Insulation<br>Diameter<br>Max. | Contact Part Numbers |            |            |            |
|------------------|--------------------------------|----------------------|------------|------------|------------|
|                  |                                | Pin                  |            | Socket     |            |
|                  |                                | Strip Form           | Loose Form | Strip Form | Loose Form |
| 22-28            | .040                           | 748333-2             | 748333-4   | 748610-2   | 748610-4   |

### HDP-22 Crimp Snap-In Contact Connectors

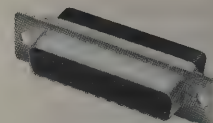
#### Material and Finish:

**Shell**—Steel, tin-plated

**Insert**—94V-0 rated thermoplastic,  
black



Plug



Receptacle

| Shell<br>Size | No. of<br>Contact<br>Positions | Part Numbers |            |
|---------------|--------------------------------|--------------|------------|
|               |                                | Plug         | Receptacle |
| 1             | 15                             | 748364-1     | 748565-1   |
| 2             | 26                             | 748365-1     | 748566-1   |
| 3             | 44                             | 748366-1     | 748567-1   |
| 4             | 62                             | 748367-1     | 748568-1   |
| 5             | 78                             | 748368-1     | 748569-1   |

### HDP-22 Basic Shielding Hardware Kits

#### Each kit contains:

- Connector
- Inner shield
- Outer shield

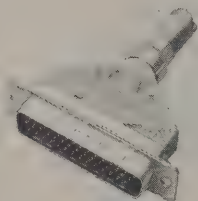
Contacts and ferrules must be  
purchased separately.

#### Material and Finish:

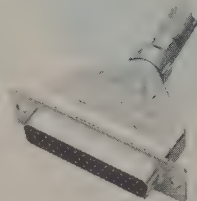
**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated  
thermoplastic, black

**Shields**—Steel, tin plated



Plug



Receptacle

| Shell<br>Size | No. of<br>Contact<br>Positions | Kit Numbers |            |
|---------------|--------------------------------|-------------|------------|
|               |                                | Plug        | Receptacle |
| 1             | 15                             | 748468-1    | 748634-1   |
| 2             | 26                             | 748469-1    | 748635-1   |
| 3             | 44                             | 748470-1    | 748636-1   |
| 4             | 62                             | 748471-1    | 748637-1   |
| 5             | 78                             | 748472-1    | 748638-1   |

**Notes:** 1. Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.

2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

### HDP-22 Shielding Hardware Enclosure Kits

#### Each kit contains:

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Contacts and ferrules must be  
purchased separately.

#### Material and Finish:

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated  
thermoplastic, black

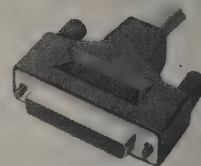
**Shields**—Steel, tin plated

**Enclosure**—94V-0 rated thermoplastic,  
black

**Jackscrews**—Zinc alloy



Plug



Receptacle

| Shell<br>Size | No. of<br>Contact<br>Positions | Kit Numbers |            |
|---------------|--------------------------------|-------------|------------|
|               |                                | Plug        | Receptacle |
| 1             | 15                             | 748473-1    | 748639-1   |
| 2             | 26                             | 748474-1    | 748640-1   |
| 3             | 44                             | 748475-1    | 748641-1   |
| 4             | 62                             | 748476-1    | 748642-1   |
| 5             | 78                             | 748477-1    | 748643-1   |

**Notes:** 1. Plugs accept size 22 DF pin contacts and receptacles accept size 22 DF socket contacts.

2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



For more information request Catalog 82068

# HDE-20 Metal Shell IDC Connectors

## Material and Finish:

**Shell**—Steel, tin plated

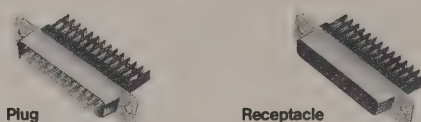
**Insert**—94V-0 rated thermoplastic, black

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.

**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.



| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Connector Part Numbers                          |            |                                                 |            |
|------------|--------------------------|-------------------------------|-------------------------------------------------|------------|-------------------------------------------------|------------|
|            |                          |                               | Contact Identification No. 1 for 30-26 AWG Wire |            | Contact Identification No. 2 for 26-22 AWG Wire |            |
|            |                          |                               | Plug                                            | Receptacle | Plug                                            | Receptacle |
| 1          | 9                        | A                             | 745492-1                                        | 745491-1   | 745492-2                                        | 745491-2   |
|            |                          | B                             | 745492-4                                        | 745491-4   | 745492-5                                        | 745491-5   |
| 2          | 15                       | A                             | 745494-1                                        | 745493-1   | 745494-2                                        | 745493-2   |
|            |                          | B                             | 745494-4                                        | 745493-4   | 745494-5                                        | 745493-5   |
| 3          | 25                       | A                             | 745496-1                                        | 745495-1   | 745496-2                                        | 745495-2   |
|            |                          | B                             | 745496-4                                        | 745495-4   | 745496-5                                        | 745495-5   |
| 4          | 37                       | A                             | 745498-1                                        | 745497-1   | 745498-2                                        | 745497-2   |
|            |                          | B                             | 745498-4                                        | 745497-4   | 745498-5                                        | 745497-5   |

- Notes:** 1. All connectors are preloaded with insulation displacement contacts. Pins in plug connectors and sockets in receptacle connectors. Contacts accept a max. wire insulation thickness of .015 [0.38] and a max. wire insulation dia. of .060 [1.52].  
 2. HDE connectors are designed for terminating solid or stranded (7-strand max.) wire.  
 3. Individual conductor strands should be .005 [0.13] diameter or larger.  
 4. **Extraction Tool No. 91232-1** is used to remove pin or socket contacts.

# HDE-20 Basic Shielding Hardware Kits

## Material and Finish:

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

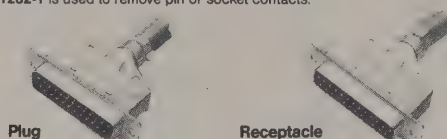
**Shield**—Steel, tin plated

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.

**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.



| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Connector Part Numbers                          |            |                                                 |            |                                                 |            |
|------------|--------------------------|-------------------------------|-------------------------------------------------|------------|-------------------------------------------------|------------|-------------------------------------------------|------------|
|            |                          |                               | Contact Identification No. 1 for 30-26 AWG Wire |            | Contact Identification No. 2 for 26-22 AWG Wire |            | Contact Identification No. 3 for 22-20 AWG Wire |            |
|            |                          |                               | Plug                                            | Receptacle | Plug                                            | Receptacle | Plug                                            | Receptacle |
| 1          | 9                        | A                             | 747515-1                                        | 747516-1   | 747515-2                                        | 747516-2   | 747515-3                                        | 747516-3   |
|            |                          | B                             | 747515-4                                        | 747516-4   | 747515-5                                        | 747516-5   | 747515-6                                        | 747516-6   |
| 2          | 15                       | A                             | 747531-1                                        | 747532-1   | 747531-2                                        | 747532-2   | 747531-3                                        | 747532-3   |
|            |                          | B                             | 747531-4                                        | 747532-4   | 747531-5                                        | 747532-5   | 747531-6                                        | 747532-6   |
| 3          | 25                       | A                             | 747547-1                                        | 747548-1   | 747547-2                                        | 747548-2   | 747547-3                                        | 747548-3   |
|            |                          | B                             | 747547-4                                        | 747548-4   | 747547-5                                        | 747548-5   | 747547-6                                        | 747548-6   |
| 4          | 37                       | A                             | 747563-1                                        | 747564-1   | 747563-2                                        | 747564-2   | 747563-3                                        | 747564-3   |
|            |                          | B                             | 747563-4                                        | 747564-4   | 747563-5                                        | 747564-5   | 747563-6                                        | 747564-6   |

**Notes:** Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

# HDE-20 Shielding Hardware Enclosure Kits

## Each kit contains

- Connector
- Inner shield
- Outer shield
- Enclosure
- Two jackscrews

Ferrules must be purchased separately.

## Material and Finish:

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shield**—Steel, tin plated

**Enclosure**—PVC, black

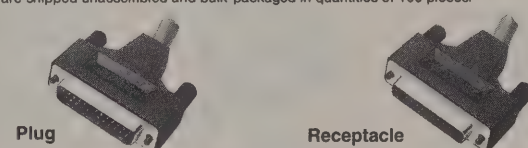
**Jackscrews**—Zinc alloy

**Contacts**—Phosphor bronze

**Contact Finish**—Duplex plated:

**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated



| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Kit Part Numbers                                                             |            |                                                                             |            |                                                                            |            | Shielding Enclosure Expansion Tool |          |
|------------|--------------------------|-------------------------------|------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------|------------|----------------------------------------------------------------------------|------------|------------------------------------|----------|
|            |                          |                               | Contact Identification No. 1<br>for 30-26 AWG<br>[0.05-0.15mm <sup>2</sup> ] |            | Contact Identification No. 2<br>for 26-22 AWG<br>[0.15-0.4mm <sup>2</sup> ] |            | Contact Identification No. 3<br>for 22-20 AWG<br>[0.4-0.6mm <sup>2</sup> ] |            |                                    |          |
|            |                          |                               |                                                                              |            |                                                                             |            |                                                                            |            | Cable O.D. (Max.)                  | Part No. |
|            |                          |                               | Plug                                                                         | Receptacle | Plug                                                                        | Receptacle | Plug                                                                       | Receptacle |                                    |          |
| 1          | 9                        | A                             | 747944-1                                                                     | 747943-1   | 747944-2                                                                    | 747943-2   | 747944-3                                                                   | 747943-3   | .355<br>9.02                       | 58241-4  |
|            |                          | B                             | 747944-4                                                                     | 747943-4   | 747944-5                                                                    | 747943-5   | 747944-6                                                                   | 747943-6   |                                    |          |
| 2          | 15                       | A                             | 747946-1                                                                     | 747945-1   | 747946-2                                                                    | 747945-2   | 747946-3                                                                   | 747945-3   |                                    |          |
|            |                          | B                             | 747946-4                                                                     | 747945-4   | 747946-5                                                                    | 747945-5   | 747946-6                                                                   | 747945-6   |                                    |          |
| 3          | 25                       | A                             | 747948-1                                                                     | 747947-1   | 747948-2                                                                    | 747947-2   | 747948-3                                                                   | 747947-3   | .455<br>11.56                      | 58241-1  |
|            |                          | B                             | 747948-4                                                                     | 747947-4   | 747948-5                                                                    | 747947-5   | 747948-6                                                                   | 747947-6   |                                    |          |
| 4          | 37                       | A                             | 747950-1                                                                     | 747949-1   | 747950-2                                                                    | 747949-2   | 747950-3                                                                   | 747949-3   | .562<br>14.27                      | 58241-2  |
|            |                          | B                             | 747950-4                                                                     | 747949-4   | 747950-5                                                                    | 747949-5   | 747950-6                                                                   | 747949-6   |                                    |          |

Specifications subject to change.

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

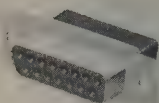
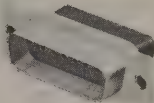


For more information request Catalog 82068

HDP-20 Crimp Snap-In Contact Connectors

Material and Finish:

Shell—Steel, zinc or tin plated  
Insert—94V-0 rated thermoplastic, black or 94V-1 rated thermoplastic, beige



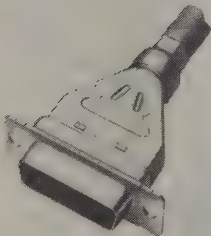
| Shell Size | No. of Contact Positions | Mounting Method | Insert Material | Plug Part Numbers |                           |                        | Receptacle Part Numbers |                  |
|------------|--------------------------|-----------------|-----------------|-------------------|---------------------------|------------------------|-------------------------|------------------|
|            |                          |                 |                 | Zinc Plated Shell | Tin Plated Shell          |                        | Zinc Plated Shell       | Tin Plated Shell |
|            |                          |                 |                 |                   | Without Grounding Indents | With Grounding Indents |                         |                  |
| 1          | 9                        | Standard        | 94V-0           | 205204-1          | 205204-3                  | 205204-4               | 205203-1                | 205203-3         |
|            |                          | Clinch Nut      | 94V-0           | —                 | 745906-1                  | 745906-2               | —                       | 745907-1         |
| 2          | 15                       | Standard        | 94V-0           | 205206-1          | 205206-2                  | 205206-3               | 205205-1                | 205205-2         |
|            |                          | Clinch Nut      | 94V-0           | —                 | 745908-1                  | 745908-2               | —                       | 745909-1         |
| 3          | 25                       | Standard        | 94V-0           | 205208-1          | 207464-1                  | 207464-2               | 205207-1                | 207463-1         |
|            |                          | Clinch Nut      | 94V-0           | —                 | 745036-1                  | 745036-2               | —                       | 207516-3         |
| 4          | 37                       | Standard        | 94V-0           | 205210-1          | 205210-2                  | 205210-3               | 205209-1                | 205209-2         |
|            |                          | Clinch Nut      | 94V-0           | —                 | —                         | 745135-2               | —                       | 207661-3         |
| 5          | 50                       | Standard        | 94V-0           | 205212-1          | 205212-2                  | 205212-3               | 205211-1                | 205211-2         |
|            |                          | Clinch Nut      | 94V-0           | —                 | —                         | —                      | —                       | 745884-1         |

Note: Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.

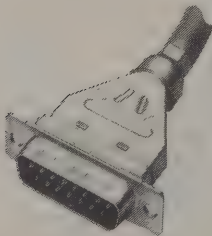
HDP-20 Basic Shielding Hardware Kits

Material and Finish:

Connector Shells—Steel, tin plated  
Connector Insert—94V-0 rated thermoplastic, black  
Shields—Steel, tin plated



Receptacle



Plug

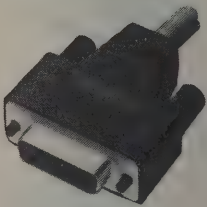
| Shell Size | No. of Contact Pos. | Kit Numbers |            |
|------------|---------------------|-------------|------------|
|            |                     | Plug        | Receptacle |
| 1          | 9                   | 747522-1    | 747523-1   |
| 2          | 15                  | 747538-1    | 747539-1   |
| 3          | 25                  | 747554-1    | 747555-1   |
| 4          | 37                  | 747570-1    | 747571-1   |
| 5          | 50                  | 747577-1    | 747578-1   |

Notes: 1. Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.  
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

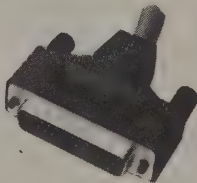
HDP-20 Shielding Hardware Enclosure Kits

Material and Finish:

Connector Shells—Steel, tin plated  
Connector Insert—94V-0 rated thermoplastic, black  
Shields—Steel, tin plated  
Enclosure—94V-0 rated thermoplastic, black  
Jackscrews—Zinc alloy



Receptacle



Plug

| Shell Size | No. of Contact Pos. | Kit Numbers |            |
|------------|---------------------|-------------|------------|
|            |                     | Plug        | Receptacle |
| 1          | 9                   | 747952-1    | 747951-1   |
| 2          | 15                  | 747954-1    | 747953-1   |
| 3          | 25                  | 747956-1    | 747955-1   |
| 4          | 37                  | 747958-1    | 747957-1   |
| 5          | 50                  | 747960-1    | 747959-1   |

Notes: 1. Plugs accept size 20 DF pin contacts and receptacles accept size 20 DF socket contacts.  
2. Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.  
3. Preassembled kits  
15-Pos. Plug Part No. 749245-1  
15-Pos. Receptacle Part No. 749246-1



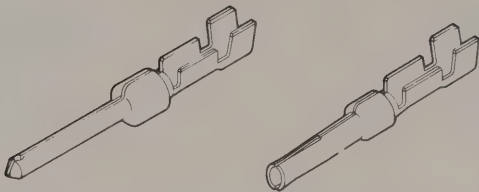
HDP-20 Connector Contacts,  
Precision Formed

Crimp Snap-In Contacts

Contact Size 20 DF  
Pin Diameter .040 [1.02]

Material and Finish:

Pin—Brass  
Socket—Phosphor bronze  
Plated:  
B—Duplex—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.  
D—Duplex—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.



Pin

Socket

With Insulation Support

| Wire Size Range AWG | Ins. Dia. Max. | Contact Finish (Plating Code) | Contact Part Numbers |            |            |            |
|---------------------|----------------|-------------------------------|----------------------|------------|------------|------------|
|                     |                |                               | Pin                  |            | Socket     |            |
|                     |                |                               | Strip Form           | Loose Form | Strip Form | Loose Form |
| 28-24               | .040<br>1.02   | B                             | 3-66507-0            | 5-66507-7  | 6-66505-0  | 6-66505-2  |
|                     |                | D                             | 3-66507-1            | 5-66507-9  | 5-66505-7  | 5-66505-9  |
|                     | .060<br>1.52   | B                             | 66682-9              | 1-66682-1  | 1-66683-0  | 1-66683-2  |
|                     |                | D                             | 66682-6              | 66682-8    | 66683-7    | 66683-9    |
| 26-22               | .050<br>1.27   | B                             | 1-745254-4           | 1-745254-6 | 1-745253-4 | 1-745253-6 |
|                     |                | D                             | 1-745254-1           | 1-745254-3 | 1-745253-1 | 1-745253-3 |
| 24-20               | .060<br>1.52   | B                             | 2-66506-4            | 5-66506-7  | 5-66504-9  | 6-66504-0  |
|                     |                | D                             | 2-66506-5            | 5-66506-9  | 5-66504-6  | 5-66504-7  |

Ferrules for Shielding  
Hardware Kits

Material and Finish:  
Steel (annealed), tin plated



Stepped

Straight

| Shell Sizes | Style    | Cable Diameter           | Ferrule Part Numbers |
|-------------|----------|--------------------------|----------------------|
| 1-3         | Stepped  | .165-.190<br>4.19-4.83   | 747579-8             |
| 1-3         | Stepped  | .190-.217<br>4.83-5.51   | 747579-8             |
| 1-3         | Stepped  | .217-.246<br>5.51-6.25   | 747579-8             |
| 1-3         | Stepped  | .246-.284<br>6.25-7.21   | 1-747579-0           |
| 1-3         | Stepped  | .284-.324<br>7.21-8.23   | 1-747579-0           |
| 1-3         | Stepped  | .324-.375<br>8.23-9.53   | 1-747579-1           |
| 1-3         | Straight | .375-.435<br>9.53-11.05  | 1-747579-2           |
| 1-3         | Straight | .400-.455<br>10.16-11.56 | 1-747579-4           |
| 4-5         | Stepped  | .230-.265<br>5.84-6.73   | 1-747580-0           |
| 4-5         | Stepped  | .338-.385<br>8.59-9.78   | 747580-8             |
| 4-5         | Stepped  | .375-.432<br>9.53-10.97  | 747580-4             |
| 4-5         | Stepped  | .422-.490<br>10.72-12.45 | 747580-5             |
| 4           | Straight | .480-.562<br>12.19-14.28 | 747580-6             |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



For more information request Catalog 82068

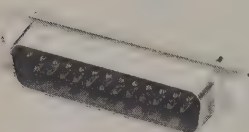
## HD-20 Solder Cup Connectors

### Materials and Finish:

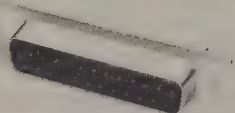
**Shell**—Steel, tin or zinc plated

**Insert**—94V-0 rated thermoplastic, black

**Contacts**—Phosphor bronze; duplex plated with gold flash on mating end, tin-lead on solder cup, with entire contact nickel underplated



Plugs



Receptacles

| Shell Size | No. of Contact Positions | Plug Part Numbers |                   | Receptacle Part Numbers |                   |
|------------|--------------------------|-------------------|-------------------|-------------------------|-------------------|
|            |                          | Tin Plated Shell  | Zinc Plated Shell | Tin Plated Shell        | Zinc Plated Shell |
| 1          | 9                        | 747904-2          | 747904-4          | 747905-2                | 747905-4          |
| 2          | 15                       | 747908-2          | 747908-4          | 747909-2                | 747909-4          |
| 3          | 25                       | 747912-2          | 747912-4          | 747913-2                | 747913-4          |
| 4          | 37                       | 747916-2          | 747916-4          | 747917-2                | 747917-4          |

## HD-20 Solder Cup Basic Shielding Hardware Kits

### Each kit contains

■ Connector with preloaded, nonremovable contacts

■ Inner shield

■ Outer shield

Ferrules must be purchased separately.

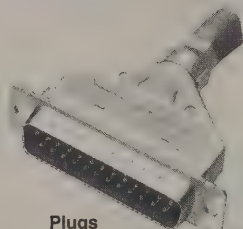
### Materials and Finish:

**Connector Shells**—Steel, tin plated

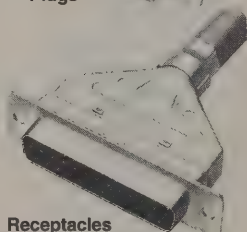
**Connector Insert**—94V-0 rated thermoplastic, black

**Shields**—Steel, tin plated

**Contacts**—Phosphor bronze; duplex plated with gold flash on mating end, tin-lead on solder cup, with entire contact nickel underplated



Plugs



Receptacles

| Shell Size | No. of Contact Positions | Cable Insulation Diameter | Kit Numbers |            |
|------------|--------------------------|---------------------------|-------------|------------|
|            |                          |                           | Plug        | Receptacle |
| 1          | 9                        | .165-.455<br>4.19-11.56   | 748038-1    | 748039-1   |
| 2          | 15                       | .165-.455<br>4.19-11.56   | 748040-1    | 748041-1   |
| 3          | 25                       | .165-.455<br>4.19-11.56   | 748042-1    | 748043-1   |
| 4          | 37                       | .338-.562<br>8.59-14.27   | 748044-1    | 748045-1   |

Note: Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

## HD-20 Solder Cup Shielding Hardware Enclosure Kits

### Each kit contains

■ Connector with preloaded, nonremovable contacts

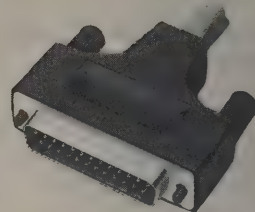
■ Inner shield

■ Outer shield

■ Enclosure

■ Two jackscrews

Ferrules must be purchased separately.



Plugs



Receptacles

### Materials and Finish:

**Connector Shell**—Steel, tin plated

**Connector Insert**—94V-0 rated thermoplastic, black

**Shields**—Steel, tin plated

**Enclosure**—PVC, black

**Jackscrews**—Zinc alloy

**Contacts**—Phosphor bronze

**Contacts**—Phosphor bronze; duplex plated with gold flash on mating end, tin-lead on solder cup, with entire contact nickel underplated

| Shell Size | No. of Contact Positions | Cable Insulation Diameter | Kit Numbers |            |
|------------|--------------------------|---------------------------|-------------|------------|
|            |                          |                           | Plug        | Receptacle |
| 1          | 9                        | .190-.375<br>4.83-9.53    | 748046-1    | 748047-1   |
| 2          | 15                       | .190-.375<br>4.83-9.53    | 748048-1    | 748049-1   |
| 3          | 25                       | .217-.435<br>5.51-11.05   | 748050-1    | 748051-1   |
| 4          | 37                       | .338-.562<br>8.59-14.27   | 748052-1    | 748053-1   |

Note: Components of the kits are shipped unassembled and bulk-packaged in quantities of 100 pieces.

## HD-22 Front Metal Shell Right-Angle Posted Connectors 350 Mount

### Materials and Finish:

**Front Shell**—Steel, tin plated

**Housing**—94V-0 rated thermoplastic, black

**Eyelets**—Brass, tin or tin-lead plated

**Threaded Inserts**—Zinc

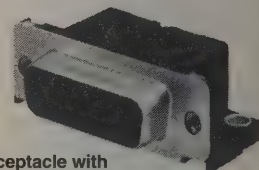
**Female Screwwlocks**—Zinc

**Contacts (Posted):**

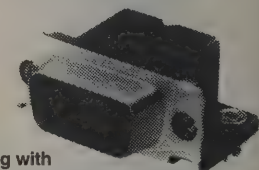
**Socket**—Phosphor bronze

**Pin**—Brass

**Contact Finish:** Duplex plated: .000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact underplated with .000050 [0.00127] nickel.



Receptacle with Grounding Straps



Plug with Grounding Indents and Grounding Straps

| Shell Size | No. of Contact Positions | Receptacle Part Numbers |                  | Plug Part Numbers |                  |
|------------|--------------------------|-------------------------|------------------|-------------------|------------------|
|            |                          | Boardlocks              | Threaded Inserts | Boardlocks        | Threaded Inserts |
| 1          | 15                       | 748390-5                |                  | 749767-1          |                  |
| 2          | 26                       | 748481-5                |                  | 749769-1          |                  |
| 3          | 44                       | 748482-5                |                  | 749771-1          |                  |
| 4          | 62                       | 748394-5                |                  | 749639-1          |                  |
| 5          | 78                       | 748483-5                |                  | 749233-1          |                  |

Notes: 1. All connectors are preloaded with size 22 DF posted contacts.

2. Recommended pc board thickness is .062 [1.57] for connectors with boardlock and .093 [2.36] max. for all others.

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



## HD-20 Front Metal-Shell Right-Angle Posted Connectors 318 Mount

### Material and Finish:

**Front Shell**—Steel, tin plated  
**Housing**—94V-0 rated thermoplastic, black  
**Eyelets**—Brass, tin plated  
**Threaded Inserts**—Zinc  
**Female Screwlocks**—Zinc  
**Boardlocks**—Copper alloy, tin-lead plated  
**Pin Contacts (Posted)**—Brass

**Socket Contacts (Posted)**—Phosphor bronze  
 Contacts duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.  
**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.

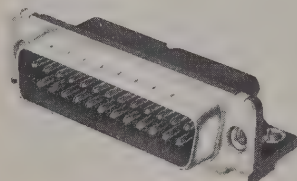
Plug with Grounding Indents  
and Grounding Straps

Receptacle with Grounding Straps

| Shell Size | No. of Positions | Contact Finish (Plating Code) | Plug Part Numbers     |                       | Receptacle Part Numbers      |                       |                              |                       |                              |  |
|------------|------------------|-------------------------------|-----------------------|-----------------------|------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|--|
|            |                  |                               | Without Boardlocks    | With Boardlocks       | Without Boardlocks           |                       | With Boardlocks              |                       |                              |  |
|            |                  |                               | With Threaded Inserts | With Threaded Inserts | With Standard Mounting Holes | With Threaded Inserts | With Fixed Female Screwlocks | With Threaded Inserts | With Fixed Female Screwlocks |  |
| 1          | 9                | A                             | 747250-4              | 747840-4              | 745781-2                     | 745781-4              | 745781-6                     | 747844-4              | 747844-6                     |  |
|            |                  | B                             | 747250-3              | 747840-3              | 745781-1                     | 745781-3              | 745781-5                     | 747844-3              | 747844-5                     |  |
| 2          | 15               | A                             | 747236-4              | 747841-4              | 745782-2                     | 745782-4              | 745782-6                     | 747845-4              | 747845-6                     |  |
|            |                  | B                             | 747236-3              | 747841-3              | 745782-1                     | 745782-3              | 745782-5                     | 747845-3              | 747845-5                     |  |
| 3          | 25               | A                             | 747238-4              | 747842-4              | 745783-2                     | 745783-4              | 745783-6                     | 747846-4              | 747846-6                     |  |
|            |                  | B                             | 747238-3              | 747842-3              | 745783-1                     | 745783-3              | 745783-5                     | 747846-3              | 747846-5                     |  |
| 4          | 37               | A                             | 747252-4              | 747843-4              | 745784-2                     | 745784-4              | 745784-6                     | 747847-4              | 747847-6                     |  |
|            |                  | B                             | 747252-3              | 747843-3              | 745784-1                     | 745784-3              | 745784-5                     | 747847-3              | 747847-5                     |  |

**Notes:** 1. All plugs and receptacles are preloaded with size 20 DF posted pin or socket contacts.  
 2. Recommended pc board thickness is .062 [1.57] for connectors with boardlocks and .093 [2.36] max. for all others.  
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

## HD-20 Right-Angle, Metal-Shell Connectors (AMPLIMITE III) 318 Mount Plugs



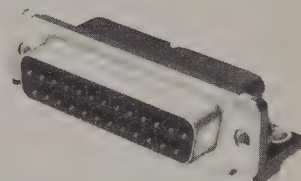
### Material and Finish:

**Shell**—Steel, tin plated  
**Housing**—94V-0 rated thermoplastic, black  
**Eyelets**—Brass, tin plated  
**Threaded Inserts**—Zinc  
**Female Screwlock**—Zinc  
**Boardlock**—Copper alloy, tin-lead plated

**Pin Contacts (Posted)**—Brass duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end with entire contact nickel underplate.  
**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.  
**C**—.000010 [0.000254] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.

| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Without Boardlocks    |                              | With Boardlocks       |                              |
|------------|--------------------------|-------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
|            |                          |                               | With Threaded Inserts | With Fixed Female Screwlocks | With Threaded Inserts | With Fixed Female Screwlocks |
| 1          | 9                        | A                             | 748839-1              | 748919-1                     | 748879-1              | 748959-1                     |
|            |                          | B                             | 748839-2              | 748919-2                     | 748879-2              | 748959-2                     |
|            |                          | C                             | 748839-3              | 748919-3                     | 748879-3              | 748959-3                     |
| 2          | 15                       | A                             | 748840-1              | 748920-1                     | 748880-1              | 748960-1                     |
|            |                          | B                             | 748840-2              | 748920-2                     | 748880-2              | 748960-2                     |
|            |                          | C                             | 748840-3              | 748920-3                     | 748880-3              | 748960-3                     |
| 3          | 25                       | A                             | 748841-1              | 748921-1                     | 748881-1              | 748961-1                     |
|            |                          | B                             | 748841-2              | 748921-2                     | 748881-2              | 748961-2                     |
|            |                          | C                             | 748841-3              | 748921-3                     | 748881-3              | 748961-3                     |
| 4          | 37                       | A                             | 748842-1              | 748922-1                     | 748882-1              | 748962-1                     |
|            |                          | B                             | 748842-2              | 748922-2                     | 748882-2              | 748962-2                     |
|            |                          | C                             | 748842-3              | 748922-3                     | 748882-3              | 748962-3                     |

## HD-20 Right-Angle, Metal-Shell Connectors (AMPLIMITE III) 318 Mount Receptacles High Temperature Housings Compatible with Vapor-phase and IR Reflow Soldering Processes



### Material and Finish:

**Shell**—Steel, tin plated  
**Housing**—94V-0 rated thermoplastic, black (SMT Compatible)  
**Eyelets**—Brass, tin plated  
**Threaded Inserts**—Zinc  
**Female Screwlock**—Zinc  
**Boardlock**—Copper alloy, tin-lead plated

**Socket Contacts (Posted)**—Brass duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end with entire contact nickel underplated.  
**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.  
**C**—.000010 [0.000254] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.

| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Without Boardlocks    |                              | With Boardlocks       |                              |
|------------|--------------------------|-------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|
|            |                          |                               | With Threaded Inserts | With Fixed Female Screwlocks | With Threaded Inserts | With Fixed Female Screwlocks |
| 1          | 9                        | A                             | 748835-1              | 748915-1                     | 748875-1              | 748955-1                     |
|            |                          | B                             | 748835-2              | 748915-2                     | 748875-2              | 748955-2                     |
|            |                          | C                             | 748835-3              | 748915-3                     | 748875-3              | 748955-3                     |
| 2          | 15                       | A                             | 748836-1              | 748916-1                     | 748876-1              | 748956-1                     |
|            |                          | B                             | 748836-2              | 748916-2                     | 748876-2              | 748956-2                     |
|            |                          | C                             | 748836-3              | 748916-3                     | 748876-3              | 748956-3                     |
| 3          | 25                       | A                             | 748837-1              | 748917-1                     | 748877-1              | 748957-1                     |
|            |                          | B                             | 748837-2              | 748917-2                     | 748877-2              | 748957-2                     |
|            |                          | C                             | 748837-3              | 748917-3                     | 748877-3              | 748957-3                     |
| 4          | 37                       | A                             | 748838-1              | 748918-1                     | 748878-1              | 748958-1                     |
|            |                          | B                             | 748838-2              | 748918-2                     | 748878-2              | 748958-2                     |
|            |                          | C                             | 748838-3              | 748918-3                     | 748878-3              | 748958-3                     |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

EEM 1993

AMP INCORPORATED, HARRISBURG, PA 17105

For manufacturers' sales offices, see yellow pages

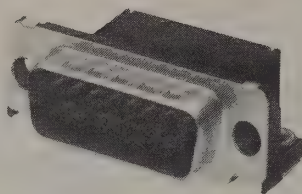
C•1199



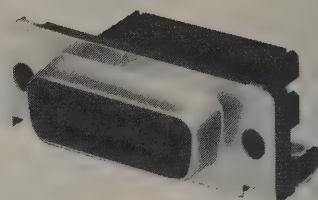
## HD-20 Front Metal-Shell Right-Angle Posted Connectors 590 Mount

### Material and Finish:

**Front Shell**—Steel, tin plated  
**Housing**—94V-0 rated thermoplastic, black  
**Eyelets**—Brass, tin plated  
**Threaded Inserts**—Zinc  
**Female Screwlocks**—Zinc  
**Boardlocks**—Copper alloy, tin-lead plated  
**Pin Contacts (Posted)**—Brass  
**Socket Contacts (Posted)**—Phosphor bronze  
 Contacts duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.  
**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.



Plug with Grounding Indents  
and Grounding Straps



Receptacle with Grounding Straps

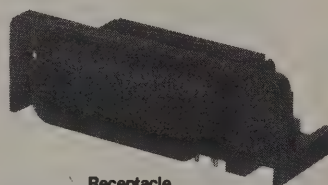
| Shell Size | No. of Positions | Contact Finish (Plating Code) | Plug Part Numbers     |                              |                              | Receptacle Part Numbers |                              |                       |                              |
|------------|------------------|-------------------------------|-----------------------|------------------------------|------------------------------|-------------------------|------------------------------|-----------------------|------------------------------|
|            |                  |                               | Without Boardlocks    |                              | With Boardlocks              | Without Boardlocks      |                              | With Boardlocks       |                              |
|            |                  |                               | With Threaded Inserts | With Fixed Female Screwlocks | With Fixed Female Screwlocks | With Threaded Inserts   | With Fixed Female Screwlocks | With Threaded Inserts | With Fixed Female Screwlocks |
| 1          | 9                | A                             | 745990-4              | 745990-6                     | 747832-6                     | 745988-4                | 745988-6                     | 747836-4              | 747836-6                     |
|            |                  | B                             | 745990-3              | 745990-5                     | 747832-5                     | 745988-3                | 745988-5                     | 747836-3              | 747836-5                     |
| 2          | 15               | A                             | 745986-4              | 745986-6                     | 747833-6                     | 745984-4                | 745984-6                     | 747837-4              | 747837-6                     |
|            |                  | B                             | 745986-3              | 745986-5                     | 747833-5                     | 745984-3                | 745984-5                     | 747837-3              | 747837-5                     |
| 3          | 25               | A                             | 745994-4              | 745994-6                     | 747834-6                     | 745992-4                | 745992-6                     | 747838-4              | 747838-6                     |
|            |                  | B                             | 745994-3              | 745994-5                     | 747834-5                     | 745992-3                | 745992-5                     | 747838-3              | 747838-5                     |
| 4          | 37               | A                             | 745998-4              | 745998-6                     | 747835-6                     | 745996-4                | 745996-6                     | 747839-4              | 747839-6                     |
|            |                  | B                             | 745998-3              | 745998-5                     | 747835-5                     | 745996-3                | 745996-5                     | 747839-3              | 747839-5                     |

Notes: 1. All plugs and receptacles are preloaded with size 20 DF pin or socket contacts.  
 2. Recommended pc board thickness is .062 [1.57] for connectors with boardlocks and .093 [2.36] max. for all others.  
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

## HD-20 All-Plastic Right-Angle Posted Connectors 318 Mount (Front Load)

### Material and Finish:

**Housing**—94V-0 rated thermoplastic, black  
**Threaded Inserts**—Brass, unplated  
**Female Screwlocks**—Brass, nickel plated  
**Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated.  
**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.



Receptacle

| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Receptacle Part Numbers      |                       |                              |
|------------|--------------------------|-------------------------------|------------------------------|-----------------------|------------------------------|
|            |                          |                               | With Standard Mounting Holes | With Threaded Inserts | With Fixed Female Screwlocks |
| 1          | 9                        | A                             | 745131-2                     | 745394-2              | 745395-2                     |
|            |                          | B                             | 745131-1                     | 745394-1              | 745395-1                     |
| 2          | 15                       | A                             | 745271-2                     | 745393-2              | 745396-2                     |
|            |                          | B                             | 745271-1                     | 745393-1              | 745396-1                     |
| 3          | 25                       | A                             | 745132-2                     | 745392-2              | 745397-2                     |
|            |                          | B                             | 745132-1                     | 745392-1              | 745397-1                     |
| 4          | 37                       | A                             | —                            | 747724-2              | 747725-2                     |
|            |                          | B                             | —                            | 747724-1              | 747725-1                     |

Notes: 1. All receptacles are preloaded with size 20 DF posted socket contacts.  
 2. Recommended pc board thickness is .093 max.  
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C-1200

For manufacturers' sales offices, see yellow pages

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

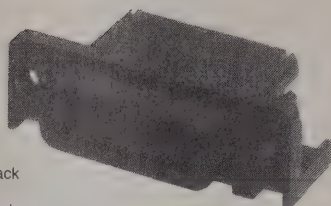
EEM 1993



## HD-20 All-Plastic Right-Angle Posted Connectors 590 Mount (Front Load)

### Material and Finish:

**Housing**—94V-0 rated thermoplastic, black  
**Threaded Inserts**—Brass, unplated  
**Female Screwlocks**—Brass, nickel plated  
**Contact (Posted)**—  
**Socket**—Phosphor bronze  
 Contacts duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, with entire contact nickel underplated  
**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated.



Receptacle

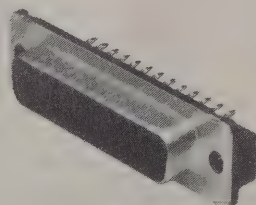
| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Receptacle Part Numbers      |                       |                             |
|------------|--------------------------|-------------------------------|------------------------------|-----------------------|-----------------------------|
|            |                          |                               | With Standard Mounting Holes | With Threaded Inserts | With Fixed Female Screwlock |
| 1          | 9                        | A                             | 747459-2                     | 747459-4              | 747459-6                    |
|            |                          | B                             | 747459-1                     | 747459-3              | 747459-5                    |
| 2          | 15                       | A                             | 747460-2                     | 747460-4              | 747460-6                    |
|            |                          | B                             | 747460-1                     | 747460-3              | 747460-5                    |
| 3          | 25                       | A                             | 747461-2                     | 747461-4              | 747461-6                    |
|            |                          | B                             | 747461-1                     | 747461-3              | 747461-5                    |
| 4          | 37                       | A                             | 747462-2                     | 747462-4              | 747462-6                    |
|            |                          | B                             | 747462-1                     | 747462-3              | 747462-5                    |

**Notes:** 1. All connectors are preloaded with size 20 DF posted socket contacts.  
 2. Recommended pc board thickness is .093 [2.36] max.  
 3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks

## HD-20 Front Metal-Shell Straight Posted Connectors with ACTION PIN Contacts

### Material and Finish:

**Front Shell**—Steel, tin plated  
**Housing**—94V-0 rated thermoplastic, black  
**Threaded Inserts**—Brass, unplated  
**Female Screwlocks**—Brass, nickel plated  
**ACTION PIN Contacts**—Copper alloy, duplex plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on ACTION PIN post surface, with entire contact nickel underplated.



Receptacle

### For .093 [2.36] to .125 [3.18] Thick Pc Boards

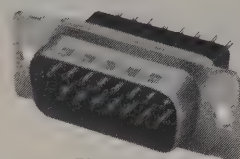
| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Receptacle Part Numbers     |                       |                              |
|------------|--------------------------|-------------------------------|-----------------------------|-----------------------|------------------------------|
|            |                          |                               | With Standard Mounting Hole | With Threaded Inserts | With Fixed Female Screwlocks |
| 3          | 25                       | A                             | 745922-2                    | 745925-2              | 745928-2                     |
| 4          | 37                       | A                             | 747713-2                    | 747714-2              | 747715-2                     |
| 5          | 50                       | A                             | 747143-2                    | 747144-2              | 747145-2                     |

**Notes:** 1. All receptacles are preloaded with straight posted ACTION PIN socket contacts.  
 2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.  
 3. Consult AMP Incorporated for replacement contact numbers.

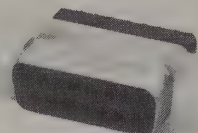
## HDP-20 Full Metal Shell Straight Posted Connectors

### Material and Finish:

**Shell**—Steel, tin plated  
**Insert**—94V-0 rated thermoplastic, black  
**Contacts (Posted)**—  
**Pin**—Brass  
**Sockets**—Phosphor bronze  
 Contacts plated as follows:  
**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, entire contact underplated with .000050 [0.00127] nickel.  
**B**—Gold flash on mating end, tin-lead on termination end, entire contact underplated with .000030 [0.00076] nickel.



Plug



Receptacle

| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Plug Part No.          | Receptacle Part No.          |                  |
|------------|--------------------------|-------------------------------|------------------------|------------------------------|------------------|
|            |                          |                               | With Grounding Indents | With Standard Mounting Holes | With Clinch Nuts |
| 1          | 9                        | A                             | 745410-1               | 745183-1                     | 747190-2         |
|            |                          | B                             | 745410-2               | 745183-2                     | 747190-1         |
| 2          | 15                       | A                             | 745410-7*              | 745183-7*                    | 747190-4*        |
|            |                          | A                             | 745411-1               | 745185-1                     | 745820-1         |
|            |                          | B                             | 745411-2               | 745185-2                     | 745820-2         |
|            |                          | A                             | 745411-7*              | 745185-7*                    | 745820-7*        |
| 3          | 25                       | A                             | 745412-1               | 745187-1                     | 745886-1         |
|            |                          | B                             | 745412-2               | 745187-2                     | 745886-2         |
|            |                          | A                             | 745412-7*              | 745187-7*                    | 745886-7*        |
| 4          | 37                       | A                             | 745413-1               | 745189-1                     | 747315-1         |
|            |                          | B                             | 745413-2               | 745189-2                     | 747315-2         |
| 5          | 50                       | A                             | 745414-1               | 745191-1                     | 747302-1         |

\* Post length is .188 [4.78].  
 .125 [3.18] post length is recommended for pc board thickness of .062-.093 [1.57-2.36].  
 .188 [4.78] post length is recommended for pc board thickness of .125 [3.18].

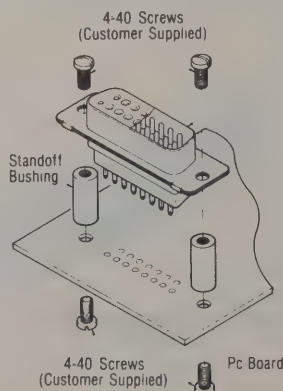
**Notes:** 1. All connectors are preloaded with size 20 DF posted contacts.  
 2. Special loading of contacts can be arranged upon request.

## Standoff Bushings for Full Metal Shell Straight Posted Connectors

### Material:

Aluminum

**Kit Number 205933-3**  
 (two bushings per package)



## Keying Plug (for Size 20 Socket Contacts)

### Material:

Polyphenylene oxide



Part No. 206509-1

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.  
 Call 1-800-522-6752 for product information  
 and 1-800-722-1111 for tooling information.



For more information request Catalog 82068

## HD-20 Front Metal Shell Straight Posted Connectors

### Material and Finish:

**Shell**—Steel, tin plated

**Housing**—Thermoplastic, black,  
94V-0 rated

**Threaded Inserts**—Brass, unplated

**Female Screwlocks**—Zinc

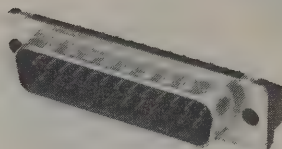
**Pin Contacts (Posted)**—Brass

**Socket Contacts (Posted)**—Phosphor  
bronze

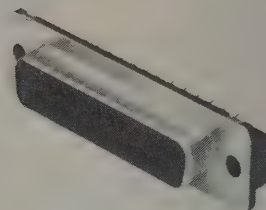
**Contact Finish**—Duplex plated

**A**—.000030 [0.00076] gold on mating  
end, tin-lead on termination end,  
entire contact underplated with  
.000050 [0.00127] nickel.

**B**—Gold flash on mating end, tin-lead  
on termination end, entire contact  
underplated with .000030 [0.00076]  
nickel.



Plug with Grounding Indents



Receptacle

| Shell<br>Size | No. of<br>Contact<br>Positions | Post*<br>Length | Contact<br>Finish<br>(Plating<br>Code) | Plug Part Numbers                  |                             |                                    | Receptacle Part Numbers            |                             |                                    |
|---------------|--------------------------------|-----------------|----------------------------------------|------------------------------------|-----------------------------|------------------------------------|------------------------------------|-----------------------------|------------------------------------|
|               |                                |                 |                                        | With Standard<br>Mounting<br>Holes | With<br>Threaded<br>Inserts | With Fixed<br>Female<br>Screwlocks | With Standard<br>Mounting<br>Holes | With<br>Threaded<br>Inserts | With Fixed<br>Female<br>Screwlocks |
| 1             | 9                              | .125            | A                                      | 747871-2                           | 747871-8                    | —                                  | 747150-2                           | 747150-8                    | 1-747150-4                         |
|               |                                | 3.18            | B                                      | 747871-1                           | —                           | 1-747871-3                         | 747150-1                           | 747150-7                    | 1-747150-3                         |
|               |                                | .170            | A                                      | 747871-4                           | —                           | 1-747871-6                         | 747150-4                           | —                           | 1-747150-6                         |
|               |                                | 4.32            | B                                      | 747871-3                           | —                           | 1-747871-5                         | —                                  | 747150-9                    | 1-747150-5                         |
|               |                                | .125            | A                                      | 747872-2                           | 747872-8                    | 1-747872-4                         | 747299-2                           | 747299-8                    | 1-747299-4                         |
|               |                                | 3.18            | B                                      | —                                  | —                           | —                                  | 747299-1                           | 747299-7                    | 1-747299-3                         |
| 2             | 15                             | .170            | A                                      | 747872-4                           | 1-747872-0                  | 1-747872-6                         | 747299-4                           | 1-747299-0                  | 1-747299-6                         |
|               |                                | 4.32            | B                                      | —                                  | —                           | 1-747872-5                         | —                                  | —                           | 1-747299-5                         |
|               |                                | .250            | A                                      | —                                  | —                           | —                                  | 747299-6                           | —                           | —                                  |
|               |                                | 6.35            | —                                      | —                                  | —                           | —                                  | —                                  | —                           | —                                  |
|               |                                | .125            | A                                      | 745968-2                           | 745968-8                    | 1-745968-4                         | 745967-2                           | 745967-8                    | 1-745967-4                         |
|               |                                | 3.18            | B                                      | 745968-1                           | 745968-7                    | 1-745968-3                         | 745967-1                           | 745967-7                    | 1-745967-3                         |
| 3             | 25                             | .170            | A                                      | 745968-4                           | —                           | 1-745968-6                         | 745967-4                           | 1-745967-0                  | 1-745967-6                         |
|               |                                | 4.32            | B                                      | 745968-3                           | 745968-9                    | 1-745968-5                         | 745967-3                           | 745967-9                    | 1-745967-5                         |
|               |                                | .250            | A                                      | —                                  | 1-745968-2                  | —                                  | 745967-6                           | —                           | —                                  |
|               |                                | 6.35            | B                                      | —                                  | —                           | —                                  | —                                  | 1-745967-1                  | —                                  |
|               |                                | .125            | A                                      | 747375-2                           | 747375-8                    | —                                  | 747301-2                           | 747301-8                    | 1-747301-4                         |
|               |                                | 3.18            | B                                      | —                                  | 747375-7                    | 1-747375-3                         | 747301-1                           | 747301-7                    | —                                  |
| 4             | 37                             | .170            | A                                      | 747375-4                           | 1-747375-0                  | —                                  | 747301-4                           | —                           | 1-747301-6                         |
|               |                                | 4.32            | B                                      | —                                  | —                           | 1-747375-5                         | 747301-3                           | 747301-9                    | 1-747301-5                         |
|               |                                | .250            | A                                      | —                                  | —                           | —                                  | 747301-6                           | —                           | —                                  |
|               |                                | 6.35            | —                                      | —                                  | —                           | —                                  | —                                  | —                           | —                                  |

\*.125 [3.18] post length is for recommended pc board thickness of .062-.093 [1.57-2.36] max.; .170 [4.32] post length is for recommended pc board thickness of .093-.125 [2.36-3.18]; .250 [6.35] post length is for special applications.

**Notes:** 1. All plugs are preloaded with size 20 DF posted pin contacts and all receptacles are preloaded with size 20 DF posted socket contacts.

2. Special loading of contacts can be arranged upon request.

3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

## HD-20 All-Plastic Straight Posted Connectors with ACTION PIN Contacts

### Material and Finish:

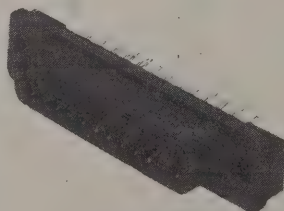
**Housing**—Thermoplastic, black,  
94V-0 rated

**Threaded Inserts**—Brass, unplated

**Female Screwlocks**—Brass, nickel  
plated

**ACTION PIN Contacts**—Copper alloy,  
duplex plated as follows:

**A**—.000030 [0.00076] gold on mating  
end, tin-lead on ACTION PIN post  
surface, with entire contact nickel  
underplated.

Receptacle  
(Low Profile)

| Shell<br>Size | No. of<br>Contact<br>Positions | Contact<br>Finish<br>(Plating<br>Code) | Receptacle Part Numbers                         |                                    |
|---------------|--------------------------------|----------------------------------------|-------------------------------------------------|------------------------------------|
|               |                                |                                        | For .093-.125<br>[2.36-3.18]<br>Thick Pc Boards | For .062 [1.57]<br>Thick Pc Boards |
| 2             | 15                             | A                                      | 745456-2                                        | 745587-2                           |
| 3             | 25                             | A                                      | 745458-2                                        | 745588-2                           |

**Notes:** 1. All receptacles are preloaded with straight posted ACTION PIN socket contacts.  
2. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.  
3. Consult AMP Incorporated for replacement contact numbers.

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C-1202

For manufacturers' sales offices, see yellow pages

EEM 1993



## HD-20 All-Plastic Straight Posted Connectors

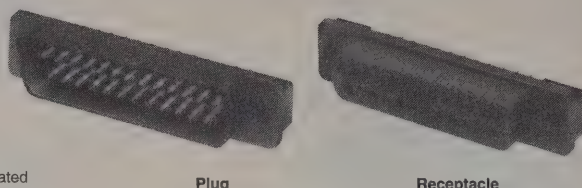
### Material and Finish:

**Housing**—Thermoplastic, black, 94V-0 rated  
**Threaded Inserts**—Brass, unplated  
**Female Screwlocks**—Brass, nickel plated  
**Pin Contacts (Posted)**—Brass  
**Socket Contacts (Posted)**—Phosphor bronze

Contacts plated as follows:

**A**—.000030 [0.00076] gold on mating end, tin-lead on termination end, entire contact underplated with .000050 [0.00127] nickel.

**B**—Gold flash on mating end, tin-lead on termination end, entire contact underplated with .000030 [0.00076] nickel.



Plug

Receptacle

| Shell Size | No. of Contact Positions | Post* Length | Contact Finish (Plating Code) | Plug Part Numbers            |                       |                              | Receptacle Part Numbers      |                       |                              |
|------------|--------------------------|--------------|-------------------------------|------------------------------|-----------------------|------------------------------|------------------------------|-----------------------|------------------------------|
|            |                          |              |                               | With Standard Mounting Holes | With Threaded Inserts | With Fixed Female Screwlocks | With Standard Mounting Holes | With Threaded Inserts | With Fixed Female Screwlocks |
| 1          | 9                        | .125         | A                             | 208006-2                     | 745051-2              | 745071-2                     | 207826-4                     | 207841-4              | 745076-4                     |
|            |                          | 3.18         | B                             | 208006-1                     | 745051-1              | 745071-1                     | 207826-3                     | 207841-3              | 745076-3                     |
|            |                          | .170         | A                             | 208006-4                     | 745051-4              | 745071-4                     | 207826-6                     | 207841-6              | 745076-6                     |
| 2          | 15                       | 4.32         | A                             | 208007-2                     | 745052-2              | 745072-2                     | 207827-4                     | 745057-4              | 745077-4                     |
|            |                          | .125         | B                             | 208007-1                     | 745052-1              | 745072-1                     | 207827-3                     | 745057-3              | 745077-3                     |
|            |                          | .125         | A                             | 208008-2                     | 745053-2              | 745073-2                     | 207828-4                     | 745058-4              | 745078-4                     |
| 3          | 25                       | 3.18         | B                             | 208008-1                     | 745053-1              | 745073-1                     | 207828-3                     | 745058-3              | 745078-3                     |
|            |                          | .170         | A                             | 208008-4                     | 745053-4              | 745073-4                     | 207828-6                     | 745058-6              | 745078-6                     |
|            |                          | 4.32         | B                             | 208008-3                     | 745053-3              | 745073-3                     | 207828-5                     | 745058-5              | 745078-5                     |
| 4          | 37                       | .125         | A                             | 208009-2                     | 745054-2              | 745074-2                     | 207829-4                     | 745059-4              | 745079-4                     |
|            |                          | 3.18         | B                             | 208009-1                     | 745054-1              | 745074-1                     | 207829-3                     | 745059-3              | 745079-3                     |
|            |                          | .125         | A                             | 208010-2                     | 745055-2              | 745075-2                     | 207830-4                     | 745060-4              | 745080-4                     |
| 5          | 50                       | 3.18         | B                             | 208010-1                     | 745055-1              | 745075-1                     | 207830-3                     | 745060-3              | 745080-3                     |

\*.125 [3.18] post length is for recommended pc board thickness of .062-.093 [1.57-2.36] max.; .170 [4.32] post length is for recommended pc board thickness of .093-.125 [2.36-3.18]

Notes: 1. All plugs and receptacles are preloaded with size 20 DF posted contacts.

2. It is recommended that these connectors be secured with appropriate hardware to a pc board and/or panel.

3. Male screw retainers are used as mating hardware with 4-40 female screwlocks.

## HD-20 Front Metal Shell Right-Angle Stacked Connectors, Series I

**Plug over Plug (shown),  
 Receptacle over Plug, Plug over Receptacle  
 Post Size - .026 Dia.**

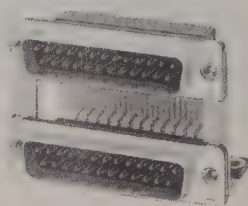
### Material and Finish:

**Front Shells and Brackets**—Steel, tin plated  
**Housings**—94V-0 rated thermoplastic, black  
**Pc Board**—94V-0 flame retardant glass epoxy  
**Eyelets**—Brass, unplated  
**Threaded Inserts**—Stainless steel  
**Female Screwlocks**—Steel, nickel plated  
**Boardlock**—Copper alloy, tin-lead plated  
**Contacts (Posted):**  
**Pin**—Brass  
**Socket**—Phosphor bronze

Contacts duplex plated as follows:

**A**—.000030 gold on mating end, tin-lead on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated



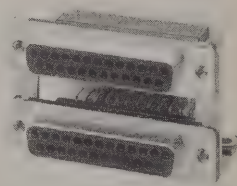
**Receptacle over Receptacle  
 Post Size - .026 Dia.**

### Material and Finish:

**Front Shells and Brackets**—Steel, tin plated  
**Housings**—94V-0 rated thermoplastic, black  
**Pc Board**—94V-0 flame retardant glass epoxy  
**Eyelets**—Brass, unplated  
**Threaded Inserts**—Stainless steel  
**Female Screwlocks**—Steel, nickel plated  
**Boardlock**—Copper alloy, tin-lead plated  
**Socket Contacts (Posted)**—Phosphor bronze, duplex plated as follows:

**A**—.000030 gold on mating end, tin-lead on termination end, with entire contact nickel underplated

**B**—Gold flash on mating end, tin-lead on termination end, with entire contact nickel underplated



| Connector Configuration    | Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Part Numbers          |                        |                                    |                                      |
|----------------------------|------------|--------------------------|-------------------------------|-----------------------|------------------------|------------------------------------|--------------------------------------|
|                            |            |                          |                               | With Threaded Inserts | With Female Screwlocks | With Female Screwlocks and Washers | With Threaded Inserts and Boardlocks |
| Plug over Plug             | 1          | 18                       | A                             | —                     | —                      | —                                  | 748662-2                             |
|                            |            |                          | B                             | 748126-2              | 748126-4               | 748126-6                           | 748126-8                             |
|                            | 3          | 50                       | A                             | 748126-1              | 748126-3               | 748126-5                           | 748126-7                             |
|                            |            |                          | B                             | 748324-2              | —                      | —                                  | —                                    |
|                            |            |                          | A                             | 748324-1              | —                      | —                                  | —                                    |
|                            |            |                          | B                             | 748324-1              | —                      | —                                  | —                                    |
| Receptacle over Plug       | 4          | 74                       | A                             | 748121-2              | 748121-4               | 748121-6                           | 748121-8                             |
|                            |            |                          | B                             | 748121-1              | 748121-3               | 748121-5                           | 748121-7                             |
|                            | 3          | 50                       | A                             | 748325-2              | —                      | —                                  | —                                    |
|                            |            |                          | B                             | 748325-1              | —                      | —                                  | —                                    |
|                            |            |                          | A                             | 748131-2              | 748131-4               | 748131-6                           | 748131-8                             |
|                            |            |                          | B                             | 748131-1              | 748131-3               | 748131-5                           | 748131-7                             |
| Plug over Receptacle       | 3          | 50                       | A                             | 748556-2              | —                      | —                                  | —                                    |
|                            |            |                          | B                             | 748556-1              | —                      | —                                  | —                                    |
| Receptacle over Receptacle | 3          | 50                       | A                             | 748275-2              | —                      | —                                  | 748275-8                             |
|                            |            |                          | B                             | 748275-1              | —                      | —                                  | 748275-7                             |

Notes: 1. All connectors are preloaded with size 20 DF posted contacts; plugs with pin contacts and receptacles with socket contacts.

2. Recommended pc board thickness is .062 for connectors with boardlocks and .093 max. for all others.

3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

| Shell Size | No. of Contact Positions | Contact Finish (Plating Code) | Part Numbers          |                        |                                    |                                      |
|------------|--------------------------|-------------------------------|-----------------------|------------------------|------------------------------------|--------------------------------------|
|            |                          |                               | With Threaded Inserts | With Female Screwlocks | With Female Screwlocks and Washers | With Threaded Inserts and Boardlocks |
| 1          | 18                       | A                             | 1-747804-0            | 747804-2               | 747804-4                           | 1-747804-2                           |
|            |                          | B                             | 747804-9              | 747804-1               | 747804-3                           | 1-747804-1                           |
|            |                          | A                             | 748110-2              | 748110-4               | 748110-6                           | 748110-8                             |
|            |                          | B                             | 748110-1              | 748110-3               | 748110-5                           | 748110-7                             |
| 2          | 30                       | A                             | 748544-2              | —                      | —                                  | 748544-8                             |
|            |                          | B                             | 748544-1              | —                      | —                                  | 748544-7                             |
| 3          | 50                       | A                             | 1-747754-0            | 747754-2               | 747754-4                           | 1-747754-2                           |
|            |                          | B                             | 747754-9              | 747754-1               | 747754-3                           | 1-747754-1                           |
|            |                          | A                             | 747867-2              | 747867-4               | 747867-6                           | 747867-8                             |
|            |                          | B                             | 747867-1              | 747867-3               | 747867-5                           | 747867-7                             |
| 4          | 74                       | A                             | 1-747899-0            | 747899-4               | 747899-6                           | 1-747899-2                           |
|            |                          | B                             | 747899-9              | 747899-3               | 747899-5                           | 1-747899-1                           |
|            |                          | A                             | 748099-2              | 748099-4               | 748099-6                           | 748099-8                             |
|            |                          | B                             | 748099-1              | 748099-3               | 748099-5                           | 748099-7                             |

Notes: 1. All receptacles are preloaded with size 20 DF posted socket contacts.

2. Recommended pc board thickness is .062 for connectors with boardlocks and .093 max. for all others.

3. Male screw retainers are used as mating hardware for connectors with 4-40 female screwlocks.

Specifications subject to change.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

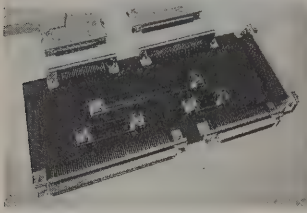
Call 1-800-522-6752 for product information  
 and 1-800-722-1111 for tooling information.



## Shielded AMPLIMITE .050 Series Connectors (.050 X .100 [1.27 X 2.54] Centerline) Series III



For more information request Catalog 82068



### Introduction

Shielded AMPLIMITE .050 Series connectors offer a high-density D type interface. Featuring .050 x .100 [1.27 x 2.54] contact centerline spacing, these compact and reliable connectors are available in 20 through 120 positions. Their construction offers exceptional EMI/RFI shielding effectiveness.

**Shielded AMPLIMITE .050 Series Connectors, Series III, are approved to SCSI-2, SCSI-3, EIA RS-232, IPI-2, and HIPPI standards.**

Connectors are available in cable-mount and panel mount versions and vertical and right-angle mount pcb headers. The headers feature high temperature housings, tight tolerances and registration features to make them suitable for robotic assembly and high temperature reflow soldering.

Cable and panel connectors use insulation displacement contacts for fast termination of discrete, round-to-flat laminated, and ribbon cable. Recommended wire size is 28 AWG [0.08-0.09 mm<sup>2</sup>] or 30 AWG [0.05 mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.

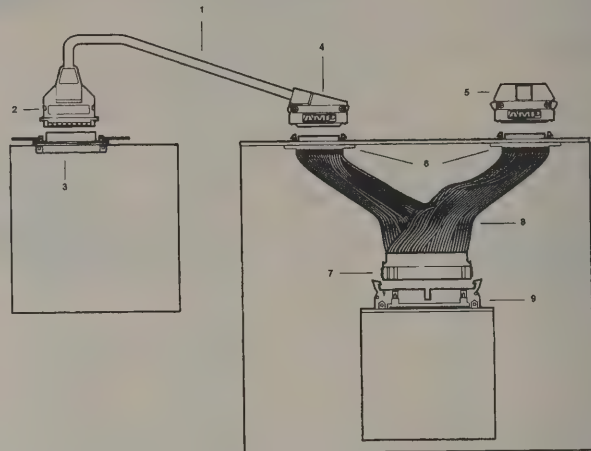
Recognized  
File No. E28476



Certified  
File No. LR7189A-207

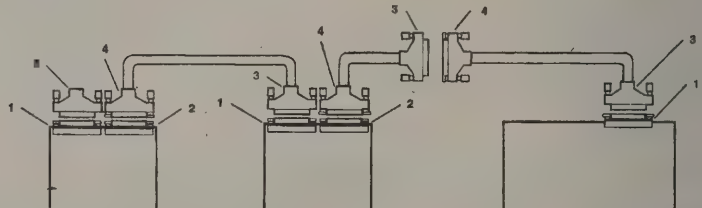


### SCSI-1 to SCSI-2 and SCSI-2 to SCSI-2 Applications



- |                                                         |                                                                                |
|---------------------------------------------------------|--------------------------------------------------------------------------------|
| 1. SCSI Transition Cable Assembly                       | 6. Shielded AMPLIMITE .050 Series, Panel-Mount Receptacles                     |
| 2. Shielded CHAMP Plug Connector                        | 7. AMP-LATCH Novo Receptacle                                                   |
| 3. Shielded CHAMP pcb Connector                         | 8. Unshielded AMP-LATCH to Shielded AMPLIMITE .050 Series Daisy Chain Assembly |
| 4. Shielded AMPLIMITE .050 Series Plug with Backshell   | 9. AMP-LATCH Universal Ejection Style Pin Header                               |
| 5. Shielded AMPLIMITE .050 Series Termination Connector |                                                                                |

### IPI-2 and HIPPI Applications



### Using AMPLIMITE .050 Series Shielded Board-Mount and Cable Connectors and Terminators

- |                                                                       |                                                                              |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------|
| 1. Shielded Board-Mount Right-Angle Receptacle with Female Screwlocks | 4. Cable Connector, Shielded Receptacle with Backshell and Female Jackscrews |
| 2. Shielded Board-Mount Right-Angle Plug with Male Screwlocks         | 5. Shielded Terminator                                                       |
| 3. Cable Connectors, Shielded Plug with Backshell and Male Jackscrews |                                                                              |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



AMP INCORPORATED, HARRISBURG, PA 17105



## Shielded AMPLIMITE .050 Series Connectors (.050 x .100 [1.27 x 2.54] Centerlines)



For more information request Catalog 82068

### Cable Assemblies Small Computer Systems Interface (SCSI) and RS-232

**Note:** .050 centerline ribbon cable assemblies are available in single or double ended versions. These assemblies are made using AMPLIMITE .050 Series panel mount connectors, AMPLIMITE .050 Series all-plastic connectors and AMP-LATCH Novo receptacle. Consult AMP Incorporated.

| Application              | Assembly                                                   | Part Numbers |          |          |
|--------------------------|------------------------------------------------------------|--------------|----------|----------|
|                          |                                                            | 2 Feet       | 2 Meters | 3 Meters |
| SCSI-2                   | 50 pos. .050 Series Plug to<br>50 pos. .050 Series Plug    | 750254-1     | 750254-2 | 750254-3 |
| SCSI-2*                  | 68 pos. .050 Series Plug to<br>68 pos. .050 Series Plug    | 750732-3     | 750732-2 | 750732-4 |
| SCSI-1 to<br>SCSI-2      | 50 pos. CHAMP Conn. to<br>50 pos. .050 Series Plug         | 750342-3     | 750342-5 | —        |
| RS-232<br>(Alternate)    | 26 pos. .050 Series Plug to<br>26 pos. .050 Series Plug    | 750255-1     | 750255-2 | 750255-3 |
| RS-232 to<br>RS-232 Alt. | Std. 25 pos. AMPLIMITE Plug to<br>26 pos. .050 Series Plug | 750257-1     | 750257-2 | —        |

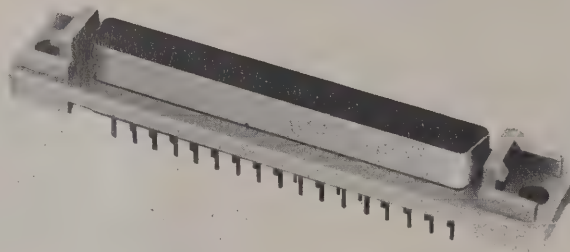
\* This version has spring latches. Consult AMP Incorporated for availability of jackscrew version.

### Cable Assemblies Intelligent Peripheral Interface (IPI-2) and High Performance Parallel Interface

| Application        | Assembly                                                  | Part Numbers |           |           |
|--------------------|-----------------------------------------------------------|--------------|-----------|-----------|
|                    |                                                           | 5 Meters     | 15 Meters | 25 Meters |
| IPI-2 and<br>HIPPI | 100 pos. .050 Series Plug to<br>100 pos. .050 Series Plug | 749755-2     | 749755-3  | 749755-4  |

### Vertical Receptacle Headers With Rails And Latch Blocks

.125 [3.18] Solder Tail  
Length



#### Materials:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

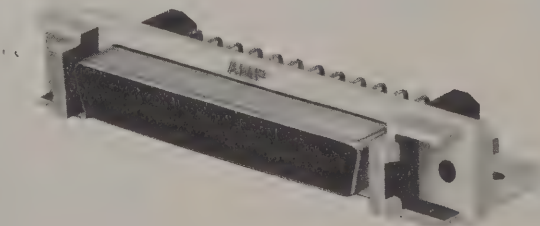
**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; .000120 [0.00304] min. tin-lead on solder end; all under-plated .000050 [0.00127] min. nickel

| No. of Pos. | Part No.   |
|-------------|------------|
| 20          | 749069-1   |
| 26          | 749069-2   |
| 28          | 749069-3   |
| 40          | 749069-4   |
| 50          | 749069-5   |
| 60          | 749069-6   |
| 68          | 749069-7   |
| 80          | 749069-8   |
| 100         | 749069-9   |
| 120         | 1-749069-0 |

### Right-Angle Receptacle Headers With Rails And Latch Blocks

.112 [2.84] Solder Tail  
Length



#### Materials:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; .000120 [0.00304] min. tin-lead on solder end; all under-plated .000050 [0.00127] min. nickel

| No. of Pos. | Part Numbers       |                 |
|-------------|--------------------|-----------------|
|             | Without Boardlocks | With Boardlocks |
| 20          | 749075-1           | 749830-1        |
| 26          | 749075-2           | 749830-2        |
| 28          | 749075-3           | 749830-3        |
| 40          | 749075-4           | 749830-4        |
| 50          | 749075-5           | 749830-5        |
| 50          | 750494-5*          | 750463-5*       |
| 60          | 749075-6           | 749830-6        |
| 68          | 749075-7           | 749830-7        |
| 80          | 749075-8           | 749830-8        |
| 100         | 749075-9           | 749830-9        |
| 120         | 1-749075-0         | 1-749830-0      |

\* Part Nos. have 4-40 threaded mating holes (2 places), for use with female screwlock Part No. 750644-1.

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



## Shielded AMPLIMITE .050 Series Connectors Series III

### Right-Angle Receptacle Headers Without Rails and Latch Blocks

.112 [2.84] and .144 [3.66]

#### Solder Tail Lengths

For use with jackscrew mating hardware

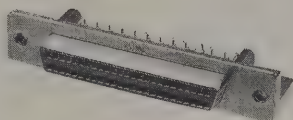
#### Materials and Finish:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; .000120 [0.00304] min. tin-lead on solder end; all underplated .000050 [0.00127] min. nickel



### Vertical Receptacle Headers Without Rails and Latch Blocks

.125 [3.18] Solder Tail

#### Length

For use with jackscrew mating hardware

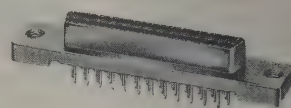
#### Materials and Finish:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; .000120 [0.00304] min. tin-lead on solder end; all underplated .000050 [0.00127] min. nickel



| No. of Pos. | Part Numbers                  |                 |                               |
|-------------|-------------------------------|-----------------|-------------------------------|
|             | With .112 [2.84] Solder Tails |                 | With .144 [3.66] Solder Tails |
|             | Without Boardlocks            | With Boardlocks | With Boardlocks               |
| 50          | 749076-5                      | 750737-5        | 786324-5                      |
| 68          | 749076-7                      | 750737-7        | 786324-7                      |
| 100         | 749076-9                      | 750737-9        | 786324-9                      |

Note: Female screwlocks must be used to mate with cable assemblies with male jackscrew hardware.

| No. of Pos. | Part Numbers |
|-------------|--------------|
| 50          | 749070-5     |
| 68          | 749070-7     |
| 100         | 749070-9     |

Note: Female screwlocks must be used to mate with cable assemblies with male jackscrew hardware.

### Right-Angle Receptacle Headers Without Rails — With Latch Blocks

.112 [2.84] and .144 [3.66]

#### Solder Tail Lengths

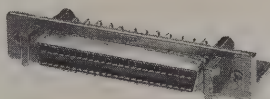
#### Materials and Finish:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; .000120 [0.00304] min. tin-lead on solder end; all underplated .000050 [0.00127] min. nickel



| No. of Pos. | Part Numbers                  |                 |                               |                 |
|-------------|-------------------------------|-----------------|-------------------------------|-----------------|
|             | With .112 [2.84] Solder Tails |                 | With .144 [3.66] Solder Tails |                 |
|             | Without Boardlocks            | With Boardlocks | Without Boardlocks            | With Boardlocks |
| 20          | 749649-2                      | 749831-1        | —                             | —               |
| 26          | 749649-1                      | 749831-2        | —                             | —               |
| 28          | 749649-3                      | 749831-3        | —                             | —               |
| 40          | 749649-4                      | 749831-4        | —                             | —               |
| 50          | 749649-5                      | 749831-5        | 786521-5                      | 786323-5        |
| 50          | —                             | 750641-5*       | —                             | —               |
| 60          | 749649-6                      | 749831-6        | —                             | —               |
| 68          | 749649-7                      | 749831-7        | 786521-7                      | 786323-7        |
| 80          | 749649-8                      | 749831-8        | —                             | —               |
| 100         | 749649-9                      | 749831-9        | 786521-9                      | 786323-9        |
| 100         | 750505-9*                     | —               | —                             | —               |
| 120         | 1-749649-0                    | 1-749831-0      | —                             | —               |

\*Part Nos. have 4-40 threaded mating holes (2 places), for use with female screwlock Part No. 750644-1

### Vertical Receptacle Headers Without Rails—With Latch Blocks

.125 [3.18] Solder Tail

#### Length

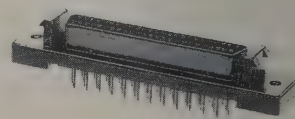
#### Materials and Finish:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end; .000120 [0.00304] min. tin-lead on solder end; all underplated .000050 [0.00127] min. nickel



| No. of Pos. | Part Numbers |
|-------------|--------------|
| 20          | 749721-1     |
| 26          | 749721-2     |
| 28          | 749721-3     |
| 40          | 749721-4     |
| 50          | 749721-5     |
| 60          | 749721-6     |
| 68          | 749721-7     |
| 80          | 749721-8     |
| 100         | 749721-9     |
| 120         | 1-749721-0   |

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.



Shielded AMPLIMITE .050 Series Connectors  
Series III



For more information request Catalog 82068

Stacked, Right-Angle Headers  
With Rails and Latch Blocks  
.112 [2.84] Solder Tail Length

Materials and Finish:

**Housing**—Thermoplastic, 94V-0 rated, black, SMT compatible

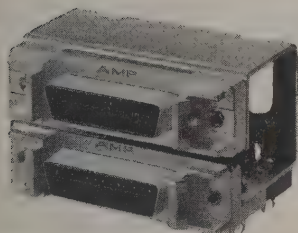
**Shell**—Steel, plated .000200 [0.00508] min. bright tin over .000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Case**—Aluminum

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000120 [0.00304] min. tin-lead on solder end; all underplated .000050 [0.00127] min. nickel

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



| No. of Pos. | Part Number |
|-------------|-------------|
| 26          | 750713-1    |
| 50*         | 750885-1    |
| 50*         | 750885-2    |

\* Stack height dimensions are different; request Customer Drawing

Subminiature D,  
SBus Connectors

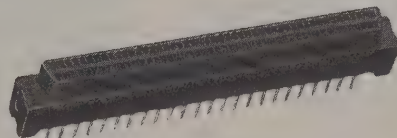
Materials and Finish:

**Housing**—Thermoplastic, 94V-0 rated, black

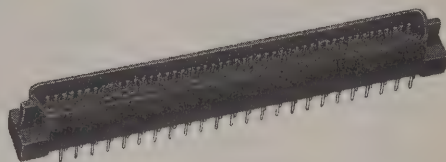
Contact Plating Code:

**Contacts** — Phosphor bronze, plated;  
**A**—.000030 [0.00076] min. gold on mating end, .000150 [0.0038] min. tin-lead on solder end, all over .000050 [0.00127] min. nickel underplating

**B**—.000010 [0.000254] min. gold on mating end, .000150 [0.0038] min. tin-lead on solder end, all over .000050 [0.00127] min. nickel underplating



Receptacle Header



Plug Header

| No. of Positions | Contact Plating Code | With Polarization |             | Without Polarization |             |
|------------------|----------------------|-------------------|-------------|----------------------|-------------|
|                  |                      | Receptacle Header | Plug Header | Receptacle Header    | Plug Header |
| 96               | A                    | 750295-1          | 6-178464-8  | 750350-1             | 6-174683-8  |
|                  | B                    | 750295-2          | 178464-8    | 750350-2             | 174683-8    |

Subminiature D  
Extended SBus Connectors

Materials and Finish:

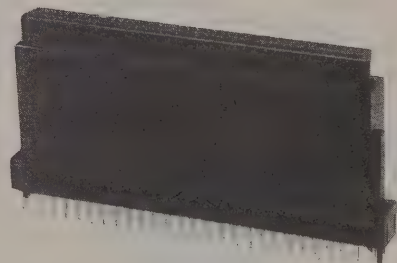
**Housing**—Thermoplastic, 94V-0 rated, black

**Hold-Down Posts**— Phosphor bronze, plated .000200 [0.00508] min. tin-lead over .000050 [0.00127] min. nickel

Contact Plating Code:

**Contacts**—Phosphor bronze, plated;  
**A**—.000030 [0.00076] min. gold on mating end, .000150 [0.0038] min. tin-lead on solder end, all over .000050 [0.00127] min. nickel underplating

**B**—.000010 [0.000254] min. gold on mating end, .000150 [0.0038] min. tin-lead on solder end, all over .000050 [0.00127] min. nickel underplating



Receptacle Header

| No. of Pos. | Contact Plating Code | Part Number |
|-------------|----------------------|-------------|
| 96          | A                    | 750925-1    |
|             | B                    | 750925-2    |





## AMPLIMITE .050 Series Cable Connectors (.050 x .100 [1.27 x 2.54] Centerline)



For more information request Catalog 82068

### Shielded Plugs

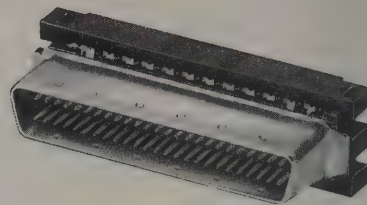
#### Materials:

**Housing**—Thermoplastic, 94V-0 rated, black

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000050 [0.00127] min. tin-lead on termination end, all underplated .000050 [0.00127] min. nickel

**Shell**—Steel, plated .000200 [0.00508] min. bright tin-lead over .000050 [0.00127] min. copper

**Recommended wire size**—28 AWG [0.08-0.09 mm<sup>2</sup>] or 30 AWG [0.05 mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.



| No. of Pos. | Part Numbers                     |                    |                                                 |                                             |                                             |                                             |
|-------------|----------------------------------|--------------------|-------------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|             | With Standard Termination Covers |                    | With Unassembled Wire Lacing Termination Covers |                                             | Wire Lacing Covers                          |                                             |
|             | Assembled Covers                 | Unassembled Covers | .032-.036<br>[0.81-0.91]<br>Outer Wire Dia.     | .029-.031<br>[0.74-0.79]<br>Outer Wire Dia. | .032-.036<br>[0.81-0.91]<br>Outer Wire Dia. | .029-.031<br>[0.74-0.79]<br>Outer Wire Dia. |
| 20          | 749111-1                         | 749621-1           | —                                               | —                                           | —                                           | —                                           |
| 26          | 1-749111-0                       | 749621-2           | 750913-2                                        | 1-750913-2                                  | 750877-2                                    | 1-750877-2                                  |
| 28          | 749111-2                         | 749621-3           | —                                               | —                                           | —                                           | —                                           |
| 40          | 749111-3                         | 749621-4           | —                                               | —                                           | —                                           | —                                           |
| 50          | 749111-4                         | 749621-5           | 750913-5                                        | 1-750913-5                                  | 750877-5                                    | 1-750877-5                                  |
| 60          | 749111-5                         | 749621-6           | —                                               | —                                           | —                                           | —                                           |
| 68          | 749111-6                         | 749621-7           | 750913-7                                        | 1-750913-7                                  | 750877-7                                    | 1-750877-7                                  |
| 80          | 749111-7                         | 749621-8           | —                                               | —                                           | —                                           | —                                           |
| 100         | 749111-8                         | 749621-9           | 750913-9                                        | 1-750913-9                                  | 750877-9                                    | 1-750877-9                                  |
| 120         | 749111-9                         | 1-749621-0         | —                                               | —                                           | —                                           | —                                           |

Note: Plug connector requires backshell kit for complete assembly. Refer to next page for backshell kit part numbers.

### Shielded Receptacles

#### Materials:

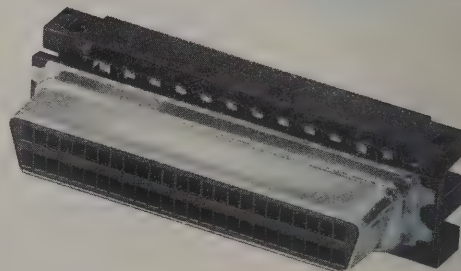
##### Housing and Covers—

Thermoplastic, 94V-0 rated, black

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000050 [0.00127] min. tin-lead on termination end, all underplated .000050 [0.00127] min. nickel

**Shell**—Steel, plated .000200 [0.00508] min. bright tin-lead over .000050 [0.00127] min. copper

**Recommended wire size**—28 AWG [0.08-0.09 mm<sup>2</sup>] or 30 AWG [0.05 mm<sup>2</sup>], solid or 7 strand, with a .029-.036 [0.74-0.89] insulation diameter.



| No. of Pos. | Part Numbers     |                    |
|-------------|------------------|--------------------|
|             | Assembled Covers | Unassembled Covers |
| 26          | 749210-2         | 749699-2           |
| 40          | 749210-4         | 749699-4           |
| 50          | 749210-5         | 749699-5           |
| 68          | 749210-7         | 749699-7           |
| 100         | 749210-8         | 749699-8           |

Note: Receptacle connector requires backshell kit for complete assembly. Refer to next page for backshell kit part numbers.

### Unshielded Plugs

#### Materials:

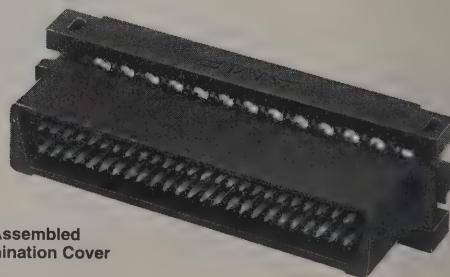
##### Housing and Termination

**Covers**—Thermoplastic, 94V-0 rated, black

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000050 [0.00127] min. bright tin-lead on termination area, all underplated .000050 [0.00127] nickel

| No. of Pos. | Part Number |
|-------------|-------------|
| 20          | 749925-1    |
| 28          | 749925-7    |
| 40          | 749925-2    |
| 50          | 749925-3    |
| 60          | 749925-4    |
| 68          | 749925-5    |
| 100         | 749925-6    |

Assembled Termination Cover



# AMP

C-1208

AMP INCORPORATED, HARRISBURG, PA 17105

For manufacturers' sales offices, see yellow pages

Specifications subject to change.

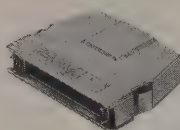
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

EEM 1993

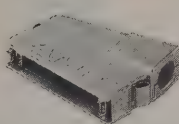


## Shielded AMPLIMITE .050 Series Connectors Series III

For more information request Catalog 82068



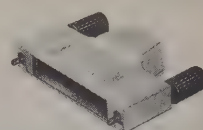
Style A  
Straight Exit  
with Latches



Style A  
Angled Exit  
with Latches



Style B  
Straight Exit  
with Latches



Style C  
Straight Exit  
with Jackscrews  
(Male Jackscrews Shown)

### Shielded Backshell Kits

(Two-Piece RFI/EMI Shields for Jacketed Cable)

#### Materials and Finish:

**Backshell**—Zinc, plated nickel over copper

**Spring Latch**—Stainless steel

**Strain Relief Staple**—Steel, plated tin-lead over nickel

**Jackscrews**—Steel, plated black zinc

**2-56 Screws**—Stainless steel

| No. of Pos. | Style | Max. O.D.    | Straight with Latches | Straight Male Jackscrews | Straight Female Jackscrews | Angled with Latches |
|-------------|-------|--------------|-----------------------|--------------------------|----------------------------|---------------------|
| 20          | A     | .270 [6.86]  | 749190-1              | —                        | —                          | 749199-1            |
| 26          | B     | .270 [6.86]  | 749608-1              | —                        | —                          | —                   |
| 26          | A     | .270 [6.86]  | —                     | —                        | —                          | 749609-1            |
| 28          | A     | .295 [7.49]  | 749191-1              | —                        | —                          | 749200-1            |
| 40          | A     | .340 [8.64]  | 749192-1              | —                        | —                          | 749201-1            |
| 50          | A     | .355 [9.02]  | 749193-1              | —                        | —                          | 749202-1            |
| 50          | A     | .400 [10.16] | 749193-2              | —                        | —                          | 749202-2            |
| 50          | B     | .480 [12.19] | 749889-3              | —                        | —                          | —                   |
| 50          | C     | .400 [10.16] | —                     | 749080-1                 | 749082-1                   | —                   |
| 60          | A     | .380 [9.65]  | 749194-1              | —                        | —                          | 749203-1            |
| 68          | A     | .400 [10.16] | 749195-1              | —                        | —                          | 749204-1            |
| 68          | A     | .440 [11.18] | 749195-2              | —                        | —                          | 749204-2            |
| 68          | B     | .440 [11.18] | 749847-2              | —                        | —                          | —                   |
| 80          | A     | .420 [10.67] | 749196-1              | —                        | —                          | 749205-1            |
| 80          | A     | .500 [12.70] | 749196-2              | —                        | —                          | —                   |
| 100         | A     | .500 [12.70] | 749197-1              | —                        | —                          | 749206-1            |
| 100         | C     | .500 [12.70] | —                     | 749081-1                 | 749083-1                   | —                   |
| 100         | C     | .550 [13.97] | —                     | 749854-1                 | 749855-1                   | —                   |
| 120         | A     | .550 [13.97] | 749198-1              | —                        | —                          | 749207-1            |

**Note:** Each backshell kit includes upper and lower backshells, two spring latches or two male jackscrews or two female jackscrews, one strain relief staple and two 2-56 screws. All are packaged unassembled.

### Shielded Enclosure Kits, with Male Jackscrews

#### Materials and Finish:

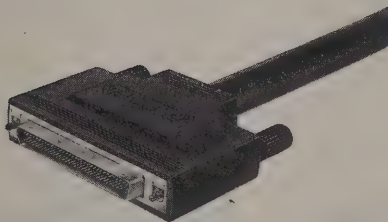
**Backshells**—Zinc

**Boot**—PVC, black

**Jackscrews**—Carbon steel and PVC, black, plated .000200 [0.00508] min. zinc, black chromate

**Staple**—Carbon steel, plated .000050 [0.00127] min. tin-lead over .000050 [0.00127] min. nickel

**Screws**—Stainless steel



| No. of Pos. | Max O.D.     | Part No. with #2-56 Threads |
|-------------|--------------|-----------------------------|
| 68          | .520 [13.21] | 750752-1                    |

**Note:** Each enclosure kit contains two backshells, one boot, two jackscrews, one staple and two screws. All are packaged unassembled.

### Shielded Enclosure Kits, With Spring Latches

#### Materials and Finish:

**Backshells**—Zinc

**Spring Latches**—Stainless steel

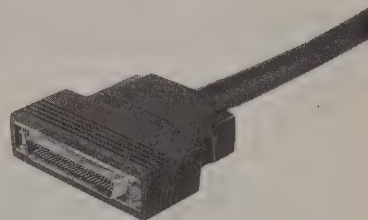
**Handles**—PVC or polyester, black

**Boot**—PVC, black

**Staple**—Carbon steel, plated .000050 [0.00127] min. tin-lead over .000050 [0.00127] min. nickel

**Screws**—Stainless steel

**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



| No. of Pos. | Max. O.D.     | Part Numbers |                 |
|-------------|---------------|--------------|-----------------|
|             |               | with Handles | without Handles |
| 50          | .400<br>10.16 | 750681-1     | 750681-3        |
| 50          | .480<br>12.19 | 750681-2     | 750681-4        |

**Note:** Each enclosure kit contains two backshells, two spring latches (with or without handles), one boot, one staple and two screws. All are packaged unassembled.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

EEM 1993

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Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

C•1209



AMPLIMITE .050 Series Connectors  
Series III



For more information request Catalog 82068

Panel Mount Receptacle  
Assemblies

Materials and Finish:

Housing and Termination

**Covers**—Thermoplastic, 94V-0 rated, black

**Shell**—Steel, plated .000200

[0.00508] min. bright tin over

.000050 [0.00127] min. copper

**Bracket**—Zinc, plated nickel over copper

**Contacts**—Phosphor bronze,

duplex plated .000030 [0.00076]

min. gold on mating end, .000050

[0.00127] min. bright tin-lead in

termination area, all underplated

.000050 [0.00127] nickel

**Recommended wire size**—28

AWG [0.08-0.09 mm<sup>2</sup>] or 30 AWG

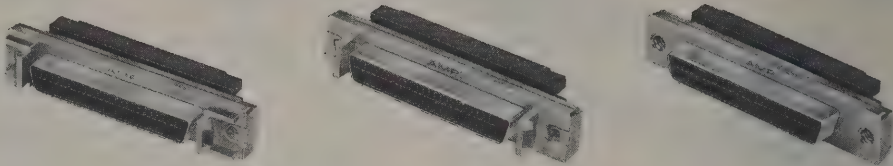
[0.05 mm<sup>2</sup>], solid or 7 strand, with a

.029-.036 [0.74-0.89] insulation

diameter.

**Wire must be approved by AMP engineering.**

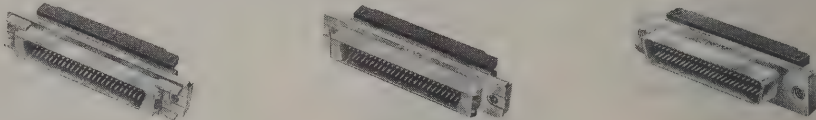
**Note:** Extra pin contact protection is provided by rails, which facilitate a straight-out unmating motion. A side-to-side rocking motion should not be used to disengage the connector system.



| No. of Pos. | Part Numbers                  |                                  |                                     |               |
|-------------|-------------------------------|----------------------------------|-------------------------------------|---------------|
|             | With Rails, With Latch Blocks | Without Rails, With Latch Blocks | Without Rails, Without Latch Blocks |               |
|             |                               |                                  | (Assembled)                         | (Unassembled) |
| 20          | 749611-2                      | 749656-2                         | —                                   | —             |
| 26          | 749611-1                      | 749656-1                         | —                                   | —             |
| 28          | 749611-3                      | 749656-3                         | —                                   | —             |
| 40          | 749611-4                      | 749656-4                         | —                                   | —             |
| 50          | 749611-5                      | 749656-5                         | 749877-5                            | 750721-1      |
| 50          | 750450-1*                     | 750640-1*                        | —                                   | —             |
| 60          | 749611-6                      | 749656-6                         | —                                   | —             |
| 68          | 749611-7                      | 749656-7                         | 749877-7                            | —             |
| 80          | 749611-8                      | 749656-8                         | —                                   | —             |
| 100         | 749611-9                      | 749656-9                         | 749877-9                            | —             |
| 120         | 1-749611-0                    | 1-749656-0                       | —                                   | —             |

\* Part Number has 4-40 threaded holes. All other receptacle assemblies have 2-56 threaded holes.

Panel Mount Plug Assemblies

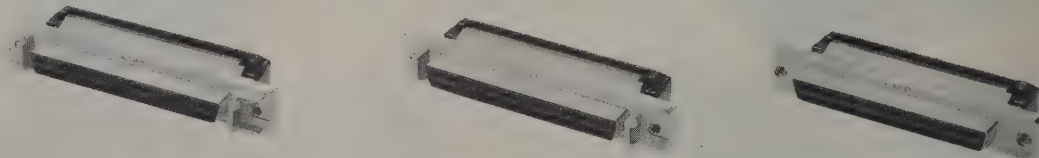


| No. of Pos. | Part Numbers                  |                                  |                                     |               |
|-------------|-------------------------------|----------------------------------|-------------------------------------|---------------|
|             | With Rails, With Latch Blocks | Without Rails, With Latch Blocks | Without Rails, Without Latch Blocks |               |
|             |                               |                                  | (Assembled)                         | (Unassembled) |
| 26          | 749878-2                      | 749880-2                         | —                                   | —             |
| 40          | 749878-4                      | 749880-4                         | —                                   | —             |
| 50          | 749878-5                      | 749880-5                         | 749879-5                            | 750722-1      |
| 68          | 749878-7                      | 749880-7                         | —                                   | —             |
| 100         | 749878-9                      | 749880-9                         | 749879-9                            | —             |

Panel Mount Receptacle Assemblies  
for .025 [0.64] Centerline Ribbon Cable

Recommended wire size—

30 AWG [0.05 mm<sup>2</sup>] stranded or solid ribbon cable



| No. of Pos. | Part Numbers                  |                                  |                                     |
|-------------|-------------------------------|----------------------------------|-------------------------------------|
|             | With Rails, With Latch Blocks | Without Rails, With Latch Blocks | Without Rails, Without Latch Blocks |
| 50          | 786103-5                      | 786161-5                         | 786096-5                            |
| 68          | 786103-7                      | 786161-7                         | 786096-7                            |

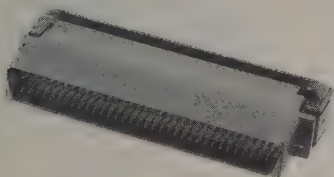




For more information request Catalog 82068



**AMPLIMITE .050 Series  
Plug Assemblies  
Unshielded for .025 [0.64]  
Centerline Ribbon Cable  
Series III**



**Materials and Finish:**

**Housing and Termination Covers—**

Thermoplastic, 94V-0 rated, black

**Contacts—**Phosphor bronze, duplex plated

.000030 [0.00076] min. gold on mating end,

.000050 [0.00127] min. bright tin-lead on

termination end, all over .000050 [0.00127]

min. nickel underplating

**Recommended wire size—**30 AWG

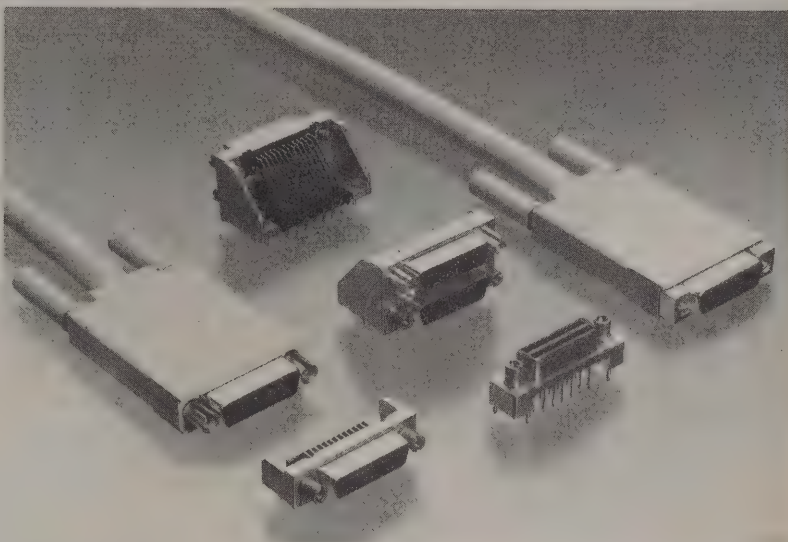
[0.05 mm<sup>2</sup>] stranded or solid ribbon cable.

**Wire must be approved by AMP**

Engineering.

| No. of<br>Pos. | Part<br>No. |
|----------------|-------------|
| 50             | 786090-5    |
| 68             | 786090-7    |

**Shielded AMPLIMITE .050 Series  
Slimline Connectors**



**Product Facts**

■ Compact design, profile for the right-angle header 1.230 x .588 [31.24 x 14.94], vertical header 1.230 x .433 [31.24 x 11.00], right-angle stacked headers 1.230 x .803 [31.24 x 20.40]

■ Housings and covers made of UL 94V-0 rated thermoplastic

■ Headers are compatible with surface mount reflow solder processes

■ Header footprint for right-angle and stacked configurations is .100 x .050 [2.54 x 1.27] staggered centerlines

■ Header footprint for vertical configuration is .100 x .075 [2.54 x 1.90] staggered centerlines

■ Right-angle and stacked headers feature integral boardlocks for positive board retention and grounding

■ Vertical headers feature 8 below the board, retentive contact legs for mechanical retention before and after soldering

■ Vertical headers feature polarized grounding posts to assure correct header-to-board orientation

■ Stacked headers reduce overall total header volume by 48% and PC board area by 38%

■ Stacked headers offer optional contact shield for additional EMI/RFI protection

■ Plugs preloaded with insulation displacement contacts (IDC) provide fast, reliable and economical terminations

■ Aesthetically designed backshell kits feature easy-to-use finger grip jackscrews to secure mated connectors

■ Choice of three keying positions, plus non-keyed inserts for assurance against mismatch mating

■ Listed and complies with UL 1863, Communication Circuit Accessories, File No. E81956

■ Certified by Canadian Standards Association File No. LR7189A



**AMP**

AMP INCORPORATED, HARRISBURG, PA 17105

EEM 1993

For manufacturers' sales offices, see yellow pages

*Specifications subject to change.*

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

C•1211



## Shielded AMPLIMITE .050 Series, Slimline Connectors

26 Position  
Right-Angle Header,  
Receptacle

## Materials and Finish:

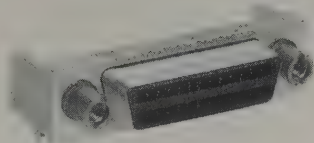
**Housing**—UL 94V-0 rated thermoplastic, black

**Bracket**—Zinc, plated .000200 [0.00508] min. tin or tin-lead over .000200 [0.00508] min. copper

**Metal-Shell**—Carbon steel, plated .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

**Boardlocks**—Copper alloy, tin-lead plated

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, tin-lead plated .000120 [0.00305] min. on solder end, all over .000050 [0.00127] min. nickel



Part No. 750823-1

26/26 Position  
Shielded Right-Angle  
Stacked Header,  
Receptacle

## Materials and Finish:

**Housing**—UL 94V-0 rated thermoplastic, black

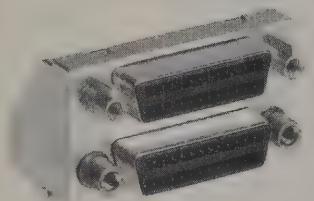
**Bracket**—Zinc, plated .000200 [0.00508] min. tin-lead over .000200 [0.00508] min. copper

**Metal-Shell**—Carbon steel, plated .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

**Boardlocks**—Copper alloy, tin-lead plated

**Contact Shield**—Phosphor bronze, plated .000100 [0.00254] min. tin

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. on mating end, tin-lead plated .000120 [0.00305] min. on solder end, all over .000050 [0.00127] min. nickel



| No. of Positions | Part Numbers                           |                      |                                             |                      |
|------------------|----------------------------------------|----------------------|---------------------------------------------|----------------------|
|                  | Std. Rcpt. without Rear Contact Shield |                      | Rcpt. with Rear Contact Shield <sup>6</sup> |                      |
|                  | Keyed <sup>6</sup>                     | Unkeyed <sup>7</sup> | Keyed <sup>6</sup>                          | Unkeyed <sup>7</sup> |
| 26/26            | 786199-1                               | 786200-1             | 750821-1                                    | 750820-1             |

<sup>6</sup> Lower header unkeyed with 4-40 threaded holes, upper header keyed in keying position 1.

<sup>7</sup> Both headers unkeyed with 4-40 threaded holes.

<sup>8</sup> Receptacle includes a metal contact shield for added RFI protection to the rear of the receptacle assembly.

26 Position  
Vertical Mount Header,  
Receptacle

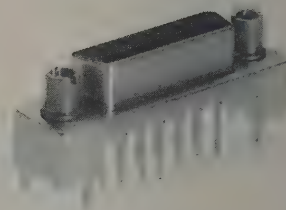
## Materials and Finish:

**Housing**—UL 94V-0 rated thermoplastic, black

**Bracket**—Zinc, plated .000200 [0.00508] min. tin-lead over .000200 [0.00508] min. copper

**Metal-Shell**—Carbon steel, plated .000200 [0.00508] min. tin over .000050 [0.00127] min. copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, bright tin-lead plated .000120 [0.00305] min. on solder end, all over .000050 [0.00127] min. nickel



Part No. 750828-1

26 Position  
Cable Connector, Plug

## Materials and Finish:

## Housing and Termination

**Covers**—UL 94V-0 rated thermoplastic, black

**Shell**—Steel, plated .000200 [0.00508] min. bright tin-lead over .000050 [0.00127] min. copper

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] min. gold on mating end, .000050 [0.00127] min. bright tin-lead on termination end, all underplated .000050 [0.00127] min. nickel

**Recommended Wire Size**—28 AWG [0.08 mm<sup>2</sup>] with max. O.D. .032 [0.813]. PVC or polyolefin insulation. **Wire must be approved by AMP Engineering.**



Part No. 750833-1

Note: This plug must be used with Backshell Kits below.

26 Position  
Backshell Kits

## Materials and Finish:

**Backshells**—Steel, plated .000200 [0.00508] min. tin over .000100 [0.00254] min. copper

**Jackscrews**—Steel, plated .000100 [0.00254] min. tin over .000050 [0.00127] min. copper,

handles covered with ABS, gray  
**Keyed and Unkeyed Inserts**—Zinc, plated .000200 [0.00508] min. tin over .000200 [0.00508] min. copper

**Outside Covers**—Gray & black. Other colors can be made available.



| Unkeyed Kit Part No. | Keyed Kit Part No. | Cable Dia. | Packaging*              |
|----------------------|--------------------|------------|-------------------------|
| 750850-1             | 750852-1           | .250-.280  | Individually Packed Kit |
| 750850-2             | 750852-2           | 6.35-7.11  | Bulk Packed Kit         |
| 750850-3             | 750852-3           | .280-.310  | Individually Packed Kit |
| 750850-4             | 750852-4           | 7.11-7.87  | Bulk Packed Kit         |

\*Bulk packaging - 100 kits per box.

Specifications subject to change.

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



## AMPLIMITE .050 Series Terminators

### Introduction

Terminators must be present at both ends of the SCSI bus as shown in Figure 1. The SCSI bus behaves as an electrical transmission line and must be properly terminated at each end to prevent reflections when signals reach the end of the bus. The magnitude of the reflections will depend on the impedance mismatch between the cable and the terminator. The ideal terminator will match the characteristic impedance of the cable.

In many applications, passive terminators have been used successfully. However, as the clock rates and signal transition speeds increase, and noise margins decrease, the passive terminator can no longer ensure a reliable signal. It is expected that the SCSI-3 SPI standard will recommend a single-ended active terminator to replace the passive terminator.

An active terminator, already recommended in the SCSI-2 standard, can significantly improve the signal integrity. Through the use of a voltage regulator, it has an immunity to TERM-PWR voltage variations. Additionally, the lower impedance of the active terminator, typically 110 ohms, more closely matches that of the cable.

The SCSI-2 and SCSI-3 standard designates that the RESERVE lines must be connected to ground in the terminator. A SCSI device should have these lines open, but may connect them to ground. This requirement can cause problems when mixing devices on a bus.

Terminators may be internal or external to a SCSI device. The initiator (normally the host adapter) supplies power to the terminator and must be capable of maintaining the minimum required voltage, at the terminator, of 4.25 volts for single-ended applications and 4.00 volts for differential applications.

Considerable work was put into the development of the terminator specifications, most of which is beyond the scope of this document. However, most SCSI applications will work very well with one of the terminators listed in the following pages. For special applications or information on obtaining an analysis of your SCSI bus contact AMP Engineering.

### Product Facts

Typically, there are two design configurations for terminators. One design may consist of a connector with a resistor network on a ceramic substrate. The other design may use a SIP (single in-line pin) or DIP (dual in-line pin) package, or discrete resistors on a printed circuit board. Electronic components included in these designs are:

**Resistor**—Provides the necessary resistance to match system characteristic impedance.

**Capacitor**—Provides filtering to control transmission and power line surges. Two commonly used types are:

Ceramic—Filters noise  
Tantalum—Controls voltage excursions

**Voltage Regulator**—Regulates Term Power line at 2.85 volts.

**Light Emitting Diode (LED)**—Indicates power on condition for the Term Power line

**Types of Terminators**—SCSI (Small Computer Systems Interface), Electrical Alternatives

For more information request Catalog 82068

■ **Single-Ended**—Allows up to 5 megabytes per second, cable lengths up to 6 meters:

**A. Passive**—220/330 Ohms for lower data transmission rates.

- Termination of each signal consists of 220 Ohms to terminal power line and 330 Ohms to ground.
- 36 resistors
- Ideal impedance match — 132 Ohms

**B. Active**—Also referred to as "Regulated" or "boulay." These terminators include a voltage regulator along with resistors and capacitors. They support applications requiring longer cable lengths and faster data transmission rates

- 18—110 Ohm resistors
- 3—capacitors
- 2—power divider resistors
- 1—voltage regulator

■ **Differential**—allows up to 10 megabytes per second, cable lengths up to 25 meters.

- Requires more powerful drivers than single-ended. Cannot be incorporated on the SCSI controller chip. This dictates a need for an external chip requiring additional space.
- Ideal impedance match—122 Ohms

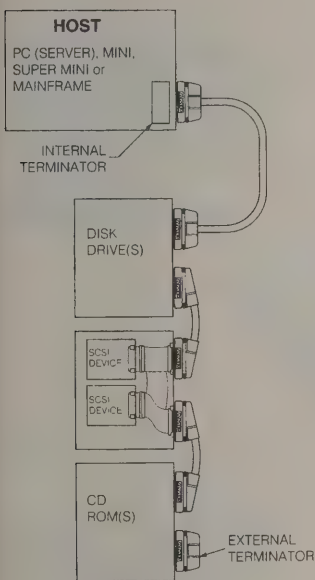


Figure 1

### AMPLIMITE .050 Series, SCSI-2 Terminators

| Terminator Type                                    | No. of Positions | Part Numbers         |         |                     |          |              |         |
|----------------------------------------------------|------------------|----------------------|---------|---------------------|----------|--------------|---------|
|                                                    |                  | Single-Ended Passive |         | Single-Ended Active |          | Differential |         |
|                                                    |                  | A Cable              | B Cable | A Cable             | B Cable  | A Cable      | B Cable |
| Die Cast Shielded w/Spring Latches                 | 50               | 749535-2             | —       | 750381-1            | —        | 749541-1     | —       |
|                                                    | 68               | —                    | —       | —                   | 750383-1 | —            | —       |
| Die Cast Shielded w/Spring Latches, w/Capacitor    | 50               | 869329-1             | —       | —                   | —        | —            | —       |
| Shielded All-Plastic, Low Profile w/Spring Latches | 50               | 750881-1             | —       | 869546-1            | —        | 869545-1     | —       |

### AMPLIMITE .050 Series, SCSI-3 Terminators

| Terminator Type                                          | No. of Positions | Part Numbers        |             |              |             |
|----------------------------------------------------------|------------------|---------------------|-------------|--------------|-------------|
|                                                          |                  | Single-Ended Active |             | Differential |             |
|                                                          |                  | A Cable             | P & Q Cable | A Cable      | P & Q Cable |
| Shielded All-Plastic, Low Profile w/Jackscrews, w/o LED  | 68               | —                   | 869516-1    | —            | 869515-1    |
| Shielded All-Plastic, Std. Profile w/Jackscrews, w/o LED | 68               | —                   | 869535-1    | —            | 750897-1    |
| Shielded All-Plastic, Std. Profile w/Jackscrews, w/LED   | 68               | —                   | 869536-1    | —            | —           |

Specifications subject to change.

Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



## AMPLIMITE .050 Series Terminators



For more information request Catalog 82068

### SCSI-2 Terminators with Die Cast Shield, with Spring Latches

#### Material and Finish:

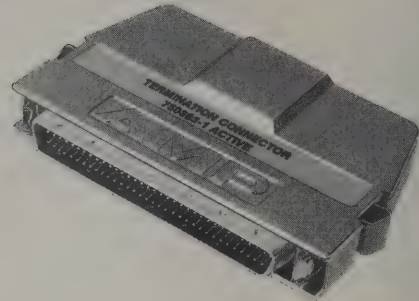
**Housing**—Zinc, plated nickel over copper

**Insert**—94V-0 rated thermoplastic, black

**Latches**—Stainless steel

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] gold min. on mating end over .000050 [0.00127] min. nickel underplating

**Resistor**—Thick film network on alumina substrate



| Description                                                            | Part Number |
|------------------------------------------------------------------------|-------------|
| Plug, 50-Position; Single-Ended, Passive; Resistor Tolerance $\pm 5\%$ | 749535-2    |
| Plug, 50-Position; Single-Ended, Passive                               | 869329-1    |
| Plug, 50-Position; Single-Ended, Active; Resistor Tolerance $\pm 1\%$  | 750381-1    |
| Plug, 50-Position; Differential; Resistor Tolerance $\pm 5\%$          | 749541-1    |
| Plug, 68-Position; Single-Ended, Active; Resistor Tolerance $\pm 1\%$  | 750383-1    |

### SCSI-2 Terminators, Internal Shield, All-Plastic Cover, Low Profile, With Spring Latches

#### Material and Finish:

**Shell**—Steel, plated .000200 [0.00508] min. tin or tin-lead over .000050 [0.00127] min. copper

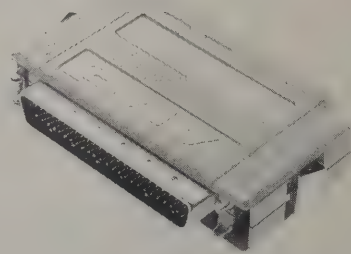
**Housing**—94V-0 rated thermoplastic, black

**Cover**—94V-0 rated ABS, gray

**Latches**—Stainless steel

**Contacts**—Phosphor bronze, duplex plated .000030 [0.00076] gold min. on mating end over .000050 [0.00127] min. nickel underplating

**Resistor**—Thick film network on alumina substrate



| Description                                                             | Part Number |
|-------------------------------------------------------------------------|-------------|
| Plug, 50-Position; Single-Ended, Passive; Resistor Tolerance $\pm 5\%$  | 750881-1    |
| Plug, 50-Position; Single-Ended, Active; Resistor Tolerance $\pm 1.5\%$ | 869546-1    |
| Plug, 50-Position; Differential; Resistor Tolerance $\pm 5\%$           | 869545-1    |

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For manufacturers' sales offices, see yellow pages

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

EEM 1993



AMPLIMITE .050 Series Terminators

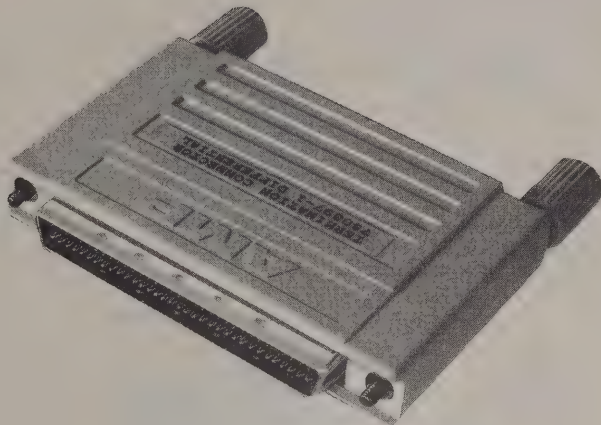


For more information request Catalog 82068

SCSI-3 Terminators,  
Internal Shield, All-Plastic Cover,  
Standard Profile, with Jackscrews

Material and Finish:

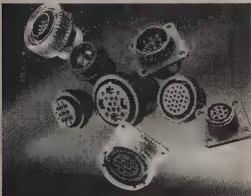
- Shell—Steel, plated .000200 [0.00508] min. tin or tin-lead over .000050 [0.00127] min. copper
- Shield—Copper
- Housing—94V-0 rated thermoplastic, black
- Cover—94V-0 rated ABS, gray
- Jackscrews—Steel, plated .000150 [0.0038] min. zinc, black chromate
- Jackscrew Head—Coated PVC
- Contacts—Phosphor bronze, duplex plated .000030 [0.00076] gold min. on mating end over .000050 [0.00127] min. nickel underplating
- Resistor—Thick film network on alumina substrate



| Description                                                                          | Part Number |
|--------------------------------------------------------------------------------------|-------------|
| Plug, 68-Position, Without LED; Single-Ended, Active; Resistor Tolerance $\pm 1.5\%$ | 869535-1    |
| Plug, 68-Position; Differential; Resistor Tolerance $\pm 2\%$                        | 750897-1    |
| Plug, 68-Position, With LED; Single-Ended, Active; Resistor Tolerance $\pm 1.5\%$    | 869536-1    |

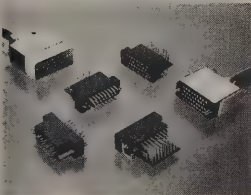
Other Connectors

CPC (Circular Plastic) and Metal-Shell CPC Connectors  
Request Catalog 82021



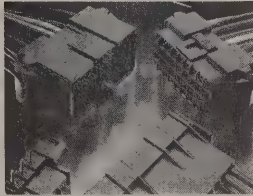
These plastic molded connectors provide substantial savings in both weight and cost. Crimp snap-in contacts are terminated by hand tool or automatic machine. A metal shell connector with a black thermoplastic insert is also available. These connectors are designed for such commercial applications as automotive, aircraft, instrumentation, computer and peripheral equipment.

M Series V.35  
Special Application Connectors  
Request Catalog 65541



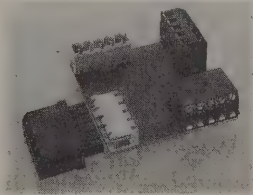
The 34-position V.35 Connector includes both printed circuit board mount and cable mount configurations. They offer dependable, convenient assembly in high-speed data transmission applications. Connectors meet the requirements of ISO 2593 for CCITT V.35 interface.

Metrimate Pin and Socket Connectors  
Request Catalog 82045



Connectors are true metric specification connectors designed for panel, free-hanging or pc board application. These connectors are ideally suited for equipment manufacturers engaged in both national and international markets. This connector line is designed to meet the general requirements of various testing and approval agencies, including UL, CSA, VDE and IEC.

TERMI-BLOK Stacking Connectors  
Request Catalog 65451



These versatile, modular terminal block connectors are widely used in the process controls, telecommunications, traffic control, and building equipment industries. The TERMI-BLOK connectors consist of one-piece right-angle and vertical mount pcb terminal blocks, and cable connectors with mating right-angle or vertical mount pcb headers.

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



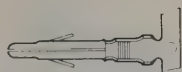
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## Soft Shell Pin and Socket Connectors

### Universal MATE-N-LOK Connectors

Contacts—Pin Diameter .084 [2.13]



Pin



Socket

| Wire Size<br>Range<br>AWG | Inside<br>Dia.<br>Range        | Material<br>and<br>Finish | Contact Part Numbers |             |                                   |                                   |
|---------------------------|--------------------------------|---------------------------|----------------------|-------------|-----------------------------------|-----------------------------------|
|                           |                                |                           | Pin                  |             | Socket                            |                                   |
|                           |                                |                           | Strip Form           | Loose Piece | Strip Form                        | Loose Piece                       |
| 30-26                     | .030-.057<br>0.81-1.45         | Brass, Pre-tin            | —                    | —           | 350925-1                          | —                                 |
|                           |                                | Brass, Pre-tin            | 350561-1             | 350690-1    | 350851-1<br>350570-1 <sup>1</sup> | 350689-1 <sup>1</sup>             |
|                           |                                | Brass, Gold               | 350561-2             | 350690-2    | 350851-2                          | 640347-2<br>350689-2 <sup>1</sup> |
| 24-18                     | .040-.100<br>1.02-2.54         | Brass, Select Gold        | 350561-7             | 350690-7    | —                                 | 350689-7 <sup>1</sup>             |
|                           |                                | Phos. Brz. Pre-tin        | 350561-3             | —           | 350570-3 <sup>1</sup>             | 350689-3 <sup>1</sup>             |
|                           |                                | Phos. Brz. Select Gold    | —                    | —           | 350570-6 <sup>1</sup>             | —                                 |
|                           |                                | Brass, Pre-tin            | 350218-1             | 350547-1    | 350536-1                          | 350550-1                          |
|                           |                                | Brass, Gold               | 350218-2             | —           | 350536-2                          | 350550-2                          |
| 20-14                     | .060-.130<br>1.52-3.3          | Brass, Select Gold        | 350218-7             | —           | 350536-7                          | 350550-7                          |
|                           |                                | Phos. Brz. Pre-tin        | 350218-3             | 350547-3    | 350536-3                          | 350550-3                          |
|                           |                                | Phos. Brz. Select Gold    | 350218-6             | —           | 350536-6                          | —                                 |
|                           |                                | Brass, Pre-tin            | 350538-1             | 350552-1    | 350537-1                          | 350551-1                          |
| 20-14                     | .130-.200<br>3.3 -5.08         | Brass, Gold               | —                    | —           | 350537-2                          | —                                 |
|                           |                                | Brass, Select Gold        | —                    | —           | 350537-7                          | —                                 |
|                           |                                | Phos. Brz. Pre-tin        | 350538-3             | 350552-3    | 350537-3                          | 350551-3                          |
|                           |                                | Phos. Brz., Select Gold   | —                    | —           | 350537-6                          | —                                 |
|                           |                                | Brass, Pre-tin            | 350873-1             | —           | 350874-1                          | —                                 |
| 18-14 <sup>2</sup>        | .130-.200<br>3.3 -5.08         | Phos. Brz., Pre-tin       | 350873-3             | 350918-3    | 350874-3                          | 350919-3                          |
| 12-10                     | .200<br>5.08 Max. <sup>3</sup> | Phos. Brz., Pre-tin       | 350922-3             | 640309-3    | 350923-3                          | 640310-3                          |

Notes: 1. Socket contact—.010 [0.25] stock thickness. All other .012 [0.30].

2. Recommended for predominant use of 14 AWG wire.

3. There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.

### Grounding Pin

(.100 [2.54] longer than standard pin). Can be used in either plug or cap housing.

24-18 AWG, .040-.100 [1.02-2.54] Ins.  
Dia. Range, Brass, Pre-tin, **Strip Form**  
**Part No. 770210-1**  
20-14 AWG, .060-.130 [1.52-3.3] Ins.  
Dia. Range, Brass, Pre-tin, **Strip Form**  
**Part No. 350654-1**  
**Loose Piece Part No. 350669-1**



### Split Pins

Can be used in either plug or cap housings.



| Wire Size<br>Range<br>AWG | Inside<br>Dia.<br>Range | Material<br>and<br>Finish | Contact Part Numbers |                |
|---------------------------|-------------------------|---------------------------|----------------------|----------------|
|                           |                         |                           | Strip<br>Form        | Loose<br>Piece |
| 24-18                     | .040-.100<br>1.02-2.54  | Brass, Pre-tin            | 350699-1             | —              |
|                           |                         | Brass, Gold               | 350699-2             | —              |
|                           |                         | Brass, Select Gold        | 350699-7             | 350706-7       |
| 20-14                     | .060-.130<br>1.52-3.3   | Brass, Pre-tin            | 350687-1             | —              |
|                           |                         | Brass, Gold               | 350687-2             | —              |
|                           |                         | Brass, Select Gold        | 350687-7             | —              |
| 20-14                     | .130-.200<br>3.3 -5.08  | Brass, Pre-tin            | 350700-1             | —              |
|                           |                         | Brass, Select Gold        | 350700-7             | —              |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

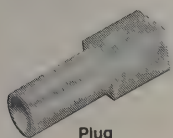
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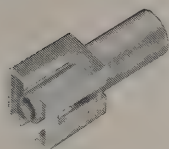
For more information request Catalog 82181

# Housings

## 1 Circuit Free-Hanging

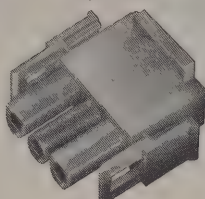


Plug

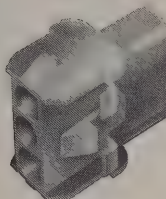


Cap

## 2, 3, 4, 5, 6, 8 and 10 Circuit Panel Mount, In-Line

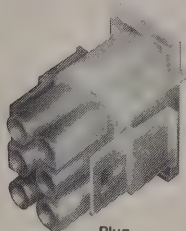


Plug

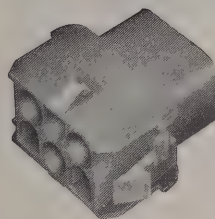


Cap

## 6 Circuit Panel Mount Matrix

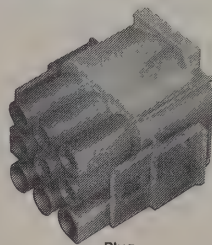


Plug

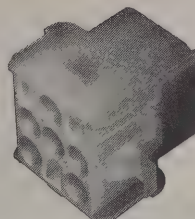


Cap

## 9, 12 and 15 Circuit Panel Mount, Matrix



Plug



Cap

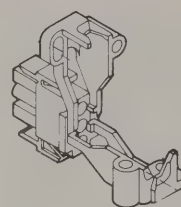
| Number of Circuits | Housing Part Numbers |             |             |             |
|--------------------|----------------------|-------------|-------------|-------------|
|                    | Plug                 |             | Cap         |             |
|                    | 94V-2 Nylon          | 94V-0 Nylon | 94V-2 Nylon | 94V-0 Nylon |
| 1                  | 1-350867-0           | 350865-1    | 1-350868-0  | 350866-1    |
| 2                  | 1-480698-0*          | 350777-1*   | 1-480699-0* | 350778-1*   |
| 3                  | 1-480700-0*          | 350766-1*   | 1-480701-0* | 350767-1*   |
| 4                  | 1-480702-0*          | 350779-1*   | 1-480703-0* | 350780-1*   |
| 5                  | 1-480763-0*          | 350809-1*   | 1-480764-0* | 350810-1*   |
| 6                  | 640585-1*            | 640581-1*   | —           | —           |
|                    | 1-480704-0           | 350715-1    | 1-480705-0  | 350781-1    |
| 8                  | 640586-1*            | 640582-1*   | —           | —           |
| 9                  | 1-480706-0           | 350720-1    | 1-480707-0  | 350782-1    |
| 12                 | 1-480708-0           | 350735-1    | 1-480709-0  | 350783-1    |
| 15                 | 1-480710-0           | 350736-1    | 1-480711-0  | 350784-1    |

\* In-line version.

Notes: 1. 94V-2 nylon material is natural color, 94V-0 nylon material is brick red color.  
2. Contacts are on .250 [6.35] centerlines.

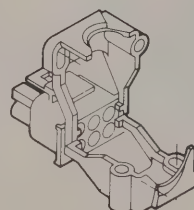
## Keying Plug

94V-2 Nylon material, natural color  
Part No. 1-640415-1  
94V-0 Nylon material, brick red color  
Part No. 1-640415-0



## Plug Housing Strain Reliefs

2, 3, 4, 5 and 8 Circuit, In-Line  
94V-2 Nylon material, natural color  
Part No. 1-350589-0  
94V-0 Nylon material, brick red color  
Part No. 350811-1



6, 9, 12 and 15 Circuit, Matrix  
94V-2 Nylon material, natural color  
Part No. 1-350590-0  
94V-0 Nylon material, brick red color  
Part No. 350812-1

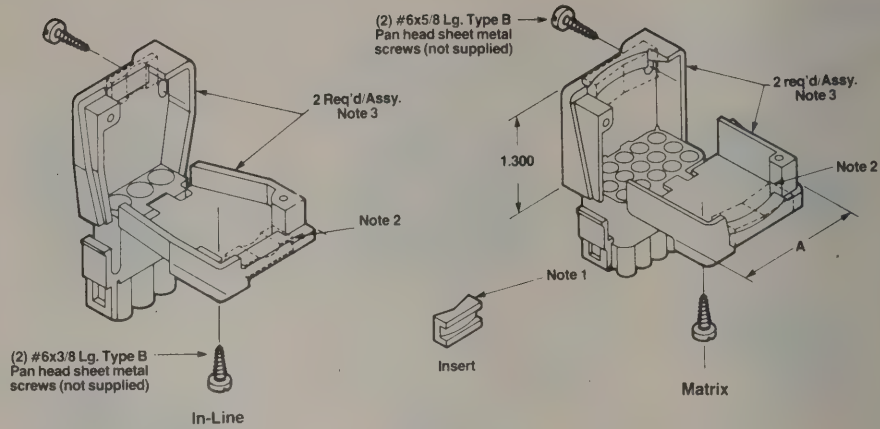
Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



Cap Housings  
Strain Reliefs

2, 3, 4, 5, 6, 9, 12 and 15  
Circuit (Enclosed)

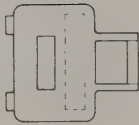


| Type    | Number of Circuits | Insert Supplied | Part Numbers         |                        |
|---------|--------------------|-----------------|----------------------|------------------------|
|         |                    |                 | 94V-2 Nylon, Natural | 94V-0 Nylon, Brick Red |
| In-Line | 2                  | Yes             | 1-640719-0           | 640713-1               |
|         | 3                  | Yes             | 1-640720-0           | 640714-1               |
|         | 3                  | No              | 641763-1             | 641945-1               |
|         | 4                  | Yes             | 641775-1             | 641776-1               |
|         | 4                  | No              | 641775-2             | 641776-2               |
|         | 5                  | Yes             | 643030-3             | 643030-1               |
| Matrix  | 6                  | Yes             | 643585-1             | 643313-1               |
|         | 6                  | Yes             | 1-640721-0           | 640715-1               |
|         | 9                  | Yes             | 1-640722-0           | 640716-1               |
|         | 12                 | Yes             | 1-640723-0           | 640717-1               |
|         | 15                 | Yes             | 1-640724-0           | 640718-1               |

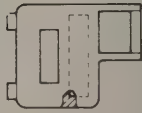
Notes: 1. Cable clamping insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.  
2. Inserts to be positioned as shown by dotted lines.  
3. Strain relief part numbers represent one-half of a strain relief. Two of a part number are required for one connector.

Cap Housing Adapters

For all positions except  
2 and 6 Circuits  
94V-2 Nylon, natural color  
Part No. 641777-1  
94V-0 Nylon, brick red color  
Part No. 641778-1



For 2 and 6 Circuit  
Cap Housing Only  
94V-2 Nylon, natural color  
Part No. 643182-1  
94V-0 Nylon, brick red color  
Part No. 643182-2

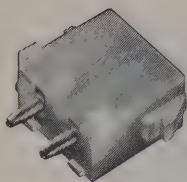




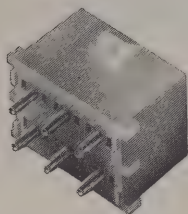
Printed Circuit Board  
Vertical Pin Headers

Material and Finish:  
Housing—94V-2 Nylon, natural color  
94V-0 Nylon, brick red color  
Contacts—Phosphor bronze

For more information request Catalog 82181



2, 3, 4, 5, 6 and 8  
Circuit, In-Line



6, 9, 12 and 15  
Circuit, Matrix

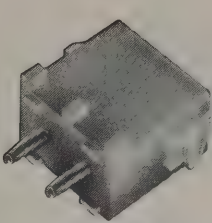
| Number of Circuits | Housing Material | Pin Finish <sup>3</sup> | 2, 3, 4, 5, 6 and 8 Circuit In-Line Pin Header Part Numbers |                                      |                        | 6, 9, 12 and 15 Circuit, Matrix Pin Header Part Numbers |                                      |                        |
|--------------------|------------------|-------------------------|-------------------------------------------------------------|--------------------------------------|------------------------|---------------------------------------------------------|--------------------------------------|------------------------|
|                    |                  |                         | Standard Tail <sup>1</sup>                                  | Standard Tail Polarized <sup>1</sup> | Long Tail <sup>2</sup> | Standard Tail <sup>1</sup>                              | Standard Tail Polarized <sup>1</sup> | Long Tail <sup>2</sup> |
| 2                  | 94V-2            | Pre-tin                 | 350428-1                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    |                  | Gold                    | 350428-2                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | 350786-1                                                    | —                                    | 350787-1               | —                                                       | —                                    | —                      |
|                    |                  | Gold                    | 350786-2                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
| 3                  | 94V-2            | Pre-tin                 | 350429-1                                                    | —                                    | 350583-1               | —                                                       | —                                    | —                      |
|                    |                  | Gold                    | 350429-2                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | 350789-1                                                    | 641966-1                             | 3507901                | —                                                       | —                                    | —                      |
|                    |                  | Gold                    | 350789-2                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
| 4                  | 94V-2            | Pre-tin                 | 350430-1                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    |                  | Gold                    | 350430-2                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | 350792-1                                                    | 641968-1                             | 350793-1               | —                                                       | —                                    | —                      |
|                    |                  | Gold                    | 350792-2                                                    | —                                    | 350793-2               | —                                                       | —                                    | —                      |
| 5                  | 94V-2            | Pre-tin                 | 640466-1                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    | 94V-0            |                         | 640900-1                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
| 6                  | 94V-2            | Pre-tin                 | 641832-1                                                    | —                                    | —                      | 350431-1                                                | —                                    | 350585-1*              |
|                    | 94V-0            | Pre-tin                 | 641831-1                                                    | 643408-1                             | —                      | 350711-1*                                               | —                                    | 350732-1               |
|                    |                  | Gold                    | —                                                           | —                                    | —                      | 350711-2                                                | —                                    | 350732-2               |
| 8                  | 94V-2            | Pre-tin                 | 641825-1                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
|                    | 94V-0            |                         | 641828-1                                                    | —                                    | —                      | —                                                       | —                                    | —                      |
| 9                  | 94V-2            | Pre-tin                 | —                                                           | —                                    | —                      | 350432-1                                                | —                                    | 350586-1               |
|                    |                  | Gold                    | —                                                           | —                                    | —                      | 350432-2                                                | —                                    | 350586-2               |
|                    | 94V-0            | Pre-tin                 | —                                                           | —                                    | —                      | 350712-1                                                | —                                    | 350742-1               |
|                    |                  | Gold                    | —                                                           | —                                    | —                      | 350712-2                                                | —                                    | 350742-2               |
| 12                 | 94V-2            | Pre-tin                 | —                                                           | —                                    | —                      | 350433-1                                                | —                                    | 350587-1               |
|                    | 94V-0            | Pre-tin                 | —                                                           | —                                    | —                      | 350713-1                                                | 641974-1                             | 350737-1               |
| 15                 | 94V-2            | Pre-tin                 | —                                                           | —                                    | —                      | 350434-1                                                | —                                    | 350588-1               |
|                    | 94V-0            | Pre-tin                 | —                                                           | —                                    | —                      | 350714-1                                                | —                                    | 350738-1               |

<sup>1</sup>Use Standard Tail for .062 [1.58] thick pc board.  
<sup>2</sup>Use Long Tail for .125 [3.18] thick pc board.  
<sup>3</sup>Gold finish—Plated .000030 [0.00076] min. gold over .000050 [0.00127] min. nickel.  
\*Mates with Plug Housing Part Number (using pin contacts).

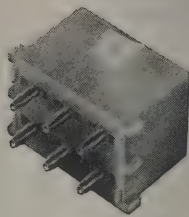


Printed Circuit Board  
Vertical Socket Headers

**Material:**  
**Housing**—94V-2 Nylon, natural color  
94V-0 Nylon, brick red color  
**Contacts**—Phosphor bronze



2, 3, 4 and 5 Circuit, In-Line



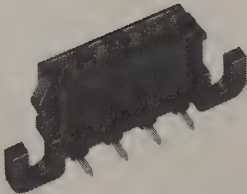
6, 9, 12 and 15 Circuit, Matrix

| Number of Circuits | Housing Material | Pin Finish <sup>3</sup> | 2, 3, 4 and 5 Circuit, In-Line Pin Header Part Numbers |                                      | 6, 9, 12 and 15 Circuit, Matrix Pin Header Part Numbers |                                      |                        |
|--------------------|------------------|-------------------------|--------------------------------------------------------|--------------------------------------|---------------------------------------------------------|--------------------------------------|------------------------|
|                    |                  |                         | Standard Tail <sup>1</sup>                             | Standard Tail Polarized <sup>1</sup> | Standard Tail <sup>1</sup>                              | Standard Tail Polarized <sup>1</sup> | Long Tail <sup>2</sup> |
| 2                  | 94V-2            | Pre-tin                 | 350759-4                                               | —                                    | —                                                       | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | 350824-1                                               | —                                    | —                                                       | —                                    | —                      |
| 3                  | 94V-2            | Pre-tin                 | 350760-4                                               | —                                    | —                                                       | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | 350825-1                                               | 643414-1                             | —                                                       | —                                    | —                      |
| 4                  | 94V-2            | Pre-tin                 | 350761-4                                               | —                                    | —                                                       | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | 350826-1                                               | —                                    | —                                                       | —                                    | —                      |
| 5                  | 94V-2            | Pre-tin                 | 640467-1                                               | —                                    | —                                                       | —                                    | —                      |
| 6                  | 94V-2            | Pre-tin                 | —                                                      | —                                    | 350762-4                                                | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | —                                                      | —                                    | 350827-1                                                | 643424-1                             | 350834-1               |
| 9                  | 94V-2            | Pre-tin                 | —                                                      | —                                    | 350763-4                                                | —                                    | 350990-4               |
|                    | 94V-0            | Pre-tin                 | —                                                      | —                                    | 350828-1                                                | —                                    | 350835-1               |
| 12                 | 94V-2            | Pre-tin                 | —                                                      | —                                    | 350764-4                                                | —                                    | —                      |
|                    | 94V-0            | Gold                    | —                                                      | —                                    | —                                                       | —                                    | 350991-3               |
| 15                 | 94V-2            | Pre-tin                 | —                                                      | —                                    | 350829-1                                                | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | —                                                      | —                                    | 350765-4                                                | —                                    | —                      |
|                    | 94V-0            | Pre-tin                 | —                                                      | —                                    | 350830-1                                                | —                                    | 350837-1               |

<sup>1</sup>Use Standard Tail for .062 [1.58] thick pc board.  
<sup>2</sup>Use Long Tail for .125 [3.18] thick pc board.  
<sup>3</sup>Gold finish—Plated .000030 [0.00076] gold over .000050 [0.00127] min. nickel.

Printed Circuit Board  
Right-Angle  
Pin and Socket Headers

**Material:**  
**Housing**—94V-0 Nylon, brick red color  
**Contacts**—Phosphor bronze



| Number of Circuits | Contact Finish* | Part Numbers |               |
|--------------------|-----------------|--------------|---------------|
|                    |                 | Pin Header   | Socket Header |
| 2                  | Pre-tin         | 1-350942-0   | —             |
|                    | Gold            | 2-350942-0   | —             |
| 3                  | Pre-tin         | 1-350943-0   | 643228-1      |
|                    | Gold            | 2-350943-0   | —             |
| 4                  | Pre-tin         | 1-350944-0   | 643230-1      |
|                    | Gold            | 2-350944-0   | —             |
| 5                  | Pre-tin         | 1-350945-0   | —             |
| 6                  | Pre-tin         | 640583-1     | —             |
|                    | Gold            | 640583-2     | —             |
| 8                  | Pre-tin         | 640584-1     | —             |
|                    | Gold            | 640584-2     | —             |

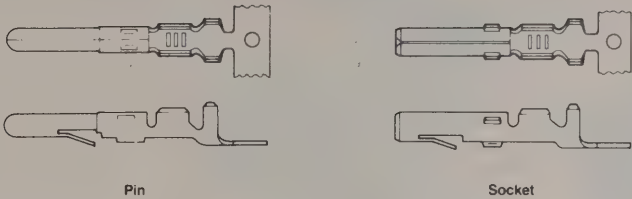
\*Gold finish—Plated .000030 [0.00076] min. gold over .000050 [0.00127] min. nickel.



For more information request Catalog 82181

Commercial MATE-N-LOK  
Connectors

Contacts  
Pin Diameter—.084 [2.13]



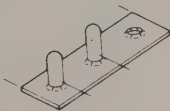
| Wire Size<br>Range<br>AWG       | Inside<br>Dia.<br>Range       | Material<br>and<br>Finish | Contact Part Numbers |             |            |             |
|---------------------------------|-------------------------------|---------------------------|----------------------|-------------|------------|-------------|
|                                 |                               |                           | Pin                  |             | Socket     |             |
|                                 |                               |                           | Strip Form           | Loose Piece | Strip Form | Loose Piece |
| 30-22                           | .075<br>1.9                   | Brass, tin                | 350079-1             | 61174-1     | 350078-1   | 61173-1     |
|                                 |                               | Phos. Brz., tin           | —                    | —           | 350078-4   | —           |
| 24-18                           | .100<br>2.54                  | Brass, tin                | 61116-1              | 60618-1     | 61314-1    | 60617-1     |
|                                 |                               | Phos. Brz., tin           | 61116-4              | —           | 61314-4    | 60617-4     |
|                                 |                               | Brass <sup>1</sup>        | —                    | —           | 61314-5    | 60617-5     |
|                                 |                               | Brass <sup>2</sup>        | 61116-7              | —           | 61314-7    | —           |
| 20-14                           | .130<br>3.3                   | Brass, tin                | 61118-1              | 60620-1     | 61117-1    | 60619-1     |
|                                 |                               | Phos. Brz., tin           | —                    | 60620-4     | 61117-4    | 60619-4     |
|                                 |                               | Brass <sup>1</sup>        | —                    | 60620-5     | 61117-5    | —           |
|                                 |                               | Phos. Brz. <sup>1</sup>   | —                    | —           | 61117-6    | 60619-7     |
|                                 |                               | Brass <sup>2</sup>        | —                    | —           | 61117-7    | —           |
| (2) 18 or<br>(1) 18 &<br>(1) 16 | (2) .115<br>2.92<br>(Stacked) | Brass, tin                | 350558-1             | —           | —          | —           |
|                                 |                               | Phos. Brz., tin           | —                    | —           | 350557-4   | —           |

<sup>1</sup>.000030 [0.00076] gold in mating area and inside wire barrel over nickel plating on entire contact.  
<sup>2</sup>.000030 [0.00076] gold in mating area over nickel plating on entire contact.

Commoning Tabs

Material and Finish:

Brass, tin plated



**2 Circuit Part No. 60843-1**  
(used to common any 2 adjacent contacts)

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

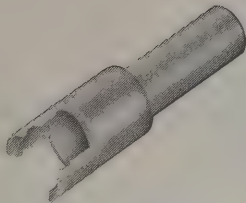


## Commercial MATE-N-LOK Connectors

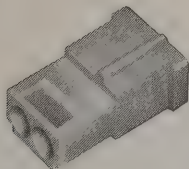
### Free-Hanging Connectors

#### Material:

94V-2 Nylon, natural color



1 Circuit Housing



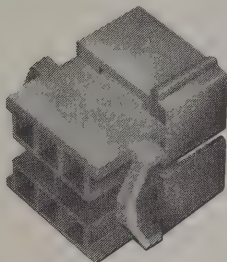
2, 3 and 4 Circuit Housings, In-Line

| No. of Circuits | Part Numbers            |                         |
|-----------------|-------------------------|-------------------------|
|                 | Pin Housing             | Socket Housing          |
| 1               | 1-480350-0 <sup>1</sup> | 1-480349-0              |
| 1               | 1-480351-0 <sup>2</sup> | —                       |
| 2               | 1-480319-0              | 1-480318-0 <sup>3</sup> |
| 3               | 1-480305-0              | 1-480303-0 <sup>3</sup> |
| 4               | 1-480426-0              | 1-480424-0 <sup>3</sup> |
| 6               | 1-480340-0              | —                       |
| 8               | 1-480345-0              | —                       |

<sup>1</sup>Detent Lock.

<sup>2</sup>Positive Lock.

<sup>3</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.93].

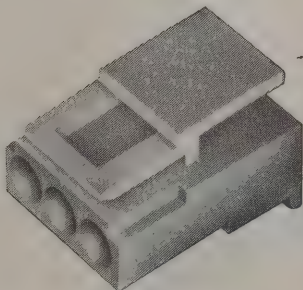


6, 8 and 10 Circuit Housings, Matrix

### Free-Hanging Connectors

#### Material:

94V-2 Nylon, natural color



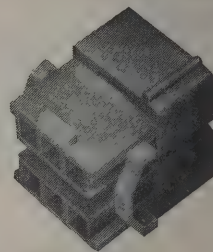
2, 3 and 4 Circuit Positive Lock Socket Housing

| No. of Circuits | Socket Housing Part Numbers |
|-----------------|-----------------------------|
| 2               | 1-480720-0                  |
| 3               | 1-480721-0                  |
| 4               | 1-480722-0                  |

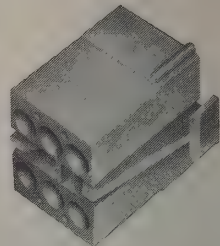
## Motor Mount Connectors

#### Material:

94V-2 Nylon, natural color



Pin Housing



Socket Housing

6, 8, 10, 12 and 16 Circuit Housings, Matrix

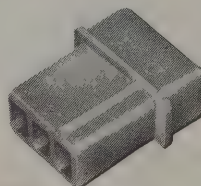
| No. of Circuits | Part Numbers |                |
|-----------------|--------------|----------------|
|                 | Pin Housing  | Socket Housing |
| 6               | 1-480271-0   | 1-480270-0*    |
| 8               | 1-480284-0   | 1-480283-0*    |
| 10              | —            | 1-480285-0*    |
| 12              | —            | 1-480287-0     |
| 16              | 1-480439-0   | 1-480438-0     |

\*Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.93].

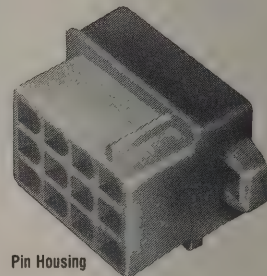
## Panel Mount Connectors

#### Material:

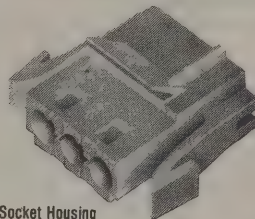
94V-2 Nylon, natural color



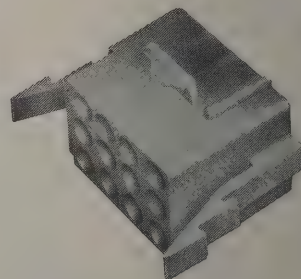
Pin Housing



Pin Housing



Socket Housing



Socket Housing

3 and 4 Circuit Housings, In-Line

| No. of Circuits | Part Numbers |                |
|-----------------|--------------|----------------|
|                 | Pin Housing  | Socket Housing |
| 3               | 1-480305-0   | 1-480304-0     |
| 4               | 1-480426-0   | 1-480425-0     |
| 6               | 1-480276-0   | 1-480273-0     |
| 9               | 1-480277-0   | 1-480274-0     |
| 12              | 1-480278-0   | 1-480275-0     |
| 15              | 1-480324-0   | 1-480323-0     |

6, 9, 12 and 15 Circuit Housings, Matrix

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C•1222

For manufacturers' sales offices, see yellow pages

Specifications subject to change.

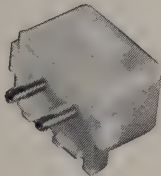
Call 1-800-522-6752 for product information and 1-800-722-1111 for tooling information.

EEM 1993



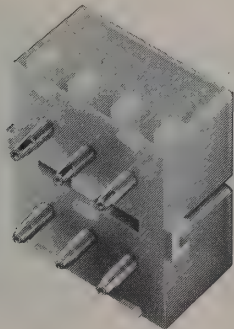
Printed Circuit Board  
Pin Headers

**Material:**  
**Housing**—94V-2 Nylon, natural color  
**Contacts**—Copper Alloy



| Number of Circuits | Finish     | Part Numbers       |            |                  |            |
|--------------------|------------|--------------------|------------|------------------|------------|
|                    |            | With Positive Lock |            | With Detent Lock |            |
|                    |            | Standard Pin*      | Long Pin** | Standard Pin*    | Long Pin** |
| 2                  | Tin Plated | 350539-1           | —          | 350209-1         | —          |
| 3                  | Tin Plated | 350541-1           | —          | 350210-1         | —          |
| 4                  | Tin Plated | 350543-1           | —          | 350211-1         | 350424-1   |

\*Use Standard Pin for .062 [1.58] thick pc board.  
\*\*Use Long Pin for .125 [3.18] thick pc board.



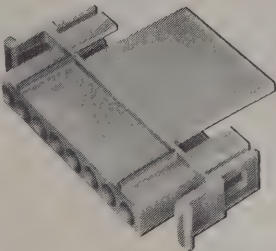
6, 8, 10 and 12 Circuit,  
Matrix

| Number of Circuits | Finish     | Part Numbers  | Mates with Socket Housing Part Number |
|--------------------|------------|---------------|---------------------------------------|
|                    |            | Standard Pin* |                                       |
| 6                  | Tin Plated | 1-380999-0    | 1-480270-0                            |
| 8                  | Tin Plated | 350212-1      | —                                     |
| 10                 | Tin Plated | 1-380991-0    | —                                     |
| 12                 | Tin Plated | 350213-1      | —                                     |

\*Use Standard Pin for .062 [1.58] thick pc board.

Flange Mount  
Connector

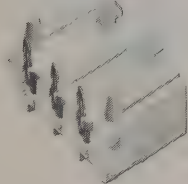
**Material:**  
94V-2 Nylon, natural color



8 Circuit Pin Housing (Cap)  
Part No. 1-480460-0

Right-Angle Mount  
Printed Circuit Board  
Headers

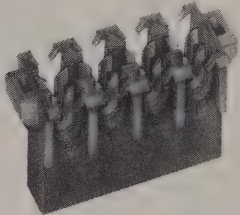
**Material and Finish:**  
Phosphor bronze, pre-tin



| No. of Circuits | Housing Material     | Part Numbers |
|-----------------|----------------------|--------------|
| 3               | 94V-0 Nylon, Natural | 643488-1     |
| 4               | 94V-2 Nylon, Natural | 641737-1     |

Insulation Displacement  
Plug Assembly

**Material and Finish:**  
**Housing**—94V-2 Nylon  
**Contact**—Phosphor bronze, tin plated

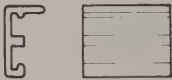


4 Circuit

| Wire Size AWG | Housing Color | Part Number |
|---------------|---------------|-------------|
| 16            | Blue          | 770156-5    |
| 18            | Orange        | 770156-3    |
| 20            | Yellow        | 770156-4    |
| 22            | Red           | 770156-2    |

Dust Covers

**Material:**  
94V-0 PBT, natural



For Standard Wiring  
Part No. 770232-1



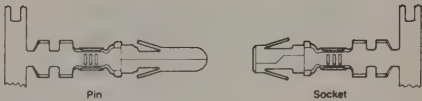
For Feed Through Wiring  
Part No. 770233-1



.140 MATE-N-LOK Connectors  
Large Insulation .240 [6.10] Centerline

Contacts

Pin Diameter—.140 [3.56]  
Stock Thickness—.014 [0.36]

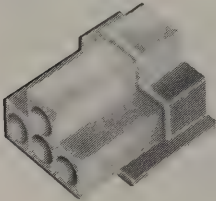


| Wire Size<br>Range<br>AWG | Insulation<br>Dia.<br>Range | Material<br>and<br>Finish | Contact Part Numbers |            |
|---------------------------|-----------------------------|---------------------------|----------------------|------------|
|                           |                             |                           | Pin                  | Socket     |
|                           |                             |                           | Strip Form           | Strip Form |
| 20-14                     | .100-.180<br>2.54-4.57      | Brass, pre-tin            | 61627-1              | 61626-1    |
| 14-10                     | .100-.180<br>2.54-4.57      | Brass, pre-tin            | 350201-1             | 350200-1   |

Housings

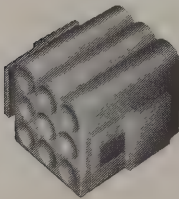
Material:  
94V-2 Nylon, natural color

4 Circuit Free-Hanging

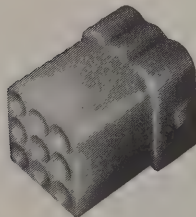


Pin Housing (Cap)  
Part No. 1-480512-0

9 Circuit Free-Hanging



Socket Housing (Plug)  
Part No. 1-480585-0



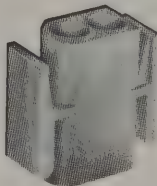
Pin Housing (Cap)  
Part No. 1-480586-0

Housings

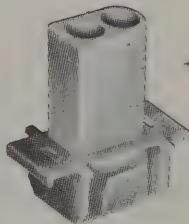
Material:  
94V-2 Nylon, natural color

2, 3 and 9 Circuit  
Panel Mount

2 Circuit

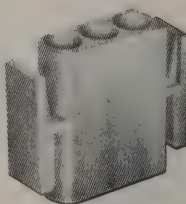


Socket Housing (Plug)  
Part No. 1-350344-0

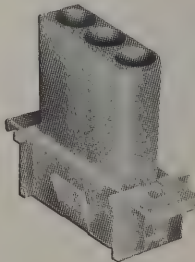


Pin Housing (Cap)  
Part No. 1-350345-0

3 Circuit

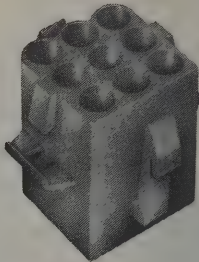


Socket Housing (Plug)  
Part No. 1-350346-0

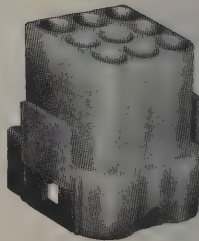


Pin Housing (Cap)  
Part No. 1-350347-0

9 Circuit



Socket Housing (Plug)  
Part No. 1-480672-0



Pin Housing (Cap)  
Part No. 1-480673-0



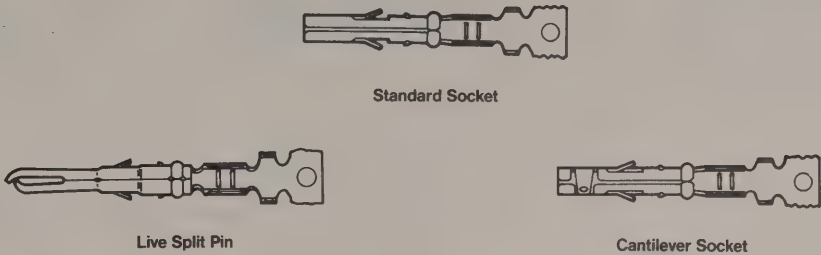
MR (Miniature Rectangular)  
Connectors

For more information request Catalog 82181

Pin and Socket Contacts  
(MR Connectors)

Material and Finish:

Phosphor bronze, pre-tin plated or .000050 [0.00127] nickel over entire contact and .000030 [0.00076] gold in contact area.  
.008 [0.2] stock thickness.



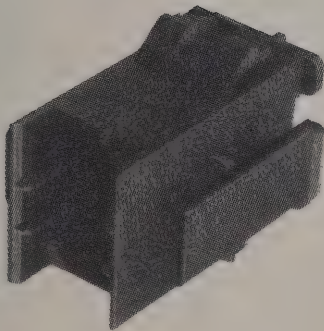
| Wire Size Range (AWG) | Insulation Range       | Contact Finish | Part Numbers   |             |                  |             |                   |             |
|-----------------------|------------------------|----------------|----------------|-------------|------------------|-------------|-------------------|-------------|
|                       |                        |                | Live Split Pin |             | Standard Socket* |             | Cantilever Socket |             |
|                       |                        |                | Strip          | Loose Piece | Strip            | Loose Piece | Strip             | Loose Piece |
| 26-18                 | .050-.115<br>1.27-2.92 | Pre-tin        | 350967-1       | 640545-1    | 641294-1         | 641300-1    | 350665-1          | 350666-1    |
|                       |                        | Gold           | 350967-2       | 640545-2    | 641294-2         | 641300-2    | 350665-2          | 350666-2    |

\*Preferred combination is live split pin and standard socket.

Housings  
(MR Connectors)

Material:

Nylon, 94V-0 rated, brick red

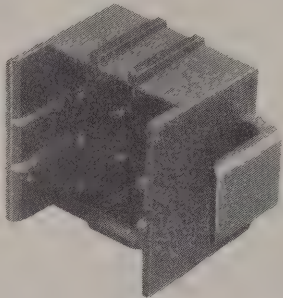


| No. of Circuits | Part Numbers |                |
|-----------------|--------------|----------------|
|                 | Pin Housing  | Socket Housing |
| 2               | 1-640507-0   | 1-640517-0     |
| 3               | 1-640508-0   | 1-640518-0     |
| 4               | 1-640509-0   | 1-640519-0     |
| 6               | 1-640510-0   | 1-640520-0     |
| 9               | 1-640511-0   | 1-640521-0     |
| 12              | 1-640512-0   | 1-640522-0     |
| 15              | 1-640513-0   | 1-640523-0     |
| 20              | 1-640514-0   | 1-640524-0     |
| 24              | 1-640515-0   | 1-640525-0     |
| 36              | 1-640516-0   | 1-640526-0     |

Printed Circuit Board  
Pin Headers  
(MR Connectors)

Material:

**Housings**—Nylon, 94V-0 rated, brick red  
**Contacts**—Plated tin or .000030 [0.00076] gold over .000050 [0.00127] nickel over contact length and matte tin on solder tail end.



| Number of Circuits | Board Thickness | Part Numbers |          |
|--------------------|-----------------|--------------|----------|
|                    |                 | Tin          | Gold     |
| 2                  | .063<br>1.6     | 640497-1     | 640497-2 |
|                    | .063<br>1.6     | 640498-1     | 640498-2 |
| 4                  | .063<br>1.6     | 640499-1     | 640499-2 |
|                    | .063<br>1.6     | 640500-1     | 640500-2 |
| 6                  | .120<br>3.05    | 640500-3     | 640500-4 |
|                    | .063<br>1.6     | 640501-1     | 640501-2 |
| 9                  | .120<br>3.05    | 640501-3     | 640501-4 |
|                    | .063<br>1.6     | 640502-1     | 640502-2 |
| 12                 | .063<br>1.6     | 640503-1     | 640503-2 |
|                    | .120<br>3.05    | 640503-3     | 640503-4 |
| 15                 | .063<br>1.6     | 640504-1     | 640504-2 |
|                    | .063<br>1.6     | 640505-1     | 640505-2 |
| 20                 | .063<br>1.6     | 640506-1     | 640506-2 |
|                    | .063<br>1.6     |              |          |
| 24                 | .063<br>1.6     |              |          |
|                    | .063<br>1.6     |              |          |
| 36                 | .063<br>1.6     |              |          |
|                    | .063<br>1.6     |              |          |

Accessories  
(MR Connectors)

Keying Plug

Material:

Nylon, natural, 94V-0, brick red

Part Number 350591-1



Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



**.093 [2.36] and .062 [1.57]  
Soft Shell Commercial  
Pin and Socket Connectors**

**Pin Diameter .093 [2.36]**

**.010 [0.25] Stock Thickness**

Pin and socket contacts can be used in either plug or receptacle housings.



Pin

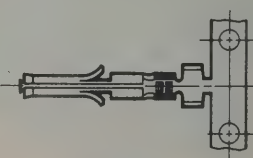
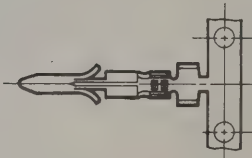
Socket

| Wire Size             |                            | Ins. Dia.<br>(Max.) | Material & Finish            | Part Numbers |          |
|-----------------------|----------------------------|---------------------|------------------------------|--------------|----------|
| AWG                   | mm <sup>2</sup>            |                     |                              | Pin          | Socket   |
| 24-18                 | 0.2-0.9                    | .110<br>2.79        | Brass, Pre-tin               | 350418-1     | 350417-1 |
|                       |                            |                     | Brass, Gold                  | —            | 350417-3 |
|                       |                            |                     | Brass, Select Gold           | 350418-5     | 350417-5 |
|                       |                            |                     | Phosphor Bronze, Select Gold | 350418-7     | 350417-7 |
| 20-14                 | 0.6-2                      | .140<br>3.56        | Brass, Pre-tin               | 350416-1     | 350415-1 |
|                       |                            |                     | Brass, Select Gold           | 350416-5     | 350415-5 |
|                       |                            |                     | Phosphor Bronze, Pre-tin     | —            | 350415-6 |
|                       |                            |                     | Phosphor Bronze, Select Gold | 350416-7     | 350415-7 |
| 18-14<br>or<br>2 (18) | 0.8-2<br>or<br>2 (0.8-0.9) | .180<br>4.57        | Brass, Pre-tin               | 770530-1     | 770529-1 |
|                       |                            | .180<br>4.57        | Brass, Pre-tin               | 770385-1     | —        |
|                       |                            | (per wire)          | Phosphor Bronze, Pre-tin     | —            | 770383-1 |

**Pin Diameter .062 [1.57]**

**.008 [0.20] Stock Thickness**

Pin and socket contacts can be used in either plug or receptacle housings.



Pin

Socket

| Wire Size |                 | Ins. Dia.              | Material & Finish            | Part Numbers |          |
|-----------|-----------------|------------------------|------------------------------|--------------|----------|
| AWG       | mm <sup>2</sup> |                        |                              | Pin          | Socket   |
| 30-24     | 0.05-0.2        | .060<br>1.52 Max.      | Brass, Pre-tin               | 640391-1     | 640392-1 |
|           |                 |                        | Brass, Select Gold           | 640391-5     | 640392-5 |
|           |                 |                        | Phosphor Bronze, Select Gold | 640391-7     | 640392-7 |
| 24-18     | 0.2-0.9         | .050-.110<br>1.27-2.79 | Brass, Pre-tin               | 350629-1     | 350628-1 |
|           |                 |                        | Phosphor Bronze, Pre-tin     | —            | 350628-2 |
|           |                 |                        | Brass, Duplex Gold           | 350629-4     | 350628-4 |
|           |                 |                        | Brass, Select Gold           | 350629-5     | 350628-5 |
|           |                 |                        | Phosphor Bronze, Select Gold | 350629-6     | 350628-6 |

Notes: 1. Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.



AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

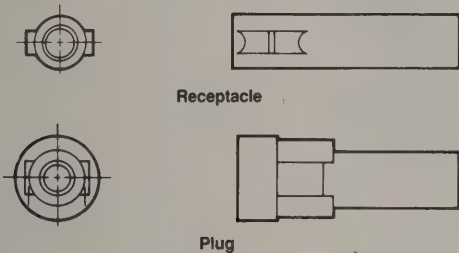


For more information request Catalog 82237

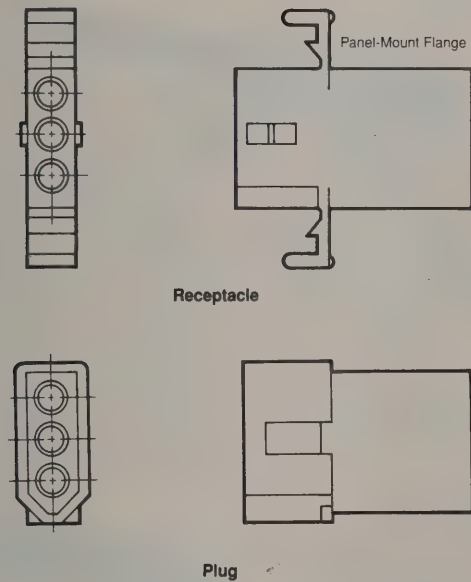
**.198 [5.03] Centerline Housings  
For .093 [2.36] Contacts**

**Material:**  
94V-2 nylon, natural color

**1-Circuit Housing**



**2, 3, and 4-Circuit Housings,  
In-Line**

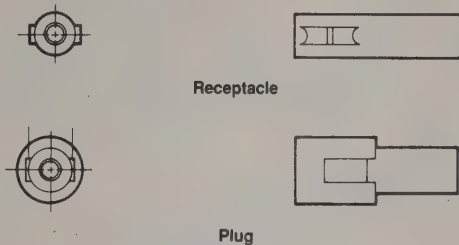


| No. of<br>Circuits | Receptacle Part Numbers     |                              | Plug Part Numbers |
|--------------------|-----------------------------|------------------------------|-------------------|
|                    | Panel Mount<br>With Detents | Free-Hanging<br>With Detents | Free-Hanging      |
| 1                  | —                           | 770063-1                     | 770064-1          |
| 2                  | 770066-1                    | 770065-1                     | 770069-1          |
| 3                  | 770071-1                    | 770070-1                     | 770074-1          |
| 4<br>(In-line)     | 770076-1                    | 770075-1                     | 770078-1          |
| 4<br>(Matrix)      | —                           | 770843-1                     | 770842-1          |
| 5                  | —                           | 770083-1                     | 770084-1          |
| 9                  | 770093-1                    | 770092-1                     | 770096-1          |
| 12                 | 770099-1                    | 770098-1                     | 770102-1          |
| 15                 | —                           | —                            | 770107-1          |

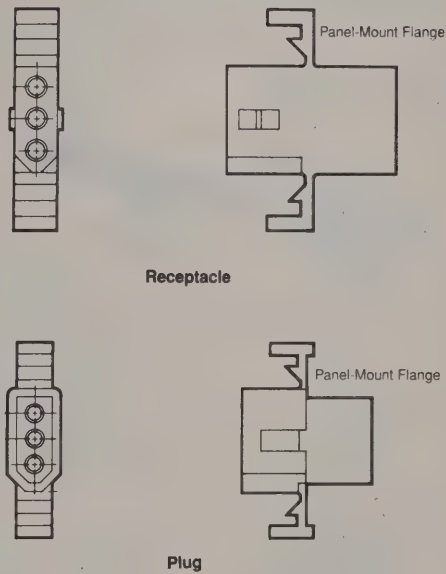
**.145 [3.68] Centerline Housings  
For .062 [1.57] Contacts**

**Material:**  
94V-2 nylon, natural color

**1-Circuit Housing**



**2, 3, and 4-Circuit Housings,  
In-Line**



| No. of<br>Circuits | Receptacle Part Numbers |              | Plug Part Numbers |
|--------------------|-------------------------|--------------|-------------------|
|                    | Panel Mount             | Free-Hanging | Free-Hanging      |
| 1                  | —                       | 770277-1     | 770278-1          |
| 2                  | 770343-1                | 770342-1     | 770340-1          |
| 3                  | 770326-1                | 770333-1     | 770331-1          |
| 4<br>(In-line)     | 770335-1                | 770274-1     | 770275-1          |
| 4<br>(Matrix)      | 770441-1                | 770442-1     | 770433-1          |
| 6                  | 770354-1                | 770356-1     | 770355-1          |
| 9                  | 770427-1                | 770429-1     | 770428-1          |
| 12                 | —                       | —            | —                 |
| 15                 | 770898-1                | 770897-1     | 770899-1          |

Specifications subject to change.

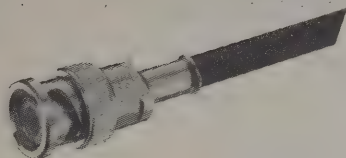
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



## BNC and TNC Connectors for Coaxial Cable

### BNC Connectors, 50 Ohm Plugs

#### Standard Single Crimp Plugs



| RG/U<br>Cable                                | Part Numbers  |            |                            |
|----------------------------------------------|---------------|------------|----------------------------|
|                                              | Silver Plate  |            | Tarnish<br>Resistant Plate |
|                                              | Dielectric    |            |                            |
|                                              | Polypropylene | TEFLON     |                            |
| 58, 58A, 58B, 58C                            | 2-329082-1    | 2-329444-1 | —                          |
| 59, 59A, 59B, 62, 62A,<br>62B, 124, 140, 210 | 2-329083-1    | 2-329445-1 | —                          |
| 161, 179, 187                                | —             | 2-329446-1 | —                          |
| 180, 189, 195                                | —             | 2-329447-1 | —                          |
| 55, 55A, 55B, 223                            | —             | 2-329444-2 | —                          |
| 174, 188, 316                                | 2-330058-1    | 2-330061-1 | —                          |
| 141, 141A                                    | —             | 2-330358-1 | —                          |
| 142, 142A, 142B, 400                         | —             | 2-330358-2 | —                          |
| 178, 196                                     | —             | 330876     | 1-225587-9                 |

### Mil Type Dual Crimp Plugs MIL-C-39012 (Category B)\*



| RG/U Cable                                                            | Silver Plate<br>Standard<br>AMP No. | Tarnish Resistant<br>Plate<br>Standard<br>AMP No. |
|-----------------------------------------------------------------------|-------------------------------------|---------------------------------------------------|
| 55, 55A, 55B, 223                                                     | —                                   | 225395-3                                          |
| 58, 58A, 58B, 58C,<br>Belden 8219, 8262                               | 2-331350-1                          | 225395-1                                          |
| 59, 59A, 59B, 62, 62A, 62B, 124,<br>210, 240, Belden 9204, 9209, 9269 | 331350†                             | 225395-2                                          |
| 141, 141A, 303                                                        | —                                   | 225395-5                                          |
| 142, 142A, 142B, 400                                                  | 2-331350-9                          | 225395-6                                          |
| 174, 188, 316, Belden 9239                                            | 2-331350-4                          | 225395-7                                          |
| 179, 187, Belden 9221                                                 | 2-331350-5                          | 225395-8                                          |
| 180, 180A, 195                                                        | 2-331350-6                          | 225395-9                                          |
| Belden 8218                                                           | 2-331350-2                          | 1-225395-0                                        |
| 8, 8A, 213                                                            | 225886-1                            | 2-225395-1                                        |
| Belden 89292<br>Alpha 9847                                            | 225886-5                            | —                                                 |
| Weco, 724, Belden 3049, 8281<br>Amphenol 21-1060-7                    | 4-331350-0                          | —                                                 |
| Belden 8212, 9104,<br>9112, 9167, 9259                                | 5-331350-3                          | 2-225395-0                                        |
| Brand Rex T209A                                                       | 5-331350-5                          | —                                                 |
| Belden 9914                                                           | 225886-7                            | —                                                 |

\*Category A available for RG/U Cable—55, 58, 141, 142, 223, 400 Part No. 221552-1 silver/nickel; Part No. 221552-2 silver/silver.

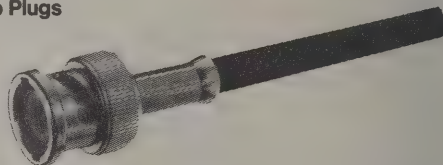
†Military Part Number: M39012/16B0008.

### Commercial Dual Crimp Plugs



| RG/U Cable                                 | Part Numbers           |            |
|--------------------------------------------|------------------------|------------|
|                                            | Center Contact Plating |            |
|                                            | Gold                   | Silver     |
| 58, 58A, 58B, 58C                          | 227079-5               | 227079-9   |
| 55, 55A, 55B, 223                          | 227079-6               | —          |
| 59, 59A, 59B, 62, 62A,<br>124, 140, 210    | 227079-7               | 1-227079-1 |
| 142, 142A, 142B, 400                       | 6-227079-1             | —          |
| Belden 8281                                | 5-227079-8             | —          |
| Belden 9266, RG59-Type<br>with 20 AWG C.C. | 1-227079-3             | —          |
| 174, 188, 316,                             | 1-227079-6             | 1-227079-5 |
| 179, 187, Belden 9221                      | 2-227079-2             | 2-227079-1 |
| Belden 88240                               | 4-227079-3             | —          |
| Belden 88241                               | 4-227079-9             | —          |

### Commercial Hex Crimp Plugs

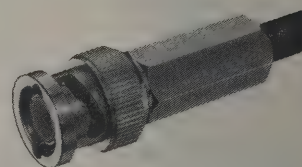


| RG/U Cable                                                 | Part Numbers |           |
|------------------------------------------------------------|--------------|-----------|
|                                                            | Kit Pkg.     | Bulk Pkg. |
| 58, 58A, 58B, 58C, Belden 88240                            | 1-221128-0   | 221128-1  |
| 59, 59A, 59B, 62, 62A, 62B,<br>124, 140, 210, Belden 88241 | 1-221128-1   | 221128-2  |
| 141, Belden 9907, 89907                                    | 2-221128-7   | —         |
| 174, 188, 316                                              | 2-221128-1   | —         |
| 179, 187                                                   | 2-221128-3   | —         |
| 180, 195                                                   | 2-221128-5   | —         |
| Belden 8231, 9231,<br>Western Electric 728B                | 1-221128-2   | —         |

### Commercial Twist-On-Plug

| RG/U Cable* | Acetal<br>Dielectric Material |
|-------------|-------------------------------|
| 58          | 221984-7                      |
| 59, 62      | 221984-1                      |

\*Cable with solid center conductor only.



### Commercial Field Serviceable Plugs (Category A)



| RG/U Cable                                                               | Tarnish Resistant Plate<br>AMP No. |
|--------------------------------------------------------------------------|------------------------------------|
| 58, 58A, 58B, 58C, 141, 141A, 142, 142A,<br>142B, 55, 55A, 55B, 223, 400 | 1-221265-0                         |
| 59, 59A, 59B, 62, 62A, 62B, 124, 210,<br>140, 71, 71A, 71B               | 1-221265-1                         |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

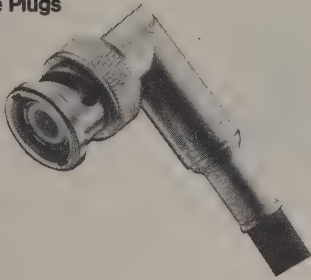
# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



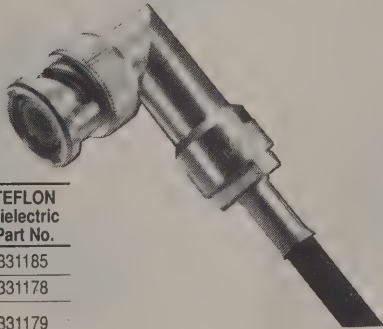
BNC Connectors  
50 Ohm Right-Angle Plugs

Mil-Type Dual Crimp  
Right-Angle Plugs



| RG/U Cable                                | Part Numbers |                         |
|-------------------------------------------|--------------|-------------------------|
|                                           | Silver Plate | Tarnish Resistant Plate |
| 58, 58A, 58B, 58C                         | —            | 225974-1                |
| 142, 142A, 142B                           | 225973-4     | —                       |
| 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210 | 225973-5     | 225974-5                |
| 55, 223                                   | —            | 225974-2                |

Mil-Type Single Crimp  
Right Angle Plugs



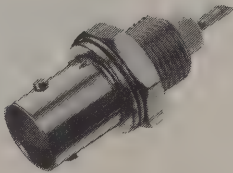
| RG/U                                              | TEFLON Dielectric Part No. |
|---------------------------------------------------|----------------------------|
| 178, 196                                          | 331185                     |
| 174, 188, 316                                     | 331178                     |
| 179, 161, 187<br>Belden 9221                      | 331179                     |
| 58                                                | 331175                     |
| 142, 400                                          | 331182                     |
| 124, 140, 210                                     | 331176                     |
| Belden 8281<br>Western Electric<br>724, 728, 3049 | 50635                      |

BNC Connectors  
50-Ohm Panel Jacks  
Commercial Panel  
Solder Jacks

(Includes lockwasher and jam nut.)



Insulating Bushing, Nylon  
Part No. 227223-1

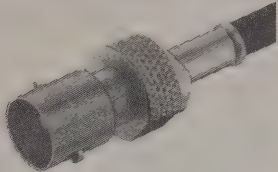


Without Solder Terminal

| Contact Material | Dielectric | Part Numbers |          |
|------------------|------------|--------------|----------|
|                  |            | Long         | Short    |
| Gold             | VALOX      | 227169-3     | 227754-2 |
| Silver           | VALOX      | —            | 227754-3 |
| Silver           | TEFLON     | 1-227169-0   | —        |
| Gold             | TEFLON     | 227169-4     | 227715-3 |

BNC Connectors,  
50 Ohm Jacks

Mil-Type Single  
Crimp Jack



| RG/U Cable                                | Part Numbers      |
|-------------------------------------------|-------------------|
|                                           | TEFLON Dielectric |
| 58, 58A, 58B, 58C                         | 2-329545-1        |
| 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210 | 2-329549-1        |
| 55, 55A, 55B, 223                         | 2-329452-2        |
| 174, 188, 316                             | 2-330062-1        |

Commercial Dual Crimp Jacks  
MIL-C-39012  
(Category B)



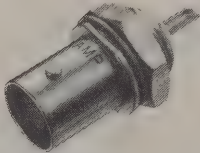
| RG/U Cable                                | Tarnish Resistant Plate AMP No. |
|-------------------------------------------|---------------------------------|
| 58, 58A, 58B, 58C                         | 228979-5                        |
| 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210 | 228979-6                        |
| 174, 188, 316,                            | 228979-7                        |

Hex Crimp Jacks

| RG/U Cable              | Part Numbers |
|-------------------------|--------------|
| 174, 188, 316           | 413779-3     |
| 179, 187                | 413779-4     |
| 180, 195                | 413779-5     |
| 58, Belden 88240        | 413779-1     |
| 141, Belden 89907, 9907 | 413779-6     |
| 59, 62, Belden 88241    | 413779-2     |



Panel Thickness  
Long .046-.250 [1.17-6.35]  
Short .046-.125 [1.17-3.18]



Commercial Panel  
Solder Jack—Low Profile



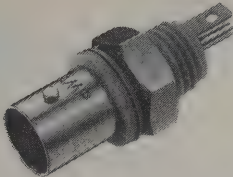
Solder Terminal  
Part No. 227260-2

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



Isolated Bulkhead SolderJack

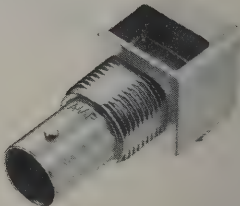
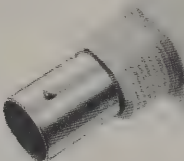


Part Nos.  
227726-1 Tin  
227726-2 Silver  
227726-3 Gold

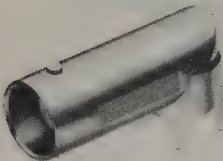
Commercial Right-Angle  
Pc Board/Panel Mount  
Jacks

VALOX Body

Metal Body



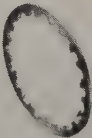
Right-Angle Pc Board  
Mount Jack



| Impedance Value | Right-Angle Pc Board Jack |
|-----------------|---------------------------|
| 50 Ohms         | 413631-1                  |
| 75 Ohms         | 413558-1                  |

| Style                          | Part Numbers       |              |                    |              |             |              |
|--------------------------------|--------------------|--------------|--------------------|--------------|-------------|--------------|
|                                | White Body (VALOX) |              | Black Body (VALOX) |              | Metal Body  |              |
|                                | Tin Contact        | Gold Contact | Tin Contact        | Gold Contact | Tin Contact | Gold Contact |
| Without Mounting Posts         | 226990-1           | 226990-3     | 226990-2           | 226990-6     | 227433-1    | 227676-1     |
| With Mounting Posts            | 227161-1           | 227161-3     | 227161-2           | 227161-6     | 227661-1    | 227677-1     |
| Low Height with Mounting Posts | —                  | 227161-7     | —                  | 227161-9     | —           | —            |

Lockwasher and Jam Nut



Part No.  
1-329632-2



Part No  
1-329631-2



AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



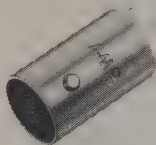
**BNC Connectors,  
50 Ohm Jacks**

For more information request Catalog 82074

**Commercial Vertical  
Metalized PCB  
Mount Jacks**



Style A



Style B



Press-Fit Connector  
Part No. 222006-1

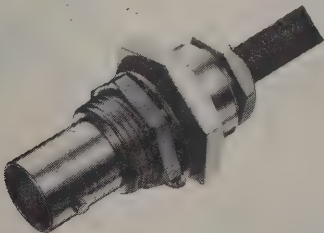
| Style | Plating  |          |          |
|-------|----------|----------|----------|
|       | Silver   | Gold     | Tin      |
| A     | 227699-1 | 227699-2 | 227699-3 |
| B     | —        | 221123-2 | 221123-3 |

**Mil-Type  
Single Crimp  
Bulkhead Jack**



| RG/U<br>Cable                                | Part Numbers<br>Dielectric |            |
|----------------------------------------------|----------------------------|------------|
|                                              | Polypropylene              | TEFLON     |
| 59, 59A, 59B, 62, 62A,<br>62B, 124, 140, 210 | 2-329091-1                 | 2-329457-1 |
| 161, 179, 187                                | 2-329092-1                 | 2-329458-1 |
| 174, 188, 316                                | 2-330060-1                 | 2-330063-1 |
| 142, 142A, 142B                              | —                          | 2-329456-2 |
| 178, 196                                     | —                          | 331974     |
| 58, 58A, 58B, 58C                            | —                          | 2-329456-1 |

**Mil-Type Field Serviceable  
Bulkhead Jack  
(Category A)**



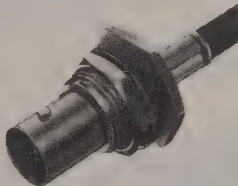
| RG/U Cable                                                                                                                                                      | Silver Plate<br>AMP No. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 58, 58A, 58B, 58C<br>141A, 223, 55, 55A 55B,<br>142, 142A, 42B, 400                                                                                             | 221313-1                |
| 124, 140, 210, 62, 62A,<br>62B, 59, 59A, 59B, Belden<br>9291 9209, 9268, 88241<br>Hi-Temp 62A, Times PL-62,<br>Berk-Tek BTDC-59, BTDC-<br>62, 302, 71, 71A, 71B | 221313-2                |

**Mil-Type Dual Crimp  
Bulkhead Jacks  
MIL-C-39012  
(Category B)**



| RG/U<br>Cable                                | Silver Plate<br>Standard<br>AMP Number | Tarnish Resistant Plate<br>Standard AMP Number |
|----------------------------------------------|----------------------------------------|------------------------------------------------|
|                                              |                                        |                                                |
| 59, 59A, 59B, 62, 62A,<br>62B, 124, 140, 210 | —                                      | 225398-2                                       |
| 174, 188, 316                                | 1-331693-2                             | 225398-7                                       |
| 179, 187                                     | —                                      | 225398-8                                       |
| 180, 180A, 195                               | —                                      | 225398-9                                       |
| Belden 8218,<br>Amphenol 21-597              | 1-331693-0                             | —                                              |
| Brand Rex T209A,<br>IBM 5353914              | 2-331693-5                             | —                                              |
| 58, 58A, 58B, 58C                            | 1-331693-1                             | 225398-1                                       |
| 55, 223                                      | —                                      | 225398-3                                       |
| 142, 142A, 142B, 400                         | —                                      | 225398-6                                       |

**Commercial Dual Crimp  
Bulkhead Jacks**



| RG/U Cable                                      | Part<br>Number |
|-------------------------------------------------|----------------|
| 58, 58A, 58B, 58C,<br>141, 141A                 | 228980-5       |
| 59, 59A, 59B,<br>62, 62A, 62B,<br>124, 140, 210 | 228980-6       |
| 174, 188, 316                                   | 228980-7       |
| Belden 9907, 89907                              | 1-228980-6     |

**Hex Crimp Bulkhead Jacks**



| RG/U Cable                 | Part<br>Numbers |
|----------------------------|-----------------|
| 174, 188, 316              | 413771-3        |
| 179, 187                   | 413771-4        |
| 180, 195                   | 413771-5        |
| 58, Belden 88240           | 413771-1        |
| 141, Belden 89907,<br>9907 | 413771-6        |
| 59, 62, Belden 88241       | 413771-2        |



## BNC Connectors, 75 Ohm Jacks

## Twin BNC Connectors

### Commercial Dual Crimp Plugs



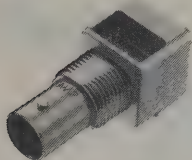
| RG/U<br>Cable                                               | Part<br>Number |
|-------------------------------------------------------------|----------------|
| 59, 59A, 59B                                                | 221185-2       |
| Belden 8281, 9231                                           | 221185-5       |
| 179, 179A, 179B, 187,<br>187A, Belden 9221                  | 221185-8       |
| Belden 9266, 9259,<br>9240 (RG 59-Type<br>with 20 AWG C.C.) | 221185-9       |
| AT&T 735A                                                   | 1-221185-8     |
| AT&T 734A                                                   | 1-221185-0     |
| 6, 6A                                                       | 221185-7       |

### Commercial Dual Crimp Bulkhead Jacks



| RG/U<br>Cable                              | Part<br>Number |
|--------------------------------------------|----------------|
| 59, 59A, 59B                               | 221221-2       |
| 179, 179A, 179B, 187,<br>187A, Belden 9221 | 221221-5       |

### Commercial Right-Angle PCB/ Panel Mount Jack

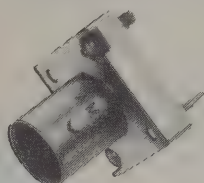


Part No. 222092-1

### Commercial Vertical Metalized PCB Mount Jack (Press Fit)



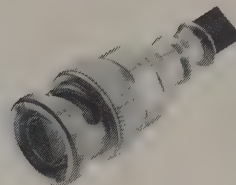
Part No. 222462-1



Part No. 221336-1  
.093 [2.36] Min.  
Pc Board Thickness

Part No. 221336-3  
.125 [3.17] Min.  
Pc Board Thickness

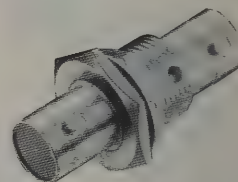
### Plug



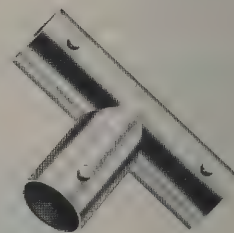
Plugs

| RG/U<br>Cable                     | Dielectric<br>Material | Part<br>Number |
|-----------------------------------|------------------------|----------------|
| 108, 108A                         | TEFLON                 | 332225         |
| Trompeter TWC-124-2               | TEFLON                 | 332225-3       |
| 108, 108A                         | Polypropylene          | 332225-5       |
| ROLM 49D2401<br>Raychem 7824D0130 | Polypropylene          | 332225-6       |

### Bulkhead Jack

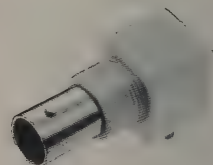


Bulkhead Jack  
Adapter  
Part No. 332215



Tee Adapter  
Part No. 228833-1

### Right-Angle PCB/ Panel Mount Jack with Solder Mounting Posts Part No. 228686-1



Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

# AMP

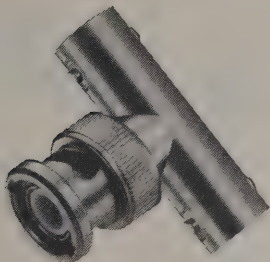
AMP INCORPORATED, HARRISBURG, PA 17105



BNC Connector  
Accessories

For more information request Catalog 82074

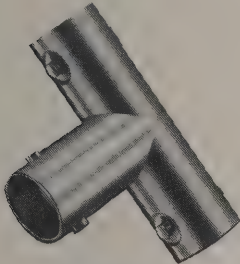
Standard Tee Adapters  
(Jack-Jack-Plug), 50 Ohm



| Type       | Body<br>Plating | Contact<br>Plating | Part<br>Number |
|------------|-----------------|--------------------|----------------|
| Mil-Type   | Nickel          | Gold               | 221543-2       |
| Commercial | Nickel          | Gold               | 413592-2       |

Standard Jack  
Tee Adapter  
(Jack-Jack-Jack)  
50 Ohm

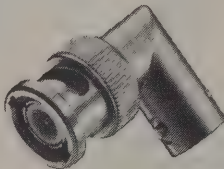
Contact—Silver  
Body—Nickel



Part No. 221988-1

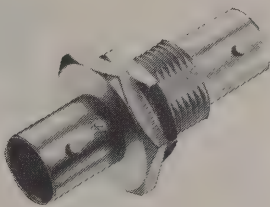
Standard  
Right-Angle Adapter  
(Jack-Plug)  
50 Ohm

Contact—Gold  
Body—Nickel



Part No. 222165-2

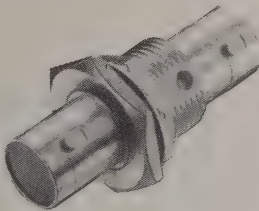
Bulkhead Jack Adapters,  
50 Ohm



| Body<br>Plating | Contact<br>Plating | Part<br>Number |
|-----------------|--------------------|----------------|
| Silver          | Silver             | 330024         |
| Nickel          | Gold               | 228226-1       |

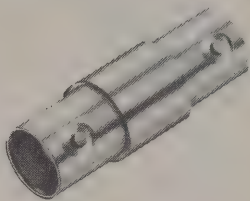
Bulkhead Jack Adapters  
Commercial,  
75 Ohm

Contact—Gold  
Body—Nickel



Part No. 222117-1

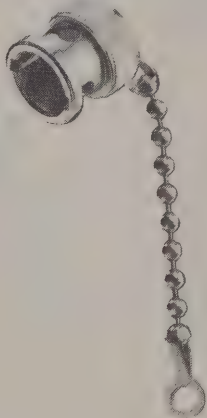
Standard Jack  
Feedthru Adapter  
50 Ohm



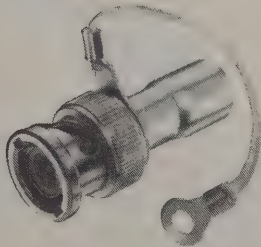
Part No. 221551-1—Silver/Nickel  
Part No. 221551-3—Gold/Nickel

Jack Cover

Silver Plating  
Part No. 330022  
Nickel Plating  
Part No. 1-330022-2



Commercial Terminator Plugs  
Steel Stamp



| Resistor<br>Specification | Part Numbers |                |
|---------------------------|--------------|----------------|
|                           | With Tether  | Without Tether |
| 1 Watt, 50 Ohm            | 221629-1     | 221629-4       |
| 1 Watt, 75 Ohm            | 221629-2     | 221629-5       |
| 1 Watt, 93 Ohm            | 221629-3     | 221629-6       |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



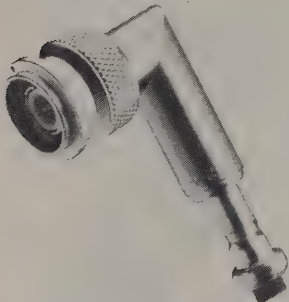
## TNC Connectors 50 Ohm

**Mil-Type  
Single Crimp Plug**



| RG/U<br>Cable   | Part<br>Number |
|-----------------|----------------|
| 142, 142A, 142B | 2-330953-2     |
| 59              | 331100         |
| 179, 187        | 331103         |
| 141, 303        | 2-330953-1     |
| 55, 223         | 2-330953-3     |

**Standard Dual Crimp  
Right-Angle Plug**



| RG/U<br>Cable     | Tarnish Resistant<br>Plate<br>Part No. |
|-------------------|----------------------------------------|
| 9, 9A, 9B, 214    | 225559-9                               |
| 58, 58A, 58B, 58C | 225559-2                               |
| 8, 8A, 213        | 225559-8                               |

**Commercial  
Dual Crimp Plugs**



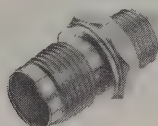
| RG/U<br>Cable                                   | Center Contact  |                   |
|-------------------------------------------------|-----------------|-------------------|
|                                                 | Plating<br>Gold | Plating<br>Silver |
| 58, 58A, 58B,<br>58C, 141                       | 227000-5        | —                 |
| 59, 59A, 59B,<br>62, 62A, 62B,<br>124, 140, 210 | 227000-7        | 1-227000-1        |
| Belden 88241                                    | 1-227000-9      | —                 |
| Belden 88240                                    | 2-227000-2      | —                 |
| 142, 400                                        | 4-227000-6      | —                 |

**Mil-Type  
Dual Crimp Plug  
MIL-C-39012  
(Category B)**



| RG/U<br>Cable                                | Standard<br>Silver Plate | Tarnish Resistant<br>Plate | Weatherproof<br>Silver Plate |
|----------------------------------------------|--------------------------|----------------------------|------------------------------|
| 55, 55A, 55B, 223                            | —                        | —                          | 225550-1                     |
| 59, 59A, 59B, 62, 62A,<br>62B, 124, 140, 210 | —                        | 225555-3                   | 225550-3                     |
| 9, 9A, 9B, 214                               | 225345-8                 | —                          | —                            |
| 225                                          | —                        | —                          | 1-225550-2                   |
| 58                                           | —                        | 225555-2                   | 225550-2                     |
| 142                                          | 225345-6                 | 225555-6                   | 225550-6                     |

**Commercial Bulkhead  
Solder Jack**



**Solder Terminal  
Part No. 227260-2**

| Contact<br>Material | Dielectric<br>Material | Receptacle Assembly * |          |
|---------------------|------------------------|-----------------------|----------|
| Gold                | VALOX                  | Short                 | 227758-2 |
| Gold                | VALOX                  | Long                  | 227764-2 |

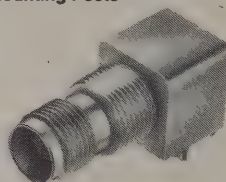
\*Includes lockwasher and jam nut.

**Jack Adapter**



**Part No. 221325-1  
Gold Center Contact**

**Commercial Right-Angle  
PCB/Panel Mount Jack  
without Flanges, with  
Mounting Posts**



**Part No. 227839-1  
Metal Body, Gold Contact**

**Bulkhead Jack  
Adapter—50 Ohm**



**Part No. 221500-1**

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C-1234

For manufacturers' sales offices, see yellow pages

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

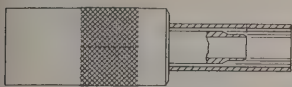
EEM 1993



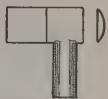
SMB Connectors

50 Ohm, Mil-Type Connectors

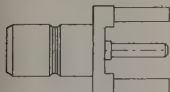
Cable Plugs, Hex Crimp Straight



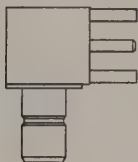
Cable Plugs Right Angle



PC Board Jacks



PC Board Jacks Right Angle



| Cable Size<br>RG/U                     | Type                         | Plate Finish |        | Part No. |
|----------------------------------------|------------------------------|--------------|--------|----------|
|                                        |                              | Contact      | Body   |          |
| Plugs                                  |                              |              |        |          |
| 178/196                                | Straight, Comm.              | Gold         | Nickel | 228213-2 |
| 174/188/316                            | Straight, Mil-Type           | Gold         | Gold   | 413985-1 |
| 174/188/316                            | Straight, Mil-Type           | Gold         | Nickel | 413985-3 |
| 178/196                                | Right Angle, Comm.           | Gold         | Nickel | 228214-2 |
| 174/188/316                            | Right Angle, Mil-Type        | Gold         | Gold   | 414002-1 |
| 174/188/316                            | Right Angle, Mil-Type        | Gold         | Nickel | 414002-3 |
| Cable Jacks                            |                              |              |        |          |
| 174/188/316                            | Straight, Mil-Type           | Gold         | Gold   | 414091-1 |
| 174/188/316                            | Straight, Blkh'd, Mil-Type   | Gold         | Gold   | 414092-1 |
| PC Board Jacks                         |                              |              |        |          |
| —                                      | Vertical, Mil-Type           | Gold         | Gold   | 413990-1 |
| —                                      | Vertical, Mil-Type           | Gold         | Nickel | 413990-2 |
| —                                      | Right Angle, Mil-Type        | Gold         | Gold   | 413996-2 |
| —                                      | Right Angle, Mil-Type        | Gold         | Nickel | 413996-4 |
| —                                      | Right Angle w/Pads, Mil-Type | Gold         | Gold   | 414026-2 |
| —                                      | Right Angle w/Pads, Mil-Type | Gold         | Nickel | 414026-3 |
| Bulkhead Jacks Receptacles, Solder Pot |                              |              |        |          |
| —                                      | Front Mount, Comm.           | Gold         | Nickel | 228216-1 |
| —                                      | Front Mount, Comm.           | Gold         | Gold   | 228216-2 |
| —                                      | Rear Mount, Comm.            | Gold         | Nickel | 228215-1 |
| —                                      | Right Angle, Mil-Type        | Gold         | Nickel | 414022-4 |
| Adapters                               |                              |              |        |          |
| Blkh'd. Jack-to-Jack                   |                              | Gold         | Nickel | 228553-1 |
| SMC Plug to SMB Plug                   |                              | Gold         | Gold   | 414025-2 |
| SMB Jack-to-Jack                       |                              | Gold         | Gold   | 414029-2 |
| SMB Tee (Jack-Plug-Jack)               |                              | Gold         | Gold   | 414040-2 |
| SMB Jack to BNC Jack Blkh'd            |                              | Gold         | Gold   | 414051-2 |
| SMB Res Term 510hm/.5W Plug            |                              | Gold         | Gold   | 414042-2 |

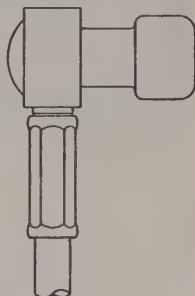
For more information request Catalog 82074

50 Ohm, Commercial Connectors

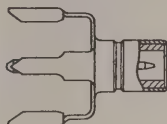
Straight Plugs



Right Angle Plugs

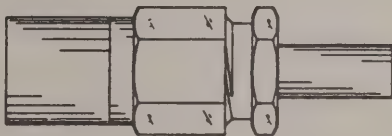


PC Board Jack

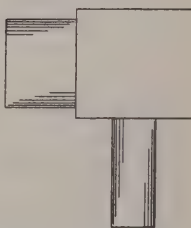


75 Ohm Connectors

Cable Plugs Straight



Cable Plugs Right Angle



| Cable Size<br>RG/U                     | Type                  | Plate Finish |          | Part No. |
|----------------------------------------|-----------------------|--------------|----------|----------|
|                                        |                       | Contact      | Body     |          |
| Plugs                                  |                       |              |          |          |
| 161/179/187                            | Straight, Mil-Type    | Gold         | Nickel   | 414047-6 |
| 180/195                                | Straight, Mil-Type    | Gold         | Nickel   | 414047-8 |
| 161/179/187                            | Right Angle, Mil-Type | Gold         | Nickel   | 414048-6 |
| 180/195                                | Right Angle, Mil-Type | Gold         | Nickel   | 414048-8 |
| Straight Cable Jacks                   |                       |              |          |          |
| 161/179/187                            | Mil-Type              | Gold         | Nickel   | 414074-6 |
| 180/195                                | Mil-Type              | Gold         | Nickel   | 414074-8 |
| Straight Bulkhead Cable Jacks          |                       |              |          |          |
| 161/179/187                            | Mil-Type              | Gold         | Nickel   | 414075-6 |
| 180/195                                | Mil-Type              | Gold         | Nickel   | 414075-8 |
| PC Board Jacks                         |                       |              |          |          |
| —                                      | Vertical, Comm.       | Gold         | Tin Lead | 221114-1 |
| —                                      | Right Angle, Comm.    | Gold         | Nickel   | 211014-1 |
| Bulkhead Jacks Receptacles, Solder Pot |                       |              |          |          |
| —                                      | Front Mount, Comm.    | Gold         | Nickel   | 221225-1 |



AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

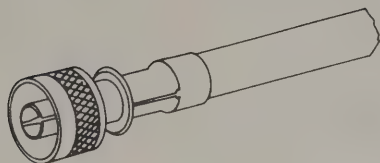


## AMP N Series Connectors

### Commercial Plug Dual Crimp Connector

#### Materials and Finish

**Body Components**—Brass 70/30  
**Contact**—Brass 70/30  
**Insulators**—TEFLON  
**Crimp Ferrule**—Copper  
**Gaskets**—Silicone Rubber ZZ-R-765  
**Plating**—Bright Nickel and Bright Tin

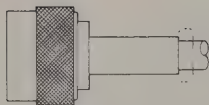


| RG/U<br>Cable | Gold Plated<br>Center Contact |
|---------------|-------------------------------|
| 8, 213        | 1-227086-0                    |

### Mil-Type Plug Dual Crimp

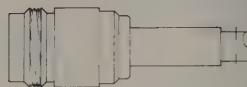
#### Materials and Finish

**Brass**: QQ-B-626  
**Beryllium Copper**: QQ-C-530  
**TEFLON**: MIL-P-19468  
**Copper, Annealed**: QQ-C-576  
**Phosphor Bronze**: QQ-B-750  
**Silicone Rubber**: ZZ-R-765  
**Plating**  
**Body**: Silver per QQ-S-365  
**Tarnish Resistant**—Nickel per  
 QQ-N-290  
**Center Contact**: Gold per MIL-G-  
 45204



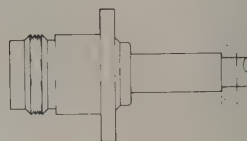
| RG/U Cable      | Part Numbers    |             |                 |             |
|-----------------|-----------------|-------------|-----------------|-------------|
|                 | Standard        |             | Weatherproof    |             |
|                 | Tarn. Res. Fin. | Silver Fin. | Tarn. Res. Fin. | Silver Fin. |
| 9, 9A, 9B, 214  | 225661-1        | 51692-1     | 225662-1        | 225092-1    |
| 8, 8A, 213      | 225661-2        | 51692-2     | 225662-2        | 225092-2    |
| 393             | —               | —           | 1-225662-1      | 1-225092-1  |
| 58A, 58C        | 1-225661-2      | 225361-1    | —               | 225392-7    |
| 55A, 223        | 1-225661-3      | 225361-2    | —               | 225392-1    |
| 142, 142A, 142B | 1-225661-5      | 225361-4    | 225699-1        | 225392-2    |

### Mil-Type Jack Dual Crimp



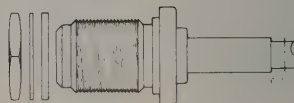
| RG/U<br>Cable        | Weatherproof<br>Silver Finish |
|----------------------|-------------------------------|
| 58, 58A, 58B, 58C    | 225723-4                      |
| 142, 142A, 142B, 400 | 225723-2                      |
| 8, 8A, 213           | 225093-2                      |
| 9, 9A, 9B, 214       | 225093-1                      |

### Panel Jack



| RG/U<br>Cable | Weatherproof<br>Silver Finish |
|---------------|-------------------------------|
| 8, 8A, 213    | 225089-2                      |

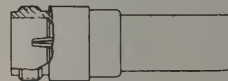
### Bulkhead Jack



| RG/U<br>Cable   | Standard<br>Silver Finish | Weatherproof<br>Tar. Res. Fin. |
|-----------------|---------------------------|--------------------------------|
| 393             | —                         | 1-225668-1                     |
| 142, 142A, 142B | 225363-2                  | —                              |

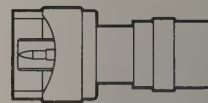
### Terminator Jack

Standard Tarnish Resistant Finish  
 Part No. 227997-1



### Terminator Plug

Standard Tarnish Resistant Finish  
 Part No. 227953-1



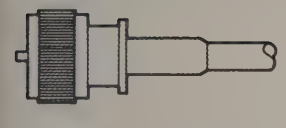
# AMP

AMP INCORPORATED, HARRISBURG, PA 17105



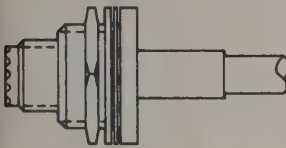
UHF Series  
Miniature Connector

Plug



| RG/U Cable          | Part Number |
|---------------------|-------------|
| 58, 58A<br>58B, 58C | 226600-1    |

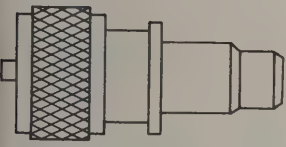
Bulkhead Jack



| RG/U Cable  | Part Number |
|-------------|-------------|
| 174/188/316 | 228665-2    |

Economy  
UHF Series Connectors

Plug



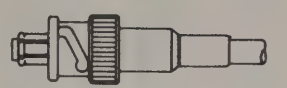
| RG/U Cable | Nickel Plated Part Number |
|------------|---------------------------|
| 58         | 226279-1                  |

COAXICON SHV Series

Materials

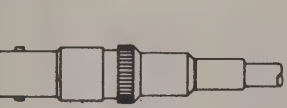
Beryllium Copper: QQ-C-530  
Silicone Rubber: ZZ-R-765  
Brass: QQ-B-626  
Copper: QQ-C-576  
TEFLON Insulation: MIL-P-19468  
Plating: Silver—QQ-S-365

Plugs



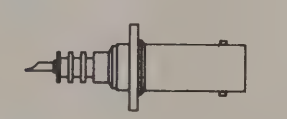
| RG/U Cable                   | Silver Plate | Tarn. Res. Plate |
|------------------------------|--------------|------------------|
| 58A, 58C                     | 51426-1      | 51426-4          |
| 59, 59A, 59B<br>62, 62A, 62B | 51426-2      | 51426-5          |

Jacks



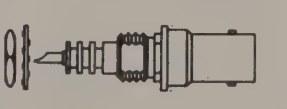
| RG/U Cable                   | Tarn. Res. Plate |
|------------------------------|------------------|
| 58, 58A, 58B, 58C            | 225087-4         |
| 59, 59A, 59B<br>62, 62A, 62B | 225087-5         |

Panel Receptacle



Part No. 51421-1—Silver Plating  
Part No. 51421-2—Tarnish-Resistant plating

Bulkhead Receptacle



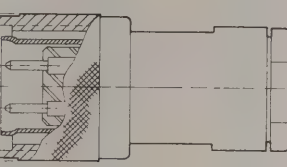
Part No. 51494-1—Silver Plating  
Part No. 51494-2—Tarnish-Resistant Plating

AMP Twin-Ax  
Interconnection  
System

Materials

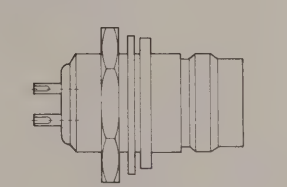
Brass: MIL-C-50  
ASTM B-136  
QQ-B-626  
Beryllium Copper: QQ-C-530 and  
QQ-C-533  
Copper Annealed: QQ-C-576  
Phosphor Bronze: ASTM-B-140  
(QQ-B-750)

Cable Plug



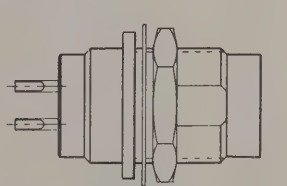
| Contact                | Part Number |
|------------------------|-------------|
| Solder Type            | 227241-1    |
| Crimp Type             | 227241-2    |
| Captivated Solder Type | 227241-3    |

Bulkhead Jack  
(Front Mount)



Part No. 228284-1

Bulkhead Jack  
(Rear Mount)

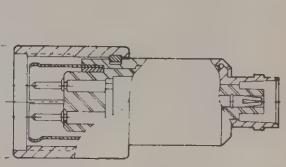


Part No. 228523-1

Plating:

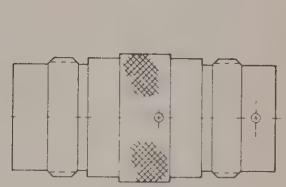
Silver—QQ-S-365  
Gold—MIL-G-45204  
Nickel—QQ-N-290  
Copper—MIL-C-14550  
Zinc—QQ-Z-363  
Tin—MIL-T-10727  
Silicone Rubber: ZZ-R-765  
Nylon: MIL-M-20693 Type I  
TEFLON TFE: MIL-P-19468  
Polypropylene: General purpose

Twin-Ax/BNC Adapter  
(Transformer)



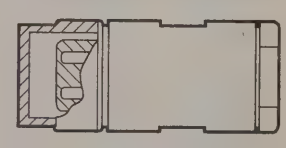
Part No. 227447-1

Cable Splice



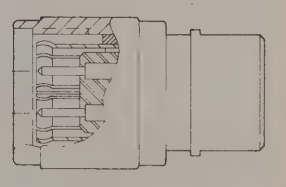
Part No. 227502-1

Cable Jack



Part No. 227682-1

Terminator (Resistor)



50 Ohm—Part No. 227504-1  
75 Ohm—Part No. 227504-2

For more information request Catalog 82074

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



AMP INCORPORATED, HARRISBURG, PA 17105



## Ring Tongue Terminals

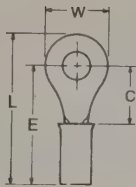
### PIDG

#### Material:

Insulation—Nylon

Terminal Body and Metallic Sleeve—  
Copper per QQ-C-576

Plating—Tin per MIL-T-10727



PIDG Terminals meet or exceed  
the requirements of MIL-T-7928,  
Type II, Class 1 and 2.

| Wire Size Range |              | Stud<br>Size | Dimensions |      |           |           | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Tongue<br>Material<br>Thickness<br>Max. | Barrel<br>I.D.<br>Min. | Part Numbers   |                 |
|-----------------|--------------|--------------|------------|------|-----------|-----------|---------------------------------|----------------------------------------|-----------------------------------------|------------------------|----------------|-----------------|
| AWG             | CMA          |              | C<br>Min.  | W    | E<br>Max. | L<br>Max. |                                 |                                        |                                         |                        | Loose<br>Piece | Tape<br>Mounted |
| 26-22           | 202-810      | 2/M2         | .121       | .140 | .452      | .525      | Yellow                          | .082                                   | .020                                    | .029                   | 323912         | 2-323912-1      |
|                 |              |              | .211       | .203 | .542      | .646      | Yellow                          | .082                                   | .020                                    | .029                   | 323915         | 2-323915-2      |
|                 |              | 6/M3.5       | .250       | .281 | .654      | .797      | Red                             | .125                                   | .033                                    | .061                   | 36151          | 2-36151-2       |
|                 |              |              | .250       | .281 | .654      | .797      | Red                             | .140                                   | .033                                    | .061                   | 36152          | 2-36152-1       |
| 22-16           | 509-3,260    | 8/M4         | .281       | .312 | .685      | .844      | Red                             | .125                                   | .033                                    | .061                   | 323008         | 2-323008-1      |
|                 |              |              | .281       | .312 | .685      | .844      | Red                             | .140                                   | .033                                    | .061                   | 31890          | 2-31890-1       |
|                 |              |              | .250       | .281 | .654      | .797      | Red                             | .140                                   | .033                                    | .061                   | 31886          | 2-31886-2       |
|                 |              |              | .281       | .312 | .685      | .844      | Red                             | .140                                   | .033                                    | .061                   | 36154          | 2-36154-2       |
|                 |              | 10           | .250       | .281 | .654      | .797      | Red                             | .140                                   | .033                                    | .061                   | 31887          | 2-31887-1       |
|                 |              |              | .250       | .281 | .654      | .797      | Red                             | .140                                   | .033                                    | .061                   | 31887          | 2-31887-1       |
|                 |              |              | .250       | .281 | .654      | .797      | Red                             | .140                                   | .033                                    | .061                   | 31887          | 2-31887-1       |
|                 |              |              | .250       | .281 | .654      | .797      | Red                             | .140                                   | .033                                    | .061                   | 31887          | 2-31887-1       |
| 16-14           | 2,050-5,180  | 6/M3.5       | .437       | .469 | .841      | 1.078     | Red                             | .140                                   | .033                                    | .061                   | 31894          | 2-31894-2       |
|                 |              |              | .437       | .469 | .841      | 1.078     | Red                             | .140                                   | .033                                    | .061                   | 31894          | 2-31894-2       |
|                 |              | 8/M4         | .171       | .250 | .575      | .703      | Blue                            | .170                                   | .033                                    | .085                   | 320619         | 2-320619-1      |
|                 |              |              | .219       | .281 | .810      | .953      | Yellow                          | .250                                   | .042                                    | .129                   | 35149          | 2-35149-1       |
|                 |              | 10           | .302       | .375 | .893      | 1.083     | Yellow                          | .250                                   | .042                                    | .129                   | 35108          | 2-35108-1       |
|                 |              |              | .281       | .343 | .872      | 1.046     | Yellow                          | .230                                   | .042                                    | .129                   | 32883          | 1-32883-0       |
|                 |              |              | .302       | .312 | .893      | 1.052     | Yellow                          | .230                                   | .042                                    | .129                   | 324918         | 1-324918-0      |
|                 |              |              | .302       | .375 | .893      | 1.083     | Yellow                          | .250                                   | .042                                    | .129                   | 35109          | 2-35109-1       |
| 12-10           | 5,180-13,100 | 10           | .302       | .375 | .893      | 1.083     | Yellow                          | .300                                   | .042                                    | .129                   | 35364          | 2-35364-1       |
|                 |              |              | .302       | .375 | .893      | 1.083     | Yellow                          | .300                                   | .042                                    | .129                   | 35364          | 2-35364-1       |
|                 |              | 1/4/M6       | .468       | .531 | 1.054     | 1.322     | Yellow                          | .250                                   | .042                                    | .129                   | 35110          | 2-35110-1       |
|                 |              |              | .468       | .531 | 1.054     | 1.322     | Yellow                          | .250                                   | .042                                    | .129                   | 35110          | 2-35110-1       |

### PIDG Radiation Resistant

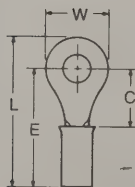
#### Material:

Insulation—Polyvinylidene Fluoride  
(PVF<sub>2</sub>)

Color—Natural

Terminal Body and Metallic Sleeve—  
Copper per QQ-C-576

Plating—Tin per MIL-T-10727



| Wire Size Range |              | Stud<br>Size | Dimensions |      |           |           | Terminal<br>Insulation<br>Color<br>Stripe | Wire<br>Insulation<br>Diameter<br>Max. | Tongue<br>Material<br>Thickness<br>Max. | Part Numbers   |                 |
|-----------------|--------------|--------------|------------|------|-----------|-----------|-------------------------------------------|----------------------------------------|-----------------------------------------|----------------|-----------------|
| AWG             | CMA          |              | C<br>Min.  | W    | E<br>Max. | L<br>Max. |                                           |                                        |                                         | Loose<br>Piece | Tape<br>Mounted |
| 22-16           | 509-3,260    | 6/M3.5       | .156       | .218 | .560      | .672      | Red                                       | .125                                   | .033                                    | 53406-1        | —               |
|                 |              | 6/M3.5       | .250       | .250 | .654      | .782      | Red                                       | .125                                   | .033                                    | 53407-1        | —               |
|                 |              | 8/M4         | .281       | .312 | .685      | .844      | Red                                       | .125                                   | .033                                    | 53408-1        | —               |
|                 |              | 10           | .281       | .312 | .685      | .844      | Red                                       | .125                                   | .033                                    | 53409-1        | —               |
| 16-14           | 2,050-5,180  | 8/M4         | .281       | .312 | .685      | .844      | Blue                                      | .150                                   | .033                                    | 53417-1        | —               |
|                 |              | 10           | .281       | .312 | .685      | .844      | Blue                                      | .150                                   | .033                                    | 53418-1        | 53418-2         |
|                 |              | 8/M4         | .302       | .375 | .893      | 1.083     | Yellow                                    | .230                                   | .042                                    | 53424-1        | 53424-2         |
| 12-10           | 5,180-13,100 | 10           | .302       | .375 | .893      | 1.083     | Yellow                                    | .230                                   | .042                                    | 53425-1        | 53425-2         |
|                 |              | 1/4/M6       | .468       | .531 | 1.054     | 1.322     | Yellow                                    | .230                                   | .042                                    | 53426-1        | —               |

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



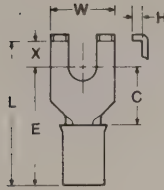
For more information request Catalog 82042

Flanged Spade  
Tongue Terminal

PIDG

Material:

Insulation—Nylon  
Terminal Body and Metallic Sleeve—  
Copper per QQ-C-576  
Plating—Tin per MIL-T-10727



PIDG Terminals meet or exceed  
the requirements of MIL-T-7928,  
Type II, Class 1 and 2.

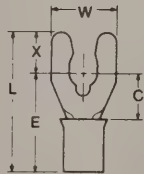
| Wire Size Range |             | Stud<br>Size | Dimensions |      |           |           |      |      | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Tongue<br>Material<br>Thickness<br>Max. | Barrel<br>I.D.<br>Min. | Part Numbers   |                 |
|-----------------|-------------|--------------|------------|------|-----------|-----------|------|------|---------------------------------|----------------------------------------|-----------------------------------------|------------------------|----------------|-----------------|
| AWG             | CMA         |              | C<br>Min.  | W    | E<br>Max. | L<br>Max. | X    | H    |                                 |                                        |                                         |                        | Loose<br>Piece | Tape<br>Mounted |
| 22-16           | 509-3,260   | 2/M2         | .203       | .182 | .607      | .727      | .115 | .046 | Red                             | .140                                   | .033                                    | .061                   | 324608         | 2-324608-1      |
|                 |             |              | .203       | .296 | .607      | .737      | .125 | .046 | Red                             | .125                                   | .033                                    | .061                   | 32561          | 2-32561-1       |
|                 |             | 6/M3.5       | .203       | .296 | .607      | .737      | .125 | .046 | Red                             | .140                                   | .033                                    | .061                   | 32562          | 2-32562-1       |
|                 |             |              | .203       | .250 | .607      | .737      | .125 | .046 | Red                             | .125                                   | .033                                    | .061                   | 322777         | 2-322777-1      |
| 16-14           | 2,050-5,180 | 6/M3.5       | .203       | .294 | .607      | .737      | .125 | .052 | Blue                            | .170                                   | .033                                    | .085                   | 320861         | 2-320861-1      |

Short Spring Spade  
Tongue Terminals

PIDG

Material:

Insulation—Nylon  
Terminal Body—Phosphor Bronze  
Metallic Sleeve—Copper per  
QQ-C-576  
Plating—Tin per MIL-T-10727



| Wire Size Range |              | Stud<br>Size | Dimensions |      |           |           |      | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Tongue<br>Material<br>Thickness<br>Max. | Barrel<br>I.D.<br>Min. | Part Numbers   |                 |
|-----------------|--------------|--------------|------------|------|-----------|-----------|------|---------------------------------|----------------------------------------|-----------------------------------------|------------------------|----------------|-----------------|
| AWG             | CMA          |              | C<br>Min.  | W    | E<br>Max. | L<br>Max. | X    |                                 |                                        |                                         |                        | Loose<br>Piece | Tape<br>Mounted |
| 22-16           | 509-3,260    | 5/M3         | .250       | .250 | .654      | .799      | .140 | Red                             | .125                                   | .033                                    | .061                   | 52928          | 52928-1         |
|                 |              | 6/M3.5       | .250       | .250 | .654      | .799      | .140 | Red                             | .125                                   | .033                                    | .061                   | 52929          | 52929-1         |
|                 |              | 8/M4         | .281       | .375 | .685      | .860      | .170 | Red                             | .125                                   | .033                                    | .061                   | 52930          | 52930-1         |
|                 |              | 10           | .281       | .406 | .685      | .908      | .218 | Red                             | .125                                   | .033                                    | .061                   | 52931          | 52931-1         |
| 16-14           | 2,050-5,180  | 6/M3.5       | .250       | .250 | .654      | .799      | .140 | Blue                            | .170                                   | .033                                    | .085                   | 52935          | 52935-1         |
|                 |              |              | .250       | .250 | .654      | .799      | .140 | Blue                            | .182                                   | .033                                    | .085                   | 52935-2        | 52935-3         |
|                 |              | 8/M4         | .281       | .375 | .685      | .860      | .170 | Blue                            | .170                                   | .033                                    | .085                   | 52936          | 52936-1         |
|                 |              |              | .281       | .375 | .685      | .860      | .170 | Blue                            | .182                                   | .033                                    | .085                   | 52936-2        | 52936-3         |
| 12-10           | 5,180-13,100 | 10           | .281       | .406 | .685      | .908      | .218 | Blue                            | .170                                   | .033                                    | .085                   | 52937          | 52937-1         |
|                 |              | 6/M3.5       | .174       | .250 | .775      | .959      | .179 | Yellow                          | .250                                   | .042                                    | .129                   | 52941          | 52941-1         |
|                 |              | 8/M4         | .276       | .375 | .877      | 1.052     | .170 | Yellow                          | .250                                   | .042                                    | .129                   | 52942          | 52942-1         |
|                 |              | 10           | .276       | .406 | .877      | 1.100     | .218 | Yellow                          | .250                                   | .042                                    | .129                   | 52943          | 52943-1         |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



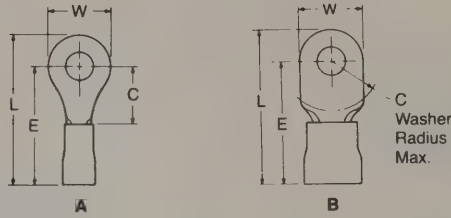
AMP INCORPORATED, HARRISBURG, PA 17105



PLASTI-GRIP

Material:

Insulation—Vinyl  
Terminal Body—Copper per  
QQ-C-576  
Plating—Tin per MIL-T-10727



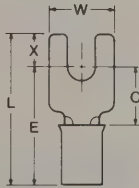
| Wire Size Range |               | Stud Size | Style | Dimensions |      |        |        | Terminal Insulation Color | Wire Insulation Diameter Max. | Tongue Material Thickness Max. | Barrel I.D. Min. | Part Numbers |              |
|-----------------|---------------|-----------|-------|------------|------|--------|--------|---------------------------|-------------------------------|--------------------------------|------------------|--------------|--------------|
| AWG             | CMA           |           |       | C Min.     | W    | E Max. | L Max. |                           |                               |                                |                  | Loose Piece  | Tape Mounted |
| 22-16           | 509-3,260     | 6/M3.5    | A     | .250       | .281 | .666   | .809   | Red                       | .125                          | .033                           | .061             | 32947        | 2-32947-1    |
|                 |               |           |       | .281       | .312 | .697   | .856   | Red                       | .125                          | .033                           | .061             | 32950        | 2-32950-1    |
|                 |               | 8/M4      | A     | .281       | .312 | .697   | .856   | Red                       | .125                          | .033                           | .061             | 32951        | 2-32951-1    |
|                 |               |           |       | .281       | .312 | .697   | .856   | Red                       | .125                          | .033                           | .061             | 32952        | 2-32952-1    |
| 16-14           | 2,050-5,180   | 8/M4      | A     | .250       | .312 | .666   | .825   | Blue                      | .170                          | .033                           | .085             | 328527       | 2-328527-1   |
|                 |               | 10        | A     | .281       | .343 | .697   | .871   | Blue                      | .140                          | .033                           | .085             | 32960        | 2-32960-1    |
| 8               | 13,100-20,800 | 10        | B     | .437       | .431 | 1.358  | 1.576  | Red                       | .325                          | .043                           | .172             | 52263-1      | 52263-3      |
| 6               | 20,800-33,100 | 10        | B     | .421       | .468 | 1.482  | 1.719  | Blue                      | .436                          | .048                           | .224             | 52265        | 52265-3      |
|                 |               | 1/4/M6    | B     | .515       | .500 | 1.591  | 1.844  | Blue                      | .436                          | .048                           | .224             | 52042-1      | 52042-7      |

Spade Tongue  
Terminals

PIDG

Material:

Insulation—Nylon  
Terminal Body and Metallic Sleeve—  
Copper per QQ-C-576  
Plating—Tin per MIL-T-10727



PIDG Terminals meet or exceed the requirements of MIL-T-7928, Type II, Class 1 and 2.

| Wire Size Range |             | Stud Size |  | Dimensions |      |        |        | Terminal Insulation Color | Wire Insulation Diameter Max. | Tongue Material Thickness Max. | Barrel I.D. Min. | Part Numbers |              |
|-----------------|-------------|-----------|--|------------|------|--------|--------|---------------------------|-------------------------------|--------------------------------|------------------|--------------|--------------|
| AWG             | CMA         |           |  | C Min.     | W    | E Max. | L Max. |                           |                               |                                |                  | Loose Piece  | Tape Mounted |
| 26-22           | 202-810     | 4         |  | .211       | .203 | .542   | .627   | Yellow                    | .082                          | .020                           | .029             | 321035       | 2-321035-1   |
| 22-16           | 509-3,260   | 6/M3.5    |  | .203       | .297 | .607   | .753   | Red                       | .125                          | .033                           | .061             | 34080        | 2-34080-1    |
|                 |             |           |  | .312       | .250 | .716   | .846   | Red                       | .140                          | .033                           | .061             | 34541        | 2-34541-1    |
| 16-14           | 2,050-5,180 | 6/M3.5    |  | .203       | .297 | .607   | .753   | Blue                      | .170                          | .033                           | .085             | 35559        | 2-35559-1    |
|                 |             | 8/M4      |  | .203       | .297 | .607   | .753   | Blue                      | .170                          | .033                           | .085             | 321233       | 2-321233-1   |

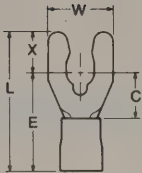


For more information request Catalog 82042

Short Spring Spade  
Tongue Terminals

PLASTI-GRIP

**Material:**  
Insulation—Vinyl  
Terminal Body—Phosphor Bronze  
per QQ-B-750  
Plating—Tin per MIL-T-10727

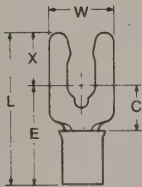


| Wire Size Range |             | Stud Size | Dimensions |      |        |        |      | Terminal Insulation Color | Wire Insulation Diameter Max. | Tongue Material Thickness Max. | Barrel I.D. Min. | Part Numbers |              |
|-----------------|-------------|-----------|------------|------|--------|--------|------|---------------------------|-------------------------------|--------------------------------|------------------|--------------|--------------|
| AWG             | CMA         |           | C Min.     | W    | E Max. | L Max. | X    |                           |                               |                                |                  | Loose Piece  | Tape Mounted |
| 22-16           | 509-3,260   | 6/M3.5    | .250       | .250 | .666   | .811   | .140 | Red                       | .140                          | .033                           | .061             | 52949        | 52949-1      |
|                 |             | 8/M4      | .281       | .375 | .697   | .872   | .170 | Red                       | .140                          | .033                           | .061             | 52950        | 52950-1      |
|                 |             |           | .281       | .244 | .697   | .872   | .170 | Red                       | .140                          | .033                           | .061             | 53241-1      | 53241-2      |
| 16-14           | 2,050-5,180 | 6/M3.5    | .250       | .250 | .666   | .811   | .140 | Blue                      | .170                          | .033                           | .085             | 52955        | 52955-1      |
|                 |             | 8/M4      | .281       | .375 | .697   | .872   | .170 | Blue                      | .170                          | .033                           | .085             | 52956        | 52956-1      |
|                 |             |           | .281       | .244 | .746   | .921   | .170 | Blue                      | .170                          | .033                           | .085             | 53244-1      | 53244-2      |
|                 |             | 10        | .281       | .406 | .697   | .920   | .218 | Blue                      | .170                          | .033                           | .085             | 52957        | 52957-1      |
|                 |             |           | .281       | .406 | .697   | .920   | .218 | Blue                      | .250                          | .033                           | .085             | 52957-2      | 52957-3      |

Long Spring Spade  
Tongue Terminals

PIDG

**Material:**  
Insulation—Nylon  
Terminal Body—Phosphor Bronze  
per QQ-B-750  
Metallic Sleeve—Copper per  
QQ-C-576  
Plating—Tin per MIL-T-10727

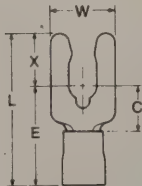


PIDG Terminals meet or exceed the requirements of MIL-T-7928, Type II, Class 1 and 2.

| Wire Size Range |             | Stud Size | Dimensions |      |        |        |      | Terminal Insulation Color | Wire Insulation Diameter Max. | Tongue Material Thickness Max. | Barrel I.D. Min. | Part Numbers |              |
|-----------------|-------------|-----------|------------|------|--------|--------|------|---------------------------|-------------------------------|--------------------------------|------------------|--------------|--------------|
| AWG             | CMA         |           | C Min.     | W    | E Max. | L Max. | X    |                           |                               |                                |                  | Loose Piece  | Tape Mounted |
| 22-16           | 509-3,260   | 6/M3.5    | .238       | .250 | .652   | .938   | .276 | Red                       | .125                          | .033                           | .061             | 52409        | 52409-1      |
|                 |             | 8/M4      | .270       | .281 | .684   | .979   | .290 | Red                       | .125                          | .033                           | .061             | 52410        | 52410-1      |
|                 |             | 10        | .283       | .343 | .697   | 1.005  | .303 | Red                       | .125                          | .033                           | .061             | 52411        | 52411-1      |
| 16-14           | 2,050-5,180 | 6/M3.5    | .243       | .250 | .647   | .928   | .276 | Blue                      | .170                          | .033                           | .085             | 52420-1      | 52420-3      |
|                 |             | 8/M4      | .275       | .281 | .679   | .974   | .290 | Blue                      | .170                          | .033                           | .085             | 52421-1      | 52421-3      |

PLASTI-GRIP

**Material:**  
Insulation—Vinyl  
Terminal Body—Phosphor Bronze  
per QQ-B-750  
Plating—Tin per MIL-T-10727



| Wire Size Range |           | Stud Size | Dimensions |      |        |        |      | Terminal Insulation Color | Wire Insulation Diameter Max. | Tongue Material Thickness Max. | Barrel I.D. Min. | Part Numbers |              |
|-----------------|-----------|-----------|------------|------|--------|--------|------|---------------------------|-------------------------------|--------------------------------|------------------|--------------|--------------|
| AWG             | CMA       |           | C Min.     | W    | E Max. | L Max. | X    |                           |                               |                                |                  | Loose Piece  | Tape Mounted |
| 22-16           | 509-3,260 | 8/M4      | .270       | .281 | .696   | .991   | .290 | Red                       | .140                          | .033                           | .061             | 52454        | 52454-1      |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



## Slotted Ring Tongue Terminals

### PIDG

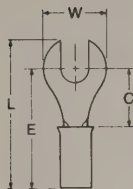
#### Material:

Insulation—Nylon

Terminal Body and Metallic Sleeve—

Copper per QQ-C-576

Plating—Tin per MIL-T-10727



PIDG Terminals and Splices meet or exceed the requirements of MIL-T-7928, Type II, Class 1 and 2.

| Wire Size Range |         | Stud Size | Dimensions |      |        |        | Terminal Insulation Color | Wire Insulation Diameter Max. | Tongue Material Thickness Max. | Barrel I.D. Min. | Part Numbers |              |
|-----------------|---------|-----------|------------|------|--------|--------|---------------------------|-------------------------------|--------------------------------|------------------|--------------|--------------|
| AWG             | CMA     |           | C Min.     | W    | E Max. | L Max. |                           |                               |                                |                  | Loose Piece  | Tape Mounted |
| 26-22           | 202-810 | 6/M3.5    | .281       | .250 | .612   | .719   | Yellow                    | .082                          | .020                           | .029             | 323011       | 2-323011-2   |

## Butt Splices

### PIDG

#### Material:

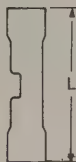
Splice Body—Copper per QQ-C-576

Plating—Tin per MIL-T-10727

Insulation Support Sleeve—Copper per QQ-C-576

Plating—Tin per MIL-T-10727

Insulation Sleeve—Nylon



Standard

| Wire Size Range    |                  | Style    | Dimension L Max. | Splice Insulation Color | Wire Insulation Diameter Max. | Barrel I.D. Min. | Part Numbers |              |
|--------------------|------------------|----------|------------------|-------------------------|-------------------------------|------------------|--------------|--------------|
| AWG                | CMA <sup>a</sup> |          |                  |                         |                               |                  | Loose Piece  | Tape Mounted |
| 26-22 <sup>b</sup> | 202-810          | Standard | .890             | Yellow                  | .082                          | .029             | 323994       | 2-323994-1   |
| 24-20              | 320-1,290        |          | 1.035            | Trans.                  | .100                          | .043             | 323975       | 2-323975-3   |
| 22-16 <sup>c</sup> | 509-3,260        |          | 1.265            | Red                     | .125                          | .061             | 320559       | 2-320559-4   |
| 16-14              | 2,050-5,180      |          | 1.265            | Blue                    | .150                          | .085             | 320562       | 2-320562-3   |
| 12-10              | 5,180-13,100     |          | 1.656            | Yellow                  | .220                          | .129             | 320570       | —            |

<sup>a</sup>26-22 splices are 26-24 range in accordance with MIL-T-7928.

<sup>b</sup>22-16 splices are 22-18 range in accordance with MIL-T-7928.

<sup>c</sup>When using two or more wires in either end of a butt splice, the combined cross sectional area must be within the (CMA) circular mil area range listed.

### PLASTI-GRIP

#### Material:

Insulation—Vinyl

Splice Body—Copper per QQ-C-576

Plating—Tin per MIL-T-10727



| Wire Size Range    |                  | Dimension L Max. | Splice Insulation Color | Wire Insulation Diameter Max. | Barrel I.D. Min. | Part Numbers |              |
|--------------------|------------------|------------------|-------------------------|-------------------------------|------------------|--------------|--------------|
| AWG                | CMA <sup>a</sup> |                  |                         |                               |                  | Loose Piece  | Tape Mounted |
| 26-22 <sup>1</sup> | 202-810          | .620             | Yellow                  | .080                          | .029             | 321026       | 2-321026-1   |
| 22-16 <sup>2</sup> | 509-3,260        | 1.065            | Red                     | .125                          | .061             | 34067        | 2-34067-1    |

<sup>1</sup>26-22 splices are 26-24 range in accordance with MIL-T-7928.

<sup>2</sup>22-16 splices are 22-18 range in accordance with MIL-T-7928.

<sup>a</sup>When using two or more wires in either end of a butt splice, the combined cross sectional area must be within the (CMA) circular mil range listed.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



For more information request Catalog 82042

Parallel  
Splices

PLASTI-GRIP

Material:  
Insulation—Vinyl  
Splice Body—Copper per QQ-C-576  
Plating—Tin per MIL-T-10727



| Wire Size Range |                  | Dimension<br>L<br>Max. | Splice<br>Insulation<br>Color | Wire Insulation<br>Diameter<br>Max. | Part Number<br>(Loose Piece) |
|-----------------|------------------|------------------------|-------------------------------|-------------------------------------|------------------------------|
| AWG             | CMA <sup>1</sup> |                        |                               |                                     |                              |
| 22-16           | 509-3,260        | .760                   | Red                           | .120                                | 34131                        |

<sup>1</sup>When using two or more wires in a parallel splice, the combined cross sectional area must be within the (CMA) circular mil range listed.

Knife Disconnect  
Splices

PIDG

Material:  
Insulation—Nylon  
Body and Metallic Sleeve—Copper  
per QQ-C-576  
Plating—Tin per MIL-T-10727



PIDG Splices meet or exceed  
the requirements of MIL-T-7928,  
Type II, Class 1 and 2.

| Wire Size Range |           | Dimension<br>L<br>Max. | Splice<br>Insulation<br>Color | Wire Insulation<br>Diameter<br>Max. | Part Number<br>(Loose Piece) |
|-----------------|-----------|------------------------|-------------------------------|-------------------------------------|------------------------------|
| AWG             | CMA       |                        |                               |                                     |                              |
| 22-16           | 509-3,260 | .878                   | Red                           | .140                                | 32446                        |

Closed End  
Splices

ECN, EC  
Splice



ECN, EC  
Splice



VS, ECV  
BOMB-TAIL Splice

VS, ECV  
BOMB-TAIL Splice

| UL Listed<br>and CSA<br>Certified<br>Wire Size | AMP<br>Wire<br>Size | Insulation |          | L<br>Max. | Opening<br>Dia.<br>Min. | Material | Plating | Splice Marking <sup>1</sup><br>(Voltage & Temp.<br>Rating Code) | Part Numbers   |                 |
|------------------------------------------------|---------------------|------------|----------|-----------|-------------------------|----------|---------|-----------------------------------------------------------------|----------------|-----------------|
|                                                |                     | Color      | Material |           |                         |          |         |                                                                 | Loose<br>Piece | Tape<br>Mounted |
| 22-16                                          | 22-14               | Purple     | Vinyl    | .740      | .187                    | Copper   | Tin     | VS                                                              | 36964          | 2-36964-2       |
|                                                |                     | Trans.     | Nylon    | .680      | .250                    | Copper   | Tin     | ECN                                                             | 35115          | 1-35115-0       |
|                                                |                     | Trans.     | Nylon    | .775      | .375                    | Copper   | Tin     | ECN                                                             | 35653          | 2-35653-1       |
| 22-10                                          | 18-10               | Purple     | Vinyl    | 1.125     | .360                    | Copper   | Tin     | ECV                                                             | 321519         | 2-321519-2      |
|                                                |                     | Trans.     | Nylon    | .720      | .375                    | Copper   | Tin     | EC                                                              | 328730         | 2-328730-1      |

<sup>1</sup>Splice Marking:  
VS—300 V, 90° C  
ECV—600 V Max. Building Wiring—1000 V Max. Fixtures & Signs, 105° C UL, 90° C CSA  
ECN—300 V, 105° C  
EC—600 V Max. Building Wiring—1000 V Max. Fixtures & Signs, 105° C



## Ultra-Fast Fully Insulated FASTON Receptacle and Tab

### Material:

Housing—Nylon type 6/6

Terminal—Tin-plated, copper alloy

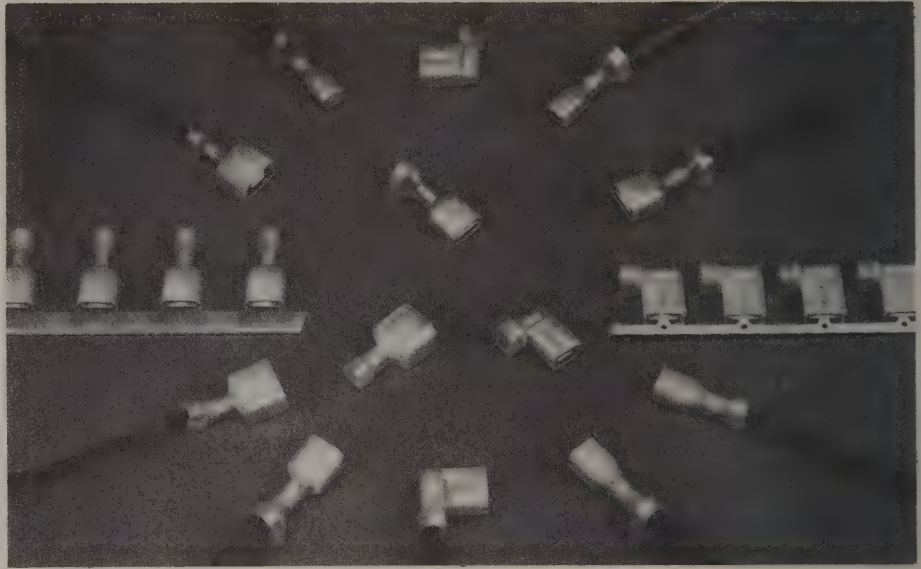
### Color Code (Translucent)

Violet—26-22 AWG [0.12-0.4 mm<sup>2</sup>]

Red—22-18 AWG [0.3-0.9 mm<sup>2</sup>]

Blue—16-14 AWG [1.25-2 mm<sup>2</sup>]

Yellow—12-10 AWG [3-6 mm<sup>2</sup>]



### Receptacles

| Description           | Wire Range<br>AWG | Ins. Dia.<br>Max. | Mating<br>Tab              | Terminal Base<br>Material | Part Numbers            |                         |
|-----------------------|-------------------|-------------------|----------------------------|---------------------------|-------------------------|-------------------------|
|                       |                   |                   |                            |                           | Strip                   | Loose Piece             |
| .110 [2.79]<br>Series | 26-22<br>0.12-0.4 | .100<br>2.54      | .020 x .110<br>0.51 x 2.79 | Brass                     | 7-520365-2 <sup>1</sup> | 7-520366-2 <sup>1</sup> |
|                       |                   |                   | .016 x .110<br>0.41 x 2.79 | Brass                     | 2-520080-2 <sup>1</sup> | 2-520081-2 <sup>1</sup> |
|                       | 22-18<br>0.3-0.9  | .120<br>3.05      | .020 x .110<br>0.51 x 2.79 | Brass                     | 2-520083-2              | 2-520084-2              |
|                       |                   |                   | .032 x .110<br>0.81 x 2.79 | Brass                     | 2-520272-2              | 2-520273-2              |
|                       | 22-18<br>0.3-0.9  | .230<br>5.84      | .020 x .110<br>0.51 x 2.79 | Brass                     | 2-520306-2              | —                       |
|                       |                   |                   | .032 x .110<br>0.81 x 2.79 | Brass                     | 2-520310-2              | —                       |
| .187 [4.75]<br>Series | 16-14<br>1.25-2   | .260<br>6.6       | .032 x .110<br>0.81 x 2.79 | Brass                     | 3-520370-2 <sup>2</sup> | —                       |
|                       |                   |                   | .020 x .187<br>0.51 x 4.75 | Brass                     | 2-520181-2              | 2-520182-2              |
|                       | 22-18<br>0.3-0.9  | .135<br>3.43      | .032 x .187<br>0.81 x 4.75 | Brass                     | 2-520193-2              | 2-520194-2              |
|                       |                   |                   | .020 x .187<br>0.51 x 4.75 | Brass                     | 2-520261-2              | —                       |
|                       | 16-14<br>1.25-2   | .230<br>5.84      | .032 x .187<br>0.81 x 4.75 | Brass                     | 2-520274-2              | 2-520275-2              |
|                       |                   |                   | .020 x .187<br>0.51 x 4.75 | Brass                     | 3-350815-2              | 3-350816-2              |
| .250 [6.35]<br>Series | 22-18<br>0.3-0.9  | .160<br>4.06      | .032 x .187<br>0.81 x 4.75 | Brass                     | 3-520124-2              | 3-520125-2              |
|                       |                   |                   | .020 x .187<br>0.51 x 4.75 | Brass                     | 3-520150-2              | 3-520151-2              |
|                       | 16-14<br>1.25-2   | .260<br>6.6       | .032 x .250<br>0.81 x 6.35 | Brass                     | 2-520183-2              | 2-520184-2              |
|                       |                   |                   | .032 x .250<br>0.81 x 6.35 | Phosphor Bronze           | 2-520183-4              | 2-520184-4              |
|                       | 12-10<br>3-6      | .320<br>8.13      | .032 x .250<br>0.81 x 6.35 | Brass                     | 2-520263-2              | 2-520264-2              |
|                       |                   |                   | .032 x .250<br>0.81 x 6.35 | Phosphor Bronze           | 2-520263-4              | —                       |
| .250 [6.35]<br>Series | 22-18<br>0.3-0.9  | .160<br>4.06      | .032 x .250<br>0.81 x 6.35 | Brass                     | 3-350819-2              | 3-350820-2              |
|                       |                   |                   | .032 x .250<br>0.81 x 6.35 | Phosphor Bronze           | 3-520116-2              | 3-520117-2              |
|                       | 16-14<br>1.25-2   | .260<br>6.6       | .032 x .250<br>0.81 x 6.35 | Brass                     | 3-520140-2              | 3-520141-2              |
|                       |                   |                   | .032 x .250<br>0.81 x 6.35 | Phosphor Bronze           | 3-520140-4              | —                       |
|                       | 12-10<br>3-6      | .320<br>8.13      | .032 x .250<br>0.81 x 6.35 | Brass                     | 4-520447-2              | 4-520448-2              |
|                       |                   |                   | .032 x .250<br>0.81 x 6.35 | Brass                     | 4-520447-2              | 4-520448-2              |

<sup>1</sup> UL Recognized

<sup>2</sup> UL Recognized, 8 amps max.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



Ultra-Fast Fully Insulated FASTON Receptacle and Tab (Continued)

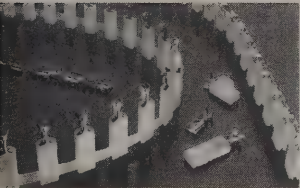


Ultra-Fast Plus—Fully Insulated FASTON Receptacles

**Material:**  
Housing-Nylon 6/6  
Terminal-Tin-plated, copper alloy

**Color Code (Translucent)**  
Red-22-18 AWG [0.3-0.9 mm<sup>2</sup>]  
Blue-16-14 AWG [1.25-2 mm<sup>2</sup>]

Ultra-Fast Plus has been tested by TUV (File No. E9071003) as suitable for end product certification to the following standards:  
EN 60 950/09.87  
DIN IEC 380/VDE 0806/08.81  
DIN IEC 601-1 Part 1/VDE 0750 T1/05.82  
DIN VDE 0700 T1/02.81



Ultra-Pod Fully Insulated FASTON Receptacles

**Material:**  
Housing-6/6 Nylon  
Terminal-Tin-plated, copper alloy

Tabs

| Description           | Wire Range<br>AWG | Ins. Dia.<br>Max. | Tab<br>Size                | Terminal Base<br>Material | Part Numbers |             |
|-----------------------|-------------------|-------------------|----------------------------|---------------------------|--------------|-------------|
|                       |                   |                   |                            |                           | Strip        | Loose Piece |
| .250 [6.35]<br>Series | 22-18             | .135              | .032 x .250<br>0.81 x 6.35 | Brass                     | 2-520102-2   | 2-520103-2  |
|                       | 0.3-0.9           | 3.43              |                            |                           |              |             |
|                       | 16-14             | .160              |                            |                           | 3-520106-2   | 3-520107-2  |
|                       | 1.25-2            | 4.06              |                            |                           |              |             |

Flag Receptacle

| Description           | Wire Range*<br>AWG | Ins. Dia.<br>Max. | Tab<br>Size | Terminal Base<br>Material | Part Numbers |             |
|-----------------------|--------------------|-------------------|-------------|---------------------------|--------------|-------------|
|                       |                    |                   |             |                           | Strip        | Loose Piece |
| .187 [4.75]<br>Series | 22-18<br>0.3-0.9   | .165<br>4.19      | .020 x .187 | Brass                     | 2-520334-2   | 2-520335-2  |
|                       |                    |                   | 0.51 x 4.75 |                           |              |             |
|                       |                    |                   | .032 x .187 | Brass                     | 2-520336-2   | 2-520337-2  |
|                       |                    |                   | 0.81 x 4.75 |                           |              |             |
|                       |                    | .185<br>4.7       | .020 x .187 | Brass                     | 3-520338-2   | 3-520339-2  |
|                       |                    |                   | 0.51 x 4.75 |                           |              |             |
|                       | 16-14<br>1.25-2    | .185<br>4.7       | .032 x .187 | Brass                     | 3-520340-2   | —           |
|                       |                    |                   | 0.81 x 4.75 |                           |              |             |
|                       |                    |                   | .260        | Brass                     | 3-520997-2   | —           |
|                       |                    | .165<br>4.19      | .020 x .187 | Brass                     |              |             |
|                       |                    |                   | 0.51 x 4.75 |                           |              |             |
|                       |                    |                   | .032 x .250 | Brass                     | 2-520128-2   | 2-520129-2  |
| .250 [6.35]<br>Series | 22-18<br>0.3-0.9   | 5.84              | 0.81 x 6.35 | Brass                     | 2-520856-2   | —           |
|                       |                    |                   | .230        |                           |              |             |
|                       |                    |                   | 0.81 x 6.35 |                           |              |             |
|                       | 16-14<br>1.25-2    | .185<br>4.7       | .032 x .250 | Brass                     | 3-520132-2   | 3-520133-2  |
|                       |                    |                   | 0.81 x 6.35 |                           |              |             |
|                       |                    |                   | .260        | Brass                     | 3-521013-2   | —           |
|                       |                    | 6.6               | 0.81 x 6.35 |                           |              |             |

\* Stranded wire only.

| Description           | Wire Range<br>AWG | Ins. Dia.<br>Max.      | Mating<br>Tab | Terminal Base<br>Material | Part Numbers |             |
|-----------------------|-------------------|------------------------|---------------|---------------------------|--------------|-------------|
|                       |                   |                        |               |                           | Strip        | Loose Piece |
| .110 [2.79]<br>Series | 22-18<br>0.3-0.9  | .060-.120<br>1.52-3.05 | .020 x .110   | Brass                     | 2-520932-2   | —           |
|                       |                   |                        | 0.51 x 2.79   |                           |              |             |
|                       |                   |                        | .032 x .110   | Brass                     | 2-520979-2   | —           |
| .187 [4.75]<br>Series | 22-18<br>0.3-0.9  | .060-.135<br>1.52-3.43 | 0.81 x 2.79   |                           |              |             |
|                       |                   |                        | .020 x .187   | Brass                     | 2-520401-2   | 2-520409-2  |
|                       |                   |                        | 0.51 x 4.75   |                           |              |             |
|                       | 16-14<br>1.3-2    | .090-.160<br>2.29-4.06 | .032 x .187   | Brass                     | 2-520403-2   | 2-520411-2  |
|                       |                   |                        | 0.81 x 4.75   |                           |              |             |
|                       |                   |                        | .020 x .187   | Brass                     | 3-520402-2   | 3-520410-2  |
| .250 [6.35]<br>Series | 22-18<br>0.3-0.9  | .060-.135<br>1.52-3.43 | 0.51 x 4.75   |                           |              |             |
|                       |                   |                        | .032 x .187   | Brass                     | 3-520404-2   | 3-520412-2  |
|                       | 16-14<br>1.3-2    | .090-.160<br>2.29-4.06 | 0.81 x 4.75   |                           |              |             |
|                       |                   |                        | .032 x .250   | Brass                     | 2-520405-2   | 2-520407-2  |
|                       |                   |                        | 0.81 x 6.35   |                           |              |             |
|                       |                   |                        | .032 x .250   | Brass                     | 3-520406-2   | 3-520408-2  |
|                       |                   |                        | 0.81 x 6.35   |                           |              |             |

Insulation Support

| Description           | Wire Range<br>AWG | Ins. Dia.<br>Max.      | Mating<br>Tab              | Material<br>and Finish | Part Numbers |
|-----------------------|-------------------|------------------------|----------------------------|------------------------|--------------|
| .187 [4.75]<br>Series | 20-16<br>0.5-1.4  | .090-.130<br>2.29-3.3  | .020 x .187                | Brass                  | 520973-1     |
|                       |                   |                        | 0.51 x 4.75                | Tin Plated Brass       | 520973-2     |
|                       |                   |                        | .032 x .187                | Brass                  | 520982-1     |
|                       | 22-18<br>0.3-0.8  | .090-.130<br>2.29-3.3  | 0.81 x 4.75                | Tin Plated Brass       | 520982-2     |
|                       |                   |                        | .032 x .250                | Brass                  | 520988-1     |
|                       |                   |                        | 0.81 x 6.35                | Tin Plated Brass       | 520988-2     |
| .250 [6.35]<br>Series | 18-14<br>0.8-2    | .120-.170<br>3.05-4.32 | .032 x .250<br>0.81 x 6.35 | Brass                  | 520963-1     |
|                       | 14-12<br>2-3      | .130-.180<br>3.3-4.57  | .032 x .250                | Tin Plated Brass       | 520963-2     |
|                       |                   |                        | 0.81 x 6.35                | Brass                  | 520974-1     |
|                       |                   |                        | .032 x .250                | Tin Plated Brass       | 520974-2     |

Flag Insulation Support

| Description           | Wire Range<br>AWG | Ins. Dia.<br>Max.      | Mating<br>Tab              | Material<br>and Finish | Part Numbers |
|-----------------------|-------------------|------------------------|----------------------------|------------------------|--------------|
| .250 [6.35]<br>Series | 18-14<br>0.8-2    | .110-.160<br>2.79-4.06 | .032 x .250<br>0.81 x 6.35 | Brass                  | 520971-1     |
|                       |                   |                        |                            | Tin Plated Brass       | 520971-2     |

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

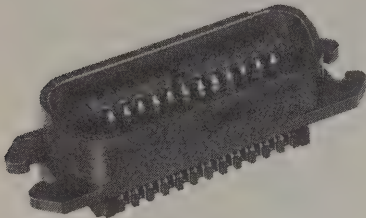




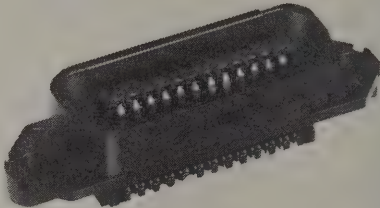
Miniature Ribbon Connector  
System (CHAMP)

CHAMP IDC Connectors

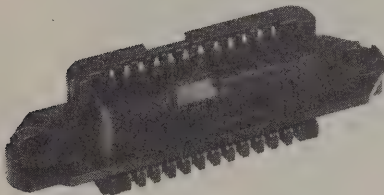
<sup>1</sup>Thick Flange connectors are typically for cable-to-cable screw lock applications.  
<sup>2</sup>Thin Flange connectors are typically for panel mount applications.



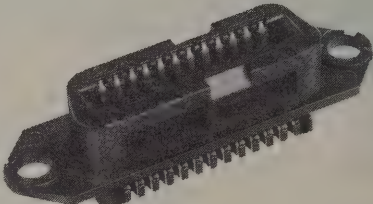
Plug, Style PB—  
Plug, Bail Lock



Plug, Style PS—  
Plug, Screw Lock (Thick Flange)<sup>1</sup>



Receptacle, Style RS—  
Receptacle, Screw or Bail Lock  
(Thick Flange)<sup>1</sup>



Receptacle, Style RP—  
Receptacle, Panel Mount,  
Screw or Bail Lock  
(Thin Flange)<sup>2</sup>

| Number<br>of<br>Positions | Wire Size          |                            | Part Numbers |          |            |            |
|---------------------------|--------------------|----------------------------|--------------|----------|------------|------------|
|                           | Solid<br>AWG       | 7 Strand<br>AWG            | Plug         |          | Receptacle |            |
|                           |                    |                            | Style PS     | Style PB | Style RS   | Style RP   |
| 24                        | 22                 | 22                         | 552301-1     | 552317-1 | 552305-1   | 2-552322-1 |
| 36                        | 0.64               | 0.40                       | 552302-1     | 552318-1 | 552306-1   | —          |
| 24                        | 24-26<br>0.51-0.40 | 24<br>0.20                 | 552283-1     | 552272-1 | 552313-1   | 2-552273-1 |
| 36                        |                    |                            | 552284-1     | 552274-1 | 552314-1   | 2-552275-1 |
| 50                        |                    |                            | 229974-1     | 552032-1 | 229975-1   | 2-552001-1 |
| 24                        | —                  | 26-27-28<br>0.14,0.10,0.09 | 552443-1     | 552469-1 | 552464-1   | 2-552474-1 |
| 36                        |                    |                            | 552444-1     | 552470-1 | —          | 2-552475-1 |
| 50                        |                    |                            | 552390-1     | 552471-1 | 552391-1   | 2-552476-1 |

Notes: 1. Plug connector Part No. 552686-1 (B Slot) is available in thin flange housing with .187 [4.75] dia. mounting holes for panel mount applications. Available in 50 position only. Also available in Multiple Wire Plug Connectors.  
2. For thin flange panel mount plug connectors all standard mounting hardware may be utilized with the exception of bail lock mounting hardware.  
3. Acceptable connector insulations are polyvinyl chloride (PVC), polyethylene, irradiated polyethylene and polypropylene and Teflon. Maximum insulation diameter .045 [1.14] for tools that mass terminate conductors on one side at a time. For tools that insert one conductor per side at a time .043 [1.09] insulation diameter is the maximum. As a rule, for harder insulations, such as Teflon, smaller diameters are required.



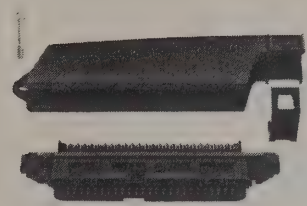
AMP INCORPORATED, HARRISBURG, PA 17105

Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



For more information request Catalog 82008

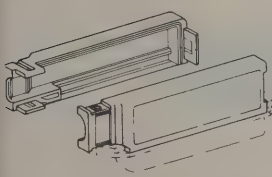
# Cable-to-Cable Plug and Receptacle with Tapered Cover and Screws for 50 Position Connector Kits



| Wire Size          |              | Cable Dia. Range        | Dust Cover | Color | Plug Kit Part Number | Receptacle Kit Part Number |
|--------------------|--------------|-------------------------|------------|-------|----------------------|----------------------------|
| Solid AWG          | 7 Strand AWG |                         |            |       |                      |                            |
| 24-26<br>0.51-0.40 | 24<br>0.20   | .425-.500<br>10.80-12.7 | Yes        | Black | 3-229912-1           | 3-229913-1                 |
|                    |              |                         | No         | Black | 2-229912-1           | 2-229913-1                 |
|                    |              | .350-.425<br>8.89-10.80 | Yes        | Black | 1-229912-1           | 1-229913-1                 |
|                    |              |                         | No         | Black | 229912-1             | 229913-1                   |

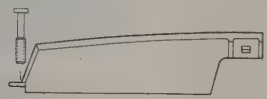
## Cable-to-Cable Accessories

### 90° Snap-On Strain Relief Cover



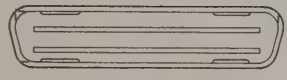
| No. of Pos. | Cable Range Dia.         | 90° Part No. |
|-------------|--------------------------|--------------|
| 50          | .415-.465<br>10.54-11.81 | 552011-1     |

### 90° Tapered Slide-On Strain Relief Cover Kit (for 50 Position Only)



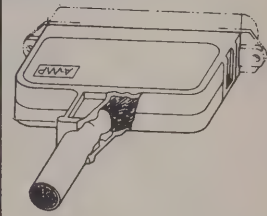
| Cable Range Diameter       | Part Numbers |
|----------------------------|--------------|
| .425 - .500<br>10.8-12.7   | 552560-5     |
| .350 - .425<br>8.89 - 10.8 | 552560-1     |

### Dust Cover



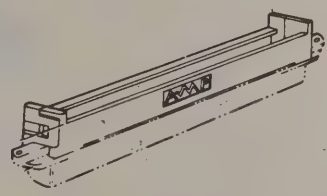
| No. of Pos. | Plug Cover (Blue) Part No. | Receptacle Cover (Red) Part No. |
|-------------|----------------------------|---------------------------------|
| 24          | 229968-4                   | 229969-4                        |
| 36          | 229968-3                   | 229969-3                        |
| 50          | 229968-1                   | 229969-1                        |

### 180° Snap-On Strain Relief Cover



| No. of Pos. | Cable Range Dia.         | 180° Part No. |
|-------------|--------------------------|---------------|
| 24          | .230-.280<br>5.84-7.11   | 552076-1      |
|             | .320-.380<br>8.13-9.65   | 2-552076-1    |
| 36          | .290-.360<br>7.37-9.14   | 552073-1      |
|             | .360-.430<br>9.14-10.92  | 552073-5      |
|             | .430-.500<br>10.92-12.70 | 552073-6      |
|             | .380-.430<br>9.65-10.92  | 2-552008-1    |
| 50          | .430-.490<br>10.92-12.45 | 552008-1      |
|             | .490-.550<br>12.45-13.97 | 4-552008-1    |

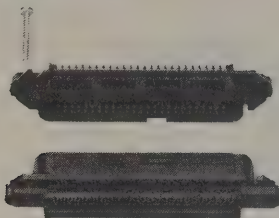
### Snap-On Strain Relief



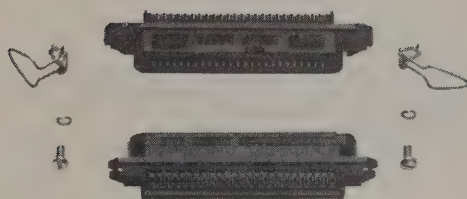
| Number of Positions | Low Profile Part Number |
|---------------------|-------------------------|
| 24                  | 1-552298-1              |
| 36                  | 1-552297-1              |
| 50                  | 1-552027-1              |



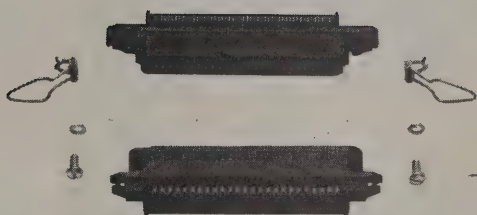
## Cable-to-Cable Hardware Kits



Screw Lock Hardware Kit  
Part No. 229911-1  
(Two required per assembly)



Bent Bail Lock Hardware Kit  
Part No. 552561-4  
(For use with 90° Strain Relief Cover—  
One kit required per assembly)

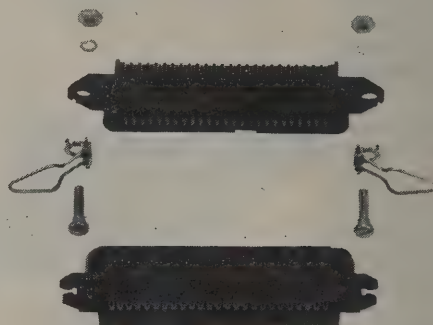


Bail Lock Hardware Kit  
Part No. 552561-3  
(One kit required per assembly)

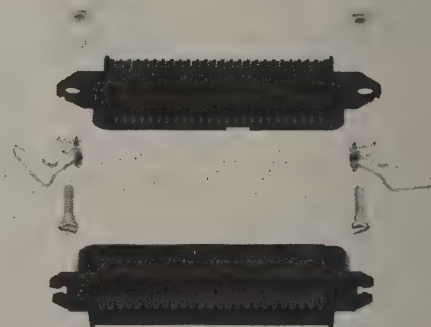
## Cable-to-Panel Hardware Kits



Screw Lock Hardware Kit  
Part No. 552568-1 (For thin flange receptacle)



Bail Lock Hardware Kit  
Part No. 552567-1 (as shown)  
(One kit required per assembly)



Bent Bail Lock Hardware Kit  
Part No. 552567-2  
(For use with 90° strain relief cover—  
One kit required per assembly)

J-Hook Latch Part No. 552655-1



Only fastening hardware supplied,  
other items shown for reference purposes.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C•1248

For manufacturers' sales offices, see yellow pages

Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

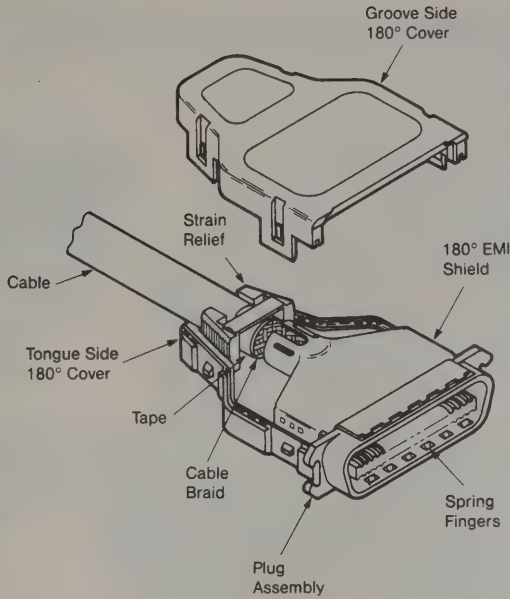
EEM 1993



Shielded Cable Connectors

Material and Finish:

- Housing and Cover**—Thermoplastic, black
- Terminals**—Gold over nickel plated high strength copper alloy
- Shield**—Bright nickel plated carbon steel
- Strain Relief**—Flame retardant nylon, black
- Female**—Copper alloy
- Hardware**—Zinc plated steel
- Metric Shoulder Screw**—Black oxide plated, carbon steel



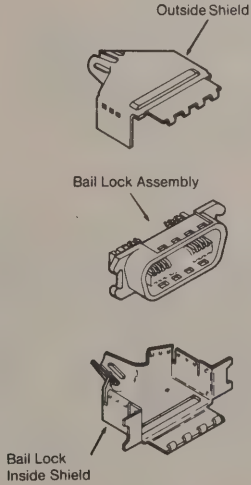
Plug Connectors Kits

| Number of Pos. | Cable Range             | Part Numbers      |                       |                         | Cover Kits            |
|----------------|-------------------------|-------------------|-----------------------|-------------------------|-----------------------|
|                |                         | Shielded Plug Kit |                       | Shielded Receptacle Kit |                       |
|                |                         | Bail Lock         | Bail Lock             | Screw or Bail Lock      |                       |
|                |                         | B Slot            | E Slot                | E Slot                  |                       |
| 36             | .250-.500<br>6.35-12.7  | 554950-2          | 554950-1              | 5-554952-1 <sup>3</sup> | 554945-1              |
| 50             | .350-.625<br>8.89-15.88 | 554953-2          | 554953-1 <sup>1</sup> | 554955-1 <sup>1</sup>   | 554946-1 <sup>2</sup> |

<sup>1</sup>SCSI applicable.  
<sup>2</sup>For cable diameter .500 [12.7] or less.  
<sup>3</sup>This kit available in bulk only  
B-Slot—24 AWG [0.51 mm] and 26 AWG [0.40 mm] (solid) or 24 AWG [0.20 mm<sup>2</sup>] (7 strand).  
E-Slot—26, 27, 28 AWG [0.12, 0.10, 0.09 mm<sup>2</sup>] (7 strand) wire

Bail Lock

Connector Kit



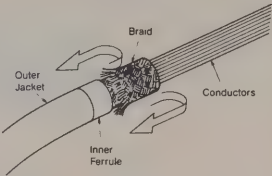
Ferrule Part Numbers

- .350 [8.89] Inside Dia. 554725-3
- .400 [10.16] Inside Dia. 554725-4

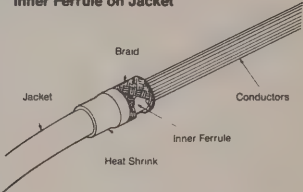


Inner Ferrule  
(Sold Separately)

Inner Ferrule on Braid

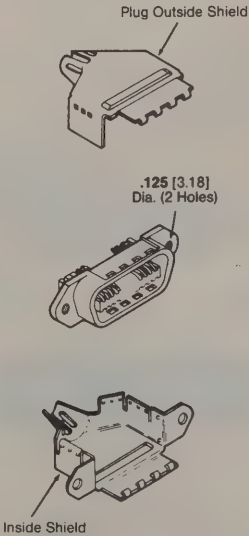


Inner Ferrule on Jacket



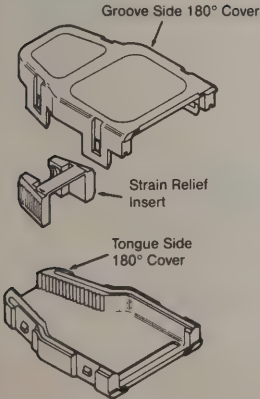
Screw or Bail Lock  
Connector Kit

Standard Connector Kit



Accessories

Cover Kit  
(Sold Separately)



Specifications subject to change.  
Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.



## CHAMP Printed Circuit Board Connectors

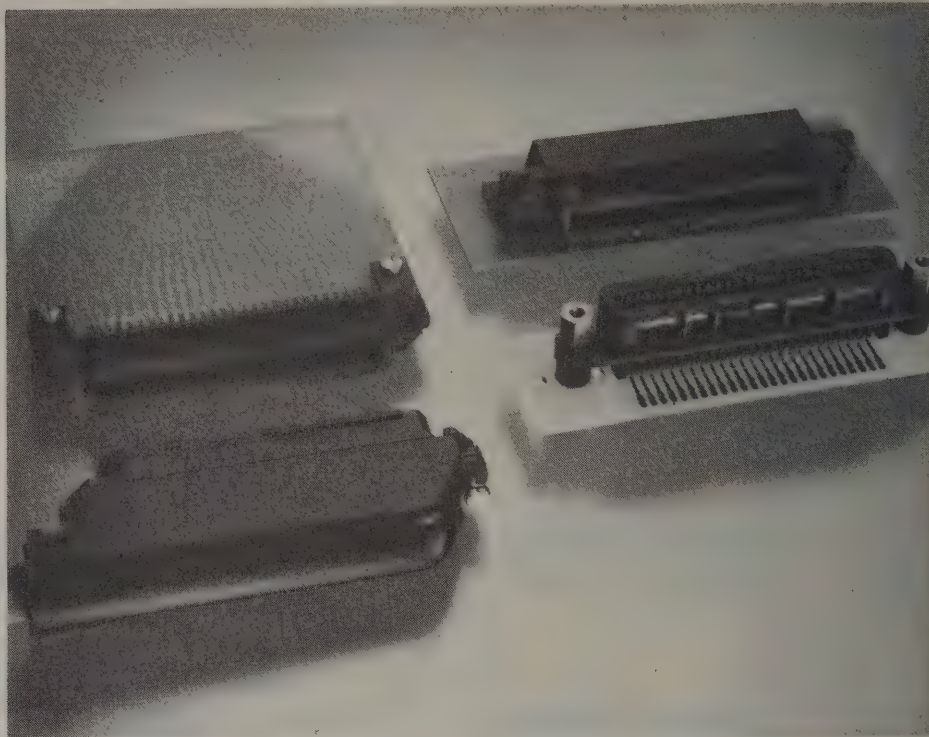
### Right Angle Connector

#### Material:

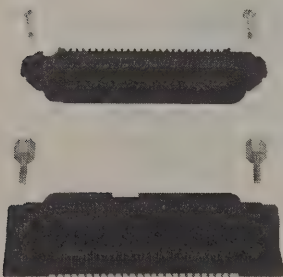
**Housing, bracket, plate and comb—**

Black thermoplastic, 94V-0 rated

**Terminal—**Selectively plated gold over nickel plated high strength copper alloy, tin plated tails.

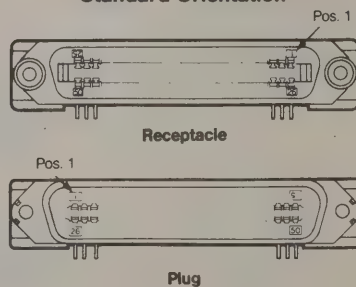


### Screw Lock Right Angle Mount Hardware Kit

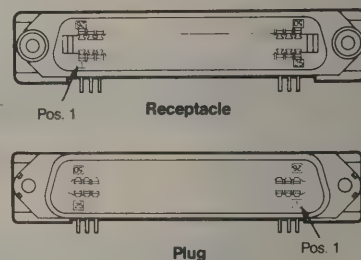


Screw Lock Hardware Kit  
Part No. 552631-1  
Rear panel mount only  
(One kit required per assembly)  
For pc board-to-panel applications  
(Panel thickness .062 [1.57] max.)

#### Standard Orientation



#### Reverse Orientation



| Number of Positions | Self Tapping Part Numbers |          |                       |          |
|---------------------|---------------------------|----------|-----------------------|----------|
|                     | Standard Orientation      |          | Reverse Orientation   |          |
|                     | Receptacle                | Plug     | Receptacle            | Plug     |
| 24                  | 552791-1 <sup>1</sup>     | 552741-1 | 552791-2 <sup>1</sup> | —        |
| 36                  | 552742-1                  | 552743-1 | 552742-2              | —        |
| 50                  | 552725-1                  | 552726-1 | 552725-3              | 552726-3 |

<sup>1</sup>For IEEE-488 applications.

# AMP

AMP INCORPORATED, HARRISBURG, PA 17105

C•1250

For manufacturers' sales offices, see yellow pages

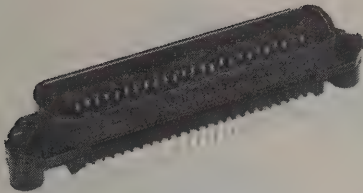
Specifications subject to change.

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

EEM 1993



Vertical Mount  
Connectors



Vertical Mount  
Style PV—Plug, Screw Lock



Style RV—Receptacle,  
Screw or Bail Lock

| Number<br>of<br>Positions | Part Numbers |                       |
|---------------------------|--------------|-----------------------|
|                           | Plug         | Receptacle            |
| 24                        | 552221-1     | 552224-1 <sup>1</sup> |
| 36                        | 552232-1     | 552235-1              |
| 50                        | 552116-1     | 552118-1              |

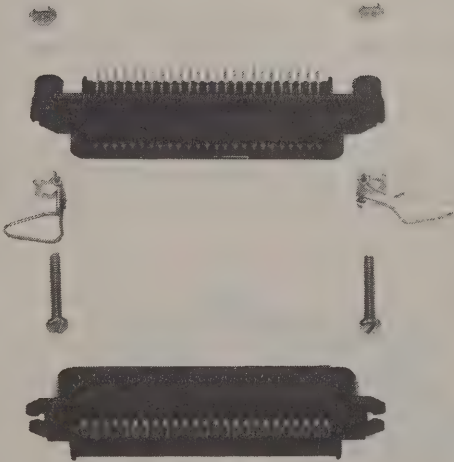
<sup>1</sup>.189 [4.80] Diameter Mounting Hole.

For more information request Catalog 82008

Vertical Mount Connector  
Hardware Kits



Screw Lock Hardware Kit  
Part No. 552563-1  
(One kit required per assembly)



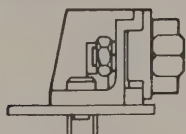
Bent Bail Lock Hardware Kit  
Part No. 552562-2  
(One kit required per assembly)



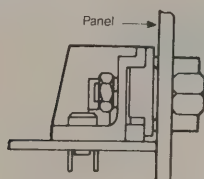
### IEEE-488 Right Angle Mount Hardware Kit



Standard Mount



Rear Panel Mount



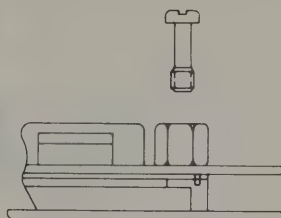
### IEEE-488 Vertical Mount Screw Lock Hardware Kits For Standard Mount

(One kit required per assembly)



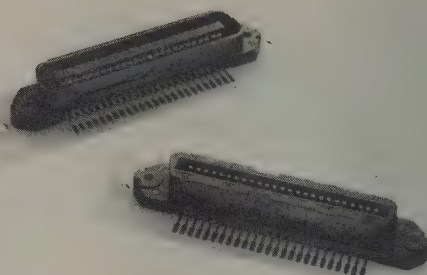
Standard Mount

### ACTION PIN Connector Hardware



Screw Lock Hardware Kit  
Part No. 552631-1  
(Rear panel mount applications)  
(One kit required per assembly)

### ACTION PIN Connectors



| No. of<br>Pos. | Part Numbers |            |
|----------------|--------------|------------|
|                | Plug         | Receptacle |
| 50             | 554758-1     | 554753-1   |

# AMP

C•1252

AMP INCORPORATED, HARRISBURG, PA 17105

For manufacturers' sales offices, see yellow pages

*Specifications subject to change.*

Call 1-800-522-6752 for product information  
and 1-800-722-1111 for tooling information.

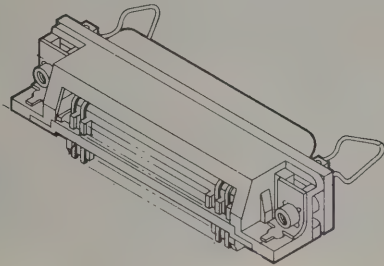
**EEM 1993**



Shielded Right Angle  
Rear Panel Mounted  
Connectors with Boardlocks

Material and Finish:

**Housing, Bracket, Adapter Comb and Terminal Support Plate**—Polyester, black  
**Bail Clip**—Passivated stainless steel  
**Receptacle Shield**—Bright nickel over copper plated die casting  
**Terminals**—Selectively plated gold over nickel plated high strength copper alloy, tin plated tails  
**Ground Bracket**—Tin-lead plated carbon steel



(Shown with Bail Locks)

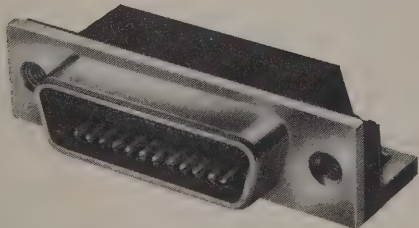
| Number of Positions | Preassembled Hardware Type | Screw Size | Part Numbers |          |
|---------------------|----------------------------|------------|--------------|----------|
|                     |                            |            | Standard     | Reverse  |
| 24                  | Screw Lock                 | 6-32       | 554923-2     | 554923-1 |
| 36                  | Bail Lock                  | 4-40       | 555119-1     | —        |

Maximum pc board thickness is .062 [1.57].

Shielded Right Angle  
Connectors

Material and Finish:

**Housing, bracket, connector comb and terminal support plate**—Thermoplastic (black)  
**Terminals**—Selectively plated gold over nickel plated high strength copper alloy, tin plated tails.  
**EMI Shield**—Nickel plated die casting

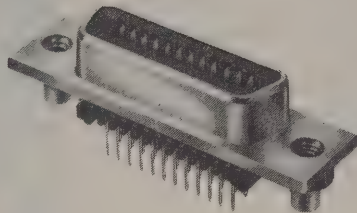


Preassembled Screw Lock

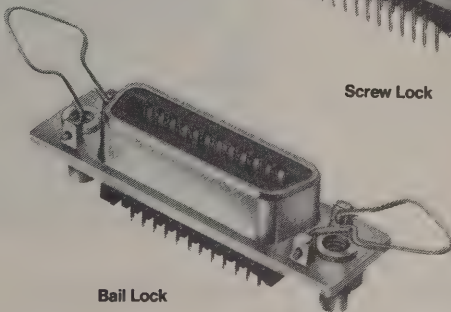
Shielded Vertical Mount  
Connectors

Material and Finish:

**Housing**—Thermoplastic, black  
**Terminals**—Selectively plated gold over nickel plated high strength copper alloy, tin plated tails  
**EMI Shield**—Nickel plated die casting



Screw Lock



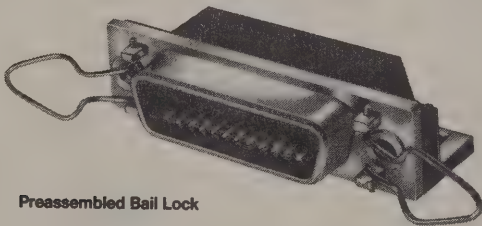
Bail Lock

| Number of Positions | Screw Lock            |                       | Bail Lock 4-40 Hole   |
|---------------------|-----------------------|-----------------------|-----------------------|
|                     | 6-32 Hole             | 4-40 Hole             |                       |
| 24                  | 554501-1 <sup>3</sup> | —                     | —                     |
| 50                  | —                     | —                     | 554216-3 <sup>2</sup> |
|                     | —                     | 554217-4 <sup>1</sup> | —                     |

<sup>1</sup>SCSI applicable with use of Bail Lock Hardware Kit Part No. 554818-2.

<sup>2</sup>SCSI applicable.

<sup>3</sup>Can be used with Interface Bus Applications per IEEE-488.



Preassembled Bail Lock

| Number of Positions | Part Numbers            |                        |
|---------------------|-------------------------|------------------------|
|                     | Preassembled Screw Lock | Preassembled Bail Lock |
| 24                  | 553811-1 <sup>3</sup>   | —                      |
| 36                  | —                       | 555233-1               |
| 50                  | 553813-3 <sup>1</sup>   | 554901-1 <sup>2</sup>  |

<sup>1</sup>SCSI applicable with use of bail lock hardware kit. Part No. 554818-2.

<sup>2</sup>SCSI applicable.

<sup>3</sup>Can be used with Interface Bus Application per IEEE-488.



Modular Interconnection System

Printed Circuit Board  
Modular Jacks  
Standard Profile

With Center Latch  
and Offset Latch

Material and Finish:

**Housing**—Polyester (wave solder compatible)  
**Contact**—.014 [0.36] thick phosphor bronze; plated .000050 [0.00127] gold in contact area and .000080 [0.00203] tin-lead on solder tails, over .000050 [0.00127] nickel underplate

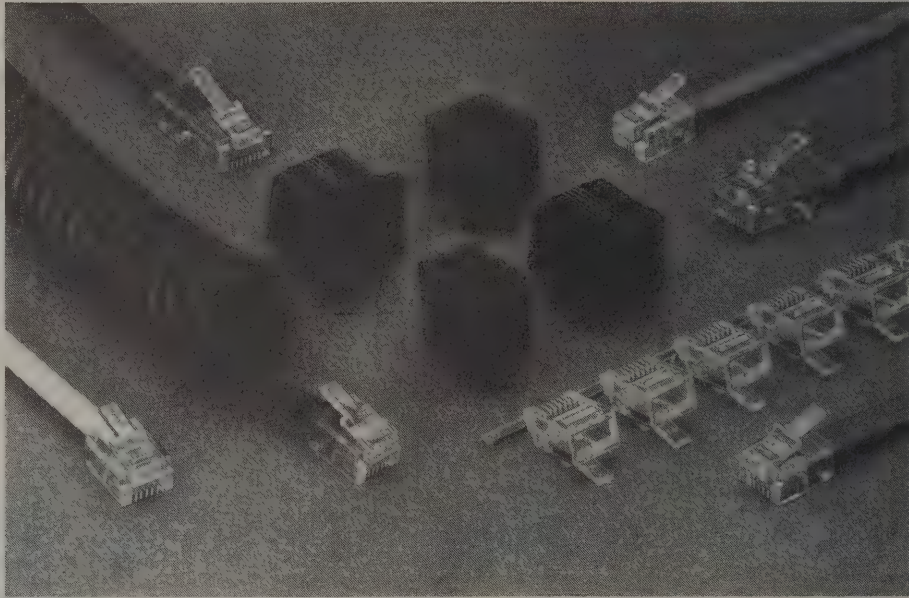
AMP Modular Plugs

Material and Finish:

**Housing**—Polycarbonate  
**Contact**—.014 [0.36] thick phosphor bronze; plated .000050 [0.00127] gold in contact area and gold flash on remainder of contact, over .000050 [0.00127] nickel underplating.

| Description            | Plug Part Numbers<br>(1,000/box) |
|------------------------|----------------------------------|
| 4-Position Handset     | 5-641334-2                       |
| 4-Position Line        | 5-641335-2                       |
| 6-Position Line        | 5-641337-2*                      |
| 8-Position Line        | 5-554739-2                       |
| 8-Position Round Cable | 5-554720-2                       |

\*6-Position Line also available in 100/box, 10 boxes/carton. Order Part No. 5-641337-3.  
•Listed by Underwriters Laboratories, Inc. File No. E81956, CSA Certified, File No. LR82669.



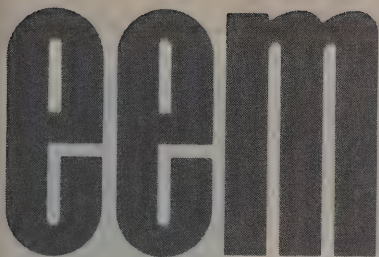
Printed Circuit Board Modular Jacks

| Description                                | No. of Positions | No. of Contacts | Jack Part Number | Mating Plug    | USOC                                     |
|--------------------------------------------|------------------|-----------------|------------------|----------------|------------------------------------------|
| Side Entry Flanged                         | 8                | 8               | 520243-4         | 8 Pos.         | —                                        |
| Side Entry with Panel Stops                | 4                | 4               | 520249-2         | 4 Pos. Handset | —                                        |
|                                            | 4                | 4               | 520249-3*        | 4 Pos. Handset | —                                        |
|                                            | 6                | 2               | 520250-1         | 6 Pos.         | —                                        |
|                                            | 6                | 4               | 520250-2         | 4 Pos.         | RJ11C, RJ11W, RJ13C, RJ13W, RJ14C, RJ14W |
|                                            | 6                | 6               | 520250-3         | 6 Pos.         | RJ12C, RJ12W                             |
|                                            | 8                | 8               | 520251-4         | 8 Pos.         | —                                        |
|                                            | 8 Keyed          | 8               | 520252-4         | 8 Pos. Keyed   | —                                        |
|                                            | 4                | 4               | 520257-2         | 4 Pos. Handset | —                                        |
| Top Entry with Panel Stops                 | 6                | 4               | 520258-2         | 4 Pos.         | RJ11C, RJ11W, RJ13C, RJ13W, RJ14C, RJ14W |
|                                            | 6                | 6               | 520258-3         | 6 Pos.         | RJ12C, RJ12W                             |
|                                            | 8                | 8               | 520259-4         | 8 Pos.         | —                                        |
|                                            | 8 Keyed          | 8               | 520260-4         | 8 Pos. Keyed   | —                                        |
| Top Entry Without Panel Stops              | 6                | 6               | 520425-3         | 6 Pos.         | RJ12C, RJ12W                             |
| Side Entry w/Panel Stops Offset Latch-Gray | 6                | 6               | 555003-1         | 6 Pos.         | —                                        |
| Top Entry w/Panel Stops Offset Latch-Gray  | 6                | 6               | 554990-1         | 6 Pos.         | —                                        |

\*Housing—Gray color

Other standard profile configurations are available, as well as low profile, surface mount and shielded/unshielded versions.  
Contact AMP Incorporated.





# MAXIMUM CURRENT CAPACITY— CONDUCTORS

| Size,<br>AWG | MIL-W-5088      |                  |                 |                  | National<br>Electrical<br>Code | Underwriters<br>Laboratory |      | American<br>Insurance<br>Association | 500<br>c mils/A |
|--------------|-----------------|------------------|-----------------|------------------|--------------------------------|----------------------------|------|--------------------------------------|-----------------|
|              | Copper          |                  | Aluminum        |                  |                                | 60°C                       | 80°C |                                      |                 |
|              | Single-<br>wire | Wire-<br>bundled | Single-<br>wire | Wire-<br>bundled |                                |                            |      |                                      |                 |
| 30           | ...             | ...              | ...             | ...              | ...                            | 0.2                        | 0.4  | ...                                  | 0.20            |
| 28           | ...             | ...              | ...             | ...              | ...                            | 0.4                        | 0.6  | ...                                  | 0.32            |
| 26           | ...             | ...              | ...             | ...              | ...                            | 0.6                        | 1.0  | ...                                  | 0.51            |
| 24           | ...             | ...              | ...             | ...              | ...                            | 1.0                        | 1.6  | ...                                  | 0.81            |
| 22           | 9               | 5                | ...             | ...              | ...                            | 1.6                        | 2.5  | ...                                  | 1.28            |
| 20           | 11              | 7.5              | ...             | ...              | ...                            | 2.5                        | 4.0  | 3                                    | 2.04            |
| 18           | 16              | 10               | ...             | ...              | 6                              | 4.0                        | 6.0  | 5                                    | 3.24            |
| 16           | 22              | 13               | ...             | ...              | 10                             | 6.0                        | 10.0 | 7                                    | 5.16            |
| 14           | 32              | 17               | ...             | ...              | 20                             | 10.0                       | 16.0 | 15                                   | 8.22            |
| 12           | 41              | 23               | ...             | ...              | 30                             | 16.0                       | 26.0 | 20                                   | 13.05           |
| 10           | 55              | 33               | ...             | ...              | 35                             | ...                        | ...  | 25                                   | 20.8            |
| 8            | 73              | 46               | 58              | 36               | 50                             | ...                        | ...  | 35                                   | 33.0            |
| 6            | 101             | 60               | 86              | 51               | 70                             | ...                        | ...  | 50                                   | 52.6            |
| 4            | 135             | 80               | 108             | 64               | 90                             | ...                        | ...  | 70                                   | 83.4            |
| 2            | 181             | 100              | 149             | 82               | 125                            | ...                        | ...  | 90                                   | 132.8           |
| 1            | 211             | 125              | 177             | 105              | 150                            | ...                        | ...  | 100                                  | 167.5           |
| 0            | 245             | 150              | 204             | 125              | 200                            | ...                        | ...  | 125                                  | 212.0           |
| 00           | 283             | 175              | 237             | 146              | 225                            | ...                        | ...  | 150                                  | 266.0           |
| 000          | 328             | 200              | ...             | ...              | 275                            | ...                        | ...  | 175                                  | 336.0           |
| 0000         | 380             | 225              | ...             | ...              | 325                            | ...                        | ...  | 225                                  | 424.0           |





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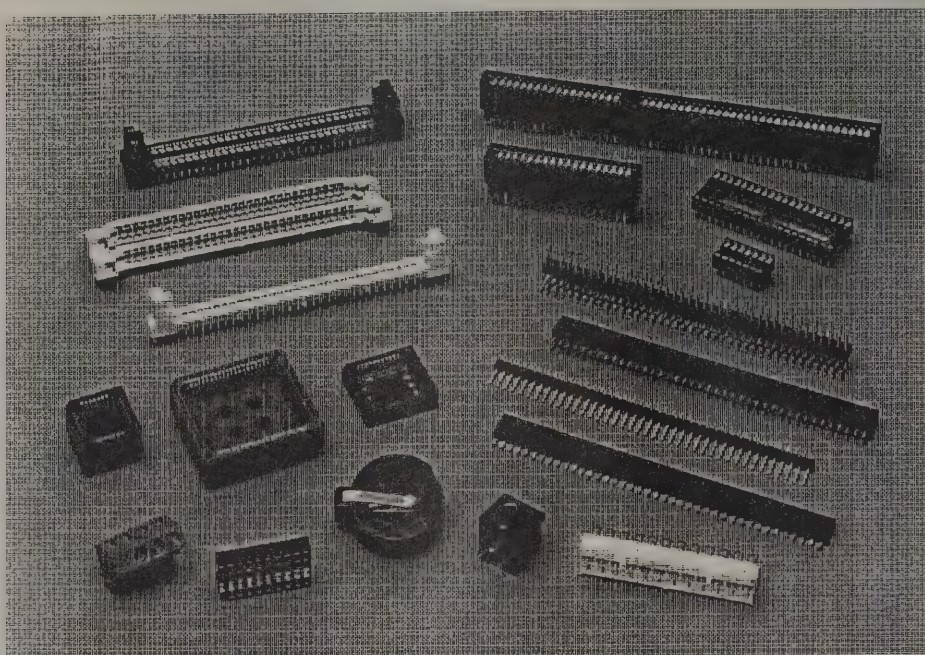
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**Commercial Grade**

**PLCC, SIMM, DIP, AND DRAM  
Sockets, Pin Headers & Connectors**

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Andon's economy grade sockets and edge card connectors are designed for commercial application and complement our line of precision screw machine products. The economy grade product line includes;

- **PLCC Sockets:** available in 20, 28, 32, 44, 52, 68, 84 and 100-pin patterns in soldertail and surface mount configurations.
- **DRAM Option Sockets:** designed for future upgrade of memory chips. Available DRAM's include; 34, 38, (for upgrading an 18-pin one megabit chip to 20-pin 4 megabit chip), 42, 46 and 54-pin configurations.

- **Standard DIP Sockets:** .300 centers include 6, 8, 14, 16, 18, 20, 22, 24, and 28-pin patterns. .600 spacing includes 24, 28, 32, 40, 42, 48-pin configurations.
- **Coin cell battery holders**
- **Mini DIN Connectors**
- **Terminal Blocks**
- **6 and 12-pin Power Wafer Sockets, and Edge Card Connectors**
- **30 and 60-pin single and dual vertical and angled SIMM Sockets:** in two types of materials, Poly Butylene Terephthalate (PBT) and Liquid Crystal Polymer (LCP).
- **Single and dual straight and right angle Pin Headers and Box Headers:** Single headers are available in 5, 10, 15, 20, 25, 30, 35, and 40-pin configurations. Dual headers come in 10, 20, 30, 40, 50, 60, 70 and 80-pin configurations.



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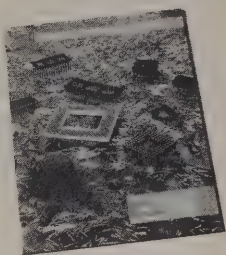
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### SOCKETS

PGA, IPGA, PLCC TH & SMT, LCC TH & SMT,  
SIMM, DIP, SIP, and ZIP

### CONNECTORS

MEMORY CARD, EISA, DIN, .100"(2,52mm)  
HEADERS, .079" (2,00mm) HEADERS,  
POWER HEADERS and HIGH DENSITY  
EDGE CARD

## Series 585 Hi-Reliability Interstitial PGA Socket

### FEATURES UNIQUE ANDON 1 OZ. INSERTION-CERTIFIED CONTACTS

- CONTACTS MADE IN HOUSE UNDER STRICT QUALITY CONTROL

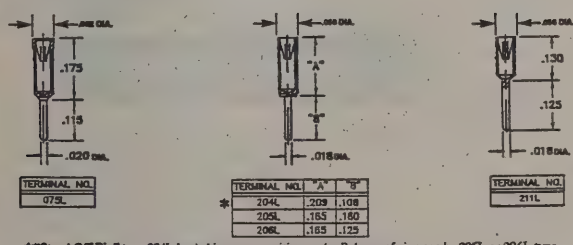
#### FEATURES

- Unique 1oz. insertion force (Per Pin)  
Contacts ease insertion and withdrawal  
of high density ASIC devices
- Contact design provides .005" (0,020mm) greater positional tolerance  
critical in high pin out device mating.
- Glass epoxy socket insulator matches  
thermal coefficient of expansion of PCB.

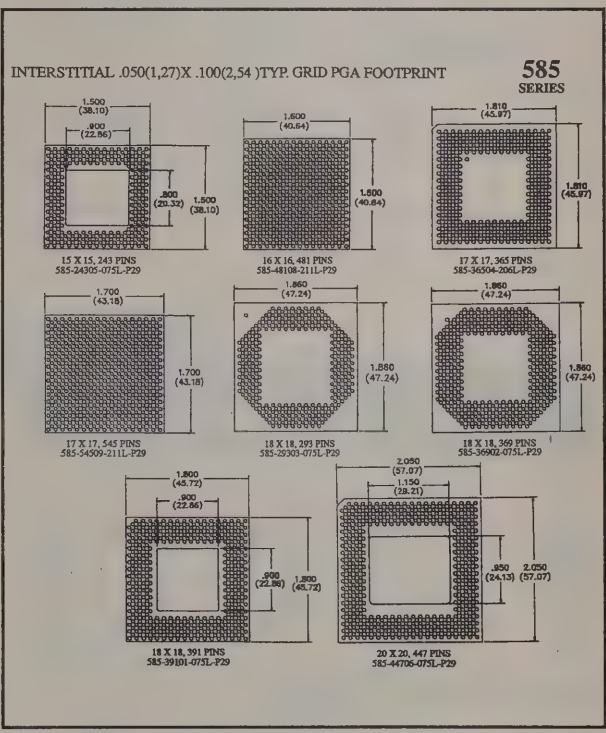
#### TECHNICAL SPECIFICATIONS

| MATERIAL DATA |                                        | ELECTRICAL DATA                    |                  |
|---------------|----------------------------------------|------------------------------------|------------------|
| INSULATOR     | FR4 Glass Epoxy,<br>.062 or .093 Thick | CURRENT RATING                     | 1AMP             |
| TERMINAL      | Brass QQ-B-626                         | CAPACITANCE                        | 2 pF MAX         |
| CONTACT       | BeCu QQ-C-533                          | INSULATION<br>RESISTANCE           | > 50,000 M Ω     |
| PLATING       |                                        | DIELECTRIC<br>WITHSTANDING VOLTAGE | 1000VAC          |
| -P15          | TERMINAL GOLD 10 μ"                    | OPERATING<br>TEMPERATURE           | 55 °C TO +125 °C |
|               | CONTACT GOLD 30 μ"                     | CONTACT FORCE                      |                  |
| -P17          | TERMINAL TIN 200 μ"                    | INSERTION FORCE                    | 1.00 oz.         |
|               | CONTACT GOLD 30 μ"                     | WITHDRAWAL FORCE                   | 0.50 oz.         |
| -P29          | TERMINAL TIN 200 μ"                    |                                    |                  |
|               | CONTACT GOLD 10 μ"                     |                                    |                  |

#### TERMINAL TYPES



\*"Stead Off Pin" type 204L loaded in corner positions only. Balance of pins can be 205L or 206L type.

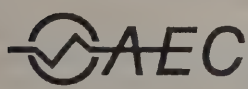


#### ORDERING INFORMATION

585-XXX-XX-XXX-XX

SERIES \_\_\_\_\_ PLATING TYPE \_\_\_\_\_  
NO. PINS \_\_\_\_\_  
\*FOOTPRINT \_\_\_\_\_ TERMINAL TYPE \_\_\_\_\_

\*CONSULT FACTORY FOR  
OTHER FOOTPRINTS NOT SHOWN.  
NOTE: Dimensions are shown as inches (Millimeters). We reserve the right to change  
specifications without notice  
SEE FRONT OF DATA SHEET FOR OPTIONAL TERMINALS and PLATINGS



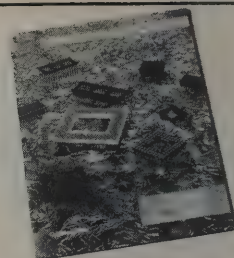
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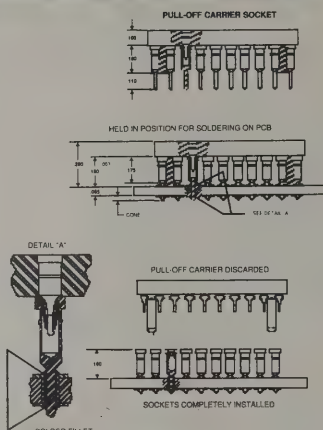
### PGA SOCKETS

### Cari-Loc™ PATENTED

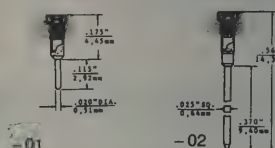
### SERIES 575, 550, 540 & 510

### HI-RELIABILITY SOCKETS

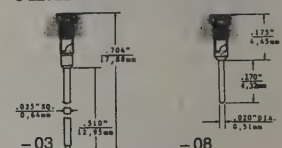
| MOUNTING HEIGHT   | INSULATOR HEIGHT                                                                                                                                                                                                                                                  |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SERIES 550</b> | <b>PULL-OFF CARRIER™ SOCKET</b><br>DISCARD INSULATOR WITH STANDOFF FOR SOLDER FILLET TOP AND BOTTOM OF PCB<br>M4 = Molded Glass Filled Polyester, Pull-Off Carrier Socket, Standard 125° C (Plastic Wafer, Discard After Soldering)<br>Other materials available. |
| <b>SERIES 540</b> | <b>INSULATOR WITH STANDOFFS</b><br>FOR SOLDER FILLET TOP AND BOTTOM OF PCB<br>M4 = Molded Glass Filled Polyester, Standard 125° C<br>Other materials available.                                                                                                   |
| <b>SERIES 510</b> | <b>STANDARD OFF THE SHELF</b><br>M4 = Molded Glass Filled Polyester, Standard 125° C<br>Other materials available.                                                                                                                                                |
| <b>SERIES 575</b> | <b>FOR CUSTOM DESIGN</b><br>G1 = .062" Thick Glass Epoxy, FR4 140° C<br>G2 = .050" Thick Glass Epoxy, FR4 140° C<br>G3 = .062" Polyimide HI-TEMP, 240° C                                                                                                          |



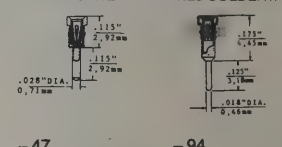
STANDARD 2 LEVEL WIRE WRAP



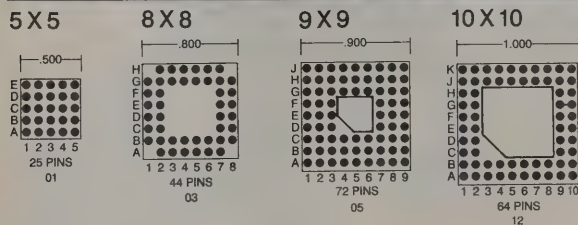
3 LEVEL WIRE WRAP MULTI LAYER



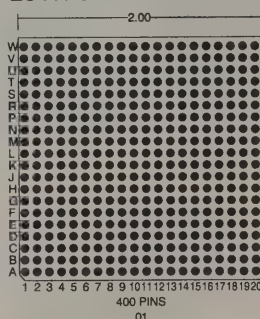
LOW PROFILE .125 SOLDER TAIL



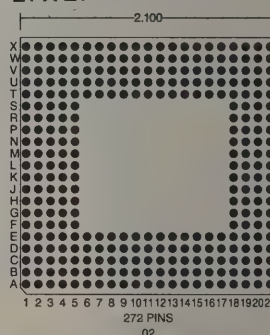
### PGA SOCKET FOOTPRINTS



20 X 20



21 X 21



### Part Number Ordering Information

510 XX XX XXX XX XXX XXX

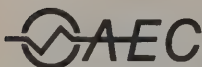
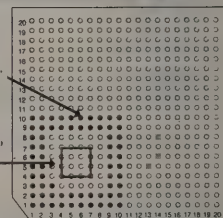
Plating  
Terminal/Contact Style  
Insulation  
Pin Count  
Footprint  
Grid  
Series

Many other standard footprints available. Please consult factory or catalog.

### CUSTOM PGA

The contact configuration is to be marked as follows.

If you wish an open frame, please mark it as follows.

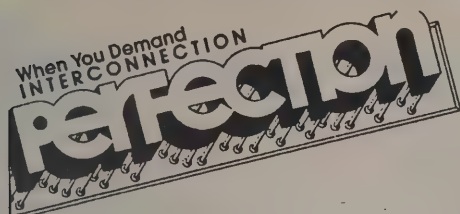


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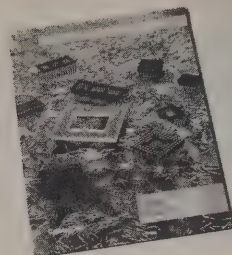
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DATASHEETS available**

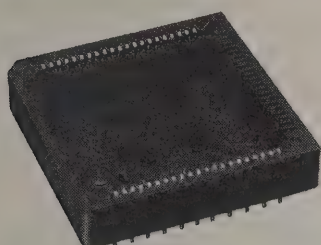


# **ANDON ELECTRONICS CORPORATION** **PLCC THRU HOLE and SURFACE MOUNT SOCKETS**

## **Series 654-STO**

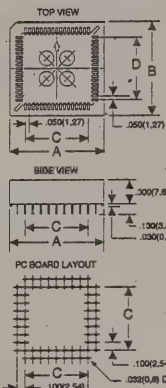
## **PLCC Thru Hole Socket**

COMMERCIAL - HI - TEMP THROUGH BOARD MOUNT  
.050" PITCH PLASTIC LEADED CHIP CARRIER SOCKET



### **FEATURES**

- Accepts Jeduc MO-47 & MO-52 Leaded Plastic Chip Carrier Packages
- Solder Terminations on 100 Mil Grid
- Low Profile HI-Temp Insulator 300 in. (7.6 mm)
- Anti-shorting Contacts
- High Visibility Pin One Indicator



NOTE: Dimensions are shown in Inches (Millimeters)  
We reserve the right to change specifications without notice.

### **TECHNICAL SPECIFICATIONS**

#### **ELECTRICAL DATA**

Contact Resistance(MAX)... 30 Milliohms  
Current Rating... 1.0 Amp  
Insulation Resistance... 1000 Megohms  
Dielectric Voltage... 500V AC

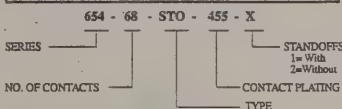
#### **MATERIAL DATA**

Insulator... (PPS)  
UL Rating... 94 V-0  
Plating... Tin  
Contacts... Phosphor Bronze  
Mounting... .0100"/2.54mm/Gold

#### **DIMENSIONAL FEATURES**

| PART NUMBER              | A ±.008(.02) | B ±.008(.02) | C ±.008(.02) | D ±.008(.02) |
|--------------------------|--------------|--------------|--------------|--------------|
| 654 - 20 - STO - 455 - X | 0.610(15.50) | 0.610(15.50) | 0.200(5.08)  | 0.200(5.08)  |
| 654 - 28 - STO - 455 - X | 0.710(18.00) | 0.710(18.00) | 0.300(7.62)  | 0.300(7.62)  |
| 654 - 32 - STO - 455 - X | 0.690(17.50) | 0.790(20.10) | 0.300(7.62)  | 0.400(10.16) |
| 654 - 44 - STO - 455 - X | 0.920(23.40) | 0.925(23.50) | 0.500(12.70) | 0.500(12.70) |
| 654 - 52 - STO - 455 - X | 1.025(26.00) | 1.025(26.00) | 0.600(15.24) | 0.600(15.24) |
| 654 - 68 - STO - 455 - X | 1.220(31.00) | 1.220(31.00) | 0.800(20.32) | 0.800(20.32) |
| 654 - 84 - STO - 455 - X | 1.420(36.00) | 1.420(36.00) | 1.000(25.40) | 1.000(25.40) |

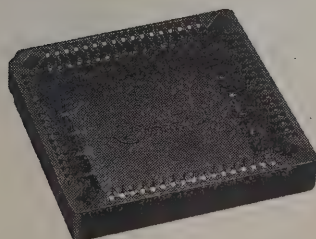
\* INDICATES RECTANGULAR SHAPED SOCKET



## **Series 654-SMO**

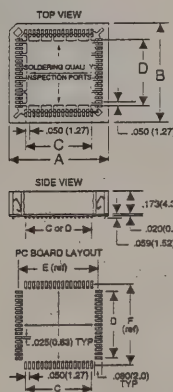
## **PLCC Surface Mount Socket**

COMMERCIAL - SURFACE MOUNT  
.050" PITCH PLASTIC LEADED CHIP CARRIER SOCKET



### **FEATURES**

- Accepts Jeduc MO-47 & MO-52 Leaded Plastic Leaded Chip Carrier Packages
- High Temperature Insulator -- Good for Vaporphase and IR Soldering
- Low Profile Insulator .173 in. (4.39 mm)
- Universal Mounting Footprint
- View Ports for Inspecting Solder Terminations
- Available With or Without Standoffs



NOTE: Dimensions are shown in Inches (Millimeters)  
We reserve the right to change specifications without notice.

### **TECHNICAL SPECIFICATIONS**

#### **ELECTRICAL DATA**

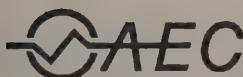
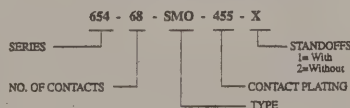
Contact Resistance(MAX)... 30 Milliohms  
Current Rating... 1.0 Amp  
Insulation Resistance... 1000 Megohms  
Dielectric Voltage... 500 V AC

#### **MATERIAL DATA**

Insulator... PPS  
UL Rating... 94 V-0  
Contacts... Phosphor Bronze  
Plating... Tin  
Mounting... 0.050"/1.27mm/Gold

#### **DIMENSIONAL FEATURES**

| PART NUMBER              | A ±.008(0.2) | B ±.008(0.2) | C ±.008(0.2) | E (ref)      | F (ref)         |
|--------------------------|--------------|--------------|--------------|--------------|-----------------|
| 654 - 20 - SMO - 455 - X | 0.613(15.58) | 0.613(15.58) | 0.200(5.08)  | 0.200(5.08)  | (.345) (.345)   |
| 654 - 28 - SMO - 455 - X | 0.713(18.12) | 0.713(18.12) | 0.300(7.62)  | 0.300(7.62)  | (.445) (.445)   |
| 654 - 32 - SMO - 455 - X | 0.713(18.12) | 0.813(20.66) | 0.300(7.62)  | 0.400(10.16) | (.545) (.445)   |
| 654 - 44 - SMO - 455 - X | 0.913(23.20) | 0.913(23.20) | 0.500(12.70) | 0.500(12.70) | (.645) (.645)   |
| 654 - 52 - SMO - 455 - X | 1.013(25.74) | 1.013(25.74) | 0.600(15.24) | 0.600(15.24) | (.745) (.745)   |
| 654 - 68 - SMO - 455 - X | 1.213(30.82) | 1.213(30.82) | 0.800(20.32) | 0.800(20.32) | (.845) (.845)   |
| 654 - 84 - SMO - 455 - X | 1.413(35.90) | 1.413(35.90) | 1.000(25.40) | 1.000(25.40) | (1.145) (1.145) |



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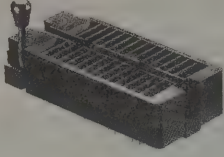
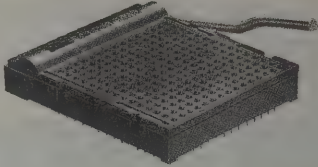
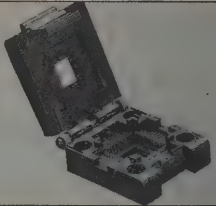
## Universal & Pin Specific ZIF Programming/Test/Burn-in Sockets

Aries offers one of the most extensive ranges of test, programming and burn-in sockets in the industry, with a version to accommodate just about every package

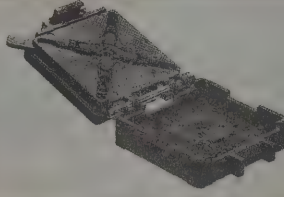
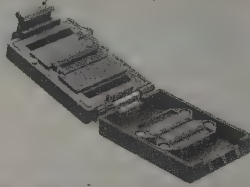
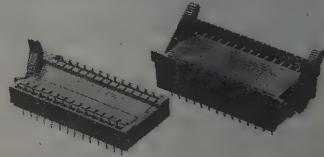
style and application need. Aries' exclusive Universal ZIF socket, available in DIP, PGA, PLCC and SOIC package styles, lets you use just one socket to

handle a whole range of device sizes, footprints, and pin counts.

### Package Styles:

| UNIVERSAL ZIF<br>DIP SOCKETS                                                                                                                                                                                                                                                                                                                                                                           | PIN SPECIFIC<br>ZIF PGA SOCKETS                                                                                                                                                                                     | PIN SPECIFIC<br>ZIF PLCC SOCKETS                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                       |                                                                                                                                    |                                                                                                                                                |
| <ul style="list-style-type: none"> <li>• Extra wide openings accept .300, .400 or .600 ctr devices</li> <li>• All pin counts can be ordered to fit .300 or .600 ctr boards</li> <li>• Can be soldered or plugged into standard IC sockets or receptacles</li> <li>• Numerous handle position options</li> <li>• Normally closed contacts eliminate dependence on plastic to sustain contact</li> </ul> | <ul style="list-style-type: none"> <li>• Multiple grid sizes and footprints available</li> <li>• Replaceable pins</li> <li>• Normally closed contacts eliminate dependence on plastic to sustain contact</li> </ul> | <ul style="list-style-type: none"> <li>• Auto pick &amp; place capability</li> <li>• Corner posts provide positive package registration</li> <li>• Can be shimmed to accept many ceramic, leadless and J-bend packages</li> </ul> |
| Available Sizes:<br>24, 28, 32, 36, 40, 42, 44 or 48 pins on .300 or .600 ctr                                                                                                                                                                                                                                                                                                                          | Up to 21x21 full grid. Odd grid sizes: 13x13, 15x15, 17x17, 19x19, 21x21. Even sizes: leave out top & right hand rows                                                                                               | 20, 28, 32, 44, 52, 68 & 84                                                                                                                                                                                                       |
| Insulator Materials:<br>PPS, UL94V-0 rated                                                                                                                                                                                                                                                                                                                                                             | PPS, UL94V-0 rated                                                                                                                                                                                                  | PES or PPS, UL94V-0 rated                                                                                                                                                                                                         |
| Temperature Rating:<br>Up to 220°C                                                                                                                                                                                                                                                                                                                                                                     | Up to 200°C                                                                                                                                                                                                         | Up to 170°C                                                                                                                                                                                                                       |
| Contact Pin Materials:<br>Au or Sn over BeCu; or NiBo over CuNiSn Spinodal Alloy; NiBo over BeNi                                                                                                                                                                                                                                                                                                       | Au or Sn over BeCu; or NiBo over CuNiSn Spinodal Alloy                                                                                                                                                              | Au over BeCu                                                                                                                                                                                                                      |

### Package Styles:

| UNIVERSAL ZIF<br>PLCC SOCKETS                                                                                                                                    | UNIVERSAL ZIF<br>SOIC/TSOP SOCKETS                                                                                                                                                                                                      | PRODUCTION GRADE<br>ZIF SOCKETS                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|                                                                               |                                                                                                                                                      |              |
| <ul style="list-style-type: none"> <li>• One socket will accept all seven PLCC sizes: 20, 28, 44, 52, 68 &amp; 84 square PLCC and 32 rectangular PLCC</li> </ul> | <ul style="list-style-type: none"> <li>• One socket will accept all SOIC packages and some TSOP Type II packages on .050 pitch</li> <li>• Over 50 different package sizes accommodated by one Universal ZIF SOIC/TSOP socket</li> </ul> | For details on Aries' low cost, production grade Series 516 and 526 ZIF sockets, see table, page |
| Available Sizes:<br>84                                                                                                                                           | 44                                                                                                                                                                                                                                      |                                                                                                  |
| Insulator Materials:<br>PPS, UL94V-0 rated                                                                                                                       | LCP or PPS, UL94V-0 rated                                                                                                                                                                                                               |                                                                                                  |
| Temperature Rating:<br>Up to 125°C                                                                                                                               | Up to 180°C                                                                                                                                                                                                                             |                                                                                                  |
| Contact Pin Materials:<br>Au over BeCu                                                                                                                           | Au over BeCu                                                                                                                                                                                                                            |                                                                                                  |

**Note:** Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantities. Consult factory for details.



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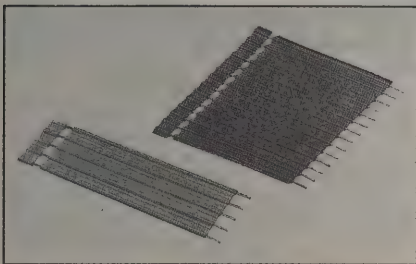
## Jumper Assemblies

Aries offers an amazing selection of jumper assemblies for easily and reliably making board-to-board and on-board

wiring connections. Choose from thousands of standard cable and connector combinations — or consult Aries' engi-

neering department for the right custom assembly for your application.

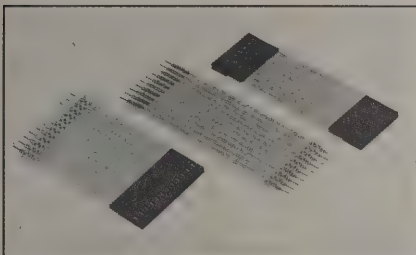
### Series 152FB Fusion Bonded Cable Jumpers



These rugged cable jumpers can be plugged directly into PC boards or Aries pin line sockets. The 26 AWG stranded copper conductor features a fusion bonded overcoat of tin for easy solderability and/or pluggability. The extruded PVC insulation features a polarization stripe along one edge.

Series 152FB jumper assemblies can be furnished with up to 22 conductors on .100 (2,54) centers. Cable lengths range from 1 (25,40) up. All jumpers are shipped with PROTECTO-TAB ends which are easily removed when the jumper is soldered or socketed.

### Series 171-175 Flat Pin Staked Flex Jumpers

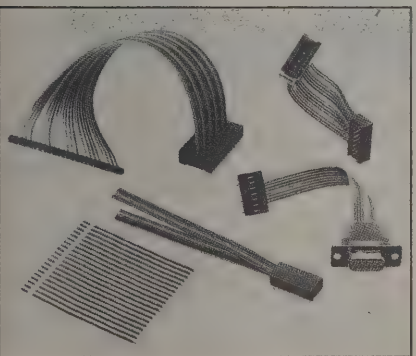


These series feature thin, flexible solid copper conductors embedded within tough, flexible, flame retardant polyester film insulation. The cable is terminated with flat pins which are securely crimped to the conductors through the insulation. This staking action forms a gas-tight electrical connection. The pins are designed for easy connection into PC board holes

or to a variety of connection hardware.

These jumpers are available from 4 to 40 conductors with flat male pins or female receptacles crimped to each conductor at either or both ends. Females are contained in a 94V-O plastic housing. Both tin and gold plating are available.

### DIP Jumpers / Special Jumper Configurations



Aries offers a uniquely broad range of jumpers and jumper assemblies. Cables can be terminated with DIP plugs, female sockets, combination plug/sockets, D-subminiature connectors, or virtually any special connector that can be soldered or mass terminated. Other options for the cable ends include fanning the cable out on a unique "pitch" bar, with tinned conductors held on .100 (2,54) pitch, ready to be soldered into any standard thru hole board. Or, one end can be simply cut, ready for you to terminate with your own IDC device. DIP plugs can be oriented up

or down perpendicular to the cable, or parallel to the cable. All of these choices are available for either end of the jumper.

Ideal for non-standard pin counts and special wiring sequences, these jumpers can be furnished with a broad range of cable choices, including 28 AWG stranded (standard, color coded per EIA standards), as well as twisted pair, flat conductor cable, and .100 (2,54) pitch cable (which can be terminated with sturdy in-line male pins in a rugged housing).

NOTE: Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantities. Consult factory for details.



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## DIP/SIP Sockets and Headers

Who else but Aries could offer such a vast assortment of DIP and SIP sockets and headers? Whether you need standard size or low-profile body type, wire-wrap or solder tail termination, eight or

48 pins...you'll find a standard Aries socket to suit just about any application requirement. If not, try our specials! Aries also manufactures a complete line of DIP headers and covers for mounting

a wide variety of components, plus strip and pin-line headers for board interconnect applications. All headers are available with stamped or screw machined contacts.

### Series/ Package Styles:

### Features:

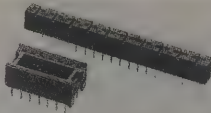
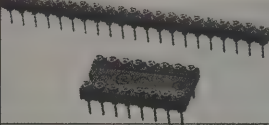
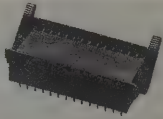
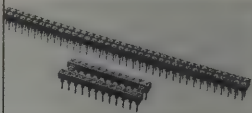
### Available Sizes:

### Pin Styles:

### Contact Pin Materials:

### Termination Styles:

### Profile Height to Seating Plane:

| 511/0511<br>DIP & SIP SOCKETS                                                                                                                                                   | 513/0513<br>DIP & SIP SOCKETS                                                                                                              | 516 DIP<br>ZIF SOCKETS                                                                                                                                                                                                 | STANDARD 518/0518<br>DIP & SIP SOCKETS                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                |                                                           |                                                                                                                                      |                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• 3 point contact w/bifurcated pin</li> <li>• 4-way chamfered lead-in holes</li> <li>• DIPs available w/ or w/o lead-in rails</li> </ul> | <ul style="list-style-type: none"> <li>• Closed frame, low profile, high reliability socket</li> <li>• Multiple plating options</li> </ul> | <ul style="list-style-type: none"> <li>• Zero insertion &amp; withdrawal force prevents bending or other damage to IC leads</li> <li>• Wiping contacts</li> <li>• Tapered entry</li> <li>• Sn or Au plating</li> </ul> | <ul style="list-style-type: none"> <li>• Open frame, low profile, high reliability socket</li> <li>• Machine insertable</li> <li>• Multiple plating options</li> <li>• Multiple pin lengths &amp; styles</li> <li>• Surface mount available</li> </ul> |
| DIPs: 8, 10 on .200, 8-20 on .300, 22 on .400, 8-48 on .600<br>SIPs: 2-40 positions                                                                                             | DIPs: 2-10 on .200, 2-40 on .300, 2-22 on .400, 2-48 on .600, 2-64 on .900<br>SIPs: 1-25 positions                                         | 24, 28, 40 on .600 ctr                                                                                                                                                                                                 | DIPs: 6-28 on .300, 20, 22, 24 on .400, 24-48 on .600, 50, 64 on .900<br>SIPs: 1-40 positions                                                                                                                                                          |
| Bifurcated, stamped 3-point face grip contacts                                                                                                                                  | Swiss screw machine (collet style) contacts                                                                                                | Stamped, dual wipe face grip contacts                                                                                                                                                                                  | Swiss screw machine (collet style) contacts                                                                                                                                                                                                            |
| Grade A spring tempered PhBr                                                                                                                                                    | BeCu contact in brass socket body                                                                                                          | BeCu                                                                                                                                                                                                                   | BeCu contact in brass socket body                                                                                                                                                                                                                      |
| Solder tail, 2/3 level wire wrap                                                                                                                                                | Solder tail, 2/3 level wire wrap                                                                                                           | Solder tail                                                                                                                                                                                                            | Solder tail, midget, extended, 2/3 level wire wrap, SMT                                                                                                                                                                                                |
| .260                                                                                                                                                                            | .165 & .193                                                                                                                                | .350                                                                                                                                                                                                                   | .095, .150, .165, .173 & .193                                                                                                                                                                                                                          |

### Series/ Package Styles:

### Features:

### Available Sizes:

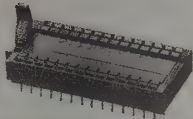
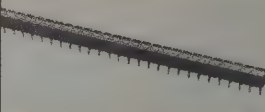
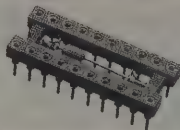
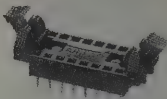
### Pin Styles:

### Contact Pin Materials:

### Termination Styles:

### Profile Height to Seating Plane:

### Notes:

| 518 OPEN FRAME DIP<br>CAPACITOR SOCKETS                                                                                                                                                                            | 0520/0525<br>SIP SOCKETS                                                                                                                                                 | 526 LOW PROFILE<br>DIP ZIF SOCKETS                                                                                                                                                     | 53X DIP EJECTING<br>SOCKETS                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                 |                                                                                       |                                                                                                    |                                                                                                                       |
| <ul style="list-style-type: none"> <li>• High reliability DIP socket with built-in decoupling capacitor</li> <li>• Machine insertable</li> <li>• Multiple plating options</li> <li>• .1mF or .33mF caps</li> </ul> | <ul style="list-style-type: none"> <li>• Low cost, breakable SIP socket</li> <li>• 0520 for IC style leads</li> <li>• 0525 for .025 thick leads &amp; jumpers</li> </ul> | <ul style="list-style-type: none"> <li>• Low cost, low profile ZIF prevents bending or other damage to IC leads</li> <li>• Cam actuated</li> <li>• Side test point openings</li> </ul> | <ul style="list-style-type: none"> <li>• Locks in &amp; ejects DIP sockets and jumpers</li> <li>• Excellent vibration resistance</li> <li>• Damage-free, easy ejection of sockets &amp; jumpers</li> </ul> |
| 14, 16, 18, 20, 24, 28 on .300<br>20, 22, 24 on .400<br>24, 28, 32, 40 on .600                                                                                                                                     | 2-40 positions                                                                                                                                                           | 24, 28 & 40 on .600                                                                                                                                                                    | 14 & 16 on .300 ctr<br>24 on .600 ctr                                                                                                                                                                      |
| Swiss screw machine (collet style) contacts                                                                                                                                                                        | Stamped, single beam face grip contacts                                                                                                                                  | Stamped, dual wipe face grip contacts                                                                                                                                                  | Bifurcated, stamped 3-point face grip contacts                                                                                                                                                             |
| BeCu contact in brass socket body                                                                                                                                                                                  | Cu alloy 688                                                                                                                                                             | BeCu                                                                                                                                                                                   | Grade A spring tempered PhBr                                                                                                                                                                               |
| Solder tail, 2/3 level wire wrap                                                                                                                                                                                   | Solder tail                                                                                                                                                              | Solder tail                                                                                                                                                                            | Solder tail                                                                                                                                                                                                |
| .165 & .193                                                                                                                                                                                                        | .165                                                                                                                                                                     | .254                                                                                                                                                                                   | .250                                                                                                                                                                                                       |
| Au or Sn over Ni                                                                                                                                                                                                   | Loses a position on breaking; Sn standard                                                                                                                                |                                                                                                                                                                                        | Au or Sn over Ni                                                                                                                                                                                           |

**Notes:** Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantity. Consult factory for details. Insulator material is glass filled thermoplastic unless otherwise noted. All parts are available either Sn or Au plated unless noted otherwise.



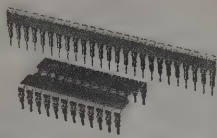
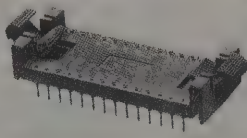
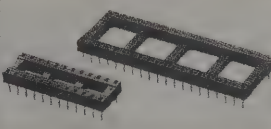
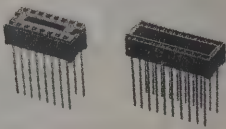
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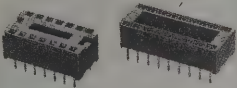


## DIP/SIP Sockets and Headers (Continued)

Series/  
Package Styles:

|                                  | 540/0540 DIP & SIP<br>PIN CARRIER SOCKETS                                                                                                                                  | CXXX<br>DIP EJECTING SOCKETS                                                                                                                                                                                                                   | C84/C93<br>DIP SOCKETS                                                                                                                                                                                  | C81/C91<br>DIP SOCKETS                                                                                                                |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
|                                  |                                                                                           |                                                                                                                                                               |                                                                                                                       |                                                    |
| Features:                        | <ul style="list-style-type: none"> <li>• Disposable collet pin carrier</li> <li>• Selective pin loading easily achieved</li> <li>• Ultra low profile pin option</li> </ul> | <ul style="list-style-type: none"> <li>• Locks in &amp; ejects DIP sockets and jumpers</li> <li>• Excellent vibration resistance</li> <li>• Damage-free, easy ejection of sockets &amp; jumpers</li> <li>• Multiple plating options</li> </ul> | <ul style="list-style-type: none"> <li>• Low cost, low profile, high retention</li> <li>• Edge grip contact</li> <li>• Anti-wicking wafer</li> <li>• End-to-end &amp; side-to-side stackable</li> </ul> | <ul style="list-style-type: none"> <li>• Low cost, high retention</li> <li>• Edge grip contact</li> <li>• Standard profile</li> </ul> |
| Available Sizes:                 | DIPs: 6-24 on .300; 6-48 on .600 ctr<br>SIPs: 2-40 positions                                                                                                               | 14, 16 on .300 ctr<br>24, 28, 32, 40 on .600 ctr                                                                                                                                                                                               | 6-24 on .300 ctr<br>22 on .400 ctr<br>24, 28, 40 on .600 ctr                                                                                                                                            | 8-20 on .300 ctr<br>22 on .400 ctr<br>24, 28, 36, 40 on .600 ctr                                                                      |
| Pin Styles:                      | Swiss screw machine (collet style) contacts                                                                                                                                | Swiss screw machine (collet style) contacts                                                                                                                                                                                                    | Stamped edge grip, dual wipe contacts                                                                                                                                                                   | Stamped edge grip, dual wipe contacts                                                                                                 |
| Contact Pin Materials:           | BeCu contact in brass socket body                                                                                                                                          | BeCu contact in brass socket body                                                                                                                                                                                                              | Cu Alloy                                                                                                                                                                                                | Cu Alloy                                                                                                                              |
| Termination Styles:              | Solder tail, abbreviated solder tail, hollow low profile solder tail                                                                                                       | Solder tail, 2/3 level wire wrap                                                                                                                                                                                                               | Solder tail                                                                                                                                                                                             | 3 level wire wrap                                                                                                                     |
| Profile Height to Seating Plane: | .165, .030, .095                                                                                                                                                           | .165 & .193                                                                                                                                                                                                                                    | .150                                                                                                                                                                                                    | .280                                                                                                                                  |
| Notes:                           | Au contact, Sn shell standard                                                                                                                                              |                                                                                                                                                                                                                                                |                                                                                                                                                                                                         | .250 profile available (without cover)                                                                                                |

Series/  
Package Styles:

|                                  | HEADERS                                                                                                                               |                                                                                                                                                    |                                                                                                                                  |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|                                  | C82/C92<br>DIP SOCKETS                                                                                                                | 600/0600<br>DIP & SIP HEADERS                                                                                                                      | 625/0625<br>DIP & SIP HEADERS                                                                                                    |
|                                  |                                                    |                                                                 |                                               |
| Features:                        | <ul style="list-style-type: none"> <li>• Low cost, high retention</li> <li>• Edge grip contact</li> <li>• Standard profile</li> </ul> | <ul style="list-style-type: none"> <li>• Coined contacts provide extra thickness at solder area</li> <li>• Five cover heights available</li> </ul> | <ul style="list-style-type: none"> <li>• High reliability</li> <li>• Machined contacts</li> <li>• Multiple pin counts</li> </ul> |
| Available Sizes:                 | 8-20 on .300 ctr<br>22 on .400 ctr<br>24, 28, 36, 40 on .600 ctr                                                                      | DIPs: 2-20 on .300 ctr, 22 on .400 ctr, 24, 28, 40 on .600 ctr<br>SIPs: 1-25 positions                                                             | DIPs: 2-10 on .200 ctr, 2-40 on .300 ctr, 2-22 on .400 ctr, 2-48 on .600 ctr, 2-64 on .900 ctr<br>SIPs: 1-25 positions           |
| Pin Styles:                      | Stamped edge grip, dual wipe contacts                                                                                                 | Stamped fork or post contacts                                                                                                                      | Swiss screw machine fork, post, solder cup contacts                                                                              |
| Contact Pin Materials:           | Cu Alloy                                                                                                                              | Brass                                                                                                                                              | Brass                                                                                                                            |
| Termination Styles:              | Solder tail                                                                                                                           | Solder tail                                                                                                                                        | Solder tail (3 level wire wrap available on fork pin)                                                                            |
| Profile Height to Seating Plane: | .280                                                                                                                                  | .120 without cover, .270, .290, .570, .650, .900 with cover                                                                                        | N/A                                                                                                                              |
| Notes:                           | .250 profile available (without cover)                                                                                                |                                                                                                                                                    |                                                                                                                                  |

Notes: Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantity. Consult factory for details. Insulator material is glass filled thermoplastic unless otherwise noted. All parts are available either Sn or Au plated unless noted otherwise.



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## DIP/SIP Sockets (Angled & Elevated)

Choose from Aries' wide selection of display sockets to find exactly the right package for your LEDs, incandescent lamps, DIP switches or other components. To mount devices horizontally or

at 30°, 45°, 60° or 90° angles to the PC board, select an Aries Vertisocket. When you need to gain some height, use an Elevator socket to lift your display from 1/4" to 1-1/4" above the board.

All display sockets are available with a broad range of standard pin counts and contact styles to accommodate your particular application requirements. And, of course, we do specials like no one else!

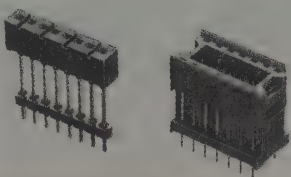
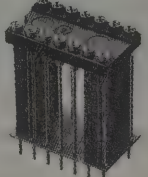
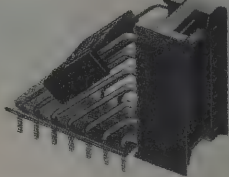
### Package Styles:

### Features:

### Available Sizes:

### Pin Styles:

### Contact Pin Materials:

| STAMPED PIN ELEVATOR<br>DIP & SIP SOCKETS                                                                                                                                                        | MACHINED PIN ELEVATOR<br>DIP & SIP SOCKETS                                                                                                                                                | STAMPED PIN VERTICAL<br>DIP SOCKETS                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                 |                                                                                                          |                                                                                                                                                      |
| <ul style="list-style-type: none"> <li>• Low cost elevator</li> <li>• Molded lead-in w/ or w/o guide rails</li> <li>• Bifurcated contact mates perfectly w/flat, flimsy display leads</li> </ul> | <ul style="list-style-type: none"> <li>• Multiple pin counts &amp; center spacings</li> <li>• Any height from .240 to 1.250 on .300 &amp; .600 ctrs; .285 to 1.250 on .200 ctr</li> </ul> | <ul style="list-style-type: none"> <li>• Molded lead-in, w/ or w/o guide rails</li> <li>• Multiple pin counts and row spacings</li> <li>• Sn or Au plating options</li> <li>• 90° standard, any other angle can be furnished</li> </ul> |
| DIPs: 14 & 16 pin on .300 ctr, 18 pin on .600 ctr<br>SIPs: 2-40 positions                                                                                                                        | DIPs: 6-10 on .200 ctr, 6-40 on .300 ctr, 6-22 on .400 ctr, 6-48 on .600 ctr<br>SIPs: 1-40 positions                                                                                      | 8 & 10 pin on .200 ctr<br>8, 14, 16 18 on .300 center<br>8, 10, 12, 14, 16, 18 on .600 ctr                                                                                                                                              |
| Bifurcated, stamped 3-point face grip contacts                                                                                                                                                   | Swiss screw machine (collet style) contacts                                                                                                                                               | Bifurcated, stamped 3-point face grip contacts                                                                                                                                                                                          |
| PhBr; Sn plated standard                                                                                                                                                                         | Au plated BeCu collet in Sn plated brass shell standard                                                                                                                                   | PhBr; Au or Sn plated                                                                                                                                                                                                                   |

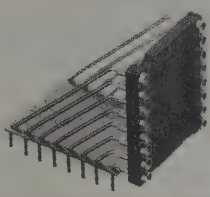
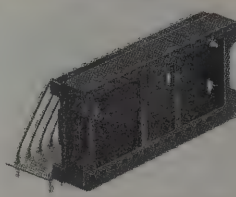
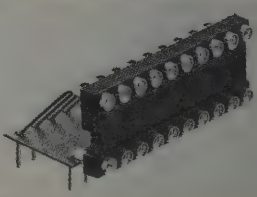
### Package Styles:

### Features:

### Available Sizes:

### Pin Styles:

### Contact Pin Materials:

| MACHINED PIN VERTICAL<br>DIP SOCKETS                                                                                                    | STAMPED PIN HORIZONTAL<br>DIP SOCKETS                                                                                                                                                                                                   | MACHINED PIN HORIZONTAL<br>DIP SOCKETS                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      |                                                                                                                                                      |                                                                                                    |
| <ul style="list-style-type: none"> <li>• 90° standard, any other angle can be furnished</li> <li>• High reliability contacts</li> </ul> | <ul style="list-style-type: none"> <li>• Molded lead-in, w/ or w/o guide rails</li> <li>• Multiple pin counts and row spacings</li> <li>• Sn or Au plating options</li> <li>• 90° standard, any other angle can be furnished</li> </ul> | <ul style="list-style-type: none"> <li>• High reliability contacts</li> <li>• Multiple pin counts and row spacings</li> <li>• 90° standard, any other angle can be furnished</li> </ul> |
| 4-10 on .200 ctr<br>4-18 on .300 ctr<br>4-18 on .400 ctr<br>4-18 on .600 ctr                                                            | 8 & 10 on .200 ctr<br>8-20 on .300 ctr<br>8-48 on .600 ctr                                                                                                                                                                              | Standard sizes: 6, 8, 10 on .200 ctr, 6-40 on .300 ctr, 6-48 on .600 ctr<br>Also available: 12-48 on .200 ctr, 48 on .300 ctr as non-standard                                           |
| Swiss screw machine (collet style) contacts                                                                                             | Bifurcated, stamped 3-point face grip contacts                                                                                                                                                                                          | Swiss screw machine (collet style) contacts                                                                                                                                             |
| Au plated BeCu collet in Sn plated brass shell standard                                                                                 | PhBr; Au or Sn plated                                                                                                                                                                                                                   | Au plated BeCu collet in Sn plated brass shell standard                                                                                                                                 |

**Notes:** Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantity. Consult factory for details. Insulator material is glass filled thermoplastic unless otherwise noted. All parts are available either Sn or Au plated unless noted otherwise.



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## Other Socket Packages

Aries excels in helping customers meet special application needs. This singular

expertise has resulted in an enhanced line of standard socket packages with

special features and capabilities – including the following products.

Series/  
Package Styles:

| 514<br>TO SOCKETS                                                                                                     | 519<br>ZIP SOCKETS                                                                          | 535<br>PLCC SOCKETS                                                                                                     | 560<br>SIMM SOCKETS                                                                                                                | 570<br>SHRINK DIP SOCKETS                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                       |                                                                                             |                                                                                                                         |                                                                                                                                    |                                                                                                                                     |
| <ul style="list-style-type: none"> <li>Molded lead-in</li> <li>External polarization for positive location</li> </ul> | <ul style="list-style-type: none"> <li>Staggered pins for zig-zag configurations</li> </ul> | <ul style="list-style-type: none"> <li>JEDEC type A</li> <li>Low profile</li> <li>Surface mount or thru hole</li> </ul> | <ul style="list-style-type: none"> <li>Nylon latch</li> <li>Vertical and low profile (25°)</li> <li>Dual and single row</li> </ul> | <ul style="list-style-type: none"> <li>.070 pin to pin spacing</li> <li>Lower insertion force</li> <li>Entry guide rails</li> </ul> |
| Available Sizes:<br>3, 4, 8 on .200 dia.<br>8, 10 on .230 dia.<br>12 on .300 dia.                                     | 16, 20, 24, 28                                                                              | 20, 28, 32, 44, 52, 68, 84                                                                                              | 30 pin single row vertical & low profile; 60 pin dual row vertical & low profile                                                   | 20, 40, 52 on .600 ctr<br>64 on .750 ctr                                                                                            |
| Pin Styles:<br>Swiss screw machine (collet style)                                                                     | Swiss screw machine (collet style)                                                          | Stamped                                                                                                                 | Stamped                                                                                                                            | Stamped single beam face grip                                                                                                       |
| Insulator Materials:<br>Glass filled thermoplastic                                                                    | Glass filled thermoplastic                                                                  | Surface mount – LCP; Thru-hole – PBT                                                                                    | LCP                                                                                                                                | Glass filled thermoplastic                                                                                                          |
| Contact Pin Materials:<br>BeCu contact in brass socket body                                                           | BeCu contact in brass socket body                                                           | PhBr                                                                                                                    | PhBr                                                                                                                               | BeCu contact                                                                                                                        |
| Termination Styles:<br>Solder tail                                                                                    | Solder tail, midjet, extended, 2/3 level wire wrap                                          | Solder tail or surface mount                                                                                            | Solder tail                                                                                                                        | Solder tail                                                                                                                         |
| Profile Height to Seating Plane:<br>.200                                                                              | .095, .165, .173 & .193                                                                     | Surface mount –.177, Thru-hole –.300                                                                                    | .180                                                                                                                               | .225                                                                                                                                |
| Notes:<br>Au collet/Sn shell standard                                                                                 |                                                                                             | Thru hole will plug into PGA sockets for wire wrapping. Sn standard                                                     | Sn standard                                                                                                                        | Sn standard                                                                                                                         |

Series/  
Package Styles:

| PGA<br>SOCKETS                                                                                                                                                                  | SAS ADAPTER<br>SOCKETS                                                                     | SOS OSCILLATOR<br>SOCKETS                                                                                                                                                     | SSPS RS232 SURGE<br>PROTECTOR SOCKETS                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                 |                                                                                            |                                                                                                                                                                               |                                                                                                                                      |
| <ul style="list-style-type: none"> <li>Custom footprints, high temperature material and molded stand-offs available</li> <li>Low insertion force, less than 1oz./pin</li> </ul> | <ul style="list-style-type: none"> <li>Converts .300 to .600 ctr and vice-versa</li> </ul> | <ul style="list-style-type: none"> <li>Machine insertable</li> <li>Side-to-side and end-to-end stackable</li> <li>High retention, high reliability collet contacts</li> </ul> | <ul style="list-style-type: none"> <li>Designed to protect 1488 &amp; 1489 transmitter &amp; receiver ICs from transients</li> </ul> |
| Available Sizes:<br>8x8 thru 21x21 standard; 3x3 thru 7x7 available                                                                                                             | 6-40 on .300 ctr<br>6-48 on .600 ctr                                                       | 4 on .300 ctr                                                                                                                                                                 | 14 on .300 ctr                                                                                                                       |
| Pin Styles:<br>Swiss screw machine (collet style) contacts                                                                                                                      | Swiss screw machine (collet style) contacts                                                | Swiss screw machine (collet style) contacts                                                                                                                                   | Swiss screw machine (collet style) contacts                                                                                          |
| Insulator Materials:<br>Glass filled thermoplastic                                                                                                                              | Glass filled thermoplastic                                                                 | Glass filled thermoplastic                                                                                                                                                    | FR-4                                                                                                                                 |
| Contact Pin Materials:<br>BeCu contact in brass socket body                                                                                                                     | BeCu contact in brass socket body                                                          | BeCu contact in brass socket body                                                                                                                                             | BeCu contact in brass socket body                                                                                                    |
| Termination Styles:<br>Solder tail, midjet, extended, 2/3 level wire wrap                                                                                                       | Solder tail                                                                                | Solder tail                                                                                                                                                                   | Solder tail                                                                                                                          |
| Profile Height to Seating Plane:<br>.095, .165, .173 & .193                                                                                                                     | .265 & .300                                                                                | .165                                                                                                                                                                          | .165                                                                                                                                 |
| Notes:<br>See PGA footprint catalog. Header pins can be used instead of collets.                                                                                                | Au collet/Sn shell standard                                                                | Au collet/Sn shell standard                                                                                                                                                   | Au collet/Sn shell standard                                                                                                          |

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## Square Pin Products

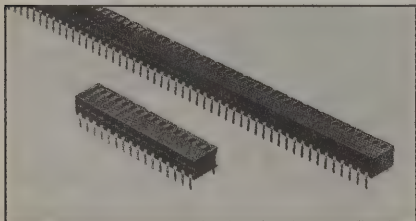
Aries offers a broad assortment of .025 (0,63) and 0.20 (0,51) square pin products in package variations to meet a

multitude of .100 (2,54) and 2 mm board-to-board interconnect needs. If you don't find the square pin product

that's just right for your application, just tell us what you need and we'll work with you.

### .100 SquareStix™ Products

#### BC Series Female Box Connectors

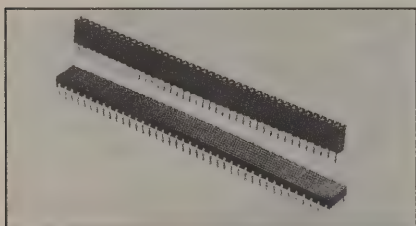


This .100 (2,54) Squarestix series is designed to mate with .025 (0,63) square or round posts. It is available in up to 63 positions, and features twin beam redundant contacts with excellent force and wiping action to ensure reliable perfor-

mance. Selective gold plating and tin-lead plating are standard with others available.

Tail spacing is .100 (2,54) along the connector length and .310 (7,87) between rows. End-to-end stackable connectors can be provided.

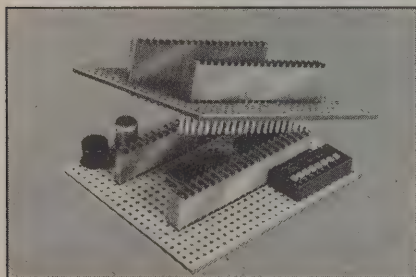
#### Series BV and BH Female Box Connectors



These female box connectors are offered in up to 40 positions in single vertical and horizontal packages. Selective gold plated or tin-lead plated phosphor bronze twin beam redundant contacts provide outstanding electrical performance, as well as optimum insertion/withdrawal forces and cycling capability.

The glass filled thermoplastic insulator can withstand high soldering temperatures without distorting. Solder standoffs facilitate flux removal. The connectors are stackable end-to-end.

#### Press-Lok™ Stackable Female Connectors



For applications requiring the stacking of 1.0625 (1,59) PC boards on .500 (12,70) or .600 (15,24) board centers, Press-Lok connectors come in two styles: with solder tail pins or with a stackable style pin, allowing infinite board stacking. (Connectors with stackable pins can plug into each other or into the solder tail version in the mother board.)

Press-Lok connectors are available in stan-

dard 20 and 40 pin dual row .100 x .100 (2,54 x 2,54) grids or 20 pins in a single row. Pin counts from 4 thru 38 pin (dual row) or 2 thru 19 pin (single row) are also available.

All Press-Lok connectors are side-to-side stackable. For end-to-end stacking, just skip one pin position.

90° Press-Lok connectors are available as Series 5935 SquareStix female connectors.

#### Stax-Stix™ PC Board Spacers



Aries Stax-Stix spacers provide another low cost means of stacking PC boards. Available in single or dual row configurations, these spacers feature .025" (0,63) square, 1.25 (31,25) long pins, tin

(standard) or gold plated. Boards can be spaced at any height from .200 (5,08) to 1.140 (28,96).

*Continued on next page*

NOTE: Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantities. Consult factory for details.



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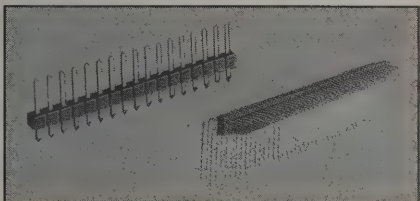




## Square Pin Products (Continued)

### .100 Squarestix Products (Continued)

#### Series 900 Squarestix Headers



These .025 (0,63) square pin headers are

offered with either straight or 90° pins and in single row (1-40 pins) and dual row (2-80 pins) packages.

Full length strips can be broken to any number of pins without loss of pins. Pin lengths from .430 (10,92) to 1.230 (31,24) are available.

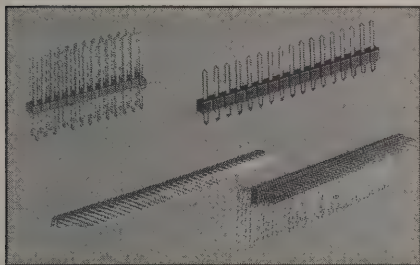
Straight Squarestix can be butted end-to-

end and side-to-side on a .100 (2,54) matrix; the 90° versions are end-to-end buttable.

All Series 900 headers feature a glass-filled UL94V-O rated insulator, gold, tin or gold/tin over phosphor bronze pins, and a standoff to facilitate cleaning and prevent solder wicking.

### 2mm Squarestix™ Products

#### Series 29XX 2mm Male Squarestix Headers



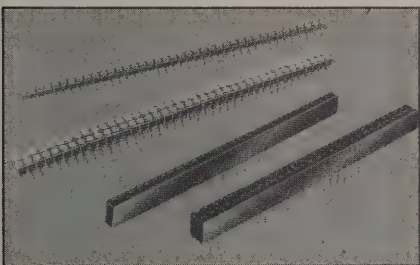
The Series 29XX headers, available in either straight or 90° angle configurations, feature .020 (0,51) square pins on 2 x 2 mm spacing. They are equally useful for making board-to-board connections or for mating with Aries socket strip products.

Aries 29XX headers are available in either single rows of 1-50 pins or double

rows with 2-100 pins. Users can also take advantage of the "break" feature to split the headers to any desired size and pin count.

Pins are phosphor bronze with tin/nickel plating. The body material for all 29XX headers is polyphenylene sulfide (PPS).

#### Series 079 2mm Female Strip Sockets



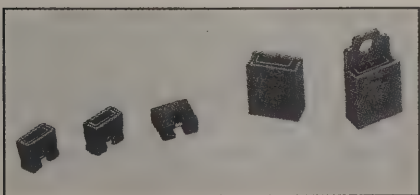
Aries' Series 079 female socket strips give designers flexibility in socketing just about any device on 2 mm spacing — including, of course, the Aries 29XX Series headers.

For even more flexibility, choose one of two contact styles: collet pin or stamped pin. Both contact styles have solder tail terminations for soldering to PC boards

with 2 x 2 mm grids.

The collet pin type sockets are supplied in 1-50 pin single-row strips or 2-100 pin dual-row strips and can be broken to any desired length. Stamped pin socket types come in standard sizes of 30 and 40 pins (single row) and 60 to 80 pins (double row); additional sizes are available to suit individual requirements.

### Mini-Link Jumpers



Aries offers both 2 mm and .100 (2,54) Mini-Link Jumpers. The ME-079 jumper is a .137 (3,48) high shorting plug with 2 mm spacing. Designed for use with 29XX Squarestix headers, this Mini-Link can be used either row-to-row or pin-to-pin. Body material is glass-filled thermo-

plastic. The .100 (2,54) Mini-Links are ideal for jumpering from row to row or from .025 (0,63) square pin to pin. They can be stacked. A convenient test probe slot is provided on ML-100. They can also be furnished with or without a handle for ease of inserting and extracting.

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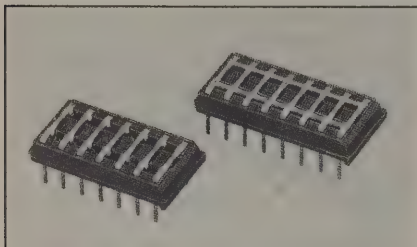
## Programming Devices

For factory- or user-programmable on-board interconnections, Aries offers a variety of programming devices. These versatile components act like a DIP switch...

with a unique characteristic: they can be individually programmed to make a permanent, unalterable switch selection. As always, Aries offers a variety of package

designs and a nearly infinite number of programming alternatives.

### Series 680 Programmable Headers and Covers

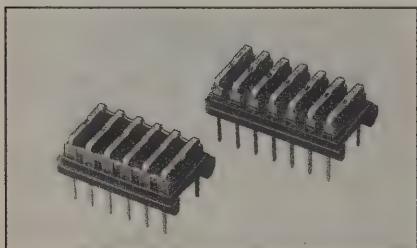


Aries Series 680 programmable headers and covers provide a simple, cost-effective means for achieving custom programming within the header itself. In applications where the programming will not be changed, this series eliminates the need for more costly DIP switches. The headers are available with 4 thru 24 pins on .300 (7,62) centers.

Series 680 headers can be user pro-

grammed with an inexpensive hand tool available from Aries, or an arbor press for high volume applications. They can also be pre-programmed by Aries or by any of our stocking distributors. Programmed headers can be protected with a plain press-on cover. A "Top-Slot" press-on cover is also available for programming through the square openings with a pointed probe (Aries P/N T-680).

### Series 675 DIP Program Headers

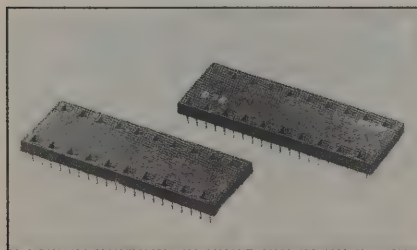


Aries Series 675 DIP Program Headers offer unusual versatility for programming by the user within the header itself. They can be individually programmed using needle nose pliers or the Aries Program Header Tool (Aries P/N T-675) to remove the interconnecting sections. Adjacent pins and opposing pins are interconnected until the pre-slotted section is snapped out by the pliers or tool. An almost infinite

number of programs can be attained by merely leaving or removing interconnection sections.

Series 675 headers are available with 4 thru 20 pins on .300 (7,62) centers. A low profile protective snap-on cover can also be marked to identify the program within the header.

### Pre-Programmed Circuit-Bridges™



This unique, low profile — .140 (3,56) high — component allows you to eliminate extra PC board layers and achieve a tamper-proof DIP switch capability. Circuitry is programmed by Aries to your specifications via a miniature PC board which is insert molded inside the device. The Circuit-Bridge is available on .300 (7,62) centers with 14 thru 24 pins and

.600 (15,24) centers with 24 thru 40 pins. Aries' Circuit-Bridge is ideal for replacing DIP switches and hard wired adapters, for programming at the PCB level, for eliminating jumpers and shunts...even for achieving limited daughterboard capabilities by adding resistors, diodes, etc. prior to insert molding.

### More Aries Programming Devices

Aries gives you even more ways to achieve low cost programming capabilities, including:

- The Aries DIPATCH which acts as a single circuit programmer or shorting

plug when plugged into a .300 (7,62) center socket.

- Aries .040 (11,01) dia. pin products, including DIP shorting plugs (SP200) and jacks (SJ200), with compatible

male or female strips. The strips can be snapped apart to achieve the desired length. Aries also offers .040 (1,01) loose pins for these products.

NOTE: Aries specializes in custom design and production. In addition to the standard products shown on this page, special materials, platings, sizes, and configurations can be furnished, depending on quantities. Consult factory for details.

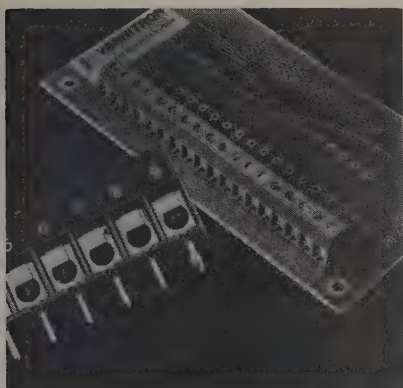


**ARIES ELECTRONICS, INC.**  
P.O. Box 130 Frenchtown, NJ 08825  
(908) 996-6841 FAX (908) 996-3891

**ARIES ELECTRONICS (Europe)**  
Unit 3, Furtho Court, Towcester Rd.  
Old Stratford, Milton Keynes, England MK19 6AQ  
Tel.: +44-908-260007 FAX +44-908-260008



# Beau Interconnect Systems



## Series 85 Single-piece (fixed) blocks economical, with low profile

These Eurostyle terminal blocks are single-piece styles for permanent mounting to PC boards. Our most economical terminal blocks, a screw clamp system is used for securing wires. They are one of the smallest of their type on the market.

Made in the USA, all Eurostyle terminal blocks embody the highest quality standards in the industry—using the finest materials and world class manufacturing processes. They meet or exceed all applicable industry standards.

### Features

- Economical screw clamp system.
- Low profile, small footprint.
- Made for multiple mating.
- Widest range of wire sizes.
- Molded to lengths from 2 to 24 positions.
- High flammability rating.

### Technical Specifications

#### Electrical

UL Class B Comm'l 15 Amps@ 250V 12 AWG

Class C Limited 10 Amps@ 300V 12 AWG

CSA 10 Amps@ 300V 12AWG

#### Mechanical

Tightening torque 2.5in.-lbs, max

Wire strip length .250 in. or 6mm

Wire range 12 to 30 AWG

#### Environmental

Operating temp -55°C to +100°C

### Approvals/Registry



File No. E48521

Guide No. XCFR2

File No. 025562



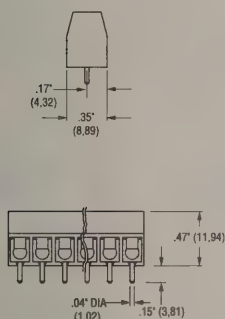
### How to Order

| 8 5    | X              | X X          | - | X X                    |
|--------|----------------|--------------|---|------------------------|
| Series | Terminal Style | No. of Poles |   | Options                |
| 85     | 4              | 02           |   | (Dash #s listed above) |
|        | 5              | to           |   |                        |
|        | 8              | 24           |   |                        |

### Series 85 : 5.0" spacing

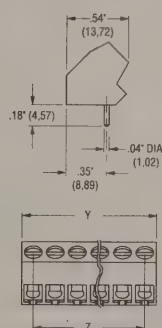
#### Style 5

Straight-thru terminals



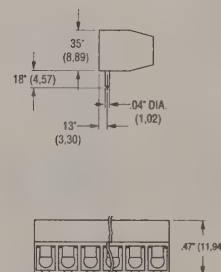
#### Style 4

45° terminals



#### Style 8

90° terminals



| No. of Poles | Y     |       | Z     |       |
|--------------|-------|-------|-------|-------|
|              | in.   | mm    | in.   | mm    |
| 2            | .400  | 10,15 | .197  | 5,00  |
| 3            | .597  | 15,15 | .394  | 10,00 |
| 4            | .793  | 20,15 | .591  | 15,00 |
| 5            | .990  | 25,15 | .787  | 20,00 |
| 6            | 1.187 | 30,15 | .984  | 25,00 |
| 7            | 1.384 | 35,15 | 1.181 | 30,00 |
| 8            | 1.581 | 40,15 | 1.378 | 35,00 |
| 9            | 1.778 | 45,15 | 1.575 | 40,00 |
| 10           | 1.975 | 50,15 | 1.772 | 45,00 |
| 11           | 2.171 | 55,15 | 1.969 | 50,00 |
| 12           | 2.368 | 60,15 | 2.165 | 55,00 |
| 13           | 2.566 | 65,15 | 2.362 | 60,00 |

| No. of Poles | Y     |        | Z     |        |
|--------------|-------|--------|-------|--------|
|              | in.   | mm     | in.   | mm     |
| 14           | 2.762 | 70,15  | 2.560 | 65,00  |
| 15           | 2.959 | 75,15  | 2.756 | 70,00  |
| 16           | 3.156 | 80,15  | 2.953 | 75,00  |
| 17           | 3.352 | 85,15  | 3.150 | 80,00  |
| 18           | 3.549 | 90,15  | 3.346 | 85,00  |
| 19           | 3.746 | 95,15  | 3.543 | 90,00  |
| 20           | 3.943 | 100,15 | 3.740 | 95,00  |
| 21           | 4.140 | 105,15 | 3.937 | 100,00 |
| 22           | 4.337 | 110,15 | 4.134 | 105,00 |
| 23           | 4.534 | 115,15 | 4.331 | 110,00 |
| 24           | 4.730 | 120,15 | 4.528 | 115,00 |



**BEAU INTERCONNECT SYSTEMS**  
DIVISION OF VERNITRON CORPORATION

P.O. Box 10 • Laconia, NH 03247

Tel: 603-524-5102 • Fax: 603-524-1627



# Beau Interconnect Systems



## Series 86 & 87 Pluggable terminal blocks with rising cage pressure clamps

These Eurostyle terminal blocks for PC boards are a 2-piece plug and header system that are polarized with the industry-standard scalloped design. They offer the convenience of pluggability and the superior reliability of rising cage pressure clamps for securing wires.

Made in the USA, all Eurostyle terminal blocks embody the highest quality standard in the industry—using the finest materials and world class manufacturing processes. They meet or exceed all applicable industry standards.

### Features

- Holds wires for a secure, reliable contact.
- Industry-standard interface.
- End-to-end stackable.
- High flammability rating.
- Made for multiple mating.
- Low electrical resistance.
- Widest range of wire sizes.

### Technical Specifications

#### Electrical

UL Class B Comm'l 15 Amps@ 250V 12 AWG  
Class C Ind'l 10 Amps@ 300V 12 AWG  
CSA 15 Amps@ 300V 12 AWG  
VDE 0110 Gr.C 12 Amps@ 250V 2.5mm<sup>2</sup>

#### Mechanical

Tightening torque 5in.-lbs, max  
Wire strip length .250 in. or 6mm  
Wire range 12 to 30 AWG

#### Environmental

Operating temp -55°C to +100°C

### Approvals/Registry



File No. E48521



Guide No. XCFR2

File No. 025562

### How to Order

| 86     | XX             | XX           | XX                     |
|--------|----------------|--------------|------------------------|
| Series | Terminal Style | No. of Poles | Options                |
| 86     | 05             | 02           | (Dash #s listed above) |
| or 87  | 15             | to 24        |                        |

### Series 86 : .200" spacing

#### Style 5

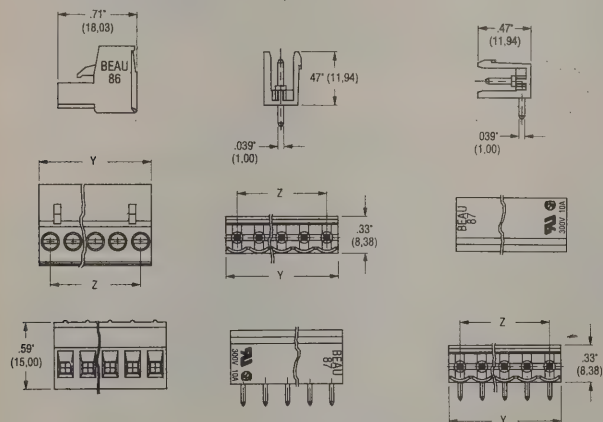
Plug, right angle

#### Style 15

Header, straight thru

#### Style 18

Header 90° terminals



| No. of Poles | Y     |       | Z     |       |
|--------------|-------|-------|-------|-------|
|              | in.   | mm    | in.   | mm    |
| 2            | .395  | 10,03 | .200  | 5,08  |
| 3            | .595  | 15,11 | .400  | 10,16 |
| 4            | .795  | 20,19 | .600  | 15,24 |
| 5            | .995  | 25,27 | .800  | 20,32 |
| 6            | 1.195 | 30,35 | 1.000 | 25,40 |
| 7            | 1.395 | 35,43 | 1.200 | 30,48 |
| 8            | 1.595 | 40,51 | 1.400 | 35,56 |
| 9            | 1.795 | 45,59 | 1.600 | 40,64 |
| 10           | 1.995 | 50,67 | 1.800 | 45,72 |
| 11           | 2.195 | 55,75 | 2.000 | 50,80 |
| 12           | 2.395 | 60,83 | 2.200 | 55,88 |

### Series 87 : 5.0 mm spacing

#### Style 5

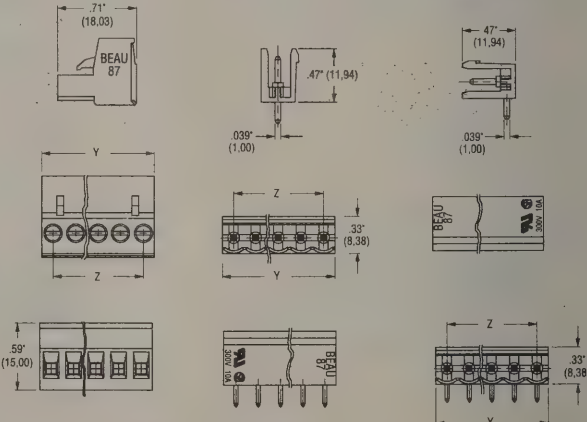
Plug, right angle

#### Style 15

Header, straight thru

#### Style 18

Header 90°



| No. of Poles | Y     |       | Z     |       |
|--------------|-------|-------|-------|-------|
|              | in.   | mm    | in.   | mm    |
| 2            | .389  | 9,90  | .197  | 5,00  |
| 3            | .586  | 14,90 | .394  | 10,00 |
| 4            | .783  | 19,90 | .591  | 15,00 |
| 5            | .980  | 24,90 | .788  | 20,00 |
| 6            | 1.177 | 29,90 | .985  | 25,00 |
| 7            | 1.374 | 34,90 | 1.182 | 30,00 |
| 8            | 1.571 | 39,90 | 1.379 | 35,00 |
| 9            | 1.768 | 44,90 | 1.576 | 40,00 |
| 10           | 1.965 | 49,90 | 1.773 | 45,00 |
| 11           | 2.162 | 54,90 | 1.970 | 50,00 |
| 12           | 2.359 | 59,90 | 2.167 | 55,00 |



**BEAU INTERCONNECT SYSTEMS**  
DIVISION OF VERNITRON CORPORATION

P.O. Box 10 • Laconia, NH 03247

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# Beau Interconnect Systems



## Series 88 & 89 Single-piece (fixed) blocks with rising cage pressure clamps

These Eurostyle terminal blocks are single-piece styles for permanent mounting to PC boards. They offer the superior reliability of rising cage pressure clamps for securing wires. The product features a closed-bottom design to prevent solder wicking.

Made in the USA, all Eurostyle terminal blocks embody the highest quality standards in the industry—using the finest materials and world class manufacturing processes. They meet or exceed all applicable industry standards.

### Features

- Holds wires for a secure, reliable contact.
- Molded to length.
- High flammability rating.
- Closed bottom prevents solder wicking.
- Extra-high conductivity contacts.
- Widest range of wire sizes.
- Small footprint.

### Technical Specifications

#### Electrical

UL Class B Comm'l 20 Amps@ 250V 12 AWG  
Class C Ind'l 10 Amps@ 300V 12 AWG  
CSA 15 Amps@ 300V 12AWG  
VDE 0110 Gr.C 16 Amps@ 250V 2.5mm<sup>2</sup>

#### Mechanical

Tightening torque 5in.-lbs, max  
Wire strip length .250 in. or 6mm  
Wire range 12 to 30 AWG

#### Environmental

Operating temp -55°C to +100°C

### Approvals/Registry



File No. E48521



Guide No: XCFR2

File No. 025562

### How to Order

| 8 6<br>Series  | XX<br>Terminal<br>Style | XX<br>No: of<br>Poles | XX<br>Options                |
|----------------|-------------------------|-----------------------|------------------------------|
| 86<br>or<br>87 | 05<br>15<br>18          | 02<br>to<br>24        | (Dash #s<br>listed<br>above) |

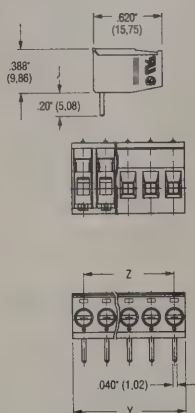
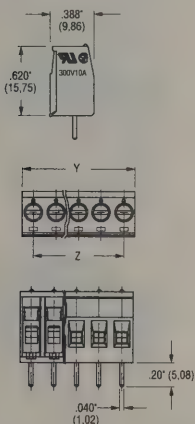
### Series 88 : .200" spacing

#### Style 05

Straight thru terminals

#### Style 08

90° terminals



| No. of Poles | Y     |       | Z     |       |
|--------------|-------|-------|-------|-------|
|              | in.   | mm    | in.   | mm    |
| 2            | .395  | 10,03 | .200  | 5,08  |
| 3            | .595  | 15,11 | .400  | 10,16 |
| 4            | .795  | 20,19 | .600  | 15,24 |
| 5            | .995  | 25,27 | .800  | 20,32 |
| 6            | 1.195 | 30,35 | 1.000 | 25,40 |
| 7            | 1.395 | 35,43 | 1.200 | 30,48 |
| 8            | 1.595 | 40,51 | 1.400 | 35,56 |
| 9            | 1.795 | 45,59 | 1.600 | 40,64 |
| 10           | 1.965 | 50,67 | 1.800 | 45,72 |
| 11           | 2.195 | 55,75 | 2.000 | 50,80 |
| 12           | 2.395 | 60,83 | 2.200 | 55,88 |

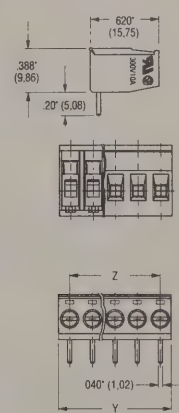
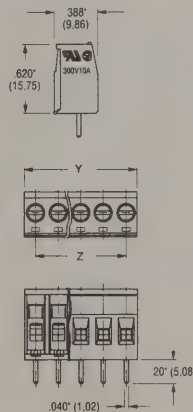
### Series 89 : 5.0 mm spacing

#### Style 05

Straight thru terminals

#### Style 08

90° terminals



| No. of Poles | Y     |       | Z     |       |
|--------------|-------|-------|-------|-------|
|              | in.   | mm    | in.   | mm    |
| 2            | .389  | 9,90  | .197  | 5,00  |
| 3            | .586  | 14,90 | .394  | 10,00 |
| 4            | .783  | 19,90 | .591  | 15,00 |
| 5            | .980  | 24,90 | .788  | 20,00 |
| 6            | 1.177 | 29,90 | .985  | 25,00 |
| 7            | 1.374 | 34,90 | 1.182 | 30,00 |
| 8            | 1.571 | 39,90 | 1.379 | 35,00 |
| 9            | 1.768 | 44,90 | 1.576 | 40,00 |
| 10           | 1.965 | 49,90 | 1.773 | 45,00 |
| 11           | 2.162 | 54,90 | 1.970 | 50,00 |
| 12           | 2.359 | 59,90 | 2.167 | 55,00 |



**BEAU INTERCONNECT SYSTEMS**  
DIVISION OF VERNITRON CORPORATION

P.O. Box 10 • Laconia, NH 03247  
Tel: 603-524-5102 • Fax: 603-524-1627



# Beau Interconnect Systems

## CONSIDER THE ADVANTAGES OF BEAU THERMOPLASTIC STRIPS

Beau thermoplastic strips offer many significant advantages. The strong, resilient barriers. The quality and uniformity of the product. Our determined commitment to engineering excellence. And, with our large selection, you're sure to find the strip you need. Design in or cross over to Beau thermoplastic strips — the advantage is yours.

## BEND BARRIERS WITHOUT BREAKING

Resilient thermoplastic reduces breakage dramatically. Production line and in-field damage are virtually eliminated.

## TERMINAL TAILS ENCLOSED

Cavities are eliminated around solder terminal tails. Allows mounting on PCB without affecting circuit isolation. Eliminates entrapment of foreign matter. Reduces solder wicking.

## CLOSED-SIDE STRIPS OFFER EXTRA PROTECTION

Closed side serves as a wire stop. Permits mounting components close to strip without shorting. Wires or screwdrivers can't pass through closed side to contact other wires, leads or PCB components.

## HIGHEST U.L. RATING

Our thermoplastic materials all carry the highest U.L. flame retardant rating: UL 94V-0 (self-extinguishing).

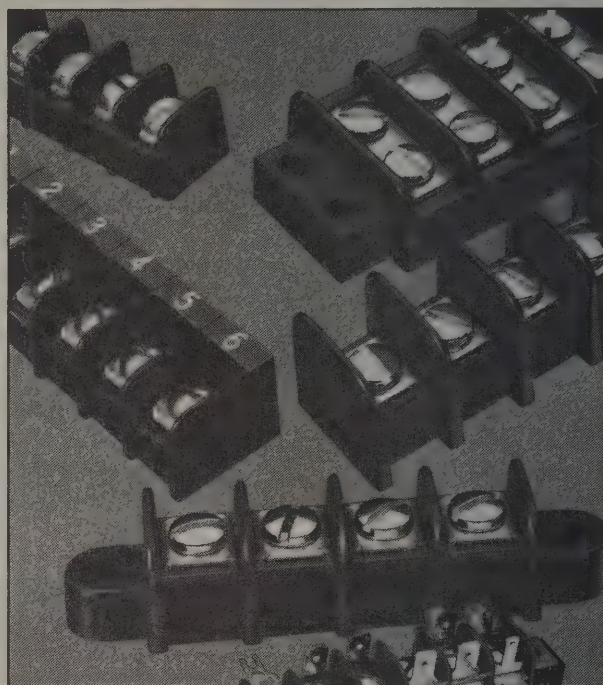
## NEAT, ACCURATE MOUNTING ENDS

All our thermoplastic strips are molded to length. None are cut down from longer strips. They're neater, without ugly saw cuts. And they are precisely the same length every time.

## WIDE VARIETY OF TERMINALS

There is a broad selection of top-side and bottom terminals—including quick-connect terminals which speed assembly time, cut costs and improve connections.

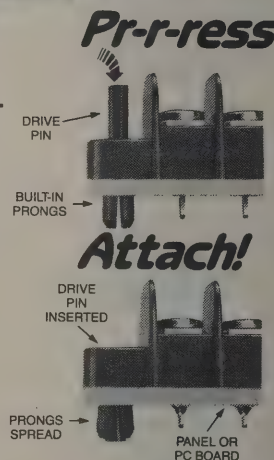
U.L. RECOGNIZED. CSA CERTIFIED.



## RAP-ATTACH™ MOUNTS SAVE 40% OF INSTALLED COST

Rap-Attach mounts (option) are the rapid new way to attach barrier terminal strips to PCBs or panels. Just press in the drive pins. The built-in prongs spread like a blind rivet. It's so easy, you can cut installed cost dramatically.

**Non-conductive mounting.**  
**Strain-free joints.**  
**Wave solderable.**



|                | SINGLE-ROW        |       |      |      |       |       | SINGLE-ROW,<br>CLOSED SIDE |       |      | DOUBLE-ROW        |      |       |
|----------------|-------------------|-------|------|------|-------|-------|----------------------------|-------|------|-------------------|------|-------|
| Series No.     | 61                | 70    | 71   | 72   | 73    | 74    | 60                         | 69    | 75   | 76                | 77   | 78    |
| Terminal ctrs  | 1/4"              | .325" | 3/8" | 3/8" | 7/16" | 7/16" | 1/4"                       | .325" | 3/8" | 3/8"              | 3/8" | 7/16" |
| Current (UL)   | 10A               | 20A   | 20A  | 20A  | 20A   | 20A   | 10A                        | 20A   | 20A  | 20A               | 20A  | 20A   |
| Volts rms (UL) |                   |       |      |      |       |       |                            |       |      |                   |      |       |
| Gen Indl       | 150               | 150   | 150  | 150  | 300   | 300   | 150                        | 150   | 150  | 150               | 150  | 300   |
| Comm1          | 250               | 250   | 250  | 250  | 250   | 250   | 250                        | 250   | 250  | 250               | 250  | 250   |
| Width          | .55"              | .50"  | .63" | .63" | .75"  | .63"  | .55"                       | .60"  | .68" | .88"              | .88" | 1.13" |
| Height         | .50"              | .50"  | .56" | .66" | .75"  | .58"  | .50"                       | .50"  | .56" | .63"              | .44" | .55"  |
| No. circuits   | 1-32              | 1-30  | 1-26 | 1-26 | 1-30  | 1-30  | 1-32                       | 1-30  | 1-26 | 2-30              | 2-30 | 1-30  |
| Back types     | Feed thru; closed |       |      |      |       |       | Feed thru; closed          |       |      | Feed thru; closed |      |       |



**BEAU INTERCONNECT SYSTEMS**  
DIVISION OF VERNITRON CORPORATION

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# Beau Interconnect Systems

## VERSATILE PHENOLIC STRIPS CROSS WITH THE POPULAR SIZES

Vernitron offers one of the widest lines of phenolic barrier terminal strips available anywhere—and we have a wide variety of options to go with them. We have all the most popular sizes and styles. Compare our quality, price and lead times — we think you'll cross over to Beau.

## SINGLE-ROW STRIPS IN MANY STYLES

Series 12 and 13 have high-impact glass-filled phenolic bases for excellent breakage resistance; color, green. The other single-row series are made of general-purpose phenolic; color, black. All styles are available with a wide choice of terminals, marker/insulation strips, imprinting, with or without mounting ends, and many other options.

## DOUBLE-ROW STRIPS RANGE FROM 10 TO 50 AMPS

Available in general-purpose phenolic; color, black. Wide choice of terminal styles, marker/insulation strips, imprinting, with or without mounting ends, and many other options.

## WIDE VARIETY OF TERMINALS

There is a broad selection of top-side and bottom terminals — including quick-connect terminals which speed assembly time, cut costs and improve connections.

## OUR HIGHEST CURRENT STRIP

Series 28 is rated at 50A. It's our highest current strip. Series 28 is a direct cross with series 603.



## LOW-COST RIVETS OFFER GREATER SECURITY

Three series of single-row strips come with either screw or rivet (option) construction. Low-cost rivets are vibration resistant and offer greater in-field security. These strips are exact replacements for the styles shown in the table below.

| Beau Series | 24       | 25       | 26       |
|-------------|----------|----------|----------|
| Replaces    | 599, 799 | 699, 899 | 812, 912 |

U.L. RECOGNIZED. CSA CERTIFIED.

AVAILABLE WORLDWIDE through agents in Canada, England, Europe, Japan, Taiwan, and other Far Eastern countries.

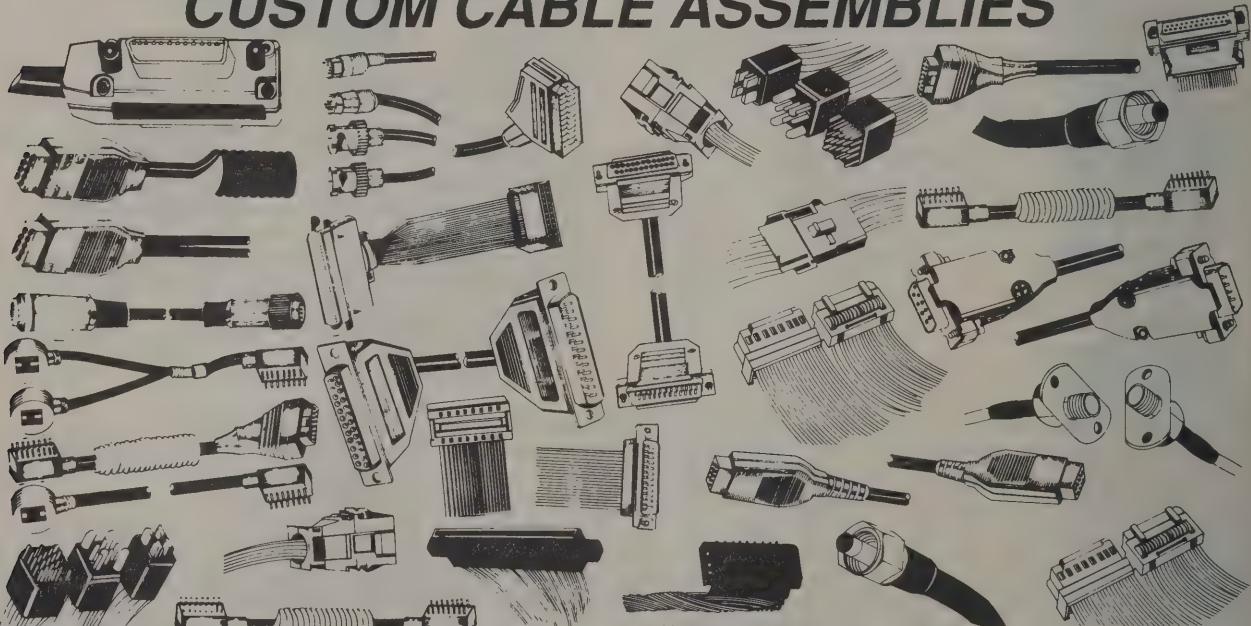
|                | SINGLE-ROW        |       | SINGLE-ROW,<br>SCREWS OR RIVETS |       |       | DOUBLE-ROW |      |       |        |       |        |         |
|----------------|-------------------|-------|---------------------------------|-------|-------|------------|------|-------|--------|-------|--------|---------|
|                | 12                | 13    | 24                              | 25    | 26    | 10         | 14   | 18    | 19     | 21    | 21CB   | 28      |
| Series No.     | 12                | 13    | 24                              | 25    | 26    | 10         | 14   | 18    | 19     | 21    | 21CB   | 28      |
| Terminal ctrs  | 3/8"              | 7/16" | 3/8"                            | 7/16" | 9/16" | 1/4"       | 3/8" | 7/16" | 7/16"  | 9/16" | 9/16"  | 1 1/16" |
| Current (UL)   | 15A               | 20A   | 15A                             | 20A   | 30A   | 10A        | 15A  | 20A   | 20A    | 30A   | 30A    | 50A     |
| Volts rms (UL) |                   |       |                                 |       |       |            |      |       |        |       |        |         |
| Gen Indl       | 150               | 150   | 150                             | 150   | 150   | 150        | 150  | 300   | 300    | 600   | 600    | 150     |
| Comm           | 250               | 250   | 250                             | 250   | 250   | 250        | 250  | 250   | 250    | 600   | 600    | 250     |
| Width          | .57"              | .73"  | .56"                            | .69"  | .75"  | .63"       | .88" | 1.13" | 1.13"  | 1.31" | 1.31"  | 1.81"   |
| Height         | .44"              | .55"  | .41"                            | .50"  | .72"  | .31"       | .41" | .50"  | .55"   | .63"  | .66"   | .75"    |
| No. circuits   | 1-31              | 1-26  | 1-30                            | 1-30  | 1-18  | 1-20       | 1-30 | 1-30  | 1-11   | 1-25  | 1-26   | 1-12    |
| Back types     | Feed thru; closed |       | Open                            |       |       | Open       |      |       | Closed | Open  | Closed | Open    |



**BEAU INTERCONNECT SYSTEMS**  
DIVISION OF VERNITRON CORPORATION

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**C&C JETRONIC****CONNECTORS & CABLE ASSEMBLIES****COAXIAL & CIRCULAR CONNECTORS****CUSTOM CABLE ASSEMBLIES**

- Free corporate logo
- Special packaging and labeling
- Design support and documentation
- Connectors from card edge, Din, RF....etc.
- Programmed Hi-Pot testing
- Ionic cleanliness for finished products
- RS 232C applications
- High torque capabilities

- Multiple termination
- Multi gauge conductors
- Gradual or acute angles
- 100 million flex cycles
- Temperatures -100 +500F
- Neoprene jacketing
- 100% tested
- Reduce EMI/RFI emissions
- "In house" mold tooling

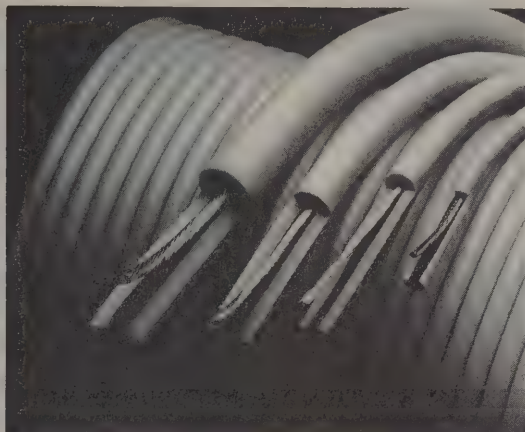
- Meet UL, CSA, VDE and FCC requirement
- Cable capabilities include PU, PVC, P-P, Hytrel, Neoprene tyle wire or custom combinations
- From prototype harnesses to interconnection systems
- MIL-STD-2000 soldering, MIL-I-45208A, MIL-STD-454, MIS-S-45734E, WS-6536S, MIL-Q-9858A
- Pull, bend, abrasion, hardness and flame testing, extension/retraction life tester, Insertion/withdraw force meter
- High voltage(5KV to 1000KV) for radar, laser, electro beam, X-ray, capacitor discharg systems

RESEARCH PARK 370 WALL ST. PRINCETON, N.J. 08540 PHONE: 609-921-8540 FAX: 609-921-7971



## The CC SERIES

- **High Voltage Applications**
- **Single and Multi-Conductor**
- **7 Standard Sizes**
- **Operating Voltage: 10 to 40KVDC**
- **Dielectric: Silicone**
- **Wire Size: 16 to 22 AWG**
- **Corona Free Performance**
- **Applications:** Radar Installations, Accelerators, Electron Beam & Medical Scanning Equipment, Ground-to-Ground and Air-to-Air Missiles.



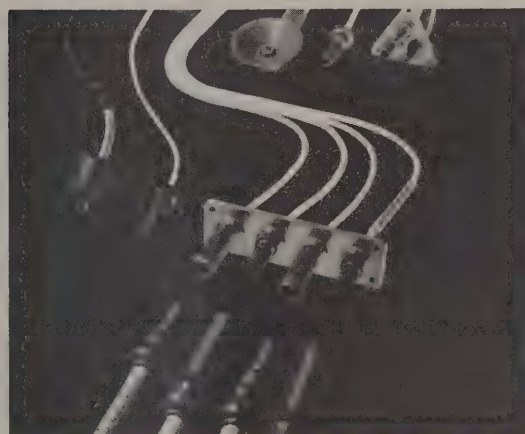
Over the past 18 years Caton has been challenged with and met hundreds of opportunities to supply High Voltage Corona-Free cable assemblies for military and commercial requirements.

Often applications required a custom design; however many did not. Until now, the availability of a "standard" high voltage cable assembly with the reliability of a "Caton Custom Assembly" was non-existent. The customer had little choice but to opt for the custom design and higher cost and longer delivery!

***NOW THERE IS A CHOICE!!....***

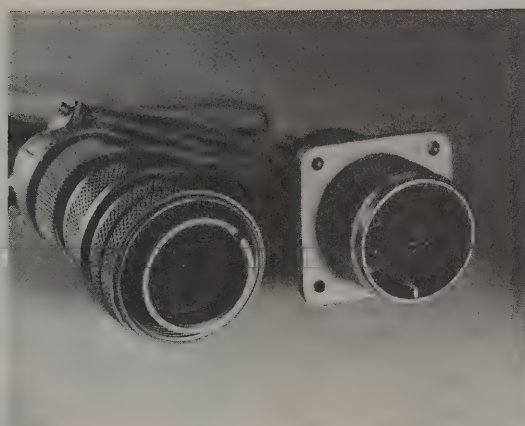
## The 14 SERIES

- **High Voltage Applications**
- **In-Line Single Conductor**
- **3 Standard Sizes**
- **Molded Silicone Body**
- **Operating Voltage: 10 thru 45KVDC**
- **Current Rating: 4 - 10 AMPS**
- **Plug Insert: Silicone Rubber**
- **Applications:** Radar Installations, Photo Copy, Laser & Scanning Equipment., Printing Presses and Laboratory hook-ups.



## The 16 SERIES

- **High Voltage Applications**
- **Single and Multi-Conductor**
- **10 Standard Shell Sizes**
- **Mil-C-5015 Style Shells**
- **15 Different Insert Configurations**
- **Molded Silicone Body**
- **Operating Voltage: 5 thru 75KVDC**
- **Current Rating: 4-16.5 AMPS**
- **Plug Insert: Silicone Rubber**
- **Applications:** Radar Installations, Power Supplies, Laser & Scanning Equipment.



We have applied our years of experience in building the most reliable High Voltage Corona-Free cable assemblies and have placed this technology into each of our standard designs.

**CATON**  
Caton Connector Corporation

Jones River Industrial Park, 20 Wapping Road, Kingston, MA 02364  
Tel: 617-585-4315 FAX: 617-585-2973



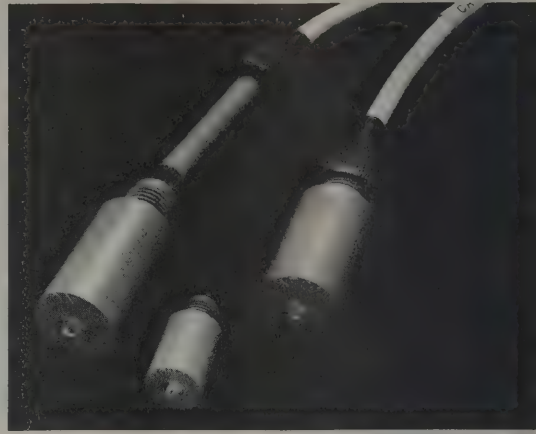
Our new catalog features these 6 standard product series, each of which began as a "Caton Custom" design. We have expanded the available configurations of each design and stock all components to keep manufacturing time minimal!

Caton prides itself as a leader of innovative designs that meet extraordinary applications. If your requirement cannot be met by a standard product, please call to discuss your custom requirement.

Please call 1-800-966-7667 to request a catalog or 1-617-585-4315 ext. 3015 or 3016 to discuss your application further.

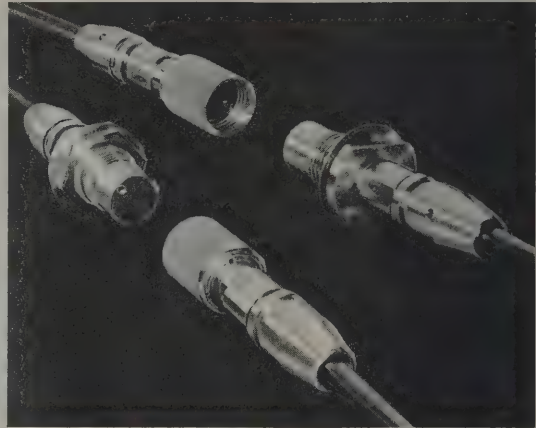
## The 17 SERIES

- **High Voltage Applications**
- **Single Conductor**
- **3 Standard Sizes**
- **Operating Voltage: 15 to 40KVDC**
- **Current Rating: 10 AMPS**
- **Plug Insert: Silicone Rubber**
- **Receptacle: Diallyl Phthalate**
- **Corona Free Performance**
- **Applications:** Power Supplies, Radar Installations, Laser Equipment, Satellite Navigational Equipment, Ground-to-Air and Air-to-Air Missiles.



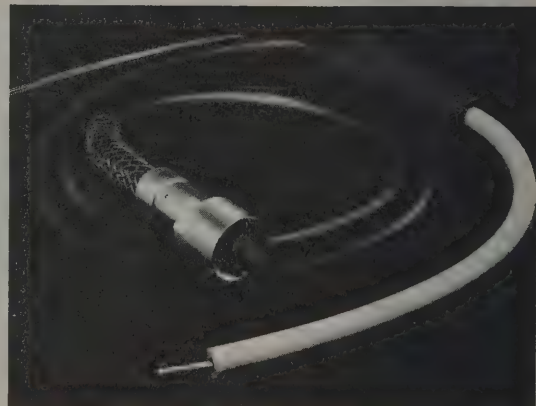
## The 18 SERIES

- **Field Assembled**
- **Single Conductor for HIGH VOLTAGE applications.**
- **Operating Voltage: 20KVDC**
- **Current Rating: 20 AMPS**
- **Corona Extinction: 5.3KVRMS**
- **Use with RG-214 Cable**
- **Plug Insert: Silicone Rubber**
- **Bulkhead Receptacle Insert: Thermoset Diallyl Phthalate**
- **Applications:** Radar Installations, Electron Microscopes, Accelerators, Electron Beam & Medical Scanning Equipment



## The 19 SERIES

- **High Voltage Applications**
- **Single Conductor**
- **3 Standard Sizes**
- **Operating Voltage: 60KVDC**
- **Current Rating: 20 AMPS**
- **Plug Insert: Silicone Rubber**
- **Receptacle: Diallyl Phthalate**
- **Corona Free Performance**
- **Applications:** Power Supplies, Radar Installations, Laser Equipment, Satellite Navigational Equipment, Ground-to-Air and Air-to-Air Missiles.



NEW for 92



Jones River Industrial Park, 20 Wapping Road, Kingston, MA 02364  
Tel: 617-585-4315 FAX: 617-585-2973

**CATON**  
Caton Connector Corporation



**CATON**  
Caton Connector Corporation

## CATON'S ACQUIRED PRODUCTS

The acquired products division of Caton Connector Corporation is comprised of connectors and assemblies that have been transferred by the original manufacturer under a licensing agreement to Caton. In most cases, original tooling is still used to manufacture the products. Where new tooling has been made, Caton has adhered to strict confirmation of the original tooling specification. If any deviation from the original specification has occurred, it is usually changed to upgrade the molding material.

### Acquired from Burndy Corporation

#### The EC Series

Originally manufactured by H.H. Buggie, the EC series consist of printed circuit board type connectors which are mineral filled diallyl phthalate to meet various MIL-M-14F type requirements. Each series comes with plug and receptacle. Operating voltage is 250 volts AC rms with a current rating of 5 amperes. Operating temperatures range from -55°C to +125°C

#### The MMC Series

These are modular terminal blocks with crimp-type snap-in contacts. The MINILOK is designed for standard and miniature coax cable. The MODULOK is used with standard wire and standard coax. The CRABLOK is a sturdy terminal block which accommodates standard AWG8 - 22 wire sizes.

#### The PD Series

This is a general purpose rack & panel type connector originally used to connect power sources to receivers, modulators and transmitters. It consists of twelve #20 contacts with a pin diameter of .040 and three #20 contacts, with a pin diameter of .090 inches. The PD Series will accommodate wire sizes from 12 - 20 AWG. Connectors come with removable crimp-type and solder contacts (Sold Separately).

#### The ME Series

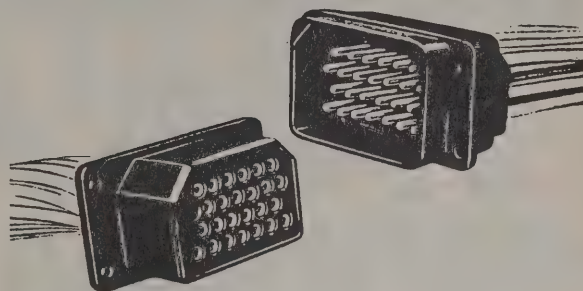
The ME HYFEN can be used in rack and panel and draw type applications. It utilizes crimp-type snap-lock contacts in 8, 13 and 26 place configurations for single conductors. All configurations have a one-piece molded insert. Inserts are interchangeable in shells providing a possible dead front on either side of the connectors. Molded-in metal ferrules allow frequent insertion and withdrawal of contacts. Optional features include an aluminum hood with cable clamp, latch and locking spring.

#### The Sealok Series

An environmentally sealed modular interconnection system that seals out moisture. This system is ideal for shipboard, aircraft, aerospace and industrial/commercial applications where protection against the environment is required. This system functions over a wide range of temperature, vibration and shock type conditions.

#### The YIC/YOC Series

An uninsulated Hyring designed for rapid and reliable grounding or terminating of shielded cable.



### Acquired from US Components, Inc.

#### The MI Series

Interchangeable and intermateable with IMI Series, the MI Series consists of 12 different rack and panel connector configurations from 7 to 75 contacts. This series is designed to accommodate #18 and #20 AWG wire.

#### 625 Series Rack & Panel Connector

This series may also be used as a P.C. type mated connector. It features .125 grid spaced crimp removable type female contacts and .025 square wire wrap male contacts. This connector has 36 contacts. The pin diameter is .062.

#### MIG Two-Piece Connector Series.

The MIG Series is a right angle plug and receptacle type connector with contact spacing on .100 centers. This series is offered in 5 different configurations from 11 to 50 contacts. The pin diameter is .040.

#### MH Series

This miniature Hex type connector comes with or without a locking mechanism. It consists of 4 different sizes from 4 to 9 contacts. The pin diameter is .040. This connector is designed to accommodate #20 AWG wire.

#### MIWC Series Rack & Panel Connector

This is a 104 contact center screwlock plug and receptacle type connector. Pin diameter is .062 with a center-to-center spacing of .150 inches. This connector is designed to accommodate #16 AWG wire.

#### UTP Series

The UTP Series is a test point type connector. It is available in a 5 and 16 pin configuration. The pin end of contact is .030 diameter. This series accepts a standard .080D test probe and retains probe with spring pressure.

#### U980/990 and 900 Series Power Connectors.

These are power connectors, some with power screw lock mechanisms. They vary in size from 7 to 34 contacts. Pin diameter is .062. These connectors are designed to accommodate #16 AWG wire.

#### UPCR/UP2CR Series

These are edge card type connectors that meet MIL-C-21097 standards. The UPCR is a single row receptacle with contacts on .156 centers. It is offered in 5 different configurations from 6 to 20 contacts and will accommodate .052 and .072 card thicknesses. The UP2CR is a double row solder type terminal receptacle with contacts on .156 centers.

For more information on these or other acquired products or for custom or modified assemblies, please call the Acquired Products Division of Caton Connector Corporation, at (617) 585-4315.

Caton Connector Corporation 617-585-4315

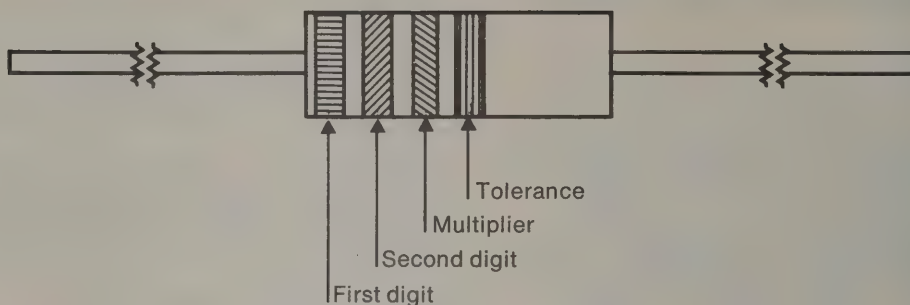




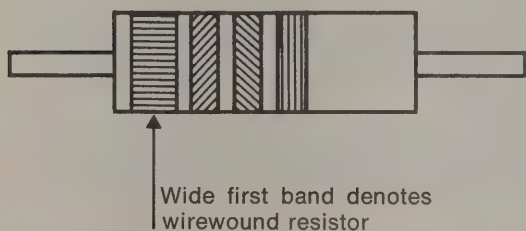
# MINIGLOSSARY

## RESISTOR COLOR CODES

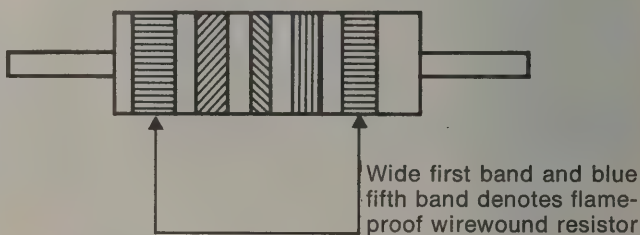
### EIA/MIL Resistor Color Codes



Color code for general-purpose industrial resistors

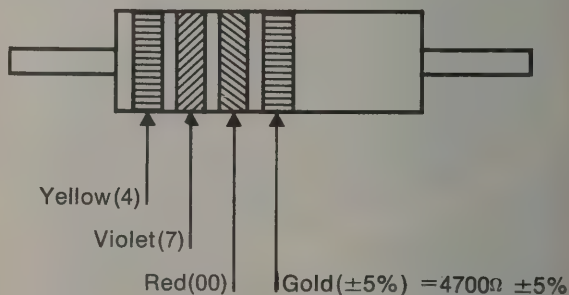


Color code for general-purpose wirewound resistors



| Color    | Significant digit | Multiplier | Tolerance |
|----------|-------------------|------------|-----------|
| Black    | 0                 | 1          | —         |
| Brown    | 1                 | 10         | ± 1%      |
| Red      | 2                 | 100        | ± 2%      |
| Orange   | 3                 | 1000       | ± 3%      |
| Yellow   | 4                 | 10,000     | ± 4%      |
| Green    | 5                 | 100,000    | —         |
| Blue     | 6                 | 1,000,000  | —         |
| Violet   | 7                 | 10,000,000 | —         |
| Gray     | 8                 | —          | —         |
| White    | 9                 | —          | —         |
| Gold     | —                 | 0.1        | ± 5%      |
| Silver   | —                 | 0.01       | ± 10%     |
| No color | —                 | —          | ± 20%     |

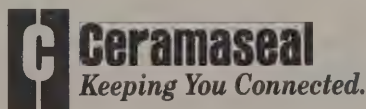
Example:





# PERKIN-ELMER, MIT, SANDIA, VARIAN, LAWRENCE LIVERMORE, RAYTHEON, GE, IBM AND NASA ALL CONNECT WITH CERAMASEAL

Your application may never need the rigorous performance that these facilities do. But every connection requires reliability — that's our strength. Ceramaseal has pioneered ceramic-to-metal seal technology for more than 40 years, and we're already working on the next 40 by developing new product designs and process capabilities for such applications as fiber optics, sensors and cryogenics. Our renewed commitment to you is to provide the highest quality customer service, prompt delivery and competitive pricing for our standard and custom-designed components.



For a free copy of our product catalog, call (800) 752-SEAL.



**CA****CIRCUIT ASSEMBLY CORP.****HIGH DENSITY NANOFLEX****I.D. SOCKET - .050 X .100****FEATURES**

UL recognized; mass-terminates with .025 center ribbon cable; mates with .027 X .019 post on .050 X .100 centers; patented 3 point IDC contact system; slots in cover permit easy insertion of test probe; molded on polarizing tab; dual leaf side wipe contacts; optional strain relief (ordered separately)

**MATERIALS**

Housing - glass filled polyester, blue, UL94V-0  
Contact - beryllium copper plated with 12µIN sel gold

**HIGH DENSITY NANOFLEX****SHROUDED HEADER - .050 X .100****FEATURES**

UL recognized; mates with NANOFLEX sockets on .050 X .100 grid; .106 long X .020 square solder tail; P.C.B. hole pattern on 4 row .050 X .075 staggered grid; latch ejectors for socket with/without strain relief

**MATERIALS**

Housing - glass filled polyester, blue, UL94V-0  
Contact - phosphor bronze plated with 12µIN sel gold

**NOTES**

for right angle tail exit: replace NFH with NFHR

**HIGH DENSITY NANOFLEX****BOX HEADER - .050 X .100****FEATURES**

UL recognized; mates with NANOFLEX sockets on .050 X .100 grid; .106 long X .020 square solder tail; P.C.B. hole pattern on 4 row .050 X .075 staggered grid; low profile

**MATERIALS**

Housing - glass filled polyester, blue, UL94V-0  
Contact - phosphor bronze plated with 12µIN sel gold

**HIGH DENSITY NANOFLEX****SOCKET - .050 X .100****FEATURES**

UL recognized; mates with .027 X .019 post on .050 X .100 grid; .106 long X .016 X .020 solder tail; P.C.B. hole pattern on 4 row .050 X .075 staggered grid; molded on polarizing tab

**MATERIALS**

Housing - glass filled polyester, blue, UL94V-0  
Contact - phosphor bronze plated with 12µIN sel gold

**HIGH DENSITY NANOFLEX****I.D. TRANSITION PLUG - .050 X .075****FEATURES**

UL recognized; mass-terminates with .025 center ribbon cable; .130 long X .016 X .024 solder tail; P.C.B. hole pattern on 4 row .050 X .075 staggered grid; can be soldered directly to P.C.B.; patented 3 point IDC contact system; slots in cover permit easy insertion of test probe

**MATERIALS**

Housing - glass filled polyester, blue, UL94V-0  
Contact - beryllium copper plated with 12µIN sel gold

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Connector     | Strain Relief |
|-----------------|---------------|---------------|
| 10              | CA-10NFS-12G  | CA-SR10NFS    |
| 16              | CA-16NFS-12G  | CA-SR16NFS    |
| 20              | CA-20NFS-12G  | CA-SR20NFS    |
| 26              | CA-26NFS-12G  | CA-SR26NFS    |
| 34              | CA-34NFS-12G  | CA-SR34NFS    |
| 40              | CA-40NFS-12G  | CA-SR40NFS    |
| 50              | CA-50NFS-12G  | CA-SR50NFS    |
| 60              | CA-60NFS-12G  | CA-SR60NFS    |
| 64              | CA-64NFS-12G  | CA-SR64NFS    |
| 80              | CA-80NFS-12G  | CA-SR80NFS    |
| 100             | CA-100NFS-12G | CA-SR100NFS   |

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Socket Latch/Ejector | Strain Relief Latch/Ejector |
|-----------------|----------------------|-----------------------------|
| 10              | CA-10NFH-12GT-10     | CA-10NFH-12GT-20            |
| 16              | CA-16NFH-12GT-10     | CA-16NFH-12GT-20            |
| 20              | CA-20NFH-12GT-10     | CA-20NFH-12GT-20            |
| 26              | CA-26NFH-12GT-10     | CA-26NFH-12GT-20            |
| 34              | CA-34NFH-12GT-10     | CA-34NFH-12GT-20            |
| 40              | CA-40NFH-12GT-10     | CA-40NFH-12GT-20            |
| 50              | CA-50NFH-12GT-10     | CA-50NFH-12GT-20            |
| 60              | CA-60NFH-12GT-10     | CA-60NFH-12GT-20            |
| 64              | CA-64NFH-12GT-10     | CA-64NFH-12GT-20            |
| 80              | CA-80NFH-12GT-10     | CA-80NFH-12GT-20            |
| 100             | CA-100NFH-12GT-10    | CA-100NFH-12GT-20           |

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Straight Tail Exit | Right Angle Tail Exit |
|-----------------|--------------------|-----------------------|
| 16              | CA-16NFHL-12GT     | CA-16NFHLR-12GT       |
| 26              | CA-26NFHL-12GT     | CA-26NFHLR-12GT       |
| 34              | CA-34NFHL-12GT     | CA-34NFHLR-12GT       |
| 40              | CA-40NFHL-12GT     | CA-40NFHLR-12GT       |
| 50              | CA-50NFHL-12GT     | CA-50NFHLR-12GT       |
| 60              | CA-60NFHL-12GT     | CA-60NFHLR-12GT       |
| 80              | CA-80NFHL-12GT     | CA-80NFHLR-12GT       |

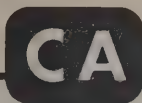
**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Straight Tail Exit |
|-----------------|--------------------|
| 16              | CA-16NFVS-12GT     |
| 26              | CA-26NFVS-12GT     |
| 34              | CA-34NFVS-12GT     |
| 40              | CA-40NFVS-12GT     |
| 50              | CA-50NFVS-12GT     |
| 60              | CA-60NFVS-12GT     |
| 80              | CA-80NFVS-12GT     |

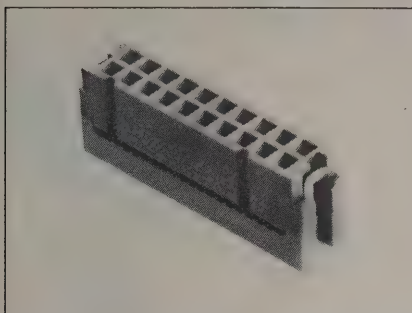
**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Solder Tail   |
|-----------------|---------------|
| 10              | CA-10NFT-12G  |
| 16              | CA-16NFT-12G  |
| 20              | CA-20NFT-12G  |
| 26              | CA-26NFT-12G  |
| 34              | CA-34NFT-12G  |
| 40              | CA-40NFT-12G  |
| 50              | CA-50NFT-12G  |
| 60              | CA-60NFT-12G  |
| 64              | CA-64NFT-12G  |
| 80              | CA-80NFT-12G  |
| 100             | CA-100NFT-12G |





CIRCUIT ASSEMBLY CORP.

**I. D. SOCKET - .100 X .100****FEATURES**

UL recognized, CSA certified; conforms to MIL-C-83503; mass-terminates with .050 center ribbon cable; mates with .025 square posts on .100 centers; stainless steel cover clips; single leaf side wipe contact; optional strain relief (ordered separately)

**MATERIALS**

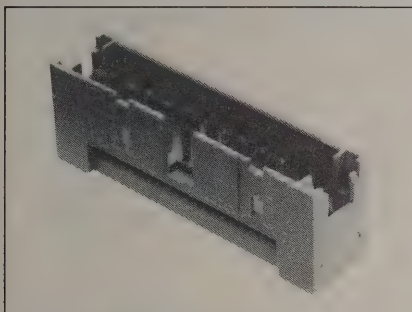
Housing - glass filled polyester, gray, UL94V-0  
Contact - beryllium copper plated with 30µIN sel gold

**NOTES**

for central polarizing tab: add suffix -SPT  
for 10µIN gold plating: replace -F with -B

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Connector   | Strain Relief |
|-----------------|-------------|---------------|
| 10              | CA-10IDS2-F | CA-SR10IDS2   |
| 14              | CA-14IDS2-F | CA-SR14IDS2   |
| 16              | CA-16IDS2-F | CA-SR16IDS2   |
| 20              | CA-20IDS2-F | CA-SR20IDS2   |
| 26              | CA-26IDS2-F | CA-SR26IDS2   |
| 34              | CA-34IDS2-F | CA-SR34IDS2   |
| 40              | CA-40IDS2-F | CA-SR40IDS2   |
| 50              | CA-50IDS2-F | CA-SR50IDS2   |
| 60              | CA-60IDS2-F | CA-SR60IDS2   |

**I.D. HEADER - .100 X .100****FEATURES**

UL recognized, CSA certified; mass-terminates with .050 center ribbon cable; .025 square post mates with sockets on .100 centers; mounting ear option has .125 wide slot; optional latch ejectors for mating socket with/without strain relief

**MATERIALS**

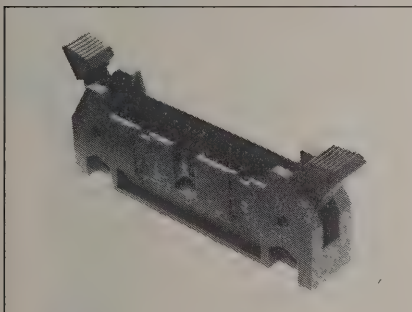
Housing - glass filled polyester, gray, UL94V-0  
Contact - phosphor bronze plated with 30µIN sel gold

**NOTES**

for loose latch ejectors for socket: order CA-IDHLE-43 for socket; order CA-IDHLE-57 for socket with strain relief; No tool needed to install, 2 required per connector

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Connector no ears | Connector with Ears |
|-----------------|-------------------|---------------------|
| 10              | CA-10IDH-3F-SPT   | CA-10IDH-2F-SPT     |
| 20              | CA-20IDH-3F       | CA-20IDH-2F         |
| 26              | CA-26IDH-3F       | CA-26IDH-2F         |
| 34              | CA-34IDH-3F       | CA-34IDH-2F         |
| 40              | CA-40IDH-3F       | CA-40IDH-2F         |
| 50              | CA-50IDH-3F       | CA-50IDH-2F         |
| 60              | CA-60IDH-3F       | CA-60IDH-2F         |

**SHROUDED HEADER - .100 X .100****FEATURES**

UL recognized, CSA certified; conforms to MIL-C-83503; .025 square post mates with sockets on .100 centers; .100 long X .028 round solder tail; latch ejectors for mating socket with/without strain relief

**MATERIALS**

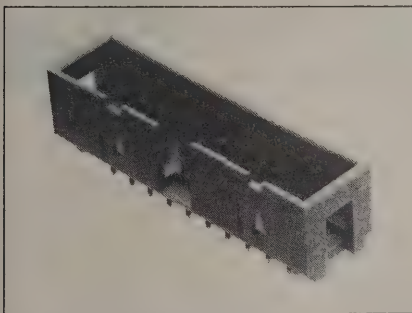
Housing - glass filled polyester, gray, UL94V-0  
Contact - phosphor bronze plated with 30µIN sel gold

**NOTES**

for right angle tail exit: replace HM with HRM  
for 15µIN sel gold plating: replace -1F with -1C

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Socket Latch/Ejector | Strain Relief Latch/Ejector |
|-----------------|----------------------|-----------------------------|
| 10              | CA-10HM-1F-S-SPT     | CA-10HM-1F-SR-SPT           |
| 14              | CA-14HM-1F-S         | CA-14HM-1F-SR               |
| 16              | CA-16HM-1F-S         | CA-16HM-1F-SR               |
| 20              | CA-20HM-1F-S         | CA-20HM-1F-SR               |
| 26              | CA-26HM-1F-S         | CA-26HM-1F-SR               |
| 34              | CA-34HM-1F-S         | CA-34HM-1F-SR               |
| 40              | CA-40HM-1F-S         | CA-40HM-1F-SR               |
| 50              | CA-50HM-1F-S         | CA-50HM-1F-SR               |
| 60              | CA-60HM-1F-S         | CA-60HM-1F-SR               |

**BOX HEADER - .100 X .100****FEATURES**

UL recognized, CSA certified; .025 square post mates with sockets on .100 centers; .100 long X .028 round solder tail; low profile

**MATERIALS**

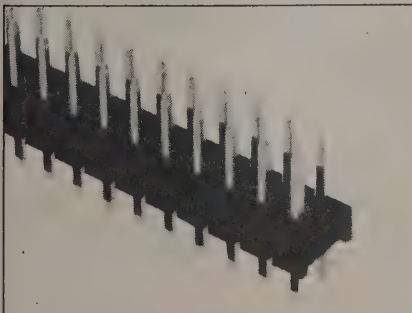
Housing - glass filled polyester, gray, UL94V-0  
Contact - phosphor bronze plated with 15µIN sel gold

**NOTES**

for 30µIN sel gold plating: replace -1C with -1F

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Straight Tail Exit | Right Angle Tail Exit |
|-----------------|--------------------|-----------------------|
| 10              | CA-10HL-1C-SPT     | CA-10HLR-1C-SPT       |
| 14              | CA-14HL-1C         | CA-14HLR-1C           |
| 16              | CA-16HL-1C         | CA-16HLR-1C           |
| 20              | CA-20HL-1C         | CA-20HLR-1C           |
| 26              | CA-26HL-1C         | CA-26HLR-1C           |
| 34              | CA-34HL-1C         | CA-34HLR-1C           |
| 40              | CA-40HL-1C         | CA-40HLR-1C           |
| 50              | CA-50HL-1C         | CA-50HLR-1C           |
| 60              | CA-60HL-1C         | CA-60HLR-1C           |

**STRIP HEADER - .100 X .100****FEATURES**

UL recognized, CSA certified; .025 square post, .240 high, mates with sockets on .100 centers; .100 long X .025 square solder tail

**MATERIALS**

Housing - glass filled polyester, black, UL94V-0  
Contact - phosphor bronze plated with 15µIN sel gold

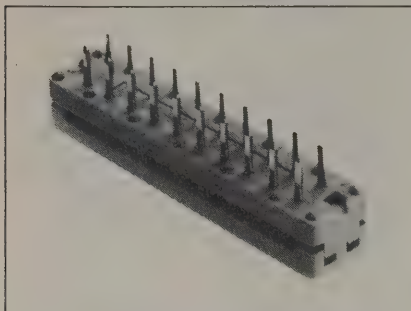
**NOTES**

other sizes and pin lengths available, consult factory

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Straight Tail Exit | Right Angle Tail Exit |
|-----------------|--------------------|-----------------------|
| 10              | CA-D10-24C-44      | CA-D10R-24C-10        |
| 14              | CA-D14-24C-44      | CA-D14R-24C-10        |
| 16              | CA-D16-24C-44      | CA-D16R-24C-10        |
| 20              | CA-D20-24C-44      | CA-D20R-24C-10        |
| 26              | CA-D26-24C-44      | CA-D26R-24C-10        |
| 34              | CA-D34-24C-44      | CA-D34R-24C-10        |
| 40              | CA-D40-24C-44      | CA-D40R-24C-10        |
| 50              | CA-D50-24C-44      | CA-D50R-24C-10        |
| 60              | CA-D60-24C-44      | CA-D60R-24C-10        |



**CA****CIRCUIT ASSEMBLY CORP.****I.D. PLUG - .100 X .100****FEATURES**

UL recognized, CSA certified; mass-terminates with .050 center ribbon cable; .126 long solder tail; can be soldered directly to P.C.B.

**MATERIALS**

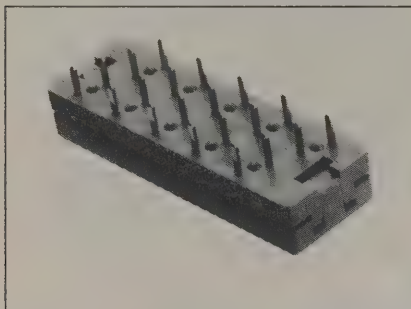
Housing - glass filled polyester, gray, UL94V-0  
Contact - beryllium copper plated with 250µIN tin

**NOTES**

for 10µIN gold plating: replace -1T with -1B

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Solder Tail   |
|-----------------|---------------|
| 10              | CA-10JDPSL-1T |
| 14              | CA-14JDPSL-1T |
| 16              | CA-16JDPSL-1T |
| 20              | CA-20JDPSL-1T |
| 26              | CA-26JDPSL-1T |
| 34              | CA-34JDPSL-1T |
| 40              | CA-40JDPSL-1T |
| 50              | CA-50JDPSL-1T |
| 60              | CA-60JDPSL-1T |

**I.D. TRANSITION PLUG - .050 X .100****FEATURES**

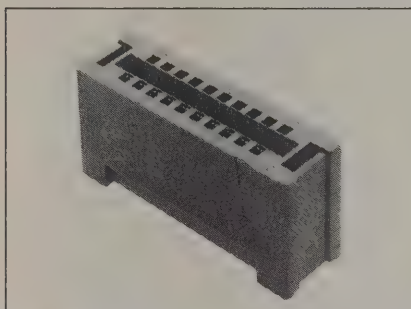
UL recognized, CSA certified; mass-terminates with .050 center ribbon cable; .100 long solder tail; P.C.B. hole pattern on 4 row .050 X .100 staggered grid; can be soldered directly to P.C.B.

**MATERIALS**

Housing - glass filled polyester, gray, UL94V-0  
Contact - beryllium copper plated with 250µIN tin

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Solder Tail   |
|-----------------|---------------|
| 10              | CA-10IDPCB-1T |
| 20              | CA-20IDPCB-1T |
| 26              | CA-26IDPCB-1T |
| 34              | CA-34IDPCB-1T |
| 40              | CA-40IDPCB-1T |
| 50              | CA-50IDPCB-1T |

**I.D. EDGE CARD - .100 CENTERS****FEATURES**

UL recognized, CSA certified; mass-terminates with .050 center ribbon cable; mates with standard .062 thick P.C.B. on .100 centers; mounting ear option has .125 wide slot; stainless steel cover latches; optional strain relief (ordered separately)

**MATERIALS**

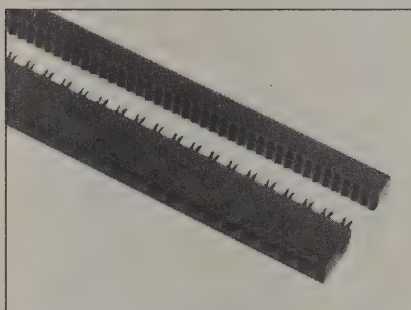
Housing - glass filled polyester, gray, UL94V-0  
Contact - beryllium copper plated with 30µIN sel gold

**NOTES**

for mounting ears: replace -3F with -2F

**CIRCUIT ASSEMBLY PART NUMBER**

| No. of Contacts | Connector    | Strain Relief |
|-----------------|--------------|---------------|
| 10              | CA-10IDEC-3F | CA-SR10IDEC   |
| 14              | CA-14IDEC-3F | CA-SR14IDEC   |
| 16              | CA-16IDEC-3F | CA-SR16IDEC   |
| 20              | CA-20IDEC-3F | CA-SR20IDEC   |
| 26              | CA-26IDEC-3F | CA-SR26IDEC   |
| 34              | CA-34IDEC-3F | CA-SR34IDEC   |
| 40              | CA-40IDEC-3F | CA-SR40IDEC   |
| 50              | CA-50IDEC-3F | CA-SR50IDEC   |
| 60              | CA-60IDEC-3F | CA-SR60IDEC   |

**I.D. STRIP SOCKET - .100 CENTERS****FEATURES**

UL recognized, CSA certified; mass-terminates with .100 center ribbon cable; mates with .025 square post on .100 centers; available in 10 through 36 contact positions (cut to size)

**MATERIALS**

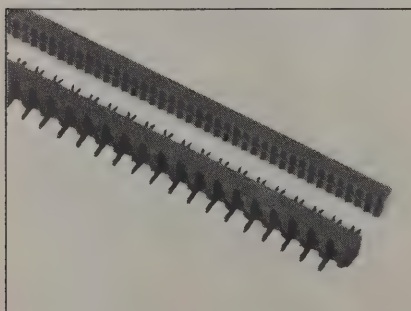
Housing - glass filled polyester, gray, UL94V-0  
Contact - beryllium copper plated with 30µIN sel gold

**NOTES**

for other sizes: replace 36 with desired contact count

**CIRCUIT ASSEMBLY PART NUMBER**

| No. of Contacts | Connector     |
|-----------------|---------------|
| 36              | CA-S36IDS-2-F |

**I.D. STRIP PLUG - .100 CENTERS****FEATURES**

UL recognized, CSA certified; mass-terminates with .100 center ribbon cable; .120 long X .025 square solder tail; can be soldered directly to P.C.B.; available in 10 through 36 contact positions (cut to size)

**MATERIALS**

Housing - glass filled polyester, gray, UL94V-0  
Contact - phosphor bronze plated with 150µIN tin

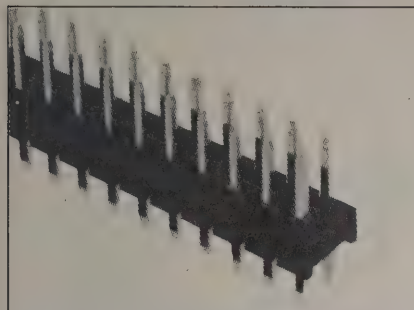
**NOTES**

for other sizes: replace 36 with desired contact count

**CIRCUIT ASSEMBLY PART NUMBER**

| No. of Contacts | Connector    |
|-----------------|--------------|
| 36              | CA-S36IDP-1T |



**CA****CIRCUIT ASSEMBLY CORP.****STRIP HEADER - .100 CENTERS****FEATURES**

UL recognized, CSA certified; .025 square post, .240 high, mates with sockets on .100 centers; .100 long X .025 square solder tail in straight and right angle tail exits; available in single, dual and triple row configurations; up to 40 positions per row (cut to size); many other contact lengths and configurations available

**MATERIALS**

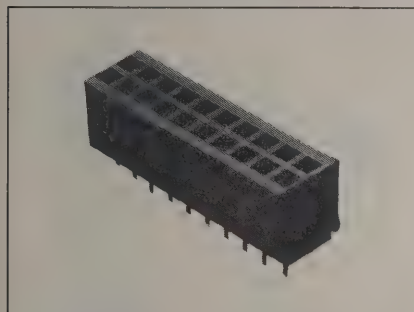
Housing - glass filled polyester, black, UL94V-0  
Contact - phosphor bronze plated with 15µIN sel gold

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Straight<br>Tail Exit | Right Angle<br>Tail Exit |
|--------------------|-----------------------|--------------------------|
| 1X40               | CA-S40-24C-44         | CA-S40R-24C-10           |
| 2X40               | CA-D80-24C-44         | CA-D40R-24C-10           |
| 3X40               | CA-T120-24C-44        | CA-T120R-24C-10          |

**NOTES**

1 X 40 (single row): for other sizes, replace 40 with total number of contacts (01 thru 40)  
2 X 40 (dual row): for other sizes, replace 80 with total number of contacts (04 thru 80, multiples of 2)  
3 X 40 (triple row): for other sizes, replace 120 with total number of contacts (09 thru 120, multiples of 3)

**STRIP SOCKET - .100 CENTERS****FEATURES**

UL recognized, CSA certified; mates with .025 square post on .100 centers; .120 long solder tail; available in single and dual row configurations; up to 36 positions per row (cut to size); dual leaf edge wipe contacts; many other tail lengths available

**MATERIALS**

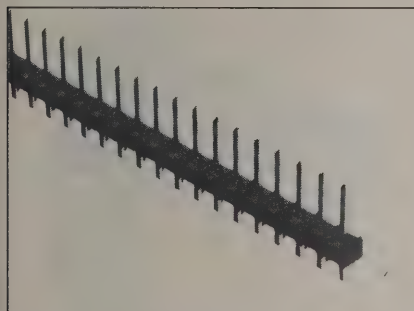
Housing - glass filled polyester, black, UL94V-0  
Contact - beryllium copper plated with 10µIN gold

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Straight<br>Tail Exit | Right Angle<br>Tail Exit |
|--------------------|-----------------------|--------------------------|
| 1X36               | CA-S36VSC-12B         | CA-S36VSCR-12B           |
| 2X36               | CA-D72VSC-12B         | CA-D72VSCR-12B           |

**NOTES**

1 X 36 (single row): for other sizes, replace 36 with total number of contacts (01 thru 36)  
2 X 36 (dual row): for other sizes, replace 72 with total number of contacts (02 thru 72, multiples of 2)

**2MM STRIP HEADER - .079 CENTERS****FEATURES**

.020 square post, .150 high, mates with sockets on 2mm (.079) centers; .110 long X .020 square solder tail, straight exit; .120 long X .020 square solder tail, right angle exit; available in single, dual row configurations; up to 40 positions per row (cut to size)

**MATERIALS**

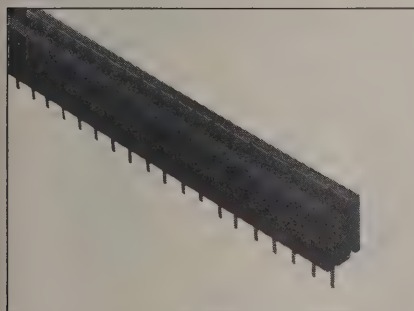
Housing - glass filled polyester, black, UL94V-0  
Contact - copper alloy plated with gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Straight<br>Tail Exit | Right Angle<br>Tail Exit |
|--------------------|-----------------------|--------------------------|
| 1X40               | CA-SM40-15A-32        | CA-SM40R-15A-12          |
| 2X40               | CA-DM80-15A-32        | CA-DM80R-15A-12          |

**NOTES**

1 X 40 (single row): for other sizes, replace 40 with total number of contacts (01 thru 40)  
2 X 40 (dual row): for other sizes, replace 80 with total number of contacts (02 thru 80, multiples of 2)

**2MM STRIP SOCKET - .079 CENTERS****FEATURES**

mates with .020 square post on 2mm (.079) centers; .110 long solder tail; available in single and dual row configurations; up to 40 positions per row (cut to size); dual leaf side wipe contacts

**MATERIALS**

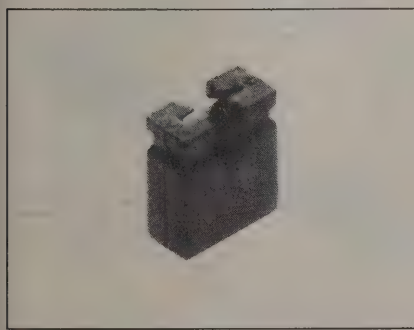
Housing - glass filled polyester, black, UL94V-0  
Contact - copper alloy plated with gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Straight<br>Tail Exit |
|--------------------|-----------------------|
| 1X40               | CA-SM40VS-11A         |
| 2X40               | CA-DM80VS-11A         |

**NOTES**

1 X 40 (single row): for other sizes, replace 40 with total number of contacts (01 thru 40)  
2 X 40 (dual row): for other sizes, replace 80 with total number of contacts (02 thru 80, multiples of 2)

**SHORTING JUMPER - .100 OR .079 CENTERS****FEATURES**

SJO-A mates with .025 square post on .100 centers; SJO-MA mates with .020 square post on 2mm (.079) centers; open design allows easy attachment of test probe between two shorted pins

**MATERIALS**

Housing - glass filled thermoplastic, black, UL94V-0  
Contact - copper alloy plated with gold flash

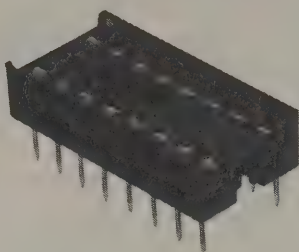
**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | .100<br>Centers | 2mm (.079)<br>Centers |
|--------------------|-----------------|-----------------------|
| 2                  | CA-02SJO-A      | CA-02SJO-MA           |

**NOTES**

.100 centers: for other positions, replace 02 with total number of contacts (02 thru 20, multiples of 2)



**CA****CIRCUIT ASSEMBLY CORP.**

### DIP SOCKET .160 HIGH - .100 CENTERS

#### FEATURES

mates with .022 X .016 max. lead on .100 centers; .130 long solder tail; dual leaf side wipe contacts

#### MATERIALS

Housing - glass filled polyester, black; UL94V-0

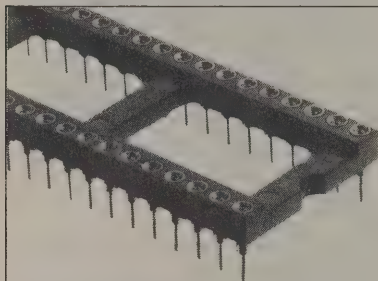
Contact - phosphor bronze plated with 150µIN tin

#### NOTES

for .300 between rows on 24 and 28 position: add suffix -3 for self-retaining solder tail: replace -1T with -2T

#### CIRCUIT ASSEMBLY PART NUMBERS

| No. of Contacts | Dimension between rows | Solder Tail |
|-----------------|------------------------|-------------|
| 6               | .300                   | CA-06SDL-1T |
| 8               | .300                   | CA-08SDL-1T |
| 14              | .300                   | CA-14SDL-1T |
| 16              | .300                   | CA-16SDL-1T |
| 18              | .300                   | CA-18SDL-1T |
| 20              | .300                   | CA-20SDL-1T |
| 24              | .600                   | CA-24SDL-1T |
| 28              | .600                   | CA-28SDL-1T |
| 32              | .600                   | CA-32SDL-1T |
| 40              | .600                   | CA-40SDL-1T |
| 48              | .600                   | CA-48SDL-1T |



### DIP SOCKET, SCREW MACHINE .177 HIGH - .100 CENTERS

#### FEATURES

mates with .022 max. round lead on .100 centers; .124 long X .018 round solder tail; open frame construction with screw machine contacts

#### MATERIALS

Housing - glass filled polyester, black; UL94V-0

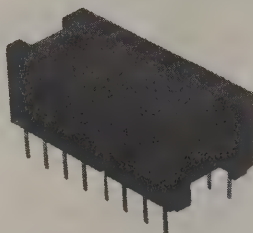
Contact - beryllium copper fingers plated with 10µIN gold, brass sleeve plated with 200µIN tin

#### NOTES

for .300 between rows on 24 and 28 position: add suffix -3

#### CIRCUIT ASSEMBLY PART NUMBERS

| No. of Contacts | Dimension between rows | Solder Tail |
|-----------------|------------------------|-------------|
| 6               | .300                   | CA-06MS-1C  |
| 8               | .300                   | CA-08MS-1C  |
| 14              | .300                   | CA-14MS-1C  |
| 16              | .300                   | CA-16MS-1C  |
| 18              | .300                   | CA-18MS-1C  |
| 20              | .300                   | CA-20MS-1C  |
| 24              | .600                   | CA-24MS-1C  |
| 28              | .600                   | CA-28MS-1C  |
| 32              | .600                   | CA-32MS-1C  |
| 40              | .600                   | CA-40MS-1C  |
| 48              | .600                   | CA-48MS-1C  |



### DIP SOCKET .300 HIGH - .100 CENTERS

#### FEATURES

mates with .022 X .020 max. lead on .100 centers; .128 long solder tail; dual leaf edge wipe contacts

#### MATERIALS

Housing - glass filled polyester, black; UL94V-0

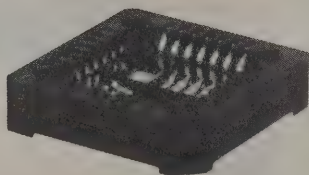
Contact - phosphor bronze plated with 10µIN gold

#### NOTES

for 250µIN tin plating: replace -10SD with -TSD for beryllium copper contact: add suffix -BC

#### CIRCUIT ASSEMBLY PART NUMBERS

| No. of Contacts | Dimension between rows | Solder Tail |
|-----------------|------------------------|-------------|
| 10              | .200                   | CA-10S-10SD |
| 14              | .300                   | CA-14S-10SD |
| 16              | .300                   | CA-16S-10SD |
| 18              | .300                   | CA-18S-10SD |
| 20              | .300                   | CA-20S-10SD |
| 24              | .600                   | CA-24S-10SD |
| 28              | .600                   | CA-28S-10SD |
| 40              | .500                   | CA-40S-10SD |



### PLCC SOCKET, SURFACE MOUNT, .177 HIGH - .050 CENTERS

#### FEATURES

designed for use with JEDEC PLCC Type A devices (J style lead); surface mount J-Style leads on .050 centers; open frame low profile construction permits visual inspection of solder pads; rated at 100 insertion/extraction cycles

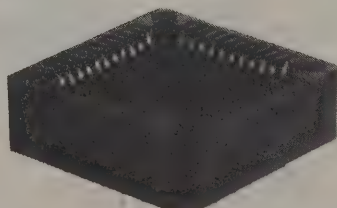
#### MATERIALS

Housing - glass filled polyphenylene, natural; UL94V-0

Contact - phosphor bronze plated with 250µIN tin

#### CIRCUIT ASSEMBLY PART NUMBERS

| No. of Contacts | Surface-Mount J-Style Lead |
|-----------------|----------------------------|
| 20              | CA-20SPCL-3T               |
| 28              | CA-28SPCL-3T               |
| 32              | CA-32SPCL-3T               |
| 44              | CA-44SPCL-3T               |
| 52              | CA-52SPCL-3T               |
| 68              | CA-68SPCL-3T               |
| 84              | CA-84SPCL-3T               |



### PLCC SOCKET .320 HIGH - .050 CENTERS

#### FEATURES

designed for use with JEDEC PLCC Type A devices (J style lead); .130 long solder tail, on .100 X .100 grid; converts .050 device centers to .100 X .100 grid

#### MATERIALS

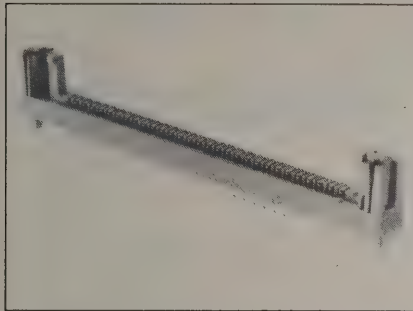
Housing - glass filled polyester, black; UL94V-0

Contact - phosphor bronze plated with 250µIN tin

#### CIRCUIT ASSEMBLY PART NUMBERS

| No. of Contacts | Solder Tail |
|-----------------|-------------|
| 20              | CA-20SPC-T  |
| 28              | CA-28SPC-T  |
| 32              | CA-32SPC-T  |
| 44              | CA-44SPC-T  |
| 52              | CA-52SPC-T  |
| 68              | CA-68SPC-T  |
| 84              | CA-84SPC-T  |



**CA****CIRCUIT ASSEMBLY CORP.****SIMM SOCKET - .050 OR .100 CENTERS****FEATURES**

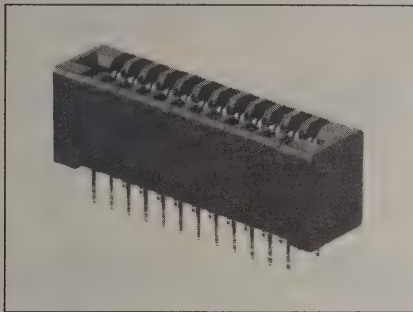
mates with standard .050 thick P.C.B. on .050 or .100 centers; .118 min. long solder tail; durable metal latch allows easy "Tilt and Snap" insertion of mating module; available in high density .050 centers for 72 position module or .100 centers for 30 position module

**MATERIALS**

Housing - liquid crystal polymer, natural, UL94V-0  
Contact - phosphor bronze plated with tin

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Single Module | Dual Module  |
|-----------------|---------------|--------------|
| 30              | CA-30SIM2-1T  | CA-60SIM2-1T |
| 72              | CA-72SIM2-1T  |              |

**EDGE CARD****.460 HIGH - .100 CENTERS****FEATURES**

UL recognized, CSA certified; mates with standard .062 thick P.C.B. on .100 centers; .165 long X .025 square solder tail (straight exit), .145 long X .025 square solder tail (right angle exit), both on .100 X .200 grid; mounting ear option with .128 diameter hole

**MATERIALS**

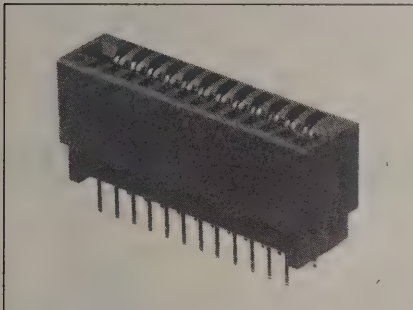
Housing - glass filled polyester, green, UL94V-0  
Contact - copper/nickel alloy plated with 20µIN sel gold

**NOTES**

for mounting ears with .128 diameter hole: replace -3 with -1

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Straight Tail Exit | Right Angle Tail Exit |
|-----------------|--------------------|-----------------------|
| 20              | CA-20EC-3-SD       | CA-20ECR-3-SD         |
| 26              | CA-26EC-3-SD       | CA-26ECR-3-SD         |
| 30              | CA-30EC-3-SD       | CA-30ECR-3-SD         |
| 34              | CA-34EC-3-SD       | CA-34ECR-3-SD         |
| 40              | CA-40EC-3-SD       | CA-40ECR-3-SD         |
| 50              | CA-50EC-3-SD       | CA-50ECR-3-SD         |
| 60              | CA-60EC-3-SD       | CA-60ECR-3-SD         |
| 72              | CA-72EC-3-SD       | CA-72ECR-3-SD         |
| 80              | CA-80EC-3-SD       | CA-80ECR-3-SD         |
| 100             | CA-100EC-3-SD      | CA-100ECR-3-SD        |

**EDGE CARD****.610 HIGH - .100 CENTERS****FEATURES**

UL recognized, CSA certified; mates with standard .062 thick P.C.B. on .100 centers; .165 long X .025 square solder tail (straight exit), .145 long X .025 square solder tail (right angle exit), both on .100 X .200 grid; mounting ear option with .128 diameter hole

**MATERIALS**

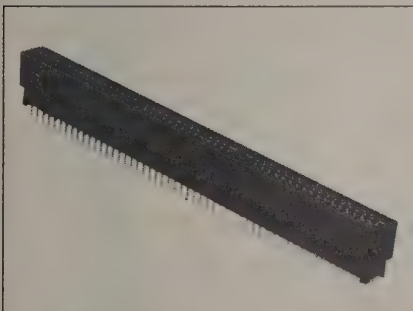
Housing - glass filled polyester, green, UL94V-0  
Contact - copper/nickel alloy plated with 20µIN sel gold

**NOTES**

for mounting ears with .128 diameter hole: replace -3 with -1

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Straight Tail Exit | Right Angle Tail Exit |
|-----------------|--------------------|-----------------------|
| 24              | CA-24EC2-3-SD      | CA-24EC2R-3-SD        |
| 34              | CA-34EC2-3-SD      | CA-34EC2R-3-SD        |
| 36              | CA-36EC2-3-SD      | CA-36EC2R-3-SD        |
| 40              | CA-40EC2-3-SD      | CA-40EC2R-3-SD        |
| 44              | CA-44EC2-3-SD      | CA-44EC2R-3-SD        |
| 50              | CA-50EC2-3-SD      | CA-50EC2R-3-SD        |
| 60              | CA-60EC2-3-SD      | CA-60EC2R-3-SD        |
| 62              | CA-62EC2-3-SD      | CA-62EC2R-3-SD        |
| 86              | CA-86EC2-3-SD      | CA-86EC2R-3-SD        |

**AT EDGE CARD - .100 CENTERS****FEATURES**

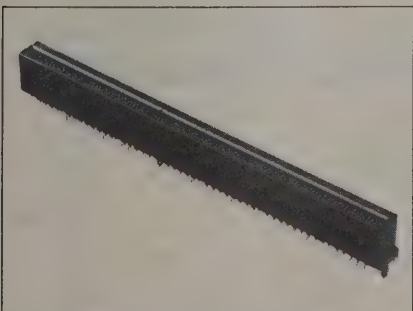
mates with standard .062 thick P.C.B. on .100 centers; .146 long solder tail on .100 X .200 grid; available in 36 and 62 contact counts for use with AT card expansion boards; optional 98 position is a one-piece version of the 36 and 62 positions

**MATERIALS**

Housing - glass filled polyester, black, UL94V-0  
Contact - phosphor bronze plated with gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Solder Tail  |
|-----------------|--------------|
| 36              | CA-36ECAT-3A |
| 62              | CA-62ECAT-3A |
| 98              | CA-98ECAT-3A |

**EISA EDGE CARD - .050 CENTERS****FEATURES**

mates with 32 bit EISA cards on .050 centers; mates with 8 and 16 bit PC-XT and PC-AT expansion cards on .100 centers; .120 long solder tail; P.C.B. hole pattern on 4 row .050 X .075 staggered grid; molded-on polarizing pegs

**MATERIALS**

Housing - polyphenylene sulfide, natural UL94V-0  
Contact - copper alloy plated with gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of Contacts | Solder Tail     |
|-----------------|-----------------|
| 188             | CA-188EISA-3A-P |



**CA****CIRCUIT ASSEMBLY CORP.****I.D. D-SUBMINIATURE****FEATURES**

UL recognized; mass-terminates with .050 center ribbon cable; mates with standard D-type connectors; metal shell with .120 clearance holes; optional strain relief (ordered separately)

**MATERIALS**

Housing - glass filled polyester, gray, UL94V-0

Shell - steel plated with tin

Contact - socket: phosphor bronze plated with sel gold flash, plug: brass plated with sel gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Socket    | Plug      |
|--------------------|-----------|-----------|
| 9                  | CA-09DSID | CA-09DPID |
| 15                 | CA-15DSID | CA-15DPID |
| 25                 | CA-25DSID | CA-25DPID |
| 37                 | CA-37DSID | CA-37DPID |

**NOTES**

for metal shell with #4-40 threaded holes: add suffix -4  
for all plastic construction: add suffix -P  
for strain relief: order CA-SRXXDID, where XX = number of contacts

**D-SUBMINIATURE  
RIGHT ANGLE - .318 BODY****FEATURES**

mates with standard D-type connectors; .125 long solder tail; right angle metal shell construction with #4-40 threaded hole and loose standoffs; ground strap with self retaining fork

**MATERIALS**

Housing - glass filled polyester, black, UL94V-0

Shell - steel plated with tin

Contact - socket: phosphor bronze plated with gold flash, plug: brass plated with gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Socket      | Plug        |
|--------------------|-------------|-------------|
| 9                  | CA-09DSR-11 | CA-09DPR-11 |
| 15                 | CA-15DSR-11 | CA-15DPR-11 |
| 25                 | CA-25DSR-11 | CA-25DPR-11 |
| 37                 | CA-37DSR-11 | CA-37DPR-11 |

**NOTES**

for ground strap with clearance hole: replace -11 with -12

**D-SUBMINIATURE  
RIGHT ANGLE - .590 BODY****FEATURES**

mates with standard D-type connectors; .125 long solder tail; right angle metal shell construction; with #4-40 threaded hole and loose standoffs; ground strap with self-retaining fork

**MATERIALS**

Housing - glass filled polyester, black, UL94V-0

Shell - steel plated with tin

Contact - socket: phosphor bronze plated with gold flash, plug: brass plated with gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Socket       | Plug         |
|--------------------|--------------|--------------|
| 9                  | CA-09DSRL-11 | CA-09DPRL-11 |
| 15                 | CA-15DSRL-11 | CA-15DPRL-11 |
| 25                 | CA-25DSRL-11 | CA-25DPRL-11 |
| 37                 | CA-37DSRL-11 | CA-37DPRL-11 |

**NOTES**

for ground strap with clearance hole: replace -11 with -12

**I.D. RIBBON****FEATURES**

UL recognized; mass-terminates with .050 center ribbon cable; mates with standard Ribbon type connectors; socket has metal shell with #4-40 threaded holes and bail latches; plug has metal shell with bail locks; optional strain relief (ordered separately)

**MATERIALS**

Housing - glass filled polyester, gray, UL94V-0

Shell - steel plated with nickel

Contact - phosphor bronze plated with sel gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Socket<br>Bail Latch | Plug<br>Bail Lock |
|--------------------|----------------------|-------------------|
| 14                 | CA-14RSID-4          | CA-14RPID-3       |
| 24                 | CA-24RSID-4          | CA-24RPID-3       |
| 36                 | CA-36RSID-4          | CA-36RPID-3       |
| 50                 | CA-50RSID-4          | CA-50RPID-3       |

**NOTES**

for metal shell socket with .120 diameter holes: replace -4 with -2  
for all plastic construction: add suffix P  
for strain relief: order CA-SRXXRID, where XX = number of contacts

**RIBBON  
RIGHT ANGLE****FEATURES**

mates with standard Ribbon type connectors; .187 long solder tail; right angle metal shell with bail latches ground strap with #4-40 threaded holes

**MATERIALS**

Housing - glass filled polyester, black, UL94V-0

Shell - steel plated with nickel

Contact - phosphor bronze plated with sel gold flash

**CIRCUIT ASSEMBLY PART NUMBERS**

| No. of<br>Contacts | Socket<br>Bail Latch |
|--------------------|----------------------|
| 14                 | CA-14RSR-4           |
| 24                 | CA-24RSR-4           |
| 36                 | CA-36RSR-4           |
| 50                 | CA-50RSR-4           |



# Coax Connection

**Coaxial Adapters, Connectors, PC. Mounts, Attenuators, & Terminations; Coaxial Bulk Cable and Cable Assemblies; Multiconductor Adapters, Connectors, and Cable Assemblies; Test Accessories; Crimp Tools.**

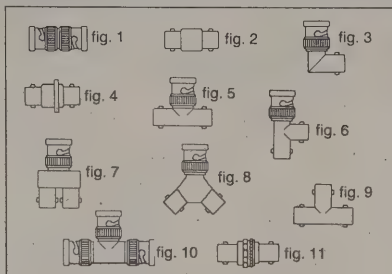
## ABL is your Coax Connection

**Connectors, Adapters, Assemblies & Accessories**

BNC...N...TNC...SMA...SMB...SMC...MHV...UHF...TWINAX

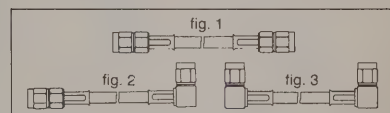
### BNC ADAPTERS

| ABLE Part No. | Description                                | Fig. |
|---------------|--------------------------------------------|------|
| CA3000        | plug to plug - straight                    | 1    |
| CA3001        | jack to jack - straight                    | 2    |
| CA3002        | plug to jack - right angle                 | 3    |
| CA3003        | jack to jack - panel mount                 | 4    |
| CA3004        | jack - plug - jack "T"                     | 5    |
| CA3004A       | jack - jack - plug "T"                     | 6    |
| CA3004G       | jack - plug - jack "Goalpost"              | 7    |
| CA3004Y       | jack - plug - jack "Y"                     | 8    |
| CA3005        | jack - jack - jack "T"                     | 9    |
| CA3006        | plug - plug - plug "T"                     | 10   |
| CA3007        | jack to jack - bulkhead feedthru           | 11   |
| CA3008        | jack to jack - bulkhead feedthru insulated | 11   |



### SMA CABLE ASSEMBLIES

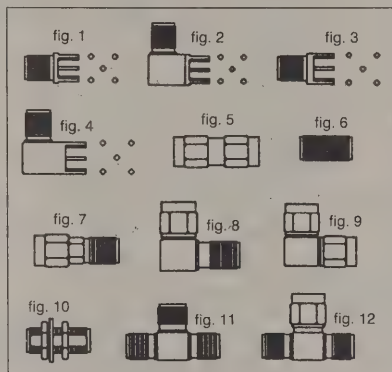
| ABLE Part No.                       | RG/U Cable | Fig. |
|-------------------------------------|------------|------|
| <b>Straight Plug To Plug</b>        |            |      |
| CCA2500-XX                          | 58         | 1    |
| CCA2501-XX                          | 55         | 1    |
| CCA2502-XX                          | 142        | 1    |
| CCA2503-XX                          | 223        | 1    |
| CCA2504-XX                          | 174        | 1    |
| CCA2505-XX                          | 178        | 1    |
| CCA2506-XX                          | 179        | 1    |
| CCA2507-XX                          | 316        | 1    |
| CCA2508-XX                          | 188        | 1    |
| CCA2509-XX                          | 59         | 1    |
| <b>Straight To Right Angle Plug</b> |            |      |
| CCA2510-XX                          | 58         | 2    |
| CCA2511-XX                          | 142        | 2    |
| CCA2512-XX                          | 223        | 2    |
| CCA2513-XX                          | 174        | 2    |
| CCA2514-XX                          | 178        | 2    |
| CCA2515-XX                          | 316        | 2    |
| CCA2516-XX                          | 188        | 2    |
| <b>Right Angle Plug to Plug</b>     |            |      |
| CCA2520-XX                          | 58         | 3    |
| CCA2521-XX                          | 142        | 3    |
| CCA2522-XX                          | 223        | 3    |
| CCA2523-XX                          | 174        | 3    |
| CCA2524-XX                          | 178        | 3    |
| CCA2525-XX                          | 316        | 3    |
| CCA2526-XX                          | 188        | 3    |



## SMA

### SMA PC MOUNTS

| ABLE Part No. | Mfg. Hole Dimension | Description                 | Fig. |
|---------------|---------------------|-----------------------------|------|
| CC7550        | .200                | straight jack receptacle    | 1    |
| CC7551        | .200                | right angle jack receptacle | 2    |
| CC7555        | .281                | straight jack receptacle    | 3    |
| CC7556        | .281                | right angle jack receptacle | 4    |



### SMA ADAPTERS

| ABLE Part No. | Description                      | Fig. |
|---------------|----------------------------------|------|
| CA3040        | plug to plug - straight          | 5    |
| CA3041        | jack to jack - straight          | 6    |
| CA3042        | plug to jack - straight          | 7    |
| CA3043        | plug to jack - right angle       | 8    |
| CA3044        | plug to plug - right angle       | 9    |
| CA3045        | jack to jack - bulkhead feedthru | 10   |
| CA3046        | jack - jack - jack "T"           | 11   |
| CA3047        | jack - plug - jack "T"           | 12   |

### 50 OHM\* ATTENUATORS

| ABLE Part No. | Atten. dB | Fig. | ABLE Part No. | Atten. dB | Fig. |
|---------------|-----------|------|---------------|-----------|------|
| <b>BNC</b>    |           |      | <b>TNC</b>    |           |      |
| ATT6001-B     | 1         | 1    | ATT6001-T     | 1         | 3    |
| ATT6002-B     | 2         | 1    | ATT6002-T     | 2         | 3    |
| ATT6003-B*    | 3         | 1    | ATT6003-T     | 3         | 3    |
| ATT6004-B     | 4         | 1    | ATT6004-T     | 4         | 3    |
| ATT6005-B     | 5         | 1    | ATT6005-T     | 5         | 3    |
| ATT6006-B*    | 6         | 1    | ATT6006-T     | 6         | 3    |
| ATT6007-B     | 7         | 1    | ATT6007-T     | 7         | 3    |
| ATT6008-B     | 8         | 1    | ATT6008-T     | 8         | 3    |
| ATT6009-B     | 9         | 1    | ATT6009-T     | 9         | 3    |
| ATT6010-B*    | 10        | 1    | ATT6010-T     | 10        | 3    |
| ATT6012-B     | 12        | 1    | ATT6012-T     | 12        | 3    |
| ATT6015-B*    | 15        | 1    | ATT6015-T     | 15        | 3    |
| ATT6020-B*    | 20        | 1    | ATT6020-T     | 20        | 3    |
| <b>N</b>      |           |      | <b>SMA</b>    |           |      |
| ATT6001-N     | 1         | 2    | ATT6001-S     | 1         | 4    |
| ATT6002-N     | 2         | 2    | ATT6002-S     | 2         | 4    |
| ATT6003-N     | 3         | 2    | ATT6003-S     | 3         | 4    |
| ATT6004-N     | 4         | 2    | ATT6004-S     | 4         | 4    |
| ATT6005-N     | 5         | 2    | ATT6005-S     | 5         | 4    |
| ATT6006-N     | 6         | 2    | ATT6006-S     | 6         | 4    |
| ATT6007-N     | 7         | 2    | ATT6007-S     | 7         | 4    |
| ATT6008-N     | 8         | 2    | ATT6008-S     | 8         | 4    |
| ATT6009-N     | 9         | 2    | ATT6009-S     | 9         | 4    |
| ATT6010-N     | 10        | 2    | ATT6010-S     | 10        | 4    |
| ATT6015-N     | 15        | 2    | ATT6015-S     | 15        | 4    |
| ATT6020-N     | 20        | 2    | ATT6020-S     | 20        | 4    |

1 - 12 dB  
VSWR

DC-500 MHz 1.3:1  
DC-1000 MHz 1.5:1  
DC-1000 MHz 1.7:1

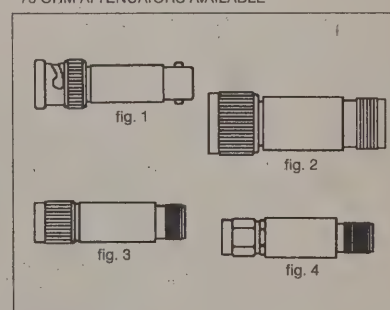
15 - 20 dB  
VSWR

DC-500 MHz 1.3:1  
DC-1000 MHz 1.6:1  
DC-1500 MHz 1.8:1

ATTENUATION  
500 MHz;  $\pm 3$  dB Max  
1000 MHz;  $\pm 6$  dB Max  
1500 MHz;  $\pm 1.0$  dB Max

ATTENUATION  
500 MHz;  $\pm 4$  dB Max  
1000 MHz;  $\pm 8$  dB Max  
1500 MHz;  $\pm 1.3$  dB Max

\*75 OHM ATTENUATORS AVAILABLE



## TEST ACCESSORIES

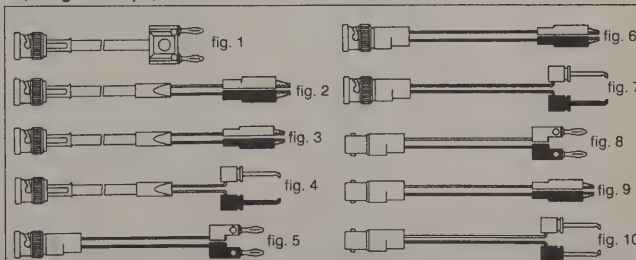
Adapters, Banana Plugs, Binding Posts, Alligator Clips, Patch Cords, Mini Test Hooks

### TEST LEADS

| ABLE Part No. | RG/U Cable | Description                                 | Fig. |
|---------------|------------|---------------------------------------------|------|
| TA001-XX      | 58         | BNC Plug to Stackable Double Banana Plug    | 1    |
| TA002-XX      | 58         | BNC Plug to Standard Alligator Clips        | 2    |
| TA003-XX      | 58         | BNC Plug to Mini Alligator Clips            | 3    |
| TA004-XX      | 58         | BNC Plug to Mini Test Hooks                 | 4    |
| TA011-4       | *          | BNC Breakout Plug to Stackable Banana Plugs | 5    |
| TA012-4       | *          | BNC Breakout Plug to Mini Alligator Clips   | 6    |
| TA013-4       | *          | BNC Breakout Plug to Mini Test Hooks        | 7    |
| TA021-4       | *          | BNC Breakout Jack to Stackable Banana Plugs | 8    |
| TA022-4       | *          | BNC Breakout Jack to Mini Alligator Clips   | 9    |
| TA023-4       | *          | BNC Breakout Jack to Mini Test Hooks        | 10   |

STANDARD LENGTHS 12, 24, 36, 48 INCHES  
Breakouts available only in 4 inch lengths

XX: SPECIFY DESIRED LENGTH (IN INCHES)  
Hook-Up Wire Standard Colors Black and Red



**ABLE ELECTRONIC SUPPLIES**

11 SOUTH BROAD STREET, PEEKSKILL, NY 10566 • 1-800-431-2103 • 914-736-1010 FAX 914-736-1899





# WIRE GAUGES— DIAMETER, AREA AND COPPER WEIGHT

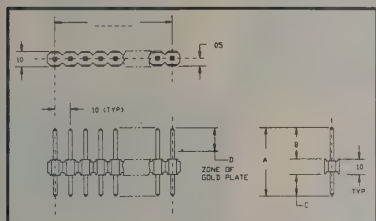
| Size,<br>AWG | Diameter at<br>20°C (68°F) |        | Area at 20°C (68°F) |         |          | Weight at 20°C (68°F),<br>bare copper wire |         |         |
|--------------|----------------------------|--------|---------------------|---------|----------|--------------------------------------------|---------|---------|
|              | mils                       | mm     | mils                | c mils  | mm       | lb/1,000 ft.                               | lb/mile | kg/km   |
| 4/0          | 460.0                      | 11.68  | 166,200             | 211,600 | 107.2    | 640.5                                      | 3,382   | 953.2   |
| 3/0          | 409.6                      | 10.40  | 131,800             | 167,800 | 85.01    | 507.8                                      | 2,681   | 755.7   |
| 2/0          | 364.8                      | 9.266  | 104,500             | 133,100 | 67.43    | 402.8                                      | 2,127   | 599.5   |
| 1/0          | 324.9                      | 8.252  | 82,891              | 105,600 | 53.49    | 319.5                                      | 1,687   | 477.6   |
| 1            | 289.3                      | 7.348  | 85,730              | 83,690  | 42.41    | 253.3                                      | 1,338   | 337.0   |
| 2            | 257.6                      | 6.543  | 52,120              | 66,360  | 33.62    | 200.9                                      | 1,061   | 298.9   |
| 3            | 229.4                      | 5.827  | 41,330              | 52,620  | 26.67    | 159.3                                      | 841.1   | 237.1   |
| 4            | 204.3                      | 5.189  | 32,780              | 41,740  | 21.15    | 126.3                                      | 667.1   | 188.0   |
| 5            | 181.9                      | 4.620  | 25,990              | 33,090  | 16.77    | 100.2                                      | 528.8   | 149.0   |
| 6            | 162.0                      | 4.115  | 20,610              | 26,240  | 13.30    | 79.44                                      | 419.4   | 118.2   |
| 7            | 144.3                      | 3.665  | 16,350              | 20,820  | 10.55    | 63.03                                      | 332.8   | 93.80   |
| 8            | 128.5                      | 3.264  | 12,970              | 16,510  | 8.367    | 49.98                                      | 263.9   | 74.38   |
| 9            | 114.4                      | 2.906  | 10,280              | 13,090  | 6.631    | 39.61                                      | 209.2   | 58.95   |
| 10           | 101.9                      | 2.588  | 8,155               | 10,380  | 5.261    | 31.43                                      | 166.0   | 46.77   |
| 11           | 90.7                       | 2.304  | 6,460               | 8,230   | 4.17     | 24.90                                      | 131     | 37.1    |
| 12           | 80                         | 2.05   | 5,130               | 6,530   | 3.310    | 19.8                                       | 104     | 29.4    |
| 13           | 72.0                       | 1.83   | 4,070               | 5,180   | 2.63     | 15.7                                       | 82.9    | 23.4    |
| 14           | 64.1                       | 1.63   | 3,230               | 4,110   | 2.08     | 12.4                                       | 65.7    | 18.5    |
| 15           | 57.1                       | 1.45   | 2,560               | 3,260   | 1.650    | 9.87                                       | 52.1    | 14.7    |
| 16           | 50.8                       | 1.29   | 2,030               | 2,580   | 1.31     | 7.81                                       | 41.2    | 11.6    |
| 17           | 45.3                       | 1.150  | 1,610               | 2,050   | 1.040    | 6.21                                       | 32.8    | 9.24    |
| 18           | 40.3                       | 1.02   | 1,280               | 1,620   | 0.823    | 4.92                                       | 26.0    | 7.32    |
| 19           | 35.9                       | 0.912  | 1,010               | 1,290   | 0.653    | 3.90                                       | 20.6    | 5.81    |
| 20           | 32.0                       | 0.813  | 804.0               | 1,020   | 0.519    | 3.10                                       | 16.4    | 4.61    |
| 21           | 28.5                       | 0.724  | 638.0               | 812.0   | 0.412    | 2.46                                       | 13.0    | 3.66    |
| 22           | 25.3                       | 0.643  | 503.0               | 640.0   | 0.324    | 1.94                                       | 10.2    | 2.88    |
| 23           | 22.6                       | 0.574  | 401.0               | 511.0   | 0.259    | 1.55                                       | 8.16    | 2.30    |
| 24           | 20.1                       | 0.511  | 317.0               | 404.0   | 0.205    | 1.22                                       | 6.46    | 1.82    |
| 25           | 17.9                       | 0.455  | 252.0               | 320.0   | 0.162    | 0.970                                      | 5.12    | 1.44    |
| 26           | 15.9                       | 0.404  | 199.0               | 253.0   | 0.128    | 0.765                                      | 4.04    | 1.14    |
| 27           | 14.2                       | 0.361  | 158.0               | 202.0   | 0.102    | 0.610                                      | 3.22    | 0.908   |
| 28           | 12.6                       | 0.320  | 125                 | 159.0   | 0.0804   | 0.481                                      | 2.54    | 0.715   |
| 29           | 11.3                       | 0.287  | 100.0               | 128.0   | 0.0647   | 0.387                                      | 2.04    | 0.575   |
| 30           | 10.0                       | 0.254  | 78.50               | 100.0   | 0.0507   | 0.303                                      | 1.60    | 0.450   |
| 31           | 8.9                        | 0.226  | 62.20               | 79.2    | 0.0401   | 0.240                                      | 1.27    | 0.357   |
| 32           | 8.0                        | 0.203  | 50.30               | 64.0    | 0.0324   | 0.194                                      | 1.02    | 0.288   |
| 33           | 7.1                        | 0.180  | 39.60               | 50.40   | 0.0255   | 0.153                                      | 0.806   | 0.227   |
| 34           | 6.3                        | 0.160  | 31.20               | 39.7    | 0.0201   | 0.120                                      | 0.634   | 0.179   |
| 35           | 5.6                        | 0.142  | 24.60               | 31.4    | 0.0159   | 0.0940                                     | 0.501   | 0.141   |
| 36           | 5.0                        | 0.127  | 19.60               | 25.00   | 0.0127   | 0.0757                                     | 0.400   | 0.113   |
| 37           | 4.50                       | 0.114  | 15.90               | 20.20   | 0.0103   | 0.0613                                     | 0.324   | 0.0912  |
| 38           | 4.0                        | 0.102  | 12.60               | 16.0    | 0.00811  | 0.0484                                     | 0.256   | 0.0721  |
| 39           | 3.5                        | 0.0889 | 9.62                | 12.2    | 0.00621  | 0.0371                                     | 0.196   | 0.0552  |
| 40           | 3.1                        | 0.0787 | 7.55                | 9.61    | 0.00487  | 0.0291                                     | 0.154   | 0.0433  |
| 41           | 2.8                        | 0.0711 | 6.16                | 7.84    | 0.00397  | 0.0237                                     | 0.125   | 0.0353  |
| 42           | 2.5                        | 0.0635 | 4.91                | 6.25    | 0.00317  | 0.0189                                     | 0.0999  | 0.0282  |
| 43           | 2.2                        | 0.0559 | 3.80                | 4.84    | 0.00245  | 0.0147                                     | 0.0774  | 0.0218  |
| 44           | 2.0                        | 0.0508 | 3.14                | 4.00    | 0.00203  | 0.0121                                     | 0.0639  | 0.0180  |
| 45           | 1.8                        | 0.0457 | 2.54                | 3.24    | 0.00164  | 0.00981                                    | 0.0519  | 0.0146  |
| 46           | 1.6                        | 0.0406 | 2.01                | 2.56    | 0.00130  | 0.00775                                    | 0.0409  | 0.0115  |
| 47           | 1.4                        | 0.0356 | 1.54                | 1.96    | 0.000993 | 0.00593                                    | 0.0313  | 0.00883 |
| 48           | 1.2                        | 0.0305 | 1.13                | 1.44    | 0.000730 | 0.00436                                    | 0.0230  | 0.00649 |
| 49           | 1.1                        | 0.0279 | 0.950               | 1.21    | 0.000613 | 0.00366                                    | 0.0193  | 0.00545 |
| 50           | 1.0                        | 0.0254 | 0.785               | 1.00    | 0.000507 | 0.00303                                    | 0.0160  | 0.00450 |



# COMM CON CONNECTORS INC.

Comm Con Connectors Inc. was established in 1982. From inception, our plan has been to offer the Electronics OEM marketplace a variety of header interconnects not available from the more traditional connector companies. Our product flexibility is a result of 14 different standard contact lengths (from .330 to 1.430), 3 plating options (tin, gold, duplex gold/tin), and plastic insulator options such as glass filled thermoplastic or high temp thermoplastic, in single, double and triple row versions. A great variety of additional customizing of these parts is possible including specific pins eliminated for keying, bypassing traces on a P.C.B., or locating the plastic at other locations on the pin. Creation of special bends is also possible.

All of our strip headers and socket connectors employ a "breakaway" feature, however, as a service to our customers, we will cut any of these products into the desired size at no charge.

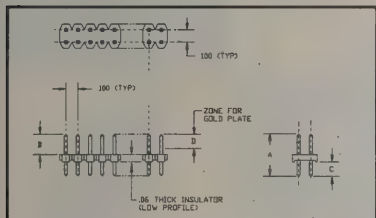
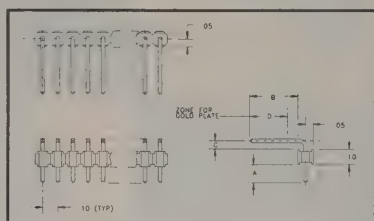


## SINGLE ROW; DOUBLE ROW; TRIPLE ROW STRAIGHT HEADERS

Our single row straight headers are available in 12 pin lengths, from .330 to 1.430, (in .100 increments). In addition to 35 standard "B" and "C" dimensioned parts, we offer an unlimited variety of customer specified parts.

## SINGLE ROW; DOUBLE ROW; TRIPLE ROW RIGHT ANGLE HEADERS

Our single row right angle .025 sq headers are available in both the low profile and high profile, as standards. Many choices in pin dimensions gives us the broadest package of right angle breakaway parts available.

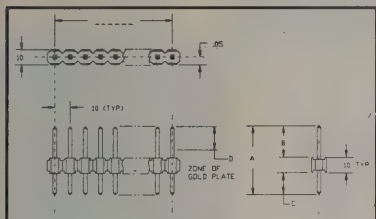
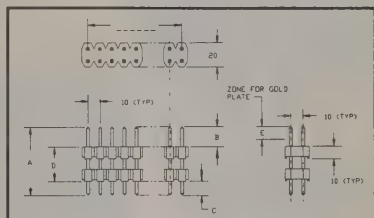


## MICRO HEIGHT HEADER SYSTEM

Available in single, double or triple row versions, our micro height headers utilize a .060 thick plastic, and a .330 long pin, which decreases the height .110 from the bottom of the PCB, vs the standard solder header.

## SINGLE AND DOUBLE ROW SPACER- HEADER INTERCONNECTS

This new concept allows the design freedom of interconnecting two PCB's with a pre specified mating length. Eliminates having both a plastic spacer, and a separate interconnect.

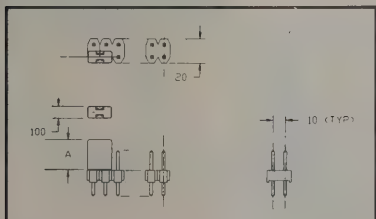
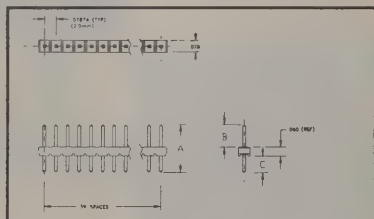


## HIGH TEMPERATURE HEADERS

For infrared or vapor reflow applications, we offer a high temp plastic insulator with a rating in excess of 260 C. Both single and double row parts available.

## MICRO SPACED CONNECTORS

Two series are available for tight circuit center designs, .050 and .079 (2mm). Both series include headers, sockets and shunts.

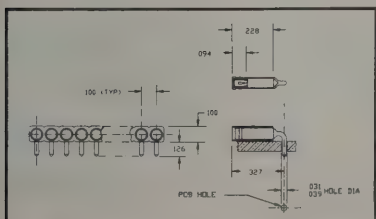
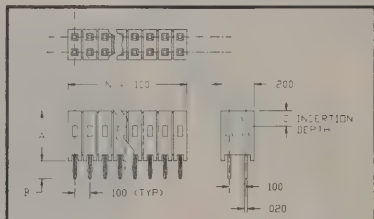


## BUSSING SHUNTS

We offer a variety of bussing shunts to cover most applications. These include 4 styles of .100 center parts, .100 center multiple shunts (2 to 10 attached together), and micro spaced .079 parts.

## STRAIGHT SOCKETS

For PCB disconnecting applications, we offer several different sockets, from .185 tall for low profile, to .315 standard applications. Designs include both modified box, and hi-rel screw machine contacts.

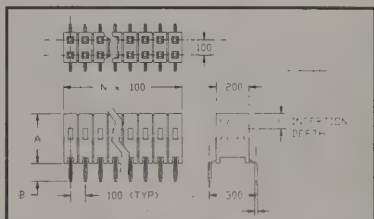


## RIGHT ANGLE SOCKETS

For right angle disconnects, we offer both single and double row socket versions. These parts utilize hi-rel screw machine sockets.

## BOTTOM ENTRY SOCKETS

To eliminate hand soldering of a socket to a PCB when a disconnect application is utilized, we offer a bottom entry socket that is soldered on the component side of the board. Access of the pin is through the PCB, into the bottom of the socket.

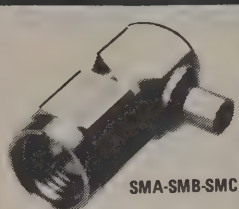


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# Presenting



SMA-SMB-SMC  
RF CONNECTORS



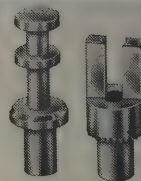
TEFLON<sup>®</sup> TERMINALS



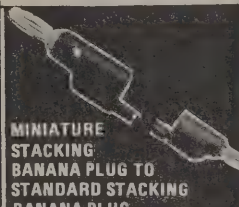
HEXHEAD  
BINDING POST



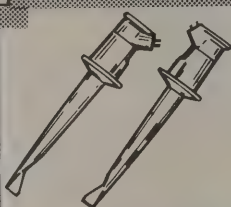
WASHERS & GROMMETS



SOLDER LUGS



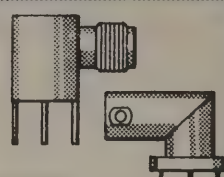
MINIATURE  
STACKING  
BANANA PLUG TO  
STANDARD STACKING  
BANANA PLUG



SAFETY HOOK TEST CLIPS



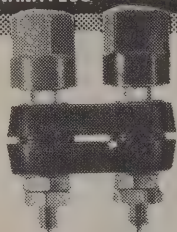
SHORTING PLUGS



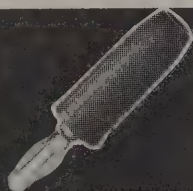
P.C. MOUNT  
CONNECTORS



DUAL  
BANANA  
PLUGS



DUAL BINDING POST



BANANA PLUGS



SEND  
FOR  
CATALOG



SOLDER LUGS



BNC-TNC-"N"  
CONNECTORS



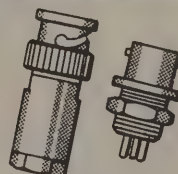
MINIATURE  
DOUBLE  
BANANA  
PLUG WITH  
SOLDER TERMINALS



TERMINAL STRIPS



HEXHEAD NYLON  
FEED THRU



TWINAX & TRIAX  
CONNECTORS



P.C. CARD SUPPORTS



INSULATED TIP PLUGS



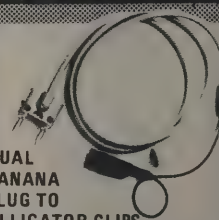
MICROWAVE  
CABLE ASSEMBLIES



BNC MALE TO BINDING POST



90° NYLON PC JACK



DUAL  
BANANA  
PLUG TO  
ALLIGATOR CLIPS  
ADAPTER CABLE

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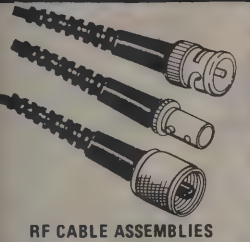
THE MANUFACTURER'S MANUFACTURER<sup>®</sup>  
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SOLDERLESS LUGS & TERMINALS



JUMPERS & PATCH CORDS



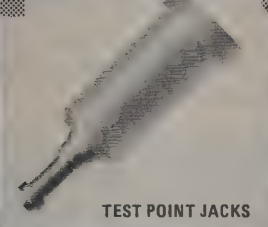
RF CONNECTORS



BINDING POST TO DOUBLE BANANA PLUG



KNOBS



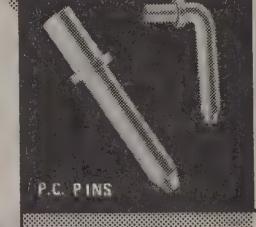
TEST POINT JACKS



PANEL JACKS



BNC FEMALE TO BANANA PLUGS



P.C. PINS



FLUTED BINDING POSTS



BREAKOUTS  
BNC AND  
ALLIGATOR  
CLIP



TEST  
ACCESSORIES



SHORTING PLUGS



OSCILLOSCOPE PROBES



SPACERS & STANDOFFS



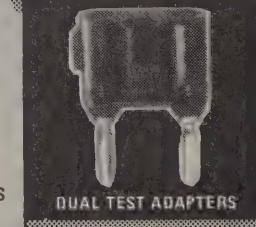
DUAL BINDING POSTS



90° NYLON P.C. JACK



MIL-C-39024 JACKS



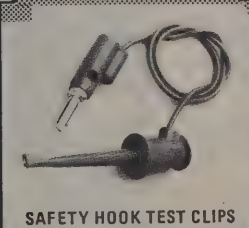
DUAL TEST ADAPTERS



HINGED STANDOFFS



TEFLON® PANEL JACKS



SAFETY HOOK TEST CLIPS



SAFETY  
TEST PROBE  
TO SHROUDED  
BANANA PLUG



HANDLES

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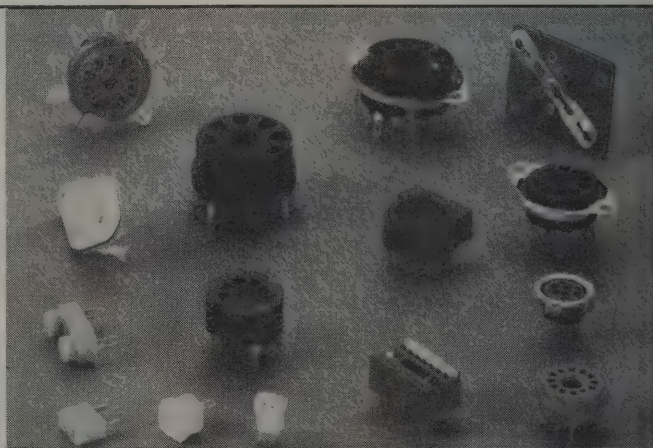
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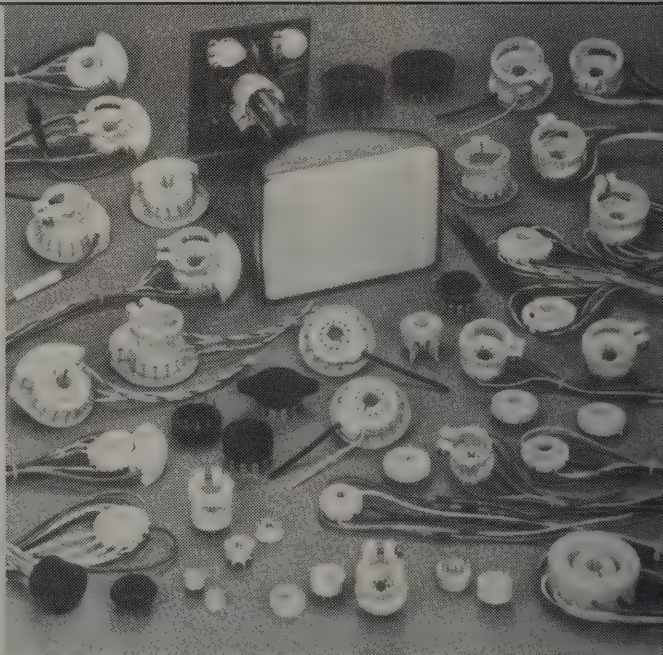
### SOCKETS

- **Tube/Relay:**  
4, 5, 7, 8, 9, 10, 11, 12, 14, 16, 20, 22 and other pin configurations. PC, solder tab and chassis mount. Molded and laminated constructions. Metal or molded saddle, top or bottom mount.
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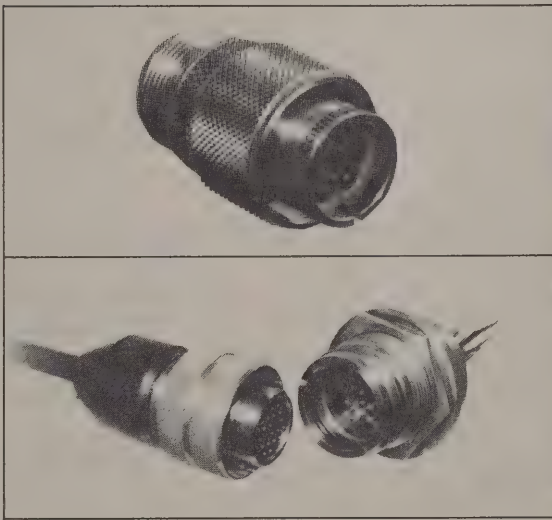
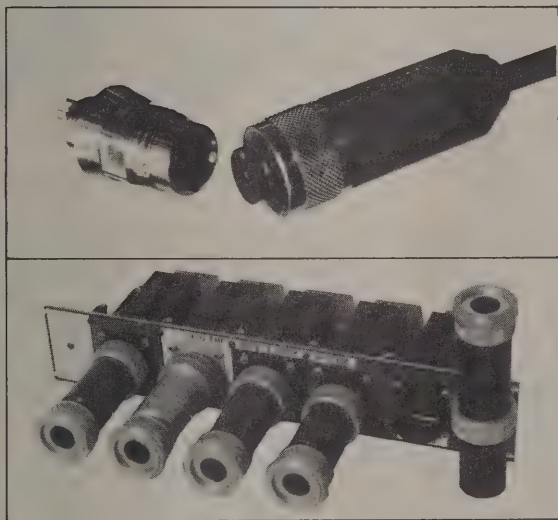
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## OEM CONNECTOR PRODUCTS

### D-SUBMINIATURE CONNECTORS

#### TWO-PIECE BLACK THERMOPLASTIC INSULATOR

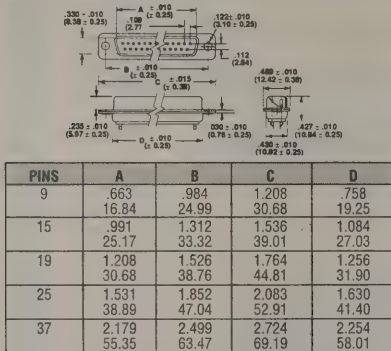
| Catalog No. | No. of Contacts | Gender |
|-------------|-----------------|--------|
| DE-9P       | 9               | Male   |
| DE-15P      | 15              | Male   |
| DE-19P      | 19              | Male   |
| DE-25P      | 25              | Male   |
| DE-37P      | 37              | Male   |
| DE-50P      | 50              | Male   |
| DE-9F       | 9               | Female |
| DE-15F      | 15              | Female |
| DE-19F      | 19              | Female |
| DE-25F      | 25              | Female |
| DE-37F      | 37              | Female |
| DE-50F      | 50              | Female |

#### FEATURES

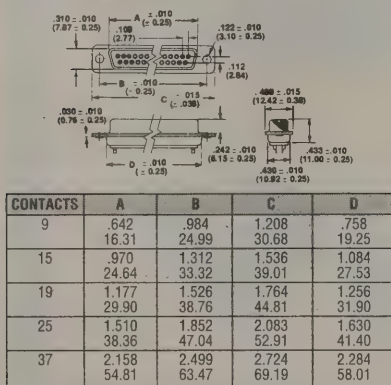
- Tinned plated steel shell
- Fixed contacts, gold over nickel plating
- Ground indents (male)
- 3.05 MM (.120") dia. mounting holes
- UL 94V-O rated insulator

Additional plating options are available; please contact factory.

#### MALE DIMENSIONS



#### FEMALE DIMENSIONS



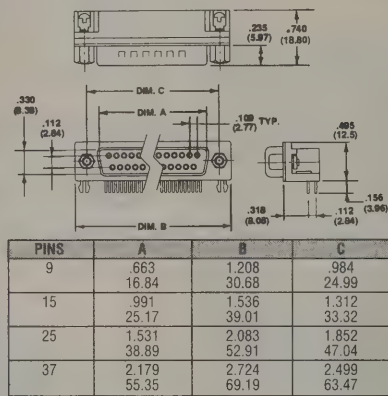
#### RIGHT-ANGLE PCB DESIGN IN 8.10 MM (.319") FOOTPRINT GLASS-FILLED BLACK THERMOPLASTIC INSULATOR

| Catalog No. | No. of Contacts | Gender |
|-------------|-----------------|--------|
| DR-9P--*    | 9               | Male   |
| DR-15P--*   | 15              | Male   |
| DR-25P--*   | 25              | Male   |
| DR-37P--*   | 37              | Male   |
| DS-9F--*    | 9               | Female |
| DS-15F--*   | 15              | Female |
| DS-25F--*   | 25              | Female |
| DS-37F--*   | 37              | Female |

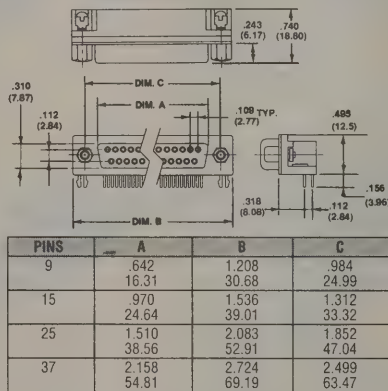
#### FEATURES

- Gold Flash over nickel contact plating
- Fully insulated rear cover
- UL 94V-O rated insulator

#### MALE DIMENSIONS



#### FEMALE DIMENSIONS



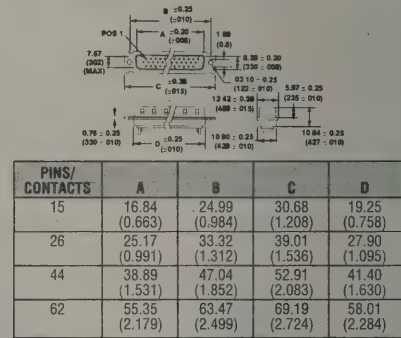
#### HIGH DENSITY METAL SHELL, BLACK THERMOPLASTIC INSULATORS

| Catalog No. | No. of Contacts | Gender |
|-------------|-----------------|--------|
| DH-15P      | 15              | Male   |
| DH-26P      | 26              | Male   |
| DH-44P      | 44              | Male   |
| DH-62P      | 62              | Male   |
| DH-15F      | 15              | Female |
| DH-26F      | 26              | Female |
| DH-44F      | 44              | Female |
| DH-62F      | 62              | Female |

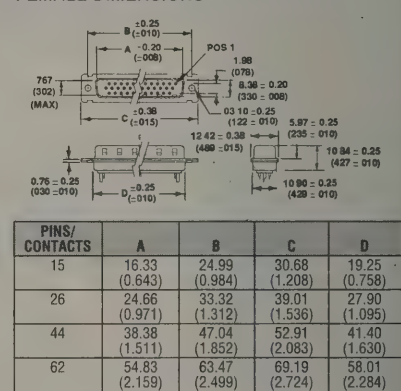
#### FEATURES

- Fixed, solder terminals
- Gold flash over nickel contact plating
- Tin plate over nickel shell
- Ground indents (male)
- Standard 3.05 MM (.120") dia. mounting holes
- UL 94V-O rated insulator

#### MALE DIMENSIONS



#### FEMALE DIMENSIONS



#### D-SUBMINIATURE CONNECTOR HOODS

##### Grey Plastic Casing Straight Entry

| Catalog No. | Designed For         |
|-------------|----------------------|
| DCH-9       | 9 Contact Connector  |
| DCH-15      | 15 Contact Connector |
| DCH-19      | 19 Contact Connector |
| DCH-25      | 25 Contact Connector |
| DCH-37      | 37 Contact Connector |
| DCH-50      | 50 Contact Connector |

For use with DE-Series Connectors

##### Metallized Chrome Plated Casing Straight Entry

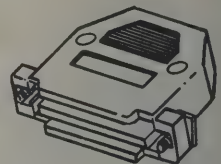
| Catalog No. | Designed For         |
|-------------|----------------------|
| DCP-9       | 9 Contact Connector  |
| DCP-15      | 15 Contact Connector |
| DCP-19      | 19 Contact Connector |
| DCP-25      | 25 Contact Connector |
| DCP-37      | 37 Contact Connector |
| DCP-50      | 50 Contact Connector |

For use with DE-Series Connectors

##### Die-Cast Casing Straight Entry

| Catalog No. | Designed For         |
|-------------|----------------------|
| DCC-9       | 9 Contact Connector  |
| DCC-15      | 15 Contact Connector |
| DCC-19      | 19 Contact Connector |
| DCC-25      | 25 Contact Connector |
| DCC-37      | 37 Contact Connector |
| DCC-50      | 50 Contact Connector |

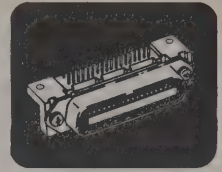
For use with DE-Series Connectors





# OEM CONNECTOR PRODUCTS

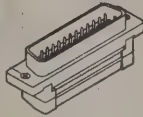
## D-SUBMINIATURE CONNECTORS



### INSULATION DISPLACEMENT TYPE GLASS-FILLED, BLUE THERMOPLASTIC INSULATOR

#### MALE

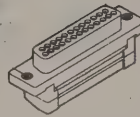
| Catalog No. | No. of Contacts | Shell Metal |
|-------------|-----------------|-------------|
| CA-209      | 9               | Plastic     |
| CA-215      | 15              | Plastic     |
| CA-225      | 25              | Plastic     |
| CA-237      | 37              | Plastic     |
| CAM-209     | 9               | Metal       |
| CAM-215     | 15              | Metal       |
| CAM-225     | 25              | Metal       |
| CAM-237     | 37              | Metal       |



MALE

#### FEMALE

| Catalog No. | No. of Contacts | Shell Metal |
|-------------|-----------------|-------------|
| CB-209      | 9               | Plastic     |
| CB-215      | 15              | Plastic     |
| CB-225      | 25              | Plastic     |
| CB-237      | 37              | Plastic     |
| CBM-209     | 9               | Metal       |
| CBM-215     | 15              | Metal       |
| CBM-225     | 25              | Metal       |
| CBM-237     | 37              | Metal       |



FEMALE

#### FEATURES

- Standard with 3.05 MM (.120") dia. mounting holes
  - All units supplied with strain relief
  - Gold flash over nickel contact plating
  - For use with 28 AWG stranded flat cable
- Additional plating options are available; please consult factory



## PARALLEL INTERFACE CONNECTORS (Centronics Compatible)

### METAL SHELL, GOLD-PLATED SOLDER CUP CONTACTS

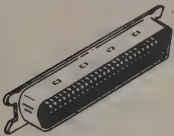


| Catalog No. | No. of Contacts | Gender |
|-------------|-----------------|--------|
| DC-14       | 14              | Male   |
| DC-24       | 24              | Male   |
| DC-36       | 36              | Male   |
| DC-50       | 50              | Male   |
| DD-14       | 14              | Female |
| DD-24       | 24              | Female |
| DD-36       | 36              | Female |
| DD-50       | 50              | Female |

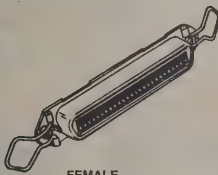
#### FEATURES

- Female connector standard with bail locks
- Gold flash over nickel contact plating

Additional variations, including top entry PCB types, are also available; please contact factory.

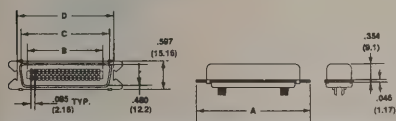


MALE



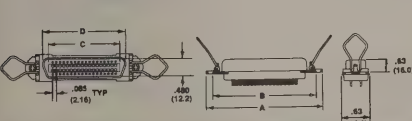
FEMALE

#### MALE DIMENSIONS



| PINS/CONTACTS | A                | B                | C                | D                |
|---------------|------------------|------------------|------------------|------------------|
| 14            | 1.518<br>(38.56) | 0.687<br>(17.45) | 1.012<br>(25.70) | 1.178<br>(29.93) |
| 24            | 1.935<br>(49.15) | 1.112<br>(28.25) | 1.436<br>(36.47) | 1.592<br>(40.43) |
| 36            | 2.443<br>(62.04) | 1.622<br>(41.20) | 1.946<br>(49.43) | 2.100<br>(53.33) |
| 50            | 3.004<br>(77.31) | 2.217<br>(56.32) | 2.542<br>(64.56) | 2.701<br>(68.61) |

#### FEMALE DIMENSIONS



| PINS/CONTACTS | A                | B                | C                | D                |
|---------------|------------------|------------------|------------------|------------------|
| 14            | 1.742<br>(44.25) | 1.429<br>(36.3)  | .702<br>(17.84)  | 1.00<br>(25.4)   |
| 24            | 2.16<br>(54.9)   | 1.842<br>(46.8)  | 1.127<br>(28.63) | 1.424<br>(36.17) |
| 36            | 2.66<br>(67.5)   | 2.350<br>(59.7)  | 1.638<br>(41.6)  | 1.935<br>(49.15) |
| 50            | 3.268<br>(83.0)  | 2.952<br>(74.98) | 2.233<br>(56.72) | 2.530<br>(64.26) |

### CABLE TYPE METAL SHELL, METAL HOOD



| Catalog No. | No. of Contacts |
|-------------|-----------------|
| DMS-14      | 14              |
| DMS-24      | 24              |
| DMS-36      | 36              |
| DMS-50      | 50              |
| DMF-14      | 14              |
| DMF-24      | 24              |
| DMF-36      | 36              |
| DMF-50      | 50              |



MALE

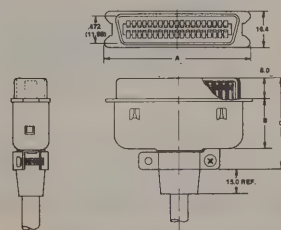


FEMALE

#### FEATURES

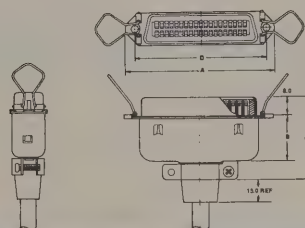
- Nickel-plated metal shell
- Gold-plated solder cup contacts
- Female connector standard with bail locks

#### MALE DIMENSIONS



| PINS/CONTACTS | A                | B              | C               |
|---------------|------------------|----------------|-----------------|
| 14            | 1.500<br>(38.1)  | .827<br>(21.0) | 1.540<br>(39.1) |
| 24            | 1.915<br>(48.64) | .843<br>(21.4) | 1.550<br>(39.4) |
| 36            | 2.665<br>(67.7)  | .905<br>(23.0) | 1.67<br>(42.4)  |
| 50            | 3.26<br>(82.8)   | 1.00<br>(25.4) | 1.771<br>(45.0) |

#### FEMALE DIMENSIONS

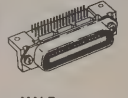


| PINS/CONTACTS | A                | B              | C               | D               |
|---------------|------------------|----------------|-----------------|-----------------|
| 14            | 1.742<br>(44.25) | .827<br>(21.0) | 1.540<br>(39.1) | 1.429<br>(36.3) |
| 24            | 2.16<br>(54.9)   | .843<br>(21.4) | 1.550<br>(39.4) | 1.542<br>(46.8) |
| 36            | 2.665<br>(67.7)  | .905<br>(23.0) | 1.67<br>(42.4)  | 2.350<br>(59.7) |
| 50            | 3.26<br>(82.8)   | 1.00<br>(25.4) | 1.772<br>(45.0) | 2.95<br>(74.9)  |

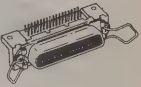
### RIGHT ANGLE PCB TERMINALS



| Catalog No. | No. of Contacts |
|-------------|-----------------|
| DKR-14      | 14              |
| DKR-24      | 24              |
| DKR-36      | 36              |
| DKR-50      | 50              |
| DLR-14      | 14              |
| DLR-24      | 24              |
| DLR-36      | 36              |
| DLR-50      | 50              |



MALE

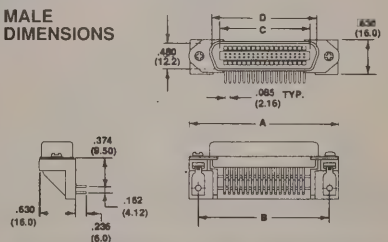


FEMALE

#### FEATURES

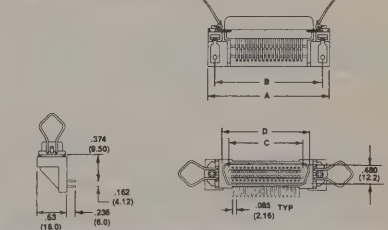
- Gold flash over nickel contact plating
- Female connector standard with bail locks
- Nickel-plated metal shell
- Available in reversed version
- Includes standard ground straps

#### MALE DIMENSIONS



| PINS/CONTACTS | A                | B                | C                | D                |
|---------------|------------------|------------------|------------------|------------------|
| 14            | 1.742<br>(44.25) | 1.429<br>(36.3)  | .687<br>(17.45)  | 1.012<br>(25.7)  |
| 24            | 2.16<br>(54.9)   | 1.842<br>(46.8)  | 1.112<br>(28.25) | 1.436<br>(36.47) |
| 36            | 2.661<br>(67.5)  | 2.350<br>(59.7)  | 1.622<br>(41.2)  | 1.946<br>(49.43) |
| 50            | 3.268<br>(83.0)  | 2.952<br>(74.98) | 2.217<br>(56.32) | 2.542<br>(64.56) |

#### FEMALE DIMENSIONS



| PINS/CONTACTS | A                | B                | C                | D                |
|---------------|------------------|------------------|------------------|------------------|
| 14            | 1.742<br>(44.25) | 1.429<br>(36.3)  | .702<br>(17.84)  | 1.00<br>(25.4)   |
| 24            | 2.16<br>(54.9)   | 1.842<br>(46.8)  | 1.127<br>(28.63) | 1.424<br>(36.17) |
| 36            | 2.66<br>(67.5)   | 2.350<br>(59.7)  | 1.638<br>(41.6)  | 1.935<br>(49.15) |
| 50            | 3.268<br>(83.0)  | 2.952<br>(74.98) | 2.233<br>(56.72) | 2.530<br>(64.26) |

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electronic wire & cable





# OEM CONNECTOR PRODUCTS

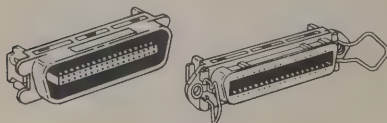
## CENTRONICS CONNECTORS INSULATION DISPLACEMENT TYPE



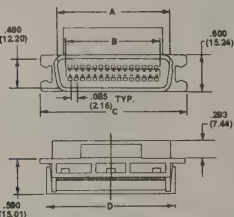
|        | Catalog No. | No. of Contacts | Description                    |
|--------|-------------|-----------------|--------------------------------|
| MALE   | CC-24       | 24              | IDC, Hard Plastic Shell        |
|        | CC-36       | 36              | IDC, Hard Plastic Shell        |
|        | CC-50       | 50              | IDC, Hard Plastic Shell        |
|        | CCM-24      | 24              | IDC, Nickel-Plated Metal Shell |
|        | CCM-36      | 36              | IDC, Nickel-Plated Metal Shell |
|        | CCM-50      | 50              | IDC, Nickel-Plated Metal Shell |
| FEMALE | CF-24       | 24              | IDC, Hard Plastic Shell        |
|        | CF-36       | 36              | IDC, Hard Plastic Shell        |
|        | CF-50       | 50              | IDC, Hard Plastic Shell        |
|        | CFM-24      | 24              | IDC, Nickel-Plated Metal Shell |
|        | CFM-36      | 36              | IDC, Nickel-Plated Metal Shell |
|        | CFM-50      | 50              | IDC, Nickel-Plated Metal Shell |

### FEATURES

- All units supplied with strain relief
  - Female connectors standard with bail locks
  - Accepts 28 AWG stranded flat cable
- Additional plating options are available; please contact factory.

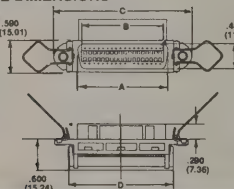


### MALE DIMENSIONS



| PINS/CONTACTS | A                | B                | C                | D                |
|---------------|------------------|------------------|------------------|------------------|
| 36            | 1.342<br>(34.08) | 1.019<br>(25.88) | 1.834<br>(46.58) | 1.530<br>(38.88) |
| 50            | 1.937<br>(49.20) | 1.614<br>(41.0)  | 2.429<br>(61.7)  | 2.126<br>(54.0)  |

### FEMALE DIMENSIONS



| PINS/CONTACTS | A               | B                | C                | D                |
|---------------|-----------------|------------------|------------------|------------------|
| 36            | 1.330<br>(33.8) | 1.070<br>(27.18) | 2.082<br>(52.88) | 1.530<br>(38.88) |
| 50            | 1.925<br>(48.9) | 1.665<br>(42.29) | 2.677<br>(67.7)  | 2.126<br>(54.0)  |

## FLAT CABLE CARD EDGE CONNECTORS



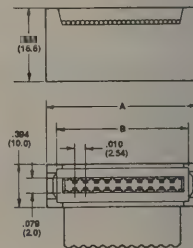
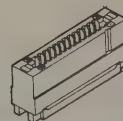
| Catalog No. | No. of Circuits |
|-------------|-----------------|
| CST-10      | 10              |
| CST-14      | 14              |
| CST-16      | 16              |
| CST-20      | 20              |
| CST-26      | 26              |
| CST-34      | 34              |
| CST-40      | 40              |
| CST-50      | 50              |
| CST-60      | 60              |
| CST-62      | 62              |
| CST-64      | 64              |

Additional plating options are available; please contact factory.

### FEATURES

- Double cantilever terminal creates firm contact
- Glass reinforced polyester, UL 94V-0 rated
- Use with 26 and 28 AWG cable (.050" centers)
- All units supplied with strain relief
- Gold flash over nickel contact plating

|   | 10              | 14               | 16               | 20               | 26               | 34               | 40               | 50               | 60               | 62               | 64               |
|---|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| A | .872<br>(22.16) | 1.072<br>(27.24) | 1.172<br>(29.78) | 1.382<br>(35.10) | 1.682<br>(42.72) | 2.082<br>(52.88) | 2.382<br>(60.50) | 2.882<br>(73.20) | 3.372<br>(85.66) | 3.472<br>(88.20) | 3.572<br>(90.74) |
| B | .604<br>(15.34) | .804<br>(20.42)  | .904<br>(22.96)  | 1.104<br>(28.04) | 1.404<br>(35.66) | 1.804<br>(45.82) | 2.104<br>(53.44) | 2.604<br>(66.14) | 3.104<br>(78.84) | 3.204<br>(81.38) | 3.304<br>(83.72) |



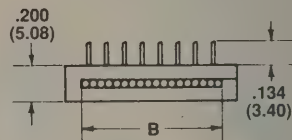
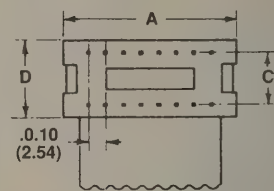
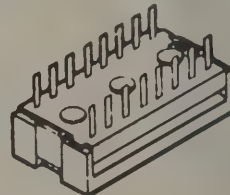
## IDC DIP PLUGS - LIGHTWEIGHT STURDY FITS ALL DIP SOCKETS .134" PIN LENGTH



| Catalog No. | No. of Contacts | Catalog No. | No. of Contacts |
|-------------|-----------------|-------------|-----------------|
| IDP-8       | 8               | IDP-24      | 24              |
| IDP-10      | 10              | IDP-28      | 28              |
| IDP-14      | 14              | IDP-32      | 32              |
| IDP-16      | 16              | IDP-36      | 36              |
| IDP-18      | 18              | IDP-40      | 40              |
| IDP-20      | 20              | IDP-42      | 42              |
| IDP-22      | 22              |             |                 |

### DIMENSIONS

| CONTACTS | A                | B                | C               | D               |
|----------|------------------|------------------|-----------------|-----------------|
| 8        | .702<br>(15.28)  | .300<br>(7.62)   | .300<br>(7.62)  | .425<br>(11.00) |
| 10       | .802<br>(17.82)  | .400<br>(10.16)  | .300<br>(7.62)  | .433<br>(11.00) |
| 14       | .787<br>(20.00)  | .600<br>(15.24)  | .300<br>(7.62)  | .428<br>(10.88) |
| 16       | .87<br>(22.54)   | .700<br>(17.78)  | .300<br>(7.62)  | .428<br>(10.88) |
| 18       | 1.102<br>(27.98) | .800<br>(20.32)  | .300<br>(7.62)  | .433<br>(11.00) |
| 20       | 1.087<br>(27.62) | .900<br>(22.86)  | .300<br>(7.62)  | .428<br>(10.88) |
| 22       | 1.302<br>(33.06) | 1.000<br>(25.40) | .400<br>(10.16) | .551<br>(14.00) |
| 24       | 1.287<br>(32.69) | 1.100<br>(27.94) | .600<br>(15.24) | .728<br>(18.50) |
| 28       | 1.502<br>(40.68) | 1.300<br>(33.02) | .600<br>(15.24) | .740<br>(18.50) |
| 32       | 1.602<br>(45.76) | 1.500<br>(38.10) | .600<br>(15.24) | .740<br>(18.80) |
| 36       | 1.702<br>(50.84) | 1.700<br>(43.18) | .600<br>(15.24) | .740<br>(18.80) |
| 40       | 2.087<br>(53.00) | 1.900<br>(48.26) | .600<br>(15.24) | .728<br>(18.50) |
| 42       | 1.902<br>(58.46) | 2.00<br>(50.80)  | .600<br>(15.24) | .740<br>(18.80) |

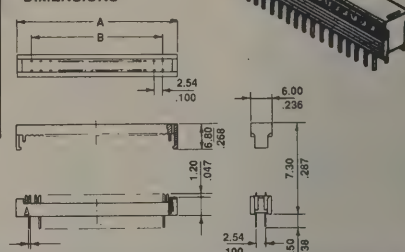


## IN-LINE TRANSITION CONNECTORS FITS STANDARD .100" x .100" MALE HEADER GRID PATTERN



| Catalog No. | No. of Contacts | Catalog No. | No. of Contacts |
|-------------|-----------------|-------------|-----------------|
| ILC-8       | 8               | ILC-28      | 28              |
| ILC-10      | 10              | ILC-30      | 30              |
| ILC-14      | 14              | ILC-34      | 34              |
| ILC-16      | 16              | ILC-40      | 40              |
| ILC-20      | 20              | ILC-50      | 50              |
| ILC-24      | 24              | ILC-60      | 60              |
| ILC-26      | 26              | ILC-64      | 64              |

### DIMENSIONS



### FEATURES

- For use with 28 AWG stranded flat cable
- UL 94V-0 rated black polyester
- Eliminate socket/header combination
- Tin-plated phosphor bronze contacts

|   | 8               | 10              | 14              | 16               | 20               | 24               | 26               | 28               | 30               | 34               | 40               | 50               | 60               | 64               |
|---|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| A | .602<br>(15.28) | .702<br>(17.82) | .902<br>(22.90) | 1.002<br>(25.44) | 1.202<br>(30.52) | 1.402<br>(35.60) | 1.502<br>(38.14) | 1.602<br>(40.68) | 1.702<br>(43.22) | 1.902<br>(48.30) | 2.202<br>(55.92) | 2.702<br>(68.62) | 3.202<br>(81.32) | 3.402<br>(86.40) |
| B | .300<br>(7.62)  | .400<br>(10.16) | .600<br>(15.24) | .700<br>(17.78)  | .900<br>(22.86)  | 1.100<br>(27.94) | 1.200<br>(30.48) | 1.300<br>(33.02) | 1.400<br>(35.45) | 1.600<br>(40.64) | 1.900<br>(48.26) | 2.400<br>(60.96) | 2.900<br>(73.66) | 3.100<br>(78.74) |

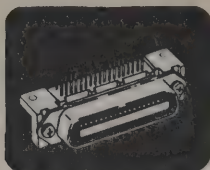


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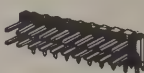






**BREAKAWAY HEADERS  
DUAL ROW, .025" SQUARE  
STRAIGHT PIN**

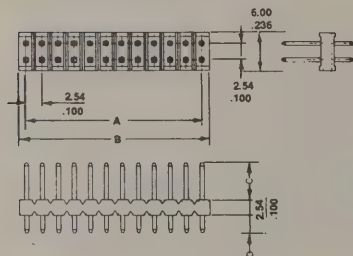
|                  | Catalog No. | No. of Contacts |
|------------------|-------------|-----------------|
| STRAIGHT POST    | DRH-4       | 4               |
|                  | DRH-6       | 6               |
|                  | DRH-8       | 8               |
|                  | DRH-10      | 10              |
|                  | DRH-12      | 12              |
|                  | DRH-14      | 14              |
|                  | DRH-16      | 16              |
|                  | DRH-20      | 20              |
|                  | DRH-26      | 26              |
|                  | DRH-30      | 30              |
| RIGHT ANGLE POST | DRHR-4      | 4               |
|                  | DRHR-6      | 6               |
|                  | DRHR-8      | 8               |
|                  | DRHR-10     | 10              |
|                  | DRHR-12     | 12              |
|                  | DRHR-14     | 14              |
|                  | DRHR-16     | 16              |
|                  | DRHR-20     | 20              |
|                  | DRHR-26     | 26              |
|                  | DRHR-30     | 30              |
| STRAIGHT POST    | DRH-34      | 34              |
|                  | DRH-40      | 40              |
|                  | DRH-50      | 50              |
| RIGHT ANGLE POST | DRHR-34     | 34              |
|                  | DRHR-40     | 40              |
|                  | DRHR-50     | 50              |
|                  | DRHR-6      | 6               |
|                  | DRHR-8      | 8               |
|                  | DRHR-10     | 10              |
|                  | DRHR-12     | 12              |



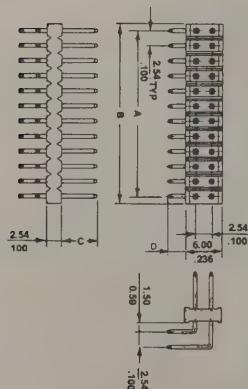
## FEATURES

- Tin-plated square post
  - Glass-filled, black polyester, UL94V-0 rated
  - Mates with .100" x .100" connectors
- Additional plating options are available; please contact factory.

### STRAIGHT POAST VERSION



### RIGHT ANGLE VERSION

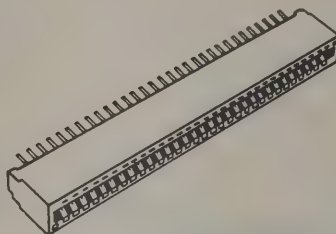


**DUAL ROW, PCB MOUNT  
CARD EDGE CONNECTOR  
2.54 MM (.100") CENTERS**

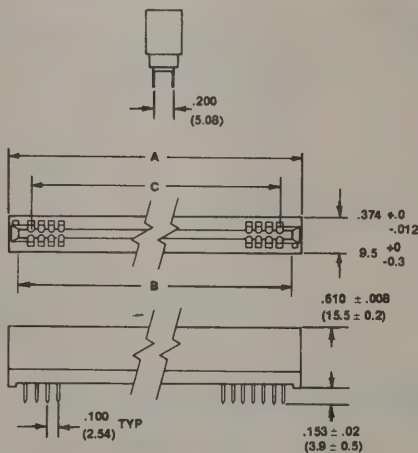
| Catalog No. | No. of Contacts | Description                      |
|-------------|-----------------|----------------------------------|
| DRE-36      | 36              | Molded Standoffs, Polarizing Key |
| DRE-40      | 40              | Molded Standoffs, Polarizing Key |
| DRE-44      | 44              | Molded Standoffs, Polarizing Key |
| DRE-50      | 50              | Molded Standoffs, Polarizing Key |
| DRE-62      | 62              | Molded Standoffs, Polarizing Key |
| DRE-86      | 86              | Molded Standoffs, Polarizing Key |
| DRE-98      | 98              | Molded Standoffs, Polarizing Key |

## FEATURES

- Tuning fork-shaped contacts
  - Glass-fiber reinforced polyester, UL 94V-2, nylon 6/6
  - 0.64 MM (.025") tin-plated square pin
- Additional plating options are available; please contact factory.



## DIMENSIONS



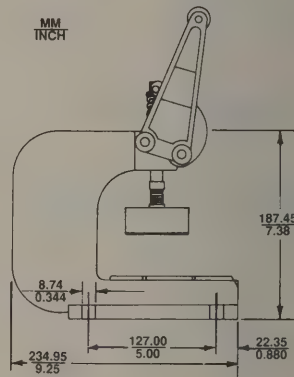
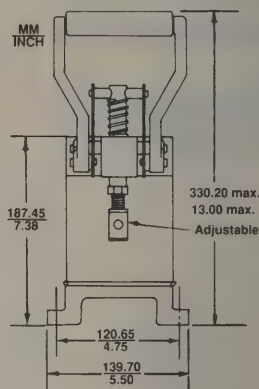
| NO. OF CONTACTS | DIM. A<br>±.20 M/M | DIM. B<br>±.30 M/M | DIM. C<br>±.010 M/M |
|-----------------|--------------------|--------------------|---------------------|
| 36              | 52.20              | 48.20              | 43.18               |
| 40              | 57.28              | 53.28              | 48.26               |
| 44              | 62.36              | 58.36              | 53.34               |
| 50              | 69.98              | 65.98              | 60.96               |
| 62              | 85.22              | 81.22              | 76.20               |
| 86              | 115.88             | 111.98             | 106.68              |
| 98              | 131.12             | 127.22             | 121.92              |

**MAINTENANCE -FREE  
CONNECTOR PRESS  
TERMINATES CONNECTORS  
TO 1.27MM (.050") FLAT CABLE**

| Catalog No.            | Description                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| LAT-1<br>(Wt. 12 Kgs.) | Hand-operated tool suitable for small lot production work, compact and lightweight, easy to operate. Order with applicator(s) below. |

| Consolidated Connector Series | Applicator No. |
|-------------------------------|----------------|
| CA, CAM, CB, CBM              | LAD-DPFR01     |
| CC, CCM, CF, CMF,             | LAD-LC1FR01    |
| CST                           | LAD-2541R01    |
| IDP                           | LAD-2615R01    |
| ILC                           | LAD-2595R01    |
| SCC                           | LAD-2540R01    |

### DIMENSIONS



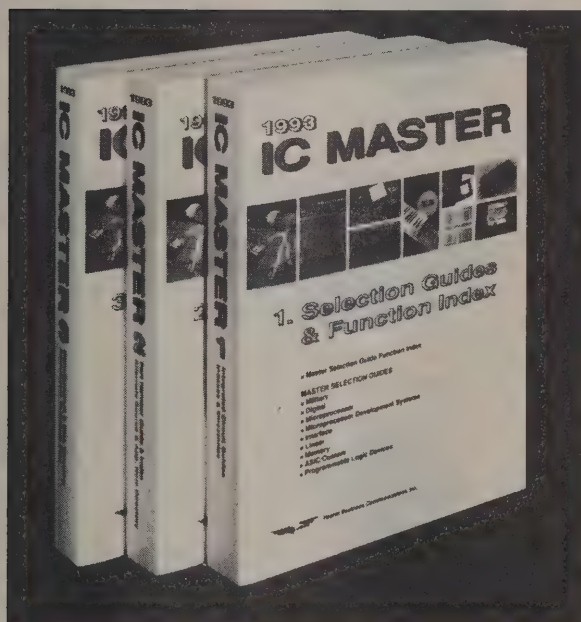
MANY OTHER CONNECTOR STYLES ARE ALSO AVAILABLE.  
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### Unfiltered Models

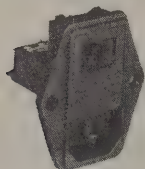
#### J Series

- 2 or 4 voltage selection
- North American fuse holder
- 6 amp current rating



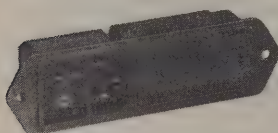
#### L Series

- North American OR European fuse holder
- Optional on/off switch or voltage selection
- 6 amp current rating
- Snap-in or flange mount



#### M Series

- North American AND European fuse holder
- 6 amp current rating
- Optional on/off switch
- Optional 2 or 4 voltage selection



#### M Series

- New Snap-in design
- Labor savings
- North American AND European fuse holder
- Optional 2 or 4 voltage selection



#### P Series

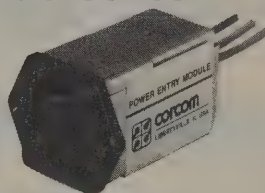
- IEC Connectors
- North American or European fuse holder
- Optional Switch
- 2 Voltage Selector
- Compact size
- 10 amp current rating



### Filtered Models

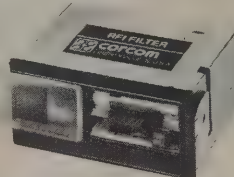
#### GG Series

- Compact size
- European fuse holder
- Filters rated for 1, 3 and 6 amps



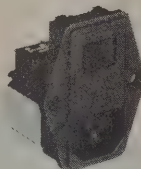
#### J Series

- Filtering for medical or or linear applications
- North American fuse holder
- 6 amp current rating



#### L Series

- Filtering for medical or linear applications
- North American OR European fuse holder
- Optional on/off switch OR voltage selection
- Current ratings of 1 to 6 amps
- Snap-in or flange mount



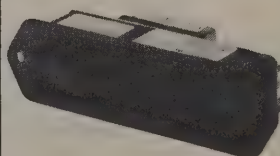
#### LA Series

- Three levels of filtering
- On/off switch
- North American AND European fuse holder
- 2 voltage selection
- Flange mount



#### M Series

- Four levels of filtering including medical applications
- North American AND European fuse holder
- Current ratings of 3 to 5 amps
- Optional on/off switch
- Optional 2 or 4 voltage selection
- Snap-in design available



See our pages in Vol. A, Section 2700; Vol. B, Section 4300.



# **corcom** **RFI Power Line Filters**

Corcom, Inc.  
 1600 Winchester Road  
 Libertyville, Illinois 60048 USA  
 TEL: 708-680-7400 FAX: 708-680-8169

## P Series

## The Chameleon Power Entry Modules

**Worldwide Agency Approvals in process including UL, CSA, and VDE**  
**Call Corcom for details.**  
**Patent Pending**

### P Series

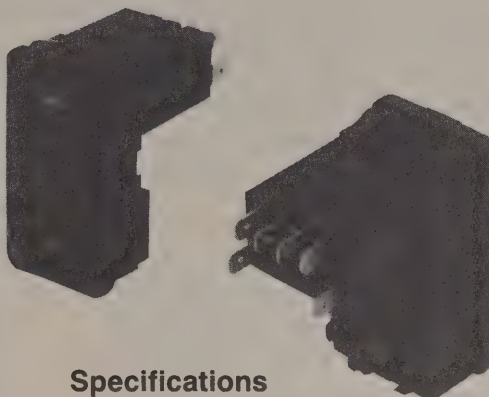
The P Series power entry module offers full flexibility of design in the most compact package.

As the first 10 amp module to provide all five power entry functions in one compact design, the "Chameleon" readily adapts to its environment and the needs of international markets.

- IEC power line connector
- Both North American and European fusing capabilities
- Two voltage selection
- Optional DPST on/off switch
- Filtering options available by early 1994

The Chameleon's compact design and modular construction will allow you to select all the power entry features you require—without altering the panel cut-out. And, the Chameleon, with adapters, will fit any standard panel cut-out you currently have designed.

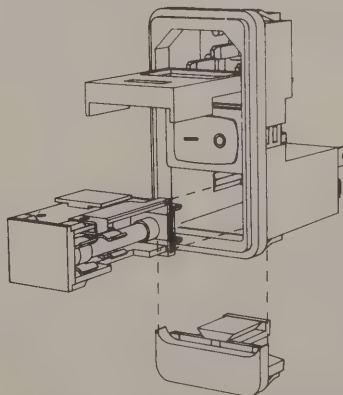
In addition, the Chameleon carries a full complement of safety agency approvals. Filtering for both susceptibility and medical applications is currently in tooling stages.



### Specifications

|                                       |              |
|---------------------------------------|--------------|
| Hipot rating (one minute):            |              |
| line-to-ground                        | 1500 VAC     |
| line-to-line                          | 1450 VDC     |
| Operating frequency:                  | 50/60 Hz     |
| Rated voltage:                        | 120/250 VAC  |
| Rated Current all nonfiltered models: |              |
|                                       | 10A @ 120VAC |
|                                       | 10A @ 250VAC |

|                          |                                              |
|--------------------------|----------------------------------------------|
| Operating Voltages:      |                                              |
| selectable or fixed      | 115/230 VAC                                  |
| Fuseholder:              |                                              |
| Accepts one or two fuses | 1/4" x 1-1/4"<br>or 5 x 20 mm                |
| Switch:                  | 10A/250                                      |
|                          | 10,000 operation at 51 amp inrush capability |





# **corcom** **Filtered Modular Jack**

**Corcom, Inc.**  
**1600 Winchester Road**  
**Libertyville, Illinois 60048 USA**  
**TEL: 708-680-7400 FAX: 708-680-8169**

Corcom's Signal Sentry Filtered Modular Jack provides a space saving and cost effective solution to signal line RFI emissions and susceptibility problems in telecommunications equipment, computers, terminals, workstations and peripherals.

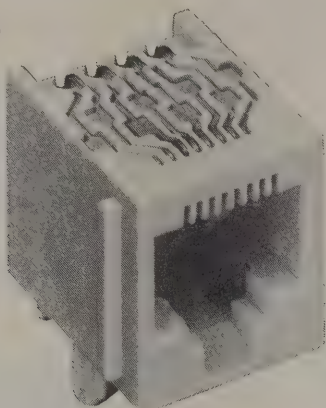
Conventional protection places separate filtering components on the printed circuit board near the connector, which adds to design/redesign requirements, uses valuable space, and sacrifices performance. The unique Corcom design, however, provides interference

suppression at its optimal location by integrating filtering into the RJ11 (6 position)/RJ45 (8 position) jack itself.

The Corcom Signal Sentry Filtered Modular Jack is the ideal connector to solve the RFI problems in your LAN, PBX, local I/O and ISDN interfaces to twisted pair or other multi-conductor cabling systems.

For detailed information, dimensions and PC board layout call or write for Signal Sentry Brochure.

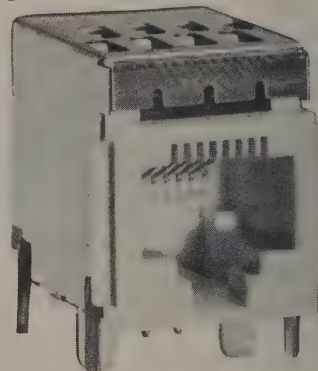
## L Models



L Models Inductive filtering in a direct retrofit size to standard unfiltered jacks. L models are offered with both standard ferrite sleeves and high performance ferrite block inductive filtering.

- Retrofit design
- RJ11, RJ45, and handset Jacks
- Available with metal shield for additional RF protection
- Ferrite block provides cost effective filtering
- Ferrite sleeves prevent cross talk

## LC Models



LC Models Inductive and capacitive filtering with metal shield. The ferrite blocks or ferrite sleeves are combined with ceramic chip capacitors for additional protection.

- Metal Shield with optional spring fingers for ground path across interface
- RJ11 and RJ45 Jack
- Ferrite Block provides cost effective filtering
- Ferrite sleeves prevent cross talk
- Available with terminals fully or partially loaded

# SIGNAL SENTRY™

See our pages in Vol. A, Section 2700; Vol. B, Section 4300.



Your Source for

CONNECTORS

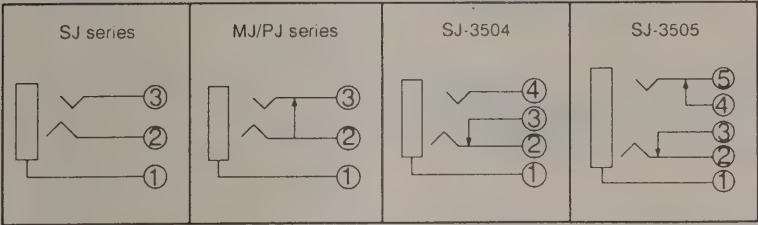
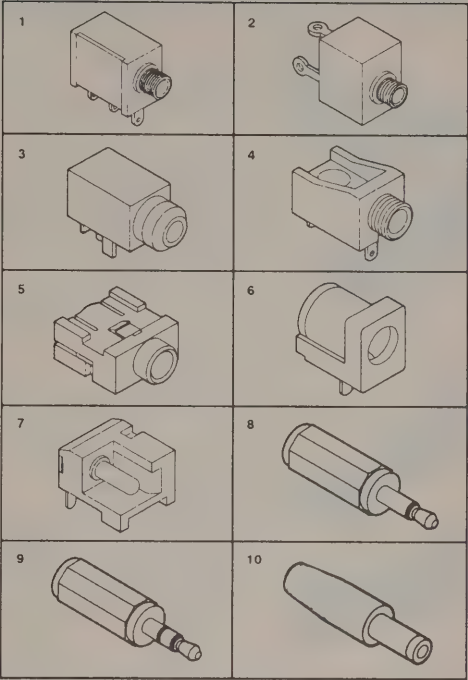
Power/ Circular DIN / Miniature DIN



Power Connectors

**General Specifications:** Contact Resistance: 10-20mΩ;  
Insulation Resistance: 50 MΩ min.; 500VDC; Voltage With-  
stand: 250 VAC, 1 minute; Life: 10,000 cycles, most models;  
Insertion/Extraction Force: 0.8 - 2.0 Kgs.

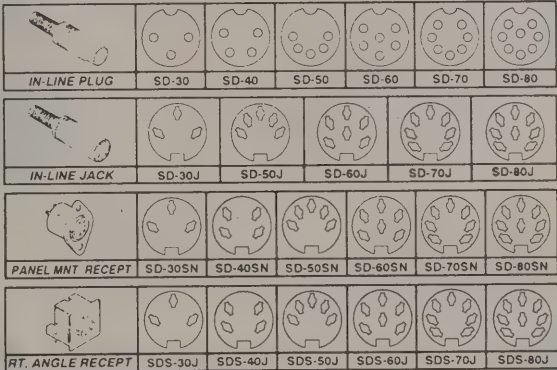
| Fig. | Description                  | Mating Connector    | Mfg. Part No. |
|------|------------------------------|---------------------|---------------|
| 1    | Right Angle Panel Mount Jack | 2.5 mm (CP-2501-ND) | MJ-2502       |
| 2    | Straight Panel Mount Jack    | 2.5 mm (CP-2501-ND) | MJ-2505       |
| 3    | PCB Mount Jack               | 2.5 mm (CP-2501-ND) | MJ-2503A      |
| 4    | Right Angle Panel Mount Jack | 3.5 mm (CP-3501-ND) | MJ-3536       |
| 5    | Right Angle PCB Mount Jack   | 3.5 mm (CP-3501-ND) | SJ-3504       |
| 5    | Right Angle PCB Stereo Jack  | 3.5 mm (CP-3502-ND) | SJ-3505       |
| 6    | Male Power Jack, Closed      | 2.0 mm (CP-004A-ND) | PJ-002A       |
| 6    | Male Power Jack, Closed      | 2.4 mm (CP-004B-ND) | PJ-002B       |
| 7    | Male Power Jack, Open        | 2.0 mm (CP-004A-ND) | PJ-003A       |
| 7    | Male Power Jack, Open        | 2.4 mm (CP-004B-ND) | PJ-003B       |
| 8    | Male Power Plug              | 3.5 mm (P-1)        | MP-3501       |
| 8    | Male Power Plug              | 2.5 mm (P-2)        | MP-2501       |
| 9    | Male Stereo Plug             | 3.5 mm              | SP-3501       |
| 10   | Female Plug, 5.5 mm outside  | 2.1 mm (P-5)        | PP-002A       |
| 10   | Female Plug, 5.5 mm outside  | 2.5 mm (P-6)        | PP-002B       |



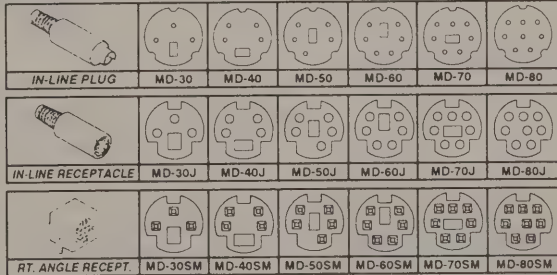
Circular and Miniature Din Connector

| Description                           | Mfg. Part No. |
|---------------------------------------|---------------|
| <b>CIRCULAR DIN CONNECTORS</b>        |               |
| 3-Pin In-Line Plug                    | SD-30         |
| 4-Pin In-Line Plug                    | SD-40         |
| 5-Pin In-Line Plug                    | SD-50         |
| 6-Pin In-Line Plug                    | SD-60         |
| 7-Pin In-Line Plug                    | SD-70         |
| 8-Pin In-Line Plug                    | SD-80         |
| 3-Pin In-Line Jack                    | SD-30J        |
| 5-Pin In-Line Jack                    | SD-50J        |
| 6-Pin In-Line Jack                    | SD-60J        |
| 7-Pin In-Line Jack                    | SD-70J        |
| 8-Pin In-Line Jack                    | SD-80J        |
| 3-Pin Panel Mount Receptacle          | SD-30SN       |
| 4-Pin Panel Mount Receptacle          | SD-40SN       |
| 5-Pin Panel Mount Receptacle          | SD-50SN       |
| 6-Pin Panel Mount Receptacle          | SD-60SN       |
| 7-Pin Panel Mount Receptacle          | SD-70SN       |
| 8-Pin Panel Mount Receptacle          | SD-80SN       |
| 3-Pin Right Angle Receptacle          | SDS-30J       |
| 4-Pin Right Angle Receptacle          | SDS-40J       |
| 5-Pin Right Angle Receptacle          | SDS-50J       |
| 6-Pin Right Angle Receptacle          | SDS-60J       |
| 7-Pin Right Angle Receptacle          | SDS-70J       |
| 8-Pin Right Angle Receptacle          | SDS-80J       |
| <b>MINIATURE DIN CONNECTORS</b>       |               |
| 3-Pin In-Line Plug                    | MD-30         |
| 4-Pin In-Line Plug                    | MD-40         |
| 5-Pin In-Line Plug                    | MD-50         |
| 6-Pin In-Line Plug                    | MD-60         |
| 7-Pin In-Line Plug                    | MD-70         |
| 8-Pin In-Line Plug                    | MD-80         |
| 3-Pin In-Line Receptacle              | MD-30J        |
| 4-Pin In-Line Receptacle              | MD-40J        |
| 5-Pin In-Line Receptacle              | MD-50J        |
| 6-Pin In-Line Receptacle              | MD-60J        |
| 7-Pin In-Line Receptacle              | MD-70J        |
| 8-Pin In-Line Receptacle              | MD-80J        |
| 3-Pin Shielded Right Angle Receptacle | MD-30SM       |
| 4-Pin Shielded Right Angle Receptacle | MD-40SM       |
| 5-Pin Shielded Right Angle Receptacle | MD-50SM       |
| 6-Pin Shielded Right Angle Receptacle | MD-60SM       |
| 7-Pin Shielded Right Angle Receptacle | MD-70SM       |
| 8-Pin Shielded Right Angle Receptacle | MD-80SM       |

Circular Din Connectors



Miniature Din Connectors



PHONE (503) 643-4899  
FAX (503) 643-6129



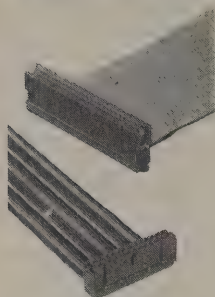
9640 SW Sunshine Ct. #700  
Beaverton, OR 97005 U.S.A.

THE CUI STACK DIFFERENCE: QUALITY, SERVICE AND EXPERIENCE



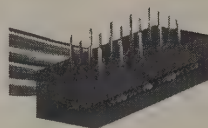
**DISCOVER**  
**CW**

# IDC Connectors



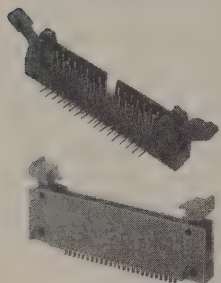
## SOCKET - IDC (Catalog C-2110 and C-2114)

- MIL-C-83503 qualified
- Patented contact
- Mates to .050" spaced conductors or NANO version to .025" spaced conductors
- 10 to 60 positions
- Choice of contact finish



## PCB - IDC (Catalog C-2110)

- MIL-C-83503 qualified
- Patented contact
- Mates to .050" spaced conductors
- 10 to 50 positions
- Choice of contact finish



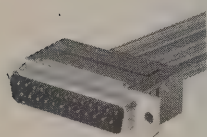
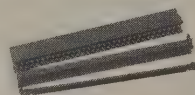
## HEADERS (Catalog C-2110 and C-2114)

- MIL-C-83503 qualified
- Easy mate or eject
- Polarization optional
- Contacts on .100" x .100" centers or NANO version on .050" x .050" centers
- 10 to 60 positions
- Choice of pin orientation, type, and finish



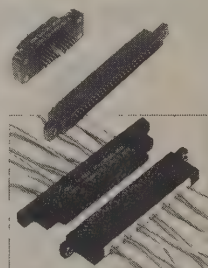
## AMERICAN DIN IDC CONNECTOR SYSTEM (Catalog MP 1188)

- Compatible to DIN connector system Spec 41612
- Patented contact
- Mates to .033" centered round conductor flat cable
- 96 positions
- Eliminates discrete wiring, soldering, crimping
- Choice of contact finish



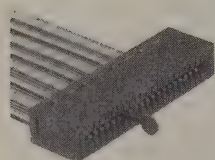
## D-SUBMINIATURE - IDC (Catalog C-2110)

- MIL-C-24308 qualified
- Patented contact
- Mates to .050" spaced conductors
- 9, 15, 25, 37 positions
- EMI/RFI shielding optional



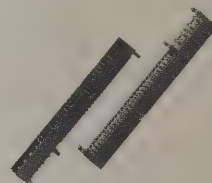
## MILITARY CONNECTORS (Catalog CWM 0291)

- Qualified to MIL-C-83503, MIL-C-24308, MIL-C-28804
- In-plant test facilities DOD qualified



## CARD EDGE - IDC (Catalog C-2110)

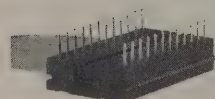
- Patented contact
- Mates to .050" spaced conductors
- Adjusts to PC board thickness variations
- 10 to 50 positions
- Polarization and mounting options



## CUSTOM CONNECTORS

Permit us to study and solve your unique connector problems. We engineer, design, develop, tool, automate, and test.

*Example: Dual-Purpose Connector for Unique Disk-Drive Application.*



## DIP - IDC (Catalog C-2110)

- MIL-C-83503 qualified
- Patented contact
- Mates to .050" spaced conductors and DIP sockets
- 14, 16, 24, or 40 positions
- Optional strain relief

See volume B, page B-1707 for our Switch products

## Standard & Custom Connectors Available

**CW**
**CW Industries**

130 James Way, Southampton, PA 18966  
 TEL: 215-355-7080 • FAX: 215-355-1088

Call today with catalog request.





## MINIGLOSSARY CONNECTORS

Connector terminology is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

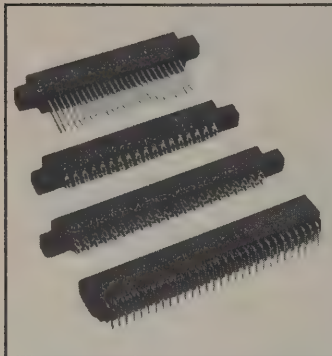
**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.



# MODELS EB4, EB6, EB7, EB8 Edgeboard Connectors

**150°C and 200°C Burn-In Connectors  
Dual Readout, High Temperature, Long Life**



## APPLICATIONS

Designed for burn-in oven and automatic temperature testing applications.

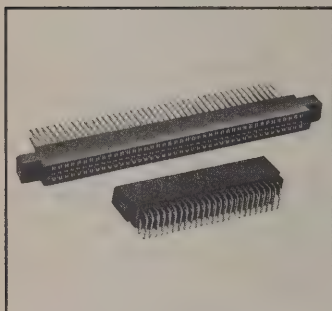
## SPECIAL NOTE:

When operating units at elevated temperatures, solder having a melting point 50°C above the operating temperature should be used. Contact factory for specific solder information.

## FEATURES

- **EB4**, .100" [2.54] C-C. **EB6**, .125" [3.17]. **EB7 and EB8**, .156" [3.96] C-C.
- Right angle styles included for all models
- High temperature, glass reinforced phenolic connector bodies - 150°C
- High temperature, glass reinforced PPS connector bodies - 200°C
- High reliability copper-nickel-tin alloy contacts
- Accepts P. C. board thickness of .054" - .071" [1.37 - 1.80]
- High reliability bifurcated bellows contacts
- Gold-plated contacts
- Card extender style terminals standard
- Variety of mounting styles available
- **Recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File E65524.**

## MODEL EB4 Edgeboard Connectors Dual Readout, .100" [2.54] C-C Standard and Right Angle Terminals



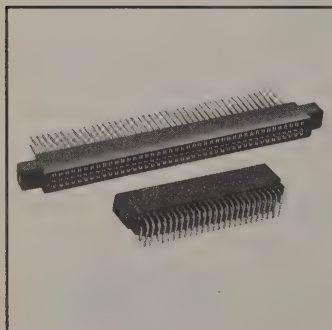
## FEATURES

- Grid Patterns: .100" C-C x .150" [2.54 x 3.81] and .100" C-C x .200" [2.54 x 5.08]
- Standard and right angle terminals
- Greater design latitude. 3 body materials: Diallyl phthalate, phenolic and glass-filled polyester. 7 contact termination styles: 3 Standard, 4 Right Angle. 20 body sizes and 6 mounting styles.
- Selective gold plating
- Accepts P. C. board thickness of .054" - .071" [1.37 - 1.80]
- Polarization between contact positions in all sizes. Between contact polarization permits polarizing without loss of contact position.
- **Recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File E65524, Project 77CH3889.**

## APPLICATIONS

For use with .0625" [1.59] printed circuit boards requiring an edgeboard type connector on .100" [2.54] centers.

## MODEL EB6 Edgeboard Connectors Dual Readout, .125" [3.17] C-C Standard and Right Angle Terminals



## FEATURES

- Grid Patterns: .125" C-C x .150" [3.17 x 3.81], .125" C-C x .200" [3.17 x 5.08] and .125" C-C x .250" [3.17 x 6.35]
- Standard and right angle terminals
- Greater design latitude. 3 body materials: Diallyl phthalate, phenolic and glass-filled polyester. 7 contact termination styles: 3 Standard, 4 Right Angle. 19 body sizes and 6 mounting styles.
- Selective gold plating
- Accepts P. C. board thickness of .054" - .071" [1.37 - 1.80]
- Polarization between contact positions in all sizes. Between contact polarization permits polarizing without loss of contact position.
- **Recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File E65524, Project 77CH3889.**

## APPLICATIONS

For use with .0625" [1.59] printed circuit boards requiring an edgeboard type connector on .125" [3.17] centers.

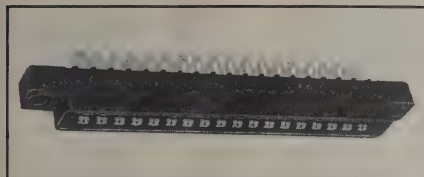


## MODEL EB7D Edgeboard Connectors Dual Readout

A COMPANY OF

VISHAY

DALE®



### FEATURES

- .156" C-C x .140" Grid [3.96 x 3.56]
- Bifurcated bellows contacts provide 2 flexing contact surfaces to assure positive contact under adverse conditions such as vibration or P. C. board irregularities
- Accepts P. C. board thickness of .054" - .071" [1.37 - 1.80]
- Polarization between contact positions in all sizes. Between contact polarization permits polarizing without loss of a contact position.
- Selective gold plating

- Polarizing key is reinforced nylon, may be inserted by hand, requires no adhesive
- Protected entry, provided by recessed leading edge of contact, permits the card slot to straighten and align the board before electrical contact is made. Prevents damage to contact which might be caused by warped or out of tolerance boards.
- Recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File E65524, Project 77CH3889.

### APPLICATIONS

For use with .062" [1.57] printed circuit boards requiring an edgeboard type connector on .156" [3.96] centers.

## MODEL EB7S Edgeboard Connectors Single Readout

A COMPANY OF

VISHAY

DALE®



### FEATURES

- .156" [3.96] C-C
- Bifurcated bellows contacts provide 2 flexing contact surfaces to assure positive contact under adverse conditions such as vibration or P. C. board irregularities
- Accepts P. C. board thickness of .054" - .071" [1.37 - 1.80]
- Polarization between contact positions in all sizes. Between contact polarization permits polarizing without loss of a contact position.
- Selective gold plating

- Polarizing key is reinforced nylon, may be inserted by hand, requires no adhesive
- Protected entry, provided by recessed leading edge of contact, permits the card slot to straighten and align the board before electrical contact is made. Prevents damage to contact which might be caused by warped or out of tolerance boards.
- Recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File E65524, Project 77CH3889.

### APPLICATIONS

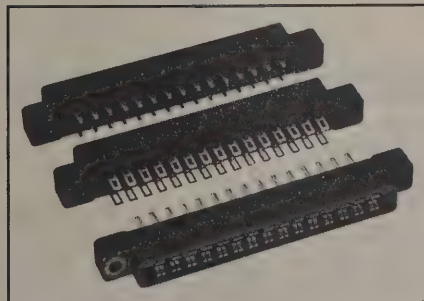
For use with .062" [1.57] printed circuit boards requiring an edgeboard type connector on .156" [3.96] centers.

## MODEL EB8 Edgeboard Connectors Dual Readout

A COMPANY OF

VISHAY

DALE®



### FEATURES

- .156" C-C x .200" Grid [3.96 x 5.08]
- Greater design latitude. 3 body materials: Diallyl phthalate, phenolic and glass-filled polyester. 6 contact termination styles, 8 body sizes, 7 mounting styles.
- Bifurcated bellows contacts provide 2 flexing contact surfaces to assure positive contact
- Accepts P. C. board thickness of .054" - .071" [1.37 - 1.80]
- Polarization between contact positions in all sizes
- Selective gold plating
- Recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File E65524, Project 77CH3889.

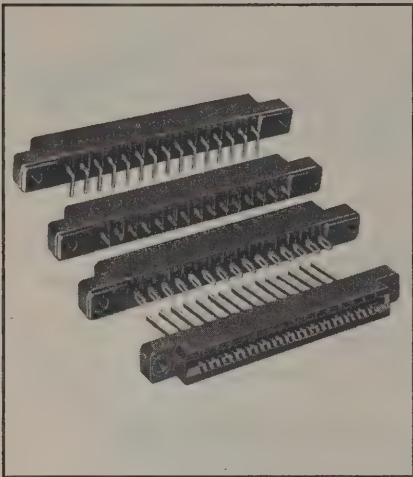
### APPLICATIONS

For use with .062" [1.57] printed circuit boards requiring an edgeboard type connector on .156" [3.96] centers.

## MODEL EBT156 Edgeboard Connectors

Single Readout

Dip Solder, Eyelet and Wire Wrap™ Termination



### FEATURES

- .156" [3.96] C-C
- Modified tuning fork contacts have chamfered lead-in to reduce wear on printed circuit board contacts without sacrificing contact pressure and wiping action.
- Accepts P. C. board thickness of .054" to .070" [1.37 to 1.78]
- Polarization on or between contact position in all sizes. Between contact polarization permits polarizing without loss of a contact position.
- Polarizing key is reinforced nylon, may be inserted by hand, requires no adhesive
- Protected entry, provided by recessed leading edge of contact, permits the card slot to straighten and align the board before electrical contact is made. Prevents damage to contacts which might be caused by warped or out of tolerance boards.
- Optional terminal configurations, including eyelet (Type A), dip-solder (Types B, C, D, R), Wire Wrap™ (Types E, F).
- Connectors with Type A, B, C, D or R contacts are recognized under the Component Program of Underwriters Laboratories, Inc. Listed under File 65524, Project 77CH3889.

### APPLICATIONS

For use with .062" [1.57] printed circuit boards requiring an edgeboard type connector on .156" [3.96] centers.

## MODEL 300 Printed Circuit Board Connectors

Dip Solder



### FEATURES

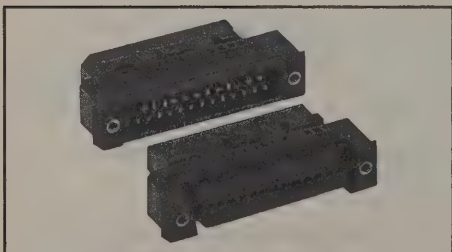
- Right angle or straight through dip solder terminals
- Threaded mounting studs
- Male contacts molded in
- Mating connector has solder cup or dip solder terminals
- Permanent mounting provides greater reliability
- Female contacts float to aid in alignment and resist vibration
- Polarization provided by contact arrangement and guide pin location

### APPLICATIONS

Where permanent mounting of male connector to printed circuit board is required with mating female connector available.

## MODEL DSEB Connectors

D-Subminiature/Edgeboard Hybrid



### FEATURES

- Combined technology of D-Subminiature and edgeboard into one connector
- Excellent alternative to surface mount technology
- Precision molded housing for accurate alignment during mating
- Selective gold plating in contact areas only to minimize costs
- Built-in locking features to hold in position in back panel of device
- Available with D-Subminiature pin or socket mating option

### APPLICATIONS

For use with any printed circuit board requiring a D-Subminiature Connector. Allows the elimination of soldering the D-Subminiature Connector to the printed circuit board by mounting the connector directly to the chassis.



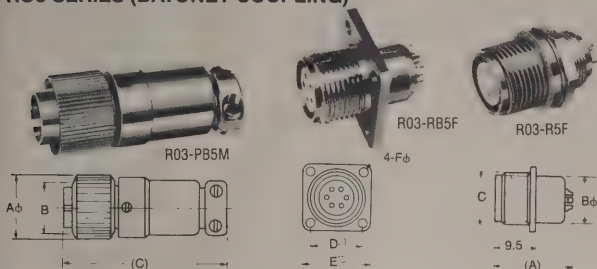


# QUALITY CONNECTORS of *TAJIMI/DSC*

## MINIATURE CIRCULAR CONNECTORS

Vibration, Moisture, Corrosion resistance: MIL-C-STD-202E.

### RO3 SERIES (THREADED COUPLING) RO5 SERIES (BAYONET COUPLING)

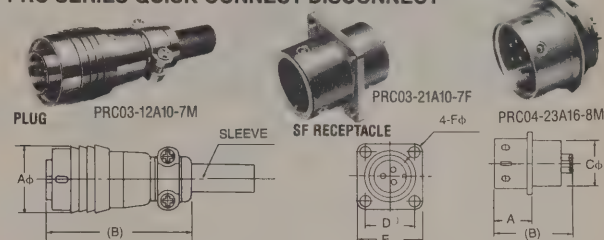


RO3 and RO5 series multipin circular connectors are small in size and high in reliability. Suitable for miniature and high density electronics equipment.

Material: Shell is brass & zinc alloy, nickel plated. Contacts: copper alloy, gold plated (Nickel based).

| No. of Contacts | A    | B           | C    | Cable O.D. | A    | B    | C           | D    | E    | F   |
|-----------------|------|-------------|------|------------|------|------|-------------|------|------|-----|
| 2, 3, 5         | 12.0 | M10.5P=0.75 | 32.0 | 5.2        | 18.0 | 9.0  | M10.5P=0.75 | 10.5 | 15.0 | 2.2 |
| 6, 8            | 15.5 | M14P=1      | 34.0 | 6.2        | 18.0 | 12.0 | M14P=1      | 13.0 | 17.5 | 2.2 |
| 12              | 20.0 | M18P=1      | 39.0 | 10.5       | 18.0 | 16.0 | M18P=1      | 17.0 | 22.5 | 2.8 |

### PRC SERIES QUICK CONNECT-DISCONNECT



PRC03, 04 and 05 series are quick release, lightweight, miniature multipin connectors with audible lock mechanism, and are also free of vibration and impact problems.

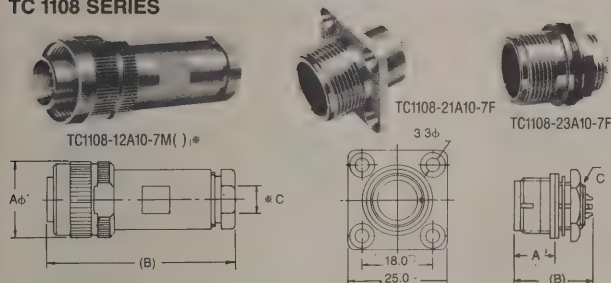
Material & Plating: PRC05. Brass-Nickel, PRC03. Zinc Alloy-Nickel, PRC04. Aluminum A/O coating.

| Plug   |                 |      |      | SF & BH Receptacle |      |      |      |      |      |     |
|--------|-----------------|------|------|--------------------|------|------|------|------|------|-----|
| Series | No. of Contacts | A    | B    | Cable O.D.         | A    | B    | C    | D    | E    | F   |
| PRC03  | 2, 3, 4, 5, 7   | 21.0 | 46.0 | 10.5               | 12.5 | 26.5 | 15.0 | 16.0 | 21.0 | 2.9 |
|        | 8, 14           | 28.0 | 55.5 | 12.5               | 13.5 | 25.5 | 21.0 | 21.5 | 28.0 | 3.4 |
| PRC04  | 12, 19          | 34.0 | 63.5 | 14.5               | 14.0 | 26.0 | 26.0 | 26.0 | 33.0 | 3.9 |
|        | 21, 37          | 41.0 | 71.0 | 18.0               | 14.0 | 26.0 | 32.0 | 31.0 | 38.0 | 3.9 |
|        | 2, 3, 5         | 13.5 | 32.0 | 5.2                | 9.5  | 18.0 | 9.0  | 11.5 | 16.0 | 2.2 |
| PRC05  | 6, 8            | 16.7 | 34.0 | 6.2                | 9.5  | 18.0 | 12.0 | 13.5 | 18.0 | 2.2 |
|        | 12              | 21.0 | 39.0 | 10.5               | 9.5  | 18.0 | 16.0 | 17.0 | 22.5 | 2.8 |

## WATERPROOF CIRCULAR CONNECTORS

Vibration, Moisture, Corrosion resistance: MIL-C-STD-202E.

### TC 1108 SERIES



Tajimi TC1108 series connectors are waterproof up to 30 meters in depth. Economical and highly reliable construction also provides for applications in high humidity conditions. Hermetically sealed receptacles (Glass-to-Metal seal and Ceramic seal) are also available. Its applications are for vacuum pumps, inert gas tanks and oil pressure pumps.

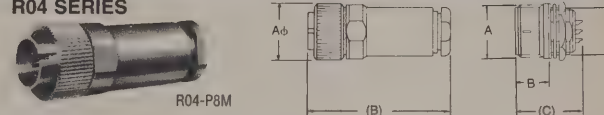
Material & Plating: Brass-Nickel. Contacts: Copper Alloy-Gold (Nickel based).

| Shell Size | No. of Contacts | A  | B    | Back-Nut I.D.* C              | Mounting Hole Dia. | Receptacle Bulk Head |      |      |
|------------|-----------------|----|------|-------------------------------|--------------------|----------------------|------|------|
|            |                 |    |      |                               |                    | A                    | B    | C    |
| 10         | 2, 3, 4, 5, 7   | 21 | 52   | 5.2, 6.3, 7.0, 8.0, 8.6, 10.0 | 14.2               | 12.5                 | 26.0 | M15  |
| 16         | 8, 14           | 27 | 55.5 | 11.1/11.8/13.5                | 20.2               | 12.5                 | 26.0 | 21.0 |
| 20         | 12, 19          | 34 | 61   | 11.0/14.3/15.8                | 25.2               | 13.5                 | 26.0 | 26.0 |
| 26         | 21, 37          | 40 | 65   | 16.3                          | 31.2               | 13.5                 | 26.0 | 32.0 |

\*Select most suitable I.D. for cable jacket outer diameter.

\*CAPs are available for receptacle and Plug of TC1108 & R04 series.

### R04 SERIES



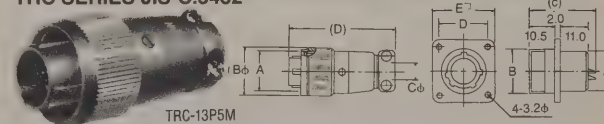
Tajimi R04 series connectors are miniature and waterproof up to 20 meters in depth. Its superior quality and small size offer design flexibility for a wide variety of applications including those for small electronics instruments and electromechanical devices which operate under high humidity conditions. Also available: Hermetically sealed receptacles (Glass-to-Metal seal and Ceramic seal).

Material & Plating: Brass-Nickel. Contacts: Copper Alloy-Gold (Nickel based).

| No. of Contacts | A    | B  | Cable O.D.       | A           | B   | C    | D          |
|-----------------|------|----|------------------|-------------|-----|------|------------|
| 2, 3, 5         | 12.0 | 38 | 4.8φ             | M10.5P-0.75 | 9.0 | 18.0 | M9.0P-0.5  |
| 6, 8            | 15.5 | 40 | 6.3φ, 6.8φ, 7.3φ | M14.0P-1    | 9.0 | 18.0 | M12.0P-0.8 |
| 12              | 20.0 | 42 | 8.5φ             | M18P-1      | 9.0 | 18.0 | M16P-1     |

## JAPAN INDUSTRIAL STANDARD CONNECTORS

### TRC SERIES JIS-C.5432



TRC series meet to Japan Industrial Standard (JIS.C.5432)

This connector is applied to many Japan made instruments and machineries.

| Shell size | No. of Contacts | A Thread | B    | C    | D    | A  | B Thread | D  | E  |
|------------|-----------------|----------|------|------|------|----|----------|----|----|
| 13         | 3, 5            | M18P=1   | 21.5 | 8.5  | 46.0 | 16 | M18P=1   | 20 | 26 |
| 16         | 7, 10           | M22P=1   | 25.5 | 12.0 | 49.0 | 20 | M22P=1   | 23 | 29 |
| 21         | 10, 16          | M26P=1   | 29.5 | 14.5 | 53.0 | 24 | M26P=1   | 26 | 32 |
| 25         | 16, 24          | M30P=1   | 33.5 | 17.5 | 56.0 | 28 | M30P=1   | 29 | 35 |

## SPECIFICATIONS FOR ALL SERIES

| Series                         | R01, R03, R04, R05, PRC05                                           | PRC03, TC1108 | PRC04 & TC1108 |
|--------------------------------|---------------------------------------------------------------------|---------------|----------------|
| Contacts                       | 2, 3, 6, 5, 8, 2, 3, 4, 5, 7, 8, 12, 14, 19, 21, 37                 |               |                |
| Current rating                 | 2A, 2A, 2A, 10A, 10A, 5A, 5A, 10A, 5A, 4A, 10A, 3A                  |               |                |
| Voltage rating (AC Vrms)       | 300, 150, 200, 600, 350, 400, 350, 400, 350, 400, 400, 400          |               |                |
| Withstanding Voltage (AC Vrms) | 900, 500, 700, 1800, 1000, 1200, 1000, 1200, 1000, 1200, 1200, 1200 |               |                |

Inline connector (JACK) is available for all series.

DSC offers a complete line of Tajimi connectors including RF Coaxial, Triaxial, Sub-miniature Coaxial.

For more information please call 1-800-372-1616

**DSC** DIRECT SOUND CORPORATION  
The Park Square Bldg., 31 St. James Street, Ste. 901, Boston, MA 02116

TOLL-FREE-1-800-372-1616

FAX 1-800-354-3317



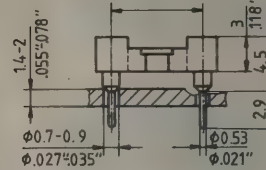
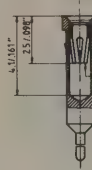
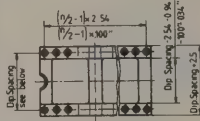
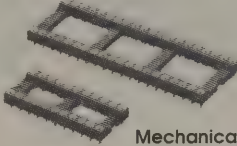
14455 North Hayden Road, Suite 208 • Scottsdale, AZ 85260  
(602) 443-1949 Fax: (602) 998-0809

1-800-638-3226

## Series 100- Dual-in-line IC Sockets with screw machined pins

### Material

- Pin (outer sleeve):  
Brass, machined CuZn38Pb2
- Clip (contact 4 finger):  
Beryllium Copper, heat treated
- Plating Pin (outer sleeve):  
Tin plated;  
2μm/80μ" nickel, 5μm/200 μ"tin-lead,  
Gold-plated;  
2μm/80μ" nickel, 0.25μm/10 μ"full gold
- Plating Clip (contact):  
2μm/80-μ"nickel gold and tin plating  
see table below
- Insulator body (black):  
Glass filled polyester Valox UL 94 V-O



### Mechanical

- Average insertion force with steel pin  
φ 0.46mm/.018"
- Average withdrawal with steel pin φ 0.46mm/.018"
- Insulator body (black):  
Glass filled polyester Valox UL 94 V-O

| 4FC | 6FC   |
|-----|-------|
| ≤3N | ≤1.3N |

| ≥0.4N | ≥0.2N |
|-------|-------|
|-------|-------|

- Mechanical life cycle: min. 200cycle
- Operating temperatures (continuous):  
Gold plated: -55°C to +125°C  
-67°F to +257°F  
Tin plated: -40°C to +105°C  
-104°F to +221°F
- Soldering temperature: +260°C, 10s max.  
+500°F, 10 s max.

### How To Order

100 - XXX - 10 - XXX

#### Number of contacts

No. of contacts-Code 10  
04,06,08,10,14,16,18,20,22,24,28,32,24,28,32,36,40,42,48,50,52,64

#### Dip Spacing

| Definition  | Code |
|-------------|------|
| 5.08/.200"  | 2    |
| 7.62/.300"  | 3    |
| 10.16/.400" | 4    |
| 15.24/.600" | 6    |
| 22.86/.900" | 9    |

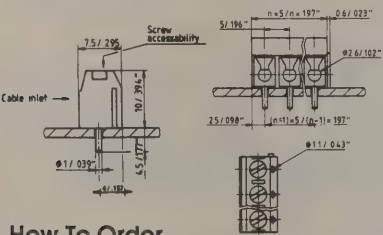
#### Pin and Clip Code Table (other platings available upon request)

| Clip 4 Finger            | Clip 6 Finger | Gold plated clip<br>0.025 μm/.10μ" | Gold plated clip<br>0.75 μm/.30μ" | Tin plated clip<br>5μm/200μ" |
|--------------------------|---------------|------------------------------------|-----------------------------------|------------------------------|
| Pin (sleeve) Tin plated  | 1003          | 1005                               | 1006                              | 1007                         |
| 5μm/200μ"                | 1004          | 1006                               | 1008                              | 1008                         |
| Pin (sleeve) Gold plated | 1303          | 1305                               | 1306                              |                              |
| 0.25μm/.200μ"            | 1304          | 1306                               |                                   |                              |

Packing Units: (In tubes) for the number of sockets per tube; see insulator bodies

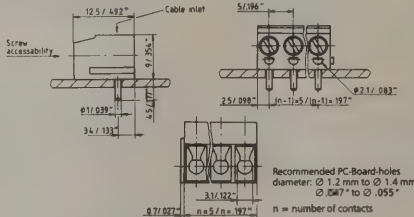
## Series 301- Front Cable inlet Type-Screw on Top

Spacing 5mm/.197" or 10mm/.394"  
Height over PC-Board 10.0mm/.394"



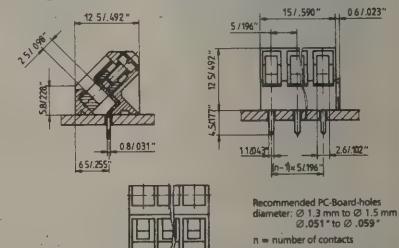
## Series 310- Top Wire inlet Type-Screw in Front

Spacing 5mm/.197" or 10mm/.394"  
Height over PC-Board 7.5mm/.295"



## Series 320- 45°C Wire inlet Type-Screw at 45°

Spacing 5mm/.197" or 10mm  
Height over PC-Board 12.5mm/.492"



### How To Order

301,310 or 320 - XXX - XXX0

#### Number of contacts

Definition Code  
2 contacts(Std.) = 02  
3 contacts(basic blocks = 03  
(2 & 3 blocks are the standard versions with multiples available)

#### Pitch (pin spacing)

| Definition | Code |
|------------|------|
| 5mm/.197"  | 1    |
| 10mm/.394" | 2    |

#### Wire Guard

| Definition      | Code |
|-----------------|------|
| No Wire Guard   | 0    |
| With Wire Guard | 1    |

#### Color

| Definition       | Code |
|------------------|------|
| Black (Standard) | 0    |
| Blue             | 6    |

(Other colors available upon request)

#### Marking

| Definition | Code |
|------------|------|
| None       | 0    |
| With       | 1    |

(markings available are: 1 to 100 or A to Z or custom specified)

## Series 145- Pin Grid Array

**Insulator body:** Polyphenylene-Sulfide (PPS), self extinguishing rated UL 94 V-O, black, resistant against detergents, mineral acids, solvents, greases and oils (short time), thickness 3mm/.118"

**Inner contact (clip):** Stamped beryllium copper with 6 fingers, gold-plated or tin-lead plated over 2-3 μm/80-120 μ" nickel plating, see pin code ref. table

**Outer sleeve (pin):** Screw machined brass (Q-Q-B-626), gold-plated 0.25μm/10μ" or tin-lead plated 5 μm/200 μ" over 2-3 μm/80-120 μ" nickel plating.

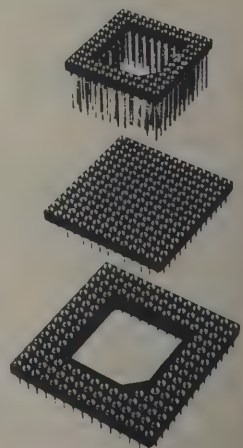
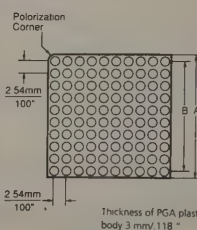
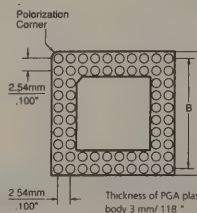
### Electrical

- Max current: 3A
- Contact resistance per contact:
- Insulation resistance:  
10<sup>9</sup> MΩ at U=100-10mΩ
- Max. operating voltage: 100 Vac/VDC
- Overload voltage: 1500 VRMS at 50 Hz
- Min. creepage distance: 0.67mm/.024"
- Capacity between two pins: <1 pF

### Mechanical

- Average press fit of pin in insulator body: 58N
- Average press fit of clip in pin: 65N
- Average insertion force with steel pin φ 0.56mm/.022": 12N
- Average withdrawal force with steel pin φ 0.40mm/.016": 0.3N

| Insulator Size | A<br>+0.50mm/0.20" |       | B<br>+0.13mm/.005" |       |
|----------------|--------------------|-------|--------------------|-------|
|                | mm                 | inch  | mm                 | inch  |
| 06x06          | 16.51              | 0.650 | 12.70              | 0.500 |
| 07x07          | 19.05              | 0.750 | 15.24              | 0.600 |
| 08x08          | 21.59              | 0.850 | 17.79              | 0.700 |
| 09x09          | 24.13              | 0.950 | 20.32              | 0.800 |
| 10x10          | 26.67              | 1.050 | 22.86              | 0.900 |
| 11x11          | 29.21              | 1.150 | 25.40              | 1.000 |
| 12x12          | 31.75              | 1.250 | 27.94              | 1.100 |
| 13x13          | 34.29              | 1.350 | 30.48              | 1.200 |
| 14x14          | 36.83              | 1.450 | 33.02              | 1.300 |
| 15x15          | 39.37              | 1.550 | 35.56              | 1.400 |
| 16x16          | 41.91              | 1.650 | 38.10              | 1.500 |
| 17x17          | 44.45              | 1.750 | 40.64              | 1.600 |
| 18x18          | 46.99              | 1.850 | 43.18              | 1.700 |
| 19x19          | 49.53              | 1.950 | 45.72              | 1.800 |
| 20x20          | 52.07              | 2.050 | 48.26              | 1.900 |







40 Tiffield Rd, Scarborough, Ontario M1V 5B6  
Tel: 416-754-3322 Fax: 416-754-3299

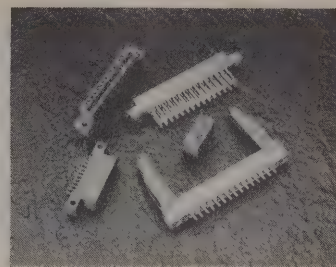
## CARD EDGE CONNECTORS

### Features

- Extensive, full line with over 435,000 different varieties of product.
- Over two million insulator bodies in stock at all times.
- All aspects of production and manufacturing done in house.
- All popular contact centers....050", .100", .125", .150", .156" and .200".
- Wide variety of card depth, row spacing and other options readily available. Large selection of mounting options.
- Both high and low profile insulators.
- Terminations include a variety of styles of dip solder P.C. tail, wire wrap, and wire hole in both single and dual row.
- Compliant pin (press fit) is available in all styles and sizes, utilizing our "Ultra-Mate" compliant section design that has been the preferred choice by most OEM engineers.
- Surface mount styles also available.
- Standard delivery in three weeks.
- Most industry standard bus structure connectors available.

### Specifications

- Insulator materials available include: Diallyl Phthalate, Polyester, Polyphenylene Sulphide, Polycarbonate and Nylon.
- Flammability rated at UL 94 V-O (except Nylon at UL 94 HB and Polycarbonate at V-2)
- Contact base materials include Phosphor Bronze Alloy CA-510, and Copper, Nickel, Tin Alloy CA-725.
- Contact plating options include selective plating, overall plating and gold inlay.
- Large variety of hardware, such as threaded inserts, bushings and card guides available.
- UL and CSA approved.
- An unlimited amount of special variations available.
- All processes are free of all ozone depleting substances.
- Customer engineering assistance available.
- Individual specifications of some of our most popular series are listed below.

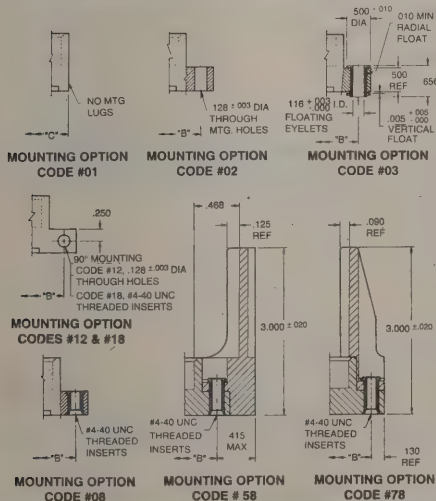


### Specifications

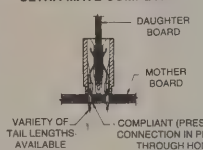
| Contact Spacing | Row Spacing | Series | Color | No. of Contacts | Accepts P.C. Board Thickness | Card Slot Depth | Insulator Height | Mounting Ears | Contacts available |           | Contacts available |           | Single/Dual Readout |
|-----------------|-------------|--------|-------|-----------------|------------------------------|-----------------|------------------|---------------|--------------------|-----------|--------------------|-----------|---------------------|
|                 |             |        |       |                 |                              |                 |                  |               | Current Rating     | Wire Hole | Wire Wrap          | P.C. Tail |                     |
| .100            | .200        | 345    | green | 5 to 144        | .054 to .070                 | .330            | .600             | yes *         | 3 amps             | yes       | yes                | yes       | either              |
| .100            | .200        | 395    | black | 5 to 144        | .054 to .070                 | .330            | .600             | yes *         | 3 amps             | yes       | yes                | yes       | either              |
| .100            | .140        | 341    | green | 6 to 120        | .054 to .070                 | .295            | .437             | yes *         | 3 amps             | yes       | no                 | yes       | either              |
| .100            | .140        | 391    | black | 6 to 120        | .054 to .070                 | .295            | .437             | yes *         | 3 amps             | yes       | no                 | yes       | either              |
| .100            | .300        | 325    | green | 6 to 122        | .115 to .135                 | .297            | .600             | yes *         | 3 amps             | no        | yes                | yes       | either              |
| .125            | .250        | 346    | green | 6 to 100        | .054 to .070                 | .330            | .600             | yes *         | 3 amps             | yes       | yes                | yes       | either              |
| .125            | .250        | 396    | black | 6 to 100        | .054 to .070                 | .330            | .600             | yes *         | 3 amps             | yes       | yes                | yes       | either              |
| .156            | .140        | 305    | green | 12 to 86        | .054 to .070                 | .300            | .460             | yes *         | 5 amps             | yes       | no                 | yes       | dual                |
| .156            | .140        | 355    | black | 12 to 86        | .054 to .070                 | .300            | .460             | yes *         | 5 amps             | yes       | no                 | yes       | dual                |
| .156            | centerline  | 306    | green | 6 to 43         | .054 to .070                 | .295            | .460             | yes *         | 5 amps             | yes       | no                 | yes       | single              |
| .156            | centerline  | 356    | black | 6 to 43         | .054 to .070                 | .295            | .460             | yes *         | 5 amps             | yes       | no                 | yes       | single              |
| .156            | .200        | 307    | green | 6 to 88         | .054 to .070                 | .300            | .460             | yes *         | 5 amps             | yes       | yes                | yes       | either              |
| .156            | .200        | 357    | black | 6 to 88         | .054 to .070                 | .300            | .460             | yes *         | 5 amps             | yes       | yes                | yes       | either              |
| .156            | .200        | 337    | green | 6 to 86         | .054 to .070                 | .330            | .600             | yes *         | 3 amps             | no        | yes                | yes       | either              |
| .156            | .200        | 387    | black | 6 to 86         | .054 to .070                 | .330            | .600             | yes *         | 3 amps             | no        | yes                | yes       | either              |
| .156            | .200        | 338    | green | 10 to 56        | .054 to .070                 | .295            | .473             | yes *         | 6 amps             | no        | yes                | no        | either              |
| .200            | .200        | 243    | white | 2 to 6          | .054 to .070                 | .370            | .656             | no            | 5 amps             | no        | yes                | no        | either              |

\* Also available without mounting ears

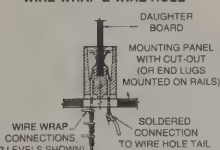
Note: All dimensions in inches



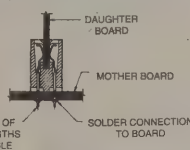
#### ULTRA-MATE COMPLIANT FIT



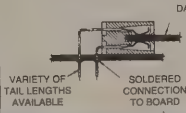
#### WIRE WRAP & WIRE HOLE



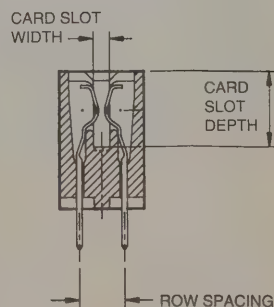
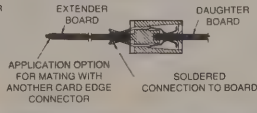
#### SOLDER DIP P.C. TAIL



#### RIGHT ANGLE BEND FOR PARALLEL BOARDS



#### EXTENDER BOARD BEND FOR IN-LINE BOARDS



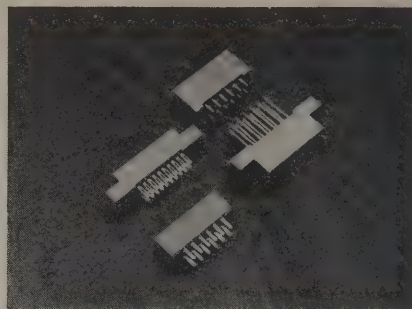
#### SECTION "Y-Y" DUAL READOUT

YOUR CONNECTION TO QUALITY AND SERVICE



40 Tiffield Rd, Scarborough, Ontario M1V 5B6  
Tel: 416-754-3322 FAX: 416-754-3299

## CARD EDGE CONNECTORS



### .100" Contact Spacing

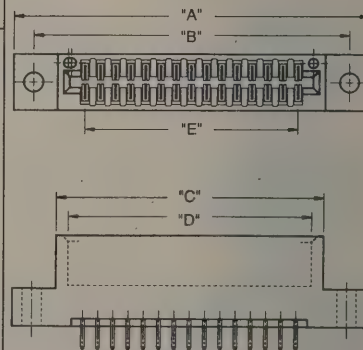
| Dimension       |      | "A"   |       |            |            |            | "B"   |       |                      |            | "C"   |       |            |            |                 | "D"   |               | "E"   |
|-----------------|------|-------|-------|------------|------------|------------|-------|-------|----------------------|------------|-------|-------|------------|------------|-----------------|-------|---------------|-------|
| No. of Contacts |      | 325   | 340   | 341<br>391 | 342<br>392 | 345<br>395 | 325   | 340   | 341, 391<br>345, 395 | 342<br>392 | 325   | 340   | 341<br>391 | 342<br>392 | 345<br>395, 745 | 340   | All<br>Others | All   |
| Single          | Dual |       |       |            |            |            |       |       |                      |            |       |       |            |            |                 |       |               |       |
| 5               | 10   | 1.355 | 1.900 | 1.375      | 1.300      | 1.335      | 1.056 | 1.400 | 1.075                | 1.022      | 0.722 | 0.965 | 0.775      | 0.746      | 0.760           | 0.610 | 0.600         | 0.400 |
| 6               | 12   | 1.455 | 2.000 | 1.475      | 1.400      | 1.435      | 1.156 | 1.500 | 1.175                | 1.122      | 0.822 | 1.065 | 0.875      | 0.846      | 0.860           | 0.710 | 0.700         | 0.500 |
| 10              | 20   | 1.855 | 2.400 | 1.875      | 1.800      | 1.835      | 1.556 | 1.900 | 1.575                | 1.522      | 1.222 | 1.465 | 1.275      | 1.246      | 1.260           | 1.110 | 1.100         | 0.900 |
| 13              | 26   | 2.155 | 2.700 | 2.175      | 2.100      | 2.135      | 1.856 | 2.200 | 1.875                | 1.822      | 1.522 | 1.765 | 1.575      | 1.546      | 1.560           | 1.410 | 1.400         | 1.200 |
| 15              | 30   | 2.355 | 2.900 | 2.375      | 2.300      | 2.335      | 2.056 | 2.400 | 2.075                | 2.022      | 1.722 | 1.965 | 1.775      | 1.746      | 1.760           | 1.610 | 1.600         | 1.400 |
| 18              | 36   | 2.655 | 3.200 | 2.675      | 2.600      | 2.635      | 2.356 | 2.700 | 2.375                | 2.322      | 2.022 | 2.265 | 2.075      | 2.046      | 2.060           | 1.910 | 1.900         | 1.700 |
| 22              | 44   | 3.055 | 3.600 | 3.075      | 3.000      | 3.035      | 2.756 | 3.100 | 2.775                | 2.722      | 2.422 | 2.665 | 2.475      | 2.446      | 2.460           | 2.310 | 2.300         | 2.100 |
| 25              | 50   | 3.355 | 3.900 | 3.375      | 3.300      | 3.335      | 3.056 | 3.400 | 3.075                | 3.022      | 2.722 | 2.965 | 2.775      | 2.746      | 2.760           | 2.610 | 2.600         | 2.400 |
| 28              | 56   | 3.655 | 4.200 | 3.675      | 3.600      | 3.635      | 3.356 | 3.700 | 3.375                | 3.322      | 3.022 | 3.265 | 3.075      | 3.046      | 3.060           | 2.910 | 2.900         | 2.700 |
| 30              | 60   | 3.855 | 4.400 | 3.875      | 3.800      | 3.835      | 3.556 | 3.900 | 3.575                | 3.522      | 3.222 | 3.465 | 3.275      | 3.246      | 3.260           | 3.110 | 3.100         | 2.900 |
| 31              | 62   | 3.955 | 4.500 | 3.975      | 3.900      | 3.935      | 3.656 | 4.000 | 3.675                | 3.622      | 3.322 | 3.565 | 3.375      | 3.346      | 3.360           | 3.210 | 3.200         | 3.000 |
| 35              | 70   | 4.355 | 4.900 | 4.375      | 4.300      | 4.335      | 4.056 | 4.400 | 4.075                | 4.022      | 3.722 | 3.965 | 3.775      | 3.746      | 3.760           | 3.610 | 3.600         | 3.400 |
| 36              | 72   | 4.455 | 5.000 | 4.475      | 4.400      | 4.435      | 4.156 | 4.500 | 4.175                | 4.122      | 3.822 | 4.065 | 3.875      | 3.846      | 3.860           | 3.710 | 3.700         | 3.500 |
| 40              | 80   | 4.855 | 5.400 | 4.875      | 4.800      | 4.835      | 4.556 | 4.900 | 4.575                | 4.522      | 4.222 | 4.465 | 4.275      | 4.246      | 4.260           | 4.110 | 4.100         | 3.900 |
| 43              | 86   | 5.155 | 5.700 | 5.175      | 5.100      | 5.135      | 4.856 | 5.200 | 4.875                | 4.822      | 4.522 | 4.765 | 4.575      | 4.546      | 4.560           | 4.410 | 4.400         | 4.200 |
| 50              | 100  | 5.855 | 6.400 | 5.875      | 5.800      | 5.835      | 5.556 | 5.900 | 5.575                | 5.522      | 5.222 | 5.465 | 5.275      | 5.246      | 5.260           | 5.110 | 5.100         | 4.900 |
| 60              | 120  | 6.855 | 7.400 | 6.875      | -          | 6.835      | 6.556 | 6.900 | 6.575                | 6.522      | 6.222 | 6.465 | 6.275      | -          | 6.260           | 6.110 | 6.100         | 5.900 |
| 61              | 122  | 6.955 | -     | -          | -          | 6.935      | 6.656 | -     | 6.675                | -          | 6.322 | -     | -          | -          | 6.360           | -     | 6.200         | 6.000 |
| 72              | 144  | -     | -     | -          | -          | 8.035      | -     | -     | -                    | -          | -     | -     | -          | -          | 7.460           | -     | 7.300         | 7.100 |
| 75              | 150  | -     | -     | -          | -          | -          | -     | -     | -                    | -          | -     | -     | -          | -          | 7.760           | -     | 7.600         | 7.400 |

### .156" Contact Spacing

| Dimension       |      | "A"   |       |       |                | "B"   |       |                | "C"        |       |       |            | "D"        |            | "E"   |
|-----------------|------|-------|-------|-------|----------------|-------|-------|----------------|------------|-------|-------|------------|------------|------------|-------|
| No. of Contacts |      | 317   | 333   | 336   | Rest of Series | 317   | 333   | Rest of Series | 303<br>317 | 333   | 336   | All Others | 315<br>316 | All Others | All   |
| Single          | Dual |       |       |       |                |       |       |                |            |       |       |            |            |            |       |
| 6               | 12   | 1.830 | 1.784 | 1.857 | 1.842          | 1.539 | 1.534 | 1.532          | 1.220      | 1.261 | 1.216 | 1.246      | 1.080      | 1.100      | 0.780 |
| 10              | 20   | 2.454 | 2.408 | 2.481 | 2.466          | 2.163 | 2.158 | 2.156          | 1.844      | 1.885 | 1.840 | 1.870      | 1.704      | 1.724      | 1.404 |
| 12              | 24   | 2.766 | 2.720 | 2.793 | 2.778          | 2.475 | 2.470 | 2.468          | 2.156      | 2.197 | 2.152 | 2.182      | 2.016      | 2.036      | 1.716 |
| 15              | 30   | 3.234 | 3.188 | 3.261 | 3.246          | 2.943 | 2.938 | 2.936          | 2.624      | 2.665 | 2.620 | 2.650      | 2.484      | 2.504      | 2.184 |
| 18              | 36   | 3.702 | 3.656 | 3.729 | 3.714          | 3.411 | 3.406 | 3.404          | 3.092      | 3.133 | 3.088 | 3.118      | 2.952      | 2.972      | 2.652 |
| 20              | 40   | 4.014 | 3.968 | 4.041 | 4.026          | 3.723 | 3.718 | 3.716          | 3.404      | 3.445 | 3.400 | 3.430      | 3.264      | 3.284      | 2.964 |
| 22              | 44   | 4.326 | 4.280 | 4.353 | 4.338          | 4.035 | 4.030 | 4.028          | 3.716      | 3.757 | 3.712 | 3.742      | 3.576      | 3.596      | 3.276 |
| 24              | 48   | 4.638 | 4.592 | 4.665 | 4.650          | 4.347 | 4.342 | 4.340          | 4.028      | 4.069 | 4.024 | 4.054      | 3.888      | 3.908      | 3.588 |
| 25              | 50   | 4.794 | 4.748 | 4.821 | 4.806          | 4.503 | 4.498 | 4.496          | 4.184      | 4.225 | 4.180 | 4.210      | 4.044      | 4.064      | 3.744 |
| 28              | 56   | 5.262 | 5.216 | 5.289 | 5.274          | 4.971 | 4.966 | 4.964          | 4.652      | 4.693 | 4.648 | 4.678      | 4.512      | 4.532      | 4.212 |
| 30              | 60   | 5.574 | 5.528 | 5.601 | 5.586          | 5.283 | 5.278 | 5.276          | 4.964      | 5.005 | 4.960 | 4.990      | 4.824      | 4.844      | 4.524 |
| 31              | 62   | 5.730 | 5.684 | 5.757 | 5.742          | 5.439 | 5.434 | 5.432          | 5.120      | 5.161 | 5.116 | 5.146      | 4.980      | 5.000      | 4.680 |
| 36              | 72   | 6.510 | 6.464 | 6.537 | 6.522          | 6.219 | 6.214 | 6.212          | 5.900      | 5.941 | 5.896 | 5.926      | 5.760      | 5.780      | 5.460 |
| 40              | 80   | 7.134 | 7.088 | 7.161 | 7.146          | 6.843 | 6.838 | 6.836          | 6.524      | 6.565 | 6.520 | 6.550      | 6.384      | 6.404      | 6.084 |
| 43              | 86   | 7.602 | 7.556 | 7.629 | 7.614          | 7.311 | 7.306 | 7.304          | 6.992      | 7.033 | 6.988 | 7.018      | 6.852      | 6.872      | 6.552 |
| 44              | 88   | -     | -     | -     | 7.770          | -     | -     | 7.460          | -          | -     | -     | 7.174      | -          | 7.026      | 6.708 |

### .125" Contact Spacing

| Dimension       |      | "A"         | "B"         | "C"   | "D"   | "E"   |
|-----------------|------|-------------|-------------|-------|-------|-------|
| No. of Contacts |      | 345 and 396 | 346 and 396 | All   | All   | All   |
| Single          | Dual |             |             |       |       |       |
| 5               | 10   | 1.435       | 1.170       | 0.910 | 0.750 | 0.500 |
| 6               | 12   | 1.560       | 1.295       | 1.035 | 0.875 | 0.625 |
| 10              | 20   | 2.060       | 1.795       | 1.535 | 1.375 | 1.125 |
| 15              | 30   | 2.685       | 2.420       | 2.160 | 2.000 | 1.750 |
| 18              | 36   | 3.060       | 2.795       | 2.535 | 2.375 | 2.125 |
| 22              | 44   | 3.560       | 3.295       | 3.035 | 2.875 | 2.625 |
| 25              | 50   | 3.935       | 3.670       | 3.410 | 3.250 | 3.000 |
| 30              | 60   | 4.560       | 4.295       | 4.035 | 3.875 | 3.625 |
| 31              | 62   | 4.685       | 4.420       | 4.160 | 4.000 | 3.750 |
| 35              | 70   | 5.185       | 4.920       | 4.660 | 4.500 | 4.250 |
| 36              | 72   | 5.310       | 5.045       | 4.785 | 4.625 | 4.375 |
| 40              | 80   | 5.810       | 5.545       | 5.285 | 5.125 | 4.875 |
| 43              | 86   | 6.185       | 5.920       | 5.660 | 5.500 | 5.250 |
| 50              | 100  | 7.060       | 6.795       | 6.535 | 6.375 | 6.125 |
| 60              | 120  | -           | -           | 7.790 | 7.625 | 7.375 |



YOUR CONNECTION TO QUALITY AND SERVICE





40 Tiffield Rd, Scarborough, Ontario M1V 5B6

Tel: 416-754-3322 Fax: 416-754-3299

## EDAC RACK & PANEL CONNECTORS

### 516 SERIES PART NUMBER CODE

Example Part Number

516 - 038 - 500 - 2 1 2  
a b c d e f

- a) Series Code (b) Total Number of Contacts  
020, 038, 056, 090 or 120

- c) Contact Code

| Code | Description and Tail Size | Tail Length "G" |
|------|---------------------------|-----------------|
| 000  | No Contacts Assembled     |                 |
| 500  | Wire Hole .110" x .024"   | .245"           |
| 520  | P.C. Tail .025" x .024"   | .215"           |
| 540  | Wire Wrap .050" x .024"   | .600"           |
| 541  | Wire Wrap .026" x .024"   | .620"           |
| 542  | Wire Wrap .050" x .024"   | .790"           |

- d) Connector Style and Insulator Material

| Code | Style      | Insulator Material      |
|------|------------|-------------------------|
| 1    | Plug       | Green Diallyl Phthalate |
| 2    | Receptacle | Green Diallyl Phthalate |
| 3    | Plug       | Grey Polycarbonate      |
| 4    | Receptacle | Grey Polycarbonate      |

- e) Cover Description

| Code | Description                              |
|------|------------------------------------------|
| 0    | No Cover Assembled                       |
| 1    | Plastic Cover, Top Entry Standard Clamp  |
| 2    | Plastic Cover, Side Entry Standard Clamp |
| 3    | Plastic Cover, Top Entry Large Clamp     |
| 4    | Plastic Cover, Side Entry Large Clamp    |
| 5    | Metal Cover, Side Entry                  |
| 6    | Metal Cover, Top Entry                   |

- f) Hardware Code

| Code | Description                             |
|------|-----------------------------------------|
| 0    | No Hardware Assembled                   |
| 1    | Actuating Screw and Polarizing Hardware |
| 2    | Locknut and Polarizing Hardware         |

| Part Number | Description                    | Silhouette |
|-------------|--------------------------------|------------|
| 516-290-500 | Wire Hole                      |            |
| 516-290-520 | P.C. Tail                      |            |
| 516-290-540 | Wire Wrap                      |            |
| 516-290-541 | Wire Wrap                      |            |
| 516-290-542 | Wire Wrap                      |            |
| 516-290-590 | Crimp - Loose                  |            |
| 516-290-591 | Crimp - 1800 Contacts per reel |            |

### Notes for 516 Series Ordering Code

- Crimp contacts are also available for the 516 series connectors.
- Contacts may be ordered separately for pre-wired or select position assembly.
- For contact installation, removal and crimping tools, refer to Edac directly.
- Grey polycarbonate insulator material is not available for the 120 pin size connector.
- The 20 pin connector cover will not accept the length of the wire wrap contacts.
- Plastic covers with large clamps are only available for the 38 and 56 pin size connectors.
- Metal covers with side entry may be converted to top entry by removing side plate and changing clamp orientation.
- Covers may be ordered separately. Refer to Edac directly.
- Insulator design prevents improper mating of individual plug and receptacle.
- Polarizing hardware enables specific plug and receptacle mating combinations.

### 516 SERIES COVER ORDERING CODE

Example Part Number

516 - 230 - 5 56  
a b c d

- a) Series  
b) Cover Identification Code  
c) Cover Type

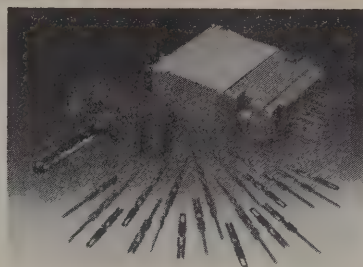
| Code | Description                              |
|------|------------------------------------------|
| 1    | Plastic Cover, Side Entry Standard Clamp |
| 2    | Plastic Cover, Top Entry Standard Clamp  |
| 3    | Plastic Cover, Side Entry Large Clamp    |
| 4    | Plastic Cover, Top Entry Large Clamp     |
| 5    | Metal Cover, Side Entry                  |
| 6    | Metal Cover, Top Entry                   |

- d) Cover Size

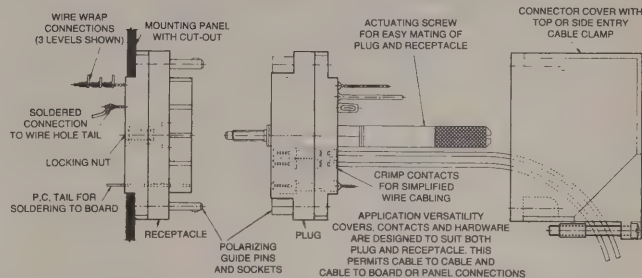
| Code | Fits Connector                          |
|------|-----------------------------------------|
| 12   | 516 Series 120 Pin                      |
| 20   | 516 Series 20 Pin and 519 Series 14 Pin |
| 38   | 516 Series 38 Pin and 519 Series 36 Pin |
| 56   | 516 Series 56 Pin                       |
| 90   | 516 Series 90 Pin                       |

### Notes for 516 Series Cover Ordering Code

- Plastic covers with large clamps are only available for the 38 and 56 pin size connectors.
- Metal covers with side entry may be converted to top entry by removing side plate and changing clamp orientation.
- The 20 pin connector cover will not accept the length of the wire wrap contacts.



RACK AND PANEL CONNECTORS



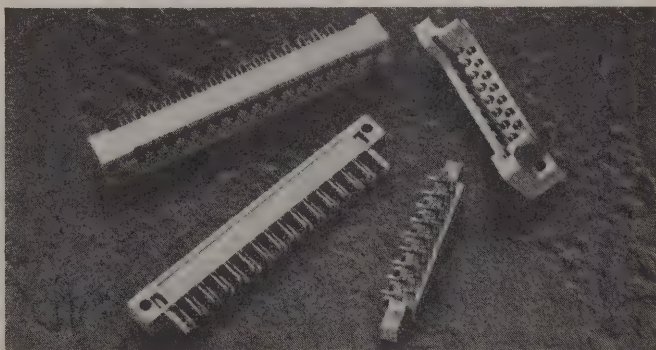
## EDAC METAL TO METAL CONNECTORS

### FEATURES

- Guide pins and socket ensure correct alignment and facilitate mating.
- Male can be used for 1/16" and 3/32" P.C. boards.
- Rigid insulator helps prevent P.C. board warp.
- Maintains exact spacing between contacts.
- One staking operation instead of two.
- Female has open ended card slot that will accept any width P.C. board.
- Many different contact terminations available.
- Five sizes: 17,23,29,35 and 41 contacts.
- Diallyl Phthalate insulators.
- Mated pair provides high reliability, gas tight connection.

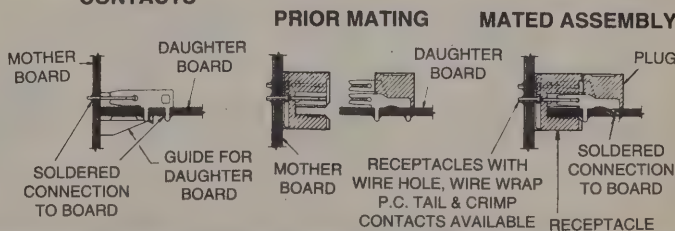
### SPECIFICATIONS

- Current rating: 10 amperes.
- Contact resistance: 10 milliohms, maximum.
- Contact material: phosphor bronze per QQ-B-750, Composition A.
- Standard Plating: 10 to 20 microinches gold over 30 to 150 microinches nickel. Other plating is available upon request.
- Insulation resistance: minimum of 25,000 megohms.
- Insertion and withdrawal force: 2 to 16 ounces per mated contact pair.



METAL TO METAL CONTACTS

METAL TO METAL CONNECTORS



YOUR CONNECTION TO QUALITY AND SERVICE

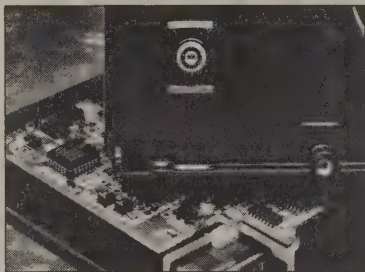
# When you need to save space and assembly time in a high density surface mount connection, think Elastomeric.

When it comes to complex connections, there's one company that thrives on turning design challenges into innovative solutions: Elastomeric. Our customers have recognized us for our smart solutions—we're a Q-1 Supplier to Ford and have received the Supplier Excellence Award from AT&T.

Here are a few ways we've used elastomeric technology to help create successful products.

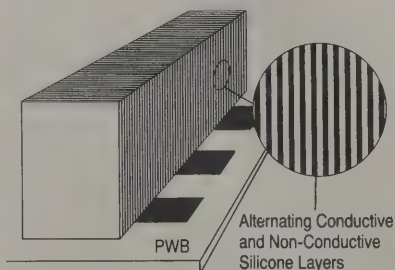
For a 3.5", 200MB disk drive, we custom-designed Elastomeric STAX™SD elements that permitted:

- Redundant connections on tin lead.
- Tight board-to-flex spacing.
- Power and signal on the same connector.



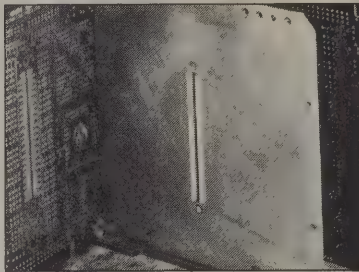
*An Elastomeric STAX™SD element saved parts, permitted a tighter board fit and simplified assembly in over 3 million disk drives.*

## STAX™ Layered Elastomeric Element



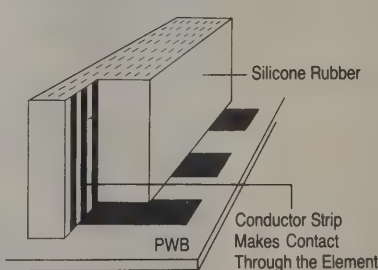
For a robot arm control module, part of NASA's Flight Telerobotic program, Elastomeric designed an Elastomeric MOE®MG (Metal On Elastomer) that provided:

- Very close board-to-board spacing (.090").
- Reliability under severe shock and vibration.
- Improved serviceability.



*An Elastomeric MOE®MG improved the performance and serviceability of a Telerobotic control module for NASA.*

## Matrix MOE® Element



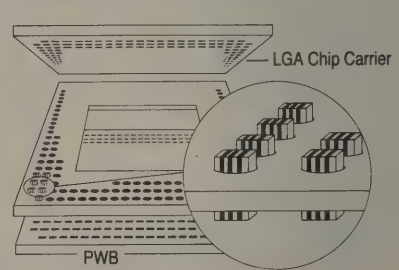
Two major IC manufacturers needed LGA test and burn-in sockets, one with 324 contacts on 0.040" centers, the other with 1,156 contacts on 0.050" centers that yielded:

- Compression force—65g per contact.
- Resistance—0.012 ohm per contact.
- Extended life test to 125°C.



*Sockets with up to 1,156 gold contacts and a compression force of less than 65 grams per contact are made possible with patent-pending Elastomeric MOE®DG technology.*

## Dedicated Matrix MOE® Element



Elastomeric connectors have brought finer pitches, higher operating speeds, greater functionality, and lower cost to hundreds of products. And we can do the same for yours. Whether your need is for an element or complete connector call Elastomeric. We're the smartest connection you can make.



**ELASTOMERIC**  
TECHNOLOGIES INCORPORATED

*Make the Smart Connection*

2940 Turnpike Drive • Hatboro, PA 19040 USA • TEL 215-672-0787 • FAX 215-672-4633

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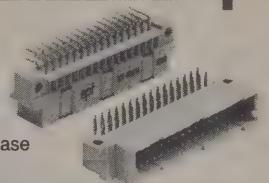
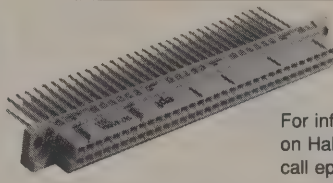
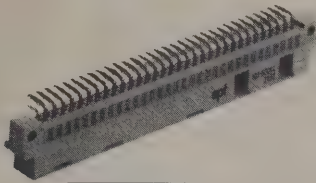
DIN 41612



B

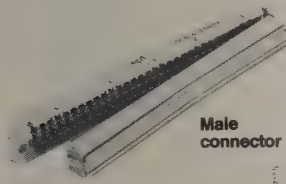
64 Pin  
Operating Current  
per pin at 20° C  
32 Pins 2.5 A  
64 Pins 2.0 A

Both, Male and  
Female Connectors  
are available in  
short tail and 2 & 3  
level WireWrap  
Pressfit versions.  
Call ept for Data  
Sheets and Order  
information.



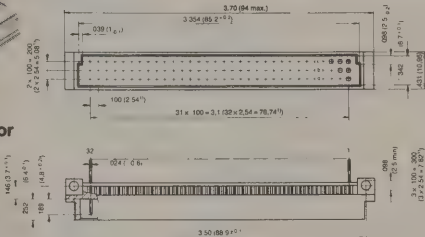
For information  
on Half DIN please  
call ept.

| B MALE   | Post length      | 16 pin          | 32 pins   | 32 pins           | 64 pins   |
|----------|------------------|-----------------|-----------|-------------------|-----------|
|          |                  | row a pos 2,4,6 | row a     | row a+b pos 2,4,6 | row a+b   |
|          | .114" solder     | 101-40004       | 101-40014 | 101-40024         | 101-40064 |
|          | .512" 2 level ww |                 | 101-40034 | 101-40044         | 101-40074 |
|          | .669" 3 level ww |                 | 101-40035 | 101-40045         | 101-40075 |
|          | .134" straight   | 101-40005       | 101-40015 | 101-40025         | 101-40065 |
| B FEMALE | Post length      | 16 pin          | 32 pins   | 32 pins           | 64 pins   |
|          |                  |                 |           |                   |           |
|          |                  |                 |           |                   |           |
|          |                  |                 |           |                   |           |
|          |                  |                 |           |                   |           |
|          | .098" solder     | 102-40004       | 102-40014 | 102-40024         | 102-40064 |
|          | .157" solder     | 102-40005       | 102-40015 | 102-40025         | 102-40065 |
|          | .512" 2 level ww | 102-40006       | 102-40016 | 102-40026         | 102-40066 |
|          | Solder eylet     | 102-40054       | 102-40034 | 102-40044         | 102-40075 |
|          |                  |                 |           |                   |           |



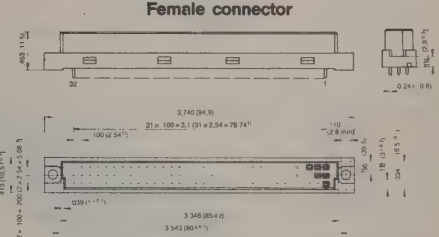
C

96 Pin  
Operating Current  
per pin at 20° C  
32 Pins 2.5 A  
96 Pins 2.0 A  
Both, Male and  
Female Connectors  
are available in  
short tail and 2 & 3  
level WireWrap  
Pressfit versions.  
Also available with 8  
microinches Au on  
WireWrap post.



C Series

Female connector

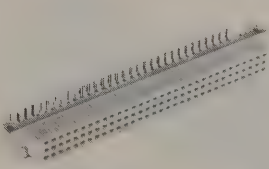
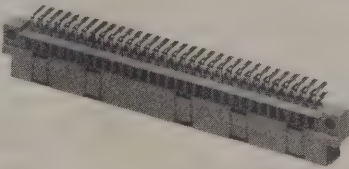


| C MALE   | Post length      | 32 pins   | 32 pins          | 48 pins            | 64 pin    | 96 pins   |
|----------|------------------|-----------|------------------|--------------------|-----------|-----------|
|          |                  | row a     | r. a,c pos 2,4,6 | r. a,b,c pos 2,4,6 | row a+c   | row a,b,c |
|          | .114" solder     | 103-40004 | 103-40014        | 103-40024          | 103-40034 | 103-40064 |
|          | .173"            |           | 103-40114        | 103-40124          | 103-40134 | 103-40164 |
|          | .512" 2 level ww |           | 103-40194        | 103-40144          | 103-40154 | 103-40174 |
|          | .669" 3 level ww |           | 103-40094        | 103-40044          | 103-40054 | 103-40074 |
|          | .134" straight   | 103-40005 | 103-40015        | 103-40025          | 103-40035 | 103-40065 |
| C FEMALE | Post length      | 32 pins   | 32 pins          | 48 pins            | 64 pins   | 96 pins   |
|          |                  |           |                  |                    |           |           |
|          |                  |           |                  |                    |           |           |
|          |                  |           |                  |                    |           |           |
|          |                  |           |                  |                    |           |           |
|          | .098" dip solder | 104-40004 | 104-40014        | 104-40044          | 104-40054 | 104-40064 |
|          | .157" dip solder | 104-40005 | 104-40015        | 104-40045          | 104-40055 | 104-40065 |
|          | .512" 2 level ww | 104-40006 | 104-40016        | 104-40046          | 104-40056 | 104-40066 |
|          | Solder eylet     | 104-40025 | 104-40035        | 104-40105          | 104-40115 | 104-40075 |
|          | IDC Flat Cable   |           |                  |                    | 104-49054 | 104-49064 |

R

Inverse DIN  
96 Pin  
Operating Current  
per pin at 20° C  
32 Pins 2.5 A  
96 Pins 2.0 A

Also available with 8  
microinches Au on  
WireWrap post. Call  
ept for Data Sheets  
and Order  
information.



| R MALE   | Post length      | 32 pins   | 32 pins          | 48 pins            | 64 pins   | 96 pins   |
|----------|------------------|-----------|------------------|--------------------|-----------|-----------|
|          |                  | row a     | r. a,c pos 2,4,6 | r. a,b,c pos 2,4,6 | row a+c   | row a,b,c |
|          | .098" dip solder | 115-40005 | 115-40015        | 115-40026          | 115-40035 | 115-40065 |
|          | .157" dip solder | 115-40044 | 115-40046        | 115-40025          | 115-40054 | 115-40074 |
|          | .512" 2 level ww | 115-40004 | 115-40014        | 115-40024          | 115-40034 | 115-40064 |
|          | .181" pressfit   | 115-60004 | 115-60014        | 115-60044          | 115-60054 | 115-60064 |
|          | .512" pressfit   | 115-60005 | 115-60015        | 115-60045          | 115-60055 | 115-60065 |
|          | .669" pressfit   | 115-60006 | 115-60016        | 115-60046          | 115-60056 | 115-60066 |
|          |                  |           |                  |                    |           |           |
| R FEMALE | Post length      | 32 pins   | 32 pins          | 48 pins            | 64 pins   | 96 pins   |
|          |                  |           |                  |                    |           |           |
|          | .052" dip solder | 116-40024 | 116-40034        | 116-40044          | 116-40054 | 116-40074 |
|          |                  |           |                  |                    |           |           |

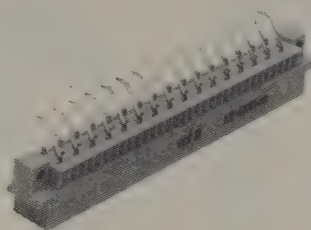
All parts listed are for Class II DIN (400 insertion extraction cycles). For more information  
on DIN specifications, and detailed drawings for connectors, please call or Fax  
Electronic Precision Technology Tel. 1-800-323-2568 Fax (617) 661-2989

# DIN 41612

ept

**D** 

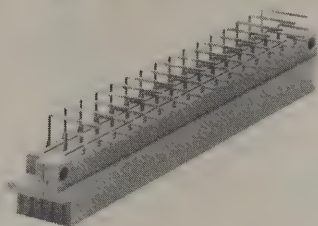
32 Pins 5.5 A  
16 Pins 6.0 A

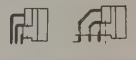
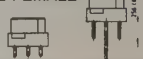


| D MALE                                                                            | Pin length<br>Class II | 16 pins<br>row a | 16 pins<br>r. a+c pos 2,6,10 | 32 pins<br>row a+c |
|-----------------------------------------------------------------------------------|------------------------|------------------|------------------------------|--------------------|
|  | .114" RA               | 105-40004        | 105-40014                    | 105-40064          |
|                                                                                   | .146" straight         | 105-40006        | 105-40016                    | 105-40066          |
| D FEMALE                                                                          |                        |                  |                              |                    |
|  | .787" WW.039           | 106-40035        | 106-40015                    | 106-40065          |
|                                                                                   | .157" solder           | 106-40034        | 106-40014                    | 106-40064          |
|                                                                                   | solder eylet           | 106-40036        | 106-40016                    | 106-40066          |
|                                                                                   | RA solder              | 106-40046        | 106-40026                    | 106-40076          |

**E** 

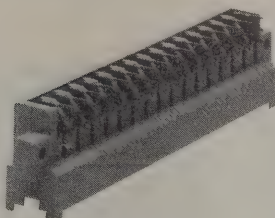
48 Pins 5.0 A  
32 Pins 6.0 A



| E MALE                                                                            | Pin length<br>Class II | 32 pins<br>row a+c | 32 pins<br>row a+e | 48 pins<br>row a,c,e |
|-----------------------------------------------------------------------------------|------------------------|--------------------|--------------------|----------------------|
|  | .100 spacing           | 107-40024          | 107-40014          | 107-40064            |
| .100 or .200 between rows                                                         | .200 spacing           | 107-40025          | 107-40015          | 107-40065            |
|                                                                                   | straight DS            | 107-40026          | 107-40016          | 107-40066            |
| E FEMALE                                                                          |                        |                    |                    |                      |
|  | .787" WW               | 108-40015          | 108-20025          | 108-40065            |
|                                                                                   | .157" solder           | 108-40014          | 108-40024          | 108-40064            |
|                                                                                   | solder eylet           | 108-40046          | 108-40036          | 108-40076            |

**F** 

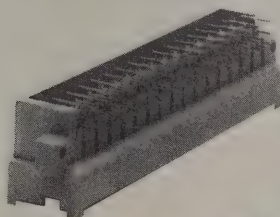
48 Pins 6.0 A  
Nom. Current  
8.0 A Max



| F MALE                                                                            | Pin length<br>Class II | 32 pins<br>row b + z | 32 pin<br>row d + z | 48 pins<br>row d+ b+ z |
|-----------------------------------------------------------------------------------|------------------------|----------------------|---------------------|------------------------|
|  | RA solder              | 109-40024            | 109-40014           | 109-40064              |
|                                                                                   | prmate pos Z           | 109-52024            | 109-51484           | 109-52064              |
|                                                                                   | prmate Z2+Z32          | 109-52025            | 109-51485           | 109-52065              |
| F FEMALE                                                                          |                        |                      |                     |                        |
|  | .866" WW               | 110-40024            | 110-40014           | 110-40064              |
|                                                                                   | .177" solder           | 110-40025            | 110-40015           | 110-40065              |
|                                                                                   | solder eylet           | 110-40026            | 110-40016           | 110-40066              |
|                                                                                   | .866" Termpoint        | 110-40054            | 110-40044           | 110-40094              |
|                                                                                   | 1.026" Termpoint       | 110-40056            | 110-40046           | 110-40096              |

**G** 

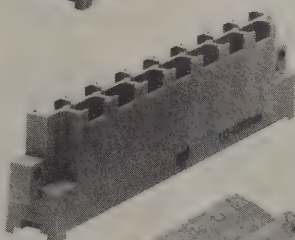
64 Pins 6.0 A  
Nominal  
8.0 A max



| G MALE                                                                              | Post length<br>Class II | 64 pins<br>row z+b+d+f |  |
|-------------------------------------------------------------------------------------|-------------------------|------------------------|--|
|  | RA Dip Solder           | 111-40064              |  |
|                                                                                     | Prmate pos Z2           | 111-40164              |  |
|                                                                                     | Prmt Z2+Z32             | 111-40264              |  |
| G FEMALE                                                                            |                         |                        |  |
|  | .866" WW                | 112-40065              |  |
|                                                                                     | .177" solder            | 112-40064              |  |
|                                                                                     | solder eylet            | 112-40095              |  |

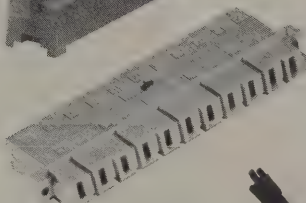
**H 15** 

15 Pin  
15 A/pin



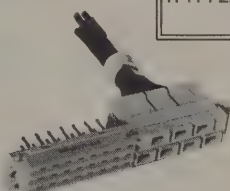
**H 11** 

11 Pin  
20 A/pin

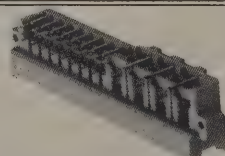


| H 15 MALE Class I   | Right angle<br>Dip Solder<br>113-40060  | Faston Pin<br>113-40070        |
|---------------------|-----------------------------------------|--------------------------------|
| H 15 FEMALE Class I | Threaded<br>screw terminal<br>114-40070 | Faston Pin<br>114-40060        |
| H 11 MALE Class I   | Right Angle<br>Dip Solder<br>113-40010  | Faston Pin<br>113-40030        |
| H 11 FEMALE         | Faston Pin<br>114-40040                 | plastic coding key<br>114-3000 |

**POWERBLOCK**



117-40061



118-40584

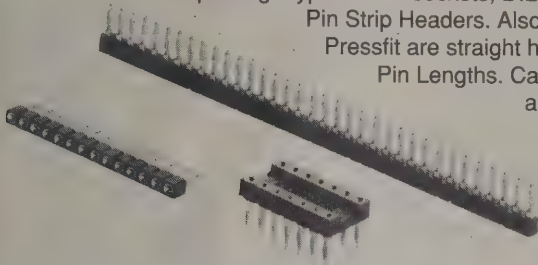
For Data Sheets and information on Powerblock shown above call or Fax.  
Electronic Precision Technology Tel. 1-800-323-2568 Fax. (617) 661-2989



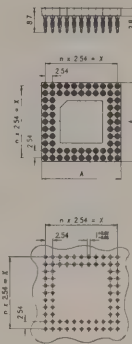
# PRESSFIT MACHINED PIN RECEPTACLES.

**ept**

Ept supplies Pressfit Machined Pin Receptacles in various package types. PGA sockets, DIL sockets and Pin Strip Headers. Also Available in Pressfit are straight headers in 50 Pin Lengths. Call For Details and Drawings.



## HIGH DENSITY CONNECTOR



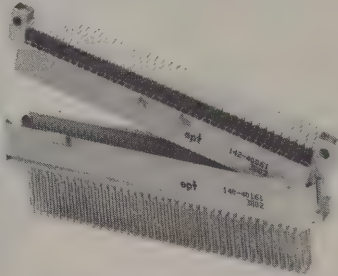
### Ordering Information

| Pin plating→     | 5 μm Tin    | 5 μm Tin  |
|------------------|-------------|-----------|
| Contact plating→ | .25 μm Au   | .75 μm Au |
| Grid Size        | Part Number |           |
| 10x10            | 934-00644   | 934-00647 |
| 11x11            | 934-10724   | 934-10727 |
| 12x12            | 934-20804   | 934-20807 |
| 13x13            | 934-30884   | 934-30887 |
| 14x14            | 934-40964   | 934-40967 |
| 15x15            | 934-51044   | 934-51047 |
| 16x16            | 934-61124   | 934-61127 |
| 17x17            | 934-71204   | 934-71207 |
| 18x18            | 934-81284   | 934-81287 |
| 19x19            | 934-91364   | 934-91367 |

Other Patterns are also available. Call ept for more information.

### 160 Pin (4x40)

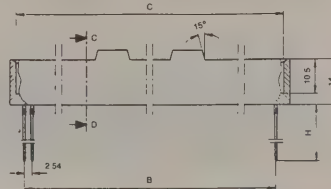
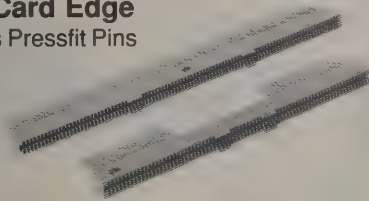
2 A at 20° C  
Pressfit PCB hole  
dia=.040±.003



## CARD EDGE CONNECTORS

### 2x99 Pin Card Edge

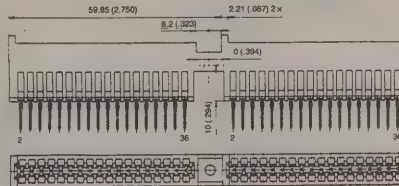
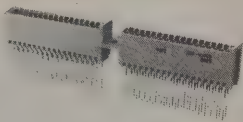
.100" centers Pressfit Pins  
2 A at 25°C



| Pins | Compliant Pin (Solid=210-40xxx) |             |
|------|---------------------------------|-------------|
|      | 17.8mm pin                      | 22.0 mm pin |
| 2x99 | 210-60265                       | 210-60264   |
| 2x94 | 210-60165                       | 210-60164   |
| 2x77 | 210-60065                       | 210-60064   |
| 2x23 | 210-60015                       | 210-60014   |

### Q-BUS 2x36 Pin

Pressfit Pins  
4 A at 20°C

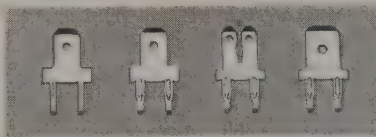


| Pin length | Terminal Surface | Part No.  |
|------------|------------------|-----------|
| .336"      | SnPb             | 220-40064 |
| .336"      | 8 microinches Au | 220-40074 |
| .708"      | SnPb             | 220-40065 |
| .708"      | 8 microinches Au | 220-40075 |

## POWER TERMINALS

### SPADE TERMINALS

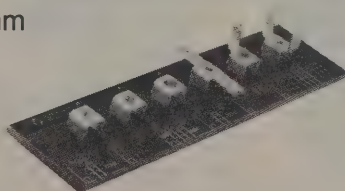
DIN 46244  
PCB hole dia=1.6 mm



| Post type          |           |           |           |           |
|--------------------|-----------|-----------|-----------|-----------|
| Pressfit solid pin | 090-10162 | 090-10161 | 090-10163 | 090-10164 |
| Solder             | 090-10062 | 090-10061 | 090-10063 | 090-10064 |

### POWER BUGS

PCB hole dia=1.6 mm

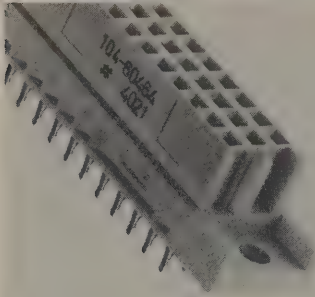


| Termination | Screw & Nut<br>M3 | Screw & Nut<br>M4 | Screw & Nut<br>M5 | Spade<br>terminal |
|-------------|-------------------|-------------------|-------------------|-------------------|
| Part No.    | 910-60040         | 910-60045         | 910-60050         | 910-22715         |

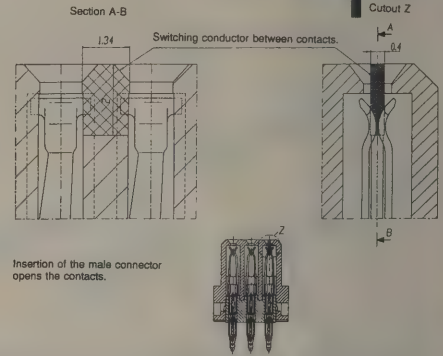
Electronic Precision Technology Tel. 1-800-323-2568 Fax. (617) 661-2989

## Automatic Daisy Chaining DIN

ept



Eliminate the need to jumper DataBus Paths for VME, VXI and Networking Products. The unique ept switching design guarantees switch over within .9mm of insertion of the male connector pin. Available in VME and in custom configuration.



## Pressfit for SMT

Straight up tool insertion and extraction speeds up manufacturing of SMT Daughter Cards. Up to 250 connectors per hour can be inserted with the ept semiautomatic insertion press shown on right.

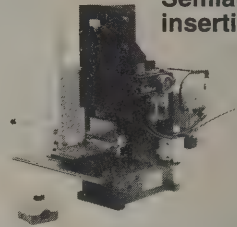
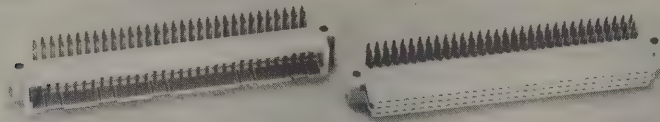
**96 Pin Male C series.**

.134" Tcom 103-60064

**96 Pin Female R series.**

.149" Tcom 116-60074

**Semiautomatic  
insertion press.**



## Discrete Wire Rail Mounted DIN

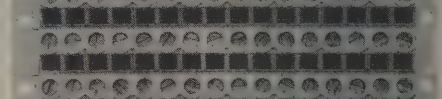
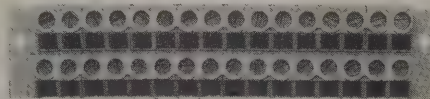
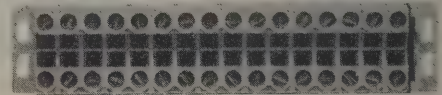
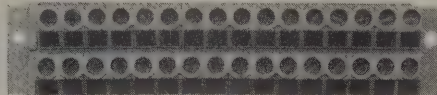
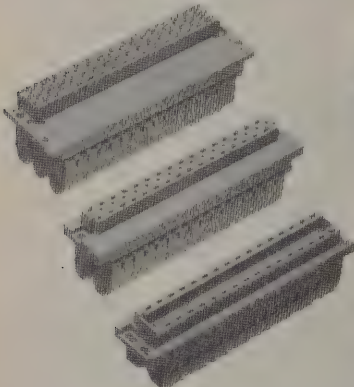
Series D, E, and F DIN Connectors with Screw on terminals for AWG 22-14 wire. Specifications: 6 Amps per pin- Contact Resistance <5mOhm - Connector body UL 94 VO

**D32f** PN. 301-432-02-000

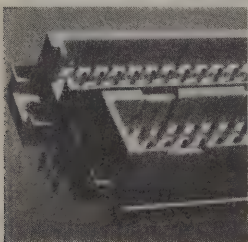
**E32f** PN. 302-432-02-000

**F32f** PN. 303-432-02-000 (zb)  
PN. 303-432-02-200 (zd)

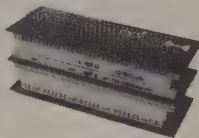
**F48f** PN. 302-448-02-000



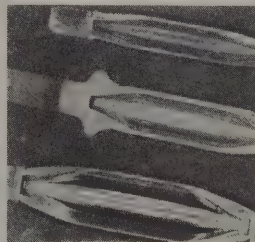
## Features - Options



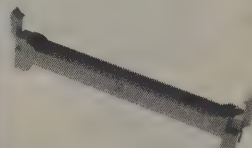
**Premating Contacts**  
For C and R male  
DIN. Up to 3 levels.



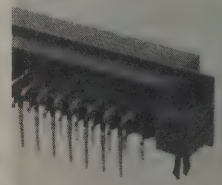
**Board Stacking.**  
Up to 10 boards  
consecutively.



**High Frequency/ low  
capacitance miniature  
Pressfit Sections.**



**Latched Shrouds**  
For 96 Pin IDC  
and daughter cards.



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## ept

Technical drawing of a shaft-hub assembly. The drawing shows a shaft with a diameter of  $\phi 15_{-0.02}^{+0.00}$  mm and a hub with a diameter of  $\phi 15_{-0.02}^{+0.00}$  mm. The shaft has a length of  $8.25 \pm 0.1$  mm. The hub has a length of  $8.2 \pm 0.1$  mm. The assembly is shown with a fit of  $1.15 \pm 0.02$  mm. The drawing also shows a cross-section of the assembly with a diameter of  $\phi 15_{-0.02}^{+0.00}$  mm and a length of  $8.2 \pm 0.1$  mm. The drawing is labeled with dimensions and tolerances.

Technical drawing of a shaft assembly. The drawing shows a shaft with a central hole. Dimensions are given in inches: 0.375, 1.75, 0.59, 0.65, and 0.6. The shaft has a diameter of 0.59 and a hole diameter of 0.375. The assembly includes a nut and a washer.

Technical drawing of a shaft with dimensions: 23 7/8, 4.013, 0.525, 4.78 max, 58.023, 71.56, 0.36 min.



Technical drawing of a mechanical part, likely a bush or sleeve, showing a cross-section. The drawing includes dimensions: outer diameter 5.35, inner diameter 4.77, and a central hole with diameter 3.7. The part is labeled 96.



C-1319

## Production Tools

ept

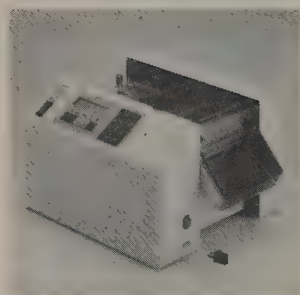
All tools have been thoroughly tested on our own production lines by our technicians and production personnel in typical daily operation. Tools and cutting machines are covered by a "return if not satisfied" Guarantee.



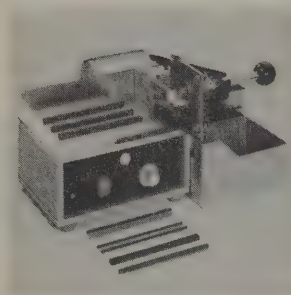
**302 PLCC-, PGA-Extractor  
PGA-Insertion**  
Universal tools for all component sizes.



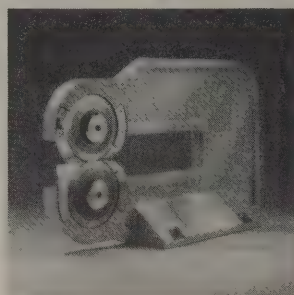
**303 IC-Butler**  
Pin straightening tool for IC components.



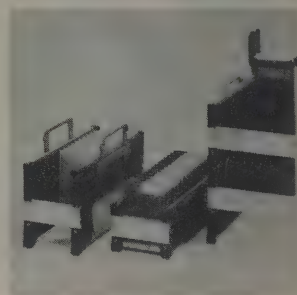
**305 FS 100 Universal Cutting Machine**  
Cuts Flat and Round Cable, Ribbon, Woven Material, Tubing, Paper etc.



**306 Strip Saw**  
To cut headers, and pin and socket strips – simplifies storage.



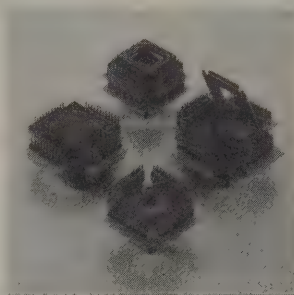
**307 MAESTRO PCB Cutter**  
Separates pre-scored PCB's cleanly, efficiently and easily.



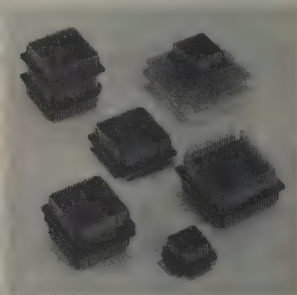
**304 PCB Rack**  
Stable and rigid. Suitable also for automated production.

## VLSI and Surface Mount Adapters

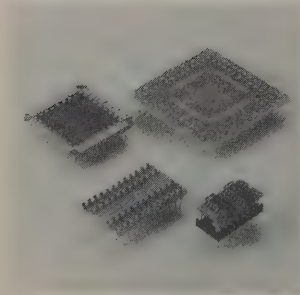
We develop and produce a comprehensive range of products in the area of laboratory test equipment. A specialty is solutions to customer specific problems, which are solved by our team of experts on short notice and at a fair price.



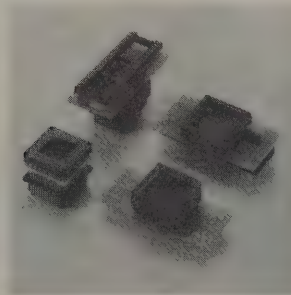
**203 PLCC-Test Sockets  
204 Combi-Sockets**  
LCC, PGA → PLCC



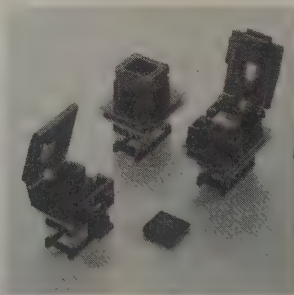
**205 PLCC Adapter**  
To insert and solder, 20 to 100 pole, in different component heights.



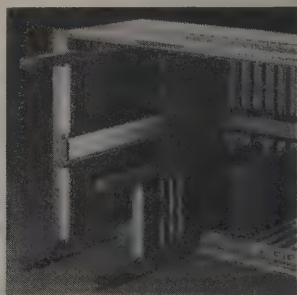
**201 Converter Sockets**  
Skinny-DIP, Shrink-DIP, SOJ → DIP  
PLCC, QFP → PGA



**201 Converter Sockets**  
DIP, PGA → PLCC,  
PLCC → DIP, Shrink-DIP



**202 Programming Sockets**  
PLCC → DIP  
SOJ → DIP

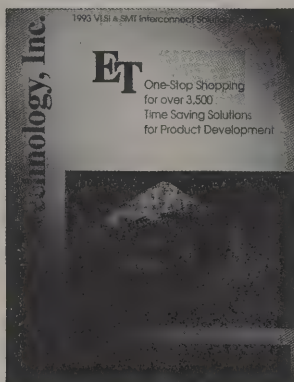


**206 19"- Test Adapter**  
19"- Laboratory Cards  
19"- Bus Wiring

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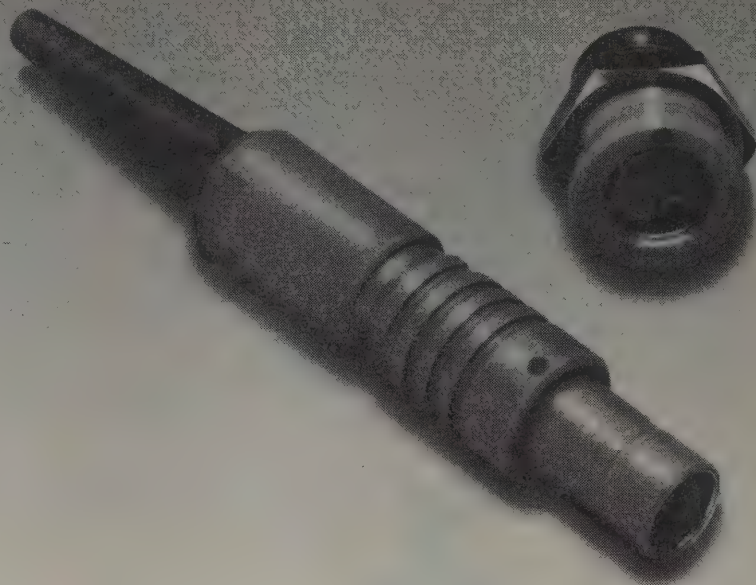
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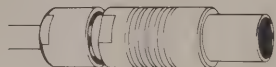
**BODY STYLES**
**PLUGS**
**RECEPTACLES**
**Connector Style:**

- S** Straight plug  
**SE** Sealed plug  
**SOV** Non-latching plug  
**SOVE** Sealed non-latching plug  
**SF** Non-latching panel plug  
**SFE** Sealed non-latching panel plug  
**WS** Right-angle plug  
**WSE** Sealed right-angle plug  
**D** Panel receptacle  
**DEE** Sealed panel receptacle  
**DB** Front projecting receptacle  
**DBEE** Sealed front projecting receptacle  
**DBP** Rear-mounted panel receptacle  
**DBPE** Sealed rear-mounted panel receptacle  
**DG** Adjustable threaded receptacle  
**DGP** Adjustable threaded receptacle with p.c.b. contacts  
**WDE** Sealed bulk-head feedthrough for connection of 2 plugs  
**K** Cable receptacle  
**KE** Sealed cable receptacle  
**DK** Panel receptacle with cable clamp  
**DKE** Sealed panel receptacle with cable clamp

S/SE



SOV/SOVE



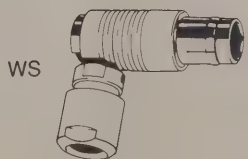
SF



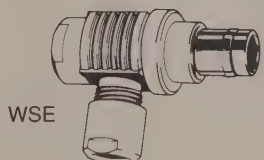
SFE



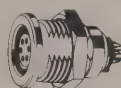
WS



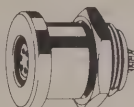
WSE



D



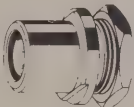
DEE



DB



DBEE



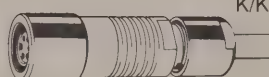
WDE



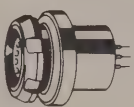
DBP



K/KE



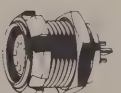
DBPE



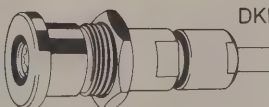
DK



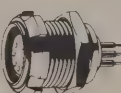
DG



DKE



DGP


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### TECHNICAL DATA

#### SERIES 101

#### NIM-CAMAC Qualified

| Part Number      | Description                        | Test Voltage (kVAc) | Impedance (Ohms) | Ampacity | Cable Diameter (mm) | Typical Cable Type               |
|------------------|------------------------------------|---------------------|------------------|----------|---------------------|----------------------------------|
| D 101 A004-CINCH | Adapter, male RCA-CAMAC female     |                     |                  |          |                     |                                  |
| D 101 A004-IB11  | Adapter, male, BNC-CAMAC female    |                     |                  |          |                     |                                  |
| IB3C-D 101 A004  | Adapter, female, BNC-CAMAC, female |                     |                  |          |                     |                                  |
| IB3C-S 101 A004  | Adapter, female, BNC-CAMAC, male   |                     |                  |          |                     |                                  |
| K-K 101 A004     | Adapter, female-female             |                     |                  |          |                     |                                  |
| S 101 A004-CINCH | Adapter, female RCA-CAMAC male     |                     |                  |          |                     |                                  |
| SDL 101 A004     | Adapter, right angle               |                     |                  |          |                     |                                  |
| SDT 101 A004     | Adapter, "T"                       |                     |                  |          |                     | The following cables may be used |
| WD 101 A004      | Feed-through, female-female        |                     |                  |          |                     |                                  |
| S 101 A004       | Plug, solder                       |                     |                  |          | 1.5-3.0             | For cable                        |
| S 101 A004-2     | Plug, crimp                        |                     |                  |          | 3.0                 | Diameter:                        |
| S 101 A004-3     | Plug, crimp                        |                     |                  |          | 5.1                 | 1.5-3.0 mm                       |
| S 101 A004-7     | Plug, solder                       |                     |                  |          | 5.1                 | RG-174                           |
| S 101 A004-8     | Plug, gold body                    |                     |                  |          |                     | RG-178                           |
| SF 101 A004      | Plug, non-locking panel mount      |                     |                  |          |                     | RG-179                           |
| SM 101 A004      | Plug, shorting                     | 1.8                 | 50               | 2A (DC)  | 3.0                 | RG-180                           |
| WS 101 A004      | Plug, crimp, right angle           |                     |                  |          |                     | RG-187                           |
|                  |                                    |                     |                  |          |                     | RG-188                           |
|                  |                                    |                     |                  |          |                     | RG-198                           |
|                  |                                    |                     |                  |          |                     | RG-316                           |
| D 101 A004       | Receptacle, solder                 |                     |                  |          | 1.5-3.0             |                                  |
| DK 101 A004      | Receptacle, solder                 |                     |                  |          | 1.5-3.0             |                                  |
| DK 101 A004-2    | Receptacle, crimp                  |                     |                  |          | 5.1e                |                                  |
| DK 101 A004-3    | Receptacle, crimp                  |                     |                  |          |                     |                                  |
| DLP 101 A004     | Receptacle, PCB, angled, gold      |                     |                  |          |                     | For cable                        |
| DLP 101 A004-10  | Receptacle, PCB, angled, nickel    |                     |                  |          |                     | Diameter:                        |
| DP 101 A004-10   | Receptacle, PCB, straight, nickel  |                     |                  |          |                     | 5.1 mm                           |
| K 101 A004       | Receptacle, solder                 |                     |                  |          | 1.5-3.0             | RG-58                            |
| K 101 A004-2     | Receptacle, crimp                  |                     |                  |          | 5.1                 | RG-400                           |
| K 101 A004-3     | Receptacle, crimp                  |                     |                  |          |                     |                                  |
| SAW 101 A004     | Termination                        |                     |                  |          |                     |                                  |
| S 101 A005       | Plug, Triax                        | 0.8                 | —                | 3.0      | 1.5-3.0             |                                  |
| D 101 A005       | Receptacle, Triax                  | 0.8                 | —                | 3.0      |                     |                                  |

#### SERIES 102

#### All Metal Body



102 A001



102 A021



102 A018



102 A005



102 A002



102 A009



102 A017



102 A016



102 A014



102 A051



102 A052



102 A053



102 A054



102 A056

| Part Number | Description           | Test Voltage (kVAc) | Ampacity (each contact) 40° C. rise) | Conductor Maximum (AWG) | Cable O.D. (mm) |
|-------------|-----------------------|---------------------|--------------------------------------|-------------------------|-----------------|
| 102 A001    | Coax                  | 1.4                 | 20                                   | 14                      |                 |
| 102 A018    | Coax                  | 7.0 (DC)            | 11                                   | 22                      | Unshielded:     |
| 102 A002    | Coax (50 Ohm)         | 1.8                 | 11                                   | 22                      | 1.4-4.7         |
| 102 A017    | Coax (75 Ohm)         | 1.5                 | 7                                    | 18                      |                 |
| 102 A014    | Triax                 | 1.1                 | 15                                   | 22                      | Shielded:       |
| 102 A021    | Triax (50 Ohm)        | 0.7                 | 15                                   | 22                      | 1.4-4.5         |
| 102 A005    | 2 pole, T.C. - Type K |                     |                                      |                         |                 |
| 102 A009    | 2 pole, T.C. - Type J |                     |                                      |                         |                 |
| 102 A016    | 2 pole, T.C. - Type T |                     |                                      |                         |                 |
| 102 A051    | 2 pole                | 0.7                 | 9                                    | 22                      |                 |
| 102 A052    | 3 pole                | 0.7                 | 8.5                                  | 22                      | Sealed:         |
| 102 A053    | 4 pole                | 0.5                 | 5                                    | 24                      | 1.5-4.7         |
| 102 A054    | 5 pole                | 1.0                 | 5                                    | 24                      |                 |
| 102 A056    | 7 pole                | 0.5                 | 1.1                                  | 30                      |                 |

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**TECHNICAL DATA**

**SERIES 103**

**All Metal Body**



103 A001



103 A002



103 A023



103 A026



103 A015



103 A011



103 A025



103 A030



103 A051



103 A052



103 A053



103 A054



103 A056



103 A057

| Part Number | Description           | Test Voltage (kVAC) | Ampacity (each contact) 40° C. rise | Conductor Maximum (AWG) | Cable O.D. (mm)        |
|-------------|-----------------------|---------------------|-------------------------------------|-------------------------|------------------------|
| 103 A001    | Coax                  | 2.6                 | 16/23                               | 12                      | Unshielded:<br>2.2-6.7 |
| 103 A002    | Coax (75 Ohm)         | 3.2                 | 9.5/13                              | 18                      |                        |
| 103 A023    | Coax (50 Ohm)         | 9.0 (DC)            | 9.5/13                              | 18                      |                        |
| 103 A026    | Coax (50 Ohm)         | 1.6                 | 12/18                               | 14                      |                        |
| 103 A015    | Triax                 | 1.0                 | 14                                  | 18                      | Shielded:              |
| 103 A011    | 2 pole, T.C. - Type J |                     |                                     |                         |                        |
| 103 A025    | 2 pole, T.C. - Type K |                     |                                     |                         |                        |
| 103 A030    | 2 pole, T.C. - Type T |                     |                                     |                         |                        |
| 103 A051    | 2 pole                | 0.7                 | 13                                  | 18                      | Sealed:<br>1.7-6.7     |
| 103 A052    | 3 pole                | 0.7                 | 12.5                                | 18                      |                        |
| 103 A053    | 4 pole                | 0.7                 | 7                                   | 22                      |                        |
| 103 A054    | 5 pole                | 0.7                 | 7                                   | 22                      |                        |
| 103 A056    | 6 pole                | 0.5                 | 5                                   | 24                      |                        |
| 103 A057    | 7 pole                | 0.5                 | 5                                   | 24                      |                        |

**SERIES 1031**

**All Metal Body**



1031 A010



1031 A012



1031 A019

| Part Number | Description | Test Voltage (kVAC) | Ampacity (each contact) 40° C. rise | Conductor Maximum (AWG) | Cable O.D. (mm)                                                      |
|-------------|-------------|---------------------|-------------------------------------|-------------------------|----------------------------------------------------------------------|
| 1031 A010   | 10 pole     | 1.4                 | 4.5                                 | 24                      | Unshielded:<br>2.2-6.7<br>Shielded:<br>2.2-6.7<br>Sealed:<br>2.2-6.7 |
| 1031 A012   | 12 pole     | 1.4                 | 4.5                                 | 24                      |                                                                      |
| 1031 A019   | 19 pole     | 1.2                 | 1.0                                 | 30                      |                                                                      |

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## TECHNICAL DATA

### SERIES 104

### All Metal Body



104 A001



104 A010



104 A012



104 A085



104 A060



104 A078



104 A093



104 A087



104 A083



104 A057



104 A061



104 A067



104 A051



104 A040



104 A035



104 A036



104 A037



104 A062



104 A053



104 A065



104 A054



104 A066



104 A055



104 A056



104 A086



104 A092

| Part Number | Description           | Test Voltage (kVAC) | Ampacity (each contact) 40° C. rise | Conductor Maximum (AWG) | Cable O.D. (mm)        |
|-------------|-----------------------|---------------------|-------------------------------------|-------------------------|------------------------|
| 104 A001    | Coax                  | 3.2                 | 45                                  | 10                      | Unshielded:<br>3.2-8.7 |
| 104 A010    | Coax                  | 8.0 (DC)            | 35                                  | 12                      |                        |
| 104 A012    | Coax                  | 2.5                 | 35                                  | 8                       |                        |
| 104 A085    | Coax                  | 1.7                 | 50                                  | 8                       |                        |
| 104 A060    | Coax (50 Ohm)         | 4.0                 | 25                                  | 12                      |                        |
| 104 A078    | Coax + 1              | 1.8/0.8             | 4.0/9.0                             | 24/24                   |                        |
| 104 A093    | Coax + 4              | 1.8/0.8             | 4.0/4.0                             | 24/24                   |                        |
| 104 A087    | Mixed                 | 1.5/2.0             | 28/3.0                              | 12/22                   |                        |
| 104 A083    | Mixed                 | 2.2/4.0             | 18/8.0                              | 14/22                   |                        |
| 104 A057    | 2 pole, T.C. - Type J |                     |                                     |                         |                        |
| 104 A061    | 2 pole, T.C. - Type K |                     |                                     |                         | Shielded:<br>2.9-8.7   |
| 104 A067    | 2 pole                | 0.7                 | 9                                   | 22                      |                        |
| 104 A051    | 2 pole                | 1.3                 | 21                                  | 14                      |                        |
| 104 A040    | 3 pole                | 1.25                | 20                                  | 14                      |                        |
| 104 A035    | 4 pole, T.C. - Type J |                     |                                     |                         | Sealed:<br>2.9-8.7     |
| 104 A036    | 4 pole, T.C. - Type K |                     |                                     |                         |                        |
| 104 A037    | 4 pole                | 1.3                 | 12                                  | 18                      |                        |
| 104 A062    | 4 pole                | 6.0 (DC)            | 8                                   | 22                      |                        |
| 104 A053    | 5 pole                | 0.9                 | 11                                  | 18                      |                        |
| 104 A065    | 6 pole                | 1.2                 | 6.5                                 | 22                      |                        |
| 104 A054    | 7 pole                | 0.9                 | 6.5                                 | 22                      |                        |
| 104 A066    | 8 pole                | 0.9                 | 6.0                                 | 22                      |                        |
| 104 A055    | 9 pole                | 0.6                 | 6.0                                 | 22                      |                        |
| 104 A056    | 11 pole               | 0.6                 | 5.8                                 | 22                      |                        |
| 104 A086    | 16 pole               | 0.5                 | 4.0                                 | 24                      |                        |
| 104 A092    | 19 pole               | 0.8                 | 3.5                                 | 24                      |                        |

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### TECHNICAL DATA

#### SERIES 105

#### All Metal Body



105 A001



105 A049



105 A002



105 A090



105 A004



105 A005



105 A074



105 A089



105 A095



105 A020



105 A036



105 A060



105 A087



105 A057



105 A039



105 A051



105 A052



105 A053



105 A054



105 A067



105 A062



105 A069



105 A104



105 A058



105 A038



105 A093



105 A102

| Part Number | Description   | Test Voltage (kVAC) | Ampacity (each contact) 40° C. rise | Conductor Maximum (AWG) | Cable O.D. (mm)      |
|-------------|---------------|---------------------|-------------------------------------|-------------------------|----------------------|
| 105 A001    | Coax          | 4.0                 | 45                                  | 8                       | Shielded:<br>3.2-8.7 |
| 105 A049    | Coax          | 25.0 (DC)           | 43                                  | 12                      |                      |
| 105 A002    | Coax (50 Ohm) | 5.0                 | 30                                  | 10                      |                      |
| 105 A090    | Coax (75 Ohm) | 5.0                 | 13                                  | 12                      |                      |
| 105 A004    | Coax (40 Ohm) | 13.0 (DC)           | 4                                   | 28                      |                      |
| 105 A005    | Coax (75 Ohm) | 14.0 (DC)           | 4.0                                 | 18                      |                      |
| 105 A074    | Coax + 1      | 4.5/1.6             | 12/12                               | 18                      |                      |
| 105 A089    | Coax + 4      | 4.5/1.5             | 12/7.0                              | 18/22                   |                      |
| 105 A095    | Coax + 9      | 1.8/1.9             | 4.0/6.0                             | 24/22                   |                      |
| 105 A020    | H.V. + 2      | 6.0/1.8             | 20/12                               | 14/18                   |                      |
| 105 A036    | H.V. + 4      | 6.0/1.8             | 18/12                               | 14/18                   | Sealed:<br>2.9-8.7   |
| 105 A060    | H.V. + 7      | 6.0/1.8             | 16/10                               | 14/18                   |                      |
| 105 A087    | 2 pole        | 1.1                 | 28                                  | 10                      |                      |
| 105 A057    | 3 pole        | 5.5 (DC)            | 13                                  | 18                      |                      |
| 105 A039    | 5 pole        | 7.0 (DC)            | 11                                  | 18                      |                      |
| 105 A051    | 2 pole        | 1.8                 | 30                                  | 12                      |                      |
| 105 A052    | 3 pole        | 1.3                 | 23                                  | 12                      |                      |
| 105 A053    | 4 pole        | 1.8                 | 20                                  | 12                      |                      |
| 105 A054    | 7 pole        | 3.0/1.8             | 25/7.0                              | 14/18                   |                      |
| 105 A067    | 8 pole        | 0.95                | 11                                  | 18                      |                      |
| 105 A062    | 10 pole       | 0.9                 | 9.0                                 | 18                      |                      |
| 105 A069    | 12 pole       | 0.7                 | 7.5                                 | 18                      |                      |
| 105 A104    | 13 pole       | 1.5                 | 13/1.0                              | 20/26                   |                      |
| 105 A058    | 15 pole       | 0.7                 | 5.0                                 | 22                      |                      |
| 105 A038    | 18 pole       | 0.7                 | 4.7                                 | 22                      |                      |
| 105 A093    | 24 pole       | 0.7                 | 3.5                                 | 24                      |                      |
| 105 A102    | 27 pole       | 0.7                 | 3.0                                 | 24                      |                      |

**Call Toll Free: 800-551-0121**



**W.W. FISCHER INC.**  
ELECTRONIC CONNECTORS

1040 Crown Pointe Parkway, Suite 560

Atlanta, Georgia 30338

Toll Free: (800) 551-0121

Fax: (404) 551-6969

## TECHNICAL DATA

### SERIES 106

#### All Metal Body



106 A003



106 A007



106 A019



106 A015



106 A018



106 A017



106 A013



106 A014

| Part Number | Description | Test Voltage (kVAC) | Ampacity (each contact) 40° C. rise | Conductor Maximum (AWG) | Cable O.D. (mm)       |
|-------------|-------------|---------------------|-------------------------------------|-------------------------|-----------------------|
| 106 A003    | 3 pole      | 3                   | 26                                  | 12                      | Shielded:<br>4.2-19.2 |
| 106 A007    | 7 pole      | 2.3                 | 20                                  | 13                      |                       |
| 106 A019    | 8 pole      | 1.9                 | 20                                  | 13                      |                       |
| 106 A015    | 12 pole     | 1.4                 | 15.5                                | 13                      |                       |
| 106 A018    | 17 pole     | 1.4                 | 10                                  | 18                      | Sealed:<br>4.2-19.2   |
| 106 A017    | 24 pole     | 1.1                 | 9.0                                 | 18                      |                       |
| 106 A013    | 6 pole      | 12 (DC)             | 11                                  | 18                      |                       |
| 106 A014    | 2 H.V. + 6  | 7.0/2.2             | 16/9.0                              | 14/18                   |                       |

### SERIES 107

#### All Metal Body



107 A003



107 A018



107 A004



107 A015



107 A017



107 A051



107 A034



107 A052



107 A013



107 A023

| Part Number | Description | Test Voltage (kVAC) | Ampacity (each contact) 40° C. rise | Conductor Maximum (AWG) | Cable O.D. (mm)       |
|-------------|-------------|---------------------|-------------------------------------|-------------------------|-----------------------|
| 107 A003    | Coax        | 30 (DC)             | 37/52                               | 8                       | Shielded:<br>5.2-22.7 |
| 107 A004    | Coax        | 55 (DC)             | 35/50                               | 8                       |                       |
| 107 A017    | Coax        | 55 (DC)             | 54/75                               | 6                       |                       |
| 107 A034    | 7 pole      | 14 (DC)             | 18                                  | 3                       |                       |
| 107 A013    | 4 pole      | 3.6 (DC)            | 35                                  | 12                      | Sealed:<br>5.7-22.7   |
| 107 A018    | 6 pole      | 2.9                 | 31                                  | 12                      |                       |
| 107 A015    | 19 pole     | 1.5                 | 13.5                                | 13                      |                       |
| 107 A051    | 27 pole     | 1.5                 | 7.5                                 | 18                      |                       |
| 107 A052    | 40 pole     | 1.0                 | 6.6                                 | 18                      |                       |
| 107 A023    | 55 pole     | 2.0/1.7             | 7.0/3.0                             | 18/22                   |                       |

### SERIES 402

#### Plastic Insulated Metal Body



402 A001



402 A021



402 A018



402 A005



402 A002



402 A009



402 A017



402 A016



402 A014



402 A051



402 A052



402 A053



402 A054



402 A056

|          |                       |          |     |    |                        |
|----------|-----------------------|----------|-----|----|------------------------|
| 402 A001 | Coax                  | 1.4      | 20  | 14 | Unshielded:<br>1.4-4.7 |
| 402 A018 | Coax                  | 7.0 (DC) | 11  | 22 |                        |
| 402 A002 | Coax (50 Ohm)         | 1.8      | 11  | 22 |                        |
| 402 A017 | Coax (75 Ohm)         | 1.5      | 7   | 18 |                        |
| 402 A014 | Triax                 | 1.1      | 15  | 22 | Shielded:<br>1.4-4.5   |
| 402 A021 | Triax (50 Ohm)        | 0.7      | 15  | 22 |                        |
| 402 A005 | 2 pole, T.C. - Type K |          |     |    |                        |
| 402 A009 | 2 pole, T.C. - Type J |          |     |    |                        |
| 402 A016 | 2 pole, T.C. - Type T |          |     |    | Sealed:<br>1.5-4.7     |
| 402 A051 | 2 pole                | 0.7      | 9   | 22 |                        |
| 402 A052 | 3 pole                | 0.7      | 8.5 | 22 |                        |
| 402 A053 | 4 pole                | 0.5      | 5   | 24 |                        |
| 402 A054 | 5 pole                | 1.0      | 5   | 24 |                        |
| 402 A056 | 7 pole                | 0.5      | 1.1 | 30 |                        |

Call Toll Free: 800-551-0121





**W.W. FISCHER INC.**  
ELECTRONIC CONNECTORS

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Toll Free: (800) 551-0121  
Fax: (404) 551-6969

**ORDERING INFORMATION**

|   |     |   |     |    |       |    |
|---|-----|---|-----|----|-------|----|
| S | 104 | A | 056 | -2 | / 6.7 | -U |
|---|-----|---|-----|----|-------|----|

**Connector Style:**

- S** Straight plug
- SE** Sealed plug
- SOV** Non-latching plug
- SOVE** Sealed non-latching plug
- SF** Non-latching panel plug
- SFE** Sealed non-latching panel plug
- WS** Right-angle plug
- WSE** Sealed right-angle plug
- D** Panel receptacle
- DEE** Sealed panel receptacle
- DB** Front projecting receptacle
- DBEE** Sealed front projecting receptacle
- DBP** Rear-mounted panel receptacle
- DBPE** Sealed rear-mounted panel receptacle
- DG** Adjustable threaded receptacle
- DGP** Adjustable threaded receptacle with p.c.b. contacts
- WDE** Sealed bulk-head feedthrough for connection of 2 plugs
- K** Cable receptacle
- KE** Sealed cable receptacle
- DK** Panel receptacle with cable clamp
- DKE** Sealed panel receptacle with cable clamp

**Connector Size (mm):<sup>1</sup>**

| Series | A   | B  | C  |
|--------|-----|----|----|
| 101    | 27  | 5  | 7  |
| 102    | 35  | 7  | 9  |
| 103    | 46  | 9  | 12 |
| 1031   | 48  | 10 | 14 |
| 104    | 50  | 12 | 15 |
| 105    | 60  | 15 | 18 |
| 1051   | 80  | 19 | 20 |
| 106    | 78  | 27 | 32 |
| 107    | 110 | 30 | 35 |

**Maximum Cable Diameter (mm):<sup>1</sup>**

| D max. | Series |
|--------|--------|
| 5.1    | 101    |
| 4.7    | 102    |
| 6.7    | 103    |
| 6.7    | 1031   |
| 8.7    | 104    |
| 10.7   | 105    |
| 15.2   | 1051   |
| 19.2   | 106    |
| 22.7   | 107    |

**Collet (Clamp) Type:**

- U** For use with unshielded cable or with shielded cable when shield is **not** terminated to connector body.
- S** For use with shielded cable braided or served when shield is terminated to connector body.

Omit if no cable clamp assembly is required (as for styles: SF, SFE, D, DEE, DB, DBEE, DBP, DBPE, DG, DGP, WDE)

**Contact Protection as a general rule:<sup>2</sup>**

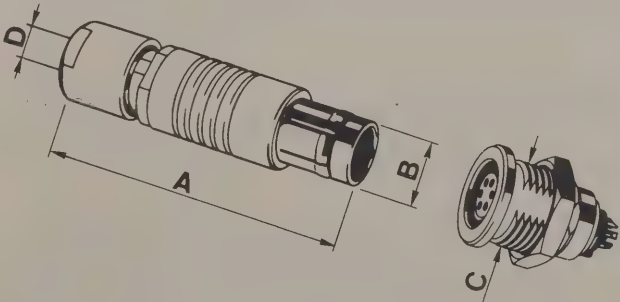
- A** Plugs have pins. Receptacles have sockets.
- Z** Plugs have sockets. Receptacles have pins.

**Code for Contact Configuration:**

See table of electrical ratings for corresponding type and series.

**Modifications:**

- Inquire about availability of various options like:
- crimp contacts
  - printed circuit contacts
  - black chrome finish
  - additional gold plating
  - cable strain relief
  - alternate keying



<sup>1</sup> General dimensions of unsealed standard connectors  
<sup>2</sup> Except certain high voltage connectors

**Call Toll Free: 800-551-0121**

# SILVER ZEBRA<sup>®</sup> LOW RESISTANCE ELASTOMERIC CONNECTORS

## Product Description

**FUJIPOLY** low resistance ZEBRA<sup>®</sup> elastomeric connectors are constructed of alternating parallel layers of electrically conductive and nonconductive silicone elastomer. The electrically conductive layer is filled with silver particles.

The composite alternating layers provide reliable electrical connection when placed between two aligned conducting surfaces.

The low resistance ZEBRA provides a redundant connection with a minimum of two conductive layers recommended per PC contact pad. The connector is available with insulating barrier or silicone supports. The connectors are used for connecting electroluminescent (EL) and plasma type displays to PC boards or for connecting hybrid circuits to PC boards, among other applications.

Low resistance ZEBRA connectors are positioned between two aligned surfaces and are mechanically clamped together with a lid or another PC board. The connectors may be free standing or positioned in a retainer depending on packaging profiles and design.

## Design Recommendations

Recommended deflection is 5-20% of free height. Minimum deflection will vary with packaging applications and should consider overall height, PC board warpage, finish, etc. (Contact **FUJIPOLY** Product Application Engineering for assistance.)

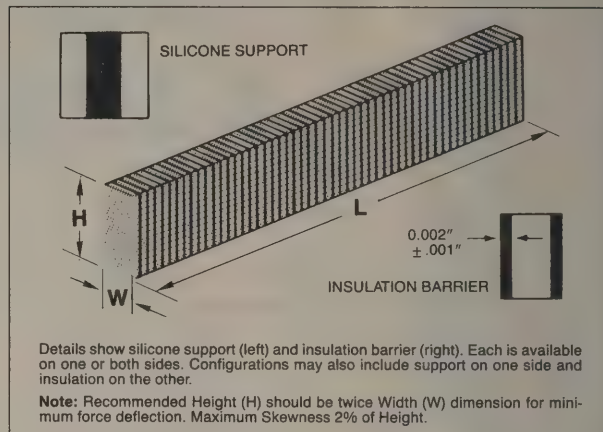
Design recommendations for solid ZEBRA over 0.400" deflect 0.050" typical. Silicone supported over 0.400" deflect 0.060" typical.

The use of an insulating barrier or silicone self-support material on one or both sides of the connector is recommended. The silicone support is utilized to reduce clamping force and provide an element of environmental protection for a cost-effective connection.

## Properties/Performance Characteristics

|                                                                                                                          |                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>CONTACT RESISTANCE</b><br>< 1.0 Ohms (Typical)                                                                        | <b>MIN. PCB OR DISPLAY CONTACT SPACING</b><br>SERIES 5002 0.015"<br>SERIES 5004 0.025"                           |
| <b>CURRENT CARRYING CAPACITY</b><br>500 milli-amps<br>(Based on 0.050" wide ZEBRA on 0.050" x 0.050" wide contact point) | <b>CONDUCTIVE LAYER</b>                                                                                          |
| <b>INSULATION RESISTANCE</b><br>10 <sup>12</sup> Ohms Minimum<br>(Between conductive layers)                             | <b>LAYER COUNT</b><br>SERIES 5002 200 min. per inch<br>SERIES 5004 160 min. per inch<br><b>COLOR</b> Silver Gray |
| <b>TEMPERATURE RANGE</b><br>- 55°F. to 260°F./<br>- 50°C. to + 125°C.                                                    | <b>INSULATING LAYER</b>                                                                                          |
| <b>HUMIDITY RANGE</b> 0-100%                                                                                             | <b>LAYER COUNT</b><br>SERIES 5002 200 min. per inch<br>SERIES 5004 160 min. per inch<br><b>COLOR</b> Off-White   |

## Dimensional Specifications



Details show silicone support (left) and insulation barrier (right). Each is available on one or both sides. Configurations may also include support on one side and insulation on the other.

**Note:** Recommended Height (H) should be twice Width (W) dimension for minimum force deflection. Maximum Skewness 2% of Height.

## Dimensional Specification (For requirements over 4" consult factory)

|            | INCHES                       | MM                            |
|------------|------------------------------|-------------------------------|
| HEIGHT (H) | 0.040 ± .003 to 0.500 ± .007 | 1 ± .08 to 13 ± .18           |
| WIDTH (W)  | 0.030 ± .003 to 0.100 ± .005 | 0.762 ± 0.076 to 2.54 ± 0.127 |
| LENGTH (L) | 0.250 ± .005 to 4.000 ± .025 | 6.35 ± .12 to 101.60 ± .64    |

## Calculation of Resistance

For the purpose of calculating the resistance of silver ZEBRA connectors and testing them for compliance, please use the following formula:

$$R = \frac{H}{W \times Ew} \times .004$$

**WHERE:** R = Resistance in Ohms Ew = Electrode pad width, inches  
W = ZEBRA width, inches H = ZEBRA height, inches.

# Series 7000 & 8000—Low Resistance Connectors

## Description

The **FUJIPOLY** ZEBRA<sup>®</sup> Series 7000 and 8000 elastomeric connector elements are "D"-shaped, low durometer silicone elastomer core around which flat metallic conductors are vulcanized in a row parallel to each other. The tips of the metallic conductors are turned upward so that point contact can be effected; in addition, contact is made to the flat area

when the connector element is positioned between two printed circuit boards. The point contact will penetrate surface oxides or contaminants which might be present on the surface of the contact pads, thus assuring reliable electrical connection on two planes. Also available are standard board to board assemblies which include connector and holder.

## Series 7000 and 8000 Dimensional Specifications

| CONNECTOR DIMENSIONS | MINIMUM                              | MAXIMUM                            |
|----------------------|--------------------------------------|------------------------------------|
| Height "H"           | 0.100" ± 0.005" 2.54mm ± .127mm      | 0.500" ± 0.015" 12.70mm ± .381mm   |
| Width "W"            | 0.060" ± 0.005" 1.52mm ± .127mm      | 0.125" ± 0.010" 3.18mm ± .254mm    |
| Length "L"           | 7000 0.200" ± 0.005" 5.08mm ± .127mm | 3.500" ± 0.015" 88.90mm ± .381mm   |
|                      | 8000 0.200" ± 0.005" 5.08mm ± .127mm | 10.000" ± 0.030" 254.00mm ± .762mm |

**Note:** For good design practice and low deflection force requirements, the height "H" should be twice the width "W".

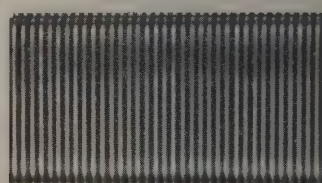
## Series 7000 Materials

|                              |                                                                                                                         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Conductive Elements</b>   | Tin-plated copper alloy wire.                                                                                           |
| <b>Wire Size and Spacing</b> | 0.002" x 0.005" flat wire on 0.015" center-to-center spacing. (Min. 66 wires/inch.)                                     |
| <b>Connector body</b>        | Nonconductive blue color silicone rubber. UL-94-HB rating, 500 volts/mil dielectric strength, 35 ± 5 Shore A durometer. |

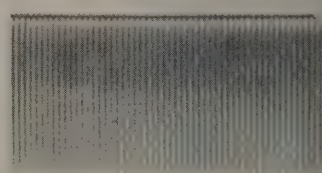
## Series 8000 Materials

|                                                        |                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Conductive Elements</b>                             | Gold-plated copper wire, gold 0.00001", nickel 0.00005". (Other wires available.)                                                                                                                                                                                              |
| <b>Wire Size and Spacing</b><br>(Series 8000 A, B & C) | A. 0.002" x 0.005" flat wire on 0.010" center-to-center spacing. (Min. 100 wires/inch.)<br>B. 0.002" x 0.004" flat wire on 0.0075" center-to-center spacing. (Min. 133 wires/inch.)<br>C. 0.001" x 0.003" flat wire on 0.006" center-to-center spacing. (Min. 166 wires/inch.) |
| <b>Connector body</b>                                  | Nonconductive tan color silicone rubber. UL-94-HB rating, 500 volts/mil dielectric strength.                                                                                                                                                                                   |
| <b>Film</b>                                            | 0.001" thick polyamide dielectric strength of film ASTM-D-149, 2000 volts/mil.                                                                                                                                                                                                 |

## Series 7000



## Series 8000



**Fujipoly<sup>®</sup> America Corporation**

750 Walnut Avenue • Cranford, NJ 07016 • 908/272-3850 • FAX: 908/272-2241



# Fujipoly Connector W Series (Elastomeric Connectors)

The high-accuracy rubber connectors of the Fujipoly W series with anisotropic conduction properties have 300-2000 fine metal wires per 1 cm<sup>2</sup> embedded in the thickness direction of the transparent silicone rubber sheet. After inserting the Fujipoly W series connectors between the opposite electrodes, all that is necessary is to apply the appropriate pressure to allow the electrodes to be properly connected. All fine metal wires are gold-plated. This finish ensures that requirements such as a low resistance and the ability to withstand a relatively high current flow can be met.

### Fujipoly Connector W Series Features

- Ensures proper solder-free connections by mere insertion between the electrodes and applying the pressure.
- The fine metal wires have a fine pitch (the average pitch in the linear direction is 80μ for the L pattern) to allow high-density mounting. This also eliminates the need for positional alignment of the connectors when mounting.
- The continuity (contact) resistance is extremely small (1Ω/mm<sup>2</sup> or less).

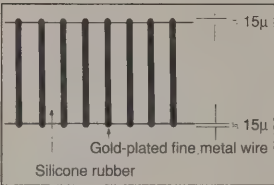
### Fujipoly Connector W Series Applications

- Mounting and inspection of chip carriers, QFP, TAB, PLCC, hybrid IC boards
- Mounting and inspection of display panels including LCD, LED and ECD.
- Connecting and inspection of printed circuit boards.

### Types of W Series Fujipoly Connectors

#### WS □ Type

This type of connector has straight fine metal wires embedded in a transparent silicone rubber sheet in a regular arrangement. The fine wires protrude slightly from both ends of the silicone rubber sheet to ensure a perfect connection at a very light touch. Suitable for mounting applications.



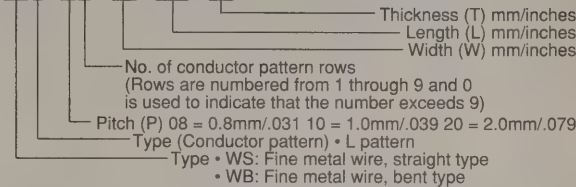
### Nomenclature

For ordering purposes, use the following numbering.

#### (1) For L-pattern conductor arrangement

Ex. Fujipoly Connector

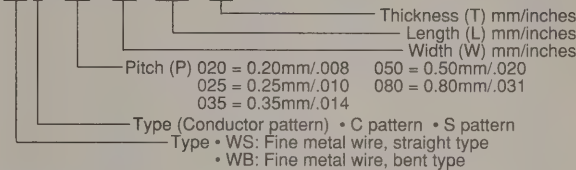
WSL-102-(2.0 x 20.0 x 0.5)



#### (2) For C-pattern, S-pattern conductor arrangement

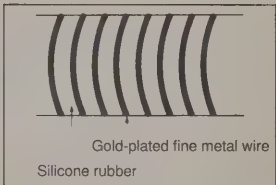
Ex. Fujipoly Connector

WSC-050-(5.0 x 20.0 x 0.5)



#### WB □ Type

This type of connector has bent or curved fine metal wires embedded in a transparent silicone rubber sheet in a regular arrangement. The fine wires are curved so that these connectors are ideal for application requiring repeated compression. Suitable for inspection applications.



### Specifications and Dimensions

| Type<br>(Conductor<br>Pattern) | Conductor pattern<br>(Plan) | Pitch<br>(P) mm/in | Thickness<br>(T) mm/in | Max. Width (W) mm/in.<br>Max. Length (L) mm/in. |             |
|--------------------------------|-----------------------------|--------------------|------------------------|-------------------------------------------------|-------------|
|                                |                             |                    |                        | L 120                                           | L120        |
| WSL                            |                             | 0.8/.031           | 0.3/.012               | W ≤80                                           | (120<L≤145) |
|                                |                             | 0.5/.020           | 0.5/.020               | 3.150                                           | 4.72 5.71   |
|                                |                             | 1.0/.039           | 1.0/.039               | W ≤10 x P                                       |             |
|                                |                             | 2.0/.079           | 1.6/.063               | W ≤50                                           | (120<L≤140) |
|                                |                             |                    | 2.2/.087               |                                                 |             |
|                                |                             | 1.0/.039           | 3.0/.118               |                                                 |             |
| WSC                            |                             | 0.20/.008          | 0.3/.012               | W ≤80                                           | (120<L≤195) |
|                                |                             | 0.35/.014          | 0.5/.020               | 4.72 7.68                                       |             |
|                                |                             | 0.50/.020          | 1.0/.039               | 3.150                                           | W ≤50       |
|                                |                             |                    |                        | 1.969                                           |             |
|                                |                             | 0.35/.014          | 1.6/.063               | W ≤50                                           | (120<L≤140) |
|                                |                             | 0.50/.020          | 2.2/.087               | 4.72 5.51                                       | W ≤40       |
| WSS                            |                             | 0.25/.010          | 0.3/.012               | W ≤80                                           | (120<L≤195) |
|                                |                             | 0.50/.020          | 0.5/.020               | 4.72 7.68                                       |             |
|                                |                             | 0.80/.031          | 1.0/.039               | 3.150                                           | W ≤50       |
|                                |                             |                    |                        | 1.969                                           |             |
|                                |                             | 0.50/.020          | 1.6/.063               | W ≤50                                           | (120<L≤140) |
|                                |                             | 0.80/.031          | 2.2/.087               | 4.72 5.51                                       | W ≤40       |

### Specifications and Dimensions

| Type<br>(Conductor<br>Pattern) | Conductor pattern<br>(Plan) | Pitch<br>(P) mm/in | Thickness<br>(T) mm/in | Max. Width (W) mm/in.<br>Max. Length (L) mm/in. |             |
|--------------------------------|-----------------------------|--------------------|------------------------|-------------------------------------------------|-------------|
|                                |                             |                    |                        | L 120                                           | L120        |
| WBL                            |                             | 0.8/.031           | 0.5/.020               | W ≤80                                           | (120<L≤145) |
|                                |                             | 0.5/.020           | 0.5/.020               | 3.150                                           | 4.72 5.71   |
|                                |                             | 1.0/.039           | 1.0/.039               | W ≤10 x P                                       |             |
|                                |                             | 2.0/.079           | 1.6/.063               | W ≤50                                           | (120<L≤140) |
|                                |                             |                    | 2.2/.087               |                                                 |             |
|                                |                             | 1.0/.039           | 3.0/.118               |                                                 |             |
| WBC                            |                             | 0.20/.008          | 0.3/.012               | W ≤80                                           | (120<L≤195) |
|                                |                             | 0.35/.014          | 0.5/.020               | 4.72 7.68                                       |             |
|                                |                             | 0.50/.020          | 1.0/.039               | 3.150                                           | W ≤50       |
|                                |                             |                    |                        | 1.969                                           |             |
|                                |                             | 0.35/.014          | 1.6/.063               | W ≤50                                           | (120<L≤140) |
|                                |                             | 0.50/.020          | 2.2/.087               | 4.72 5.51                                       | W ≤40       |
| WBS                            |                             | 0.25/.010          | 0.3/.012               | W ≤80                                           | (120<L≤195) |
|                                |                             | 0.50/.020          | 0.5/.020               | 4.72 7.68                                       |             |
|                                |                             | 0.80/.031          | 1.0/.039               | 3.150                                           | W ≤50       |
|                                |                             |                    |                        | 1.969                                           |             |
|                                |                             | 0.50/.020          | 1.6/.063               | W ≤50                                           | (120<L≤140) |
|                                |                             | 0.80/.031          | 2.2/.087               | 4.72 5.51                                       | W ≤40       |

(NOTE) The C pattern and S pattern marks indicate the clusters of fine metal wires.  
The number of wires in each cluster varies depending on the type of connector.  
Other pitch, thickness and dimensional specifications available upon request.



750 Walnut Avenue • Cranford, NJ 07016 • 908/272-3850 • FAX: 908/272-2241

# Zebra® Connectors for Liquid Crystal Displays

## High Resistance Connectors

FUJIPOLY ZEBRA connectors (see Figure 1) have alternating parallel layers of conductive carbon-filled and non-conductive silicone rubber. They make reliable connections by being deflected between contacting surfaces. ZEBRA connectors are

used for connecting any LCD, from small displays for watches to large area displays for instruments. Table A shows the different types of ZEBRA connectors available. Table B shows performance characteristics.

| Series | LCD Contact Spacing Center-to-Center* |                       | PITCH: Sum of the Thickness of an Adjacent Conductive and non-Conductive Layer |         | Conductive Layer per inch |                        | Individual Conductive and Insulating Layer Thickness |         | Available Lengths |
|--------|---------------------------------------|-----------------------|--------------------------------------------------------------------------------|---------|---------------------------|------------------------|------------------------------------------------------|---------|-------------------|
|        | Minimum                               | Nominal               | Maximum                                                                        | Minimum | Maximum                   | Maximum                | Minimum                                              | Maximum |                   |
| 1006   | 0.030 in.<br>0.75 mm                  | 0.010 in.<br>0.25 mm  | 0.014 in.<br>0.35 mm                                                           | 100     | 0.002 in.<br>0.05 mm      | 0.008 in.<br>0.20 mm   | 8.00 in.<br>203 mm                                   |         |                   |
| 1002   | 0.010 in.<br>0.25 mm                  | 0.004 in.<br>0.10 mm  | 0.006 in.<br>0.15 mm                                                           | 240     | 0.001 in.<br>0.025 mm     | 0.004 in.<br>0.10 mm   | 11.8 in.<br>300 mm                                   |         |                   |
| 2002   | 0.015 in.<br>0.38 mm                  | 0.005 in.<br>0.125 mm | 0.007 in.<br>0.175 mm                                                          | 200     | 0.001 in.<br>0.025 mm     | 0.005 in.<br>0.125 mm  | 6.00 in.<br>152.4 mm                                 |         |                   |
| 2004   | 0.020 in.<br>0.50 mm                  | 0.008 in.<br>0.20 mm  | 0.010 in.<br>0.25 mm                                                           | 140     | 0.002 in.<br>0.050 mm     | 0.006 in.<br>0.15 mm   | 11.8 in.<br>300 mm                                   |         |                   |
| 2005   | 0.006 in.<br>0.15 mm                  | 0.002 in.<br>0.050 mm | 0.010 in.<br>0.10 mm                                                           | 500     | 0.0004 in.<br>0.010 mm    | 0.0024 in.<br>0.060 mm | 11.8 in.<br>300 mm                                   |         |                   |

TABLE A

| Zebra Connectors | Temperature Range |                | Current Carrying Capacity<br>0.035" x 0.035" pad | Resistance<br>Between Layers |
|------------------|-------------------|----------------|--------------------------------------------------|------------------------------|
|                  | Minimum           | Maximum        |                                                  |                              |
| All Series       | -55°F<br>-50°C    | 260°F<br>125°C | 0.050 amps                                       | 10 <sup>12</sup> ohms        |

TABLE B

| Configuration | Tolerance                                                                                                                                                                                                                                                          |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LENGTH = L    | 0.157 in. to 2.40 in.—± .008 in./4.00 mm to 61.0 mm—± .20 mm<br>2.410 in. to 6.00 in.—± .012 in./61.2 mm to 152.4 mm—± .30 mm<br>6.010 in. to 7.87 in.—± .020 in./152.6 mm to 200.0 mm—± .50 mm<br>7.880 in. to 11.80 in.—± .039 in./200.1 mm to 300.0 mm—± 1.0 mm |
| HEIGHT = H    | .020 in. to .750 in.—± .005 in./0.5 mm to 19.0 mm ± .127 mm<br>above .750 in./19.0 mm consult factory                                                                                                                                                              |
| WIDTH = W     | 0.015 in. to .039 in.—± .003 in./0.38 mm to 1.0 mm—± 0.076 mm<br>0.040 in. to .079 in.—± .004 in./1.01 mm to 2.0 mm—± 0.100 mm<br>0.080 in. to .118 in.—± .008 in./2.01 mm to 3.0 mm—± 0.0 mm<br>above .118 in./3.00 mm consult factory                            |

TABLE C

## Sponge Supported Connectors

The Self-Supporting Sponge Zebra connector utilizes standard 1002/2004 zebra connector elements supported by a silicone sponge rubber on one or two sides. The silicone sponge creates a larger width that can eliminate the need for a holder, and yet the force required for deflection is very low (See product technical sheets #4 & 5 for specific information). The

standard Self-Supporting Sponge Zebra connector is available in a host of widths to accommodate LCD's with a glass lip overhang of 0.060"/1.5mm minimum. The Self-Supporting Sponge Zebra connector is used to connect LCD's to printed circuit boards and eliminates bowing of the printed circuit board due to the low force required to make contact.

### Standard Sponge Self-Supporting Zebra Connector Widths

|                  |                  |                  |                  |
|------------------|------------------|------------------|------------------|
| 0.060 in./1.5 mm | 0.079 in./2.0 mm | 0.106 in./2.7 mm | 0.150 in./3.8 mm |
| 0.063 in./1.6 mm | 0.087 in./2.2 mm | 0.110 in./2.8 mm | 0.157 in./4.0 mm |
| 0.067 in./1.7 mm | 0.091 in./2.3 mm | 0.118 in./3.0 mm |                  |
| 0.070 in./1.8 mm | 0.100 in./2.5 mm | 0.126 in./3.2 mm |                  |
| 0.075 in./1.9 mm | 0.102 in./2.6 mm | 0.138 in./3.5 mm |                  |

TABLE A

| Configuration | Tolerance (inches/mm)                                                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LENGTH = L    | 0.157 in. to 2.40 in.—± .006 in./4.00 mm to 61.0 mm—± .20 mm<br>2.410 in. to 6.00 in.—± .015 in./61.2 mm to 152.4 mm ± .38 mm<br>6.010 in. to 7.87 in.—± .020 in./152.6 mm to 200.0 mm—± .50 mm |
| HEIGHT = H    | .020 in. to .750 in.—± .005 in./0.05 mm to 19 mm ± .127 mm<br>above .750 in./19.0 mm consult factory.                                                                                           |
| WIDTH = W     | 0.080 in. to 0.157 in.—± .004/1.52 mm to 4.0mm ± 0.1mm<br>above 0.157 in./4.00 mm consult factory.                                                                                              |

TABLE B

| Zebra connectors | Temperature Range |                | Current Carrying Capacity<br>0.035" x 0.035" pad | Resistance<br>Between Layers |
|------------------|-------------------|----------------|--------------------------------------------------|------------------------------|
|                  | Minimum           | Maximum        |                                                  |                              |
| All Series       | -55°F<br>-50°C    | 260°F<br>125°C | 0.050 amps                                       | 10 <sup>12</sup> ohms        |

TABLE C

## Solid Self-Supported Connectors

The Solid Self-Supporting Zebra connector utilizes a standard zebra connector element supported by a soft, non-conductive silicone rubber on one or two sides. The silicone rubber creates a larger width that eliminates the need for a holder, and yet the force required for deflection is very low. (See product technical sheets #2 & 3 for specific information). The standard Solid Self-

Supporting Zebra connector has a 0.020"/0.50mm wide zebra connector element and is available in 8 different widths to accommodate LCD's with a glass lip overhang of 0.050"/1.27mm minimum.

### Standard Solid Self-Supporting Zebra Connector Widths

|                   |                  |                  |                   |
|-------------------|------------------|------------------|-------------------|
| 0.050 in./1.27 mm | 0.070 in./1.8 mm | 0.091 in./2.3 mm | 0.118 in./3.0 mm  |
| 0.060 in./1.50 mm | 0.079 in./2.0 mm | 0.100 in./2.5 mm | 0.138 in./3.50 mm |

TABLE A For other sizes and pitches consult factory.

| Configuration | Tolerance (inches/mm)                                                                                                                                                                                                                                              |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LENGTH = L    | 0.157 in. to 2.40 in.—± .008 in./4.00 mm to 61.0 mm—± .20 mm<br>2.410 in. to 6.00 in.—± .015 in./61.2 mm to 152.4 mm ± .38 mm<br>6.010 in. to 7.87 in.—± .020 in./152.6 mm to 200.0 mm—± .50 mm<br>7.880 in. to 11.80 in.—± .039 in./200.1 mm to 300.0 mm—± 1.0 mm |
| HEIGHT = H    | .020 in. to .750 in.—± .005 in./0.05 mm to 19 mm ± .127 mm<br>above .750 in./19.0 mm consult factory.                                                                                                                                                              |
| WIDTH = W     | 0.050 in./0.079 in.—± 0.006/1.27 mm to 2.00 mm—± 0.15mm<br>0.080 in. to 0.157 in.—± .004/1.52 mm to 4.0mm ± 0.1mm<br>0.101 in. to 0.138 in.—± 0.008/2.55 mm to 3.50 mm ± 0.20 mm<br>above 0.138 in./3.50 mm consult factory.                                       |

TABLE B

| Zebra connectors | Temperature Range |                | Current Carrying Capacity<br>0.035" x 0.035" pad | Resistance<br>Between Layers |
|------------------|-------------------|----------------|--------------------------------------------------|------------------------------|
|                  | Minimum           | Maximum        |                                                  |                              |
| All Series       | -55°F<br>-50°C    | 260°F<br>125°C | 0.050 amps                                       | 10 <sup>12</sup> ohms        |

TABLE C

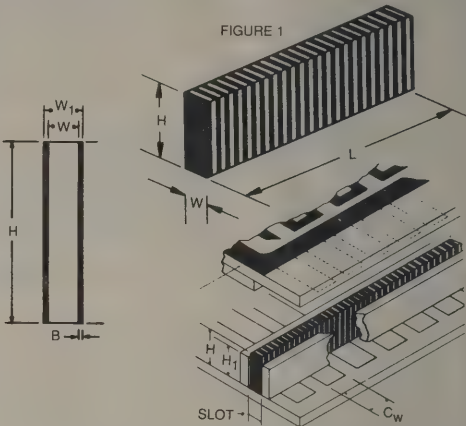


Figure 1 shows the three dimensions of the ZEBRA connector. When ordering, the three dimensions should be specified within the limits shown in Table C. For best overall performance, ZEBRA connectors must be ordered and used with a ratio of H/W equal to or greater than 1.5.

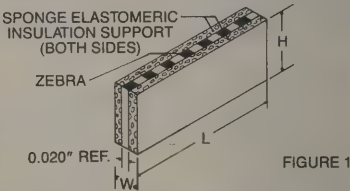


Figure 1 shows the three dimensions of a typical Sponge Supporting ZEBRA connector. Table A and B give the available sizes and tolerances.

| Zebra Element                         | LCD contact Spacing in/mm |
|---------------------------------------|---------------------------|
| 1002                                  | 0.010/0.25                |
| 2004                                  | 0.020/0.50                |
| Nominal Resistance, ohms              |                           |
| $R = \frac{12 \times H}{Cw \times W}$ |                           |

TABLE D

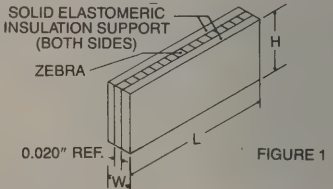


Figure 1 shows the three dimensions of a typical Self-Supporting ZEBRA connector. Table A, B, and D give the available sizes, pitch and tolerances.

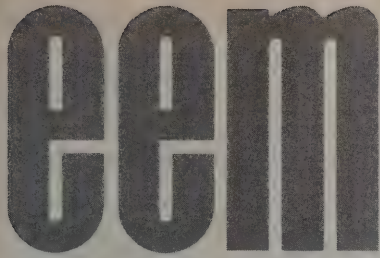
| Zebra Element                         | LCD contact Spacing in/mm |
|---------------------------------------|---------------------------|
| 1006                                  | 0.030/0.75                |
| 2004                                  | 0.020/0.50                |
| 2002                                  | 0.015/0.38                |
| 1002                                  | 0.010/0.25                |
| 2005                                  | 0.006/0.15                |
| Nominal Resistance, ohms              |                           |
| $R = \frac{12 \times H}{Cw \times W}$ |                           |

TABLE D



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# NOMOGRAPH VOLTAGE DROP

## NOMOGRAPH OF VOLTAGE DROP ACROSS LOAD SUPPLY LEADS (as a function of wire size and load current)

**THIS NOMOGRAPH  
CAN BE USED TO FIND:**

**Maximum current carrying  
capacity recommended for  
any standard wire size.\***

- 1) With a straight edge, connect from the wire size on Scale 2 to the point "A" on Scale 3.
- 2) Read  $I_{max}$  on Scale 1.

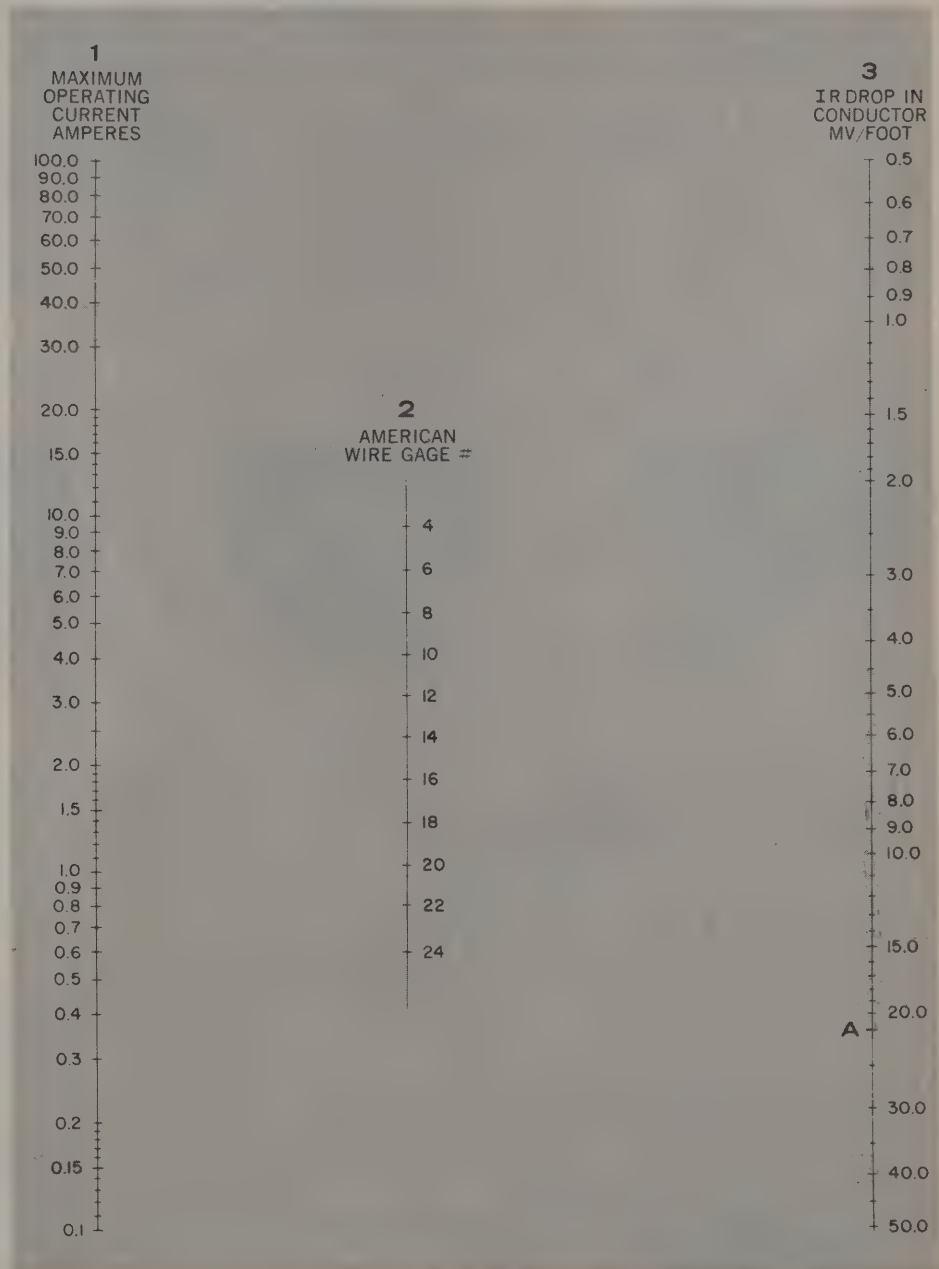
**Voltage drop in millivolts per  
foot for known wire size and  
operating current.**

- 1) With a straight edge, connect the known current on Scale 1 and the wire size on Scale 2.
- 2) Read voltage drop on Scale 3.

**Wire size required for known  
operating current and known  
maximum tolerable voltage  
drop across supply leads.**

- 1) Determine maximum tolerable drop in millivolts **per foot** of lead (sum of positive and negative leads).
- 2) Connect the value on Scale 3 (as determined in step 1) to the known current on Scale 1.
- 3) Read wire size on Scale 2.

*\* Based on an arbitrary minimum  
500 circular mils per ampere.  
High-temperature class insulation  
will safely allow higher  
currents.*

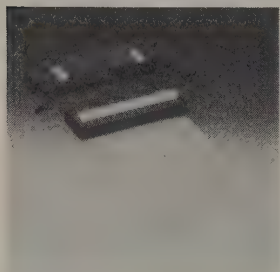


**NOTE:** A voltage stabilized Power Supply controls the voltage across its output terminals. Hence, the wire conductors used to connect the load must be considered as part of the load. At high load currents, the voltage drop across the supply leads may appreciably degrade stabilization at the load. Kepco models equipped with the *remote error sensing* feature can automatically compensate for voltage drops of up to 500 mV across each load supply lead.

## CONNECTORS

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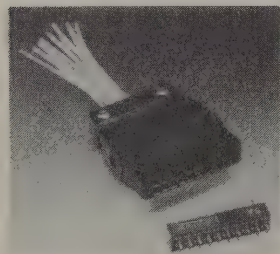
### IDC SOCKETS & HEADERS MODEL FCN-700, FCN-600



#### FEATURES:

The Model 700 connector has a superior ejector with a unique flexible hook. Header terminals are tin-plated and have superior cost performance; the solder dip section is made into a 0.5 mm (0.020 in.) square and can be used in a 0.8 mm (0.031 in.) through-hole. A special strain relief prevents wire breakage, and incorrect insertion is prevented by two kinds of keys and bump polarization. Connectors with 4 mm (0.157 in.) terminals have also been serialized for mounting on multi-layer PC boards. 10-64 positions. Stackable headers available.

### SOCKET HOUSINGS, CRIMP CONTACTS & HEADERS MODEL FCN-720, FCN-720M\*

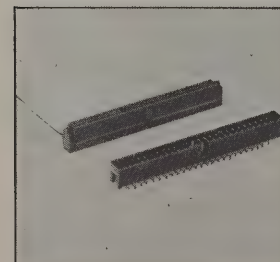


#### FEATURES:

The crimp connector has been designed for wide use, and comes in many shapes and contact arrangements (one and two rows). The Model 720 block headers are matable with the Model 700 and 740 sockets, and Model 720 sockets are lockable with Model 700 headers when a special cover is used. Female contacts are secured in the housing by a unique internal spring structure. High-pressure contacts are also available which prevent accidental disconnection in applications using only a few contacts. For the W and S type headers, insulation molds can be broken into the necessary size. 0.100 in. pitch (2.54 mm).

\* NEW. Also available in 2 mm pitch 0.079

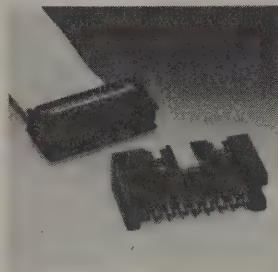
### BOX PLUG: FCN-724Q/728Q\*\*\*-G/\*M IDC SOCKET: FCN-727B/727J\*\*\*-G/\*M



#### FEATURES:

- Contact, terminal are arranged in 2.0mm (0.079in.) grid
- 1.0mm (0.039in.) pitch flat cable is applied
- Suitable for 2.5 in. HDD connection
- Bump type available
- SMT box plug available

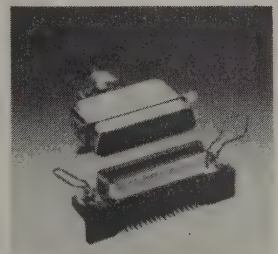
### MINI IDC SOCKETS & HEADERS MODEL FCN-740



#### FEATURES:

This mini-header and socket were developed to provide a compact set of connectors – their combined height is less than half that of the Model 700 connector. Unique plastic retention clips prevent disconnection due to vibration. There are up to 34 contact header and socket combinations, and the socket can be mated with all contact numbers of the FCN-700 header with S hooks and locked. The mini-header has an integral polarization to ensure correct insertion.

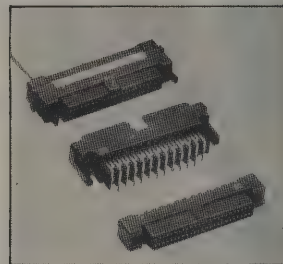
### RIBBON CONTACT TYPE CONNECTORS MODEL FCN-780/FCN-680



#### FEATURES:

- Matable with other ribbon-type connectors and have a sturdy metal shell that enables easy EMI shieldings
- Made of PBT, a superior solvent-resistant material, enabling flux cleaning with chlorisrin and other solvents
- UL-recognized (94 V-0) insulation material
- 1.27 mm (0.050 in.) pitch flat cable can be used.
- Accessories available
- Interface standards for SCSI, Centronics, HPIB, GPIB, IEEE 488

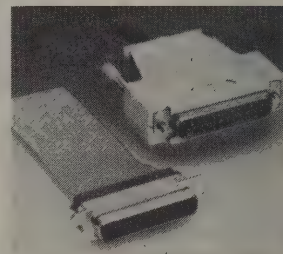
### FCN-210 SERIES BOARD PLUG/SOCKET, CABLE SOCKET AND PCB PLUG CONNECTORS.



#### FEATURES:

- 1.27 mm (0.05 in.) pitch contact arrangement in two rows enables high-density mounting
- Can be used for any type of connection between boards
- Terminals are spaced in a four-row zigzag array (1.27 mm (0.05 in.) x 1.905 mm (0.075 in.) for easy PC board design
- Insulation is UL-approved (94V-0) and is cleanable

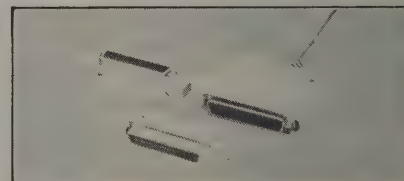
### D-SUB CONNECTORS MODEL FCN-770/FCN-670



#### FEATURES:

- The 1.27 mm (0.050 in.) pitch flat cable can be used
- The connectors are matable with MIL specification D-type connectors
- Fujitsu-developed highly reliable U-contacts are used
- Molded and metalized (plated) holders are available
- UL recognized (94 V-0) insulation material is used
- RS232, 447, 449

### FCN-240R SERIES BOARD TO CABLE CONNECTORS



#### FEATURES:

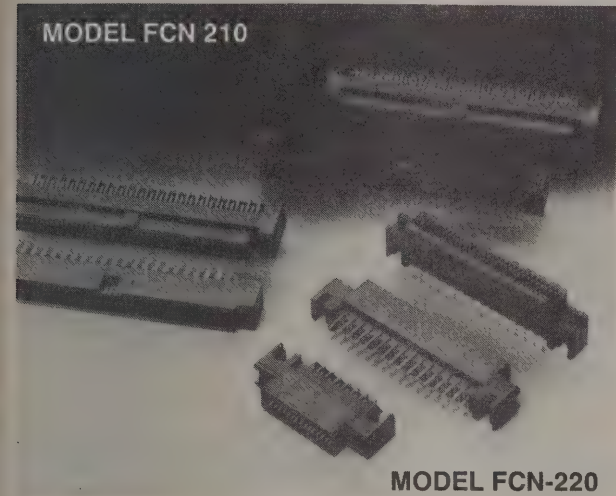
- The mating contact has a 1.27 mm (0.050 in.) pitch
- External connection type with high density mounting
- Ribbon contact provides excellent torsional strength
- IDC assembly with discrete wire
- Dual cover (plastic outercover & metal innercover) provides excellent EMI, ESD protection
- PCB-terminal has a four-row zigzag array (2.54 x 1.905 mm [0.100 x 0.075 in.]



CONNECTORS

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BOARD TO BOARD & I.O CONNECTORS  
CARD EDGE CONNECTORS



FEATURES

(ONE PIECE)

- 1.27 mm (0.05 in.) pitch contact arrangement in two rows enable high-density mounting.
- Can be used for any type of connection between boards.
- The card-edge connectors can accommodate double-sized independent PC boards of 1.6 mm (0.063 in.) in thickness.
- Terminals are spaced in a four-row zig-zag array (1.27 mm (0.050 in.) x 1.905 mm (0.075 in.)) for easy PC board design.
- Insulation is UL-approved (94 V-O), and is cleanable.
- Available in 30-182 contacts.

SPECIFICATIONS

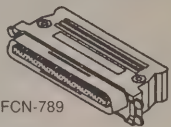
|                              |                                                                                          |
|------------------------------|------------------------------------------------------------------------------------------|
| Temperature Range            | −55 to 105 degrees C                                                                     |
| Current Rating               | 2 A DC                                                                                   |
| Voltage Rating               | 250 VAC                                                                                  |
| Contact Resistance           | 35 megohm max. (6 VDC, 0.1 A)                                                            |
| Insulation Resistance        | 1,000 megohm min. (500 VAC)                                                              |
| Dielectric Withstand Voltage | 500 VAC for 1 minute                                                                     |
| Insertion Force              | Two-piece connectors: 3 kg max. (10-way)<br>Card-edge connectors: 2 kg max. (10-way)     |
| Withdrawal Force             | Two-piece connectors: 250 g min. (10 way)<br>Card-edge connectors: 125 min. (10-way)     |
| Applicable PC Board          | Two-piece connectors: 250 kg max. (10-way)<br>Card-edge connectors: 125 kg max. (10-way) |
| Applicable Wire              | Flat cable: 0.635 mm (0.025 in.) pitch AWG #30<br>(solid wire) AWG #32 (standard wire)   |

MATERIALS

|                 |                                                 |
|-----------------|-------------------------------------------------|
| Contact         | Phosphor bronze                                 |
| Insulator       | PBT, UL94 V-0                                   |
| Contact Plating | Gold over palladium over nickel (PAGOS plating) |

SCSI II TYPE TERMINATORS  
FCN-239P050-G/\*, FCN-239P068-G/\*/\*, FCN-789P050-L/\*

- Matable with SCSI II PCB-mount socket connector (1.27 mm pitch)
- One-touch lock mechanism or screw locks.
- Complete EMI protection by die-cast zinc cover (nickel-plated ABS for FCN789).
- Compliance to SCSI standards set forth by American National Standards Institute (ANSI).
- Single-ended Passive and Active alt 2 in 50 and 60 positions.
- Differential in 50 and 68 positions for A, B, and P cables in SCSI I-II, III spec.

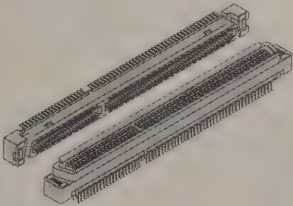


| Part No.                | FCN-789P050-L/A<br>FCN-239P050-G/E        | FCN-789P050-L/C<br>FCN-239P050-G/C        | FCN-789P050-L/D<br>FCN-239P050-G/D        |
|-------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| Operating Temp.         | −40 to +85°C                              | −25 to +70°C                              | −25 to +70°C                              |
| Rated Current           | 1 A DC                                    | 1 A DC                                    | 1 A DC                                    |
| Rated V                 | 250 VAC                                   | 250 VAC                                   | 250 VAC                                   |
| Operating Voltage       | 4.25 to 5.25 VDC                          | 4.25 to 5.25 VDC                          | 4.0 to 5.25 VDC                           |
| Insulation Resistance   | 1000 MΩ min.<br>(between FG signal)       | 1000 MΩ min.<br>(between FG signal)       | 1000 MΩ min.<br>(between FG signal)       |
| Dielectric Strength     | 300 VAC for 1 min.<br>(between FG signal) | 300 VAC for 1 min.<br>(between FG signal) | 300 VAC for 1 min.<br>(between FG signal) |
| SCSI Trans. Elec. Cond. | Single-end<br>Alternative 1               | Single-end<br>Alternative 2               | Differential                              |

| Part No.    | FCN-239P068-G/CS                      | FCN-239P068-G/DS               | FCN-239P068-G/DP               |
|-------------|---------------------------------------|--------------------------------|--------------------------------|
| Description | SCSI-2 Single-Ended<br>Alt 2, B Cable | SCSI-2 Differential<br>B Cable | SCSI-3 Differential<br>P Cable |

FCN-240 SERIES  
RIBBON CONTACT BOARD  
PLUG/SOCKET CONNECTORS

1.27mm PITCH, RIBBON CONTACT BOARD  
PLUG/SOCKET CONNECTORS



FEATURES:

- The mating pin has a 1.27 mm (0.050 in.) pitch two-row configuration to enable high-density mounting.
- Ribbon contact provides excellent torsional strength.
- PCB terminal has a 4-row staggered arrangement (1.27 <0.05> x 1.905 <0.075> mm <in.>).
- The insulation material is completely washable and is approved by the UL (94V-0).
- Connectors for stacking boards from 8 to 14 mm are available.

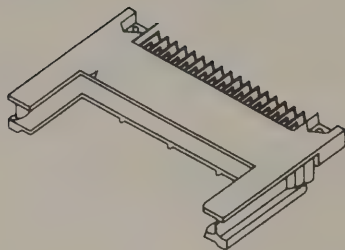
# CONNECTORS

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## FCN-560 SERIES MEMORY CARD CONNECTORS

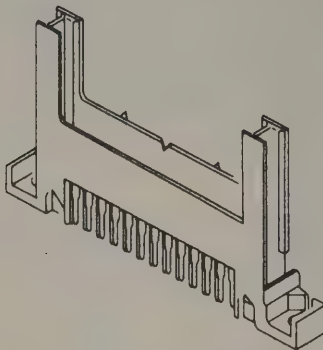
### STANDARD TYPE WITHOUT EJECTOR MECHANISM

#### RIGHT ANGLE



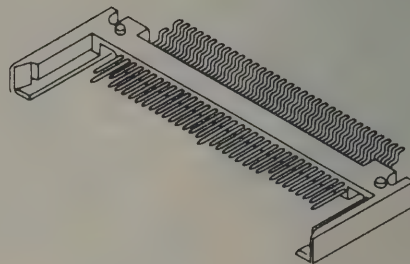
Mounting height 7.0mm

#### STRAIGHT



Mounting height 35.2mm

#### SMT

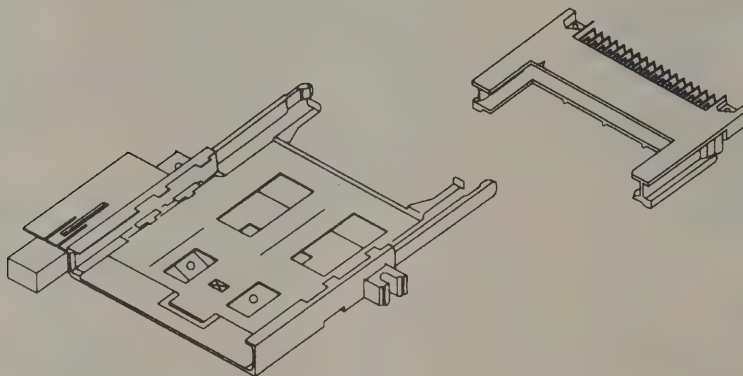


Mounting height 4.3mm

- We have a series of mounting connector on a reverse side of PCB board. (card inverted insertion type).

- Terminal 1 row product now available.
- Mounting height 5.15mm product is also available. (Terminal 1 Row).

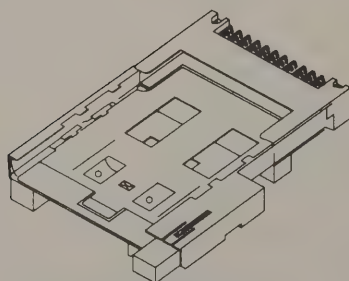
### CONNECTOR BODY AND EJECTOR MECHANISM



Ejector Mechanism

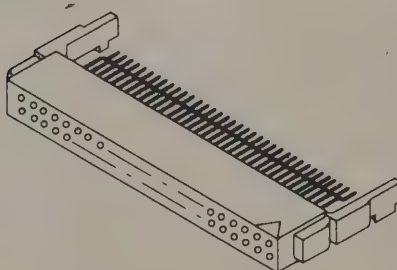
Body

### LIFTED TYPE WITH EJECTOR MECHANISM

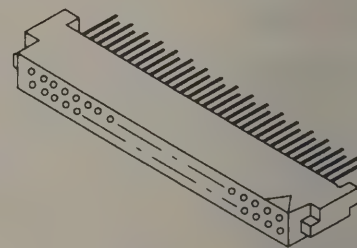


Lifted up height 4.5mm

### SOCKET FOR CARDS



Single sided mount type



Straddle mount type

### ...AND OTHERS

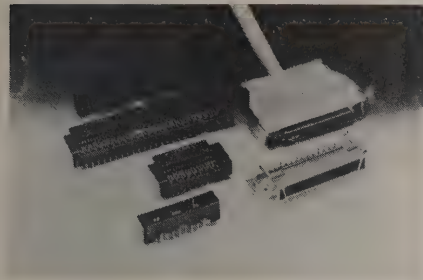
- Connectors with ESD (Electro-Static Discharge) clip, support clip are available.
- Stacked version plug is available.
- 80 + versions of plug connectors are available.



CONNECTORS

FUJITSU

BOARD TO BOARD & I.O. CONNECTORS/COVERS MODEL FCN-230



SCSI II STANDARD  
AND OPPOSITE  
GENDER AVAILABLE

FEATURES

- Keyed backshells are available
- 1.27 mm (0.05 in.) pitch contact arrangement in two rows enables high-density mounting.
- Terminals are spaced in a four-row zigzag array (1.27 mm (0.05 in.) x 1.905 mm (0.075 in.)) for easy PC board design.
- IDC or solder termination for discrete wiring available.
- Metal cover enables EMI protection.
- Insulation materials UL (94 V0)
- Each of the contacts on the female connector of mold type are alternately inset to facilitate two-step coupling, significantly reducing insertion force.

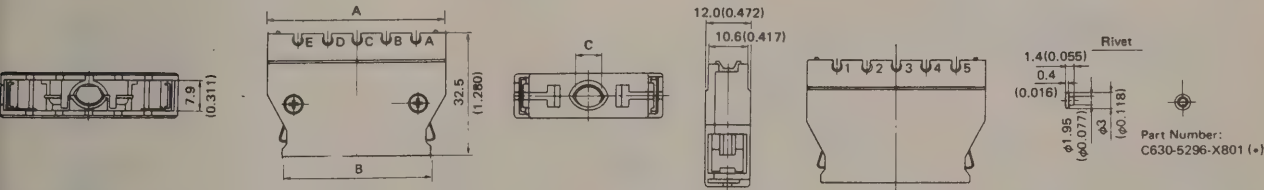
MATERIALS

|           |                                         |
|-----------|-----------------------------------------|
| Material  | Copper Alloy                            |
| Insulator | Polyester, UL94V-O                      |
| Plating   | Gold over Palladium over Nickel (PAGOS) |

SPECIFICATIONS

|                              |                                                                        |      |      |      |      |     |
|------------------------------|------------------------------------------------------------------------|------|------|------|------|-----|
| Temperature Range            | -55 to +105 degrees C                                                  |      |      |      |      |     |
| Max. Rated Current           | 1 A DC (PCB to cable)<br>2 A DC (PCB to PCB)                           |      |      |      |      |     |
| Max. Rated Voltage           | 240 VAC                                                                |      |      |      |      |     |
| Contact Resistance           | 30 megohm max. (6 VDC, 0.1 A)                                          |      |      |      |      |     |
| Insulation Resistance        | 1,000 megohm min. (500 VDC)                                            |      |      |      |      |     |
| Dielectric Withstand Voltage | 750 VAC for 1 minute                                                   |      |      |      |      |     |
| Insertion Force (kg)         | PC8 to PC8                                                             |      |      |      |      |     |
|                              | No. of contacts:                                                       | 34   | 48   | 68   | 96   |     |
|                              | Force:                                                                 | 3.0  | 4.0  | 5.5  | 7.0  |     |
|                              | PC8 to cable                                                           |      |      |      |      |     |
|                              | No. of contacts:                                                       | 20   | 28   | 36   | 50   | 68  |
| Withdrawal Force (kg)        | Force:                                                                 | 5.5  | 6.0  | 6.5  | 8.0  | 9.0 |
|                              | PCB to PCB                                                             |      |      |      |      |     |
|                              | No. of contacts:                                                       | 34   | 48   | 68   | 96   |     |
|                              | Force:                                                                 | 0.68 | 0.96 | 1.36 | 1.92 |     |
|                              | PCB to cable                                                           |      |      |      |      |     |
| Applicable PC Board          | No. of contacts:                                                       | 20   | 28   | 36   | 50   | 68  |
|                              | Force:                                                                 | 0.8  | 1.12 | 1.44 | 2.0  | 2.3 |
|                              | 0.8 to 1.5 mm (0.031 to 0.53 in.) thick                                |      |      |      |      |     |
| Applicable Wire              | IDC type                                                               |      |      |      |      |     |
|                              | AWG = 28 or = 30 (wire diameter: 0.5 to 0.65 ohm (0.020 to 0.024 ohm)) |      |      |      |      |     |
|                              | Solder Type                                                            |      |      |      |      |     |
|                              | AWG = 26 max.                                                          |      |      |      |      |     |

Unit: mm (in.)



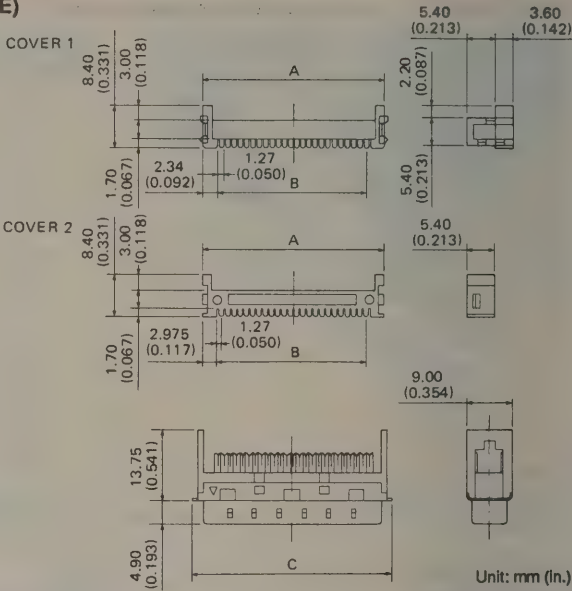
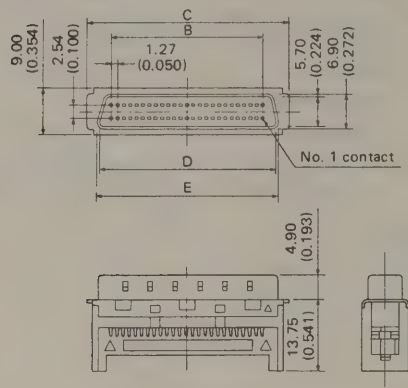
Standard Cable Hole Type

| No. of Contacts      | Part Number         | Dimensions    |               |                             |
|----------------------|---------------------|---------------|---------------|-----------------------------|
|                      |                     | A             | B             | C                           |
| 20                   | FCN-230C020-B/E     | 28.95 (1.140) | 21.15 (0.833) | 4.5 x 5.5 (0.177 x 0.217)   |
| 28                   | FCN-230C028-B/E     | 34.03 (1.340) | 26.23 (1.033) | 5 x 7 (0.197 x 0.276)       |
| 36                   | FCN-230C036-B/E     | 39.11 (1.540) | 31.31 (1.233) | 6 x 8 (0.236 x 0.315)       |
| 50                   | FCN-230C050-B/E     | 48.00 (1.890) | 40.20 (1.583) | 6 x 8 (0.236 x 0.315)       |
| 68                   | FCN-230C068-B/E     | 59.43 (2.340) | 51.63 (2.033) | 6 x 8 (0.236 x 0.315)       |
| Wide Cable Hole Type |                     |               |               |                             |
| 20                   | FCN-230C020C/E      | 28.95 (1.140) | 21.15 (0.833) | —                           |
| 26                   | FCN-230C026C/E      | 32.76 (1.290) | 24.96 (0.983) | 8.00 x 6.75 (0.315 x 0.266) |
| 28                   | FCN-230C028C/E      | 34.03 (1.340) | 26.23 (1.033) | —                           |
| 36                   | FCN-230C036D/E, C/E | 39.11 (1.540) | 31.31 (1.233) | 9.00 x 10.0 (0.354 x 0.394) |
| 40                   | FCN-230C040C/E      | 41.65 (1.639) | 33.85 (1.332) | 9.00 x 10.0 (0.354 x 0.394) |
| 50                   | FCN-230C050D/E, C/E | 48.00 (1.890) | 40.20 (1.583) | 9.00 x 10.0 (0.354 x 0.394) |
| 68                   | FCN-230C068D/E, C/E | 59.43 (2.340) | 51.63 (2.033) | 9.00 x 10.0 (0.354 x 0.394) |

CONNECTORS



FCN-230 – DIMENSIONS FOR METAL SHIELDED SHELL TYPE IDC PLUG (SCSI II TYPE)



| No. of Contacts | Part Number     | Dimensions    |               |               |               |               |
|-----------------|-----------------|---------------|---------------|---------------|---------------|---------------|
|                 |                 | A             | B             | C             | D             | E             |
| 20              | FCN-237R020-G/F | 16.75 (0.659) | 11.43 (0.450) | 21.25 (0.837) | 15.80 (0.622) | 17.00 (0.669) |
| 26              | FCN-237R026-G/F | 20.56 (0.809) | 15.24 (0.600) | 25.06 (0.987) | 19.61 (0.772) | 20.81 (0.819) |
| 28              | FCN-237R028-G/F | 21.83 (0.859) | 16.51 (0.650) | 26.33 (1.037) | 20.88 (0.822) | 22.08 (0.869) |
| 40              | FCN-237R040-G/F | 29.45 (1.159) | 24.13 (0.950) | 33.95 (1.337) | 28.50 (1.122) | 29.70 (1.169) |
| 50              | FCN-237R050-G/F | 35.80 (1.409) | 30.48 (1.200) | 40.30 (1.587) | 34.85 (1.372) | 36.05 (1.419) |
| 68              | FCN-237R068-G/F | 47.23 (1.859) | 41.91 (1.650) | 51.73 (2.037) | 46.28 (1.822) | 47.48 (1.869) |
| 100             | FCN-237R100-G/F | 67.55 (2.659) | 62.23 (2.450) | 72.05 (2.837) | 66.60 (2.622) | 67.80 (2.669) |

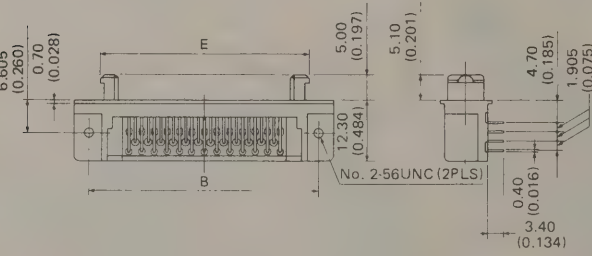
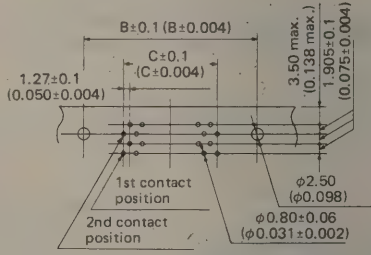
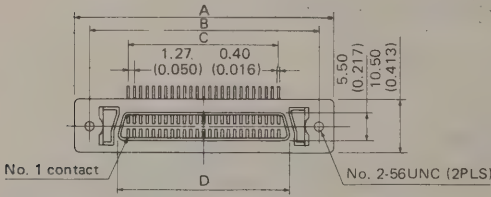
DIMENSIONS FOR METAL SHIELDED TYPE SOCKET (SCSI II TYPE)

MOUNTING HOLE LAYOUT

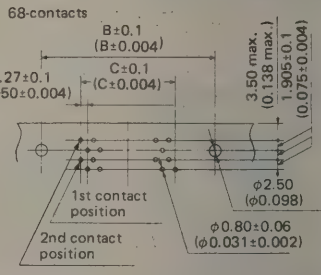
Unit: mm (inches)

RIGHT ANGLE

50-contacts



(From mounting side of PCB)



| No. of Contacts | Part Number     | Dimensions    |               |               |               |               |
|-----------------|-----------------|---------------|---------------|---------------|---------------|---------------|
|                 |                 | A             | B             | C             | D             | E             |
| 20              | FCN-234D020-G/E | 33.40 (1.315) | 27.43 (1.080) | 11.43 (0.450) | 15.60 (0.614) | 23.24 (0.915) |
| 26              | FCN-234D026-G/E | 37.21 (1.465) | 31.24 (1.230) | 15.24 (0.600) | 19.41 (0.764) | 27.05 (1.065) |
| 28              | FCN-234D028-G/E | 38.48 (1.515) | 32.51 (1.280) | 16.51 (0.650) | 20.68 (0.814) | 28.32 (1.115) |
| 40              | FCN-234D040-G/E | 46.10 (1.815) | 40.13 (1.580) | 24.13 (0.950) | 28.30 (1.114) | 35.94 (1.415) |
| 50              | FCN-234D050-G/E | 52.45 (2.065) | 46.48 (1.830) | 30.48 (1.200) | 34.65 (1.364) | 42.29 (1.665) |
| 68              | FCN-234D068-G/E | 63.88 (2.515) | 57.91 (2.280) | 41.91 (1.650) | 46.08 (1.814) | 53.72 (2.115) |

NOTE: 50 and 100 position IPI also available. See local sales rep or distributor.



CONNECTORS

FUJITSU

FCN-230 CONTINUED

Unit: mm (in.)

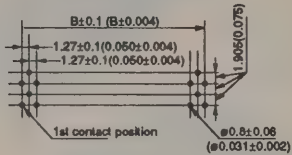
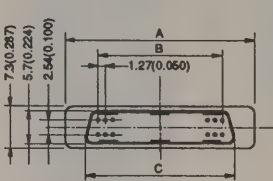
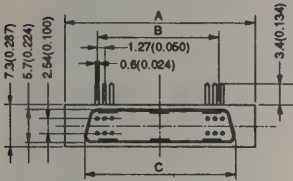
UNSHIELDED TYPE PLUG CONNECTOR/DIMENSIONS

MOUNTING HOLE LAYOUT

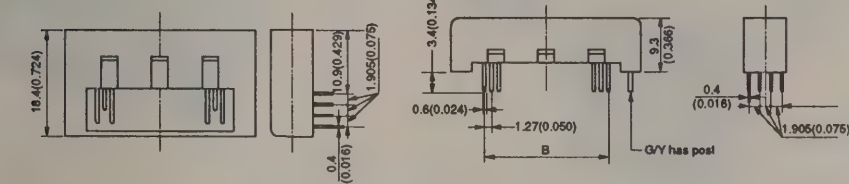
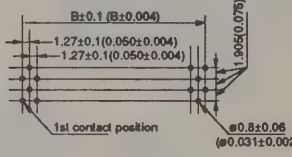
RIGHT ANGLE

STRAIGHT

RIGHT ANGLE, STRAIGHT  
34 CONTACTS



48, 68, AND 96 CONTACTS



PART NUMBERS

| No. of Contacts | Part Number     |                                       | Dimensions    |               |               |
|-----------------|-----------------|---------------------------------------|---------------|---------------|---------------|
|                 | Right Angle     | Straight                              | A             | B             | C             |
| 34              | FCN-235P034-G/O | FCN-234P034-G/O                       | 31.63 (1.245) | 20.32 (0.800) | 24.69 (0.972) |
| 48              | FCN-235P048-G/O | FCN-234P048-G/O, G/Y                  | 40.52 (1.595) | 29.21 (1.150) | 33.58 (1.322) |
| 68              | FCN-235P068-G/O | FCN-234P068-G/O, G/Y                  | 53.22 (2.095) | 41.91 (1.650) | 46.28 (1.822) |
| 96              | FCN-235P096-G/O | FCN-234P096-G/O, G/Y, G/X, G/Z (SMT)* | 71.00 (2.795) | 59.69 (2.350) | 64.06 (2.522) |

Note: \*S-Bus Connectors

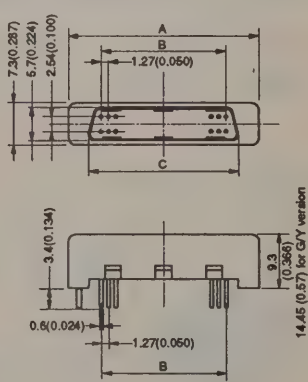
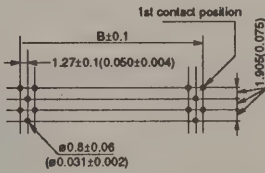
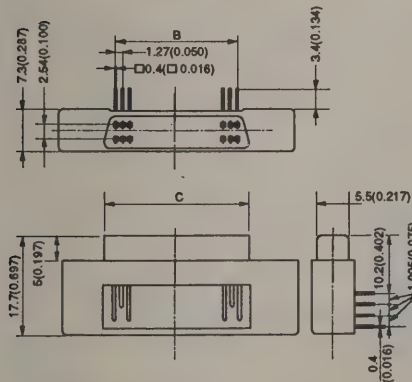
Unit: mm (inches)

UNSHIELDED TYPE SOCKET CONNECTOR/DIMENSIONS

RIGHT ANGLE

STRAIGHT  
MOUNTING HOLE LAYOUT  
34 CONTACTS

STRAIGHT



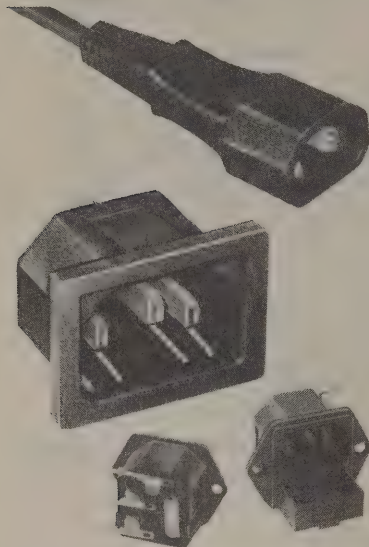
PART NUMBERS

| No. of Contacts | Part Number     |                                             | Dimensions    |               |               |
|-----------------|-----------------|---------------------------------------------|---------------|---------------|---------------|
|                 | Right Angle     | Straight                                    | A             | B             | C             |
| 34              | FCN-235J034-G/O | FCN-234J034-G/O                             | 31.63 (1.245) | 20.32 (0.800) | 24.49 (0.964) |
| 48              | FCN-235J048-G/O | FCN-234J048-G/O, G/Y                        | 40.52 (1.595) | 29.21 (1.150) | 33.38 (1.314) |
| 68              | FCN-235J068-G/O | FCN-234J068-G/O, G/Y                        | 53.22 (2.095) | 41.91 (1.650) | 46.08 (1.814) |
| 96              | FCN-235J096-G/O | FCN-234J096-G/O, G/Y, G/TF, G/U, G/V (SMT)* | 71.00 (2.795) | 59.69 (2.350) | 64.86 (2.514) |

Note: \*S-Bus Connectors

# **GlobTek, Inc.**

## CONNECTORS, TERMINALS, SOCKETS



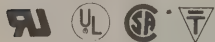
- FUSE HOLDERS
- FILTERS
- RELAYS
- INLET/OUTLETS
- MODULES
- TERMINAL BLOCKS

- PLUGS
- RECEPTACLES
- CONNECTORS
- CORDSETS
- SOCKETS
- POWER INLETS
- ROCKER SWITCHES
- VOLTAGE SELECTORS

Globtek's new 208-pg. Component and Engineering Services Catalog contains technical information on North American and international cable and cord sets, AC and DC plugs and connectors, appliance couplers, power entry modules, line filters, circuit breakers, switches and voltage selectors, fuse holders, surge protection, fans, capacitors, relays, external power supplies and transformers, DC/DC converters, OEM subcontract assemblies, safety test equipment.

### RECEPTACLES, SOCKETS & PLUGS

#### APPROVALS:



Contact Resistance: 30mΩ or less at 1A-2.5VDC  
Insulation Resistance: 100MΩ or more at 500VDC  
Insulation Withstand Voltage: 1 min. at 1000VAC

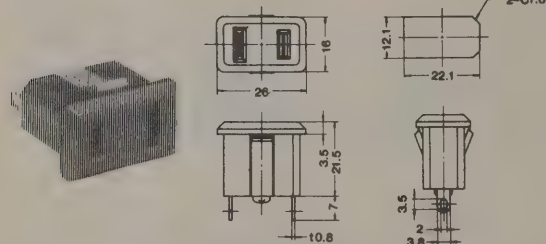
Rating: I — 15A - 125VAC

II — 6A - 125VAC

Body Color: B — Black

W — White

AC-IE   



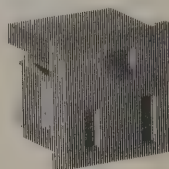
Model No.: AC-IE

Rating: I

Standard: UL/CSA,  41-10886

Body Color: B

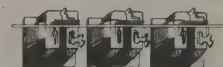
AC-G10BB44   



Model No.: AC-G108844

Fig.: A Rating: I

Standard:  /CSA  41-14864 Pole:  Body Color: B



V slotted terminal:

When you need to line up several receptacles, AWG No. 14 can save you time and money because it is designed with V slots. Just run a wire through the slot and solder.

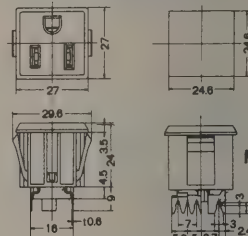


FIG. A

Mounting Plate: 1.6/1.2  
1.0/0.8

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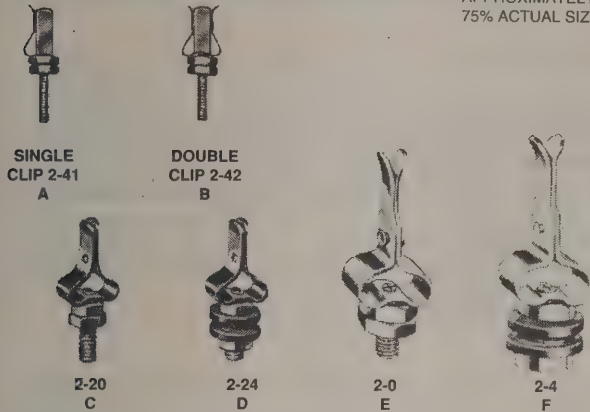




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# Test Clips, Posts, Sockets

APPROXIMATELY  
75% ACTUAL SIZE



## TEST CLIPS (FIGURES A THRU F)

Designed for panel mounting on test equipment or for breadboarding to allow rapid connections without manual opening and closing of jaws. Hex nut under each clip allows for tension adjustment. Insulated washers for 2-24 (Fig. D) and 2-4 (Fig. F) have shoulder to fit .250 and .375 inch diameter holes, respectively. They fit minimum panel thickness of .125 inches. Spring clips are nickel plated brass (beryllium copper for 2-41 and 2-42); insulators are molded phenolic.

| FIG. NO. | TOTAL HEIGHT | ABOVE BOARD | MAX. WIDTH | CLIP WIDTH | THREAD SIZE  | HEX FLATS |
|----------|--------------|-------------|------------|------------|--------------|-----------|
| A        | .781         | .406        | .188       | .125       | #2-56 UNC-2A | .187      |
| B        | .781         | .406        | .250       | .125       | #2-56 UNC-2A | .187      |
| C        | 1.079        | .719        | .406       | .218       | #6-32 UNC-2A | .250      |
| D        | 1.079        | .726        | .406       | .218       | #6-32 UNC-2A | .250      |
| E        | 1.562        | 1.250       | .550       | .312       | #8-32 UNC-2A | .344      |
| F        | 1.562        | 1.257*      | .550       | .312       | #8-32 UNC-2A | .344      |

\*Includes height of thru hole shoulder. For part numbers, see figures.

## BINDING POSTS (FIGURES G & H)

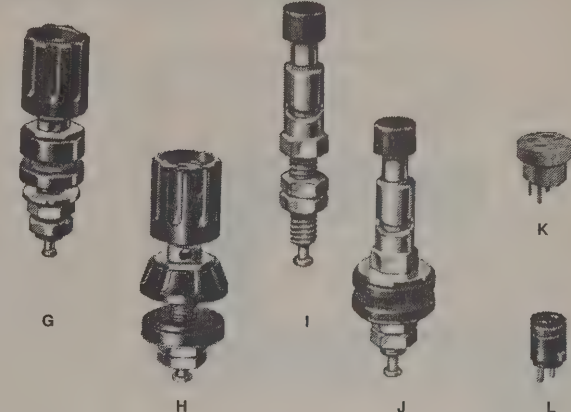
Standard screw type posts in dark red (RED suffix) or black (BLK suffix) let you color code connections. Flush hole prevents crimping. Non-turn D style insulating washers fit panels up to .188 inches. Open height above board is 1.02 inches; total length is 1.70 inches reference. Straight skirt style (Fig. G) fits .375 inch diameter hole with optional D shape width .343 inches. Flared skirt (Fig. H) fits .500 inch diameter hole for wider spacing; optional D shape width is .463 inches. Integral solder stud; 2 hex nuts for solder lug connections. Rated at 120 Vdc, 15 A continuously. Insulation Resistance: 120,000 megohms (Fig. G); 200,000 megohms (Fig. H). Voltage Breakdown (stud to panel): 1500 Vac (Fig. G); 3000 Vac (Fig. H). Insulating Material: Thermoset plastic per MIL-M-14, Type CFG.

- Binding Post with Straight Skirt: 29-1 RED or 29-1 BLK  
Binding Post with Flared Skirt: 29-3 RED or 29-3 BLK

## PUSH POSTS (FIGURES I & J)

Plunger type binding posts provides quick connect/disconnect action. To operate, press button, place lead in slot, and release button. Spring pressure assures firm positive contact. Red (RED suffix) or Black (BLK suffix) caps let you color code connections. Type 29-104 (Fig. J) has insulating washers .500 inch diameter wide, with shoulder to fit .391 diameter hole. Slot opening measures .06 inches. Post is .25 inches in diameter and total length is 1.44 inches. Height above board is .81 inches and .89 inches for Figures I and J respectively. Rated at 120 Vdc for 20 Amps continuously. Metal parts are nickel plated brass. Spring is tinned music wire; button cap is polyethylene; insulating washers (Fig. J) are black phenolic.

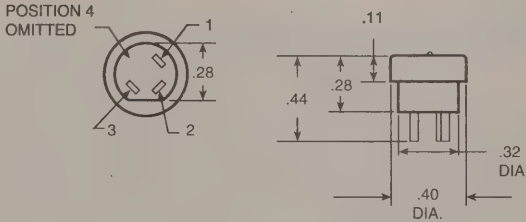
- Standard Push Post (Figure I): 29-100 RED or 29-100 BLK  
Insulated Push Post (Figure J): 29-104 RED or 29-104 BLK



## TRANSISTOR SOCKET (FIGURE K)

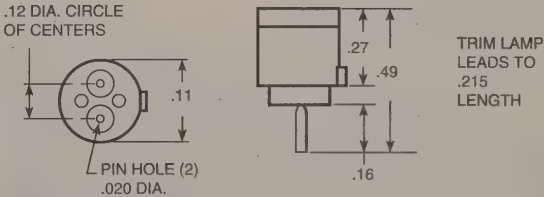
Transistor type accepts standard outline (TO-5, 9 11, 16, 26, 29, 31, & 39). Indicator for aligning transistor tab is molded into top. Solder socket into PC board, or mount thru a D-shaped hole and use retaining ring such as Walde Truarc ring number 115-31. Socket has wrap around, molded-in terminals. Socket also available with different D flat alignment, or with 4 terminals, or with 4 terminals plus screw/rivet mounting. Operating Temperature: 265°F maximum. Loss Factor: .06 at 1 Meg. Housing is natural color, molded, mica filled phenolic per MIL-M-15, Type MFE. Contacts are wrap-around type, silver plated beryllium, copper with gold plate.

Part Number: 22-16-3



## LAMP SOCKET (FIGURE L)

Use as Bi-pin lamp socket or pencil tube socket. Socket accepts standard T 1-3/4 or Chicago miniature T 1-1/4 lamps with leads trimmed to .215 length. Insulating material is Mica filled phenolic per MIL-M14, Type MFE. Contacts are gold plated beryllium copper. Part Number: 22-3



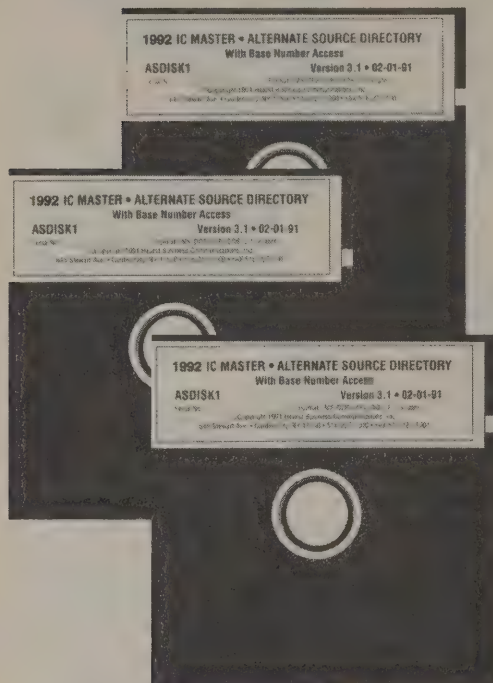
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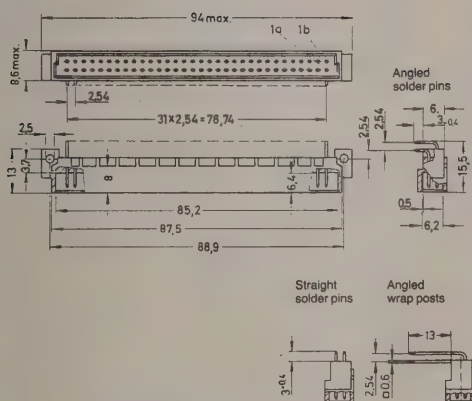
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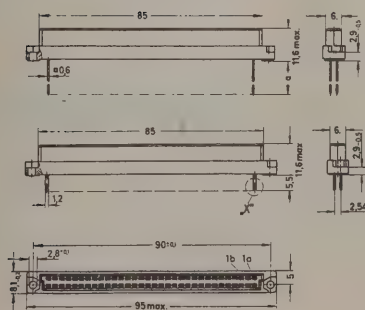
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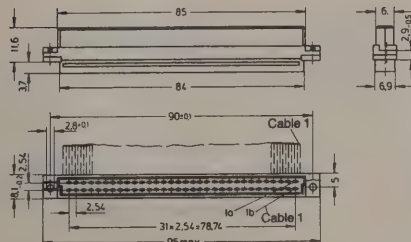
## Male Connectors



## Female Connectors



## Female Connectors with insulation displacement



| Type | No. of Contacts | Contact Arrange.                                                                    | Perf. Levels | Male Connector with angled solder pins                                                                                                                                        |
|------|-----------------|-------------------------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B    | 64              |    | 2            | <br>09 02 164 6921<br>09 02 132 6921<br>09 02 132 6931                                      |
|      | 32              |    | 2            |                                                                                                                                                                               |
|      | 32              |    | 2            |                                                                                                                                                                               |
| B    | 64              |    | 2            | <b>with straight solder pins</b><br><br>09 02 164 6922<br>09 02 132 6922<br>09 02 132 6932 |
|      | 32              |   | 2            |                                                                                                                                                                               |
|      | 32              |  | 2            |                                                                                                                                                                               |
| B    | 64              |  | 2            | <b>with angled wrap posts</b><br><br>09 02 164 6928<br>09 02 132 6928                     |
|      | 32              |  | 2            |                                                                                                                                                                               |

| Type | No. of Contacts | Contact Arrange.                                                                    | Perf. Levels | Female Connector with solder pins<br>2.5 mm 4 mm 7mm                                 |                 |      |      |      |  |
|------|-----------------|-------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------|-----------------|------|------|------|--|
| B    | 64              |  | 2            |  | 09 02 164       | 6824 | 6825 | 6827 |  |
|      | 32              |  | 2            |                                                                                      | 09 02 132       | 6824 | 6825 | 6827 |  |
|      | 32              |  | 2            |                                                                                      | 09 02 132       | 6834 | 6835 | 6837 |  |
| B    | 64              |  | 2            |  | with wrap posts |      |      |      |  |
|      | 32              |  | 2            |                                                                                      | 09 02 164       | 6821 |      |      |  |
|      |                 |                                                                                     |              |                                                                                      | 09 02 132       | 6821 |      |      |  |

| Type | No. of Contacts | Contact Arrange. | Perf. Levels | Female Connector for insulation displacement                                                       |
|------|-----------------|------------------|--------------|----------------------------------------------------------------------------------------------------|
| B    | 64              | —                | 2            |  09 02 264 6828 |



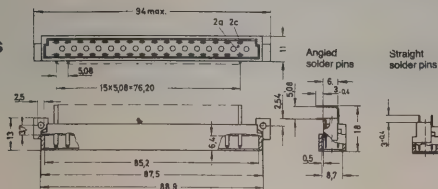




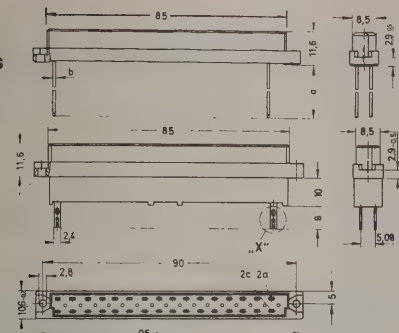


**ELEKTRONIK, INC.**

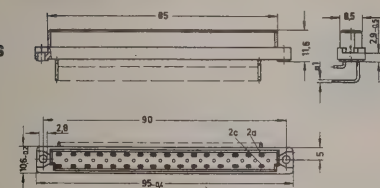
## Male Connectors



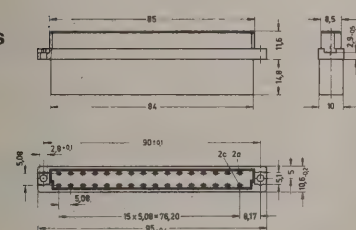
## Female Connectors



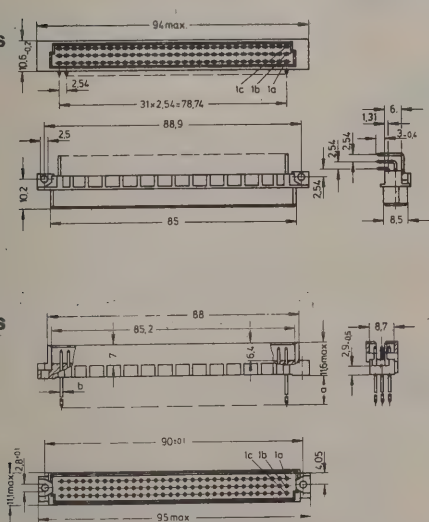
## Female Connectors



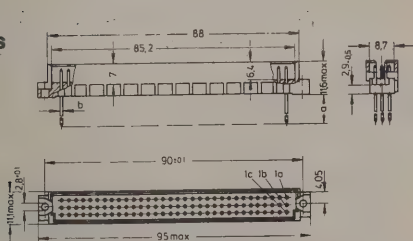
## Female Connectors



## Female Connectors



## Male Connectors



| Type | No. of Contacts | Contact Arrange.                                                                  | Perf. Levels | Male Connector with angled solder pins                                                           |
|------|-----------------|-----------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------|
| D    | 32              |  | 2            |  09 04 132 6921 |
| D    | 32              |  | 2            |  09 04 132 6922 |

| Type | No. of Contacts | Contact Arrange.                                                                  | Perf. Levels | Female Connector with solder pins<br>2.5 mm 4 mm                                   |                                         |      |
|------|-----------------|-----------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------|-----------------------------------------|------|
| D    | 32              |  | 2            |  | 09 04 232 6832                          | 6831 |
| D    | 32              |  | 2            |                                                                                    | with wrap posts 20 mm<br>09 04 232 6821 |      |
| D    | 32              |  | 2            |  | with solder lugs<br>09 04 232 6823      |      |

| Type | No. of Contacts | Contact Arrange.                                                                  | Perf. Levels | Female Connector with angled solder pins 1 x 1 mm                                                |
|------|-----------------|-----------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------|
| D    | 32              |  | 2            |  09 04 232 6826 |

| Type | No. of Contacts | Contact Arrange. | Perf. Levels | Female Connector for crimp contacts                                                                |
|------|-----------------|------------------|--------------|----------------------------------------------------------------------------------------------------|
| D    | 32              | —                | 2            |  09 04 032 3213 |
| D    | 32              | —                | 2            | <b>Female crimp contacts</b><br>09 06 000 8484<br>09 06 000 8481<br>09 06 000 8482                 |

| Type | No. of Contacts | Contact Arrange.                                                                    | Perf. Levels | Female Connector with angled solder pins                                                               |                |
|------|-----------------|-------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------|----------------|
| R    | 96              |  | 2            | <br>09 73 196 6801 |                |
|      | 64              |  | 2            |                                                                                                        | 09 73 164 6801 |
|      | 32              |  | 2            |                                                                                                        | 09 73 132 6801 |
|      | 32              |  | 2            |                                                                                                        | 09 73 132 6811 |

| Type | No. of Contacts | Contact Arrange.                                                                    | Perf. Levels | Male Connector with solder pins 4.0mm                                                               |
|------|-----------------|-------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------|
| R    | 96              |  | 2            |  09 73 196 6903 |
|      | 64              |  | 2            |  09 73 164 6903 |
|      | 32              |  | 2            |  09 73 132 6903 |
|      | 32              |  | 2            |  09 73 132 6913 |





## MINIGLOSSARY ENCAPSULATION

### MATERIALS/HANDLING

**Catalyst:** A substance which changes the *rate* of chemical reaction. Very small quantities can cause fast change.

**Conformal coating** Sprayed or dipped. A thin conformal jacket which protects an assembly from moisture or other degrading environments.

**Curing agent:** See catalyst.

**Hardener:** See catalyst.

**Hermetic:** A permanent gas-tight seal.

**RTV:** Room Temperature Vulcanizing. Associated with silicone rubber sealants which vulcanize at room temperature.

**Thermoplastic:** Plastic materials which can be made to flow *repeatedly* with the application of heat.

**Thermosetting:** Plastics which once cured cannot be made to flow again.

**Thixotropy:** The property of a coating compound which has low viscosity when agitated, but which thickens when the agitation ceases.

**Viscosity:** Measured in units of *poise* or *centipoise*. The property of a liquid which resists internal flow. Low viscosity equates with thin and vice-versa.

### PROCESSING

**Casting:** Parts or assemblies are placed in a mold. Encapsulating material is added and cured. Part is then removed from the mold.

**Dip coating:** Part or assembly is dipped into the encapsulating material. Final thickness is determined by number of dips, viscosity, rate of withdrawal, and temperature.

**Embedding:** Wherein an encapsulant substantially fills all voids in and about an assembly.

**Impregnation:** A process of encapsulation involving evacuating all air and then allowing the encapsulating material to flow in and fill all voids.

**Molding:** Similar to casting except this process usually implies multicavity molds and costly machines.

**Potting:** Wherein the part or assembly is immersed in an encapsulating material contained in a shell which becomes a permanent outer surface after curing.

### DIELECTRIC

**Arc resistance:** An encapsulant's resistance to the formation of a conductive path or track. Measured in time.

**Breakdown voltage:** The voltage at which an encapsulant fails electrically.

**Capacitance:** The property of conductors and dielectrics which allows the storage of an electrical charge when the voltage is applied.

**Corona:** A luminous discharge of electricity due to air ionization when a cer-

tain voltage is reached. Can be internal or external. The formation of ozone can cause rapid deterioration of certain materials.

**Dielectric:** Insulator (Nonconductor.)

**Dielectric constant:** The property of a material that determines its ability to store electrostatic energy.

**Dielectric strength:** The ratio of dielectric breakdown to the thickness of insulating material.

**Dissipation factor:** The ratio of a dielectric material's energy losses.

**Flashover:** Point at which an electric discharge occurs around an edge or across a surface. Can result in a carbon track and permanent degradation.

**Insulation resistance:** (IR) An insulating material's total DC leakage.

**Surface resistivity:** The resistance of the surface of an insulating material to the flow of direct current.

**Voltage endurance:** Sometimes called corona resistance. The ability of a material to withstand the application of sustained high voltage.

**Volume resistivity:** The resistance of a material to direct current flow as a measure of volume. Expressed as ohm-centimeters.





# OUR CUSTOMERS RELY ON US

## CONNECTORS and SPECIALTY PROBES

When it comes to interconnections, you want the finest quality connectors and probes available. Why, then, settle for imitations? Unfortunately, there are a lot of them out there. And they all claim to be "Just like a Hirschmann."

For over 60 years Hirschmann has engineered interconnection solutions for industrial controls, sensors and test equipment, as well as computer and medical diagnostic equipment. Our connectors meet the most stringent requirements for reliability and safety — measured not only by industry standards, but by our customers who rely on them.

Whether it's a basic installation or an intricate custom assembly, specify Hirschmann. Because when it comes to quality and performance, there's nothing like a Hirschmann but a Hirschmann.

# Hirschmann



**RICHARD HIRSCHMANN OF AMERICA, INC.**  
Industrial Row, Riverdale, N.J. 07457  
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Water-tight industrial connectors for control and machine tool applications (DIN 43650/IP65)

Circular connectors for sensors and instrumentation (IP 67)

Specialty probes and clips for medical diagnostic and test equipment (VDE)

Circular DIN connectors including miniature "DIN Style" for datacom and instrumentation (IEC)

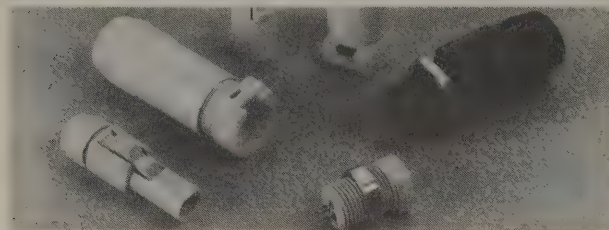
Call us for free designers guide and the name of your local Hirschmann Distributor.



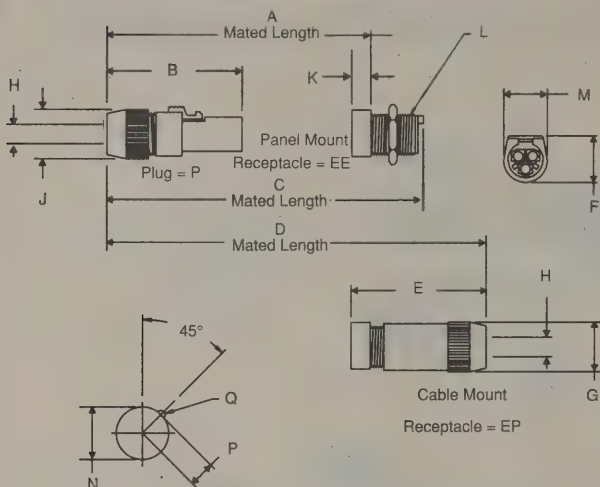
**HYPERTRONICS  
CORPORATION**

## LOW INSERTION FORCE CONNECTORS

## D SERIES



### CONNECTOR DIMENSIONS



## MOUNTING DIMENSIONS

Note: Dimensions in inches (mm)

## GENERAL SPECIFICATIONS

| CONNECTOR HOUSING                  | D01                                                                                                          |                                                                                     | D02                                                                                 |                                                                                      |                                                                                       |                                                                                       |
|------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Contact Arrangement                |                           |  |  |  |  |  |
| Number of Contacts                 | 3                                                                                                            | 4                                                                                   | 3                                                                                   | 7                                                                                    | 9                                                                                     | 12                                                                                    |
| Contact Diameter                   | .0235(.6)                                                                                                    | .0235(.6)                                                                           | .059(1.5)                                                                           | .0235(.6)                                                                            | .0235(.6)                                                                             | .018(.5)                                                                              |
| Current Rating (amperes)           | 3                                                                                                            | 3                                                                                   | 8                                                                                   | 3                                                                                    | 3                                                                                     | 2                                                                                     |
| Contact Resistance (milliohms)     | <5                                                                                                           | <5                                                                                  | <2                                                                                  | <5                                                                                   | <5                                                                                    | <8                                                                                    |
| Extraction Force (ounces)          | .5 to 2                                                                                                      | .5 to 2                                                                             | 1.8 to 5.4                                                                          | .5 to 2                                                                              | .5 to 2                                                                               | .3 to 1.6                                                                             |
| Contact Life Cycles                | >100,000                                                                                                     | >100,000                                                                            | >100,000                                                                            | >100,000                                                                             | >100,000                                                                              | >100,000                                                                              |
| Breakdown Voltage Between Contacts | >2250                                                                                                        | >2250                                                                               | >2250                                                                               | >2000                                                                                | >1560                                                                                 | >1000                                                                                 |
| WIRE SIZE (AWG)                    |                                                                                                              |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Solder Cup                         | up to 19                                                                                                     | up to 19                                                                            | up to 16                                                                            | up to 20                                                                             | up to 20                                                                              | up to 22                                                                              |
| Crimp                              | 22 & 24                                                                                                      | 22 & 24                                                                             | 18 & 20                                                                             | 22 & 24                                                                              | 22 & 24                                                                               | 22, 24 & 26                                                                           |
| Housing Color & Material           | Black & grey: polycarbonate<br>Black & White: polysulfone                                                    |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| CONTACT                            |                                                                                                              |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Material                           | BeCu wires, brass body                                                                                       |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Plating                            | gold over nickel                                                                                             |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Insulation Resistance              | >10 <sup>3</sup> Megohms @ 500VDC                                                                            |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| TEMPERATURE RATING                 |                                                                                                              |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Polycarbonate                      | -40 °C to +85°C                                                                                              |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Polysulfone                        | -40 °C to +125°C                                                                                             |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Plating                            | T = 10µin gold                                                                                               |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Reference                          | TH = 50µin gold (pin only)<br>TAH = 50µin gold on mating surface & gold flash on socket bodies (socket only) |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |

## ACCESSORIES

|                |                          |                          |             |                          |                          |       |
|----------------|--------------------------|--------------------------|-------------|--------------------------|--------------------------|-------|
| Crimp Tool     | AFM8 or<br>(M22520/2-01) | AFM8 or<br>(M22520/2-01) | AF8         | AFM8 or<br>(M22520/2-01) | AFM8 or<br>(M22520/2-01) | AFM8  |
| Positioner     | K547                     | K547                     | TP688       | K623                     | K623                     | T870  |
| Removal Tool   | S/DEM1.0060              | S/DEM1.0060              | S/DEM5.0150 | S/DEM1.0060              | S/DEM1.0060              | —     |
| Insertion Tool | —                        | —                        | —           | —                        | —                        | T1271 |



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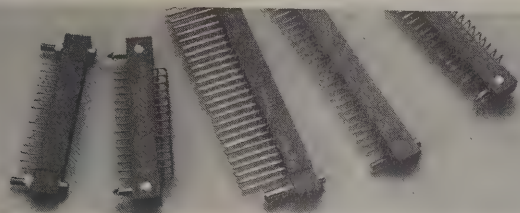


# LOW INSERTION FORCE CONNECTORS

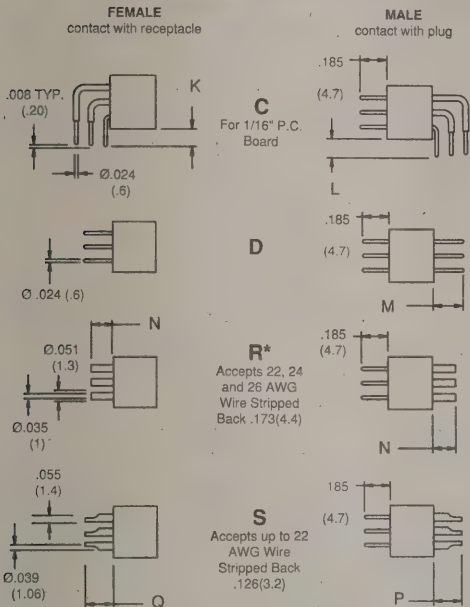
## KA SERIES

### 2 & 3 ROW P.C. BOARD CONNECTORS

- Average insertion force one ounce per contact
- Hard metric design
- Most models QPL'D to DOD-C-55302
- <5 milliohms contact resistance 3 ampere contact
- Choice of Crimp, Solder Cup, and straight dip terminals
- Over 100,000 cycles life



### TERMINAL STYLES



\*Contacts will be shipped unassembled Note: Dimensions in inches (mm)

### GENERAL SPECIFICATIONS

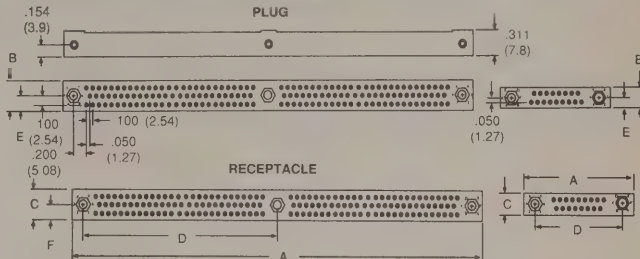
|                           |                                                                                                               |
|---------------------------|---------------------------------------------------------------------------------------------------------------|
| Number Contacts           | 17, 29, 33, 41, 53, 62, 65, 72, 80.1, 84*, 96, 98, 120, 160                                                   |
| Contact Diameter          | .0235(.6)                                                                                                     |
| Current Rating            | 3 amps H.C. test procedure<br>5 amps Military test procedure                                                  |
| Contact Resistance        | <5 milliohms                                                                                                  |
| Extraction Force          | .3 - 2 oz.                                                                                                    |
| Contact Life Cycles       | >100,000                                                                                                      |
| Insulation Resistance     | >10 <sup>9</sup> Megohms @ 500 VDC                                                                            |
| Temperature Rating        | -55°C to +125°C                                                                                               |
| Insulator                 | Diallyl-phthalate                                                                                             |
| CONTACT Material:         | BeCu wires, brass body                                                                                        |
| Plating:                  | gold over nickel                                                                                              |
| GUIDES HARDWARE Material: | brass nickel                                                                                                  |
| Plating:                  | T = 10µin gold                                                                                                |
| Plating Reference         | TAH = 50µin gold (pin only)<br>TAH = 50µin gold on mating surface & gold flash on socket bodies (socket only) |

\* Consult factory for dimensional information

### MOUNTING DIMENSIONS

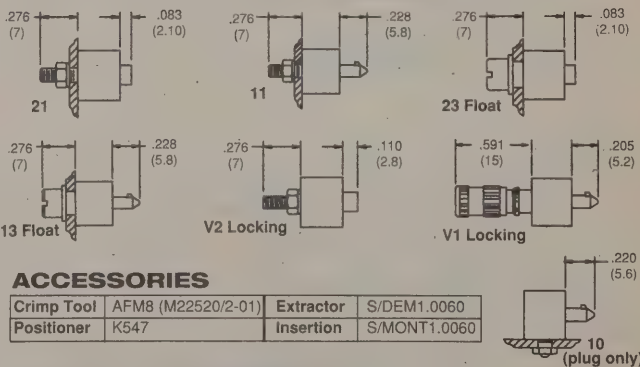
|                                                          | K              | L              | M              | N              | P              | Q              |
|----------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| KA17, 29, 33, 41, 53, 65, 72, 96, 120 Two Row Connectors | .138<br>(3.50) | .128<br>(3.25) | .221<br>(5.62) | .173<br>(4.40) | .213<br>(5.40) | .193<br>(4.90) |
| KA62, 80.1, 98 Three Row Connectors                      | .138<br>(3.50) | .128<br>(3.25) | .221<br>(5.62) | .173<br>(4.40) | .213<br>(5.40) | .193<br>(4.90) |
| KA160 Three Row Connectors                               | .123<br>(3.12) | .115<br>(2.92) | .211<br>(5.35) | .163<br>(4.13) | .202<br>(5.13) | .182<br>(4.63) |

### CONNECTOR DIMENSIONS



| # of Contacts | # of Rows | # of Guides | A                | B              | C              | D                | E plug         | R recept       |
|---------------|-----------|-------------|------------------|----------------|----------------|------------------|----------------|----------------|
| 17            | 2         | 2           | 1.512<br>(38.40) | .250<br>(6.35) | .268<br>(6.80) | 1.200<br>(30.48) | .124<br>(3.15) | .114<br>(2.90) |
| 29            | 2         | 2           | 2.110<br>(53.60) | .250<br>(6.35) | .268<br>(6.80) | 1.800<br>(45.72) | .124<br>(3.15) | .114<br>(2.90) |
| 33            | 2         | 2           | 2.311<br>(58.7)  | .250<br>(6.35) | .268<br>(6.80) | 2.00<br>(50.8)   | .124<br>(3.15) | .114<br>(2.90) |
| 41            | 2         | 2           | 2.713<br>(69.90) | .250<br>(6.35) | .268<br>(6.80) | 2.400<br>(60.96) | .124<br>(3.15) | .114<br>(2.90) |
| 53            | 2         | 2           | 3.311<br>(84.10) | .250<br>(6.35) | .268<br>(6.80) | 3.000<br>(76.20) | .124<br>(3.15) | .114<br>(2.90) |
| 62            | 3         | 2           | 2.713<br>(69.90) | .372<br>(9.45) | .366<br>(9.30) | 2.400<br>(60.96) | .174<br>(4.42) | .164<br>(4.17) |
| 65            | 2         | 2           | 3.913<br>(99.40) | .250<br>(6.35) | .268<br>(6.80) | 3.600<br>(91.44) | .124<br>(3.15) | .114<br>(2.90) |
| 72            | 2         | 3           | 4.512<br>(114.6) | .250<br>(6.35) | .268<br>(6.80) | 2.100<br>(53.34) | .124<br>(3.15) | .114<br>(2.90) |
| 80.1          | 3         | 2           | 3.311<br>(84.10) | .372<br>(9.45) | .366<br>(9.30) | 3.000<br>(76.20) | .174<br>(4.42) | .164<br>(4.17) |
| 96            | 2         | 3           | 5.713<br>(145.1) | .250<br>(6.35) | .268<br>(6.80) | 2.700<br>(68.58) | .124<br>(3.15) | .114<br>(2.90) |
| 98            | 3         | 2           | 3.913<br>(99.40) | .372<br>(9.45) | .366<br>(9.30) | 3.600<br>(91.44) | .174<br>(4.42) | .164<br>(4.17) |
| 120           | 2         | 3           | 6.909<br>(175.5) | .250<br>(6.35) | .268<br>(6.80) | 3.300<br>(83.32) | .124<br>(3.15) | .114<br>(2.90) |
| 160           | 3         | 2           | 6.220<br>(158.0) | .366<br>(9.30) | .366<br>(9.30) | 2.950<br>(74.93) | .187<br>(4.75) | .179<br>(4.55) |

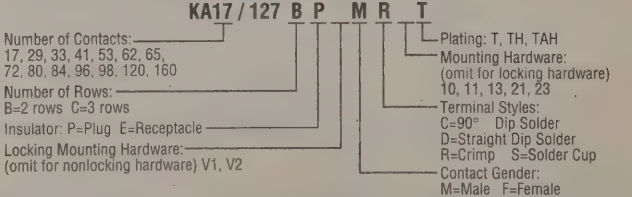
### MOUNTING STYLES



### ACCESSORIES

|            |                    |           |              |
|------------|--------------------|-----------|--------------|
| Crimp Tool | AFM8 (M22520/2-01) | Extractor | S/DEM1.0060  |
| Positioner | K547               | Insertion | S/MONT1.0060 |

### ORDERING INFORMATION



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# LOW INSERTION FORCE CONNECTORS

## L SERIES

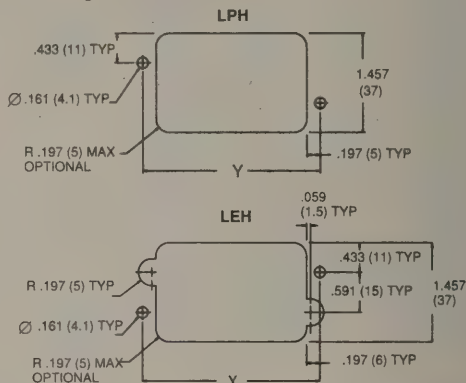
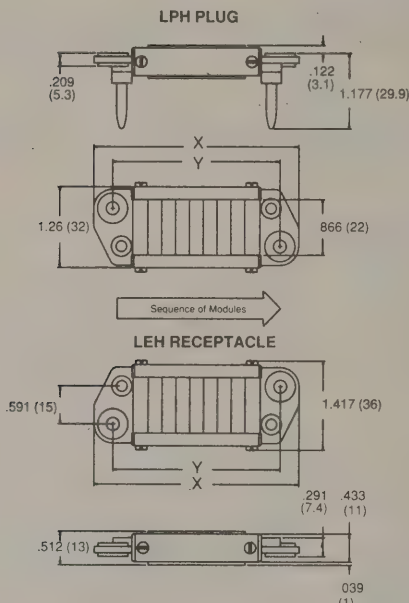
### CABLE AND RACK AND PANEL CONNECTORS

- Blind matable with up to .049" misalignment
- Jackscrew and rugged polycarbonate hood
- Custom design with optional 8, 15, 25, 50, 100 and 200<sup>4</sup> amperes contacts
- Small size and light weight

### HOUSING DIMENSIONS

#### TYPE H

Blind matable with up to .049" misalignment



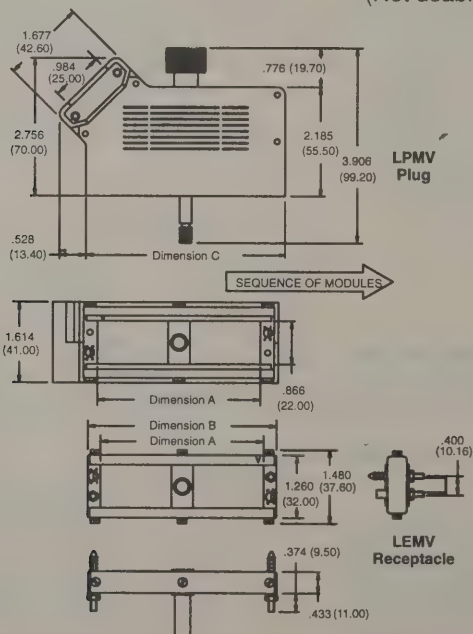
| UNITS | X             | Y            |
|-------|---------------|--------------|
| 4     | 2.559 (65)    | 1.969 (50)   |
| 5     | 2.776 (69.5)  | 2.185 (55.5) |
| 6     | 2.992 (76)    | 2.402 (61)   |
| 7     | 3.209 (81.5)  | 2.618 (66.5) |
| 8     | 3.425 (87)    | 2.835 (72)   |
| 9     | 3.642 (92.5)  | 3.051 (77.5) |
| 10    | 3.858 (98)    | 3.268 (83)   |
| 11    | 4.075 (103.5) | 3.484 (88.5) |

| UNITS | X             | Y             |
|-------|---------------|---------------|
| 12    | 4.291 (109)   | 3.701 (94)    |
| 13    | 4.508 (114.5) | 3.917 (99.5)  |
| 14    | 4.724 (120)   | 4.134 (105)   |
| 15    | 4.941 (125.5) | 4.350 (110.5) |
| 16    | 5.157 (131)   | 4.567 (116)   |
| 17    | 5.374 (136.5) | 4.784 (121.5) |
| 18    | 5.591 (142)   | 5.000 (127)   |
| 19    | 5.807 (147.5) | 5.217 (132.5) |
| 20    | 6.024 (153)   | 5.433 (138)   |

#### TYPE MV

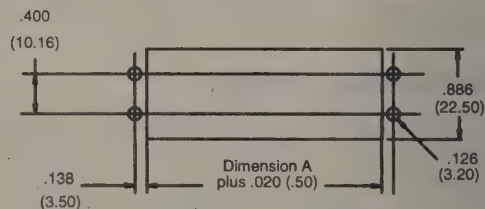
Adjustable cable clamp

With jackscrew and molded hood/black polycarbonate  
(Not usable with 100-200 AMP modules)



| NUMBER OF UNITS | DIMENSIONS     |                |                |
|-----------------|----------------|----------------|----------------|
|                 | A              | B              | C              |
| 12              | 2.598 (66.00)  | 3.110 (79.00)  | 3.315 (84.20)  |
| 15              | 3.248 (82.50)  | 3.760 (95.50)  | 3.965 (100.70) |
| 20              | 4.331 (110.00) | 4.843 (123.00) | 5.047 (128.20) |
| 22              | 4.764 (121.00) | 5.276 (134.00) | 5.480 (139.20) |

### MOUNTING DIMENSION



HYPERTRONICS CORPORATION

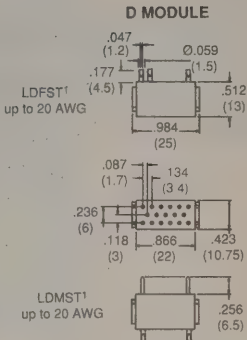
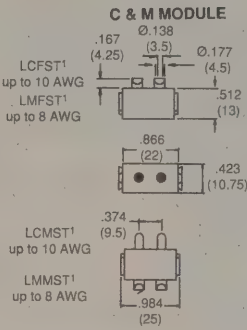
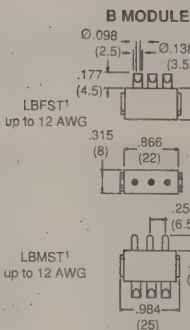
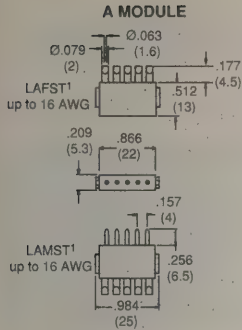
16 BRENT DRIVE, HUDSON, MA 01749-2904 • TOLL FREE 800-225-9228 (508-568-0451) FAX 508-568-0680





LOW INSERTION FORCE CONNECTORS

L SERIES  
MODULES DIMENSIONS  
TYPES: A, B, C, D, AND M



TYPES G and K

File No. E102195

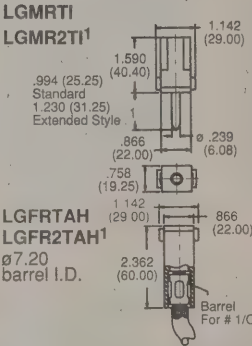
File No. LR83002

ORDERING INFORMATION

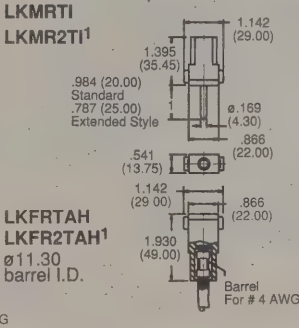
L P H 8 / 4 AMST / 2DMST / TG

P=Plug  
E=Receptacle  
Housing:  
H, MV (add 2  
units for  
jackscrew)  
Length of Rails  
4-20 Units  
Number of  
Modules  
Module combination by quantity  
(Refer to type of module and ter-  
minals style etc....using above  
outline as sample only) Module  
will be positioned in frame  
according to sequence listed

G MODULE  
3.5 units width



K MODULE  
2.5 units width

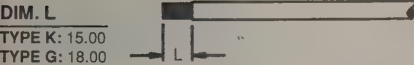


- Notes:
- 1) Extended pin option provides first mate, last break ground contacts
  - 2) Consult factory when ordering empty modules and replacement barrier
  - 3) Contacts shipped unassembled
  - 4) Approved to 180 amps by CSA for 30°C temperature rise

NOTE: Dimensions in inches (mm)

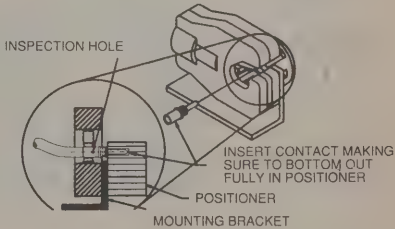
CRIMP INSTRUCTIONS

STEP 1: Strip wire insulation to dimension specified



STEP 2: Insert wire into contact crimp barrel until wire becomes visible in the inspection hole, then crimp using T1501 with applicable positioner

STEP 3: Insert contacts into insulator. An audible click should be heard when contacts are fully seated



GENERAL SPECIFICATIONS FOR MODULES

| MODULE TYPE                    | A                                                                              | B          | C          | D          | M          | G                         | K                |
|--------------------------------|--------------------------------------------------------------------------------|------------|------------|------------|------------|---------------------------|------------------|
| Width                          | 1 Unit                                                                         | 1.5 Units  | 2 Units    | 2 Units    | 2 Units    | 2.5 units                 | 3.5 units        |
| Number of Contacts             | 5                                                                              | 3          | 2          | 17         | 2          | 1                         | 1                |
| Contact Diameter               | .059 (1.5)                                                                     | .098 (2.5) | .138 (3.5) | .047 (1.2) | .138 (3.5) | .169 (4.30)               | .239 (22.00)     |
| Current Rating                 | 8 amps                                                                         | 15 amps    | 25 amps    | 8 amps     | 50 amps    | 100                       | 200 <sup>4</sup> |
| Contact Resistance (milliohms) | <1.5                                                                           | <.8        | <.6        | <2.5       | <.4        | <.35                      | <.20             |
| Extraction Force (oz.)         | 1-5                                                                            | 3-20       | 4-30       | 7-4        | 4-40       | 15-90                     | 80-160           |
| Break Down Voltage             |                                                                                |            |            |            |            | >250 VAC                  |                  |
| Between Contact Rails          | >2000V                                                                         | >1600V     | >3000V     | >1800V     | >3000V     | >10 megohms @500VDC       |                  |
| Insulation Resistance          | >10 <sup>6</sup> megohms @ 500 VDC                                             |            |            |            |            | >10 megohms @500VDC       |                  |
| Insulator                      | Diallyl-phthalate                                                              |            |            |            |            | Polyphthalamide           |                  |
| Temperature Rating             | -55°C to +125°C                                                                |            |            |            |            |                           |                  |
| Contact Life Cycles            | >100,000                                                                       |            |            |            |            |                           |                  |
| CONTACT                        |                                                                                |            |            |            |            |                           |                  |
| Material:                      | BeCu wires and brass body                                                      |            |            |            |            | copper; brass             |                  |
| Plating:                       | gold over nickel                                                               |            |            |            |            | gold over nickel          |                  |
| Plating                        | TG = 10µin gold                                                                |            |            |            |            | TAH=Socket only           |                  |
| Reference                      | TH = 50µin gold (pin only)                                                     |            |            |            |            | TI=50Min. gold (Pin only) |                  |
|                                | TAH = 50µin gold on mating surface & gold flash on socket bodies (socket only) |            |            |            |            |                           |                  |

ACCESSORIES  
FOR G & K  
MODULES

T1501: crimp tool  
T1551: mtg. bracket

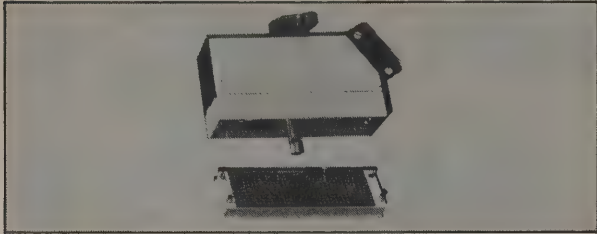
Removable Tools  
T1507: G Module  
T1500: K Module

Positioners  
T1535: G Module  
T1536: K Module



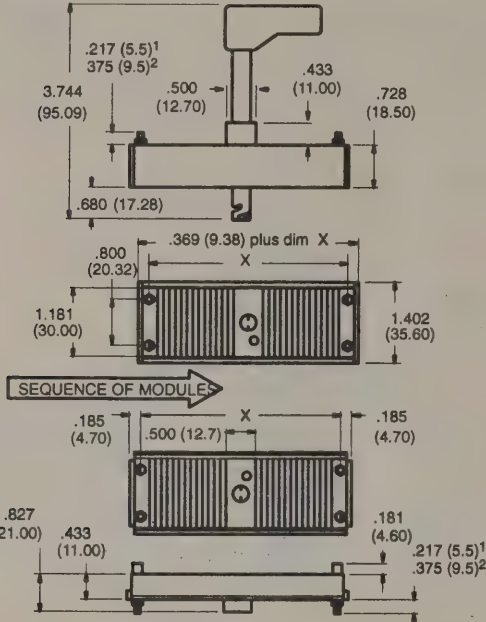
# LOW INSERTION FORCE CONNECTORS

## N SERIES



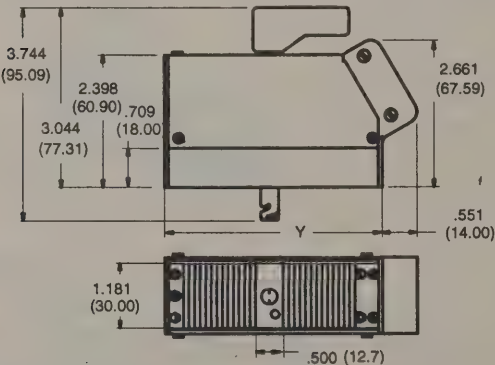
### TYPE BY

Standard Sizes: 7, 11, 15, 19, 23, 27, 31, & 35 unit lengths



### TYPE JY

Standard Sizes: 11, 15, 19, 23, 27, 31, & 35 unit lengths



#### Notes:

- 1) Standard length for p.c. boards
- 2) Length for chassis mount
- 3) NPJY mates with NEBY
- 4) Crimp contacts shipped unassembled
- 5) Dimensions in inches (mm)

### ACCESSORIES

#### Module P

|              |                    |
|--------------|--------------------|
| Crimp Tool   | AFM8 (M22520-2/01) |
| Positioner   | K623               |
| Removal Tool | S/DEM1.0060        |

#### Module T

|              |             |
|--------------|-------------|
| Crimp Tool   | AF8         |
| Positioner   | TP687       |
| Removal Tool | S/DEM5.0150 |

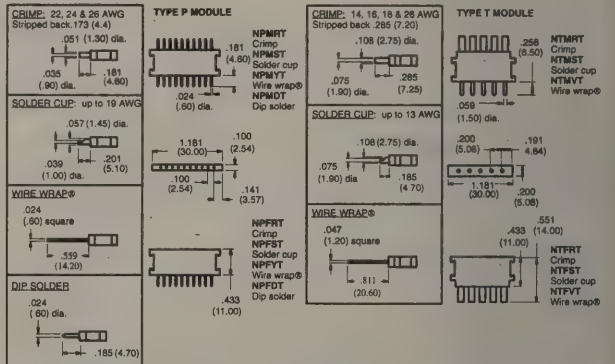
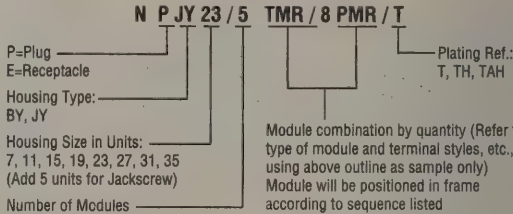
### QUICK DISCONNECT CONNECTORS

- Wiping action pin & socket contacts
- <2 second operation
- 180° quick turn cam rated at >15,000 cycles
- Provides 60-300 contacts
- 5 or 9 ampere contacts
- Crimp, dip solder, solder cup, and wire wrap® contacts

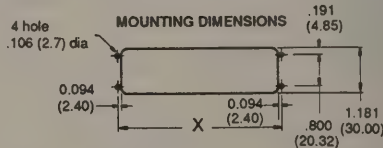
### GENERAL SPECIFICATIONS FOR MODULES

| MODULE TYPE                    | P                                                                                                                                         | T                 |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Width                          | 1 Unit                                                                                                                                    | 2 Units           |
| Number of Contacts             | 10 removable signal                                                                                                                       | 5 removable power |
| Contact Diameter               | .024(.6)                                                                                                                                  | .059 (1.5)        |
| Current Rating                 | 3 amps                                                                                                                                    | 9 amps            |
| Contact Resistance (milliohms) | <5                                                                                                                                        | <2.5              |
| Extraction Force (oz.)         | .3-2                                                                                                                                      | .7-4              |
| Break Down Voltage             |                                                                                                                                           |                   |
| Between Contact/Rails          | >1500V                                                                                                                                    | >2250V            |
| Contact Life Cycles            | >100,000                                                                                                                                  |                   |
| Insulator                      | Glass filled nylon®                                                                                                                       |                   |
| Temperature Rating             | -55°C to ±105°C                                                                                                                           |                   |
| Insulation Resistance          | >10 <sup>5</sup> megohms @ 500 VDC                                                                                                        |                   |
| CONTACT Material:              | BeCu wires and brass body                                                                                                                 |                   |
| Plating:                       | gold over nickel                                                                                                                          |                   |
| Plating Reference              | T = 10µin gold (pin only)<br>TH = 50µin gold (pin only)<br>TAH = 50µin gold on mating surface & gold flash on socket bodies (socket only) |                   |

### ORDERING INFORMATION



| Units | 7             | 11            | 15            | 19            | 23            | 27             | 31             | 35             |
|-------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|
| X     | 1,000 (25.40) | 1,400 (35.56) | 1,800 (45.72) | 2,200 (55.88) | 2,600 (66.04) | 3,000 (76.20)  | 3,400 (86.36)  | 3,800 (96.52)  |
| Y     | 2,000 (50.80) | 2,400 (60.96) | 2,800 (71.12) | 3,200 (81.28) | 3,600 (91.44) | 4,000 (101.60) | 4,400 (111.76) | 4,800 (121.92) |



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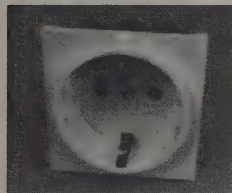


# INTERNATIONAL CONFIGURATIONS, INC.

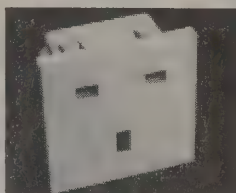
P.O. Box 3374 • Enfield, CT 06083 • Phone: (203) 749-6380 • FAX: (203) 749-2985

## INTERNATIONAL SNAP-IN MOUNT RECEPTACLES

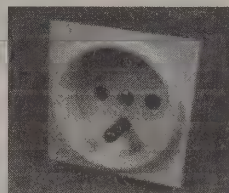
These modular-size outlets are ideal for use on exported equipment as one standard 53.5mm x 58.6mm panel cutout will accept the European, United Kingdom, Australian, French, Italian or Swiss outlet. Multiple outlets can also be ganged in various combinations.



Cat. 70100  
**EUROPEAN**  
"SCHUKO"  
CEE-7 Outlet  
Approvals: VDE,  
OVE, IMQ.  
16A 250VAC.



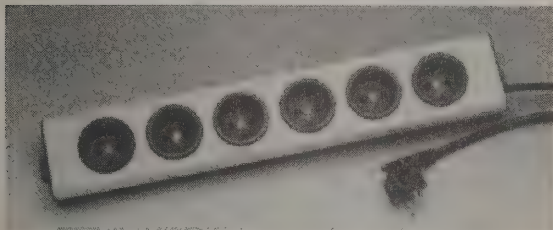
Cat. 72100  
**BRITISH**  
BS1363 Outlet  
Shuttered  
contacts.  
Approvals: BSI.  
13A 250VAC.



Cat. 71100  
**FRENCH**  
Outlet  
Approvals: UTE  
  
16A 250VAC.

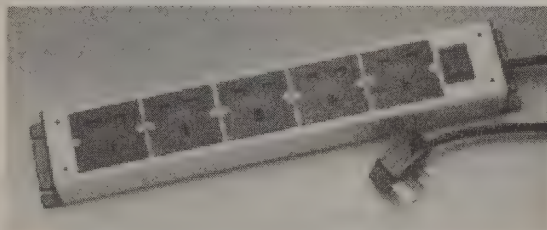
## INTERNATIONAL MULTIPLE OUTLET POWER STRIPS

### EUROPEAN "SCHUKO" CEE-7 TYPE



Cat. 52925: 5 Outlet with ON/OFF Switch  
Cat. 52906: 6 Outlet without Switch

### UNITED KINGDOM BS1363 TYPE



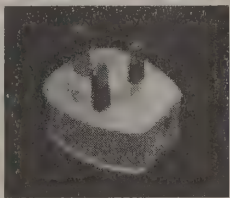
Cat. 52125: 5 Outlet with ON/OFF Switch  
Cat. 52106: 6 Outlet without Switch

NOTE: 19" Rack Mount, Surge-Suppression, GFCI, Fused and Circuit Breaker Types available.

## INTERNATIONAL ATTACHMENT PLUGS



Cat. 70140  
**EUROPEAN**  
"SCHUKO"  
CEE-7-7 PLUG  
Approvals: VDE,  
OVE, UTE, CEBEC  
16A 250VAC.



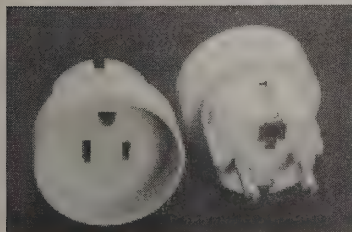
Cat. 72140  
**BRITISH**  
BS1363A  
PLUG  
Fused.  
Approvals: ASTA.  
13A 250VAC.



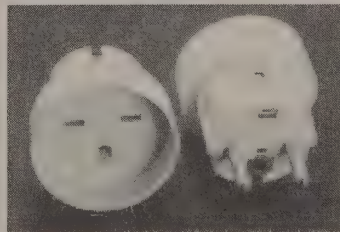
Cat. 74140  
**AUSTRALIAN**  
PLUG  
Approvals: EANSW  
  
10A 250VAC.

NOTE: Straight, Angle, High Impact and Heavy-Duty versions available.

## INTERNATIONAL PLUG ADAPTERS



Cat. 30110:  
Allows NEMA 5-15P  
Plugs to mate with  
"SCHUKO" Outlets



Cat. 30100:  
Allows NEMA 6-15P  
Plugs to mate with  
"SCHUKO" Outlets

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- Adapters - 3-wire
- Outlet Strips

- European Plugs/Outlets
- European "GFCI" Outlets

- IEC-309 Plugs/Outlets
- IEC-320 Inlets/Outlets
- Japanese Plugs/Outlets

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CONNECTORS**

### DESIGN OPTIONS

#### CABLE

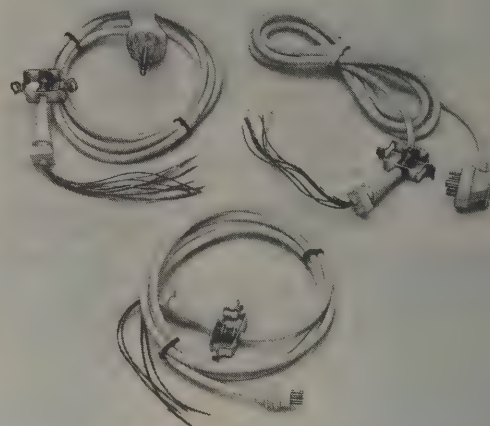
Conductor Type  
Solid, Stranded,  
& Gauge  
Number of  
Conductors  
Paired or Unpaired

Dielectric Type  
Types of Shields  
Braided Copper  
Foil/Drain Wire  
Foil/Braid  
100% Shield

Insulation of  
Conductors & Jacket  
Other

#### TERMINATION

Stripped and Tinned  
Terminals  
Connectors  
Other



## CONNECTORS

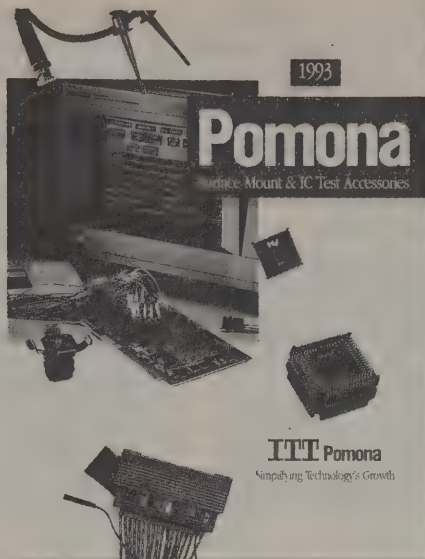
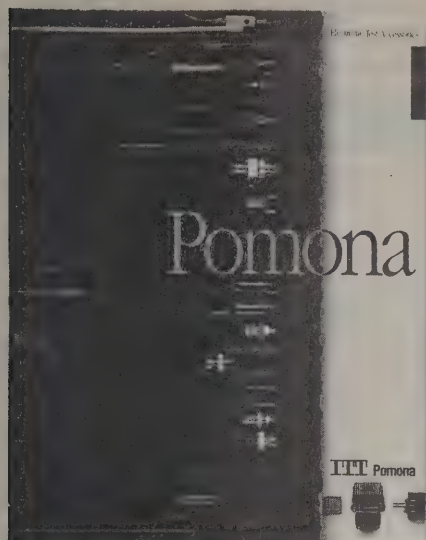
- |                |             |
|----------------|-------------|
| • AUDIO        | • D SUB     |
| • F CONNECTORS | CONNECTORS  |
| • BNC          | • UHF       |
| • TNC          | • PCB MOUNT |
| • DIN          | COAXIAL     |
| CONNECTORS     |             |



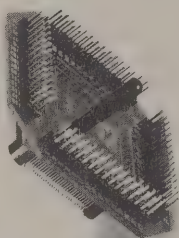
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**Safer DMM Test Lead Kits** like this model 5901 Bench Test Kit featuring silicone insulated wire, fully insulated clips, interchangeable tips.



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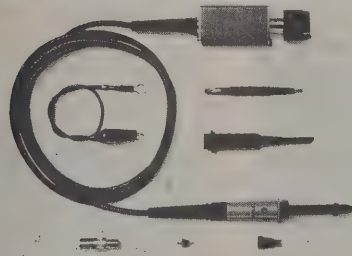
**World's First SQFP Test Clip** locks onto 80- and 100-pin SMT devices.



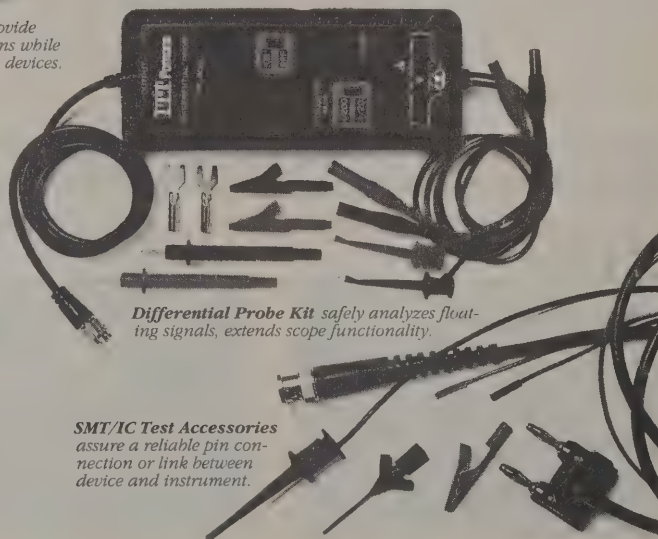
**Plugs, Jacks, Adapters and Cable Assemblies** designed for safe, positive electrical connections.



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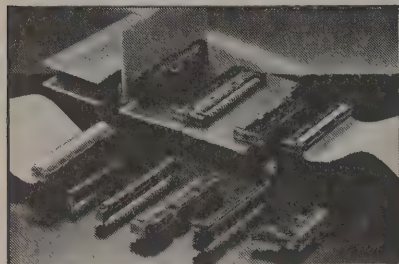


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## LOW PROFILE, HIGH DENSITY CONNECTORS

### TX1-5 SERIES: BOARD-TO-BOARD & BOARD-TO-CABLE CONNECTORS



This connector family offers two-piece PCB connectors with 0.050" high density contact spacing. These low profile, high density connectors provide design flexibility for board-to-board and board-to-cable applications. Available in 20 through 100 contact arrangements.

- TX1: IDC Sockets for flat ribbon cable on 0.025" centers
- TX2: IDC Sockets for flat ribbon cable on 0.050" centers
- TX3: Pin Headers with long or short latches, and straight or right angle through hole mounting
- TX4: Socket Receptacle with straight or right angle through hole mounting
- TX5: Pin Headers with straight or right angle through hole mounting

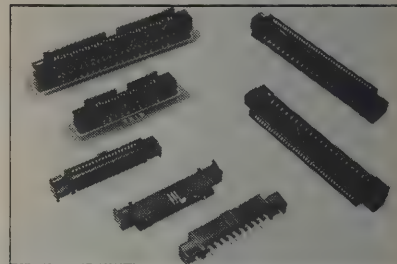
### TX11-13 SERIES: BOARD-TO-CABLE CONNECTORS



Developed for board-to-cable applications. Feature ribbon/leaf spring contacts to meet the high density packaging requirements of state-of-the-art electronic equipment. Sizes available 40 through 100.

- TX11: IDC cable connectors for flat ribbon cable on 0.025" centers
- TX12: IDC cable connectors for flat ribbon cable on 0.050"
- TX13: Male version with or without mounting ears, and straight or right angle through hole mounting
- IDC cable connectors have self-latching/self-ejecting lever for easier mating and unmating on the PCB
- Ribbon/leaf spring contact design prevents contact damage
- First mate/last break contacts
- 0.5 Amp operating current

### TX14/15 SERIES: BOARD-TO-BOARD CONNECTORS



Designed for high density applications. Board-to-board ribbon/leaf spring contact design features superior reliability and stability. Available in 40, 60, 80, 100, 120, 140, 160, 180 and 200 contact arrangements.

- Receptacle (TX14) and plug (TX15) can be arranged in horizontal, vertical or parallel positions
- Straight through hole and angled through hole types available
- Adaptable to parallel board assemblies spaced within a 0.472" (12mm) to 0.787" (20mm) range
- Available with 16 optional polarized keying positions
- Hook pin mounting eliminates threaded board mounting hardware
- First mate/last break contacts

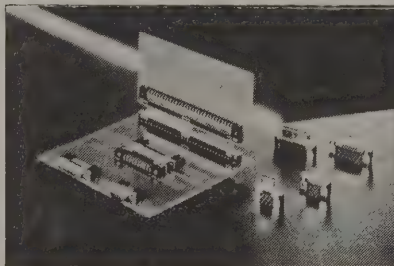
### SX SERIES: HIGH DENSITY SMT CONNECTORS



High density surface mount connectors designed for parallel board-to-board stacking. Two optional board stacking heights of .250" and .315" available. Contact arrangements of 40, 50, 70, 80, and 100 available on 0.050" contact pitch. Right angle-to-right angle available in 50 and 70 positions.

- High temperature thermoplastic insulator
- High density 0.050" contact pitch
- Gull wing-type surface mount terminals
- Ribbon/leaf spring contacts
- Hook-pin board mounts allow double sided mounting

### TX20/TX20A SERIES: BOARD-TO-BOARD & BOARD-TO-CABLE CONNECTORS



Low profile, two-piece connector with 0.21" (5.4mm) mated height on board.

- 0.050" (1.27mm) contact spacing
- Simple 0.050" X 0.075" 4-row offset board pattern
- EMI/RFI shielded and grounded to meet FCC Docket B
- Ribbon/leaf spring contacts
- Through hole board termination (TX20)
- Through hole and surface mount board termination (TX20A)
- 0.5 Amp operating current



| No. of Contacts | TX20 Board-to Board | TX20A Board-to Cable |
|-----------------|---------------------|----------------------|
| 10              | X                   | X                    |
| 14              |                     | X                    |
| 26              | X                   | X                    |
| 36              |                     | X                    |
| 40              | X                   |                      |
| 50              |                     | X                    |
| 68              |                     | X                    |
| 120             | X                   |                      |

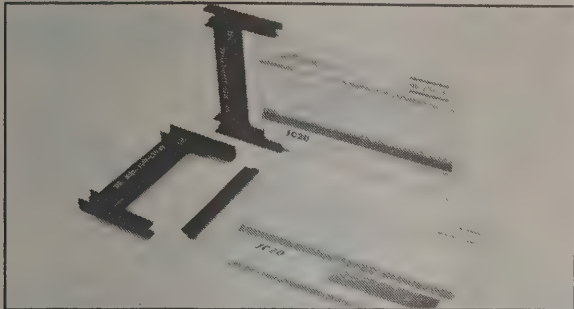




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MEMORY CARD CONNECTORS

JC20 SERIES

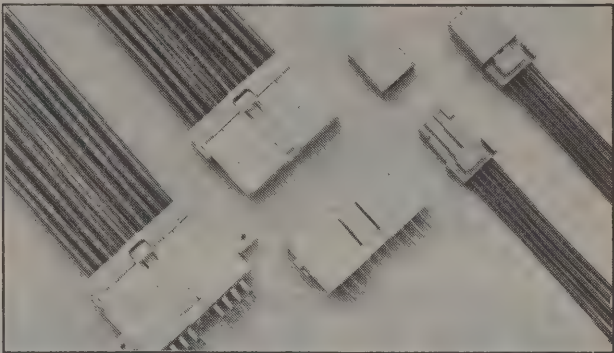


This two-piece memory card connector system consists of a surface mount socket connector for memory card side. The male pin header connector is offered in through hole and SMT configurations. Ejection version also available. First mate/last break extended male contacts offered in accordance with JEIDA (Ver. 4) and PCMCIA (Rev. 2).

| No. of Contacts | No. of Rows | Contact Spacing Inches (mm) |
|-----------------|-------------|-----------------------------|
| 20              | 1           | 0.050 (1.27)                |
| 32              | 1           | 0.050 (1.27)                |
| 38              | 1           | 0.050 (1.27)                |
| 40              | 1           | 0.039 (1.00)                |
| 45              | 1           | 0.039 (1.00)                |
| 60              | 2           | 0.050 (1.27)                |
| 68              | 2           | 0.050 (1.27)                |
| 88              | 2           | 0.039 (1.00)                |

HIGH CURRENT CONNECTORS

EX5-R/IL-AG5 SERIES

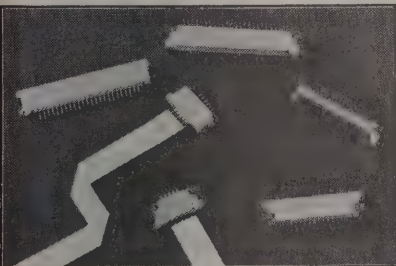


Miniature industrial-type connectors for wire-to-board applications. Meet the demands of the automotive, white goods and industrial controls industries.

- Sizes available:  
EX5-R: 16 pos.  
IL-AG5:  
Single Row: 5, 6, 7, 10  
Double Row: 14, 16, 18, 22 & 30
- Contact Pitch:  
EX5-R: 0.157" (4.0mm), double row  
IL-AG5: 0.098" (2.5mm), single and double row
- One-touch release mechanical locking mechanism
- Secondary contact locking mechanism (TPA feature) to assure contact positioning/retention
- Current Rating:  
EX5-R: 8 Amps  
IL-AG5: 3 Amps

BOARD-TO-FPC/FFC CONNECTORS

IL-402/IL-402R SERIES



- Developed to meet the demands of increased component density. Low profile 0.098" (2.5mm) mounting height. Sizes available: 4 through 30.
- 0.039" (1.0mm) contact spacing
  - Surface mount/right angle configuration
  - Zero insertion force design utilizes a slide actuator
  - Applicable for 0.012" (0.3mm) thick FPCs/FFCs
  - IL-402 bottom contact mating version
  - IL-402R top contact mating version
  - 0.5 Amp operating current

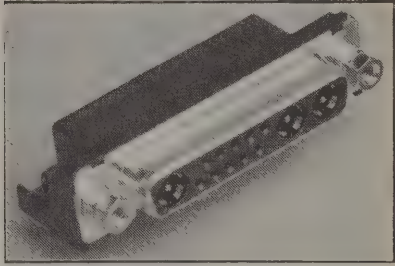
IL-404 SERIES



- Low profile, high density connectors designed for packaging applications requiring maximum flexibility and optimum space savings. Sizes available: 8 through 30.
- 0.049" (1.25mm) contact spacing
  - Zero insertion force design utilizes a slide actuator
  - Applicable for 0.012" (0.3mm) thick FPCs/FFCs
  - Straight or right angle through hole mounting
  - 0.5 Amp operating current

I/O CONNECTORS

DBML SERIES

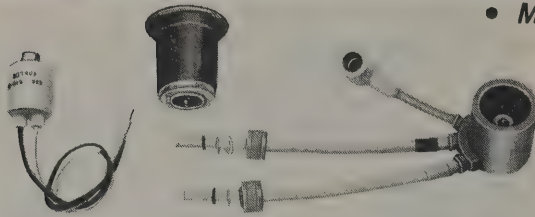


- Designed for use with high resolution graphics I/Os for new generation Engineering Work Stations requiring 75Ω signal impedance. Combines Red-Green-Blue or gray scale graphics signals with data lines in a single, shielded connector.
- Combines coaxial contacts and signal contacts in a single-shielded connector
  - UL94V-0 flammability rating
  - Snap-in expansion post mounting eliminates costly threaded hardware on board mount connector

# PROBLEM SOLVERS IN High-voltage

A COMPLETE DESIGN-ENGINEERING AND MANUFACTURING  
SERVICE FOR ALL O.E.M. PROPRIETARY PRODUCTS FOR OVER 32 YEARS

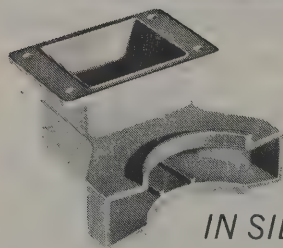
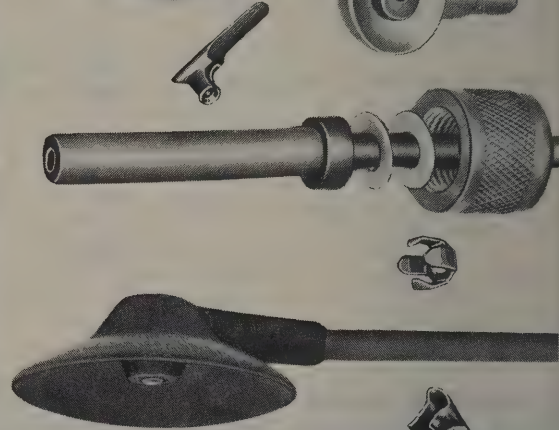
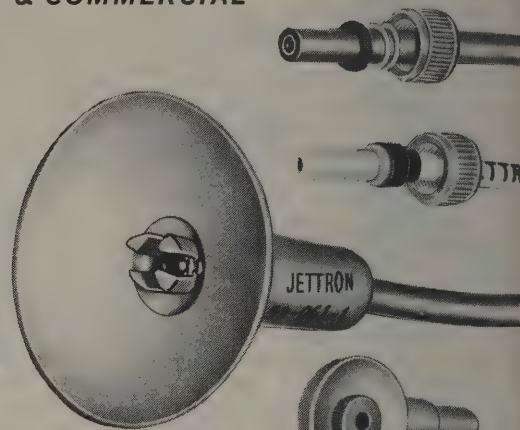
• MILITARY & COMMERCIAL



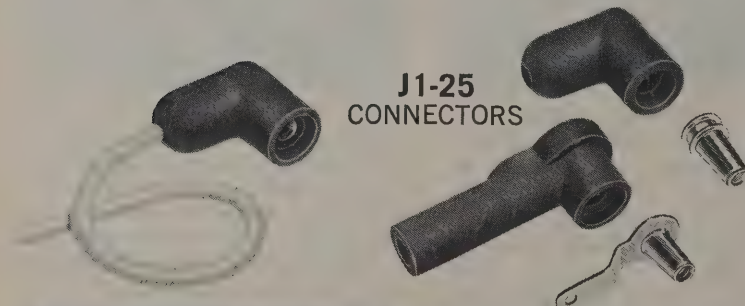
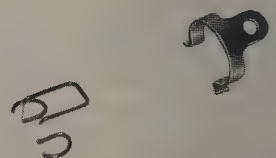
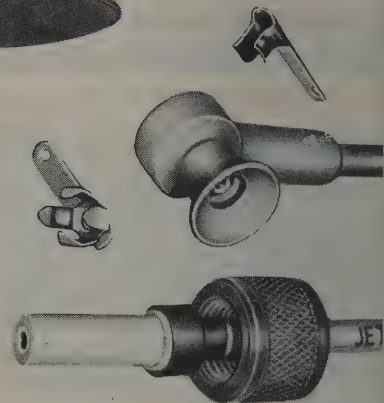
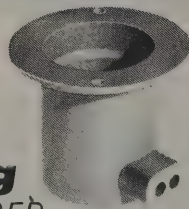
MAGNETRON CONNECTORS

## JETTRON'S

Extensive line of high voltage connections to 50KVDC including molded silicone CRT anode leads (leakproof & corona free), in-line connectors, splices, and CRT anode connector kits for customer assembly. Potting contacts of BeCu for the JEDEC J1-21, J1-22, J1-25, J1-30, and J1-32 anode terminals.



**Custom Molding**  
IN SILICONE RUBBER



J1-25  
CONNECTORS

Page 1 of 2



**JETTRON PRODUCTS, INC.**

56 ROUTE 10, P.O. BOX 337E, EAST HANOVER, N.J. 07936  
Telephone (201) 887-0571 • Fax (201) 887-4182



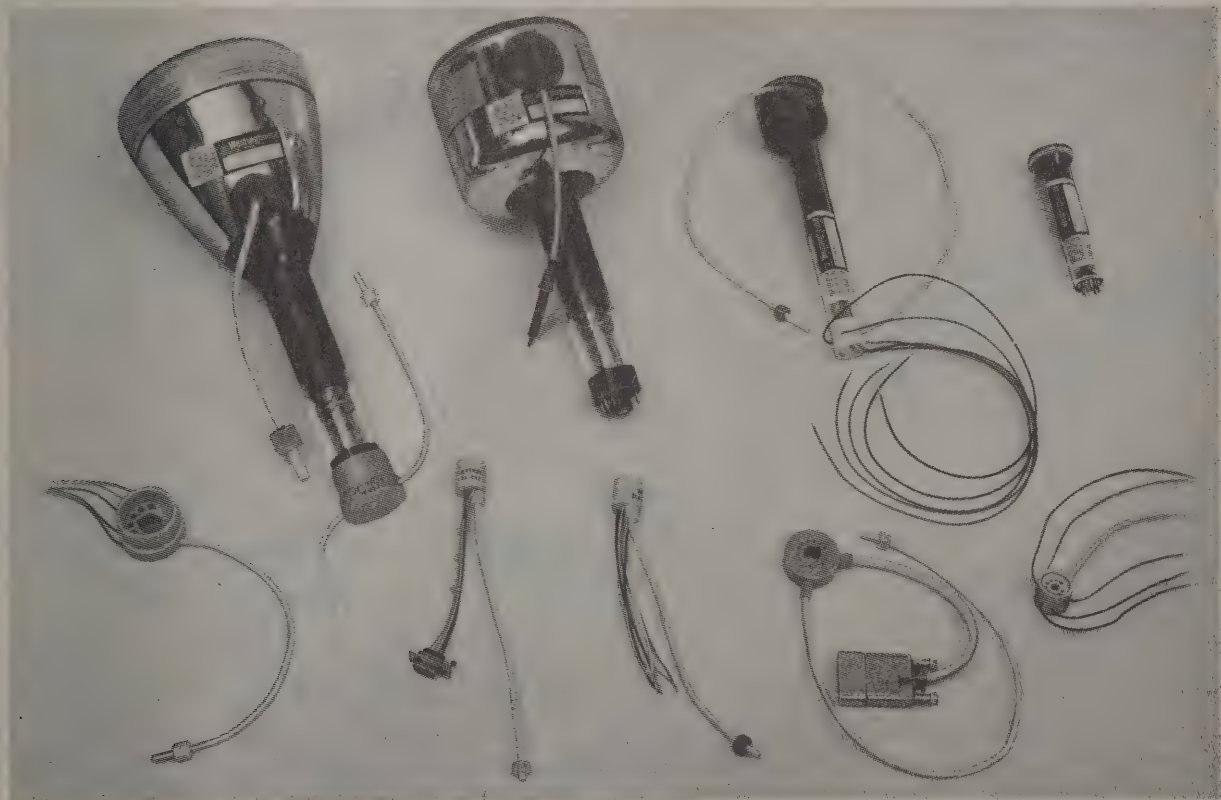
## MOLDED HV RECEPTACLES

- THE ULTIMATE IN DEPENDABILITY EVEN UNDER SEVERE AND HOSTILE ENVIRONMENTAL CONDITIONS
  - ENCAPSULATED, FLANGED, AND SPLICED TYPES FOR 10 AND 20 KVDC
- ★ NOTE: HIGHER KV RECEPTACLES ARE MADE ON SPECIAL ORDER FOR TEST AND APPLICATION REQUIREMENTS



## SILICONE CRT ANODE CONNECTORS

BONDED TO WIRE INSULATION OR KITS FOR EASY ASSEMBLY



## SILICONE CRT BASE CONNECTORS

Page 2 of 2



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Telephone (201) 887-0571 • Fax (201) 887-4182



# JOLO

13921 NAUTILUS DRIVE, GARDEN GROVE, CA 92643  
(714) 554-6840 / FAX 714-554-0306

ELECTRONIC INTERCONNECTION HARDWARE

## NEW! LOW PROFILE TERMINAL BLOCKS

### THE TERMINAL BLOCKS FOR THE 90'S

#### BB-125 SERIES

Available in 2-12 Positions  
For P.C. board mounting

#### MATERIALS

Terminal: Brass, tin-lead plated  
Spring: Stainless steel  
Insulator: Polyester, blue (UL94 V-O)  
Screws: Stainless steel

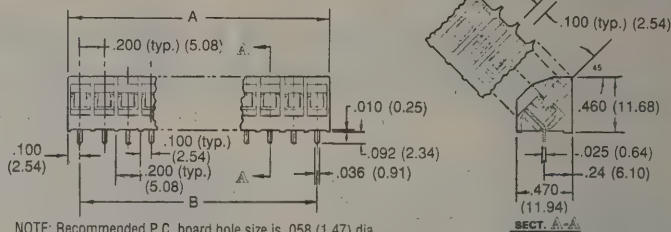
#### SPECIFICATIONS

Current Rating: 15 amps  
Voltage Rating: 500 Volts RMS  
Wire Size: #16 AWG maximum

| Terminals | A             | B             | JOLO Part No. |
|-----------|---------------|---------------|---------------|
| 2         | .400 (10.16)  | .200 (5.08)   | BB-125-02     |
| 3         | .600 (15.24)  | .400 (10.16)  | BB-125-03     |
| 4         | .800 (20.32)  | .600 (15.24)  | BB-125-04     |
| 5         | 1.000 (25.40) | .800 (20.32)  | BB-125-05     |
| 6         | 1.200 (30.48) | 1.000 (25.40) | BB-125-06     |
| 7         | 1.400 (35.56) | 1.200 (30.48) | BB-125-07     |
| 8         | 1.600 (40.64) | 1.400 (35.56) | BB-125-08     |
| 9         | 1.800 (45.72) | 1.600 (40.64) | BB-125-09     |
| 10        | 2.000 (50.80) | 1.800 (45.72) | BB-125-10     |
| 11        | 2.200 (55.88) | 2.000 (50.80) | BB-125-11     |
| 12        | 2.400 (60.96) | 2.200 (55.88) | BB-125-12     |

#### FEATURES

- Low profile, compact size - only .460" high, ideal for high density applications
- 45° angled entry - easy access where space is limited
- Polyester insulator (UL94 V-O) - low moisture absorption, excellent electrical characteristics
- Pedestal design - simplifies flux removal
- Butt mountable/end stackable
- Captive stainless steel screws



NOTE: Recommended P.C. board hole size is .058 (1.47) dia.

#### BB-122-XX SERIES

Available in 3, 4, 6, 8, 10 and 12 positions  
For P.C. board mounting

#### MATERIALS

Terminal: Brass, tin-lead plated  
Spring: Stainless steel  
Insulator: Polyester, blue (UL94 V-O)  
Screws: Stainless steel

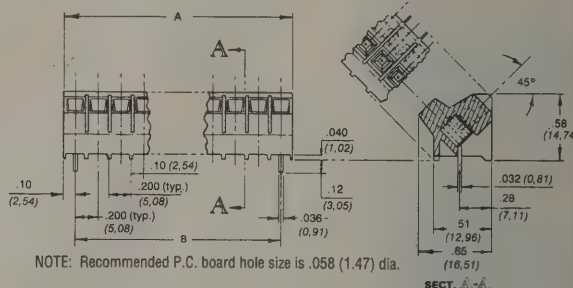
#### SPECIFICATIONS

Current Rating: 15 amps  
Voltage Rating: 500 Volts RMS  
Wire Size: #16 AWG maximum  
Resistivity: Minimum 10<sup>10</sup> ohms at 40°C and 95% relative humidity

| Terminals | A             | B             | JOLO Part No. |
|-----------|---------------|---------------|---------------|
| 3         | .600 (15.24)  | .400 (10.16)  | BB-122-03     |
| 4         | .800 (20.32)  | .600 (15.24)  | BB-122-04     |
| 6         | 1.200 (30.48) | 1.000 (25.40) | BB-122-06     |
| 8         | 1.600 (40.64) | 1.400 (35.56) | BB-122-08     |
| 10        | 2.000 (50.80) | 1.800 (45.72) | BB-122-10     |
| 12        | 2.400 (60.96) | 2.200 (55.88) | BB-122-12     |

#### FEATURES

- Designed to conform to IEC Standard 348
- 45° angled entry - easy access where space is limited
- Polyester insulator (UL 94 V-O) - low moisture absorption, excellent electrical characteristics
- Pedestal design - simplifies flux removal
- Butt mountable/end stackable
- Captive stainless steel screws



NOTE: Recommended P.C. board hole size is .058 (1.47) dia.

#### OS-120



#### FEATURES

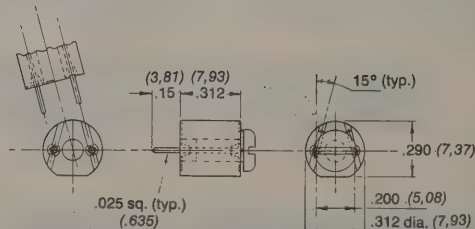
- Simple, reliable design
- Cost effective
- Vibration resistant
- P.C. Mount, .200" centers
- Polyester insulator (UL94 V-O)

#### MATERIALS

Terminal: Phosphor Bronze, tin plated  
Screw: Steel, tin plated  
Insulator: Polyester, black (UL94 V-O)

#### SPECIFICATIONS

Current Rating: 10 amps @ 110 V.R.M.S.  
Breakdown Voltage: 1800 V.R.M.S. (Min.) with screw backed out two full turns







13921 NAUTILUS DRIVE, GARDEN GROVE, CA 92643  
(714) 554-6840 / FAX 714-554-0306

ELECTRONIC INTERCONNECTION HARDWARE

## P.C. TEST JACKS

### Vertical Test Jack (Snap-In)

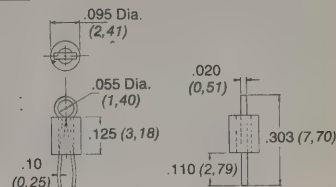
Snap into .044" - .050" diameter holes

Subminiature size for high density packaging



#### FEATURES

- For use with hook or clip probes
- Stands less than .200" off P.C. board
- Self-supporting during wave soldering
- Mounts on .100" grid pattern
- Eight colors available



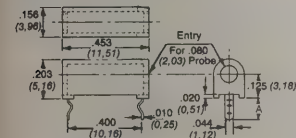
| Contact Material | Contact Finish    | JOLO Series  |
|------------------|-------------------|--------------|
| Phosphor Bronze  | .0002" electrotin | SPCJ-123-XX* |

\*XX=Insulator color code

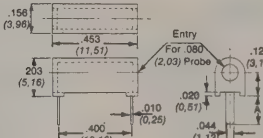
### Horizontal Test Jacks



#### .400" Ctrs/Snap-in style Single or Double Entry

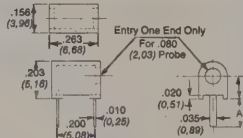


#### .400" Centers/ Std style Single or Double Entry

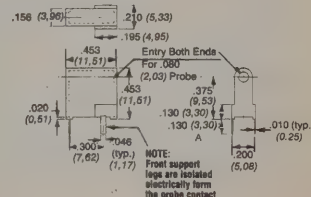


| Ctr Spacing | Entry  | Style   | A    | Contact Finish   | Contact Mat'l | JOLO Series |
|-------------|--------|---------|------|------------------|---------------|-------------|
| .400"       | Double | Std     | .150 | Gold or Tin      | BeCu          | PCJ-100     |
| .400"       | Double | Std     | .150 | Tin              | Phos Br       | PCJ-200     |
| .400"       | Double | Snap-in | .110 | Gold             | BeCu          | PCJ-124     |
| .400"       | Double | Std     | .110 | Gold or Tin-Lead | Phos Br       | PCJ-219     |
| .400"       | Single | Std     | .150 | Gold or Tin      | BeCu          | PCJ-300     |
| .400"       | Single | Std     | .150 | Tin              | Phos Br       | PCJ-400     |
| .400"       | Single | Snap-in | .110 | Gold             | BeCu          | PCJ-324     |
| .400"       | Single | Std     | .110 | Gold or Tin-Lead | Phos Br       | PCJ-419     |
| .200"       | Single | Std     | .150 | Gold or Solder   | BeCu          | PCJ-112     |
| Tri-Mount   | Double | Std     | .130 | Gold or Tin      | Phos Br       | PCJ-216     |

#### .200" Centers/ Std style Single Entry



#### Tri-Mount/Std style Double Entry



#### FEATURES

- For use with .080" probes
- Pedestal design enables flux removal
- Closed entry prevents insertion of probes greater than .085" diameter
- Snaps into .060" dia. holes (Snap-in style)
- Ten colors available

#### MATERIALS

Insulator: Nylon  
Contact: Beryllium Copper or Phosphor Bronze  
Support: Brass (Tri-Mount Only)

#### SPECIFICATIONS

Current Rating: 5 amps  
Operating voltage: 1500 V.R.M.S.  
Contact resistance: 5 milliohms max. at 5 amps  
Probe insertion force: 8 oz. min., 15 lbs. max.

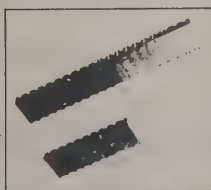
#### INSULATOR COLOR CODE

|     |       |     |        |
|-----|-------|-----|--------|
| -01 | white | -06 | orange |
| -02 | red   | -07 | blue   |
| -03 | black | -08 | yellow |
| -04 | brown | -09 | gray   |
| -05 | green | -10 | purple |

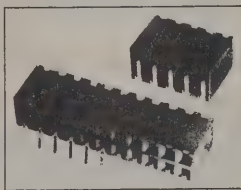
## .025 SQ. PIN HEADERS and SOCKETS (.100" ctrs.)



**Pin Headers**  
• mate with .025 sockets and shunts  
• straight / right angle



**Top Entry Sockets**  
• high density packaging  
• mate with .025 pin headers



**Horizontal Sockets**  
• mother-daughter board applications  
• mate with .025 pin headers

#### FEATURES

Pin headers and sockets available in single or dual row, 72 contacts max.

#### MATERIALS

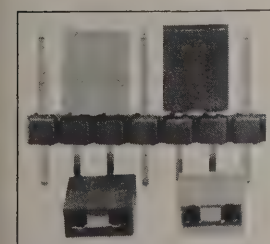
Contact: Phosphor bronze  
Insulator: Glass-filled polyester, UL 94V-0  
Plating: Tin-lead or selective gold/tin-lead

| Description | Style                        | JOLO Series |
|-------------|------------------------------|-------------|
| Pin header  | Single row, straight         | 1-PHS-977   |
| Pin header  | Single row, rt. angle        | 1-PHS-975   |
| Pin header  | Dual row, straight           | 1-PHD-976   |
| Pin header  | Dual row, rt. angle          | 1-PHD-974   |
| Socket      | Top entry, single row        | 1-TSS-982   |
| Socket      | Top entry, dual row          | 1-TSD-983   |
| Socket      | Horizontal entry, single row | 1-HSS-989   |
| Socket      | Horizontal entry, dual row   | 1-HSD-988   |

#### SPECIFICATIONS

Current rating: 3 amps  
Contact resistance: 15 milliohms maximum  
Insulation resistance: 1 x 10<sup>6</sup> megohms @ 500V dc  
Insertion force: 5.40 ozs. maximum, per contact (gold)  
Withdrawal force: 1.08 ozs. minimum, per contact (gold)

## JUMPER SOCKETS / SHUNTS (.100" ctrs.)



#### FEATURES

- hardware programming switches
- side and end stackable
- four styles (open, closed, w/handle, double)
- four colors (red, black, blue, gray)

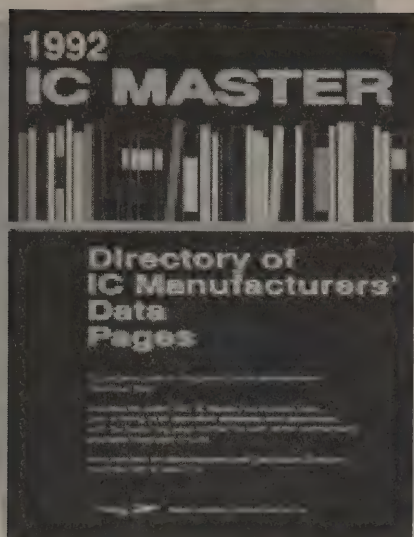
#### MATERIALS

Contact: Phosphor bronze  
Insulator: Glass-filled polyester, UL 94V-0  
Plating: Tin-lead or selective gold/nickel

| Style               | JOLO Series |
|---------------------|-------------|
| Open top            | 1-JSO-75    |
| Closed top          | 1-JSC-77    |
| Closed top w/handle | 1-JSH-79    |
| Double, open top    | 1-JSD-85    |

#### SPECIFICATIONS

Current rating: 2 amps  
Contact resistance: 20 milliohms maximum  
Insertion force: 14.4 ozs. nominal, per contact (gold)  
Withdrawal force: 3.3 ozs. nominal, per contact (gold)



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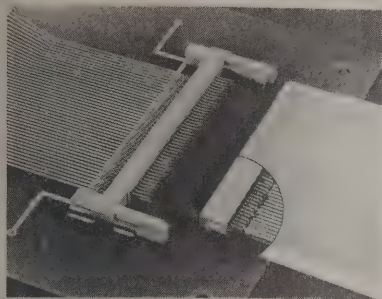
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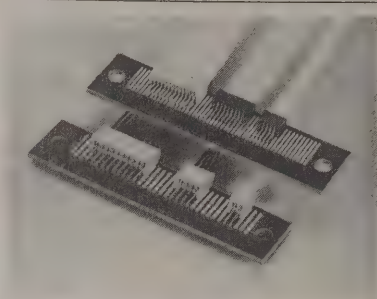
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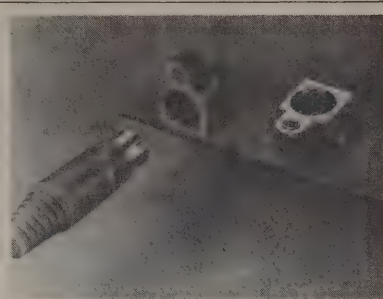


**NEW 88 CIRCUIT MEMORY CARD CONNECTOR**  
**Series ICM-D**, high density type DRAM memory card connector with 88 circuits (2 row) on 1.0 mm (.039") pitch. Side entry. SMT reflow or DIP type solder tails. Includes mating receptacle & header. Features low insertion force, polarization, and rugged construction. Conforms to PCMCIA/JEIDA DRAM Ver. 1.0. Contacts rated 0.5A, 50V AC/DC. Selective gold plating. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.



#### SMT MINIATURE CONNECTORS

Miniature SMT connectors for wire-to-board, board-to-board, flexible flat cable, flexible printed circuitry and memory card applications have a 1.0 mm, 1.25 mm, 1.50 mm, 2.0 mm pitch for optimum board density. Available on embossed tape, suitable for robotic placement. OK for vapor phase & low temperature solder. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.



#### NEW HALF-SIZE CIRCULAR DIN CONNECTOR

Ideal for high density instrument panels & A/V equipment, the new **Series MD** is a 1/2 size & EMI shielded. The plug has an exclusive one-piece crimp contact and ground clip which eliminates soldering. Rated at 1 amp AC/DC (50 V AC/DC) using #26 AWG wire. 4-9 circuits with AWG #30 to #24 wires. Low profile shielded/unshielded sockets (straight & right-angle) up to 9 circuits. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.



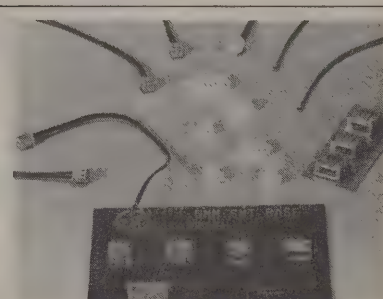
#### D-SUB CONNECTORS OFFER MORE CIRCUITS

**Type JK** D-subminiature connectors offer a 67% increase in circuits over standard D-subminiature housings. Conforms to MIL-C-24308. Plug connectors (15, 26, 44 positions) have brass or phosphor bronze crimp contacts (selectively gold or tin-plated) for #24 - #28 AWG wires. Housing insulator is glass-filled PBT rated UL94V-0. Rating is 1 amp AC/DC at 250 V AC/DC. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.

### J.S.T. CORPORATION

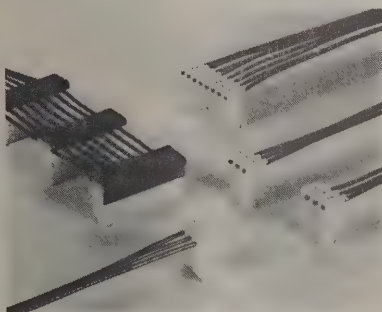


1200 Business Center Dr., #400  
 Mount Prospect, Illinois 60056  
 1-800-947-1110 Ext. 80  
 In IL: 708-803-3300 Ext. 80  
 FAX: 708-803-4918



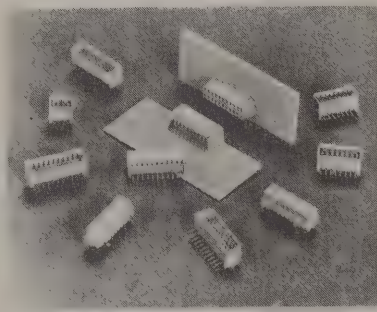
#### COMPACT IDC & CRIMP SMT CONNECTORS

Insulation displacement (**Type ZR**) and crimp style (**Type ZH**) connectors provide a size advantage with 1.5 mm (.059") pitch contacts (a 60% savings in width over conventional IDC connectors). They accommodate 2 thru 13 circuits with AWG #28 & #30 (ZR); AWG #26 - #32 (ZH) wires. Contacts are tin-plated phosphor bronze, rated at 50 Volts, 0.7 amps AC/DC. Insulation material is 94V-0 rated nylon. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.



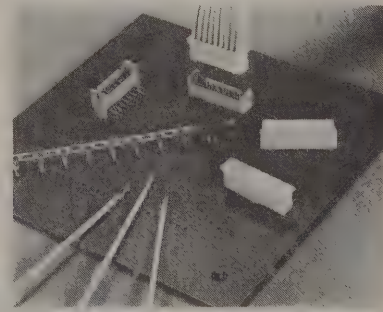
#### INSULATION DISPLACEMENT CONNECTOR

**Series VR** disconnectable, IDC type connectors may be daisy chained, or end connected to accommodate power circuits. Up to 15 circuits on 3.96 mm (.156) pitch. Color coded for wire sizes #26- #18 AWG. Contacts are brass, tin-plated, rated 7A AC/DC (250V AC/DC). Housings are Nylon 66, rated UL94V-2. Mating, friction lock headers with top or side entry are available. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.



#### BOARD-TO-BOARD CONNECTOR

**Type JED**, board-to-board, dual-in-line connector features 1.25 mm pitch for high density packaging. A housing lock assures positive mating. A polarized, shrouded header prevents misinsertion. Contacts are brass, tin-plated and rated at 1A AC/DC, 50V AC/DC. Housings are glass-filled nylon 66, rated UL94V-0. Both top & side entry types available. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.

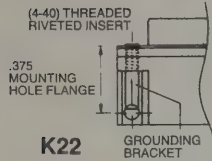
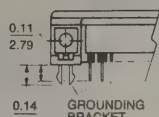
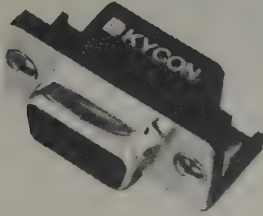


#### LOW PROFILE CRIMP TYPE CONNECTORS

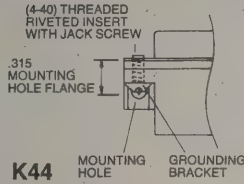
**Series PHD** connectors have a height of only 8.8 mm (.346") after mounting and a width of only 5.0 mm (.197"). They are ideally suited for high density wire-to-board interconnects. 10-32 dual row circuits. Rated 3 amps AC/DC (250V AC/DC). Chain contacts accommodate AWG #28 to #22 wires. Top & side entry shrouded headers are offered. Available with 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, & 32 positions. J.S.T. Corp., 800/947-1110 Ext. 80, 1200 Business Center Dr., #400, Mt. Prospect, IL 60056.

# KYCON CABLE AND CONNECTOR, Inc.

## KYCON RIGHT ANGLE D-SUBS



K22



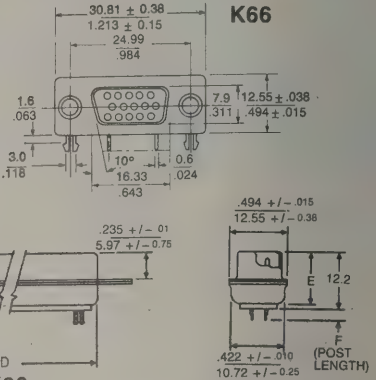
K44

### FEATURES

- 4-40 Riveted Threaded Inserts
- 4-40 Female Jackscrews available
- Grounding board locks (Other mounting options available)
- **Shell:** Steel material, tin finish
- **Insert:** PBT Thermoplastic 94V-0 Rated
- **Pin:** Brass
- **Socket:** Phosphor Bronze
- **Contact Finish:** Gold Flash
- — 15 Option: 15 U Gold
- — 30 Option: 30 U Gold
- **Temperature Rating:** —55 to +125°C

| Part Number | Gender | No. of Contacts | Foot Print |
|-------------|--------|-----------------|------------|
| K22-E9S-N   | FEMALE | 9               | .318       |
| K22-E9P-N   | MALE   | 9               | .318       |
| K22-A15S-N  | FEMALE | 15              | .318       |
| K22-A15P-N  | MALE   | 15              | .318       |
| K22-B25S-N  | FEMALE | 25              | .318       |
| K22-B25P-N  | MALE   | 25              | .318       |
| K22-C37S-N  | FEMALE | 37              | .318       |
| K22-C37P-N  | MALE   | 37              | .318       |
| K44-E9S-S   | FEMALE | 9               | .590       |
| K44-E9P-S   | MALE   | 9               | .590       |
| K44-A15S-S  | FEMALE | 15              | .590       |
| K44-A15P-S  | MALE   | 15              | .590       |
| K44-B25S-S  | FEMALE | 25              | .590       |
| K44-B25P-S  | MALE   | 25              | .590       |
| K44-C37S-S  | FEMALE | 37              | .590       |
| K44-C37P-S  | MALE   | 37              | .590       |

## KYCON HIGH DENSITY D-SUBS



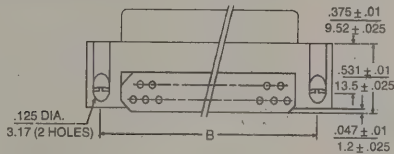
### FEATURES

- High Density D-Sub
- K66 Right angle
- 440 Riveted Threaded Inserts
- Grounding board locks
- 440 Female Jackscrews available
- K86 Vertical
- 440 Threaded bushings available
- **Shell:** Steel material, tin finish
- **Insert:** PBT Thermoplastic 94V-0 Rated
- **Pin:** Brass
- **Socket:** Phosphor Bronze
- **Contact Finish:** Gold Flash
- — 15 Option: 15 U Gold
- — 30 Option: 30 U Gold
- **Temperature Rating:** —55 to +125°C

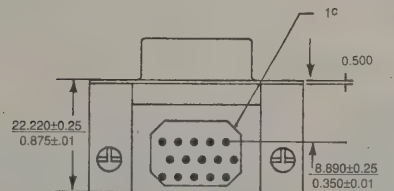
| Part Number | Description | Gender | No. of Contacts |
|-------------|-------------|--------|-----------------|
| K66-E15S-N  | RIGHT ANGLE | FEMALE | 15              |
| K66-E15P-N  | RIGHT ANGLE | MALE   | 15              |
| K66-A26S-N  | RIGHT ANGLE | FEMALE | 26              |
| K66-A26P-N  | RIGHT ANGLE | MALE   | 26              |
| K66-B44S-N  | RIGHT ANGLE | FEMALE | 44              |
| K66-C62S-N  | RIGHT ANGLE | FEMALE | 62              |
| K86-ED-15S  | VERTICAL    | FEMALE | 15              |
| K86-ED-15P  | VERTICAL    | MALE   | 15              |
| K86-AD-26S  | VERTICAL    | FEMALE | 26              |
| K86-AD-26P  | VERTICAL    | MALE   | 26              |
| K86-BD-44S  | VERTICAL    | FEMALE | 44              |
| K86-BD-44P  | VERTICAL    | MALE   | 44              |
| K86-CD-62S  | VERTICAL    | FEMALE | 62              |
| K86-CD-62P  | VERTICAL    | MALE   | 62              |

## KYCON FERRITE D-SUBS

KF22



KF66



### FEATURES

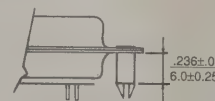
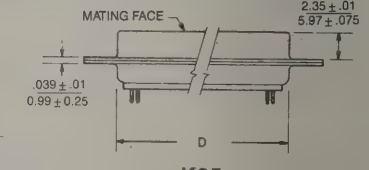
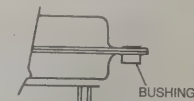
- For High Frequency EM/RFI Attenuation
- 4-40 Riveted Threaded Inserts
- 4-40 Female Jackscrews available
- Grounding board locks (Other mounting options available)
- **Shell:** Steel material, tin finish
- **Insert:** PBT Thermoplastic 94V-0 Rated
- **Pin:** Brass
- **Socket:** Phosphor Bronze
- **Contact Finish:** Gold Flash
- — 15 Option: 15 U Gold
- — 30 Option: 30 U Gold
- **Temperature Rating:** —55 to +125°C

| Part Number | Description            | Foot print |
|-------------|------------------------|------------|
| KF22-E9S-N  | D9 FEMALE              | .318       |
| KF22-E9P-N  | D9 MALE                | .318       |
| KF22-A15S-N | D15 FEMALE             | .318       |
| KF22-A15P-N | D15 MALE               | .318       |
| KF22-B25S-N | D25 FEMALE             | .318       |
| KF22-B25P-N | D25 MALE               | .318       |
| KF22-C37S-N | D37 FEMALE             | .318       |
| KF22-C37P-N | D37 MALE               | .318       |
| KF66-E15S-N | HIGH DENSITY 15 FEMALE | .350       |

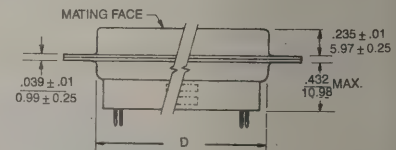
### FERRITE SPECIFICATIONS

| Type | Item    | Measured Value | Test Frequency |
|------|---------|----------------|----------------|
| KF22 | Z (ohm) | 20 Min         | 30 MHz         |
|      | Z (ohm) | 30 Min         | 50 MHz         |
|      | Z (ohm) | 50 Min         | 100 MHz        |
| KF66 | Z (ohm) | 17 Min         | 30 MHz         |
|      | Z (ohm) | 25 Min         | 50 MHz         |
|      | Z (ohm) | 40 Min         | 100 MHz        |

## KYCON VERTICAL D-SUBS

OPTION BR  
WITH RIVETED THREADED  
(4.40) BRACKETOPTION K  
WITH RIVETED THREADED  
(4.40) BUSHING

K85



K88

### FEATURES

- K85-Precision formed contacts
- K88-Precision machined contacts
- 4-40 Riveted bushing available
- **Shell:** Steel material, tin finish
- **Insert:** PBT Thermoplastic 94V-0 Rated
- **Pin:** Brass
- **Socket:** Phosphor Bronze
- **Contact Finish:** Gold Flash
- — 15 Option: 15 U Gold
- — 30 Option: 30 U Gold
- **Temperature Rating:** —55 to +125°C

| Part Number | No. of Contacts | Gender | Profile |
|-------------|-----------------|--------|---------|
| K85-ED-9S   | 9               | FEMALE | LOW     |
| K85-ED-9P   | 9               | MALE   | LOW     |
| K85-AD-15S  | 15              | FEMALE | LOW     |
| K85-AD-15P  | 15              | MALE   | LOW     |
| K85-BD-25S  | 25              | FEMALE | LOW     |
| K85-BD-25P  | 25              | MALE   | LOW     |
| K85-CD-37S  | 37              | FEMALE | LOW     |
| K85-CD-37P  | 37              | MALE   | LOW     |
| K88-EC-9S   | 9               | FEMALE | HIGH    |
| K88-EC-9P   | 9               | MALE   | HIGH    |
| K88-AC-15S  | 15              | FEMALE | HIGH    |
| K88-AC-15P  | 15              | MALE   | HIGH    |
| K88-BC-25S  | 25              | FEMALE | HIGH    |
| K88-BC-25P  | 25              | MALE   | HIGH    |
| K88-CC-37S  | 37              | FEMALE | HIGH    |
| K88-CC-37P  | 37              | MALE   | HIGH    |

NOTE: IDC D-Subs available in plastic or metal

FOR CUSTOM MOLDED CABLES LOOK FOR KYCON IN THE CABLE SECTION.



KYCON

1810 Little Orchard Street, San Jose, CA 95125 (408) 295-1110 FAX: (408) 295-8054 Outside CA: (800) 544-6941

C-1364

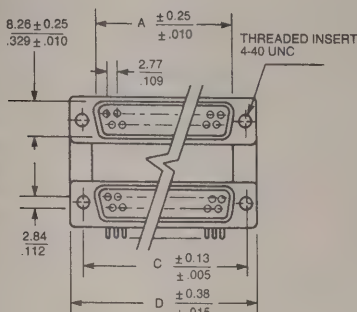
For manufacturers' sales offices, see yellow pages

EEM 1993



**KYCON CABLE AND CONNECTOR, Inc.**

**KYCON STACKED D-SUBS**

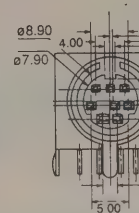
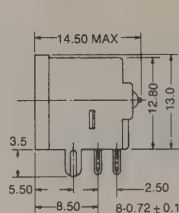


- FEATURES**
- 4-40 Riveted Threaded Inserts
  - 4-40 Female Jackscrews available
  - Grounding board locks (Other mounting options available)
  - **Shell:** Steel material, tin finish
  - **Insert:** PBT Thermoplastic 94V-0 Rated
  - **Pin:** Brass
  - **Socket:** Phosphor Bronze
  - **Contact Finish:** Gold Flash
  - **-15 Option:** 15 U Gold
  - **-30 Option:** 30 U Gold
  - **Temperature Rating:** -55 to +125°C

| Part Number    | Shell Size | Ctr. to Ctr. | Mounting    | X/X = Gender Combin. |
|----------------|------------|--------------|-------------|----------------------|
| K42-E9X/X-A    | 9          | .9           | THRU HOLES  | P/P-MALE             |
| K42-E9X/X-A4N  | 9          | .9           | BOARD LOCKS | OVER MALE            |
| K42-E9X/X-B    | 9          | .75          | THRU HOLES  |                      |
| K42-E9X/X-B4N  | 9          | .75          | BOARD LOCKS |                      |
| K42-E9X/X-C    | 9          | .625         | THRU HOLES  | P/S-                 |
| K42-E9X/X-C4N  | 9          | .625         | BOARD LOCKS | MALE OVER FEMALE     |
| K42-A15X/X-A   | 15         | .9           | THRU HOLES  |                      |
| K42-A15X/X-A4N | 15         | .9           | BOARD LOCKS |                      |
| K42-A15X/X-B   | 15         | .75          | THRU HOLES  |                      |
| K42-A15X/X-B4N | 15         | .75          | BOARD LOCKS | S/S                  |
| K42-A15X/X-C   | 15         | .625         | THRU HOLES  | FEMALE OVER FEMALE   |
| K42-A15X/X-C4N | 15         | .625         | BOARD LOCKS |                      |
| K42-B25X/X-A   | 25         | .9           | THRU HOLES  |                      |
| K42-B25X/X-A4N | 25         | .9           | BOARD LOCKS |                      |
| K42-B25X/X-B   | 25         | .75          | THRU HOLES  |                      |
| K42-B25X/X-B4N | 25         | .75          | BOARD LOCKS |                      |
| K42-B25X/X-C   | 25         | .625         | THRU HOLES  |                      |
| K42-B25X/X-C4N | 25         | .625         | BOARD LOCKS |                      |

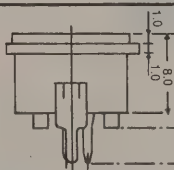
**KYCON MINI-DIN CONNECTORS**

**RIGHT ANGLE MINI-DIN SOCKETS**



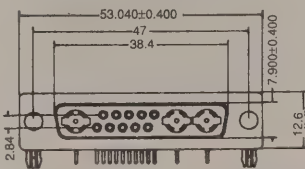
| Part Number | Shield | No. of Contacts |
|-------------|--------|-----------------|
| KMD-3S-N    | NONE   | 3               |
| KMD-3S-S    | SIDE   | 3               |
| KMD-4S-N    | NONE   | 4               |
| KMD-4S-S    | SIDE   | 4               |
| KMD-5S-N    | NONE   | 5               |
| KMD-5S-S    | SIDE   | 5               |
| KMD-6S-N    | NONE   | 6               |
| KMD-6S-S    | SIDE   | 6               |
| KMD-6S-FS   | FRONT  | 6               |
| KMD-6S-B    | BACK   | 6               |
| KMD-7S-N    | NONE   | 7               |
| KMD-7S-S    | SIDE   | 7               |
| KMD-8S-N    | NONE   | 8               |
| KMD-8S-S    | SIDE   | 8               |
| KMD-8S-FS   | FRONT  | 8               |
| KMD-8S-B    | BACK   | 8               |
| KMD-9S-N    | NONE   | 9               |
| KMD-9S-S    | SIDE   | 9               |

**VERTICAL MINI-DIN SOCKETS**



| Part Number | No. of Contacts |
|-------------|-----------------|
| KMDV-3S-N   | 3               |
| KMDV-4S-N   | 4               |
| KMDV-5S-N   | 5               |
| KMDV-6S-N   | 6               |
| KMDV-7S-N   | 7               |
| KMDV-8S-N   | 8               |

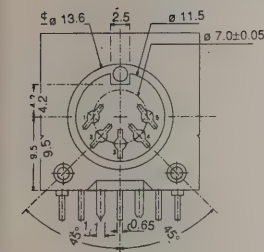
**KYCON 13W3 CONNECTOR**



- FEATURES**
- 13W3 Coax/D-Sub Combination Connector
  - **Body:** UL94V-0 Rated 30% Gold Filled Polyester
  - **10 Signal Contacts:** 15 U Inch Gold Plated
  - **3 Inner Coaxial Contacts:** 50 U Inch Gold Plated
  - **75 Ohm Impedance**

| Part Number  | Description                                   |
|--------------|-----------------------------------------------|
| K100-J13W3-N | RIGHT ANGLE FEMALE WITH GROUNDING BOARD LOCKS |

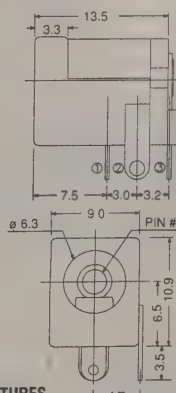
**KYCON DIN CONNECTORS**



- FEATURES**
- 5 Pin Circular DIN Socket
  - **Body:** PBT, UL 94V-0
  - **Contact:** Brass, silver plated
  - **Shield:** Iron, nickel plated
  - **Insertion Force:** 5KG-7.0KG
  - **Extraction Force:** 4KG-7.0KG
  - **Rated Voltage:** 12V DC, .02A-1.0A
  - **Temperature Rating:** -25°C to 100°C

| Part Number | Description               |
|-------------|---------------------------|
| KCD-5S-N    | NON-SHIELDED              |
| KCD-5S-S    | SHIELDED, 10 MM SPACING   |
| KCD-5S-S2   | SHIELDED, 5 MM SPACING    |
| KCD-5S-S-PS | WITH SPRINGY FRONT SHIELD |

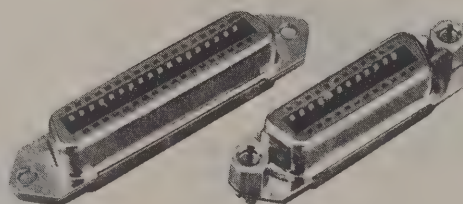
**KYCON POWER JACKS**



- FEATURES**
- **Body:** UL 94V-0-Rated Material
  - **Center Pin:** Brass
  - **Between Terminal Resistance:** 60 miliohm
  - **Plug to Sleeve Resistance:** 100 miliohm
  - **Operating Rating:** -25°C to 70°C

| Part Number | Inner PIN Dia. | Ht.     | Length  |
|-------------|----------------|---------|---------|
| KLD-0202-A  | 2.0 MM         | 10.9 MM | 13.5 MM |
| KLD-0202-B  | 2.5 MM         | 10.9 MM | 13.5 MM |
| KLD-0201-A  | 1.0 MM         | 7.4 MM  | 11.4 MM |
| KLD-0201-B  | 1.3 MM         | 7.4 MM  | 11.4 MM |

**KYCON MINIATURE RIBBON CONNECTORS**

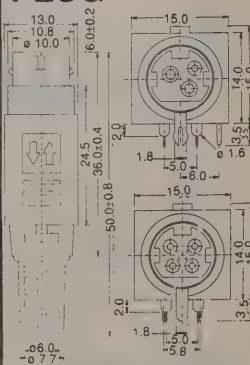


- FEATURES**
- **Body:** PBT Thermo-plastic, 30% glass filled
  - **Shell:** Steel, nickel finish
  - **Contact:** Phosphor Bronze
  - **Plating:** Gold Flash
  - **Contact Current Rating:** 5 Amps
  - **Temperature Rating:** -55 to +105°C
  - **Board locks available**

**NOTE:** IDC Ribbon Connectors available in plastic or metal

| Part Number      | No. of Contacts | Gender | Description                     |
|------------------|-----------------|--------|---------------------------------|
| 37-92240-12      | 24              | FEMALE | RIGHT ANGLE, SPRING LATCH       |
| 37-92360-12      | 36              | FEMALE | RIGHT ANGLE, SPRING LATCH       |
| 37-92500-12      | 50              | FEMALE | RIGHT ANGLE, SPRING LATCH       |
| 37-92240-12 -XJM | 24              | FEMALE | RIGHT ANGLE, METRIC JACK SCREWS |
| 37-92360-12 -XJ  | 36              | FEMALE | RIGHT ANGLE, 4-40 JACK SCREWS   |
| 37-92500-12 -XJ  | 50              | FEMALE | RIGHT ANGLE, 4-40 JACK SCREWS   |
| 37-40140-13      | 14              | FEMALE | VERTICAL, SPRING LATCH          |
| 37-40240-14      | 24              | FEMALE | VERTICAL, SPRING LATCH          |
| 37-40360-24      | 36              | FEMALE | VERTICAL, SPRING LATCH          |
| 37-40500-24      | 36              | FEMALE | VERTICAL, SPRING LATCH          |
| 37-20140-11      | 14              | FEMALE | VERTICAL                        |
| 37-20240-23      | 24              | FEMALE | VERTICAL                        |
| 37-20360-19      | 36              | FEMALE | VERTICAL                        |
| 37-20500-85      | 50              | FEMALE | VERTICAL                        |
| 37-10140-10      | 14              | MALE   | VERTICAL                        |
| 37-10240-12      | 24              | MALE   | VERTICAL                        |
| 37-10360-25      | 36              | MALE   | VERTICAL                        |
| 37-10500-73      | 50              | MALE   | VERTICAL                        |

**KYCON POWER JACK AND PLUG**



- **3 and 4 position jack and plug that snap and lock**
- **Body:** UL 94V-0 Rated
- **3 Position Current Rating:**
  - Pin 1: 1 AMP at DC 20V
  - Pin 2: 7.5 AMPS at DC 20V
  - Pin 3: 7.5 AMPS at DC 20V
- **4 Position Current Rating:** All Pins 7.5 AMPS at DC 20V

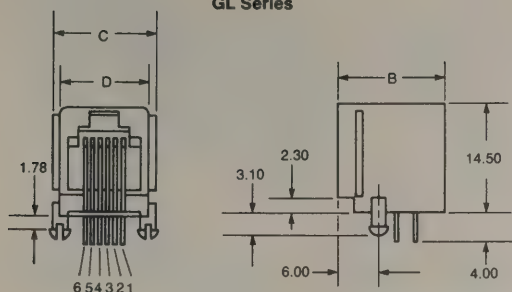
| Part Number | Description        |
|-------------|--------------------|
| KPJ-3S      | RIGHT ANGLE SOCKET |
| KPP-3P      | ASSEMBLY TYPE PLUG |
| KPJ-4S      | RIGHT ANGLE SOCKET |
| KPP-4P      | ASSEMBLY TYPE PLUG |

**FOR CUSTOM MOLDED CABLES LOOK FOR KYCON IN THE CABLE SECTION.**

# KYCON CABLE AND CONNECTOR, Inc.

## KYCON LOW PROFILE MOD JACKS

GL Series



DIMENSIONS IN MM

## FEATURES

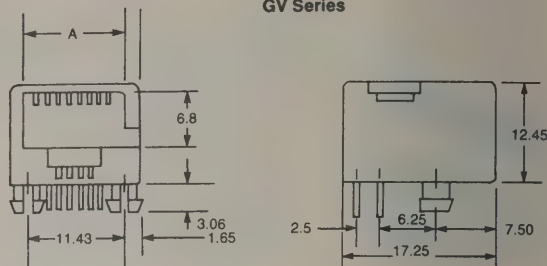


- Low Profile Design
- UL Recognized E134345
- -50 plating option will comply with FCC requirements under #47 C.F.R., Part 68 Subpart F. (50 U Gold)
- **Housing:** PBT UL94V-0 Rated material
- **Contact:** Phosphor Bronze
- **Plating:** -15 U Gold standard  
-50 U Gold available
- **Insulation Resistance:** 500 megohms min
- **Contact Resistance:** 20 milliohms max.
- **Current Rating:** 1.5 Amps

| Part Number | No. Pos. | No. Con. | Ears | B in mm | C in mm | D in mm |
|-------------|----------|----------|------|---------|---------|---------|
| GL-A-44     | 4        | 4        | YES  | 15.0    | 14.2    | 12.2    |
| GL-N-44     | 4        | 4        | NO   | 15.0    | 12.2    | 12.2    |
| GL-N-44M    | 4        | 4        | NO   | 13.0    | 10.0    | 10.0    |
| GL-A-64     | 6        | 4        | YES  | 15.0    | 14.2    | 12.2    |
| GL-N-64     | 6        | 4        | NO   | 15.0    | 12.2    | 12.2    |
| GL-N-64M    | 6        | 4        | NO   | 13.0    | 12.2    | 12.2    |
| GL-A-66     | 6        | 6        | YES  | 15.0    | 14.2    | 12.2    |
| GL-N-66     | 6        | 6        | NO   | 15.0    | 12.2    | 12.2    |
| GL-N-66M    | 6        | 6        | NO   | 13.0    | 12.2    | 12.2    |
| GL-A-88     | 8        | 8        | YES  | 15.0    | 18.0    | 16.0    |
| GL-N-88M    | 8        | 8        | NO   | 13.0    | 15.0    | 15.0    |
| GL-A-1010   | 10       | 10       | YES  | 15.0    | 18.0    | 16.0    |

## KYCON LOW PROFILE MOD JACKS

GV Series



DIMENSIONS IN MM

## FEATURES

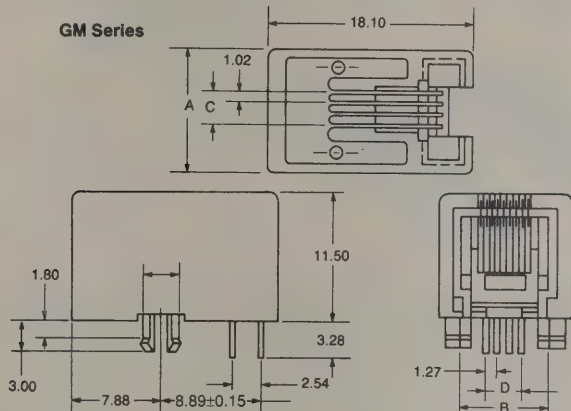


- Low Profile design
- UL Recognized E134345
- -50 plating option will comply with FCC requirements under #47 C.F.R., Part 68 Subpart F. (50 U Gold)
- **Housing:** PBT UL94V-0 Rated material
- **Contact:** Phosphor Bronze
- **Plating:** -15 U Gold standard  
-50 U Gold available
- **Insulation Resistance:** 500 megohms min.
- **Contact Resistance:** 20 milliohms max.
- **Current Rating:** 1.5 Amps

| Part Number | No. of Positions | No. of Contacts | A in mm |
|-------------|------------------|-----------------|---------|
| GV-N-44     | 4                | 4               | 7.8     |
| GV-N-64     | 6                | 4               | 9.8     |
| GV-N-66     | 6                | 6               | 9.8     |
| GV-N-88     | 8                | 6               | 11.8    |
| GV-N-88     | 8                | 8               | 11.8    |
| GV-N-88K    | 8 KEYED          | 8               | 11.8    |
| GV-N-88K    | 8 KEYED          | 8               | 11.8    |
| GV-N-1010   | 10               | 10              | 11.8    |
| GV-S-88     | 8 SHIELDED       | 8               | 11.8    |

## KYCON LOW PROFILE MOD JACKS

GM Series



DIMENSIONS IN MM

## FEATURES

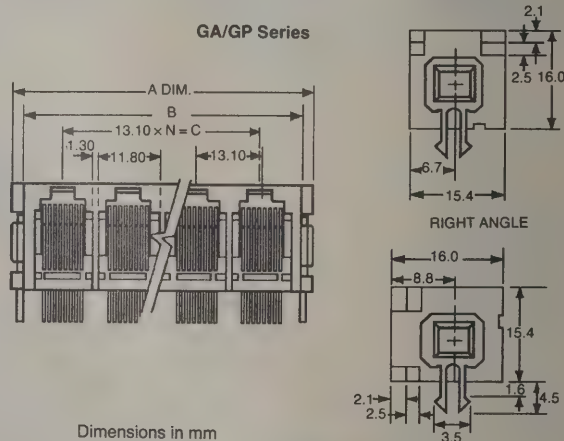


- Low Profile design
- UL Recognized E134345
- -50 plating option will comply with FCC requirements under #47 C.F.R., Part 68 Subpart F. (50 U Gold)
- **Housing:** PBT UL94V-0 Rated material
- **Contact:** Phosphor Bronze
- **Plating:** -15 U Gold standard  
-50 U Gold available
- **Insulation Resistance:** 500 megohms min.
- **Contact Resistance:** 20 milliohms max.
- **Current Rating:** 1.5 Amps

| Part Number | No. Pos.        | No. Con. | A in mm | B in mm | D in mm |
|-------------|-----------------|----------|---------|---------|---------|
| GM-N-44     | 4               | 4        | 11.18   | 7.62    | 3.81    |
| GM-N-64     | 6               | 4        | 13.20   | 10.16   | 3.81    |
| GM-N-66     | 6               | 6        | 13.20   | 10.16   | 6.35    |
| GM-N-88     | 8               | 6        | 15.24   | 11.43   | 6.35    |
| GM-N-88     | 8               | 8        | 15.24   | 11.43   | 8.89    |
| GM-S-64     | 6 SHIELDED      | 4        | 13.20   | 10.16   | 3.81    |
| GM-S-66     | 6 SHIELDED      | 4        | 13.20   | 10.16   | 6.35    |
| GM-SMT-64   | 6 SURFACE MOUNT | 4        | 13.20   | 10.16   | 3.81    |
| GM-SMT-66   | 6 SURFACE MOUNT | 6        | 13.20   | 10.16   | 6.35    |

## KYCON GANG JACKS

GA/GP Series



Dimensions in mm

## FEATURES



- Available right angle or top entry
- Metal locking brackets
- UL Recognized E134345
- -50 plating option will comply with FCC requirements under #47 C.F.R., Part 68 Subpart F. (50 U Gold)
- **Housing:** 25% glass-filled nylon 66
- UL 94V-0 Rated
- **Contact:** Phosphor Bronze
- **Plating:** -15 U Gold standard  
-50 U Gold available
- **Current Rating:** 1.5 Amps

| Part Number | A     | Description   |
|-------------|-------|---------------|
| GP-2-8X     | 32.30 | PERPENDICULAR |
| GP-3-8X     | 45.30 | PERPENDICULAR |
| GP-4-8X     | 58.50 | PERPENDICULAR |
| GA-2-8X     | 32.30 | RIGHT ANGLE   |
| GA-3-8X     | 45.30 | RIGHT ANGLE   |
| GA-4-8X     | 58.50 | RIGHT ANGLE   |
| GA-2-6X     | 28.20 | RIGHT ANGLE   |
| GA-3-6X     | 39.20 | RIGHT ANGLE   |
| GA-4-6X     | 50.20 | RIGHT ANGLE   |
| GA-5-6X     | 61.20 | RIGHT ANGLE   |
| GA-6-6X     | 72.20 | RIGHT ANGLE   |
| GA-7-6X     | 83.20 | RIGHT ANGLE   |
| GA-8-6X     | 94.20 | RIGHT ANGLE   |
| GP-2-6X     | 28.20 | PERPENDICULAR |
| GP-3-6X     | 39.20 | PERPENDICULAR |
| GP-4-6X     | 50.20 | PERPENDICULAR |
| GP-5-6X     | 61.20 | PERPENDICULAR |
| GP-6-6X     | 72.20 | PERPENDICULAR |
| GP-7-6X     | 83.20 | PERPENDICULAR |
| GP-8-6X     | 94.20 | PERPENDICULAR |

FOR CUSTOM MOLDED CABLES LOOK FOR KYCON IN THE CABLE SECTION.

KYCON 1810 Little Orchard Street, San Jose, CA 95125 (408) 295-1110 FAX: (408) 295-8054 Outside CA: (800) 544-6941



 KYCON CABLE AND CONNECTOR, Inc.

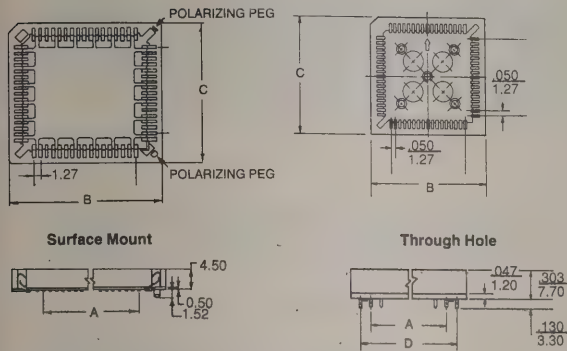
KYCON PLCC SOCKETS



KYCON CARD EDGE CONNECTORS

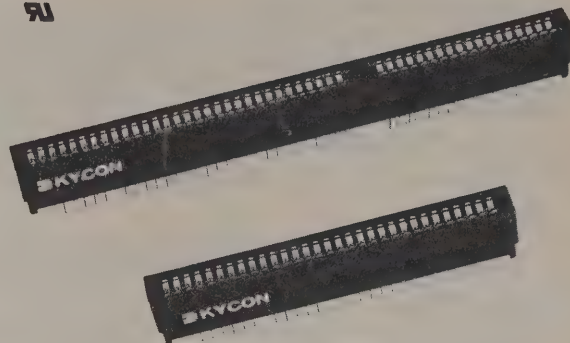


DIMENSIONS



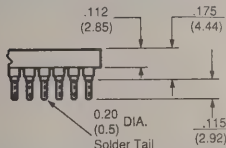
| Part Number | No. of Contacts | Material | B     | C     | Contact Type  | Temp. Rating |
|-------------|-----------------|----------|-------|-------|---------------|--------------|
| P-20LCC     | 20              | PBT      | 15.50 | 15.50 | THROUGH HOLE  | -55°-105°C   |
| P-28LCC     | 28              | PBT      | 18.20 | 18.20 | THROUGH HOLE  | -55°-105°C   |
| P-32LCC     | 32              | PBT      | 18.00 | 20.50 | THROUGH HOLE  | -55°-105°C   |
| P-44LCC     | 44              | PBT      | 23.50 | 23.50 | THROUGH HOLE  | -55°-105°C   |
| P-52LCC     | 52              | PBT      | 25.90 | 25.90 | THROUGH HOLE  | -55°-105°C   |
| P-68LCC     | 68              | PBT      | 32.00 | 32.00 | THROUGH HOLE  | -55°-105°C   |
| P-84LCC     | 84              | PBT      | 37.00 | 37.00 | THROUGH HOLE  | -55°-105°C   |
| P-68LCC-1   | 68              | PPS      | 30.50 | 30.50 | THROUGH HOLE  | -55°-125°C   |
| P-84LCC-1   | 84              | PPS      | 35.50 | 35.50 | THROUGH HOLE  | -55°-125°C   |
| SMP-20LCC-P | 20              | PPS      | 15.78 | 15.78 | SURFACE MOUNT | -55°-125°C   |
| SMP-28LCC-P | 28              | PPS      | 18.32 | 18.32 | SURFACE MOUNT | -55°-125°C   |
| SMP-32LCC-P | 32              | PPS      | 18.32 | 20.86 | SURFACE MOUNT | -55°-125°C   |
| SMP-44LCC-P | 44              | PPS      | 23.40 | 23.40 | SURFACE MOUNT | -55°-125°C   |
| SMP-52LCC-P | 52              | PPS      | 25.94 | 25.94 | SURFACE MOUNT | -55°-125°C   |
| SMP-68LCC-P | 68              | PPS      | 31.02 | 31.02 | SURFACE MOUNT | -55°-125°C   |
| SMP-84LCC-P | 84              | PPS      | 36.10 | 36.10 | SURFACE MOUNT | -55°-125°C   |

Also available without polarizing peg.  
SMT Type now available in nylon 6T-230°C for 15 sec.

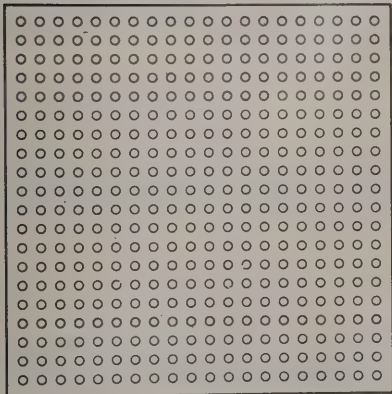


| Part Number | Contact Spacing | Body Material | Contact Material | Motherboard  | Mounting     |
|-------------|-----------------|---------------|------------------|--------------|--------------|
| KSL36-BR    | .1"             | PBT           | COPPER ALLOY     | XT, AT       | BOARD LOCKS  |
| KSL62-BR    | .1"             | PBT           | COPPER ALLOY     | AT, XT       | BOARD LOCKS  |
| KSL96-BR    | .1"             | PBT           | COPPER ALLOY     | 486, 386, AT | BOARD LOCKS  |
| KEISA-188-G | .05"            | PPS           | PHOSH. BRONZE    | EISA         | PLASTIC POST |
| KHDS-112-G  | .05"            | PPS           | PHOSH. BRONZE    | MICROCHANNEL | PLASTIC POST |
| KHDS-132-G  | .05"            | PPS           | PHOSH. BRONZE    | MICROCHANNEL | PLASTIC POST |
| KHDS-182-G  | .05"            | PPS           | PHOSH. BRONZE    | MICROCHANNEL | PLASTIC POST |
| KSL80-A     | .1"             | PBT           | PHOSH. BRONZE    | X            | X            |
| KSL86-A     | .1"             | PBT           | PHOS. BRONZE     | X            | X            |

KYCON PGA SOCKETS



PGA GRID PATTERNS  
CUSTOM  
PATTERN  
(DESIGN YOUR OWN)



NOTE: 100 (2.54) GRID

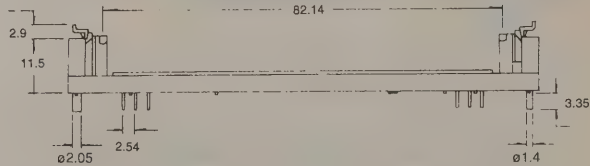
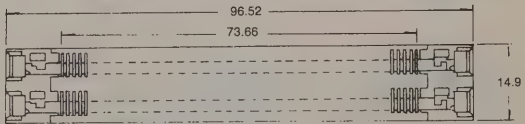
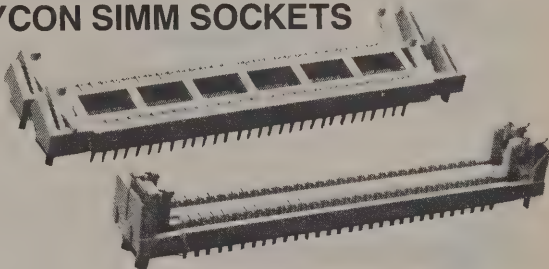
FEATURES

- Precision four finger contacts
- Body: Polyester GV, VO, UL 94V0-Rated
- Contact Springs: Beryllium Copper
- Surface: Gold plating over nickel
- Contact Sleeve: Screw machined brass
- Low Insertion Force
- Current Rating: 3 Amps

| Part Number   | No. of Contacts | Grid Size |
|---------------|-----------------|-----------|
| KPGA-68-B-11  | 68              | 11        |
| KPGA-114-B-13 | 114             | 13        |
| KPGA-121-B-13 | 121             | 13        |
| KPGA-132-B-14 | 132             | 14        |
| KPGA-144-B-15 | 144             | 15        |
| KPGA-168-B-17 | 168             | 17        |
| KPGA-169-B-17 | 169             | 17        |

MANY GRID PATTERNS AVAILABLE

KYCON SIMM SOCKETS



FEATURES

- Flexible Nylon Hook: will not break after infra red soldering no tool needed for removal of SIMM module
- Body: UL 94V-0 Rated material
- Contacts: Phosphor Bronze
- Recommended Modular P.C.B. Thickness: 1.15 MM to 1.40 MM

| Part Number  | Contact Type | Positions | Style    | Material | Temp. Rating |
|--------------|--------------|-----------|----------|----------|--------------|
| KS1000L30V-1 | 0 INSERTION  | 1×30      | VERTICAL | LCP      | -55 TO +125  |
| KS1000L30V-2 | 0 INSERTION  | 2×30      | VERTICAL | LCP      | -55 TO +125  |
| KS1200L30A-1 | 0 INSERTION  | 1×30      | 26 DEG   | LCP      | -55 TO +125  |
| KS1200L30A-2 | 0 INSERTION  | 2×30      | 26 DEG   | LCP      | -55 TO +125  |

FOR CUSTOM MOLDED CABLES LOOK FOR KYCON IN THE CABLE SECTION.

# Introducing LEMO Circular Connectors

## WHY LEMO CONNECTORS?

If your application requires high reliability, high quality and consistency of a signal and/or power transmission you should be using LEMO connectors. LEMO connectors are specified for critical applications such as medical life support and monitoring systems, test and measurement instruments, high speed process control equipment, military and aerospace control and simulation systems, secured communication devices and nuclear power facilities, to mention only a few of the environments where you will find LEMO connectors.

## THE QUICK-LOK™ FEATURE ADVANTAGES

### Speed

- Connectors engage simply and quickly by pushing them axially into the mated receptacle; and disengage by pulling on the outer shell to remove the plug easily.

### Space Savings

- No need to twist or turn a locking ring means space savings since only finger clearance on two sides is needed to engage and disengage connectors.

### Reliability

- Connections and disconnections are quick and foolproof since when lock is engaged, connection is assured.

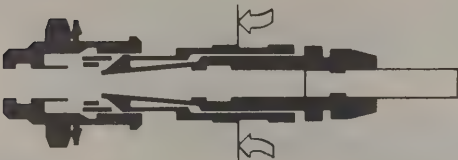
### Ruggedness

- Locking mechanism is protected by rugged outer shell. This virtually eliminates accidental disconnections, damage to locking mechanism, cable and contacts.

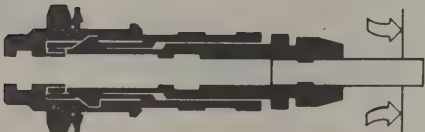
## LEMO'S QUICK-LOK™ FEATURE



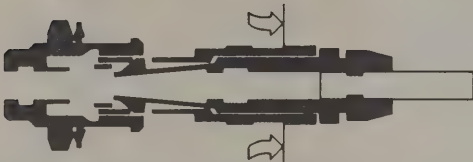
The self-latching system assures the connector to be mated by simply pushing the plug axially into the receptacle.



Connection is made simply by pushing plug directly into receptacle. An audible click is heard assuring lock is engaged.



Connection remains intact resisting stresses of pulling on the cable and any other component part except the outer shell.



When required, the connection is disengaged by a single straight axial pull on the outer shell.

## CONSTRUCTION DESIGN

- **Aesthetic functional design** to complement the most advanced instruments, components and systems.
- **Constructed of precision machined brass** with a hard satin chrome plated finish assures rugged housing for maximum safety and uniform mating.
- **Gold plated contacts** for best conduction possible.
- **Crafted metal collet type strain relief** securely grips any round cable around its circumference preventing accidental damage to the connection if cable is stressed.
- **Available bend relief** adds additional cable protection and possible color coding.

P.O. Box 11488, Santa Rosa, CA 95406  
(707) 578-8811, FAX 707/578-0869



**1-800-444-5366**

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# LEMO's Family of Quality Connectors

## GUIDELINES FOR CONNECTOR SPECIFIERS

LEMO will make your connector specifying easy. There is no need to learn the LEMO part numbering system. All you have to do is identify the 6 variables below, give us a call at (800)444-5366 and we will be happy to find the right connector for your application. Just tell us:

- 1) Shell Style (see next page)
- 2) # of contacts (pages 4 to 9)
- 3) AWG (pages 4 to 9)
- 4) Operating voltage & current (pages 4 to 9)
- 5) Cable jacket outer diameter (for cable collet)
- 6) Any environmental conditions

## The LEMO Choices - Table of Contents

### Keyed Connectors

Pages 4 to 10

#### Mechanical Keying - B Series

- Contacts from 2-64 pins
- Wire gauges from 10-30 AWG
- Alignment key on shell
- Polarized keying system
- Contact termination in crimp/solder/printed circuit
- Vacuum sealed and watertight shells available

#### Hermaphroditic Keying - S Series

- Contacts from 2-106 pins
- Wire gauges from 4-26 AWG
- Hermaphroditic inserts
- Contact terminations in solder or printed circuit
- Vacuum sealed and watertight shells available

### Environmentally Sealed

#### Keyed Connectors

Pages 4 to 10

#### Mechanical Keying - K Series

- Contacts from 2-64 pins
- Wire gauges from 10-30 AWG
- Alignment key on shell
- Polarized keying system
- Contact termination in crimp/solder/printed circuit

#### Hermaphroditic Keying - E Series

- Contacts from 2-106 pins
- Wire gauges from 4-26 AWG
- Hermaphroditic inserts
- Contact terminations in solder or printed circuit
- Vacuum sealed and watertight shells available

### Coaxial & Triaxial Connectors

Pages 11 to 12

- NIM-CAMAC - 50Ω Connectors
- 01 Minax - LEMO's smallest 50Ω coaxial connectors
- 0A Telecommunications Series 50 & 75Ω
- Video Triax Connectors for TV Camera Applications

### Plastic Connectors

Page 12

- PSU (Polysulfone) Autoclaveable Shell Designs
- Redel Miniatures from 2-9 contacts, 20-28 AWG
- 3P Series from 6-18 contacts and mixed, 22-24 AWG

### Underwater Connectors - 03 Series

Page 13

- Available in 50Ω coaxial or 2-4 pin contact arrangements
- Measures less than 1 inch long with max. cable of 3mm
- Watertightness guaranteed for up to 870 psi

### Fluidic/Pneumatic Connectors

Page 13

- Available in single or multiple tubes as well as mixed
- Working pressure up to 20 bar (290 psi)

### Other LEMO Connectors - Not Shown

(Please call LEMO USA for more information)

### High Voltage Connectors

- Available in many sizes and insert arrangements including multi high voltage
- Favorable size to voltage relationship

### Fiber Optic Connectors

- For multimode transmissions on single or multifibers
- Terminations made by the epoxy/polish method

### Thermocouple Connectors

- Designed to assure continuous & accurate monitoring of hostile environments where extreme surface or ambient temperatures, gases or liquids must be controlled

### LEMO CABLE ASSEMBLIES & OVERMOLDS

- Complete assemblies with both coax & multipin cables
- Design, fabrication, continuity & capacitance testing, and heat stamped cable or shrink marker identification

**CUSTOM DESIGNS ARE ALWAYS WELCOME!**

General Connector Characteristics

Shells: Material and treatment

| Component                  | Material (Standard)                  | Surface treatment (μm) |    |    |     |        |    |    |      |    |     |                            |    |    |    |             |    |    |    |
|----------------------------|--------------------------------------|------------------------|----|----|-----|--------|----|----|------|----|-----|----------------------------|----|----|----|-------------|----|----|----|
|                            |                                      | Chrome                 |    |    |     | Nickel |    |    | Gold |    |     | Black chrome <sup>7)</sup> |    |    |    | Olive green |    |    |    |
|                            |                                      | Cu                     | Ni | Au | Cr  | Cu     | Ni | Au | Cu   | Ni | Au  | Cu                         | Ni | Au | Cr | Cu          | Ni | Au | Zn |
| Outer shell and Collet nut | Brass (UNS C 385) (Standard)         | 0.5                    | 3  |    | 0.3 | 0.5    | 3  |    | 0.5  | 3  | 0.5 |                            | 1  |    | 2  | 0.5         |    |    | 10 |
|                            | Aluminum (AA 6262)*                  | anodized               |    |    |     |        |    |    |      |    |     |                            |    |    |    |             |    |    |    |
|                            | Stainless steel (AISI 303 or 316 L)* | without treatment      |    |    |     |        |    |    |      |    |     |                            |    |    |    |             |    |    |    |
|                            | Avional 152 (AA 2024)*               |                        |    |    |     |        | 15 |    |      |    |     |                            |    |    |    |             |    |    |    |
|                            | PPS (ASTM D 4067)*                   | color: black           |    |    |     |        |    |    |      |    |     |                            |    |    |    |             |    |    |    |
|                            | Polysulfone (MIL-P-46120 MR)*        | color: light grey      |    |    |     |        |    |    |      |    |     |                            |    |    |    |             |    |    |    |
|                            | PEEK (MIL-P-46183)*                  | color: light brown     |    |    |     |        |    |    |      |    |     |                            |    |    |    |             |    |    |    |

\*These shell materials are available upon special request.

Inserts: Materials and characteristics

| Connector Type                       | PEEK            | PTFE | PBTP            |
|--------------------------------------|-----------------|------|-----------------|
| Keyed Connectors                     | X               | —    | Special Request |
| Coaxial & Triaxial Connectors        | Special Request | X    | —               |
| Compact Series (C Series) Connectors | X               | —    | Special Request |
| Plastic Connectors                   | X               | —    | —               |
| High Voltage Connectors              | X               | X    | —               |

Other insert materials which are available upon special request include: PEhd, PA 6.6, FEP, PA-imide, SP1 M

| Insert Characteristics                     | Units   | PEEK            | PTFE              | PBTP            |
|--------------------------------------------|---------|-----------------|-------------------|-----------------|
| Maximum Working Temperature                | °C (°F) | 250 (482)       | 260 (500)         | 140 (284)       |
| Water Absorption in 24 hrs. at 23°C (73°F) | %       | 0.12            | 0.005             | 0.06            |
| Radiation Stability                        | rd      | 10 <sup>9</sup> | 2.10 <sup>4</sup> | 10 <sup>6</sup> |

Contacts: Material and treatment

Solder contacts

The conductor bucket of these contacts is machined at an angle to form a cup into which the solder can flow.

Crimp contacts (only available in B and K Series)

The crimp method used for low voltage contacts of multiple and mixed connectors is the standard four indent according to MIL-C-22520F, class 1, type 1.

Printed Circuit Contacts

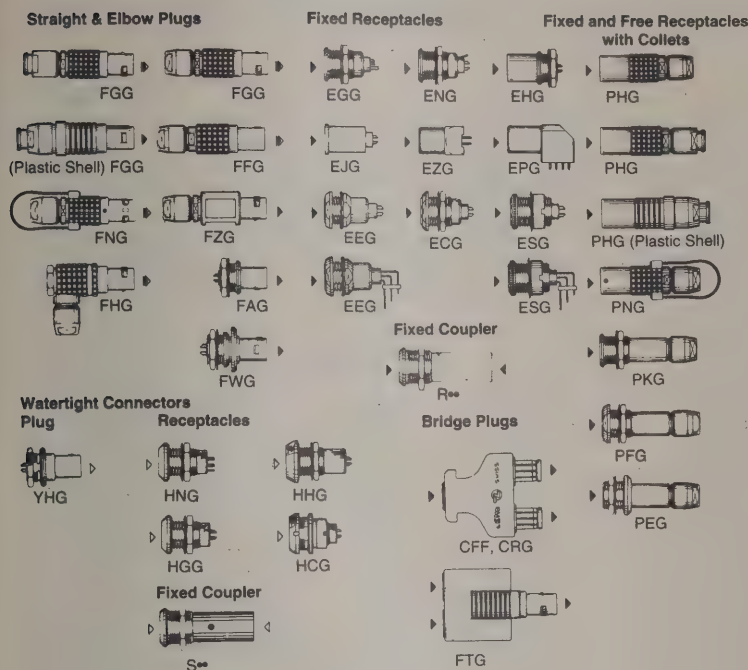
Printed Circuit Contacts can be supplied in receptacles without collet. They can easily be connected by soldering to rigid or flexible printed circuits.

| Type          | Material (Standard) | Surface treatment (µm) |    |     |
|---------------|---------------------|------------------------|----|-----|
|               |                     | Cu                     | Ni | Au  |
| Male solder   | Brass (UNS C 385)   | 0.5                    | 3  | 1.5 |
| Male crimp    | Brass (UNS C 345)   | 0.5                    | 3  | 1.5 |
| Male print    | Brass (UNS C 385)   | 0.5                    | 3  | 1.5 |
| Female solder | Bronze (UNS C 544)  | 0.5                    | 3  | 2.0 |
| Female crimp  | Bronze (UNS C 544)  | 0.5                    | 3  | 2.0 |
|               | Cu-Be (QQ-C-530)    | 0.5                    | 3  | 2.0 |
| Female print  | Cu-Be (QQ-C-530)    | 0.5                    | 3  | 2.0 |
| Male sleeve   | Brass (UNS C 385)   | 0.5                    | 3  | 1.5 |
| Female sleeve | Bronze (UNS C 544)  | 0.5                    | 3  | 1.5 |

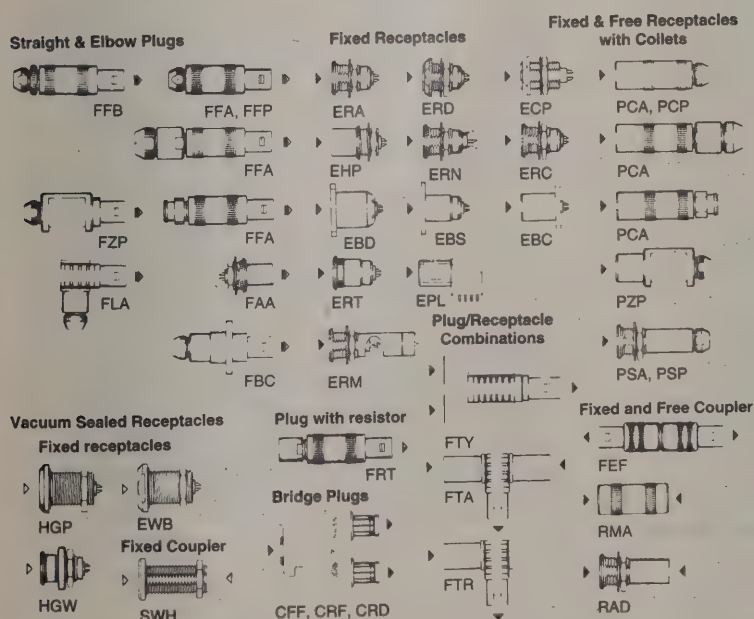


# LEMO Shell Styles

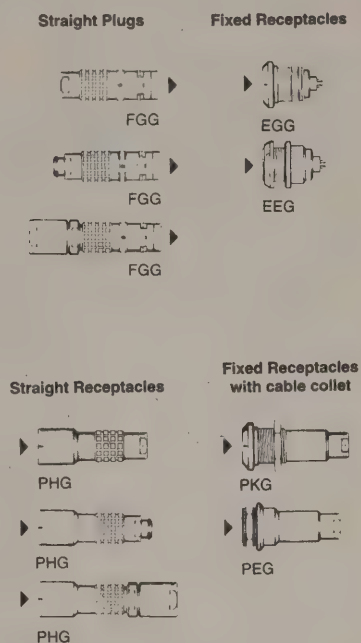
## Mechanical Keying - B Series



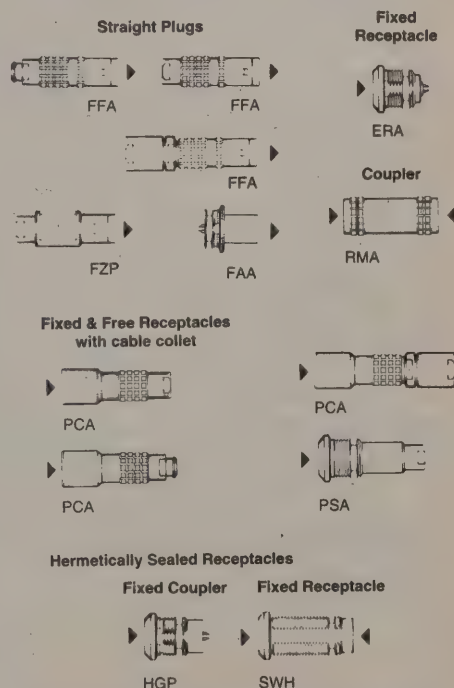
## Hermaphroditic Keying - S Series



## Environmental Shells Mechanical Keying - K Series



## Hermaphroditic - E Series



P.O. Box 11488, Santa Rosa, CA 95406  
(707) 578-8811, FAX 707/578-0869

**LEMO** *Ultrafine*  
ELECTRONIC CONNECTORS

**1-800-444-5366**  
Page 4 of 13

# LEMO Inserts - Mechanically Keyed Connectors

B Series - Standard Connectors / K Series - Environmental

Below are the insert configuration choices you have, please identify the number of contacts you need and verify the electrical characteristics and wire gauge for your application. Call LEMO for more information (800) 444-5366.

## Multi-Contact Connectors\*

| Shell Size | Number of Contacts | Contact Ø (mm) | AWG             |                | Operating Voltage |      | Test Voltage |      | Rated Current (Amps) |
|------------|--------------------|----------------|-----------------|----------------|-------------------|------|--------------|------|----------------------|
|            |                    |                | Solder Wire Max | Crimp Wire Max | AC                | DC   | AC           | DC   |                      |
| 00         | 2                  | .5             | 30              | —              | 350               | 500  | 1000         | 1500 | 4                    |
|            | 3                  | .5             | 30              | —              | 350               | 500  | 1000         | 1500 | 3                    |
|            | 4                  | .5             | 30              | —              | 350               | 500  | 1000         | 1500 | 2                    |
| 0          | 2                  | .9             | 22              | 20             | 460               | 660  | 1400         | 2000 | 10                   |
|            | 3                  | .9             | 22              | 20             | 420               | 600  | 1300         | 1800 | 8                    |
|            | 4                  | .7             | 26              | —              | 460               | 660  | 1400         | 2000 | 7                    |
|            | 5                  | .7             | 26              | —              | 260               | 400  | 800          | 1200 | 6.5                  |
|            | 6                  | .5             | 28              | —              | 220               | 320  | 680          | 960  | 2.5                  |
|            | 7                  | .5             | 28              | —              | 220               | 320  | 680          | 960  | 2.5                  |
|            | 8                  | .5             | 28              | —              | 220               | 320  | 680          | 960  | 2.5                  |
| 1          | 2                  | 1.3            | 20              | 18             | 530               | 760  | 1600         | 2300 | 15                   |
|            | 3                  | 1.3            | 20              | 18             | 420               | 600  | 1300         | 1800 | 12                   |
|            | 4                  | .9             | 22              | 20             | 630               | 900  | 1900         | 2700 | 10                   |
|            | 5                  | .9             | 22              | 20             | 460               | 660  | 1400         | 2000 | 9                    |
|            | 6                  | .7             | 26              | —              | 460               | 660  | 1400         | 2000 | 7                    |
|            | 7                  | .7             | 26              | —              | 460               | 660  | 1400         | 2000 | 7                    |
|            | 8                  | .7             | 26              | —              | 400               | 600  | 1200         | 1800 | 5                    |
|            | 10                 | .5             | 28              | —              | 200               | 300  | 600          | 900  | 2.5                  |
|            | 2                  | 2.0            | 16              | 12             | 700               | 1000 | 2100         | 3000 | 30                   |
|            | 3                  | 1.6            | 18              | 14             | 560               | 830  | 1700         | 2500 | 17                   |
| 2          | 4                  | 1.3            | 20              | 18             | 1000              | 1300 | 3000         | 4300 | 15                   |
|            | 5                  | 1.3            | 20              | 18             | 860               | 1200 | 2600         | 3700 | 14                   |
|            | 6                  | 1.3            | 20              | 18             | 630               | 900  | 1900         | 2700 | 12                   |
|            | 7                  | 1.3            | 20              | 18             | 500               | 730  | 1500         | 2200 | 11                   |
|            | 8                  | .9             | 22              | 20             | 1000              | 1500 | 3200         | 4500 | 10                   |
|            | 10                 | .9             | 22              | 20             | 560               | 830  | 1700         | 2500 | 8                    |
|            | 12                 | .7             | 26              | —              | 560               | 830  | 1700         | 2500 | 7                    |
|            | 14                 | .7             | 26              | —              | 560               | 830  | 1700         | 2500 | 6.5                  |
|            | 16                 | .7             | 26              | —              | 500               | 730  | 1500         | 2200 | 6                    |
|            | 18                 | .7             | 26              | —              | 460               | 660  | 1400         | 2000 | 5.5                  |
|            | 19                 | .7             | 26              | —              | 460               | 660  | 1400         | 2000 | 5                    |
|            | 2                  | 3.0            | 12              | 10             | 760               | 1100 | 2300         | 3300 | 50                   |
|            | 3                  | 2.0            | 16              | 12             | 1200              | 1600 | 3500         | 5000 | 25                   |
|            | 4                  | 2.0            | 16              | 12             | 830               | 1100 | 2500         | 3500 | 22                   |
|            | 5                  | 1.6            | 18              | 14             | 860               | 1200 | 2600         | 3700 | 19                   |
|            | 6                  | 1.6            | 18              | 14             | 730               | 1000 | 2200         | 3200 | 17                   |

\*In most cases solder, crimp and pc contacts are available.

| Shell Size | Number of Contacts | Contact Ø (mm) | AWG             |                | Operating Voltage |      | Test Voltage |       | Rated Current (Amps) |
|------------|--------------------|----------------|-----------------|----------------|-------------------|------|--------------|-------|----------------------|
|            |                    |                | Solder Wire Max | Crimp Wire Max | AC                | DC   | AC           | DC    |                      |
| 3          | 7                  | 1.6            | 18              | 14             | 730               | 1000 | 2200         | 3200  | 15                   |
|            | 8                  | 1.3            | 20              | 18             | 700               | 1000 | 2100         | 3000  | 13                   |
|            | 8                  | 1.3            | 20              | 18             | 400               | 600  | 1200         | 1800  | 6                    |
|            | 1                  | 2.0            | 16              | 12             | 400               | 600  | 1200         | 1800  | 15                   |
|            | 10                 | 1.3            | 20              | 18             | 460               | 660  | 1400         | 2000  | 12                   |
|            | 12                 | .9             | 22              | 20             | 560               | 830  | 1700         | 2500  | 9                    |
|            | 14                 | .9             | 22              | 20             | 560               | 830  | 1700         | 2500  | 9                    |
|            | 16                 | .9             | 22              | 20             | 460               | 660  | 1400         | 2000  | 8                    |
|            | 18                 | .9             | 22              | 20             | 460               | 660  | 1400         | 2000  | 7                    |
|            | 20                 | .7             | 26              | —              | 500               | 730  | 1500         | 2200  | 6                    |
|            | 22                 | .7             | 26              | —              | 400               | 560  | 1200         | 1700  | 5.5                  |
|            | 24                 | .7             | 26              | —              | 400               | 580  | 1200         | 1700  | 5                    |
|            | 26                 | .7             | 26              | —              | 260               | 400  | 800          | 1200  | 4.5                  |
|            | 30                 | .7             | 26              | —              | 260               | 400  | 800          | 1200  | 3.5                  |
|            | 4                  | 3.0            | 12              | 10             | 930               | 1300 | 2800         | 4000  | 30                   |
| 4          | 6                  | 2.0            | 16              | 12             | 930               | 1300 | 2800         | 4000  | 24                   |
|            | 7                  | 2.0            | 16              | 12             | 930               | 1300 | 2800         | 4000  | 20                   |
|            | 10                 | 1.6            | 18              | 14             | 700               | 1000 | 2100         | 3000  | 17                   |
|            | 12                 | 1.3            | 20              | 18             | 1000              | 1400 | 3000         | 4300  | 12                   |
|            | 16                 | .9             | 22              | 20             | 1000              | 1400 | 3000         | 4300  | 10                   |
|            | 20                 | .9             | 22              | 20             | 700               | 1000 | 2100         | 3000  | 6                    |
|            | 24                 | .9             | 22              | 20             | 630               | 900  | 1900         | 2700  | 7                    |
|            | 30                 | .9             | 22              | 20             | 460               | 660  | 1400         | 2000  | 5                    |
|            | 40                 | .7             | 26              | —              | 560               | 800  | 1700         | 2400  | 2                    |
|            | 4                  | 4.0            | 10              | 8              | 2500              | 3500 | 7500         | 10700 | 25                   |
| 5          | 10                 | 3.0            | 12              | 10             | 1200              | 1800 | 3800         | 5400  | 20                   |
|            | 14                 | 2.0            | 16              | 12             | 1500              | 2100 | 4500         | 6400  | 18                   |
|            | 16                 | 2.0            | 16              | 12             | 1500              | 2100 | 4500         | 6400  | 12                   |
|            | 20                 | 1.6            | 18              | 14             | 1300              | 1800 | 3900         | 5500  | 10                   |
|            | 30                 | 1.3            | 20              | 18             | 1200              | 1700 | 3600         | 5200  | 8                    |
|            | 40                 | 1.3            | 20              | 18             | 760               | 1100 | 2300         | 3300  | 7                    |
|            | 48                 | 1.3            | 20              | 18             | 630               | 900  | 1900         | 2700  | 6                    |
|            | 50                 | .9             | 22              | 20             | 760               | 1100 | 2300         | 3300  | 6                    |
|            | 54                 | .9             | 22              | 20             | 760               | 1100 | 2300         | 3300  | 5                    |
|            | 64                 | .9             | 22              | 20             | 530               | 700  | 1600         | 2300  | 3                    |



LEMO Inserts - Mechanically Keyed Connectors

B Series - Standard Connectors / K Series - Environmental  
Below are the insert configuration choices you have, please identify the number of contacts you need and verify the electrical characteristics and wire gauge for your application. Call LEMO for more information (800) 444-5366.

In many cases where coaxial contacts are shown, you may substitute fluidic/pneumatic, high voltage or fiber optic contacts.

Mixed-Contact Connectors\*

| Shell Size | Number of Contacts | Contact Ø (mm) | AWG             |                | Operating Voltage |      | Test Voltage |       | Rated Current (Amps) |
|------------|--------------------|----------------|-----------------|----------------|-------------------|------|--------------|-------|----------------------|
|            |                    |                | Solder Wire Max | Crimp Wire Max | AC                | DC   | AC           | DC    |                      |
|            |                    |                |                 |                |                   |      |              |       |                      |
| 1          | 2 HV               | .7             | 26              | —              | 2100              | 3000 | 5300         | 7500  | 12                   |
|            | 1 multi            | 1.3            | 20              | 18             | 400               | 600  | 1200         | 1800  |                      |
|            |                    |                |                 |                |                   |      |              |       |                      |
| 2          | 1 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440  | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 2 multi            | .9             | 22              | 20             | 330               | 500  | 1000         | 1500  | 8                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 1 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440  | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 4 multi            | .7             | 26              | —              | 400               | 600  | 1200         | 1800  | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 1 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440  | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 6 multi            | .7             | 26              | —              | 400               | 600  | 1200         | 1800  | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
| 3          | 1 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440  | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 6 multi            | .7             | 26              | —              | 400               | 600  | 1200         | 1800  | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 1 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440  | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 9 multi            | .7             | 26              | —              | 400               | 600  | 1200         | 1800  | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 1 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440  | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 13 multi           | .7             | 26              | —              | 400               | 600  | 1200         | 1800  | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 2 coax             | .7             | —               | 22             | 500               | 730  | 1500         | 2190  | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 4 multi            | .9             | 22              | 20             | 400               | 600  | 1200         | 1800  | 8                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 2 coax             | .7             | —               | 22             | 500               | 730  | 1500         | 2190  | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 6 multi            | .9             | 22              | 20             | 400               | 600  | 1200         | 1800  | 8                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 2 coax             | .7             | —               | 22             | 500               | 730  | 1500         | 2190  | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |       |                      |
|            | 10 multi           | .7             | 26              | —              | 200               | 280  | 600          | 850   | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            | 1 HV               | .9             | 22              | —              | 5600              | 8000 | 12700        | 18000 | 6                    |
|            | 9 multi            | .7             | 26              | —              | 400               | 600  | 1200         | 1800  |                      |
|            | 1 HV               | .9             | 22              | —              | 2000              | 3000 | 5300         | 7500  | 6                    |
|            | 18 multi           | .7             | 26              | —              | 400               | 600  | 1200         | 1800  |                      |
| 4          | 2 HV               | .9             | 22              | —              | 5600              | 8000 | 12700        | 18000 | 6                    |
|            | 10 multi           | .7             | 26              | —              | 200               | 280  | 1200         | 1800  |                      |
|            |                    |                |                 |                |                   |      |              |       | 5                    |
|            |                    |                |                 |                |                   |      |              |       |                      |
|            |                    |                |                 |                |                   |      |              |       |                      |

| Shell Size | Number of Contacts | Contact Ø (mm) | AWG             |                | Operating Voltage |      | Test Voltage |      | Rated Current (Amps) |
|------------|--------------------|----------------|-----------------|----------------|-------------------|------|--------------|------|----------------------|
|            |                    |                | Solder Wire Max | Crimp Wire Max | AC                | DC   | AC           | DC   |                      |
|            |                    |                |                 |                |                   |      |              |      |                      |
| 4          | 1 coax             | 1.6            | 18              | —              | 600               | 900  | 1800         | 2700 | 12                   |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 75 ohms            | 1.3            | 20              | —              | 800               | 1100 | 2400         | 3300 | 7                    |
|            | 4 multi            | .9             | 22              | 20             | 400               | 600  | 1200         | 1800 |                      |
|            | 1 coax             | 1.6            | 18              | —              | 600               | 900  | 1800         | 2700 | 12                   |
|            | 50 ohms            | 1.3            |                 |                |                   |      |              |      |                      |
|            | 75 ohms            | —              | 20              | —              | 800               | 1100 | 2400         | 3300 | 7                    |
|            | 6 multi            | .9             | 22              | 20             | 400               | 600  | 1200         | 1800 |                      |
|            | 2 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440 | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 2 multi            | .9             | 22              | 20             | 400               | 600  | 1200         | 1800 | 8                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 2 coax             | .7             | 26              | —              | 300               | 480  | 900          | 1440 | 5                    |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 4 multi            | .9             | 22              | 20             | 400               | 600  | 1200         | 1800 | 7                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 2 coax             | .7             | —               | 22             | 500               | 700  | 1500         | 2100 | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 12 multi           | .9             | 22              | 20             | 400               | 600  | 1200         | 1800 | 4                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 2 coax             | .7             | —               | 22             | 500               | 700  | 1500         | 2100 | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 16 multi           | .9             | 22              | 20             | 400               | 600  | 1200         | 1800 | 4                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
| 5          | 2 coax             | .7             | —               | 22             | 500               | 700  | 1500         | 2100 | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 18 multi           | .7             | 26              | —              | 500               | 700  | 1500         | 2100 | 2                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 3 coax             | .7             | —               | 22             | 500               | 700  | 1500         | 2100 | 2                    |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 12 multi           | .7             | 26              | —              | 300               | 500  | 1000         | 1500 | 2                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 4 coax             | .7             | —               | 22             | 300               | 500  | 1000         | 1500 | 2                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 2 coax             | 1.3            | —               | 20             | 280               | 460  | 840          | 1380 | 11                   |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 75 ohms            | .9             | —               | 22             | 700               | 1000 | 2100         | 3000 | 6                    |
|            | 10 multi           | .9             | 22              | 20             | 500               | 700  | 1500         | 2100 |                      |
|            | 2 coax             | 1.3            | —               | 20             | 280               | 460  | 840          | 1380 | 11                   |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 75 ohms            | .9             | —               | 22             | 700               | 1000 | 2100         | 3000 | 6                    |
|            | 16 multi           | .9             | 22              | 20             | 500               | 700  | 1500         | 2100 |                      |
|            | 2 coax             | 1.3            | —               | 20             | 280               | 460  | 840          | 1380 | 11                   |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 75 ohms            | .9             | —               | 20             | 700               | 1000 | 2100         | 3000 | 6                    |
|            | 17 multi           | 2.0/.9         | 16/22           | 12/20          | 500               | 700  | 1500         | 2100 |                      |
|            | 2 coax             | 1.3            | —               | 20             | 280               | 460  | 840          | 1380 |                      |
|            | 50 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 24 multi           | 1.3            | 20              | —              | 500               | 700  | 1500         | 2100 | 8                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 10 coax            | .7             | —               | 24             | 300               | 500  | 1000         | 1500 | 2                    |
|            |                    |                |                 |                |                   |      |              |      |                      |
|            | 1 triax            | .9             | 22              | —              | 800               | 1100 | 2400         | 3300 | 7                    |
|            | 75 ohms            |                |                 |                |                   |      |              |      |                      |
|            | 32 multi           | 1.3            | 20              | 18             | 500               | 700  | 1500         | 2100 | 8                    |
|            |                    |                |                 |                |                   |      |              |      |                      |

\*In most cases solder, crimp and pc contacts are available.

# LEMO Inserts - Hermaphroditic Connectors

## Single Contact Connectors

| Size      | Contact<br>Ø | Wire<br>Sizes<br>Maximum |      | Operating<br>Voltage |      | Test<br>Voltage |      | Rated<br>Current<br>(Amps) |
|-----------|--------------|--------------------------|------|----------------------|------|-----------------|------|----------------------------|
|           | (mm)         | AWG                      | (mm) | AC                   | DC   | AC              | DC   |                            |
| <b>00</b> | 1.3          | 20                       | 1.0  | 300                  | 400  | 900             | 1200 | 8                          |
| <b>0</b>  | 1.6          | 18                       | 1.4  | 500                  | 700  | 1500            | 2100 | 12                         |
| <b>1</b>  | 2.0          | 16                       | 1.8  | 600                  | 800  | 1800            | 2400 | 18                         |
|           | 3.0          | 12                       | 2.7  | 500                  | 700  | 1500            | 2100 | 25                         |
| <b>2</b>  | 3.0          | 12                       | 2.7  | 700                  | 1000 | 2100            | 3000 | 30                         |
|           | 4.0          | 10                       | 3.7  | 600                  | 800  | 1800            | 2400 | 40                         |
| <b>3</b>  | 4.0          | 10                       | 3.7  | 800                  | 1000 | 2400            | 3300 | 43                         |
|           | 6.0          | 6                        | 6.5  | 600                  | 800  | 1800            | 2400 | 65                         |
| <b>4</b>  | 4.0          | 10                       | 3.7  | 1000                 | 1400 | 3000            | 4200 | 46                         |
|           | 6.0          | 6                        | 6.6  | 900                  | 1300 | 2700            | 3900 | 70                         |
| <b>5</b>  | 12.0         | 4                        | 12.0 | 500                  | 700  | 1500            | 2100 | 230                        |

## Coaxial Connectors

| Shell<br>Size | Impedance<br>(Ω) | VSWR<br>(GHz)  | Operating<br>Voltage |      | Test<br>Voltage |      | Rated<br>Current<br>(Amps) |
|---------------|------------------|----------------|----------------------|------|-----------------|------|----------------------------|
|               |                  |                | AC                   | DC   | AC              | DC   |                            |
| <b>0</b>      | 50               | 1.02<br>+0.25f | 1000                 | 1400 | 3000            | 4300 | 6                          |
| <b>1</b>      | 50               | 1.01<br>+0.23f | 1000                 | 1400 | 3000            | 4300 | 12                         |
|               | 75               | 1.02<br>+0.08f | 800                  | 1100 | 2400            | 3300 | 10                         |
| <b>2</b>      | 50               | 1.01<br>+0.95f | 1000                 | 1400 | 3000            | 4300 | 15                         |
|               | 75               | 1.02<br>+0.03f | 500                  | 700  | 1500            | 2100 | 12                         |
| <b>3</b>      | 50               | 1.06<br>+0.5f  | 1000                 | 1400 | 3000            | 4300 | 26                         |
|               | 75               | 1.04<br>+0.05f | 900                  | 1300 | 2700            | 3900 | 15                         |
| <b>4</b>      | 50               | 1.01<br>+1.9f  | 700                  | 1000 | 2100            | 3000 | 36                         |
|               | 75               | 1.01<br>+0.12f | 600                  | 900  | 1800            | 2400 | 26                         |
| <b>5</b>      | 50               | 1.02<br>+2.3f  | 1000                 | 1400 | 3000            | 4300 | 45                         |
|               | 75               | 1.01<br>+0.7f  | 1000                 | 1400 | 3000            | 4300 | 36                         |

## Triaxial Connectors

| Shell<br>Size | Impedance<br>(Ω) | VSWR<br>(GHz)  | Operating<br>Voltage<br>(AC) |                   | Test<br>Voltage<br>(AC)     |                   | Rated<br>Current<br>(Amps) |
|---------------|------------------|----------------|------------------------------|-------------------|-----------------------------|-------------------|----------------------------|
|               |                  |                | contact/<br>inner<br>shield  | shield/<br>shield | contact/<br>inner<br>shield | shield/<br>shield |                            |
| <b>0</b>      | 50               | 1.03<br>+0.34f | 350                          | 400               | 1000                        | 1200              | 6                          |
| <b>1</b>      | 50               | 1.01<br>+1.17f | 350                          | 400               | 1000                        | 1200              | 6                          |
| <b>2</b>      | 50               | 1.01<br>+0.3f  | 500                          | 400               | 1500                        | 1200              | 12                         |
|               | 75               | 1.01<br>+0.07f | 500                          | 400               | 1500                        | 1200              | 6                          |
| <b>3</b>      | 50               | 1.01<br>+0.27f | 800                          | 400               | 2400                        | 1200              | 15                         |
|               | 75               | 1.02<br>+0.05f | 600                          | 400               | 1800                        | 1200              | 6                          |
| <b>4</b>      | 50               | 1.01<br>+0.38f | 900                          | 600               | 2700                        | 1800              | 26                         |
|               | 75               | 1.01<br>+0.14f | 1000                         | 600               | 2200                        | 1500              | 15                         |

## S Series - Standard / E Series - Environmental

Below are the insert configuration choices you have, please identify the number of contacts you need and verify the electrical characteristics and wire gauge for your application. Call LEMO for more information (800) 444-5366.

## Multicontact Connectors

| Shell<br>Size | Number<br>of<br>Contacts | Contact<br>Ø | Wire<br>Sizes<br>Maximum |      | Operating<br>Voltage |      | Test<br>Voltage |      | Rated<br>Current<br>(Amps) |
|---------------|--------------------------|--------------|--------------------------|------|----------------------|------|-----------------|------|----------------------------|
|               |                          | (mm)         | AWG                      | (mm) | AC                   | DC   | AC              | DC   |                            |
| <b>0</b>      | 2                        | 0.9          | 22                       | 0.8  | 500                  | 700  | 1500            | 2100 | 10                         |
|               | 3                        | 0.7          | 26                       | 0.6  | 300                  | 500  | 1000            | 1500 | 8                          |
|               | 4                        | 0.7          | 26                       | 0.6  | 300                  | 500  | 1000            | 1500 | 7                          |
| <b>1</b>      | 2                        | 1.3          | 20                       | 1.0  | 400                  | 600  | 1200            | 1800 | 12                         |
|               | 3                        | 0.9          | 22                       | 0.8  | 400                  | 600  | 1200            | 1800 | 11                         |
|               | 4                        | 0.9          | 22                       | 0.8  | 400                  | 600  | 1200            | 1800 | 10                         |
|               | 2                        | 0.9          | 22                       | 0.9  | 500                  | 700  | 1500            | 2100 | 10                         |
|               | 3                        | 0.7          | 26                       | 0.6  | 500                  | 700  | 1500            | 2100 | 7                          |
|               | 6                        | 0.7          | 26                       | 0.6  | 500                  | 700  | 1500            | 2100 | 7                          |
| <b>2</b>      | 2                        | 1.6          | 18                       | 1.4  | 600                  | 800  | 1800            | 2400 | 20                         |
|               | 3                        | 1.3          | 20                       | 1.0  | 500                  | 700  | 1500            | 2100 | 17                         |
|               | 4                        | 1.3          | 20                       | 1.0  | 600                  | 800  | 1800            | 2400 | 15                         |
|               | 5                        | 1.3          | 20                       | 1.0  | 500                  | 700  | 1500            | 2100 | 13                         |
|               | 6                        | 1.3          | 20                       | 1.0  | 500                  | 700  | 1500            | 2100 | 11                         |
|               | 3                        | 1.3          | 20                       | 1.0  | 250                  | 400  | 800             | 1200 | 10                         |
| <b>3</b>      | 4                        | 0.9          | 22                       | 0.8  | 250                  | 400  | 800             | 1200 | 8                          |
|               | 8                        | 0.9          | 22                       | 0.8  | 250                  | 400  | 800             | 1200 | 9                          |
|               | 10                       | 0.9          | 22                       | 0.8  | 250                  | 400  | 800             | 1200 | 8                          |
|               | 2                        | 2.0          | 16                       | 1.8  | 1000                 | 1400 | 3000            | 4200 | 23                         |
|               | 3                        | 2.0          | 16                       | 1.8  | 1000                 | 1400 | 3000            | 4200 | 20                         |
|               | 4                        | 2.0          | 16                       | 1.8  | 500                  | 700  | 1500            | 2100 | 18                         |
|               | 2                        | 2.0          | 16                       | 1.8  | 500                  | 700  | 1500            | 2100 | 16                         |
|               | 3                        | 1.3          | 20                       | 1.0  | 500                  | 700  | 1500            | 2100 | 9                          |
|               | 6                        | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 14                         |
|               | 7                        | 1.3          | 20                       | 1.0  | 350                  | 500  | 1000            | 1500 | 12                         |
|               | 8                        | 1.3          | 20                       | 1.0  | 350                  | 500  | 1000            | 1500 | 10                         |
|               | 10                       | 1.3          | 20                       | 1.0  | 350                  | 500  | 1000            | 1500 | 9                          |
|               | 12                       | 0.9          | 22                       | 0.8  | 500                  | 700  | 1500            | 2100 | 8                          |
|               | 13                       | 0.9          | 22                       | 0.8  | 500                  | 700  | 1500            | 2100 | 8                          |
|               | 14                       | 0.9          | 22                       | 0.8  | 500                  | 700  | 1500            | 2100 | 7                          |
|               | 16                       | 0.9          | 22                       | 0.8  | 350                  | 500  | 1000            | 1500 | 7                          |
|               | 18                       | 0.9          | 22                       | 0.8  | 350                  | 400  | 1000            | 1500 | 6                          |
| <b>4</b>      | 2                        | 4.0          | 10                       | 3.7  | 700                  | 1000 | 2100            | 3000 | 35                         |
|               | 1                        | 4.0          | 10                       | 3.7  | 700                  | 1000 | 2100            | 3000 | 24                         |
|               | 2                        | 3.0          | 12                       | 2.7  | 700                  | 1000 | 2100            | 3000 | 18                         |
|               | 4                        | 3.0          | 12                       | 2.7  | 700                  | 1000 | 2100            | 3000 | 22                         |
|               | 2                        | 3.0          | 12                       | 2.7  | 700                  | 1000 | 2100            | 3000 | 22                         |
|               | 3                        | 2.0          | 16                       | 1.8  | 700                  | 1000 | 2100            | 3000 | 16                         |
|               | 6                        | 2.0          | 16                       | 1.8  | 700                  | 1000 | 2100            | 3000 | 16                         |
|               | 3                        | 2.0          | 16                       | 1.8  | 700                  | 1000 | 2100            | 3000 | 16                         |
|               | 4                        | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 13                         |
|               | 8                        | 1.3          | 20                       | 1.0  | 900                  | 1300 | 2700            | 3900 | 13                         |
|               | 9                        | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 12                         |
|               | 10                       | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 11                         |
|               | 12                       | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 9                          |
|               | 13                       | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 9                          |
|               | 14                       | 1.3          | 20                       | 1.0  | 700                  | 1000 | 2100            | 3000 | 7                          |
|               | 16                       | 0.9          | 22                       | 0.8  | 700                  | 1000 | 2100            | 3000 | 7                          |
|               | 18                       | 0.9          | 22                       | 0.8  | 700                  | 1000 | 2100            | 3000 | 7                          |
|               | 20                       | 0.9          | 22                       | 0.8  | 700                  | 1000 | 2100            | 3000 | 7                          |
|               | 22                       | 0.9          | 22                       | 0.8  | 700                  | 1000 | 2100            | 3000 | 7                          |
|               | 24                       | 0.9          | 22                       | 0.8  | 700                  | 1000 | 2100            | 3000 | 7                          |

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LEMO Inserts - Hermaphroditic Connectors - continued

S Series - Standard / E Series - Environmental  
Below are the insert configuration choices you have, please identify the number of contacts you need and verify the electrical characteristics and wire gauge for your application. Call LEMO for more information (800) 444-5366.

Multicontact Connectors—cont.

| Shell Size | Number of Contacts | Contact Ø | Wire Sizes |     | Operating Voltage |      | Test Voltage |      | Rated Current (Amps) |
|------------|--------------------|-----------|------------|-----|-------------------|------|--------------|------|----------------------|
|            |                    | (mm)      | Maximum    | AWG | (mm)              | AC   | DC           | AC   |                      |
| 5          | 2                  | 6.0       | 5          | 5.5 | 1100              | 1600 | 3700         | 5200 | 50                   |
|            | 1                  | 6.0       | 5          | 5.5 | 1100              | 1600 | 3700         | 5200 | 50                   |
|            | 2                  | 4.0       | 10         | 3.7 | 1100              | 1600 | 3700         | 5200 | 35                   |
|            | 4                  | 4.0       | 10         | 3.7 | 1100              | 1600 | 3700         | 5200 | 35                   |
|            | 2                  | 4.0       | 10         | 3.7 | 1000              | 1400 | 3000         | 4200 | 35                   |
|            | 3                  | 3.0       | 12         | 2.7 | 1000              | 1400 | 3000         | 4200 | 25                   |
|            | 6                  | 3.0       | 12         | 2.7 | 1000              | 1400 | 3000         | 4200 | 25                   |
|            | 8                  | 3.0       | 12         | 2.7 | 700               | 1000 | 2100         | 3000 | 22                   |
|            | 10                 | 2.0       | 16         | 1.8 | 700               | 1000 | 2100         | 3000 | 18                   |
|            | 12                 | 2.0       | 16         | 1.8 | 700               | 1000 | 2100         | 3000 | 18                   |
|            | 2                  | 3.0       | 12         | 2.7 | 600               | 800  | 1800         | 2400 | 20                   |
|            | 12                 | 2.0       | 16         | 1.8 | 600               | 800  | 1800         | 2400 | 15                   |
|            | 16                 | 2.0       | 16         | 1.8 | 600               | 800  | 1800         | 2400 | 15                   |
|            | 2                  | 3.0       | 12         | 2.7 | 600               | 800  | 1800         | 2400 | 18                   |
|            | 16                 | 1.6       | 18         | 1.4 | 600               | 800  | 1800         | 2400 | 11                   |
|            | 20                 | 1.6       | 18         | 1.4 | 600               | 800  | 1800         | 2400 | 11                   |
|            | 2                  | 3.0       | 12         | 2.7 | 600               | 800  | 1800         | 2400 | 16                   |
|            | 20                 | 1.6       | 18         | 1.4 | 600               | 800  | 1800         | 2400 | 9                    |
|            | 24                 | 1.6       | 18         | 1.4 | 900               | 1300 | 2700         | 3900 | 9                    |
|            | 30                 | 1.3       | 20         | 1.0 | 600               | 800  | 1800         | 2400 | 8                    |
| 6          | 36                 | 1.3       | 20         | 1.0 | 600               | 800  | 1800         | 2400 | 7                    |
|            | 40                 | 1.3       | 20         | 1.0 | 400               | 600  | 1200         | 1800 | 7                    |
|            | 44                 | 1.3       | 20         | 1.0 | 400               | 600  | 1200         | 1800 | 6                    |
|            | 48                 | 1.3       | 20         | 1.0 | 400               | 600  | 1200         | 1800 | 6                    |
|            | 4                  | 8.0       | 4          | 7.5 | 1000              | 1400 | 3000         | 4200 | 60                   |
|            | 12                 | 4.0       | 10         | 3.7 | 700               | 100  | 2100         | 3000 | 22                   |
|            | 18                 | 4.0       | 10         | 3.7 | 400               | 600  | 1200         | 1800 | 16                   |
|            | 20                 | 3.0       | 12         | 2.7 | 500               | 700  | 1500         | 2100 | 14                   |
|            | 24                 | 3.0       | 12         | 2.7 | 500               | 700  | 1500         | 2100 | 12                   |
|            | 30                 | 2.8       | 16         | 1.8 | 700               | 1000 | 2100         | 3000 | 10                   |
|            | 36                 | 2.0       | 16         | 1.8 | 500               | 700  | 1500         | 2100 | 8                    |
|            | 48                 | 2.0       | 16         | 1.8 | 500               | 700  | 1500         | 2100 | 7                    |
|            | 60                 | 1.6       | 18         | 1.4 | 500               | 700  | 1500         | 2100 | 5                    |
|            | 62                 | 1.6       | 18         | 1.4 | 500               | 700  | 1500         | 2100 | 5                    |
|            | 64                 | 1.3       | 20         | 1.0 | 400               | 600  | 1200         | 1800 | 4                    |
|            | 72                 | 1.3       | 20         | 1.0 | 400               | 600  | 1200         | 1800 | 4                    |
|            | 106                | 0.9       | 22         | 0.8 | 250               | 400  | 800          | 1200 | 2                    |

Mixed-Contact Connectors (coaxial & signal)

| Shell Size | Number of Contacts       | Contact Ø | Solder Wire AWG | Operating Voltage |      | Test Voltage |      | Rated Current (Amps) |
|------------|--------------------------|-----------|-----------------|-------------------|------|--------------|------|----------------------|
|            |                          | (mm)      |                 |                   | AC   | DC           | AC   |                      |
| 3          | 1 coax 50 ohm + 1 multi  | 1.3       | 20              | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm + 2 multi  | 1.3       | 20              | 900               | 1300 | 2700         | 3900 | 14                   |
|            | 1 coax 50 ohm + 3 multi  | 1.3       | 20              | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm + 4 multi  | 1.3       | 20              | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm + 5 multi  | 0.9       | 22              | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm + 6 multi  | 1.3       | 20              | 250               | 400  | 750          | 1200 | 8                    |
|            | 1 coax 50 ohm + 7 multi  | 0.9       | 22              | 250               | 400  | 750          | 1200 | 7                    |
|            | 1 coax 50 ohm + 2 multi  | 3.0       | 12              | 700               | 1000 | 2100         | 3000 | 22                   |
|            | 1 coax 50 ohm + 3 multi  | 2.0       | 16              | 700               | 1000 | 2100         | 3000 | 16                   |
|            | 1 coax 50 ohm + 4 multi  | 1.3       | 20              | 900               | 1300 | 2700         | 3900 | 13                   |
| 4          | 1 coax 50 ohm + 5 multi  | 1.3       | 20              | 700               | 1000 | 2100         | 3000 | 11                   |
|            | 1 coax 50 ohm + 6 multi  | 1.3       | 20              | 700               | 1000 | 2100         | 3000 | 9                    |
|            | 1 coax 50 ohm + 7 multi  | 1.3       | 20              | 700               | 1000 | 2100         | 3000 | 8                    |
|            | 1 coax 50 ohm + 9 multi  | 0.9       | 22              | 700               | 1000 | 2100         | 3000 | 7                    |
|            | 1 coax 50 ohm + 10 multi | 0.9       | 22              | 700               | 1000 | 2100         | 3000 | 7                    |
|            | 1 coax 50 ohm + 12 multi | 0.9       | 22              | 700               | 1000 | 2100         | 3000 | 7                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 1 coax 50 ohm            | —         | —               | 700               | 1000 | 2100         | 3000 | 4                    |

# LEMO Inserts - Hermaphroditic Connectors - continued

## S Series - Standard / E Series - Environmental

Below are the insert configuration choices you have, please identify the number of contacts you need and verify the electrical characteristics and wire gauge for your application. Call LEMO for more information (800) 444-5366.

### Mixed Contact Connectors (coaxial & signal)-cont.

| Shell Size | Number of Contacts       | Contact Ø (mm) | Solder Wire AWG | Operating Voltage |      | Test Voltage |      | Rated Current (Amps) |
|------------|--------------------------|----------------|-----------------|-------------------|------|--------------|------|----------------------|
|            |                          |                |                 | AC                | DC   | AC           | DC   |                      |
| 4          | 2 coax 50 ohm + 2 multi  | 1.3            | 20              | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 2 coax 50 ohm + 4 multi  | 1.3            | 20              | 700               | 1000 | 2100         | 3000 | 13                   |
|            | 2 coax 50 ohm + 6 multi  | 0.9            | 22              | 600               | 800  | 1800         | 2400 | 7                    |
|            | 2 coax 50 ohm + 8 multi  | 0.9            | 22              | 600               | 800  | 1800         | 2400 | 7                    |
|            | 2 coax 50 ohm + 12 multi | 0.9            | 22              | 600               | 800  | 1800         | 2400 | 7                    |
|            | 1 coax 50 ohm + 4 multi  | 3.0            | 12              | 700               | 1000 | 2100         | 3000 | 22                   |
|            | 1 coax 50 ohm + 10 multi | 1.6            | 18              | 600               | 800  | 1800         | 2400 | 11                   |
|            | 2 coax 50 ohm + 2 multi  | 2.0            | 16              | 700               | 1000 | 2100         | 3000 | 18                   |
| 5          | 2 coax 50 ohm + 4 multi  | 2.0            | 16              | 700               | 1000 | 2100         | 3000 | 18                   |
|            | 2 coax 50 ohm + 8 multi  | 1.6            | 18              | 600               | 800  | 1800         | 2400 | 12                   |
|            | 2 coax 50 ohm + 12 multi | 1.3            | 20              | 600               | 800  | 1800         | 2400 | 9                    |
|            | 2 coax 50 ohm + 16 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 8                    |
|            | 2 coax 50 ohm + 20 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 7                    |
|            | 2 coax 50 ohm + 24 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 6                    |
|            | 4 coax 50 ohm            |                |                 | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 4 coax 50 ohm + 6 multi  | 1.3            | 20              | 250               | 400  | 800          | 1200 | 6                    |
|            | 2 coax 50 ohm + 16 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 8                    |
|            | 2 coax 50 ohm + 20 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 7                    |
|            | 2 coax 50 ohm + 24 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 6                    |
|            | 4 coax 50 ohm            |                |                 | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 4 coax 50 ohm + 6 multi  | 1.3            | 20              | 250               | 400  | 800          | 1200 | 6                    |
|            | 2 coax 50 ohm + 16 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 8                    |
|            | 2 coax 50 ohm + 20 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 7                    |
|            | 2 coax 50 ohm + 24 multi | 1.3            | 20              | 250               | 400  | 750          | 1200 | 6                    |

| Shell Size | Number of Contacts          | Contact Ø (mm)                    | Solder Wire AWG      | Operating Voltage |      | Test Voltage |      | Rated Current (Amps) |
|------------|-----------------------------|-----------------------------------|----------------------|-------------------|------|--------------|------|----------------------|
|            |                             |                                   |                      | AC                | DC   | AC           | DC   |                      |
| 6          | 1 coax 50 ohm + 26 multi    | 2.0                               | 16                   | 500               | 700  | 1500         | 2100 | 7                    |
|            | 1 coax 75 ohm + 26 multi    | 2.0                               | 16                   | 500               | 700  | 1500         | 2100 | 7                    |
|            | 1 coax 50 ohm + 4/30 multi  | 3.0/1.6                           | 12/18                | 500               | 700  | 1500         | 2100 | 14/5                 |
|            | 1 coax 75 ohm + 4/30 multi  | 3.0/1.6                           | 12/18                | 500               | 700  | 1500         | 2100 | 10/14                |
|            | 2 coax 75 ohm + 33 multi    | 1.3                               | 20                   | 400               | 600  | 1200         | 1800 | 4                    |
|            | 2 coax 50 ohm + 34 multi    | 6@1.3<br>6@1.6<br>5@2.0<br>17@0.9 | 20<br>18<br>16<br>22 | 1000              | 1400 | 3000         | 4200 | 12, 4<br>5<br>10, 2  |
|            | 2 coax 75 ohm + 34 multi    | 6@1.3<br>6@1.6<br>5@2.0<br>17@0.9 | 20<br>18<br>16<br>22 | 700               | 1000 | 2100         | 3000 | 10, 4<br>5<br>10, 7  |
|            | 2 coax 50 ohm + 40 multi    | 1.3/3.0                           | 20/12                | 400               | 600  | 1200         | 1800 | 4/14                 |
|            | 3 coax 50 ohm + 26 multi    | 2.0                               | 16                   | 400               | 600  | 1200         | 1800 | 7                    |
|            | 3 coax 75 ohm + 26 multi    | 1.3                               | 16                   | 500               | 700  | 1500         | 2100 | 4                    |
|            | 4 coax 50 ohm               | —                                 | —                    | 1000              | 1400 | 3000         | 4200 | 12                   |
|            | 4 coax 75 ohm               | —                                 | —                    | 800               | 1100 | 2400         | 3300 | 10                   |
|            | 4 coax 50 ohm + 20 multi    | 1.3                               | 20                   | 400               | 600  | 1200         | 1800 | 4                    |
|            | 4 coax 75 ohm + 26 multi    | 0.9                               | 22                   | 250               | 400  | 750          | 1200 | 2                    |
|            | 1 + 4 coax 50 ohm + 7 multi | 2.0                               | 16                   | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 6 coax 50 ohm + 4 multi     | 4.0                               | 10                   | 500               | 700  | 1500         | 2100 | 16                   |
|            | 6 coax 50 ohm + 20 multi    | 1.6                               | 18                   | 500               | 700  | 1500         | 2100 | 5                    |
|            | 8 coax 50 ohm               | —                                 | —                    | 1000              | 1400 | 3000         | 4200 | 6                    |
|            | 8 coax 50 ohm + 20 multi    | 1.6                               | 18                   | 500               | 700  | 1500         | 2100 | 7                    |
|            | 1 + 4 coax 50 ohm + 7 multi | 2.0                               | 16                   | 700               | 1000 | 2100         | 3000 | 4                    |
|            | 6 coax 50 ohm + 4 multi     | 4.0                               | 10                   | 500               | 700  | 1500         | 2100 | 16                   |
|            | 6 coax 50 ohm + 20 multi    | 1.6                               | 18                   | 500               | 700  | 1500         | 2100 | 5                    |
|            | 8 coax 50 ohm               | —                                 | —                    | 1000              | 1400 | 3000         | 4200 | 6                    |
|            | 8 coax 50 ohm + 20 multi    | 1.6                               | 18                   | 500               | 700  | 1500         | 2100 | 7                    |

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**LEMO** *Electronic*  
ELECTRONIC CONNECTORS

**1-800-444-5366**

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LEMO Inserts - Hermaphroditic Connectors - continued

S Series - Standard / E Series - Environmental

Below are the insert configuration choices you have, please identify the number of contacts you need and verify the electrical characteristics and wire gauge for your application. Call LEMO for more information (800) 444-5366.

Mixed Contact Connectors (High Voltage & Signal)

| Shell Size | Number of Contacts | HV Dielectric Ø | Contact Ø | Wire Sizes Maximum |        | Operating Voltage |      | Test Voltage |       | Rated Current (Amps) |
|------------|--------------------|-----------------|-----------|--------------------|--------|-------------------|------|--------------|-------|----------------------|
|            |                    |                 | (mm)      | AWG                | (mm)   | AC                | DC   | AC           | DC    |                      |
| 3          | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 2LV                | —               | 2.0       | 16                 | 1.8    | 500               | 700  | 1500         | 2100  | 18                   |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 3LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 14                   |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 4LV                | —               | 1.3       | 20                 | 1.0    | 350               | 500  | 1000         | 1500  | 10                   |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 5LV                | —               | 1.3       | 20                 | 1.0    | 350               | 500  | 1000         | 1500  | 9                    |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 6LV                | —               | 1.3       | 20                 | 1.0    | 350               | 500  | 1000         | 1500  | 8                    |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 7LV                | —               | 1.3       | 20                 | 1.0    | 350               | 500  | 1000         | 1500  | 8                    |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 4/4LV              | —               | 1.3/.9    | 20/22              | 1.0/.8 | 350               | 500  | 1000         | 1500  | 6/8                  |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 9LV                | —               | .9        | 22                 | .8     | 250               | 400  | 800          | 1200  | 6                    |
|            | 1HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 11LV               | —               | .9        | 22                 | .8     | 250               | 400  | 800          | 1200  | 6                    |
|            | 2HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 2HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
| 4          | 2LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 14                   |
|            | 2HV                | 1.3             | 1.3       | 20                 | 1.0    | 2100              | 3000 | 6300         | 9000  | 6                    |
|            | 4LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 10                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 2LV                | —               | 3.0       | 12                 | 2.7    | 700               | 1000 | 2100         | 3000  | 22                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 3LV                | —               | 2.0       | 16                 | 1.8    | 700               | 1000 | 2100         | 3000  | 16                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 4LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 13                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 5LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 11                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 6LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 9                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 7LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 9                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 8LV                | —               | 1.3       | 20                 | 1.0    | 700               | 1000 | 2100         | 3000  | 9                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 9LV                | —               | .9        | 22                 | .8     | 700               | 1000 | 2100         | 3000  | 7                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 10LV               | —               | .9        | 22                 | .8     | 700               | 1000 | 2100         | 3000  | 7                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 14LV               | —               | .9        | 22                 | .8     | 700               | 1000 | 2100         | 3000  | 7                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 16LV               | —               | .9        | 22                 | .8     | 500               | 700  | 1500         | 2100  | 6                    |
|            | 2HV                | 1.3             | —         | 16                 | 1.5    | 3500              | 5000 | 10500        | 15000 | 8                    |
|            | 2HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | 8                    |
|            | 2LV                | —               | 3.0       | 12                 | 2.7    | 700               | 1000 | 2100         | 3000  | 22                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | —                    |
|            | 3LV                | —               | 2.0       | 16                 | 1.8    | 700               | 1000 | 2100         | 3000  | 16                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5    | 2100              | 3000 | 6300         | 9000  | —                    |
|            | 4LV                | —               | 1.3       | 20                 | 1.0    | 750               | 1000 | 2100         | 3000  | 13                   |

| Shell Size | Number of Contacts | HV Dielectric Ø | Contact Ø | Wire Sizes Maximum |      | Operating Voltage |       | Test Voltage |       | Rated Current (Amps) |
|------------|--------------------|-----------------|-----------|--------------------|------|-------------------|-------|--------------|-------|----------------------|
|            |                    |                 | (mm)      | AWG                | (mm) | AC                | DC    | AC           | DC    |                      |
| 4          | 2HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3500  | 6300         | 9000  | —                    |
|            | 5LV                | —               | 1.3       | 20                 | 1.0  | 700               | 1000  | 2100         | 3000  | 11                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 6LV                | —               | 1.3       | 20                 | 1.0  | 700               | 1000  | 2100         | 3000  | 9                    |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 7LV                | —               | 1.3       | 20                 | 1.0  | 700               | 1000  | 2100         | 3000  | 9                    |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 9LV                | —               | .9        | 22                 | .8   | 700               | 1000  | 2100         | 3000  | 7                    |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 10LV               | —               | .9        | 22                 | .8   | 700               | 1000  | 2100         | 3000  | 7                    |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 12LV               | —               | .9        | 22                 | .8   | 700               | 1000  | 2100         | 3000  | 7                    |
|            | 3HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 4HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |
|            | 1HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 6LV                | —               | 2.0       | 16                 | 1.8  | 700               | 1000  | 2100         | 3000  | 18                   |
| 5          | 1HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 8LV                | —               | 2.0       | 16                 | 1.8  | 400               | 600   | 1200         | 1800  | 15                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 10LV               | —               | 1.6       | 18                 | 1.2  | 600               | 800   | 1800         | 2100  | 11                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5  | 7000              | 10000 | 21000        | 30000 | —                    |
|            | 10LV               | —               | 2.0       | 16                 | 1.8  | 400               | 600   | 1200         | 1800  | 15                   |
|            | 1HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 24LV               | —               | 1.3       | 20                 | 1.0  | 400               | 600   | 1200         | 1800  | 6                    |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 4LV                | —               | 3.0       | 12                 | 2.7  | 700               | 1000  | 2100         | 3000  | 22                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 6LV                | —               | 2.0       | 16                 | 1.8  | 700               | 1000  | 2100         | 3000  | 18                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 8LV                | —               | 2.0       | 16                 | 1.8  | 700               | 1000  | 2100         | 3000  | 15                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 10LV               | —               | 1.6       | 18                 | 1.2  | 600               | 800   | 1800         | 2400  | 11                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 24LV               | —               | 1.3       | 20                 | 1.0  | 400               | 600   | 1200         | 1800  | 6                    |
|            | 3HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 4LV                | —               | 2.0       | 16                 | 1.8  | 400               | 600   | 1200         | 1800  | 18                   |
|            | 4HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 2LV                | —               | 2.0       | 16                 | 1.8  | 400               | 600   | 1200         | 1800  | 18                   |
|            | 2HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 3HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 4HV                | 2.0             | —         | 16                 | 1.5  | 3500              | 5000  | 10500        | 15000 | —                    |
|            | 8HV                | 2.0             | —         | 16                 | 1.5  | 2100              | 3000  | 6300         | 9000  | —                    |

# LEMO NIM-CAMAC (NBS ND-549) Connectors

LEMO's 00 family of 50 ohm coaxial connectors is ideal for applications where high density of connectors is necessary, especially for patch panels. These connectors have served as the norm for NIM-CAMAC (NBS ND-549) applications as well as many more and are available in a wide selection of shell configurations to meet a variety of needs.

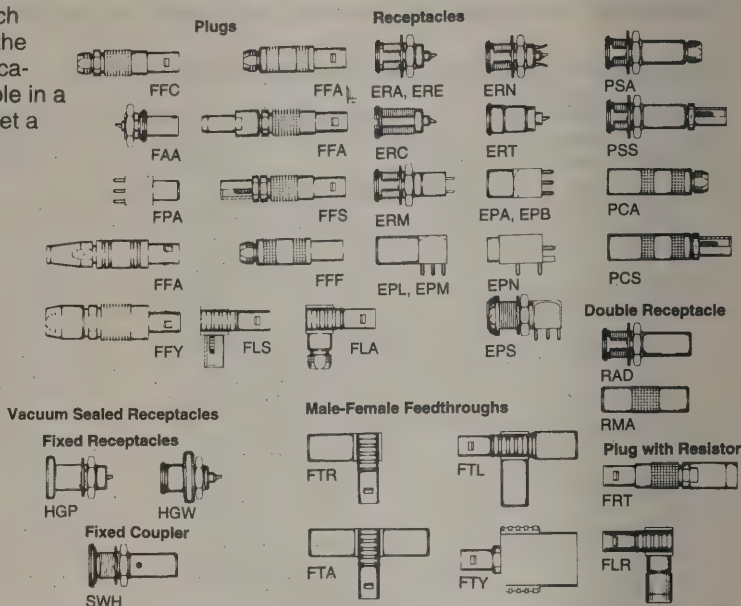
## Electrical Characteristics

| Characteristic           | Value             |
|--------------------------|-------------------|
| Impedance                | 50Ω               |
| Operating Voltage (50Hz) | .7kV rms          |
| Test Voltage (50Hz)      | 2.1kV rms         |
| Rated Current            | 4A                |
| Contact resistance       | <5 m              |
| Insulating resistance    | >10 <sup>12</sup> |
| VSWR (f+GHz)             | 1.01+.18f         |

## Recommended Cables:

|           |                  |
|-----------|------------------|
| RG.58C/U  | RG.188A/U        |
| RG.174A/U | RG.196A/U        |
| RG.178B/U | RG.316/U         |
| RG.179B/U | CCH.99.281.505   |
| RG.180B/U | CCE.99.281.505   |
| RG.187A/U | HF.2114 Datwyler |

## Shell Styles



## 01 Series - Minax Connectors

The plugs and receptacles of the 01 series are amongst LEMO's smallest 50 ohm coax connectors. In spite of their small size and light weight, their technical characteristics remain excellent. Available in a wide range of housing configurations, they are especially useful in printed circuit board applications.

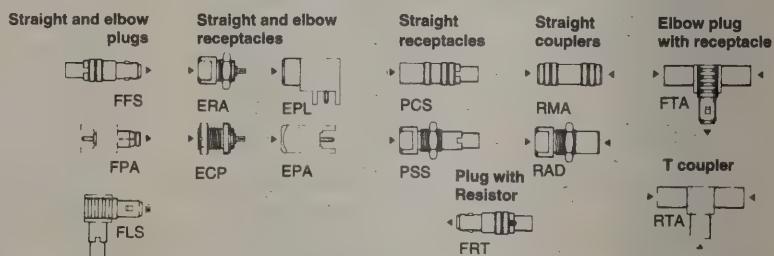
## Electrical Characteristics

| Characteristic           | Value             |
|--------------------------|-------------------|
| Impedance                | 50Ω               |
| Operating Voltage (50Hz) | .3kV rms          |
| Test Voltage (50Hz)      | 1.0kV rms         |
| Rated Current            | 4A                |
| Contact resistance       | <6 m              |
| Insulating resistance    | >10 <sup>12</sup> |
| VSWR (f+GHz)             | 1.03+.04f         |

## Recommended Cables:

|           |                |
|-----------|----------------|
| RG.174A/U | RG.316/U       |
| RG.178B/U | CCH.99.281.505 |
| RG.196A/U | CCE.99.281.505 |
| RG.188A/U |                |

## Shell Styles



## Other LEMO Coaxial Connectors

### 0A - Telecommunications Series 50 & 75 ohm

Designed to accommodate the following cables:

|                     |                         |
|---------------------|-------------------------|
| RG.58C/U            | CCH.99.281.505 LEMO     |
| RG.59B/U            | 2YCY(0.4/2.5) Siemens   |
| RG.174A/U           | 2YCCY(0.4/2.5) Siemens  |
| RG.179B/U           | 0722 102 11 001 Philips |
| RG.315/U            | 0722 102 29011 Philips  |
| CCE.99.281.505 LEMO | HF-5408/1 Datwyler      |

### Standard Series Coaxial & Triaxial Connectors:

Other 50 and 75 ohm coaxial and triaxial connectors are available to accommodate cables up to .866"/22.0mm. These are also available in an environmentally sealed design. Please see LEMO EEM page 6.

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# LEMO Video Triax Connectors

For video applications, LEMO offers a range of triaxial connectors specially designed for the connection of television cameras to their control equipment and are widely used by manufacturers of professional video cameras. These connectors can be used in indoor or outdoor environments.

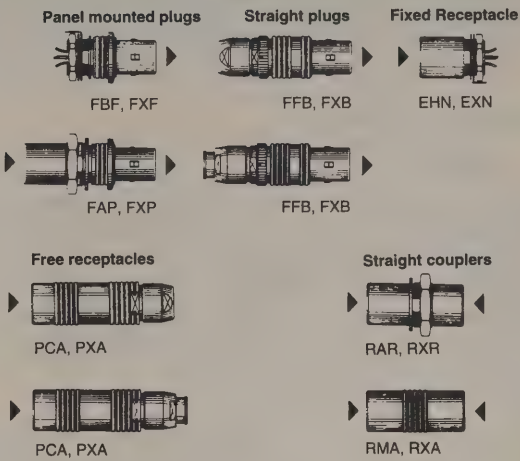
### Electrical Characteristics

|                            |             |
|----------------------------|-------------|
| Impedance                  | 75 Ω        |
| Operating frequency        | 2.5 GHz     |
| VSWR (f=GHz)               | 1.01+0.076f |
| Central contact resistance | <3m Ω       |
| Contact resistance         |             |
| Inner screen               | <1m Ω       |
| Watertightness (IEC 529)   | IP61        |

### Recommended Cables:

|                  |                 |                      |
|------------------|-----------------|----------------------|
| 8231-Belden      | 10069-C-G20-BIW | 9232-Belden          |
| HF-2426-Datwyler | 12766400-F&G    | 10070-C-G14-BIW      |
| 12765700-F&G     | 12766601-F&G    | 12766700-F&G         |
| 9267-Belden      | 8233-Belden     | 4.6/1.0EFTX-Fujikura |

### Shell Styles



# LEMO Plastic Connectors

### Redel Mini Plastic Connectors

These connectors features LEMO's self-latching quick connect-disconnect design. Their polysulfone (PSU) shell material was chosen because of its weight, corrosion resistance and good thermal properties as well as their ability to withstand steam or gas sterilization. Insert arrangements come in from 2-9 solder or printed circuit contacts.

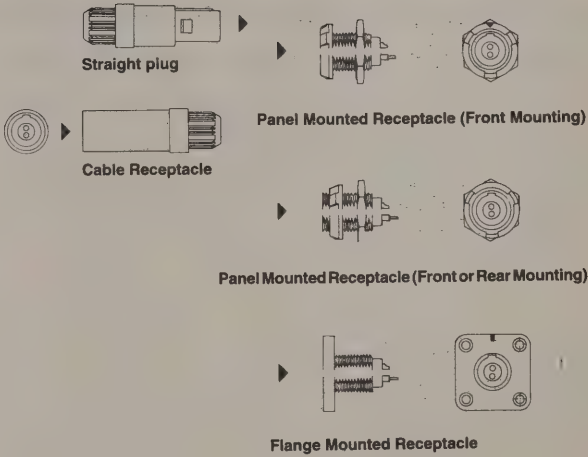
| Number of Contacts | Wire Max AWG | Test Voltage |      | Current |
|--------------------|--------------|--------------|------|---------|
|                    |              | AC           | DC   |         |
| 2                  | 20           | 1200         | 1800 | 10      |
| 4                  | 22           | 1200         | 1800 | 8       |
| 5                  | 22           | 1050         | 1500 | 7       |
| 6                  | 26           | 1050         | 1500 | 6       |
| 7                  | 26           | 1050         | 1500 | 5       |
| 9                  | 28           | 850          | 1200 | 3       |

### LEMO's 3P Plastic Connectors

LEMO's largest series of plastic connectors are available in the same polysulfone shell material as the Redel connectors (see above) but are equipped with o-ring seals which make them weather resistant. Their design offers 11 different keying arrangements and they are available in 6-18 crimp, solder and printed circuit contacts as well as mixed contact arrangements.

| Number of Contacts | Wire Max AWG | Test Voltage |       | Current |
|--------------------|--------------|--------------|-------|---------|
|                    |              | AC           | DC    |         |
| 6                  | 22           | 1200         | 1800  | 6       |
| 10                 | 22           | 1200         | 1800  | 5       |
| 14                 | 22           | 1050         | 1500  | 4       |
| 18                 | 24           | 1050         | 1500  | 3       |
| 9+ 1 HV            | 22           | 850          | 1200  | 4       |
|                    | 22           | 16800        | 22667 | 4       |

### Redel Shell Styles



### 3P Plastic Shell Styles



# LEMO Underwater Connectors

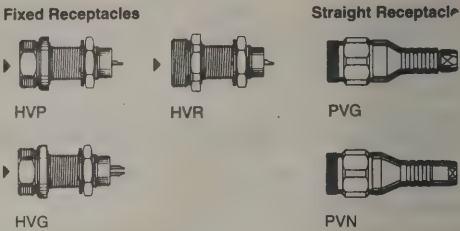
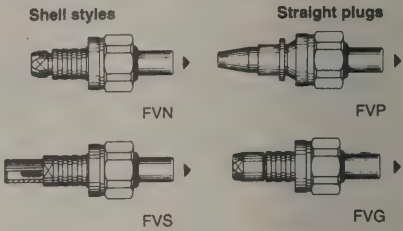
This new series of connectors has been specifically developed for applications where the connection must be guaranteed under very high pressure. The push-pull LEMO self-latching system is replaced by a screw thread connector coupling system which provides very high security, particularly against vibration. The watertight coupling is achieved by the compression of an O-ring made of Viton. After cable assembly, the rear of the plug is covered by a heat shrink tube. This series is available as 50 Ω coaxial or multipin with 2, 3 or 4 contacts.

### Mechanical and climatical

| Characteristics                    | Value                         | Standard      | Method |
|------------------------------------|-------------------------------|---------------|--------|
| Cable pull off Force <sup>1)</sup> | > 100 N                       | MIL-STD-1344A | 2007.1 |
| Protection index                   | > IP68                        | IEC 529       |        |
| Acceptable hydrostatic pressure    | ap. 60 bars                   | MIL-STD-1344A | 1006.1 |
| Endurance                          | > 1000 cycles                 | MIL-STD-1344A | 2016   |
| Operating temperature              | -55°C + 200°C (-67°F + 392°F) |               |        |

1) Average value  
1N = 0.102 kg

| Contact No. | Impedence (Ω) | Contact Ø (mm) | Operating Voltage |      | Test Voltage |      | Rated Current (A) | Wire AWG. max. |
|-------------|---------------|----------------|-------------------|------|--------------|------|-------------------|----------------|
|             |               |                | AC                | DC   | AC           | DC   |                   |                |
| 1           | 50            | 0.7            | 700               | 1000 | 2100         | 3000 | 4                 | 26             |
| 2           | —             | 0.5            | 400               | 500  | 1000         | 1500 | 5                 | 30             |
| 3           | —             | 0.5            | 400               | 500  | 1000         | 1500 | 3                 | 30             |
| 4           | —             | 0.5            | 300               | 500  | 800          | 1000 | 2                 | 30             |



# LEMO Fluidic/Pneumatic Connectors

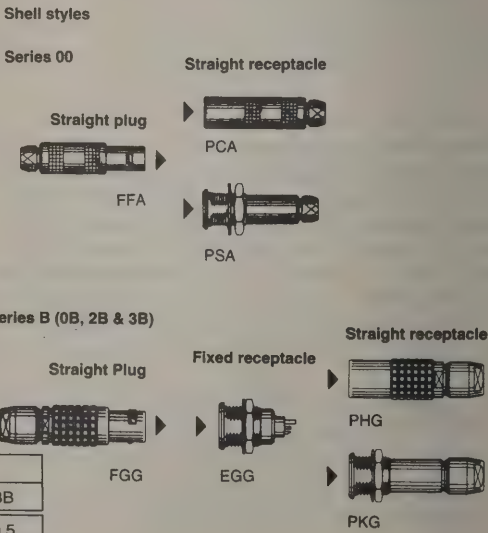
LEMO's fluidic connectors are found in many applications, for example in medical and dentistry equipment among others. These connectors may be of the monotube type available in the series 00 and 0B or the multitube type and/ or mixed with electrical contacts available in the series 2B and 3B. On request other types not mentioned in this catalog can be developed. Mixed connectors combining fluidic and signal contacts are also available. Please see page 6—in many cases where coaxial contacts are shown, fluidic/pneumatic many be substituted.

| Fluidics |         |                |                |                |                             |            |           | Low Voltage       |      |              |      |                   |  |
|----------|---------|----------------|----------------|----------------|-----------------------------|------------|-----------|-------------------|------|--------------|------|-------------------|--|
| Series   | Tube No | Ext. Ø of tube | Int. Ø of tube | Int. Ø of cont | Max. working pressure (bar) | Contact No | Contact Ø | Operating Voltage |      | Test Voltage |      | Rated Current (A) |  |
|          |         |                |                |                |                             |            |           | AC                | DC   | AC           | DC   |                   |  |
| 00       | 1       | 2.2            | 1.4            | 0.9            | 2.0                         | —          | —         | —                 | —    | —            | —    | —                 |  |
| 00       | 1       | 3.2            | 1.9            | 0.9            | 2.0                         | —          | —         | —                 | —    | —            | —    | —                 |  |
| 0B       | 1       | 5.0            | 4.0            | 1.6            | 2.0                         | —          | —         | —                 | —    | —            | —    | —                 |  |
| 2B       | 1       | 2.6            | 2.2            | 1.3            | 0.5                         | 4          | 0.9       | 0.33              | 0.50 | 1.0          | 1.50 | 8                 |  |
| 2B       | 1       | 3.6            | 3.2            | 1.6            | 0.5                         | 6          | 0.7       | 0.40              | 0.60 | 1.2          | 1.80 | 5                 |  |
| 3B       | 4       | 2.0            | 1.6            | 0.7            | 0.5                         | —          | —         | —                 | —    | —            | —    | —                 |  |
| 3B       | 2       | 2.6            | 2.2            | 1.3            | 0.5                         | 10         | 0.7       | 0.20              | 0.28 | 0.6          | 0.85 | 5                 |  |

1) Refer to the table for the diameters of the collets.  
2) For the monofluidic connector types, this diameter indicates the outside diameter of the fluidic tube being fitted.

### Mechanical and climatical

| Characteristics       | Unit   | Series                 |    |     |     |
|-----------------------|--------|------------------------|----|-----|-----|
|                       |        | 00                     | 0B | 2B  | 3B  |
| Max. working pressure | bar    | 2                      | 2  | 0.5 | 0.5 |
| Endurance             | cycles | >1000                  |    |     |     |
| Operating temperature | °C     | -15 + 30 (+5°F + 86°F) |    |     |     |



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**Connector terminology** is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.



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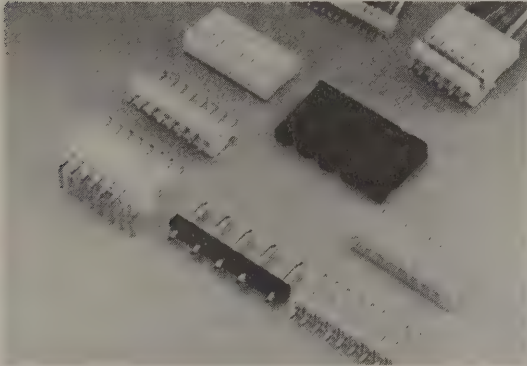
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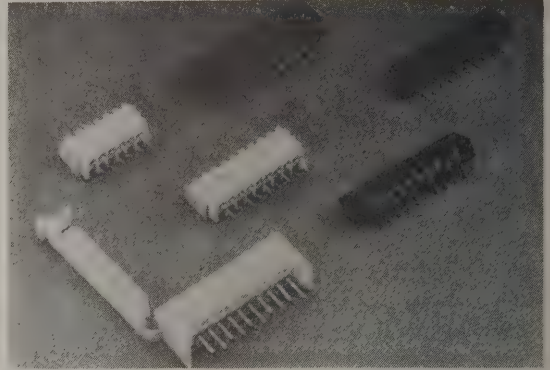
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**Standard Connector Products Available From Our California Warehouse Including:**

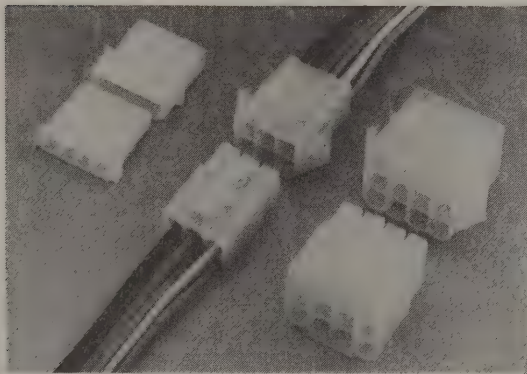
- |                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                               |                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>UL: Recognized<br>Component E82349<br>Factory E112807<br><br>CSA: Certified<br>Component LR65731<br>Factory LR68898<br><br>TUV Licensed<br>Component T9030180 | <ul style="list-style-type: none"> <li>■ PCB Interconnection System (Wire to Board, Board to Board &amp; Board in connector)</li> <li>■ Wire to Wire</li> <li>■ Faston Terminal</li> <li>■ Headers</li> <li>■ Mini Jumpers</li> <li>■ Edge Card</li> </ul> | <ul style="list-style-type: none"> <li>■ IC Sockets</li> <li>■ Flat Ribbon IDC</li> <li>■ ZIF FPC</li> <li>■ Wire Trap</li> <li>■ Modular Plugs</li> <li>■ Telephone Jacks</li> <li>■ PLCC's</li> <li>■ PGA Socket</li> </ul> | <ul style="list-style-type: none"> <li>■ SIMM Socket</li> <li>■ Ram Module Socket</li> <li>■ D-Subminiature</li> <li>■ High Density D-Subs</li> <li>■ Centronic</li> <li>■ Circular Din</li> <li>■ Mini Din</li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



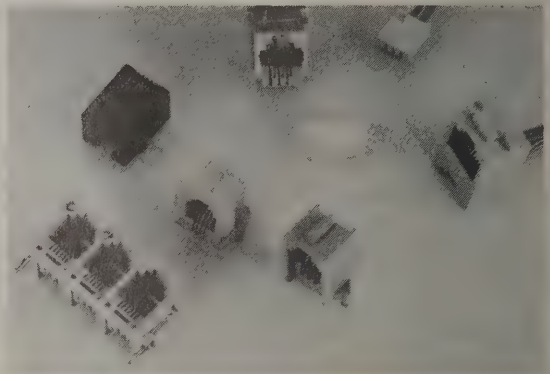
**Printed Circuit Board Interconnection System**



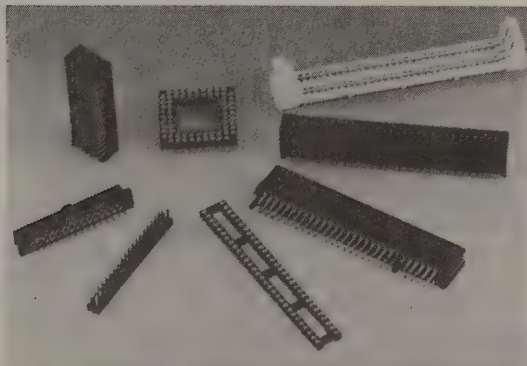
**ZIF FPC Connector & Wire Trap Connector**



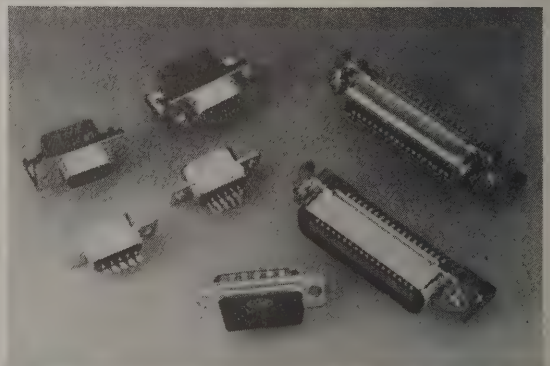
**Wire to Wire Power Connector**



**Telephone Jack**



**Header, Jumper, Edge Connector & Socket**



**D-Subminiature & Centronic Connector**



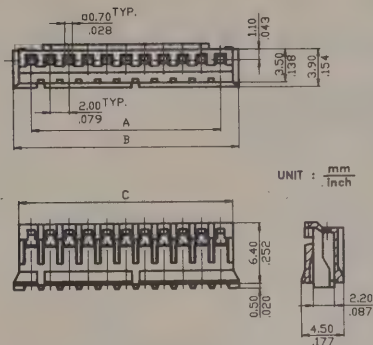


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41394 Christy Street, Fremont, CA 94538  
Phone: 510-651-0752 Fax: 510-651-2931  
800-562-2550

**2010 Series**  
**2.00mm (.079") Crimp Terminal Latch Socket**

- Features:**
- Available in 2 through 15 circuits
  - Low profile
  - With molded locking ramp
  - Nylon 6/6 UL94V-0
  - Accepts Leoco 2033 crimp terminal
  - Mates with Leoco 2011 straight or right angle version header



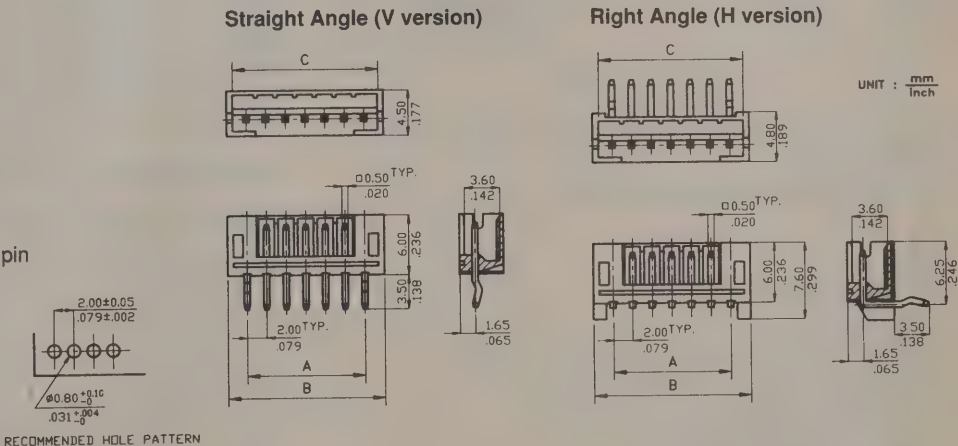
**Dimensional & Ordering Information**

| Circuits | Part No.    | Dimension     |               |               |
|----------|-------------|---------------|---------------|---------------|
|          |             | A             | B             | C             |
| 2        | 2010S020000 | 2.00 (.079)   | 5.80 (.228)   | 4.50 (.177)   |
| 3        | 2010S030000 | 4.00 (.157)   | 7.80 (.307)   | 6.50 (.256)   |
| 4        | 2010S040000 | 6.00 (.236)   | 9.80 (.386)   | 8.50 (.335)   |
| 5        | 2010S050000 | 8.00 (.315)   | 11.80 (.465)  | 10.50 (.413)  |
| 6        | 2010S060000 | 10.00 (.394)  | 13.80 (.543)  | 12.50 (.492)  |
| 7        | 2010S070000 | 12.00 (.472)  | 15.80 (.622)  | 14.50 (.571)  |
| 8        | 2010S080000 | 14.00 (.551)  | 17.80 (.701)  | 16.50 (.650)  |
| 9        | 2010S090000 | 16.00 (.630)  | 19.80 (.780)  | 18.50 (.728)  |
| 10       | 2010S100000 | 18.00 (.709)  | 21.80 (.858)  | 20.50 (.807)  |
| 11       | 2010S110000 | 20.00 (.787)  | 23.80 (.937)  | 22.50 (.886)  |
| 12       | 2010S120000 | 22.00 (.866)  | 25.80 (1.016) | 24.50 (.966)  |
| 13       | 2010S130000 | 24.00 (.945)  | 27.80 (1.094) | 26.50 (1.043) |
| 14       | 2010S140000 | 26.00 (1.024) | 29.80 (1.173) | 28.50 (1.122) |
| 15       | 2010S150000 | 28.00 (1.102) | 31.80 (1.252) | 30.50 (1.201) |

UL: Recognized No. E82349 CSA: Certified No. LR65731

**2011 Series**  
**2.00mm (.079") Header**

- Features:**
- Available in 2 through 15 circuits
  - Low profile
  - Fully shrouded
  - With Polarized slot
  - Nylon 6/6 UL94V-0
  - 0.50mm (0.20") tin plated square pin
  - Mates with Leoco 2010 socket



**Dimensional & Ordering Information**

| Circuits | Part No.       |             | Dimension     |               |               |
|----------|----------------|-------------|---------------|---------------|---------------|
|          | Straight Angle | Right Angle | A             | B             | C             |
| 2        | 2011P02V000    | 2011P02H000 | 2.00 (.079)   | 6.00 (.236)   | 4.70 (.185)   |
| 3        | 2011P03V000    | 2011P03H000 | 4.00 (.157)   | 8.00 (.315)   | 6.70 (.264)   |
| 4        | 2011P04V000    | 2011P04H000 | 6.00 (.236)   | 10.00 (.394)  | 8.70 (.343)   |
| 5        | 2011P05V000    | 2011P05H000 | 8.00 (.315)   | 12.00 (.472)  | 10.70 (.421)  |
| 6        | 2011P06V000    | 2011P06H000 | 10.00 (.394)  | 14.00 (.551)  | 12.70 (.500)  |
| 7        | 2011P07V000    | 2011P07H000 | 12.00 (.472)  | 16.00 (.630)  | 14.70 (.579)  |
| 8        | 2011P08V000    | 2011P08H000 | 14.00 (.551)  | 18.00 (.709)  | 16.70 (.657)  |
| 9        | 2011P09V000    | 2011P09H000 | 16.00 (.630)  | 20.00 (.787)  | 18.70 (.736)  |
| 10       | 2011P10V000    | 2011P10H000 | 18.00 (.709)  | 22.00 (.866)  | 20.70 (.815)  |
| 11       | 2011P11V000    | 2011P11H000 | 20.00 (.787)  | 24.00 (.945)  | 22.70 (.894)  |
| 12       | 2011P12V000    | 2011P12H000 | 22.00 (.866)  | 26.00 (1.024) | 24.70 (.972)  |
| 13       | 2011P13V000    | 2011P13H000 | 24.00 (.945)  | 28.00 (1.102) | 26.70 (1.051) |
| 14       | 2011P14V000    | 2011P14H000 | 26.00 (1.024) | 30.0 (1.181)  | 28.70 (1.130) |
| 15       | 2011P15V000    | 2011P15H000 | 28.00 (1.102) | 32.00 (1.260) | 30.70 (1.209) |

UL: Recognized No. E82349 CSA: Certified No. LR65731



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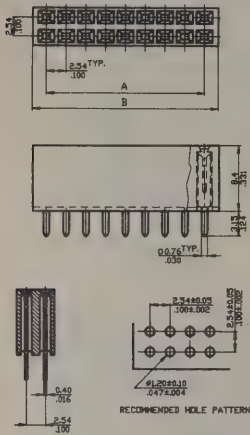
### 2543 Series

#### 2.54mm (.100") Dual Row PCB Connector

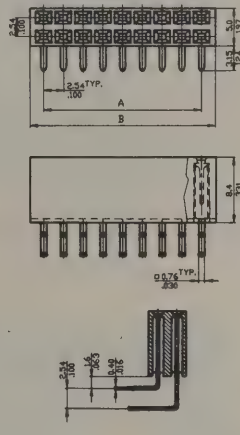
##### Features:

- Available in 4 through 80 circuits
- Color black
- Dual row
- With locking ramp P.C. Board standoff
- Standard with tin plated solder tail terminal
- Plating options available
- Glass filled polyester UL 94V-0
- Accepts 0.64mm(.025") square pin
- Contact: Phosphor bronze
- Mates with Leoco 2558, 2559, 2568, 2569 and 2666 header

##### Top Entry (V version)



##### Side Entry (H version)



A = 2.54mm x No. of spaces  
B = A + 3.04mm

##### Ordering Information:

| 2543S | 80 | V | U | 00 |
|-------|----|---|---|----|
| 1     | 2  | 3 | 4 | 5  |

1. Series No.
2. No. of circuits
3. V = Top entry  
H = Side entry
4. Contact plating:  
T = Tin plated  
U = Gold flash over 50  $\mu$ in. nickel  
W = 15  $\mu$ in. gold over 50  $\mu$ in. nickel  
Z = 30  $\mu$ in. gold over 50  $\mu$ in. nickel
5. Special options

##### Dimensional & Ordering Information

| Circuits | Part No.    | Dimension     |               |
|----------|-------------|---------------|---------------|
|          |             | A             | B             |
| 2        | 2500S020000 | 2.50 (.098)   | 5.50 (.217)   |
| 3        | 2500S030000 | 5.00 (.197)   | 8.00 (.315)   |
| 4        | 2500S040000 | 7.50 (.295)   | 10.50 (.413)  |
| 5        | 2500S050000 | 10.00 (.394)  | 13.00 (.512)  |
| 6        | 2500S060000 | 12.50 (.492)  | 15.50 (.610)  |
| 7        | 2500S070000 | 15.00 (.591)  | 18.00 (.709)  |
| 8        | 2500S080000 | 17.50 (.689)  | 20.50 (.807)  |
| 9        | 2500S090000 | 20.00 (.787)  | 23.00 (.906)  |
| 10       | 2500S100000 | 22.50 (.886)  | 25.50 (1.004) |
| 11       | 2500S110000 | 25.00 (.984)  | 28.00 (1.102) |
| 12       | 2500S120000 | 27.50 (1.083) | 30.50 (1.201) |
| 13       | 2500S130000 | 30.00 (1.181) | 33.00 (1.299) |
| 14       | 2500S140000 | 32.50 (1.280) | 35.50 (1.398) |
| 15       | 2500S150000 | 35.00 (1.378) | 38.00 (1.496) |
| 16       | 2500S160000 | 37.50 (1.476) | 40.50 (1.594) |
| 17       | 2500S170000 | 40.00 (1.575) | 43.00 (1.693) |
| 18       | 2500S180000 | 42.50 (1.673) | 45.50 (1.791) |
| 19       | 2500S190000 | 45.00 (1.772) | 48.00 (1.890) |
| 20       | 2500S200000 | 47.50 (1.870) | 50.50 (1.988) |

UL: Recognized No. E82349

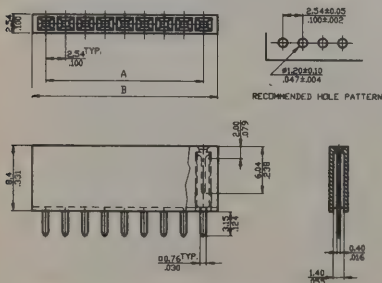
### 3594 Series

#### 2.54mm (.100") PCB Connector

##### Features:

- Available in 2 through 40 circuits
- Color black
- Single row
- With locking ramp P.C. Board standoff
- Standard with tin plated solder tail terminal
- Plating options available
- Glass filled polyester UL 94V-0
- Accepts 0.64mm(.025") square pin
- Contact: Phosphor bronze
- Mates with Leoco 2556, 2557, 2566 and 2567 header

##### Top Entry (V version)



A = 2.54mm x No. of spaces  
B = A + 3.05mm

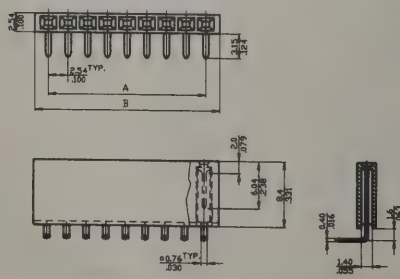
##### Ordering Information:

| 3594S | 40 | V | U | 00 |
|-------|----|---|---|----|
| 1     | 2  | 3 | 4 | 5  |

1. Series No.
2. No. of circuits
3. V = Top entry  
H = Side entry
4. Contact plating:  
T = Tin plated  
U = Gold flash over 50  $\mu$ in. nickel  
W = 15  $\mu$ in. gold over 50  $\mu$ in. nickel  
Z = 30  $\mu$ in. gold over 50  $\mu$ in. nickel
5. Special options

UL: Recognized No. E82349

##### Side Entry (H version)






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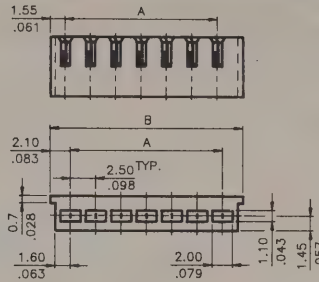
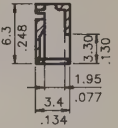
## 2512 Series

### 2.50mm (.098") Board in Connector

#### Features:

- Available in 2 through 20 circuits
- Low profile
- Use with 1.57mm (.062") thick P.C. Board
- Nylon 6/6 UL94V-0
- Accepts Leoco 2512 crimp type board in terminal

#### Dimensional & Ordering Information


 UNIT : mm  
Inch


| Circuits | Part No.    | Dimension     |               | Circuits | Part No.    | Dimension     |               |
|----------|-------------|---------------|---------------|----------|-------------|---------------|---------------|
|          |             | A             | B             |          |             | A             | B             |
| 2        | 2512S020000 | 2.50 ( .098)  | 6.70 ( .264)  | 11       | 2512S110000 | 25.00 ( .984) | 29.20 (1.150) |
| 3        | 2512S030000 | 5.00 ( .197)  | 9.20 ( .362)  | 12       | 2512S120000 | 27.50 (1.083) | 31.70 (1.248) |
| 4        | 2512S040000 | 7.50 ( .295)  | 11.70 ( .461) | 13       | 2512S130000 | 30.00 (1.181) | 34.20 (1.346) |
| 5        | 2512S050000 | 10.00 ( .394) | 14.20 ( .559) | 14       | 2512S140000 | 32.50 (1.280) | 36.70 (1.445) |
| 6        | 2512S060000 | 12.50 ( .492) | 16.70 ( .657) | 15       | 2512S150000 | 35.00 (1.378) | 39.20 (1.543) |
| 7        | 2512S070000 | 15.00 ( .591) | 19.20 ( .756) | 16       | 2512S160000 | 37.50 (1.476) | 41.70 (1.641) |
| 8        | 2512S080000 | 17.50 ( .689) | 21.70 ( .854) | 17       | 2512S170000 | 40.00 (1.575) | 44.20 (1.740) |
| 9        | 2512S090000 | 20.00 ( .787) | 24.20 ( .953) | 18       | 2512S180000 | 42.50 (1.673) | 46.70 (1.839) |
| 10       | 2512S100000 | 22.50 ( .886) | 26.70 (1.051) | 19       | 2512S190000 | 45.00 (1.772) | 49.20 (1.937) |
|          |             |               |               | 20       | 2512S200000 | 47.50 (1.870) | 51.70 (2.035) |

CSA: Certified No. LR65731

## 2512 Series

### 2.50mm (.098") Board in Terminal

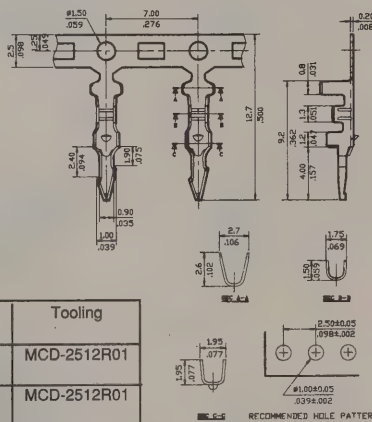
#### Features:

- Compliant tip holds terminal to P.C. Board
- Directly soldered on P.C. Board
- Used in Leoco 2512 connector
- Accommodate wire range 22 through 28
- Material: Pre-tinned phosphor bronze

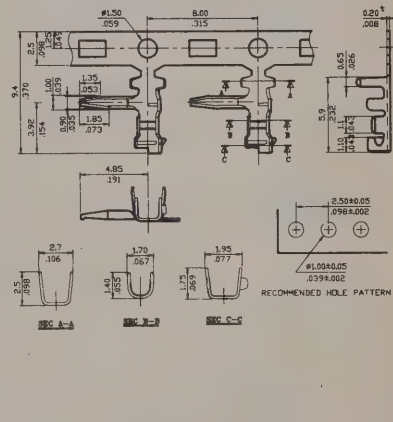
#### Specifications & Ordering Information:

| Part No.    | Wire Range  | Insulation Diameter | Reel Q'ty | Tooling     |
|-------------|-------------|---------------------|-----------|-------------|
| 2512TPB0V80 | AWG #22~#28 | 2.00 MAX. (.079)    | 10,000PCS | MCD-2512R01 |
| 2512TPB0H80 | AWG #22~#28 | 2.00 MAX. (.079)    | 10,000PCS | MCD-2512R01 |

2512TPB0V80



2512TPB0H80



## 9193 Series

### Board in Terminal

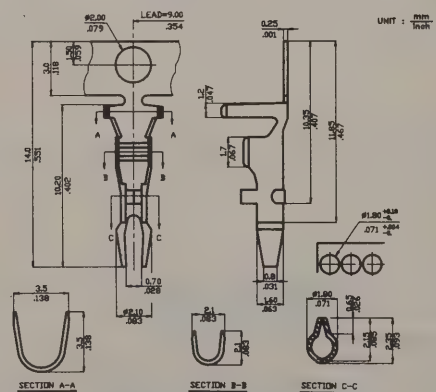
#### Features:

- Retaining clip shape secure wire to P.C. Board
- No additional contact resistance
- Accepts 18-24 AWG wire range
- Suitable for 1.57mm (.062") thick P.C. Board

#### Specifications & Ordering Information:

| Part No.    | Wire Ranges | Material          | Insulation Diameter | Reel Q'ty | Application Tooling |             |
|-------------|-------------|-------------------|---------------------|-----------|---------------------|-------------|
|             |             |                   |                     |           | Press               | Crimp Die   |
| 9193TCB00V1 | AWG#18-24   | Brass, Tin Plated | 2.65(.104) MAX      | 5,000PCS  | LCM-900***          | MCD-9193R01 |

P/N: 9193TCB00V1





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6700 Series  
2.00mm(.079") Diameter Receptacle and Plug Connector

- Features:**
- Can be used 6703, 6704, 6713, 6714 crimp terminal
  - Available in 1 through 15 circuits
  - Standard color natural

- Material:**
- Receptacle: Nylon 6/6 UL94V-2
  - Plug: Nylon 6/6 UL94V-2
  - Terminal: Brass, tin plated

Temperature Range: -25 to +85 degree C

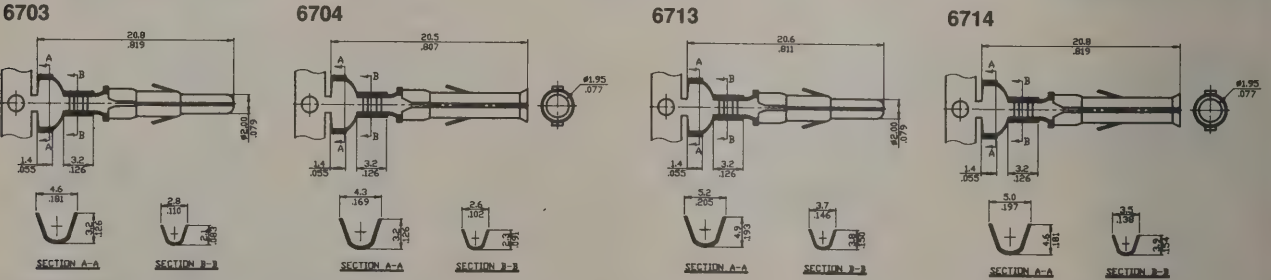
Technical Data

| Circuits | Dielectric Strength<br>AC/minute | Insulation Resistance<br>(Min.) | Contact Resistance<br>(Max.) | Voltage | Current Rating (Amps)<br>Crimp Wire Size(AWG) |     |     |         |
|----------|----------------------------------|---------------------------------|------------------------------|---------|-----------------------------------------------|-----|-----|---------|
|          |                                  |                                 |                              |         | #16                                           | #18 | #20 | #22 #24 |
| 1        | 1500V                            | 1000MΩ                          | 20mΩ                         | 600V    | 10                                            | 8   | 6   | 4 3     |
| 2        | 1500V                            | 1000MΩ                          | 20mΩ                         | 600V    | 10                                            | 8   | 6   | 4 3     |
| 3        | 1500V                            | 1000MΩ                          | 20mΩ                         | 300V    | 9                                             | 8   | 6   | 4 3     |
| 4        | 1500V                            | 1000MΩ                          | 20mΩ                         | 300V    | 9                                             | 7   | 6   | 4 3     |
| 6        | 1500V                            | 1000MΩ                          | 20mΩ                         | 300V    | 8                                             | 7   | 5   | 3 2     |
| 9        | 1500V                            | 1000MΩ                          | 20mΩ                         | 300V    | 7                                             | 6   | 5   | 3 2     |
| 12       | 1500V                            | 1000MΩ                          | 20mΩ                         | 300V    | 7                                             | 5   | 4   | 3 2     |
| 15       | 1500V                            | 1000MΩ                          | 20mΩ                         | 300V    | 7                                             | 5   | 4   | 3 2     |

UL: Recognized No. E82349

Dimensional & Ordering Information:

| Circuits | Receptacle Connector | Plug Connector       | Circuits | Receptacle Connector | Plug Connector       |
|----------|----------------------|----------------------|----------|----------------------|----------------------|
| 1        | P/N: 6700S01F000<br> | P/N: 6700S01M000<br> | 6        | P/N: 6700S06F000<br> | P/N: 6700S06M000<br> |
| 2        | P/N: 6700S02F000<br> | P/N: 6700S02M000<br> | 9        | P/N: 6700S09F000<br> | P/N: 6700S09M000<br> |
| 3        | P/N: 6700S03F000<br> | P/N: 6700S03M000<br> | 12       | P/N: 6700S12F000<br> | P/N: 6700S12M000<br> |
| 4        | P/N: 6700S04F000<br> | P/N: 6700S04M000<br> | 15       | P/N: 6700S15F000<br> | P/N: 6700S15M000<br> |



Specifications & Ordering Information:

| Part No.    | Wire Ranges | Contact | Material          | Insulation Diameter | Reel Q'ty | Application Tooling |
|-------------|-------------|---------|-------------------|---------------------|-----------|---------------------|
| 6703TCB0000 | AWG#20-24   | Male    | Brass, Tin plated | 2.48(.098) MAX      | 5,000PCS  | MCD-6703R01         |
| 6704TCB0000 | AWG#20-24   | Female  | Brass, Tin Plated | 2.48(.098)MAX       | 5,000PCS  | MCD-6704R01         |
| 6713TCB0000 | AWG#16-20   | Male    | Brass, Tin Plated | 3.50(.138)MAX       | 3,500PCS  | MCD-6713R01         |
| 6714TCB0000 | AWG#16-20   | Female  | Brass, Tin Plated | 3.30(.130)MAX       | 3,500PCS  | MCD-6714R01         |




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## 2556 Series

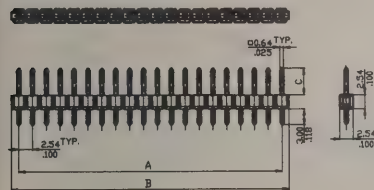
### 2.54mm (.100") Single Row Breakaway Straight Angle Header

#### Ordering Information:

| 2556P | 40 | T | A00 |
|-------|----|---|-----|
| 1     | 2  | 3 | 4   |

- Series No.
- No. of circuits
- Contact plating:  
T = Tin plated  
U = Gold flash over 50  $\mu$ m. nickel  
J = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
K = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Special options  
A00: Dim.C = 6.26mm  
B00: Dim.C = 7.26mm  
C00: Dim.C = 8.86mm  
D00: Dim.C = 5.86mm

UL: Recognized No. E82349  
TUV Licensed No. R9052132



A = 2.54mm x No. of spaces  
B = A + 2.54mm

#### Features:

- 40 circuits as standard size
- Glass filled polyester UL 94V-0
- Color black
- With standoff minimize flux wicking
- Easy breakaway to desired circuits
- Stackable row by row and end to end
- Mates with 2.54mm(.100") socket
- 0.64mm(.025") square pin
- Pin length and plating options available
- Pin omit options available in any circuits



RECOMMENDED HOLE PATTERN

## 2557 Series

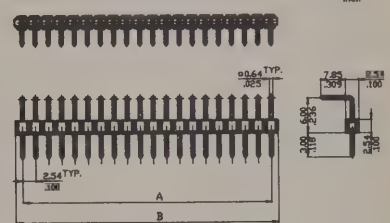
### 2.54mm (.100") Single Row Breakaway Right Angle Header

#### Ordering Information:

| 2557P | 40 | T | 000 |
|-------|----|---|-----|
| 1     | 2  | 3 | 4   |

- Series No.
- No. of circuits
- Contact plating:  
T = Tin plated  
U = Gold flash over 50  $\mu$ m. nickel  
J = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
K = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Special options

UL: Recognized No. E82349  
TUV Licensed No. R9052132



A = 2.54mm x No. of spaces  
B = A + 2.54mm

## 2558 Series

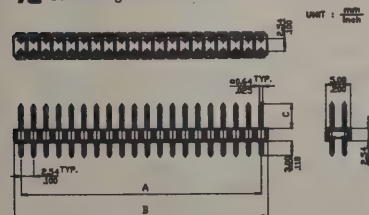
### 2.54mm (.100") Dual Row Breakaway Straight Angle Header

#### Ordering Information:

| 2558P | 80 | U | A00 |
|-------|----|---|-----|
| 1     | 2  | 3 | 4   |

- Series No.
- No. of circuits
- Contact plating:  
T = Tin plated  
U = Gold flash over 50  $\mu$ m. nickel  
J = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
K = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Special options  
A00: Dim.C = 6.26mm  
B00: Dim.C = 7.26mm  
C00: Dim.C = 8.86mm  
D00: Dim.C = 5.86mm

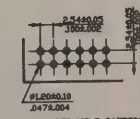
UL: Recognized No. E82349



A = 2.54mm x No. of spaces  
B = A + 2.54mm

#### Features:

- 40 circuits per row
- Glass filled polyester UL 94V-0
- Color black
- Row to row stackable
- Easy breakaway to desired circuits
- 2.54mm\* 2.54mm(.100" \* .100") Grid
- Mates with 2.54mm\* 2.54mm(.100" \* .100") socket
- 0.64mm(.025") square pin
- Pin length and plating options available
- Pin omit options available in any circuits



RECOMMENDED HOLE PATTERN

## 2559 Series

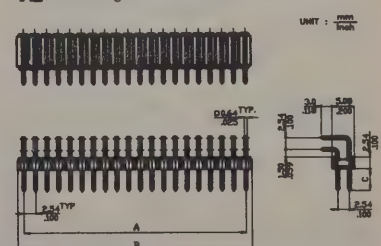
### 2.54mm (.100") Dual Row Breakaway Right Angle Header

#### Ordering Information:

| 2559P | 80 | U | A00 |
|-------|----|---|-----|
| 1     | 2  | 3 | 4   |

- Series No.
- No. of circuits
- Contact plating:  
T = Tin plated  
U = Gold flash over 50  $\mu$ m. nickel  
J = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
K = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Special options  
A00: Dim.C = 6.26mm  
B00: Dim.C = 7.26mm  
C00: Dim.C = 8.86mm  
D00: Dim.C = 5.86mm

UL: Recognized No. E82349



A = 2.54mm x No. of spaces  
B = A + 2.54mm


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## 2560 Series

### 2.54mm (.100") Single Mini Jumper

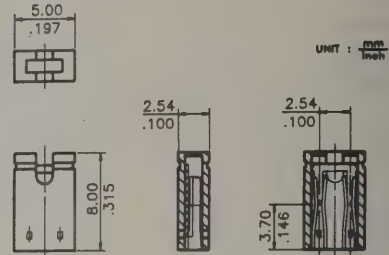
#### Features:

- Fully stackable
- Dual contact terminal
- Mates 0.64mm (.025") square pin on 2.54mm (.100") header
- Glass filled polyester UL94V-0

#### Ordering Information:

| Part No.    | Contact Plating                               |
|-------------|-----------------------------------------------|
| 2560ST00001 | 200 $\mu$ m tin plated over nickel            |
| 2560SU00001 | Gold flash over 50 $\mu$ m Nickel             |
| 2560SX00001 | 10 $\mu$ m gold plated over 50 $\mu$ m nickel |
| 2560SW0001  | 15 $\mu$ m gold plated over 50 $\mu$ m nickel |
| 2560SZ00001 | 30 $\mu$ m gold plated over 50 $\mu$ m nickel |

UL: Recognized No. E82349



## 2544 Series

### 2.54mm (.100") Dual Row Edge Connector

#### Features:

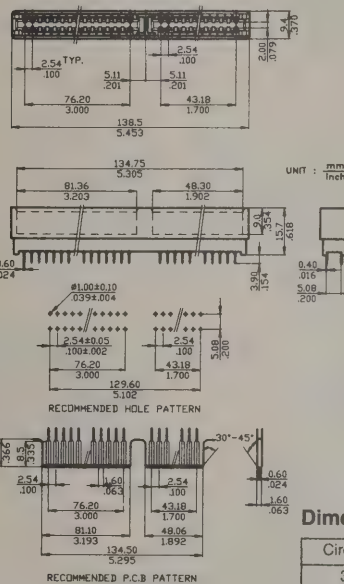
- Available in 36 through 98 circuits
- With molded standoffs
- Plating on contact surface (selective gold plated)
- Contact material: Phosphor bronze
- Insulator: Glass filled polyester UL94V-0
- Pin length or plating options available

#### Ordering Information:

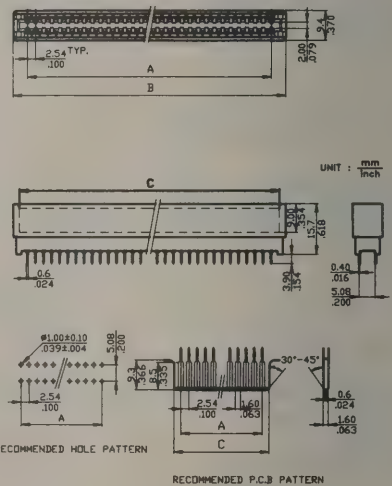
| 2544S | 62 | U | N | 01 |
|-------|----|---|---|----|
| 1     | 2  | 3 | 4 | 5  |

- Series No.
- No. of circuits
- U = Selective Gold flash over 50  $\mu$ m, nickel  
 X = 10  $\mu$ m, selective gold over 50  $\mu$ m, nickel  
 W = 15  $\mu$ m, selective gold over 50  $\mu$ m, nickel  
 Z = 30  $\mu$ m, selective gold over 50  $\mu$ m, nickel
- N = Without mounting ear
- Special options

P/N 2544S98\*NO1



P/N 2544S\*\*\*NO1 (For 36-62 circuits)



#### Dimension

| Circuits | A             | B             | C             |
|----------|---------------|---------------|---------------|
| 36       | 43.18 (1.700) | 52.00 (2.047) | 48.30 (1.902) |
| 62       | 76.20 (3.000) | 85.20 (3.354) | 81.30 (3.201) |

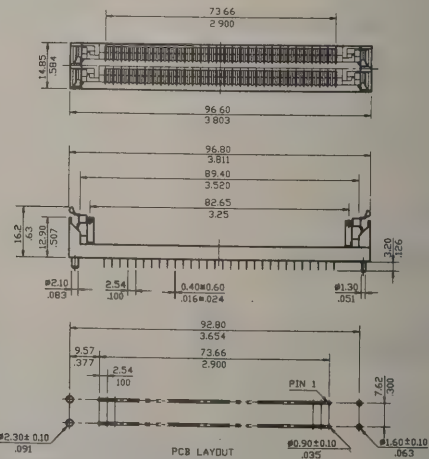
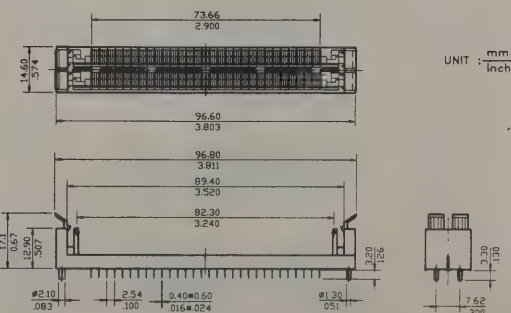
UL: Recognized No. E82349

## 2142 Series

### 2.54mm (.100") SIMM Socket Vertical Type

P/N: 2142S60TAE0

P/N: 2142S60TAM0





## 8111 Series

### 1.27mm (.050") SMT Chip Carrier

### Features:

- Surface mount type
- Insulator: P.P.S UL94V-0
- Contact: Phosphor bronze

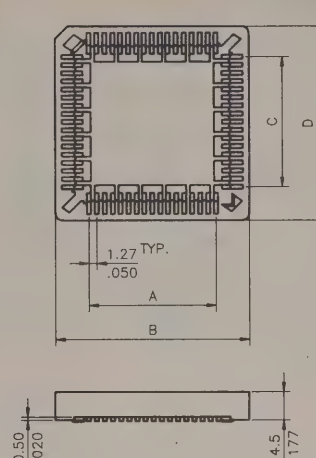
1. Series No.
2. No. of circuits
3. Contact plating  
T = Tin plated  
U = Gold flash over 50  $\mu\text{in.}$  nickel
4. Special Options  
000 = Black color (standard)

### Ordering Information:

|             |           |          |            |
|-------------|-----------|----------|------------|
| <u>8111</u> | <u>84</u> | <u>T</u> | <u>000</u> |
| 1           | 2         | 3        | 4          |

### Dimensional & Ordering Information

| Circuits | A             | B             | C             | D             |
|----------|---------------|---------------|---------------|---------------|
| 20       | 5.08 (.200)   | 15.78 (.621)  | 5.08 (.200)   | 15.78 (.621)  |
| 28       | 7.62 (.300)   | 18.32 (.721)  | 7.62 (.300)   | 18.32 (.721)  |
| 32       | 7.62 (.300)   | 18.32 (.721)  | 10.16 (.400)  | 20.86 (.821)  |
| 44       | 12.70 (.500)  | 23.40 (.921)  | 12.70 (.500)  | 23.40 (.921)  |
| 52       | 15.24 (.600)  | 25.94 (1.021) | 15.24 (.600)  | 25.94 (1.021) |
| 68       | 20.32 (.800)  | 31.02 (1.221) | 20.32 (.800)  | 31.02 (1.221) |
| 84       | 25.40 (1.000) | 36.10 (1.421) | 25.40 (1.000) | 36.10 (1.421) |



## 8300 Series

### 2.54mm (.100") Dual In Line IC Socket

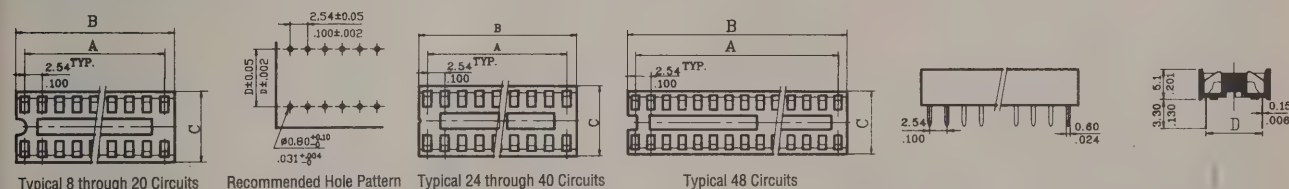
### Features:

- Low Profile
- Dual contact terminal
- Available in 8, 14, 16, 18, 20, 24, 28, 40, 42 and 48 contacts
- Glass filled polyester UL 94V-0
- Anti-solder wicking
- Contact: Phosphor bronze
- Plating: Tin plated

### Dimensional & Ordering Information

| Part No.    | Dim. A        | Dim. B        | Dim. C       | Dim. D       |
|-------------|---------------|---------------|--------------|--------------|
| 8300-08AT00 | 7.62 (.300)   | 10.00 (.394)  | 9.90 (.390)  | 7.62 (.300)  |
| 8300-14AT00 | 15.24 (.600)  | 17.60 (.693)  | 9.90 (.390)  | 7.62 (.300)  |
| 8300-16AT00 | 17.78 (.700)  | 20.20 (.795)  | 9.90 (.390)  | 7.62 (.300)  |
| 8300-18AT00 | 20.32 (.800)  | 22.70 (.894)  | 9.90 (.390)  | 7.62 (.300)  |
| 8300-20AT00 | 22.86 (.900)  | 25.30 (.996)  | 9.90 (.390)  | 7.62 (.300)  |
| 8300-24AT00 | 27.94 (1.100) | 30.30 (1.193) | 17.60 (.693) | 15.24 (.600) |
| 8300-28AT00 | 33.02 (1.300) | 35.40 (1.394) | 17.60 (.693) | 15.24 (.600) |
| 8300-32AT00 | 38.10 (1.500) | 40.50 (1.594) | 17.60 (.693) | 15.24 (.600) |
| 8300-40AT00 | 48.26 (1.900) | 50.70 (1.996) | 17.60 (.693) | 15.24 (.600) |
| 8300-48AT00 | 58.42 (2.300) | 60.80 (2.394) | 17.60 (.693) | 15.24 (.600) |

**UL: Recognized No. E82349**

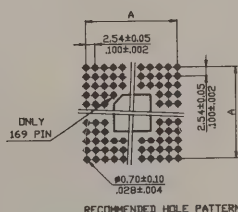


## 8350 Series

**2.54mm x 2.54mm (.100" x .100") Pin Grid Array (PGA) Socket**

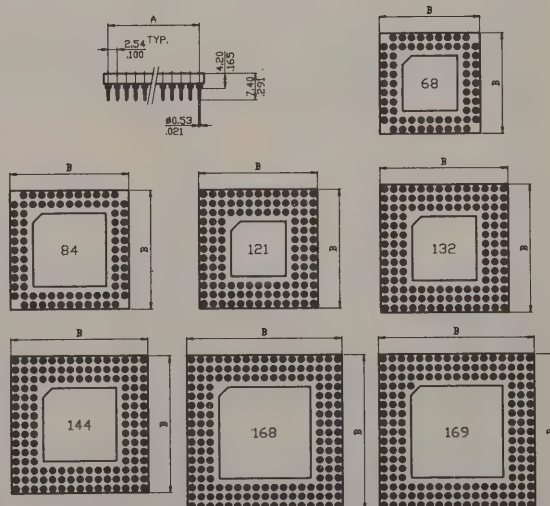
### Features:

- Anti solder wicking
- With 6 inner finger contact
- Insulator: P.P.S. UL94V-0
- Contact plating
  - Inner contact - 10  $\mu\text{m}$ . gold over nickel
  - Outer sleeve - Tin plated brass



### Dimensional & Ordering Information

| Circuits | Part No.    | Dim. A        | Dim. B        |
|----------|-------------|---------------|---------------|
| 68       | 8350-068X00 | 25.40 (1.000) | 28.60 (1.126) |
| 84       | 8350-084X00 | 30.48 (1.200) | 33.70 (1.327) |
| 121      | 8350-121X00 | 30.48 (1.200) | 33.00 (1.299) |
| 132      | 8350-132X00 | 33.02 (1.300) | 35.60 (1.402) |
| 144      | 8350-144X00 | 35.56 (1.400) | 38.10 (1.500) |
| 168      | 8350-168X00 | 40.64 (1.600) | 43.20 (1.701) |
| 169      | 8350-169X00 | 40.64 (1.600) | 43.20 (1.701) |




**LEOCO CORPORATION**

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 800-562-2550

## 2540 Series

**2.54mm x 2.54mm (.100" x .100") I.D.C. Connector for 1.27mm (.050") Center Ribbon Cable**

### Features:

- Available in 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 56, 60, 62, and 64 circuits
- Accommodate wire range 26 through 28
- Selective gold plating
- Can be assembled by Leoco LHM-1204000 bench press
- Insulator: Glass filled polyester UL94V-0
- Contact material: Phosphor bronze
- Accept with 6001PK-0006 polarization key
- Mates with Leoco 2545, 2575, 3575 straight or right angle version shrouded header

### Ordering Information:

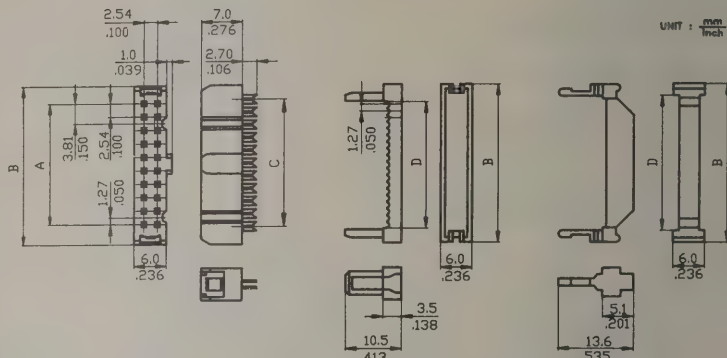
**2540S**      **34**      **X**      **001**  
**1**      **2**      **3**      **4**

1. Series No.
2. No. of circuits
3. Contact plating  
 T = Tin plated  
 U = Gold flash over 50 µin. nickel  
 W = 15 µin. selective gold over 50 µin. nickel  
 Z = 30 µin. selective gold over 50 µin. nickel
4. Color code  
 1 = Black  
 9 = Gray

### Strain Relief:

**2540S**      **34**      **SR**      **01**  
**1**      **2**      **3**      **4**

1. Series No.
2. No. of circuits
3. Strain relief
4. Color code:  
 1 = Black



### Dimension & Ordering Information

| Circuits | Dim. A         | Dim. B         | Dim. C         | Dim. D         |
|----------|----------------|----------------|----------------|----------------|
| 10       | 10.16 ( .400)  | 17.40 ( .685)  | 11.43 ( .450)  | 13.00 ( .512)  |
| 14       | 15.24 ( .600)  | 22.35 ( .880)  | 16.51 ( .650)  | 18.00 ( .709)  |
| 16       | 17.78 ( .700)  | 24.89 ( .980)  | 19.05 ( .750)  | 20.50 ( .807)  |
| 20       | 22.86 ( .900)  | 29.97 ( 1.180) | 24.13 ( .950)  | 25.50 ( 1.004) |
| 26       | 30.48 ( 1.200) | 37.59 ( 1.480) | 31.75 ( 1.250) | 33.20 ( 1.307) |
| 34       | 40.64 ( 1.600) | 47.75 ( 1.880) | 41.91 ( 1.650) | 43.40 ( 1.709) |
| 40       | 48.26 ( 1.900) | 55.37 ( 2.180) | 49.53 ( 1.950) | 51.20 ( 2.016) |
| 50       | 60.96 ( 2.400) | 68.30 ( 2.690) | 62.23 ( 2.450) | 63.80 ( 2.512) |
| 60       | 73.66 ( 2.900) | 80.77 ( 3.180) | 74.93 ( 2.950) | 76.40 ( 3.008) |
| 64       | 78.74 ( 3.100) | 85.85 ( 3.380) | 80.01 ( 3.150) | 81.60 ( 3.213) |

UL: Recognized No. E82349

## 2545 Series

**2.54mm x 2.54mm (.100" x .100")**

**Straight Shrouded Header**

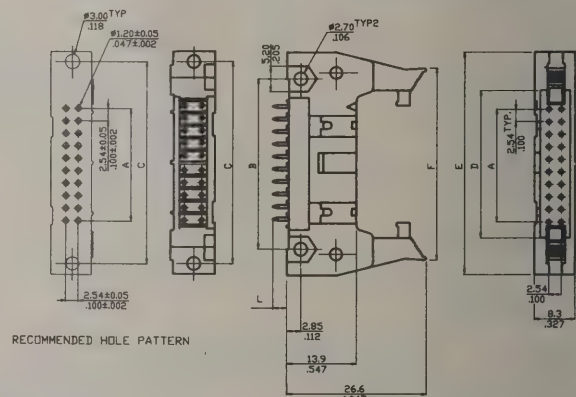
### Features:

- Available in 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, and 64 circuits
- Fully shrouded polarized
- Latches connector with or without strain relief
- With ejector latch lever
- Optional length of P.C. Board solder or pin wrap foil available
- Glass filled polyester UL94V-0
- 0.64mm (.025") square pin
- Mates with Leoco 2540 ribbon cable connector

### Ordering Information:

**2545P**      **34**      **V**      **U**      **A**      **L**  
**1**      **2**      **3**      **4**      **5**      **6**

1. Series No.
2. No. of circuits
3. V = Straight angle
4. Contact Plating  
 T = Tin plated  
 U = Gold flash over 50 µin. nickel  
 W = 15 µin. gold over 50 µin. nickel  
 Z = 30 µin. gold over 50 µin. nickel
5. Pin Length options  
 A: Dim. D = 3.30mm
6. S = Short latches (Mated connector w/o strain relief)  
 L = Long latches (Mated connector with strain relief)



RECOMMENDED HOLE PATTERN

### Dimension & Ordering Information

| Cirts. | Dim. A         | Dim. B         | Dim. C         | Dim. D         | Dim. E          | Dim. F         |
|--------|----------------|----------------|----------------|----------------|-----------------|----------------|
| 10     | 10.16 ( .400)  | 21.84 ( .860)  | 27.94 ( 1.100) | 17.52 ( .690)  | 32.00 ( 1.260)  | 26.20 ( 1.031) |
| 14     | 15.24 ( .600)  | 26.92 ( 1.060) | 33.02 ( 1.300) | 22.60 ( .890)  | 37.10 ( 1.461)  | 31.20 ( 1.228) |
| 16     | 17.78 ( .700)  | 29.46 ( 1.160) | 35.56 ( 1.400) | 25.14 ( .990)  | 39.60 ( 1.560)  | 33.70 ( 1.327) |
| 20     | 22.86 ( .900)  | 34.54 ( 1.360) | 40.64 ( 1.600) | 30.22 ( 1.190) | 44.70 ( 1.760)  | 38.70 ( 1.524) |
| 24     | 27.94 ( 1.100) | 39.62 ( 1.560) | 45.72 ( 1.800) | 35.30 ( 1.390) | 49.80 ( 1.961)  | 43.80 ( 1.724) |
| 26     | 30.48 ( 1.200) | 42.16 ( 1.660) | 48.26 ( 1.900) | 37.84 ( 1.490) | 52.30 ( 2.059)  | 45.70 ( 1.799) |
| 30     | 35.56 ( 1.400) | 47.24 ( 1.860) | 53.34 ( 2.100) | 42.92 ( 1.690) | 57.40 ( 2.260)  | 50.80 ( 2.000) |
| 34     | 40.64 ( 1.600) | 52.32 ( 2.060) | 58.42 ( 2.300) | 48.00 ( 1.890) | 62.50 ( 2.461)  | 55.70 ( 2.193) |
| 40     | 48.26 ( 1.900) | 59.94 ( 2.360) | 66.04 ( 2.600) | 55.62 ( 2.190) | 70.10 ( 2.760)  | 64.20 ( 2.528) |
| 50     | 60.96 ( 2.400) | 72.64 ( 2.860) | 78.74 ( 3.100) | 68.32 ( 2.690) | 82.80 ( 3.260)  | 76.00 ( 2.992) |
| 60     | 73.66 ( 2.900) | 85.34 ( 3.360) | 91.44 ( 3.600) | 81.02 ( 3.190) | 95.50 ( 3.760)  | 88.70 ( 3.492) |
| 64     | 78.74 ( 3.100) | 90.42 ( 3.560) | 96.52 ( 3.800) | 86.10 ( 3.390) | 100.60 ( 3.961) | 94.20 ( 3.709) |

UL: Recognized No. E82349





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# 2545H Series

## 2.54mm x 2.54mm (.100" x .100") Right Shrouded Header

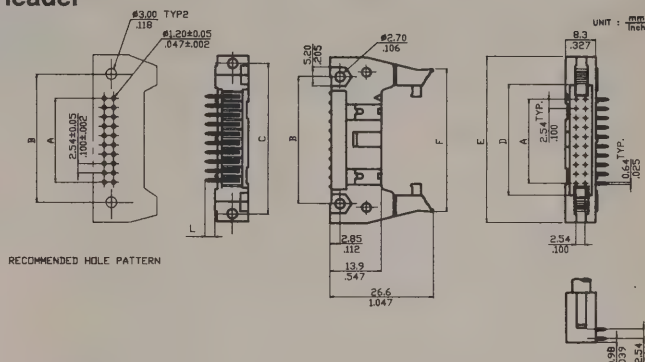
### Features:

- Available in 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, and 64 circuits
- Fully shrouded polarized
- Latches connector with or without strain relief
- With ejector latch lever
- Optional length of P.C. Board solder or pin wrap foil available
- Machine screw 10mm(Max.) and hexagon nut M2 used for mounting
- Glass filled polyester UL 94V-0
- 0.64mm(.025") square pin
- Mates with Leoco 2540 ribbon cable connector

### Ordering Information:

| 2545P | 34 | H | U | A | L |
|-------|----|---|---|---|---|
| 1     | 2  | 3 | 4 | 5 | 6 |

- Series No.
- No. of circuits
- H = Right angle
- Contact Plating  
T = Tin plated  
U = Gold flash over 50  $\mu$ m. nickel  
W = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
Z = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Pin Length options  
A: Dim. D = 3.30mm
- S = Short latches (Mated connector w/o strain relief)  
L = Long latches (Mated connector with strain relief)



### Dimension & Ordering Information

| Cirts. | Dim. A        | Dim. B        | Dim. C        | Dim. D        | Dim. E         | Dim. F        |
|--------|---------------|---------------|---------------|---------------|----------------|---------------|
| 10     | 10.16 (.400)  | 21.84 (.860)  | 27.94 (1.100) | 17.52 (.690)  | 32.00 (1.260)  | 26.20 (1.031) |
| 14     | 15.24 (.600)  | 26.92 (1.060) | 33.02 (1.300) | 22.60 (.890)  | 37.10 (1.461)  | 31.20 (1.228) |
| 16     | 17.78 (.700)  | 29.46 (1.160) | 35.56 (1.400) | 25.14 (.990)  | 39.60 (1.560)  | 33.70 (1.327) |
| 20     | 22.86 (.900)  | 34.54 (1.360) | 40.64 (1.600) | 30.22 (1.190) | 44.70 (1.760)  | 38.70 (1.524) |
| 24     | 27.94 (1.100) | 39.62 (1.560) | 45.72 (1.800) | 35.30 (1.390) | 49.80 (1.961)  | 43.80 (1.724) |
| 26     | 30.48 (1.200) | 42.16 (1.660) | 48.26 (1.900) | 37.84 (1.490) | 52.30 (2.059)  | 45.70 (1.799) |
| 30     | 35.56 (1.400) | 47.24 (1.860) | 53.34 (2.100) | 42.92 (1.690) | 57.40 (2.260)  | 50.80 (2.000) |
| 34     | 40.64 (1.600) | 53.32 (2.060) | 58.42 (2.300) | 48.00 (1.890) | 62.50 (2.461)  | 55.70 (2.193) |
| 40     | 48.26 (1.900) | 59.94 (2.360) | 66.04 (2.600) | 55.62 (2.190) | 70.10 (2.760)  | 64.20 (2.528) |
| 50     | 60.96 (2.400) | 72.64 (2.860) | 78.74 (3.100) | 68.32 (2.690) | 82.80 (3.260)  | 76.00 (2.992) |
| 60     | 73.66 (2.900) | 85.34 (3.360) | 91.44 (3.600) | 81.02 (3.190) | 95.50 (3.760)  | 88.70 (3.492) |
| 64     | 78.74 (3.100) | 90.42 (3.560) | 96.52 (3.800) | 86.10 (3.390) | 100.60 (3.961) | 94.20 (3.709) |

UL: Recognized No. E82349

# 3575 Series

## 2.54mm x 2.54mm (.100" x .100") Shrouded Header

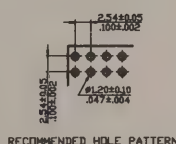
### Features:

- Available in 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, and 64 circuits
- Low profile
- Fully shrouded
- Optional length of P.C. Board solder or pin wrap foil available
- Plating options available
- Glass filled polyester UL94V-0
- Accepts 0.64mm(.025") square pin
- Mates with Leoco 2540 ribbon cable connector

### Ordering Information:

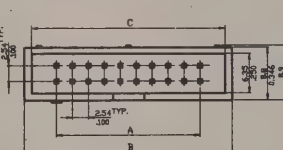
| 3575P | 34 | V | X | A | 0 |
|-------|----|---|---|---|---|
| 1     | 2  | 3 | 4 | 5 | 6 |

- Series No.
- No. of circuits
- V = Straight angle  
H = Right angle
- Contact Plating  
T = Tin plated  
U = Gold flash over 50  $\mu$ m. nickel  
W = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
Z = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Pin Length options  
A: Dim. D = 3.30mm
- Special options

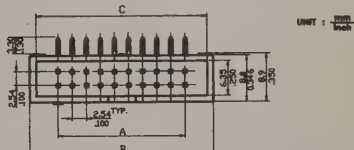


### Straight Angle (V version)

### Right Angle (H version)



For 50p, 60p, 64p



For 50p, 60p, 64p

### Dimensional & Ordering Information

| Circuits | Dim. A        | Dim. A        | Dim. B        |
|----------|---------------|---------------|---------------|
| 10       | 10.16 (.400)  | 20.50 (.807)  | 18.10 (.713)  |
| 14       | 15.24 (.600)  | 25.60 (1.008) | 23.18 (.913)  |
| 16       | 17.78 (.700)  | 28.10 (1.106) | 25.72 (1.013) |
| 20       | 22.86 (.900)  | 33.20 (1.307) | 30.80 (1.213) |
| 26       | 30.48 (1.200) | 40.80 (1.606) | 38.42 (1.513) |
| 30       | 35.56 (1.400) | 45.90 (1.807) | 43.50 (1.713) |
| 34       | 40.64 (1.600) | 51.00 (2.008) | 48.58 (1.913) |
| 40       | 48.26 (1.900) | 58.60 (2.307) | 56.20 (2.213) |
| 50       | 60.96 (2.400) | 71.30 (2.807) | 68.90 (2.713) |
| 60       | 73.66 (2.900) | 84.00 (3.307) | 81.60 (3.213) |
| 64       | 78.74 (3.100) | 89.10 (3.508) | 86.68 (3.413) |

UL: Recognized No. E82349


**LEOCO CORPORATION**

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## 7606 Series

### PCB Gang Jack Side Entry Type

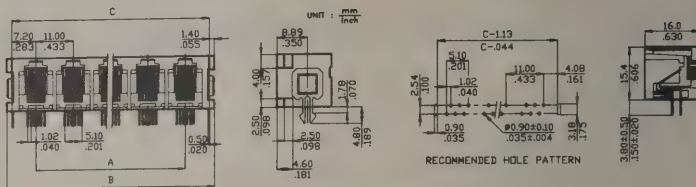
#### Features:

- Housing: Glass filled Nylon 6/6 UL94V-0
- Contact: 0.46mm(.018") Dia. Phosphor bronze
- Metal foot: 0.50mm(.020") thickness brass tin plated

#### Ordering Information:

| 7606 | 2 | 6 | 06 | W | 0 |
|------|---|---|----|---|---|
| 1    | 2 | 3 | 4  | 5 | 6 |

1. Series No.
2. No. of Parts: 2, 3, 4, 5, 6, 7, and 8
3. No. of positions: 6
4. No. of contacts: 2, 4, and 6
5. Contact plating  
 W = 15 µin. gold over 50 µin. nickel  
 Z = 30 µin. gold over 50 µin. nickel  
 G = 50 µin. gold over 50 µin. nickel
6. 0 = Gray color (Standard)  
 1 = Black color



#### Dimensional & Ordering Information

| Circuits | Dim. A        | Dim. B        | Dim. C        |
|----------|---------------|---------------|---------------|
| 2        | 11.00 (.433)  | 28.20 (1.110) | 25.40 (1.000) |
| 3        | 22.00 (.866)  | 39.20 (1.543) | 36.40 (1.433) |
| 4        | 33.00 (1.299) | 50.20 (1.976) | 47.40 (1.866) |
| 5        | 44.00 (1.732) | 61.20 (2.410) | 58.40 (2.299) |
| 6        | 55.00 (2.165) | 72.20 (2.842) | 69.40 (2.732) |
| 7        | 66.00 (2.598) | 83.20 (3.275) | 80.40 (3.165) |
| 8        | 77.00 (3.030) | 94.20 (3.710) | 91.40 (3.598) |

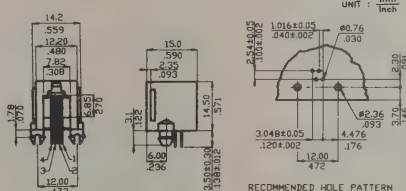
## 7624 Series

### PCB Mount Telephone Jack

#### Features:

- Mated with 1.57mm(.062") thick P.C. board
- Industry compatible
- Right angle
- Options material or color available
- Housing: Glass filled Nylon 6/6 UL94V-0
- Contact: 0.46mm(.018") Dia. Phosphor bronze

P/N 7624-040\*\*\*

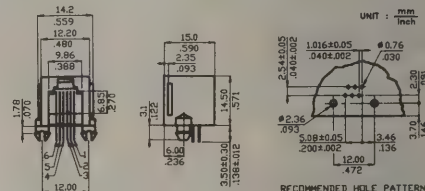


#### Ordering Information:

| 7624 | 06 | 06 | W | 0 |
|------|----|----|---|---|
| 1    | 2  | 3  | 4 | 5 |

1. Series No.
2. No. of positions: 4 and 6
3. No. of contacts: 2, 4, and 6
4. Contact Plating  
 W = 15 µin. gold over 50 µin. nickel  
 Z = 30 µin. gold over 50 µin. nickel  
 G = 50 µin. gold over 50 µin. nickel
5. 0 = Gray color (Standard)  
 1 = Black color

P/N 7624-060\*\*\*



## DPL Series

### 8.10mm (.319") Foot Print Plug Connector

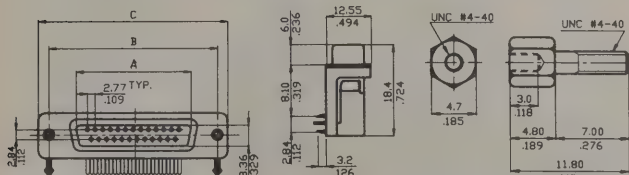
#### Features:

- Available in 9, 15, 25 and 37 circuits
- Full rear insulation cover
- Other optional female hexagonal screwlocks available
- Available with ground strap or retaining clip ground strap
- Tin plated metal shell as standard
- Selective gold plated terminal

#### Material:

- Insulator: Glass filled polyester UL94V-0 Color black
- Contact: Brass
- Shell: Steel, tin plated as standard

Standard Female Screwlock P/N: HW-H118EN00



#### Ordering Information:

| DB-25 | PL | U | R | L2 |
|-------|----|---|---|----|
| 1     | 2  | 3 | 4 | 5  |

1. Shell size:  
 DE-09 = 9 circuits, DA-15 = 15 circuits, DB-25 = 25 circuits, DC-37 = 37 circuits
2. Contact designation:  
 PL = Right angle plug terminal in 8.10mm(.319") foot print
3. Contact Plating  
 U = Selective gold flash over 50 µin. nickel  
 W = 15 µin. selective gold over 50 µin. nickel  
 Z = 30 µin. selective gold over 50 µin. nickel
4. Female screwlock variations:  
 C = Assembled type with standard #4-40 UNC female screwlocks  
 R = Riveted with #4-40 UNC flush insert (Without female screwlocks)  
 (Available for retaining clip ground strap only)  
 N = Riveted #4-40 flush insert then preloaded with #4-40 UNC hexagonal female screwlocks (Available for retaining clip ground strap only)
5. Ground fixture variations:  
 L1 = With standard #4-40 UNC ground strap  
 L2 = With standard retaining clip ground strap

#### Dimensional & Ordering Information

| Circuits | Dim. A        | Dim. B        | Dim. C        |
|----------|---------------|---------------|---------------|
| 9        | 16.92 (.666)  | 24.99 (.984)  | 30.80 (1.213) |
| 15       | 25.25 (.994)  | 33.32 (1.312) | 39.10 (1.539) |
| 25       | 38.96 (1.534) | 47.04 (1.852) | 53.00 (2.087) |
| 37       | 55.42 (2.182) | 63.50 (2.500) | 69.30 (2.728) |

UL: Recognized No. E82349




**LEOCO CORPORATION**

**Leoco (U.S.A.) Corporation**  
 41394 Christy Street, Fremont, CA 94538  
 Phone: 510-651-0752 Fax: 510-651-2931  
 800-562-2550

## DHSL Series

### PCB Mount High Density Socket Connector

#### Features:

- Available in 15, 26, 44 and 62 circuits
- Full rear insulation cover
- Other optional female hexagonal screwlocks available
- Available with ground strap or retaining clip ground strap
- Tin plated metal shell as standard
- Selective gold plated terminal

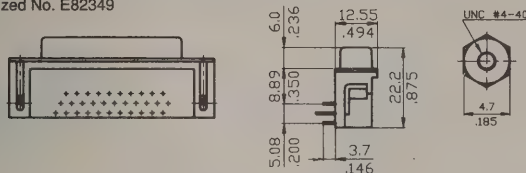
#### Material:

- Insulator: Glass filled polyester UL94V-0 color black
- Contact: Phosphor bronze
- Shell: Steel, tin plated as standard

#### Dimensional & Ordering Information

| Circuits | Dim. A        | Dim. B        | Dim. C        | Dim. D      | Dim. E      |
|----------|---------------|---------------|---------------|-------------|-------------|
| 15       | 16.33 (.643)  | 24.99 (.984)  | 30.80 (1.213) | 2.29 (.090) | 0.25 (.010) |
| 26       | 24.66 (.971)  | 33.32 (1.312) | 39.10 (1.539) | 2.29 (.090) | 0.51 (.020) |
| 44       | 38.38 (1.511) | 47.04 (1.852) | 53.00 (2.087) | 2.29 (.090) | 0.51 (.020) |
| 62       | 54.84 (2.159) | 63.50 (2.500) | 69.30 (2.728) | 2.41 (.095) | 0.58 (.023) |

UL: Recognized No. E82349



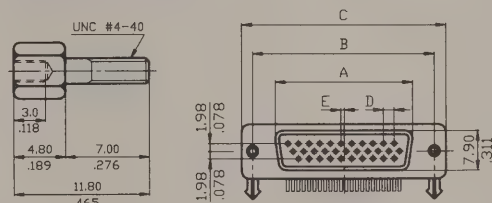
#### Ordering Information:

| DHSL | - | 15 | U | C | L2 |
|------|---|----|---|---|----|
| 1    |   | 2  | 3 | 4 | 5  |

- Series No.
- No. of circuits:  
Available in 15, 26, 44, and 62 circuits
- Contact Plating  
 U = Gold flash over 50  $\mu$ m. nickel  
 W = 15  $\mu$ m. gold over 50  $\mu$ m. nickel  
 Z = 30  $\mu$ m. gold over 50  $\mu$ m. nickel
- Female screwlock variations:  
 C = Assembled type with standard #4-40 UNC female screwlocks  
 R = Riveted with #4-40 UNC flush insert (Without female screwlocks)  
 (Available for retaining clip ground strap only)  
 N = Riveted #4-40 flush insert then preloaded with #4-40 UNC hexagonal female screwlocks (Available for retaining clip ground strap only)
- Ground fixture variations:  
 L1 = With standard #4-40 UNC ground strap  
 L2 = With standard retaining clip ground strap

#### Standard Female Screwlock

P/N: HW-H118EH00



## LCTL Series

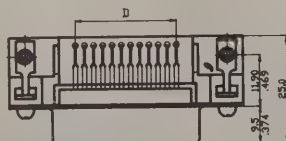
### Side Entry PCB Mount Centronic Connector

#### Features:

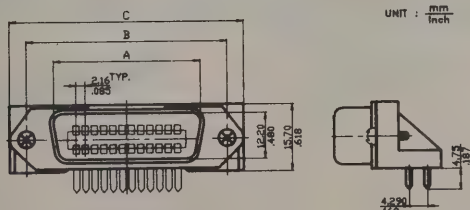
- Available in 14, 24, 36 and 50 circuits
- Options with standard ground straps or retaining clip
- Nickel plated metal shell
- Socket connector standard with bail locking device
- Available in reversed version

#### Material:

- Insulator: Glass filled polyester UL94V-0
- Contact: Phosphor bronze



Plug LCTL 30 Series



#### Dimensional & Ordering Information

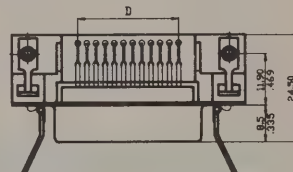
| Circuits | Dim. A        | Dim. B        | Dim. C        | Dim. D        |
|----------|---------------|---------------|---------------|---------------|
| 14       | 25.62 (1.009) | 36.00 (1.417) | 43.90 (1.728) | 12.96 (.510)  |
| 24       | 36.42 (1.444) | 46.80 (1.843) | 54.70 (2.154) | 23.76 (.935)  |
| 36       | 49.37 (1.944) | 59.70 (2.350) | 67.70 (2.665) | 36.72 (1.446) |
| 50       | 64.49 (2.539) | 74.90 (2.949) | 82.80 (3.260) | 51.84 (2.041) |

UL: Recognized No. E82349

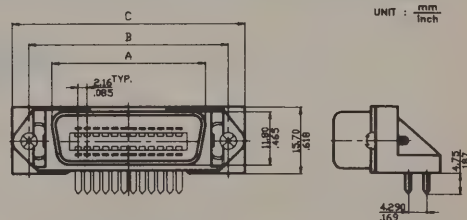
#### Ordering Information:

| LCTL | - | 40 | 36 | U | 0 | 7 |
|------|---|----|----|---|---|---|
| 1    |   | 2  | 3  | 4 | 5 | 6 |

- Series No.
- Contact designation:  
 30 = Plug contact, right angle PCB mount  
 40 = Socket contact, right angle PCB mount
- No. of circuits:  
 14, 24, 36, and 50
- Contact plating  
 U = Selective gold flash over 50  $\mu$ m. nickel  
 W = 15  $\mu$ m. selective gold over 50  $\mu$ m. nickel  
 Z = 30  $\mu$ m. selective gold over 50  $\mu$ m. nickel
- Version:  
 0 = Standard type
- Variations:  
 7 = Standard ground straps  
 9 = Ground retaining clip straps



Socket LCTL 40 Series



| Circuits | Dim. A        | Dim. B        | Dim. C        | Dim. D        |
|----------|---------------|---------------|---------------|---------------|
| 14       | 25.22 (.993)  | 36.00 (1.417) | 43.90 (1.728) | 12.96 (.510)  |
| 24       | 36.02 (1.418) | 46.80 (1.843) | 54.70 (2.154) | 23.76 (.935)  |
| 36       | 48.97 (1.928) | 59.70 (2.350) | 67.70 (2.665) | 36.72 (1.446) |
| 50       | 64.09 (2.523) | 74.90 (2.949) | 82.80 (3.260) | 51.84 (2.041) |

UL: Recognized No. E82349

## P.C.B. MOUNT TERMINAL BLOCKS


**Imi**

## P.C.B. TERMINAL BLOCKS (Parallel screw &amp; wire entry)

| Technical data                |                                      |
|-------------------------------|--------------------------------------|
| Pin (plating)                 | Brass (nickel / tin-lead)            |
| Screw-clamp (plating)         | Steel (zinc)                         |
| Housing                       | UL 94 V 0 grey polycarbonate         |
| Operating temperature         | - 40°F + 258°F / - 40°C + 125°C      |
| Insulation resistance         | $\geq 10^{12} \Omega$                |
| Captive screws                | $\varnothing .118" / M3$             |
| Blade of screwdriver          | .138" x .20" / 3.5 mm x 0.5 mm       |
| Recommended tightening torque | 5.22 lb./in. / 0.6 mN                |
| Insulation stripping length   | .315" $\pm$ .20" / 8 mm $\pm$ 0.5 mm |
| P.C.B. thickness              | $\leq .094" / \leq 2.4$ mm           |

- Screw & wire entry on the same plane
- Vertical wire entry, 14 AWG, 20 A, 300 V



| SERIES  | CENTER TO CENTER SPACING | NO. OF POSITIONS |
|---------|--------------------------|------------------|
| 102 100 | .200" / 5.08 MM          | 2 to 36          |
| 103 100 | .300" / 7.62 MM          | 2 to 24          |

- Screw & wire entry on the same plane
- Horizontal wire entry, 14 AWG, 20 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 102 200 | .200" / 5.08 MM | 2 to 36 |
| 103 200 | .300" / 7.62 MM | 2 to 24 |

- Screw & wire entry on the same plane
- Vertical wire entry, 14 AWG, 20 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 102 300 | .200" / 5.08 MM | 2 to 36 |
| 103 300 | .300" / 7.62 MM | 2 to 24 |

## P.C.B. MOUNT POWER TERMINAL BLOCKS

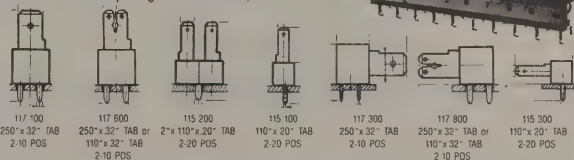
- With test point
- Wire perpendicular to clamping screw
- Horizontal wire entry, 12 AWG, 20 A, 300 V



|         |                 |                                     |
|---------|-----------------|-------------------------------------|
| 107 200 | .300" / 7.62 MM | 2 and 3<br>(Positions interlocking) |
|---------|-----------------|-------------------------------------|

## P.C.B. MOUNT TAB TERMINALS / QUICK CONNECTS

- Choice of tab sizes and configurations 8 A, 300 V
- Series 117 100 = 25 A
- Center to center spacing .200"/5.08 MM, .300"/7.62 MM



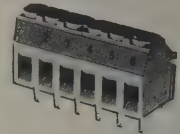
## P.C.B. MOUNT TERMINAL BLOCKS

| Technical data                |                                        |
|-------------------------------|----------------------------------------|
| Pin (plating)                 | Brass (nickel / tin-lead)              |
| Screw-clamp (plating)         | Steel (zinc)                           |
| Housing                       | UL 94 V 0 grey polycarbonate           |
| Operating temperature         | - 40°F + 258°F / - 40°C + 125°C        |
| Insulation resistance         | $\geq 10^{12} \Omega$                  |
| Captive screws                | $\varnothing .098" / M2.5$             |
| Blade of screwdriver          | .138" x .20" / 3.5 mm x 0.5 mm         |
| Recommended tightening torque | 3.48 lb./in. / 0.4 mN                  |
| Insulation stripping length   | .236" $\pm$ .20" / 6 mm $\pm$ 0.5 mm   |
| P.C.B. thickness              | $\leq .094" / \leq 2.4$ mm             |
| Testing hole                  | $\varnothing .078" / \varnothing 2$ mm |

- With test point
- Wire perpendicular to clamping screw
- Horizontal wire entry, 14 AWG, 10 A, 300 V\*



\* Series 109 200 = 600 V

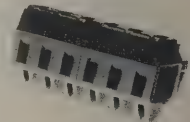


| SERIES  | CENTER TO CENTER SPACING | NO. OF POSITIONS |
|---------|--------------------------|------------------|
| 105 200 | .200" / 5.08 MM          | 2 to 36          |
| 106 200 | .300" / 7.62 MM          | 2 to 24          |
| 108 200 | .400" / 10.16 MM         | 2 to 18          |
| 109 200 | .600" / 15.24 MM         | 2 to 12          |

- With test point
- Wire perpendicular to clamping screw
- 45° wire entry, 14 AWG, 10 A, 300 V\*



\* Series 109 500 = 600 V



|         |                  |         |
|---------|------------------|---------|
| 105 500 | .200" / 5.08 MM  | 2 to 36 |
| 106 500 | .300" / 7.62 MM  | 2 to 24 |
| 108 500 | .400" / 10.16 MM | 2 to 18 |
| 109 500 | .600" / 15.24 MM | 2 to 12 |

- With test point
- Wire perpendicular to clamping screw
- Double level horizontal wire entry, 14 AWG, 10 A, 300 V



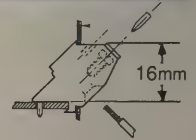
|         |                 |         |
|---------|-----------------|---------|
| 105 600 | .200" / 5.08 MM | 4 to 72 |
|---------|-----------------|---------|

## 45° THROUGH PANEL TERMINAL BLOCK

- With test point
- Wire perpendicular to clamping screw
- 14 AWG, 10 A, 300 V\*



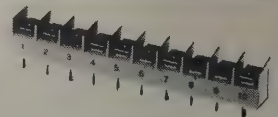
\* Series 109 400 = 600 V



|         |                  |         |
|---------|------------------|---------|
| 105 400 | .200" / 5.08 MM  | 2 to 36 |
| 108 400 | .400" / 10.16 MM | 2 to 18 |
| 109 400 | .600" / 15.24 MM | 2 to 12 |

## P.C.B. MOUNT BARRIER TERMINAL BLOCKS

- Single row barrier block
- Horizontal wire entry, 2 x 16 AWG, 10 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 107 100 | .300" / 7.62 MM | 2 to 20 |
|---------|-----------------|---------|

**Imi** CONNECTORS, INC.

1181 S. Rogers Cir. #11 - BOCA RATON, FL 33487-2710  
Phone: (407) 994-5896 - (800) 247-0564 - Fax: (407) 994-5913

**Imi** CANADA

5778 Thimens, ST-LAURENT, QUEBEC H4R 2K9  
Phone: (514) 333-7288 - (800) 565-2811 - Fax (514) 333-2881

# Call Toll Free 1-800-247-0564



# PLUGGABLE CONNECTORS FOR P.C.B.

# lmi

## DEPLUGGABLE SCREW CONNECTORS (with polarizing & locking features)

### COMPATABILITY LEGEND

Rounded Plugs = 245.000  
Rounded Headers = 255.000



Square Plugs = 202.000  
Square Headers = 232.000



- Wire perpendicular to clamping screw
- Horizontal wire entry, 14 AWG, 15 A, 300 V\*
- Optional polarizing keys and locks
- \* Series 249 200 and 269 200 = 600 V



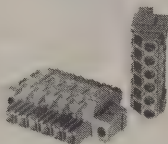
| SERIES  | CENTER TO CENTER SPACING | NO. OF POSITIONS |
|---------|--------------------------|------------------|
| 245 200 | .200" / 5.08 MM          | 2 to 36          |
| 246 200 | .300" / 7.62 MM          | 2 to 24          |
| 248 200 | .400" / 10.16 MM         | 2 to 18          |
| 249 200 | .600" / 15.24 MM         | 2 to 12          |
| 202 200 | .200" / 5.08 MM          | 2 to 36          |
| 268 200 | .400" / 10.16 MM         | 2 to 18          |
| 269 200 | .600" / 15.24 MM         | 2 to 12          |

- 180 degree plug
- Wire perpendicular to clamping screw
- Horizontal wire entry, 14 AWG, 15 A, 300 V\*
- Optional polarizing keys



|         |                 |         |
|---------|-----------------|---------|
| 245.300 | .200" / 5.08 MM | 2 to 36 |
|---------|-----------------|---------|

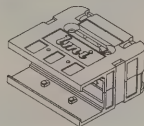
- Wire parallel to clamping screw
- Vertical wire entry, 14 AWG, 15 A, 300 V
- Optional polarizing keys & locks



|         |                 |         |
|---------|-----------------|---------|
| 202 400 | .200" / 5.08 MM | 2 to 36 |
|---------|-----------------|---------|

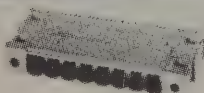
## STRAIN RELIEF COVERS

- Can be used with 202, 205, & 245 series pluggable connectors
- Available in 8, 12, 16 and 18 positions
- Accepts .200", .300", .400" and .600" pluggable connectors



## DOUBLE-SIDED HEADERS

- Double horizontal header
- Sides closed 10 A, 300 V\*
- \* Series 259 200 = 600V



|         |                  |         |
|---------|------------------|---------|
| 255 200 | .200" / 5.08 MM  | 2 to 30 |
| 258 200 | .400" / 10.16 MM | 2 to 15 |
| 259 200 | .600" / 15.24 MM | 2 to 10 |
| 232 200 | .200" / 5.08 MM  | 2 to 30 |
| 278 200 | .400" / 10.16 MM | 2 to 15 |
| 279 200 | .600" / 15.24 MM | 2 to 10 |

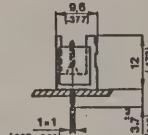
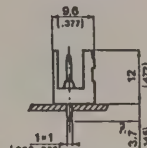
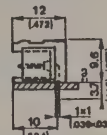
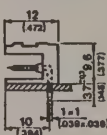
## MATING HEADERS

232 300 01  
255 300 01

232 300 11  
255 300 11

232 100 01  
255 100 01

232 100 11  
255 100 11



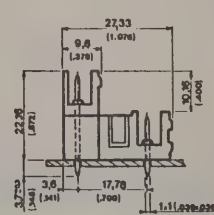
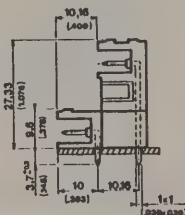
| SERIES    | CENTER TO CENTER SPACING | NO. OF POSITIONS     |
|-----------|--------------------------|----------------------|
| 255 100   | .200" / 5.08 MM          | 2 to 36 sides open   |
| 258 100   | .400" / 10.16 MM         | 2 to 18 sides open   |
| 259 100   | .600" / 15.24 MM         | 2 to 12 sides open   |
| 255 100-1 | .200" / 5.08 MM          | 2 to 36 sides closed |
| 258 100-1 | .400" / 10.16 MM         | 2 to 18 sides closed |
| 259 100-1 | .600" / 15.24 MM         | 2 to 12 sides closed |
| 255 300   | .200" / 5.08 MM          | 2 to 36 sides open   |
| 258 300   | .400" / 10.16 MM         | 2 to 18 sides open   |
| 259 300   | .600" / 15.24 MM         | 2 to 12 sides open   |
| 255 300-1 | .200" / 5.08 MM          | 2 to 36 sides closed |
| 258 300-1 | .400" / 10.16 MM         | 2 to 18 sides closed |
| 259 300-1 | .600" / 15.24 MM         | 2 to 12 sides closed |
| 232 100   | .200" / 5.08 MM          | 2 to 30 sides open   |
| 278 100   | .400" / 10.16 MM         | 2 to 15 sides open   |
| 279 100   | .600" / 15.24 MM         | 2 to 10 sides open   |
| 232 100-1 | .200" / 5.08 MM          | 2 to 30 sides closed |
| 278 100-1 | .400" / 10.16 MM         | 2 to 15 sides closed |
| 279 100-1 | .600" / 15.24 MM         | 2 to 10 sides closed |
| 232 300   | .200" / 5.08 MM          | 2 to 30 sides open   |
| 278 300   | .400" / 10.16 MM         | 2 to 15 sides open   |
| 279 300   | .600" / 15.24 MM         | 2 to 10 sides open   |
| 232 300-1 | .200" / 5.08 MM          | 2 to 30 sides closed |
| 278 300-1 | .400" / 10.16 MM         | 2 to 15 sides closed |
| 279 300-1 | .600" / 15.24 MM         | 2 to 10 sides closed |

232 600 01

255 600 01

232 700 01

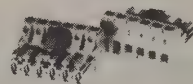
255 700 01



## LOW INSERTION FORCE DEPLUGGABLE SCREW CONNECTORS

### With optional locks

- With optional polarizing keys and locks
- Wire perpendicular to clamping screw
- Horizontal wire entry, 14 AWG, 10 A, 300 V\*
- \* Series 209 200 = 600 V



|         |                  |         |
|---------|------------------|---------|
| 205 200 | .200" / 5.08 MM  | 2 to 36 |
| 206 200 | .300" / 7.62 MM  | 2 to 24 |
| 208 200 | .400" / 10.16 MM | 2 to 18 |
| 209 200 | .600" / 15.24 MM | 2 to 12 |

## MATING HEADERS

|         |                  |         |
|---------|------------------|---------|
| 235 100 | .200" / 5.08 MM  | 2 to 18 |
| 236 100 | .300" / 7.62 MM  | 2 to 12 |
| 238 100 | .400" / 10.16 MM | 2 to 9  |
| 239 100 | .600" / 15.24 MM | 2 to 6  |
| 235 300 | .200" / 5.08 MM  | 2 to 18 |
| 236 300 | .300" / 7.62 MM  | 2 to 12 |
| 238 300 | .400" / 10.16 MM | 2 to 9  |
| 239 300 | .600" / 15.24 MM | 2 to 6  |

**lmi** CONNECTORS, INC.

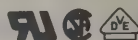
1181 S. Rogers Cir. #11 - BOCA RATON, FL 33487-2710  
Phone: (407) 994-5896 - (800) 247-0564 - Fax: (407) 994-5913

**lmi** CANADA

5778 Thimens, ST-LAURENT, QUEBEC H4R 2K9  
Phone: (514) 333-7288 - (800) 565-2811 - Fax (514) 333-2881

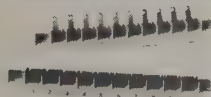
## Call Toll Free 1-800-247-0564

## P.C.B. &amp; PANEL MOUNT CONNECTORS


**lmi**

## BARRIER TERMINAL BLOCKS

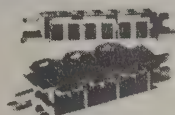
- Screw connection or solder tab  
2 × 16 AWG, 10 A, 300 V



| SERIES | CENTER TO CENTER SPACING | NO. OF POSITIONS                  |
|--------|--------------------------|-----------------------------------|
| 44 100 | .300" / 7.62 MM          | 2 to 20 screw connections         |
| 44 200 | .300" / 7.62 MM          | 3 to 20 screw and tab connections |

## HIGH POWER SOCKET CONNECTORS

- With perpendicular or parallel screw and wire contact
- Mates with all power socket connectors  
12 AWG, 25 A, 300 V



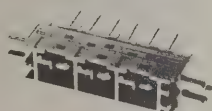
|         |                 |                       |
|---------|-----------------|-----------------------|
| 207 100 | .300" / 7.62 MM | 4 to 12 perpendicular |
| 207 300 | .300" / 7.62 MM | 4 to 12 parallel      |

- With terminal tab contacts
- Mates with all power socket connectors  
12 AWG, 25 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 217 100 | .300" / 7.62 MM | 4 to 10 |
|---------|-----------------|---------|

- With wire wrap contacts
- Mates with all power socket connectors  
12 AWG, 25 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 227 100 | .300" / 7.62 MM | 4 to 10 |
|---------|-----------------|---------|

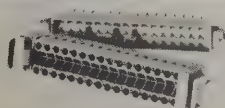
- With pin P.C.B. contacts
- Mates with all power socket connectors  
12 AWG, 25 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 237 100 | .300" / 7.62 MM | 4 to 10 |
|---------|-----------------|---------|

## DIN 41612 TYPE E CONNECTORS

- 32 screw contacts
- Mates with 09050486924 vertical header or 09050486921 horizontal header  
14 AWG, 10 A, 300 V
- Option polarizing key



|               |                 |    |
|---------------|-----------------|----|
| 302 432-02/32 | .200" / 5.08 MM | 32 |
|---------------|-----------------|----|

## EDGE CARD / TERMINAL BLOCK CONNECTORS

- Various configurations 45° etc.  
14 AWG, 5 / 10 A, 300 V
- Option polarizing keys
- Option card guides



|           |                               |                                          |
|-----------|-------------------------------|------------------------------------------|
| 505 100   | .200" / 5.08 MM (Panel mount) | 12-15-18-20-24 screw connectors          |
| 505 200   | .200" / 5.08 MM P.C.B.        | 12-15-18-20-24 P.C.B. / screw connectors |
| 505 316-2 | .200" / 5.08 MM 45°           | 16 pos. for 19 inch racks / Horizontal   |
| 505 416-2 | .200" / 5.08 MM 45°           | 16 pos. for 19 inch racks / angled       |
| 515 000   | .200" / 5.08 MM               | 6-9-12-15-18 tab terminals               |

## QUICK CONNECT TERMINAL BLOCKS

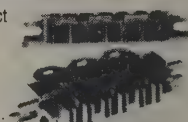
- With .250" / 6.3 MM tabs
- Various configurations available  
20 A



| SERIES | CENTER TO CENTER SPACING | NO. OF POSITIONS |
|--------|--------------------------|------------------|
| 47 000 | .512" / 13 MM            | 2 to 20          |

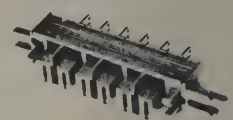
## HIGH POWER HEADER CONNECTORS

- With perpendicular or parallel screw and wire contact
- Mates with all power header connectors  
12 AWG, 25 A, 300 V



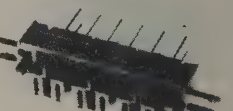
|         |                 |                       |
|---------|-----------------|-----------------------|
| 207 200 | .300" / 7.62 MM | 4 to 12 perpendicular |
| 207 400 | .300" / 7.62 MM | 4 to 12 parallel      |

- With tab terminals
- Mates with all power header connectors  
12 AWG, 25 A, 300 V



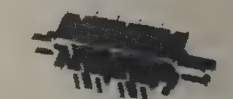
|         |                 |         |
|---------|-----------------|---------|
| 217 200 | .300" / 7.62 MM | 4 to 10 |
|---------|-----------------|---------|

- With wire wrap contacts
- Mates with all power header connectors  
12 AWG, 25 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 227 200 | .300" / 7.62 MM | 4 to 10 |
|---------|-----------------|---------|

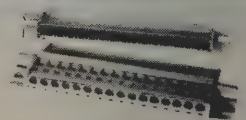
- With pin P.C.B. contacts
- Mates with all power header connectors  
12 AWG, 25 A, 300 V



|         |                 |         |
|---------|-----------------|---------|
| 237 200 | .300" / 7.62 MM | 4 to 10 |
|---------|-----------------|---------|

## THROUGH PANEL EDGE CARD CONNECTORS

- Horizontal or 45 degree wire entry  
14 AWG, 5 / 10 A, 300 V

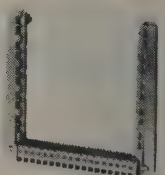


|         |                 |                             |
|---------|-----------------|-----------------------------|
| 505 300 | .200" / 5.08 MM | 8-12-16-20-24-25 horizontal |
| 505 400 | .200" / 5.08 MM | 8-12-16-20-24-25 45 degree  |

## CARD GUIDES

- P.C.B. thickness = .63" / 1.6 MM
- Heights from 1.575" / 40 MM to 4.724" / 120 MM
- Option P.C.B. board retainer

Mounting instructions engage the notch swing into place



Series 599010

**lmi** CONNECTORS, INC.

1181 S. Rogers Cir. #11 - BOCA RATON, FL 33487-2710  
Phone: (407) 994-5896 - (800) 247-0564 - Fax: (407) 994-5913

**lmi** CANADA

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Phone: (514) 333-7288 - (800) 565-2811 - Fax (514) 333-2881

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# SPACE SAVING CONNECTORS

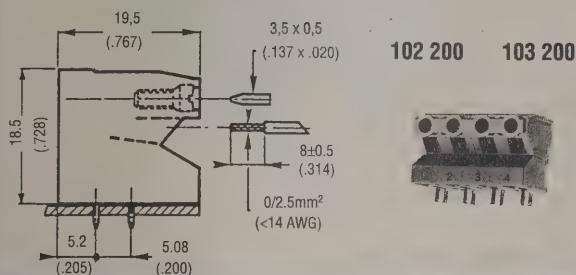


# lmi

## HORIZONTAL SCREW & WIRE ENTRY

102 200  
(.200" / 5.08mm)  
2-36 Poles

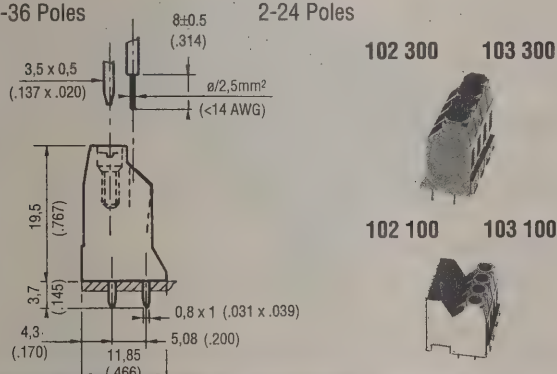
103 200  
(.300" / 7.62mm)  
2-24 Poles



## VERTICAL SCREW & WIRE ENTRY

102 100  
102 300  
(.200" / 5.08mm)  
2-36 Poles

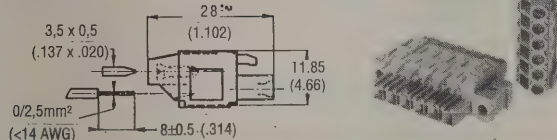
103 100  
103 300  
(.300" / 7.62mm)  
2-24 Poles



## PLUGGABLE SCREW & WIRE PARALLEL

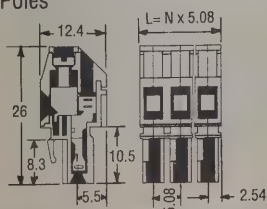
202 400  
(.200" / 5.08mm)  
2-36 Poles

202 400 31  
(with mounting blocks)  
2-36 Poles



## AXIAL PLUGGABLE CONNECTOR

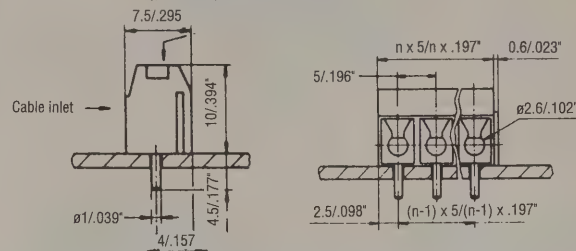
245 300 01 000  
(.200" / 5.08mm)  
2-36 Poles



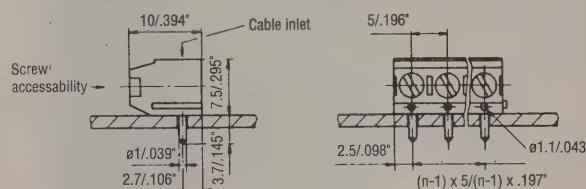
## LOW PROFILE INTERLOCKING TERMINAL BLOCKS

### TECHNICAL DATA

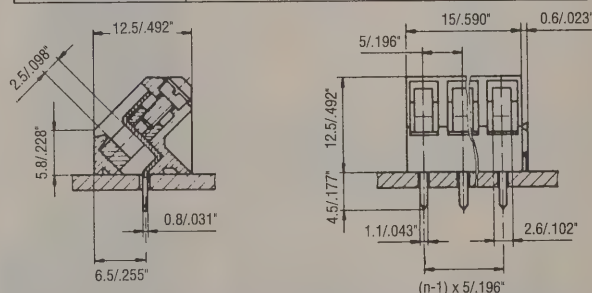
Rating 16 A, 250 V  
Center to Center Spacing .197"/5.00mm  
Pin (plating) Brass (5 micron tinned nickel)  
Wire Protector (plating) Phosphor bronze (nickel)



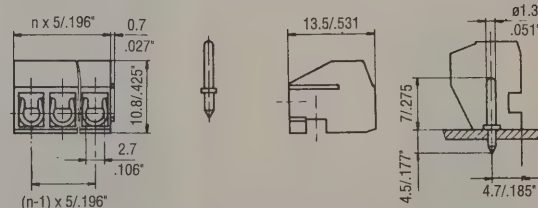
| Series   | Center to Center Spacing | No. of Positions |
|----------|--------------------------|------------------|
| 9105.102 | .197"/5.00mm             | 2                |
| 9105.103 | .197"/5.00mm             | 3                |



| Series   | Center to Center Spacing | No. of Positions |
|----------|--------------------------|------------------|
| 9105.302 | .197"/5.00mm             | 2                |
| 9105.303 | .197"/5.00mm             | 3                |



| Series   | Center to Center Spacing | No. of Positions |
|----------|--------------------------|------------------|
| 9105.502 | .197"/5.00mm             | 2                |
| 9105.503 | .197"/5.00mm             | 3                |



| Series   | Center to Center Spacing | No. of Positions |
|----------|--------------------------|------------------|
| 9245.102 | .197"/5.00mm             | 2                |
| 9245.103 | .197"/5.00mm             | 3                |

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Phone: (407) 994-5896 - (800) 247-0564 - Fax: (407) 994-5913

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# DIN CONNECTORS



# lmi

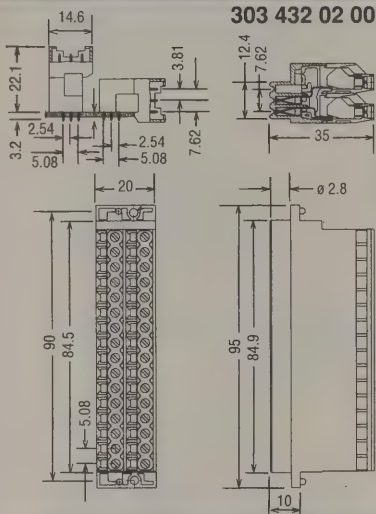
## DIN 41612 TYPE D, E, & F CONNECTORS

- 32 or 48 screw contacts
- Mates with Vertical or Horizontal Headers
- 14 awg, 10A, 300V
- Optional coding keys
- Optional strain relief latches

| Series        | Center to Center Spacing | No. of Positions |
|---------------|--------------------------|------------------|
| 301 432-02    | .200"/5.08mm             | D-32             |
| 302 432-02/32 | .200"/5.08mm             | E-32             |
| 303 432-02    | .200"/5.08mm             | F-32             |
| 303 448-02    | .200"/5.08mm             | F-48             |

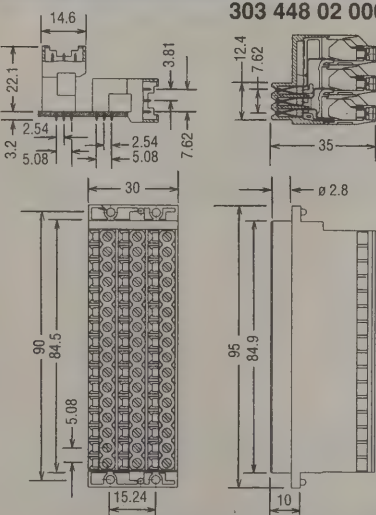
## DIN D, E, F 32

303 432 02 000



## DIN F 48 303 448 02

303 448 02 000



## FEATURES OF LMI CONNECTORS

### UL 94 VO RATED MATERIAL

- Tough plastic housing won't bend or crack
- Temperature range from -40°F/-40°C to 258°F/125°C

### CAPTIVE SCREWS

- Won't fall out
- Recessed to prevent arcing

### TEST PROBE HOLES

- Easy and Accurate Readings

### DEAD FRONT DESIGN

- Prevents accidental short circuiting
- User friendly
- Safe and Secure connections

### LARGE WIRE RANGE

- Solid or Stranded
- No ferrules or crimp-on connections
- 22 to 14 awg

### COMPATIBLE

- Plugs and Headers mate with many other major manufacturers of European Style connectors

### WORLDWIDE APPROVALS

- Designed for both the American and European markets, all LMI Connectors bear the following approvals: UL, CSA, VDE

### NATIONWIDE REPRESENTATION

- Trained LMI representatives and distributors are available from coast to coast

### FAST DELIVERY

- Prototype and pre-productions orders are shipped the same day
- Large volume orders are shipped in 2-3 weeks

**FOR FREE SAMPLES  
& LITERATURE  
CALL TOLL-FREE  
1-800-247-0564**

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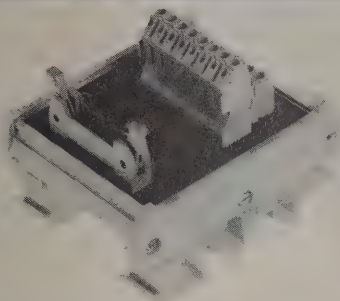
**Call Toll Free 1-800-247-0564**



# DIN RAIL MOUNTED ELECTRONIC INTERFACE MODULES

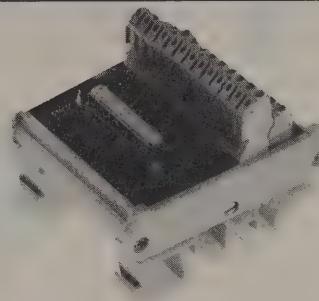
**lmi**

## FLAT RIBBON INTERFACE MODULES



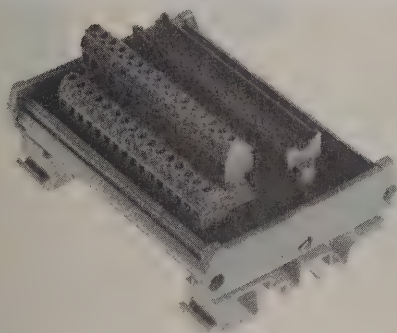
- Discrete wire to flat ribbon connector
- 1 amp, 125 Volts
- 10-64 poles
- Option: Pluggable terminal block

## D-SUB INTERFACE MODULES



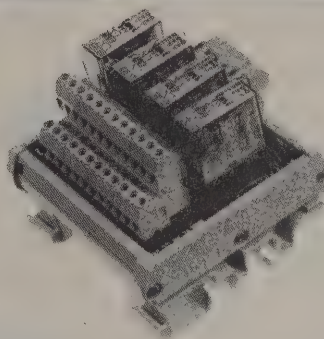
- Discrete wire to Male or Female D-sub Connector
- 1.5 amps, 125 Volts
- 9-50 poles
- Option: Pluggable terminal block

## DIN 41612 TYPE C, D, E, AND F INTERFACE MODULES



- Discrete wire to DIN 41612 type C, D, E or F Connector
- 6 Amps, 250 Volts
- 16, 32, 48 or 64 poles

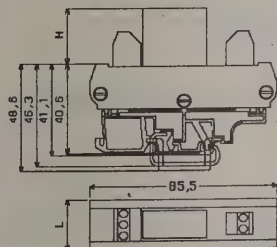
## 1, 4, 8, 16, RELAY MODULES



- 1, 4, 8, 16 or 32 relays (SPDT or DPDT)
- AC or DC
- 12, 24, 48, 110 or 220 Volts

## MODULE SHELLS SERIES 991100.00 EXTRUDED PVC

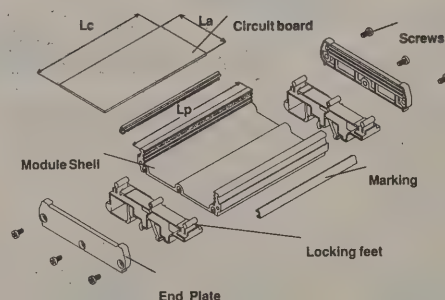
### SIZES FOR MODULE - FITTING



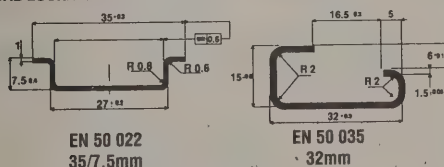
- 2 PCB Widths: 71mm or 72mm
- PCB Length 18mm to 1000mm (Up to 3000mm special request)
- PCB Thickness: 1.6mm
- Universally mounts on DIN Rails (EN 50 045, 50 022, 50 035)

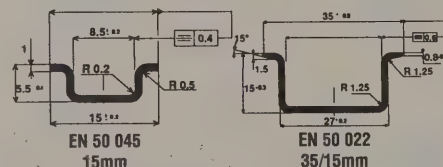
### ALSO AVAILABLE:

- Diode Modules
- Custom Modules
- CALL TOLL-FREE FOR OUR COMPLETE MODULE CATALOG

**1-800-247-0564**


### UNIVERSAL LOCKING FEET


**EN 50 022**  
35/7.5mm

**EN 50 035**  
32mm

**EN 50 045**  
15mm

**EN 50 022**  
35/15mm

**lmi** CONNECTORS, INC.

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Phone: (407) 994-5896 - (800) 247-0564 - Fax: (407) 994-5913

**lmi** CANADA

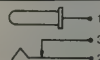
5778 Thimons, ST-LAURENT, QUEBEC H4R 2K9  
Phone: (514) 333-7288 - (800) 565-2811 - Fax (514) 333-2881

**Call Toll Free 1-800-247-0564**

# DC POWER JACKS

**SPECIFICATIONS:** Contact Resistance: 30 MΩMax  
Insulation Resistance: 50 MΩ min at 100 VDC  
Insulation Withstand Voltage: AC 250V  
R.M.S. for 1 minute

## SCHEMATIC



**Pin Diameter: 2.0mm or 2.5mm**  
**Specify "A" Suffix for 2.0mm E.G. DJ001A**  
**Specify "B" Suffix for 2.5mm E.G. DJ001B**  
**except for PN's: WK01, WK02, RL24**

## Locking Power Plug



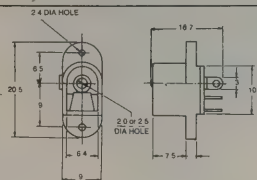
LZ1001A: 2.1/5.5/10mm

LZ1001B: 2.5/5.5/10mm

MATES WITH RL25, RL26, RL27 Below

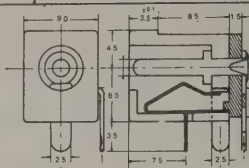
### DJ001

Panel Mount



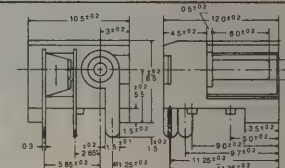
### DJ005

PCB Mount



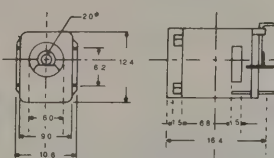
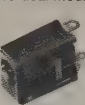
### DJ009

PCB Mount



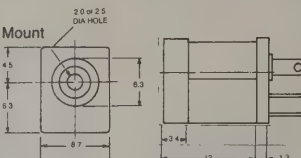
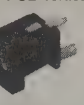
### RL11

Vertical Mount



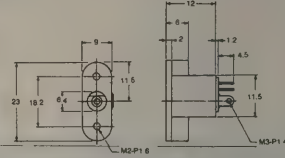
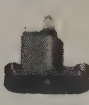
### RL9

PCB Vertical Mount



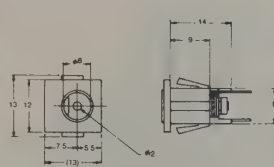
### RL201

Panel Mount



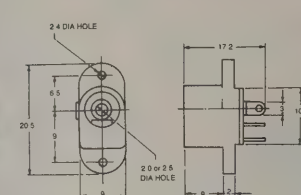
**WK01: 2.0mm Pin dia.**  
**WK02: 2.35mm Pin dia.**

Vertical Mount



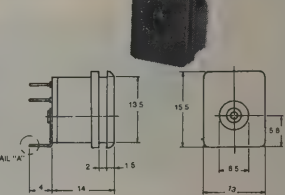
### RL204

Panel Mount



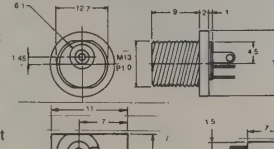
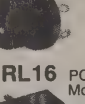
### RL15

Panel Mount



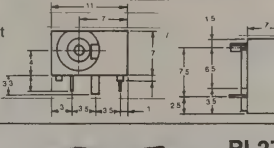
### RL17

Panel Mount



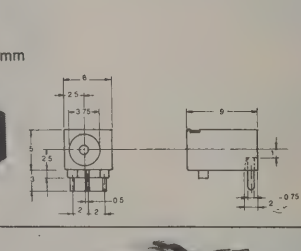
### RL16

PCB Mount

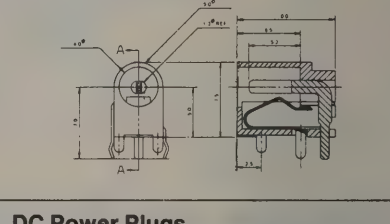


### RL24

PCB Mount  
PIN DIA: 1.3mm



### RL 13 1.3mm dia.



### RL25

Panel Mount  
2 circuit



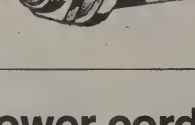
### RL27

Vertical PCB Mount  
3 Circuit



### RL26

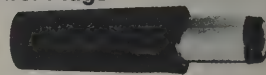
Panel Mount  
3 Circuit



**NOTE:** For extended barrel length, add "E" after part number.

## DC Power Plugs

Assembly  
Type



**HP114A:** 2.1/5.5/10 mm I.D./O.D./Shaft Length  
**HP114B:** 2.5/5.5/10 mm I.D./O.D./Shaft Length  
**HP114C:** 1.3/3.4/10 mm I.D./O.D./Shaft Length

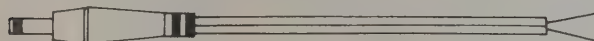
# DC power cords 6 ft. long 22 AWG, stripped and tinned leads

### DC10A

5.5 x 2.1mm plug

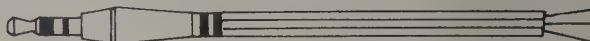
### DC10B

5.5 x 2.5mm plug



### DC12

3.5mm Stereo plug-3 cond.

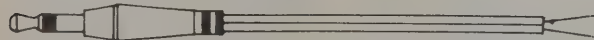


### DC11A

2.5mm mini plug

### DC11B

3.5mm mini plug



### DC15A

Fused Cigarette Lighter Plug Assembly to  
DC10A Type Plug 2.1 x 5.5mm

### DC15B

Same except to DC10B Type Plug  
2.5 x 5.5mm

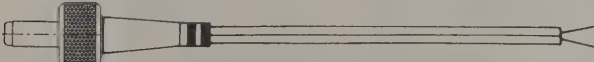


### DC16A

5.5 x 2.1mm with Locking plug

### DC16B

5.5 x 2.5mm with Locking plug.



## OPTIONS:

- Plugs on both ends
- Round Cords

- Round Shielded Cords
- Special Lengths
- Right Angle Plugs

We can make any cable or molded cable assembly to your specifications.

# LZRelectronics, inc.

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# LZR



## 2.5mm MINIATURE JACKS

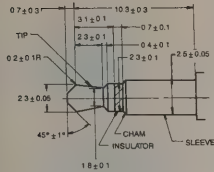


Fig. 1 Matching Plug (Mono)

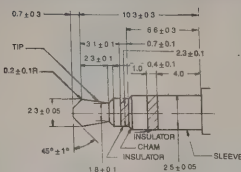


Fig. 2 Matching Plug (Stereo)

Contact Resistance: 30mΩ MAX.

Insulation Resistance: 50mΩ Min. at 100V DC

Insulation Withstand Voltage: AC250V r.m.s. for one minute

|                            |                                       |                                      |
|----------------------------|---------------------------------------|--------------------------------------|
| <b>SJ250</b><br>           | <b>SJ251</b><br>                      | <b>RL257</b><br>                     |
| <b>RL260</b><br>(Mono)<br> | <b>RL255</b><br>Switch (Mono)<br>     | <b>RL256</b><br>Switch (Stereo)<br>  |
| <b>RL261</b><br>(Mono)<br> | <b>RL264</b><br>(Mono Close Type)<br> | <b>RL258-259</b><br>Stereo 2.5mm<br> |
| <b>RL262</b><br>(Mono)<br> | <b>RL263</b><br>(Stereo)<br>          |                                      |

## 3.5mm PHONE/STEREO JACKS

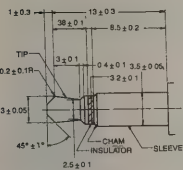


Fig. 1 Matching Plug (Mono)

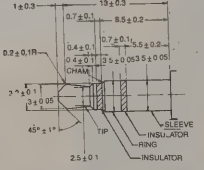


Fig. 2 Matching Plug (Stereo)

Contact Resistance: 30mΩ MAX.

Insulation Resistance: 50mΩ Min. at 100V DC

Insulation Withstand Voltage: AC250V r.m.s. for one minute

|                                                  |                                                  |                                                  |                                                  |
|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| <b>SJ350</b><br>3.5φ Miniature<br>Phone Jack<br> | <b>SJ352</b><br>3.5φ Miniature<br>Phone Jack<br> | <b>SJ360</b><br>3.5φ Miniature<br>Phone Jack<br> | <b>SJ370</b><br>3.5φ Miniature<br>Phone Jack<br> |
|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|

NOTE: For mating plugs &amp; inline jacks see page C-1407 Section 2100

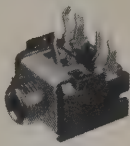
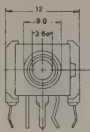
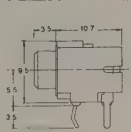
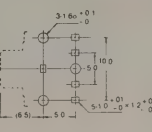
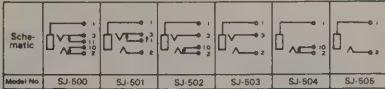
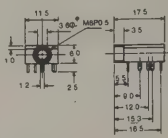
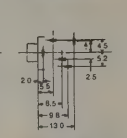
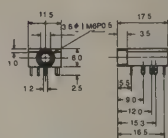
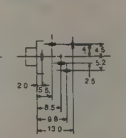
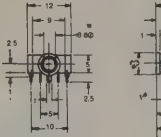
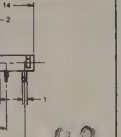
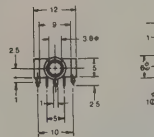
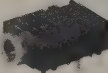
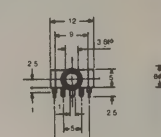
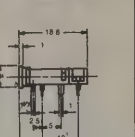
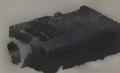
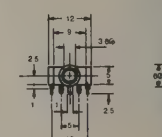
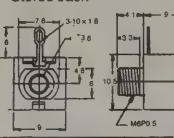
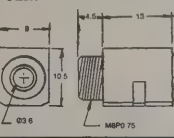
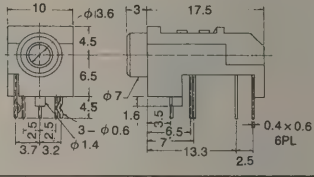
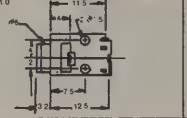
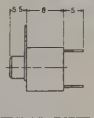
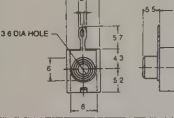
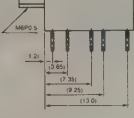
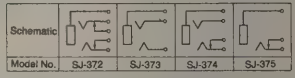
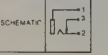
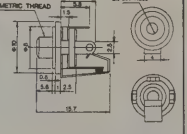
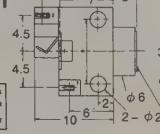
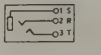
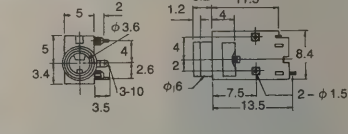
3.5mm Phone Jacks Continue on next page

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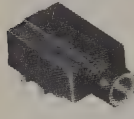
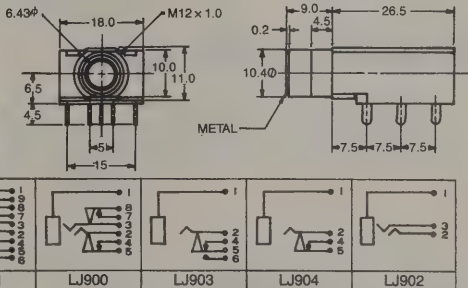
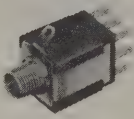
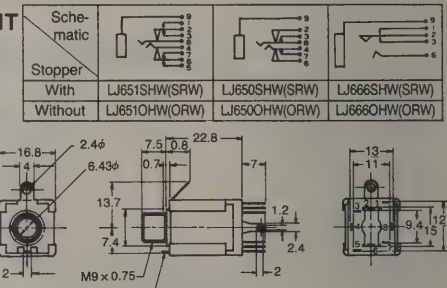
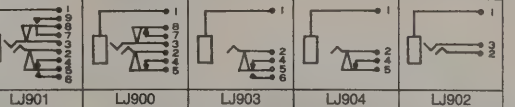
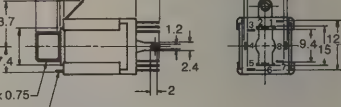
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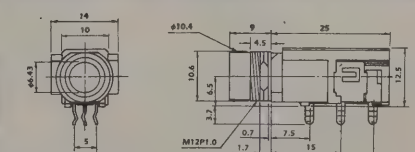
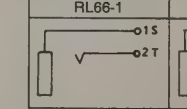
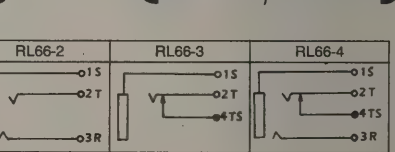
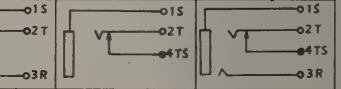
## 3.5mm JACKS, continue

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SJ500</b><br>3.5 $\phi$ Stereo Jack<br><br><br><br><br> | <b>SJ362</b><br>3.5 $\phi$ Stereo Jack<br><br><br>          | <b>SJ363</b><br>3.5 $\phi$ Stereo Jack<br><br><br>             |                                                                                                                                                                                                                                                                                                                              |
| <b>SJ100</b><br>3.5 $\phi$ Stereo Jack<br><br><br>                                                                                                                                                                           | <b>SJ200</b><br>3.5 $\phi$ Stereo Jack<br><br><br>          | <b>SJ300</b><br>3.5 $\phi$ Stereo Jack with 1P2T Switch<br><br><br> | <b>SJ400</b><br>3.5 $\phi$ Stereo Jack with 2P2T Switch<br><br><br> |
| <b>LJ0350A</b><br>3.5 $\phi$ Earphone Stereo Jack<br><br><br>                                                                                                                                                                | <b>LJ0352</b><br>3.5 $\phi$ Insulation Jack<br><br><br>     | <b>RL362, 3.5mm with Switch</b><br><br><br>                         |                                                                                                                                                                                                                                                                                                                              |
| <b>LJ0357</b><br>3.5 $\phi$ PCB Type Earphone<br><br><br>                                                                                                                                                                  | <b>RL351S</b><br>3.5 $\phi$ Phone Jack (Mono)<br><br><br> | <b>SJ372-375</b><br>3.5mm Stereo Jack<br><br><br>                  |                                                                                                                                                                                                                                          |
| <b>RL390</b><br><br><br>                                                                                                                                                                                                | <b>RL363-Stereo Jack, 3.5mm</b><br><br><br>           | <b>RL358-Stereo Jack, 3.5mm</b><br><br><br>                   |                                                                                                                                                                                                                                                                                                                              |

## 1/4" -6.3 $\phi$ PHONE JACKS

| PCB MOUNT                                                                                                                                                                                   |                                                                                                                                                                                               | PANEL MOUNT |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|
| <br> | <br> |             |  |
| <br>                   | <br>                   |             |  |

## MINIATURE HEADPHONE JACKS, 1/4" (6.3 $\phi$ mm)

| PCB MOUNT                                                                                                                                                                 |                                                                                                                                                                             | PANEL MOUNT |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|
| <br> | <br> |             |  |
| <br> | <br> |             |  |

NOTE: For mating plugs & inline jacks see page C-1407 Section 2100

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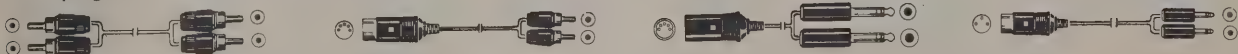


# PCB MOUNT RCA CONNECTORS

|                                           |                                    |                    |                    |                                                                                                                                                                                                                                     |                     |                    |
|-------------------------------------------|------------------------------------|--------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| <b>Right Angle<br/>PC Board Mount</b><br> | <br><b>01P0601</b>                 | <br><b>02P0602</b> | <br><b>03P0603</b> | <br><b>02P0604</b>                                                                                                                                                                                                                  | <br><b>04P0605</b>  | <br><b>06P0606</b> |
| <b>PC Board<br/>Vertical Mount</b><br>    | <br><b>02P0413</b>                 | <br><b>04P0317</b> | <br><b>06P0414</b> | <b>Right Angle PCB Mount with Mounting Threads</b><br><br><b>PN: RL3602N</b>                                                                                                                                                        |                     |                    |
|                                           | <br><b>1811P382</b>                |                    |                    |                                                                                                                                                                                                                                     | <br><b>1771P145</b> |                    |
| <br><b>RL 834</b>                         | <br><b>RL 835</b>                  |                    |                    | <br><b>RL 8394 RL 8393 RL 8392</b>                                                                                                                                                                                                  |                     |                    |
| <br><b>RL 840</b>                         | <br><b>RL 8414 RL 8413 RL 8412</b> |                    |                    | <br><b>RL 8435 RL 8434 RL 8433 RL 8432</b>                                                                                                                                                                                          |                     |                    |
| <br><b>RL 8384 RL 8383 RL 8382</b>        | <br><b>RL 844</b>                  |                    |                    | <b>Panel Mount Jack</b><br><br><b>RL 837</b>                                                                                                                                                                                        |                     |                    |
| <br><b>RL 359</b>                         | <br><b>RL 360</b>                  |                    |                    | <b>RCA PLUG-W/PLASTIC HANDLE. COLOR: BLACK, RED, WHITE</b><br><b>HP 115</b><br><br><b>RCA PLUG SOLDERLESS TYPE</b><br><b>CVP 299</b><br><br><b>RIGHT ANGLE, RCA PLUG SOLDERLESS TYPE</b><br><b>HP 118</b><br><br><b>CVP 300</b><br> |                     |                    |

## RCA CUSTOM CABLE ASSEMBLIES

2 RCA plugs and 2 RCA plugs



Plug to Plug, Plug to Jack, any combination RCA, "D" sub, DIN

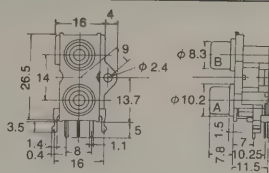
For Further Information Please Call Our Sales Office, or See EEM Section 6000 page C•1761

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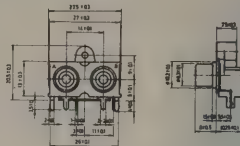
**LZR**

# PC BOARD MOUNT RCA CONNECTORS

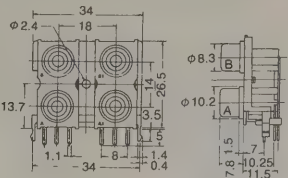
2P RCA RA



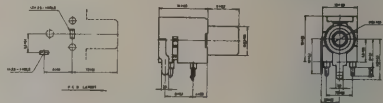
2P RCA RA H



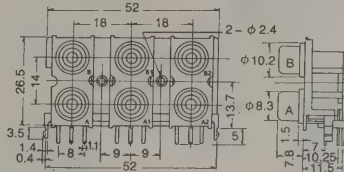
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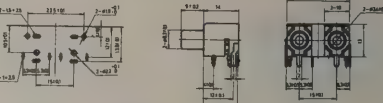
RJ1P



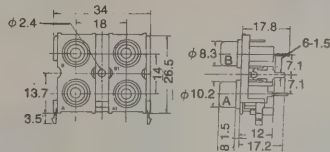
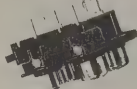
6P RCA RA



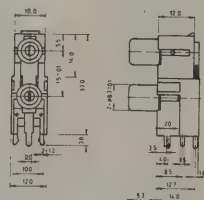
RJ2P



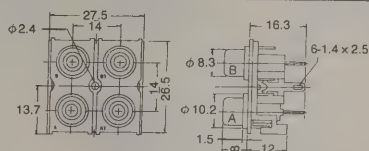
4P RCAV



RJ2PU



4P RCA P

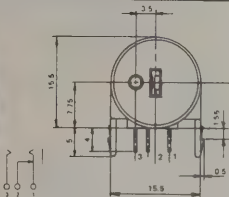
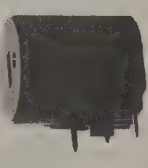


| PN:            | RJ2P-1 | RJ2P-2 | RJ2P-3 |
|----------------|--------|--------|--------|
| SCHE-<br>MATIC |        |        |        |

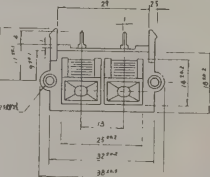
## SPEAKER JACKS

RIGHT ANGLE PC BOARD MOUNT

SPJ1P



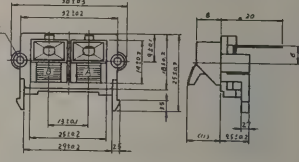
SPJ2PH



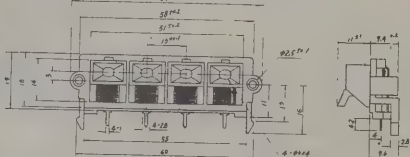
SPJ2PV



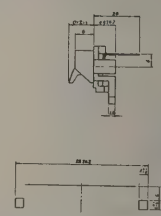
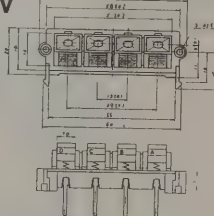
VERTICAL PC BOARD MOUNT



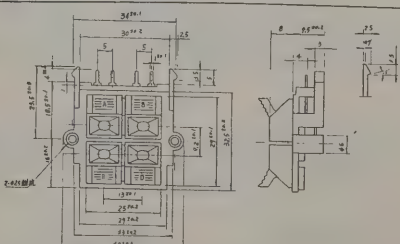
SPJ4PH



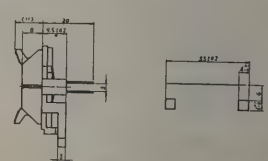
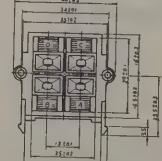
SPJ4PV



SPJ4PH-1



SPJ4PV1



**LZR**electronics, inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

**LZR**



# DIN PLUGS, JACKS & SOCKETS

## PCB MOUNT CONNECTORS, SHIELDED & UNSHIELDED.

### SPECIFICATIONS

- CONTACT RESISTANCE: 20m  $\Omega$  Max.
- INSULATION RESISTANCE: DC 500 V 10<sup>9</sup> M  $\Omega$  Min.
- VOLTAGE WITHSTANDING: AC 500V 1 MINUTE.
- INSERTION FORCE: 5.0 Kg. Max.
- WITHDRAWAL FORCE: 1-3.5 Kg.
- LIFE TEST: 5,000 CYCLES MIN. AFTER TESTING, CONTACT RESISTANCE SHALL NOT EXCEED 100m  $\Omega$
- MATES WITH PLUG DIA.: .520  $\phi$   $\pm$  .008 (13.2  $\pm$  0.2)  
.536  $\phi$   $\pm$  .004 (13.6  $\pm$  0.1)

**A**

**DJ-026-8P**  
(8P 270°)

**B**

**DJ-026-8PS**  
(8P 270°) **SHIELDED**

**C**

**DJ-007**  
**7PIN-270°**

**K - RIGHT ANGLE DIN PLUG, ASSEMBLY TYPE**

**DPRA Series**

**D-DIN MALE SOCKET**

**DJ014P5** (5P 180°) **DJ014P7** (7P 270°)

**E-DIN JACK WITH FLANGE**

**1785S040**

**F-DIN METAL SOCKET**

**SD50SN**

**G-DIN PLASTIC SOCKET-PANEL MOUNT**

**SD50S**

**H-DIN PLUG FOR CABLE ASSEMBLY TYPE**

**SD70**  
OPTIONAL: METAL SHIELDED SLEEVE

**I-DIN JACK FOR CABLE ASSEMBLY TYPE**

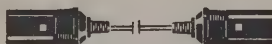
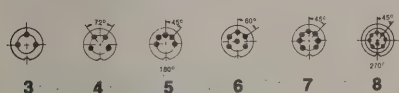
**SD70J**  
OPTIONAL: METAL SHIELDED SLEEVE

**J-DIN JACK VERTICAL PCB MOUNT**

**DJV5P180**

| Configuration              | 3 Pin       | 4 Pin       | 5 Pin       | 5 Pin       | 5 Pin       | 6 Pin       | 7 Pin       | 8 Pin       | 8 Pin       |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                            |             |             |             |             |             |             |             |             |             |
| <b>Description</b>         | <b>180°</b> | <b>210°</b> | <b>180°</b> | <b>240°</b> | <b>360°</b> | <b>240°</b> | <b>270°</b> | <b>270°</b> | <b>262°</b> |
| A. PC DIN Jack             | DJ0203P     | DJ0224P     | DJ0215P     | DJ0235P     | N/A         | DJ0246P     | DJ0257P     | DJ0268P     | DJ0278P     |
| B. PC DIN Jack-Shielded    | DJ0203PS    | DJ0224PS    | DJ0215PS    | DJ0235PS    | N/A         | DJ0246PS    | DJ0257PS    | DJ0268PS    | DJ0278PS    |
| C. PC DIN Jack             | N/A         | DJ0374P     | DJ006       | N/A         | N/A         | DJ0196P     | DJ007       | DJ010       | DJ0088P     |
| D. PC Male DIN Jack        | N/A         | N/A         | DJ014P5     | N/A         | N/A         | N/A         | DJ014P7     | N/A         | N/A         |
| E. PC DIN Jack-Wide        | N/A         | N/A         | 1785S040    | N/A         | N/A         | 1826J096    | N/A         | N/A         | N/A         |
| F. DIN Socket Panel-Metal  | SD30SN      | SD40SN      | SD50SN      | SD51SN      | SD52SN      | SD60SN      | SD70SN      | SD80SN      | SD81SN      |
| G. DIN Socket Panel Mount  | SD30S       | SD40S       | SD50S       | SD51S       | SD52S       | SD60S       | SD70S       | SD80S       | SD81S       |
| H. DIN Plug                | SD30        | SD40        | SD50        | SD51        | SD52        | SD60        | SD70        | SD80        | SD81        |
| I. DIN Jack                | SD30J       | SD40J       | SD50J       | SD51J       | SD52J       | SD60J       | SD70J       | SD80J       | SD81J       |
| J. DIN Jack Vertical Mount | DJV3P       | N/A         | DJV5P180    | DJV5P240    | N/A         | DJV6P       | DJV7P       | DJV8P270    | N/A         |
| K. Right Angle DIN plug    | DPRA3       | DPRA4       | DPRA5       | N/A         | N/A         | DPRA6       | DPRA7       | DPRA8       | N/A         |

## CUSTOM MOLDED CABLE ASSEMBLIES



Plug to plug, plug to jack, combination "D" sub, micro DIN, etc. straight coiled or shielded type. For further info please refer to page C-1407 or call our sales office.

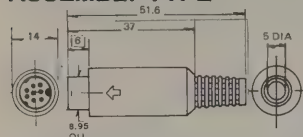
# LZRelectronics, inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

# LZR

# MINI DIN PLUGS, JACKS, PC BOARD & PANEL MOUNT CONNECTORS

## MINI DIN PLUG ASSEMBLY TYPE



|              |      |      |      |      |      |      |      |
|--------------|------|------|------|------|------|------|------|
| PIN Layout:  |      |      |      |      |      |      |      |
| No. of PINs: | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
| Part No.:    | MD30 | MD40 | MD50 | MD60 | MD70 | MD80 | MD90 |

## MINI DIN INLINE JACK ASSEMBLY TYPE



|              |       |       |       |       |       |       |       |
|--------------|-------|-------|-------|-------|-------|-------|-------|
| PIN Layout:  |       |       |       |       |       |       |       |
| No. of PINs: | 3     | 4     | 5     | 6     | 7     | 8     | 9     |
| Part No.:    | MD30J | MD40J | MD50J | MD60J | MD70J | MD80J | MD90J |

## PCB MOUNT JACK

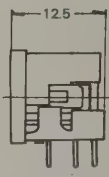
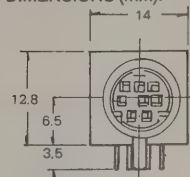


SHIELDED

### SPECIFICATIONS

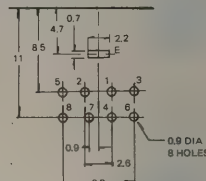
Rating: 1A, 100V AC  
2A, 12V DC  
Insulation Resistance: 50MΩ Min  
Dielectric Strength: 250V DC/1 minute  
Contact Resistance: 30mΩ Max  
Insertion Force: 4.5kg Max  
Extraction Force: 1-3kg

DIMENSIONS (mm):



PC BOARD HOLE LAYOUT

PC BOARD

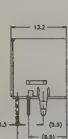
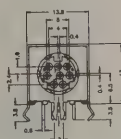


PIN layout is the same as Inline Jack above

|                       |        |        |        |        |        |        |        |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|
| No. of Contacts:      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
| PCB Mount Din Jacks   | MDJ3P  | MDJ4P  | MDJ5P  | MDJ6P  | MDJ7P  | MDJ8P  | MDJ9P  |
| PCB DIN Jack Shielded | MDJ3PS | MDJ4PS | MDJ5PS | MDJ6PS | MDJ7PS | MDJ8PS | MDJ9PS |

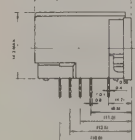
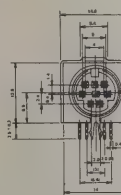
Note: Above Connectors are available with SPST switch.

## FULLY SHIELDED MINI DIN JACKS



|         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|
|         |         |         |         |         |         |
| 3       | 4       | 5       | 6       | 7       | 8       |
| MDJ3PSW | MDJ4PSW | MDJ5PSW | MDJ6PSW | MDJ7PSW | MDJ8PSW |

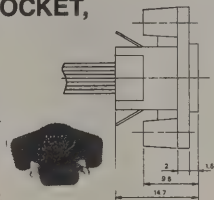
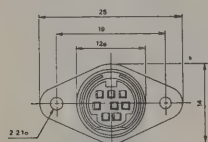
## MINI DIN JACKS WITH SWITCH



|                  |        |        |        |        |        |        |
|------------------|--------|--------|--------|--------|--------|--------|
| No. of Contacts: | 3      | 4      | 5      | 6      | 7      | 8      |
| Part No.:        | MDJSW3 | MDJSW4 | MDJSW5 | MDJSW6 | MDJSW7 | MDJSW8 |

NOTE: PIN layout is the same as Inline Jacks above

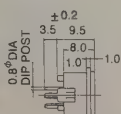
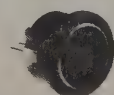
## PANEL MOUNT SOCKET, CRIMP TYPE



|                  |        |        |        |        |        |        |
|------------------|--------|--------|--------|--------|--------|--------|
| No. of Contacts: | 3      | 4      | 5      | 6      | 7      | 8      |
| Part No.:        | MDJCP3 | MDJCP4 | MDJCP5 | MDJCP6 | MDJCP7 | MDJCP8 |

NOTE: 1. Pin Layout is the same as inline jacks above.  
2. Jack comes standard with 10" 26 AWG wire leads.  
3. Specifications are the same as PCB mount jack above.

## VERTICAL PCB MOUNT SOCKET



|                  |        |        |        |        |        |        |
|------------------|--------|--------|--------|--------|--------|--------|
| No. of Contacts: | 3      | 4      | 5      | 6      | 7      | 8      |
| Part No.:        | MDJV3P | MDJV4P | MDJV5P | MDJV6P | MDJV7P | MDJV8P |

PIN layout; is the same as Inline Jack above

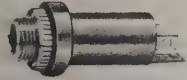
# LZRelectronics, inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

# LZR



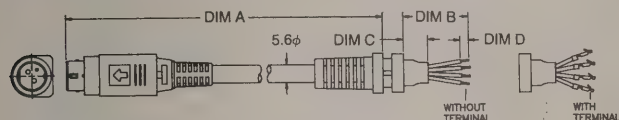
## 2.5mm, 3.5mm, 6.3mm MATING PLUGS & INLINE JACKS

|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                 |                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HP113</b> -2.5mm Mono Submini Plug, Plastic Handle, Solder Term.<br><b>HP113S</b> -2.5mm Stereo Plug<br>                                    | <b>HP147</b> -3.5mm Mono Plug, w/Strain Relief, Solder Term.<br><b>HP148</b> -3.5mm Stereo Plug<br>                                            | <b>1/4" Plug, Solder Terminals with strain relief</b><br><b>HP146</b> -Mono Type<br><b>HP145</b> -Stereo Type<br>       |
| <b>HP053</b> -2.5mm Mono Inline Jack, 2-Conductor, w/Strain Relief<br><b>HP054</b> -2.5mm Stereo Inline Jack, 3-Conductor, w/Strain Relief<br> | <b>HJ243</b> -3.5mm Mono Inline Jack, 2-Conductor, w/Strain Relief<br><b>HJ242</b> -3.5mm Stereo Inline Jack, 3-Conductor, w/Strain Relief<br> | <b>1/4" Inline Jack Solder Terminals with strain relief</b><br><b>HJ241</b> -Mono Type<br><b>HJ240</b> -Stereo Type<br> |
| <b>HP055</b> -3.5mm 3-conductors<br><b>HP056</b> -2.5mm 3-conductors<br>                                                                       |                                                                                                                                                                                                                                 |                                                                                                                                                                                                           |

## LOCKING POWER CONNECTORS & PLUGS

Available in 3 and 4 positions.

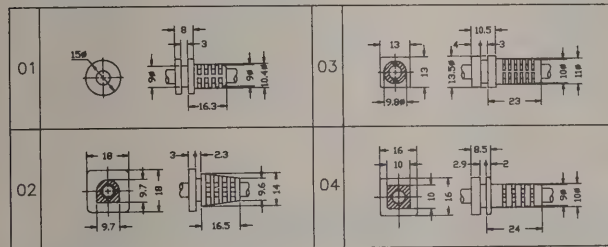
**Applications:** Computers, peripherals, medical, communications, power supplies.



### CABLE ASSEMBLY WITH LOCKING PLUG

| PN      | DESCRIPTION                              |
|---------|------------------------------------------|
| LZLP3P6 | 3 pos. Locking Plug Assembly, 6 ft. long |
| LZLP4P6 | 4 pos. Locking Plug Assembly, 6 ft. long |

### OPTIONAL STRAIN RELIEF



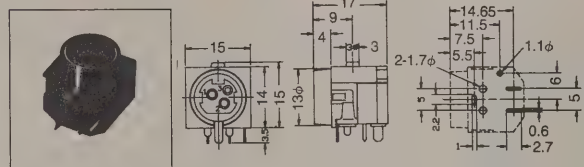
### SPECIFICATIONS

1. Rating: DC20V 1A Max.
2. Contact Resistance: 30mΩ Max.
3. Insulation Resistance: DC250V 50MΩ Min.
4. Voltage Withstanding: AC250V 1 Minute.
5. Insertion Force: 4Kg Max.
6. Withdrawal Force: 0.5Kg-3Kg

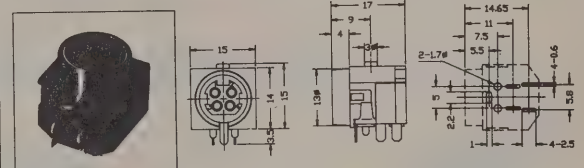


### LOCKING CONNECTORS

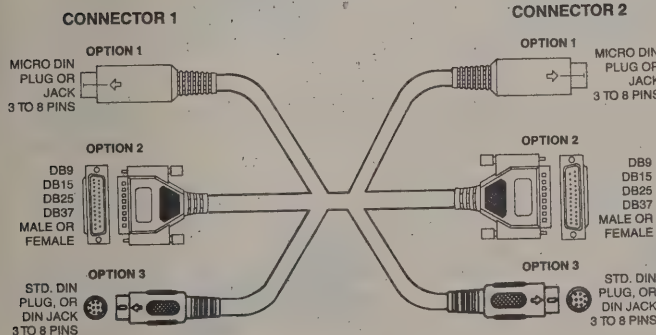
LZJ3PC  
3 position



LZJ4PC  
4 position

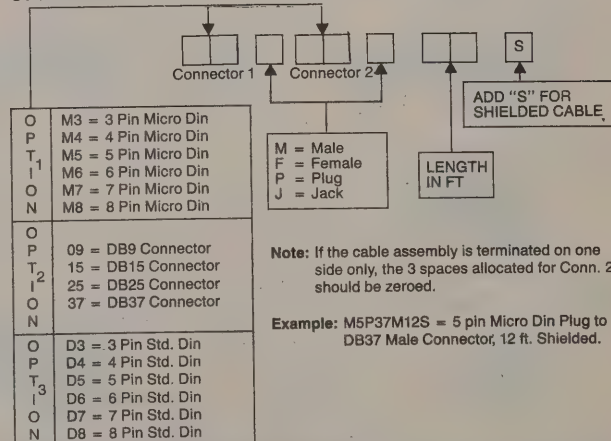


### CUSTOM MADE MOLDED CABLE ASSEMBLIES



OTHER COMBINATIONS ARE AVAILABLE UPON REQUEST

### ORDERING SYSTEM



**LZR**electronics, inc.

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**LZR**



**MODEL: 0501640**

**BG** = Connector Black Body and Center Contact Gold Plated

1.315 INCHES DIAMETER (1)

1/2-28UNEF-2A

HEIGHT  
34.9

SCREWS & HEX NUTS

(A) same as (A) except  $\phi 2.01$  holes

(B) same as (C) except  $\phi 2.01$  holes

(C) same as (A) except  $\phi 2.01$  holes

(D) same as (C) except  $\phi 2.01$  holes

(E) same as (A) except  $\phi 2.01$  holes

(F) same as (C) except  $\phi 2.01$  holes

Panel Mounting Holes Configuration

**NOTE:** 1. These connectors can be mounted on PC boards up to 3.18 mm thick and panels up to 6.35 mm thick  
2. Connectors are supplied with mounting hardware  
All the above connectors are available in TNC version for further information please contact our sales office.

050-1422



Fig. 1

Fig. 1

050-1423

Fig. 2

The figure consists of two parts. On the left is a photograph of a dark, rectangular component, possibly a sensor or a small electronic module, with some internal components visible. On the right is a technical drawing of a cylindrical component. The drawing shows a cross-section of the cylinder with the following dimensions: a diameter of 10.7, a total length of 14.5, and a section length of 11.25. The base of the cylinder has a diameter of 21.5.

Fig. 2

050-1424



Fig. 3

The figure shows a perspective view of a cylindrical component with several electrical leads extending from one end. To the right of the perspective view is a cross-sectional diagram of the component. The diagram shows a central core with a diameter of  $\phi 11.0$  and a total length of 23.0. The component has a flange at one end and a central hole.

Fig. 3

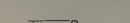
Fig. 4

Fig. 4

050-1427



Fig. 5



17.5

22.5

Fig. 5

050-1428

Fig. 6

25.0

23.0

(30.0)

Fig. 6

Fig. 1

Fig: 1

Fig 3



Fig. 3

Fig 4



Fig. 4

Fig. 5

Fig. 5

Fig 6

Fig. 6

031-2180

3/32 UNF

27.0

10.0

031-2181

Technical drawing of a component, showing a perspective view and a cross-sectional view with dimensions.

Dimensions shown in the cross-section:

- Overall length: 30.0
- Inner diameter: 17.0
- Thread specification:  $\frac{3}{8}$ -32UNF

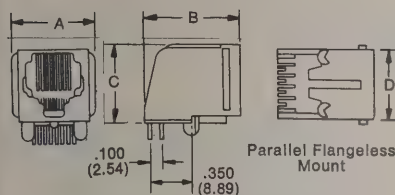
1

**LZRelectronics, inc.** 8051 Cessna Ave., Gaithersburg, MD 20879 **LZR**  
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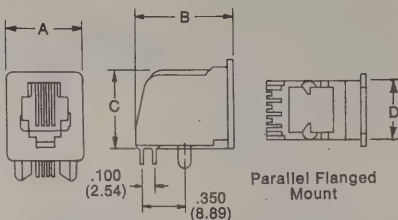


# MODULAR TELEPHONE CONNECTORS

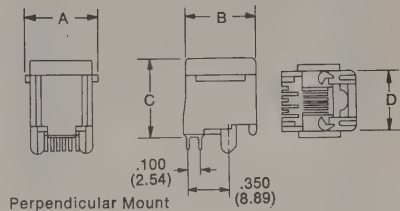
## Parallel Flangeless Mount



## Parallel Flanged Mount



## Perpendicular Mount



| Model   | No. of Position | No. of Contacts | Dimensions    |               |            |               | inch mm |
|---------|-----------------|-----------------|---------------|---------------|------------|---------------|---------|
|         |                 |                 | A             | B             | C          | D             |         |
| LZ249-4 | 4               | 4               | .540<br>13.72 | .810<br>20.57 | .630<br>16 | .440<br>11.18 |         |
| LZ250-4 | 6               | 4               | .620<br>15.75 | .810<br>20.57 | .630<br>16 | .520<br>13.51 |         |
| LZ250-6 | 6               | 6               | .620<br>15.75 | .810<br>20.57 | .630<br>16 | .520<br>13.24 |         |
| LZ251-6 | 8               | 6               | .700<br>17.78 | .810<br>20.57 | .630<br>16 | .600<br>15.24 |         |
| LZ251-8 | 8               | 8               | .700<br>17.78 | .810<br>20.57 | .630<br>16 | .600<br>15.24 |         |
| LZ252-6 | 8K†             | 6               | .700<br>17.78 | .810<br>20.57 | .630<br>16 | .600<br>15.24 |         |
| LZ252-8 | 8K†             | 8               | .700<br>17.78 | .810<br>20.57 | .630<br>16 | .600<br>15.24 |         |

† Keyed

| Model   | No. of Position | No. of Contacts | Dimensions    |               |               |               | inch mm |
|---------|-----------------|-----------------|---------------|---------------|---------------|---------------|---------|
|         |                 |                 | A             | B             | C             | D             |         |
| LZ241-4 | 4               | 4               | .570<br>14.48 | .810<br>20.57 | .680<br>17.27 | .440<br>11.18 |         |
| LZ242-4 | 6               | 4               | .650<br>16.51 | .810<br>20.57 | .680<br>17.27 | .520<br>13.21 |         |
| LZ242-6 | 6               | 6               | .650<br>16.51 | .810<br>20.57 | .680<br>17.27 | .520<br>13.21 |         |
| LZ243-6 | 8               | 6               | .730<br>18.54 | .810<br>20.57 | .680<br>17.27 | .600<br>15.24 |         |
| LZ243-8 | 8               | 8               | .730<br>18.54 | .810<br>20.57 | .680<br>17.27 | .600<br>15.24 |         |
| LZ244-6 | 8K†             | 6               | .730<br>18.54 | .810<br>20.57 | .680<br>17.27 | .600<br>15.24 |         |
| LZ244-8 | 8K†             | 8               | .730<br>18.54 | .810<br>20.57 | .680<br>17.27 | .600<br>15.24 |         |

† Keyed

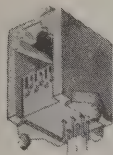
| Model   | No. of Position | No. of Contacts | Dimensions    |               |               |               | inch mm |
|---------|-----------------|-----------------|---------------|---------------|---------------|---------------|---------|
|         |                 |                 | A             | B             | C             | D             |         |
| LZ257-4 | 4               | 4               | .550<br>13.97 | .625<br>15.88 | .645<br>16.38 | .450<br>11.43 |         |
| LZ258-4 | 6               | 4               | .630<br>16    | .625<br>15.88 | .645<br>16.38 | .530<br>13.46 |         |
| LZ258-6 | 6               | 6               | .630<br>16    | .625<br>15.88 | .645<br>16.38 | .530<br>13.46 |         |
| LZ259-6 | 8               | 6               | .710<br>18.03 | .625<br>15.88 | .645<br>16.38 | .610<br>15.49 |         |
| LZ259-8 | 8               | 8               | .710<br>18.03 | .625<br>15.88 | .645<br>16.38 | .610<br>15.49 |         |
| LZ260-6 | 8K†             | 6               | .710<br>18.03 | .625<br>15.88 | .645<br>16.38 | .610<br>15.49 |         |
| LZ260-8 | 8K†             | 8               | .710<br>18.03 | .625<br>15.88 | .645<br>16.38 | .610<br>15.49 |         |

† Keyed

### PCB Mount

6 Positions

| Model     | Desc. |
|-----------|-------|
| 623TYPE4C | 6P4C  |
| 623TYPE6C | 6P6C  |



### PCB Mount

4 Positions

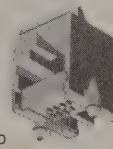
| Model     | Desc. |
|-----------|-------|
| 616TYPE4C | 4P4C  |



### PCB Mount

8 Positions

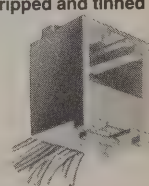
| optional industry standard polarization |             |
|-----------------------------------------|-------------|
| Model                                   | Desc.       |
| 641TYPE                                 | 8P8C        |
| 641TYPEK                                | 8P8C, KEYED |



### 7" Wire Leads, stripped and tinned

8 Positions

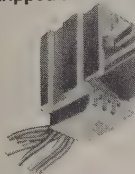
| optional industry standard polarization |             |
|-----------------------------------------|-------------|
| Model                                   | Desc.       |
| 641D                                    | 8P8C        |
| 641DK                                   | 8P8C, KEYED |



### 7" Wire Leads, stripped and tinned

6 Positions

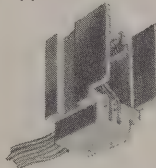
| Model  | Desc. |
|--------|-------|
| 623K4C | 6P4C  |
| 623K6C | 6P6C  |



### 7" Wire Leads, stripped and tinned

4 Positions

| Model  | Desc. |
|--------|-------|
| 616M4C | 4P4C  |



### 7" Wire Leads, stripped and tinned

6 Positions

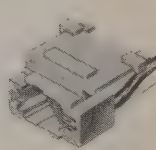
| Model  | Desc. |
|--------|-------|
| 623T4C | 6P4C  |
| 623T6C | 6P6C  |



### 7" Wire Leads, stripped and tinned

4 Positions

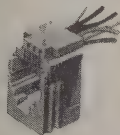
| Model  | Desc. |
|--------|-------|
| 616T4C | 4P4C  |



### 7" Wire Leads, stripped and tinned

6 Positions

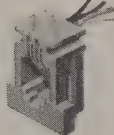
| Model  | Desc. |
|--------|-------|
| 623P4C | 6P4C  |
| 623P6C | 6P6C  |



### 7" Wire Leads, stripped and tinned

4 Positions

| Model  | Desc. |
|--------|-------|
| 616B4C | 4P4C  |



### 7" Wire Leads, stripped and tinned

4 Positions

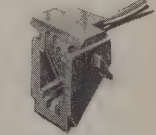
| Model  | Desc. |
|--------|-------|
| 616P4C | 4P4C  |



### 7" Wire Leads, stripped and tinned

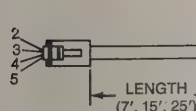
4 Positions

| Model  | Desc. |
|--------|-------|
| 616W4C | 4P4C  |

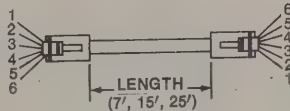


## TELEPHONE LINE CORDS AND COILED CORDS

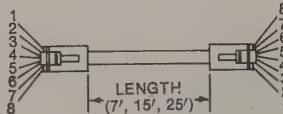
### 6P4C Plugs



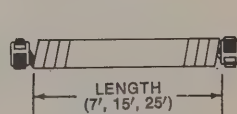
### 6P6C Plugs



### 8P8C Plugs



### Coiled Cord



Custom Color, Custom Length and Cords to your own specification are welcome. Please call our sales office.

For Further Information on Telephone Line Cords refer to EEM page C•1760

# LZRelectronics, inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

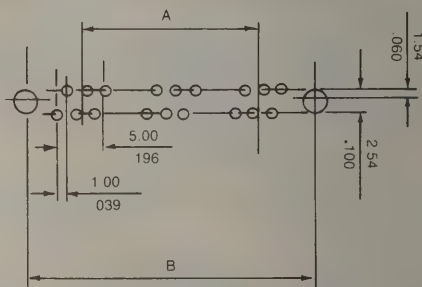
# LZR

3. Electrical Characteristics  
Dielectric withstanding voltage  
1,000 VAC 60 Hz 1 min.  
Insulation resistance 500  
megohms minimum.  
Surge test to 1,000 volts.

- 1) All Multi-port connector blocks have locking tabs at both ends. These provide enhanced PCB mounting stability.
- 2) The 6- and 8-port versions have an additional locking tab, centered in the middle of the row (between the 3rd and 4th port of 6-port block and between the 4th and 5th port of an 8-port block).

Technical drawing of a three-hole punch plate. The drawing shows a top-down view of the plate with three circular punch holes arranged horizontally. The overall width is labeled 'C' and the overall height is labeled 'D'. The distance between the centers of the outer holes is labeled '15.40'. The distance between the center of the middle hole and the right edge is labeled '4.00'. The distance between the center of the middle hole and the left edge is labeled '15.7'. The distance between the center of the middle hole and the right edge is labeled '2.50'. The distance between the center of the middle hole and the left edge is labeled '0.98'.

Technical drawing of a mechanical part, likely a valve or plug, showing dimensions in millimeters. The drawing includes a top view and a side view. Key dimensions are: 2.10, 0.82, 15.40, 6.06, 4.60, 181, 16.00, 6.70, and 630.



R = Right Angle  
V = Vertical Mt.

NO. OF POSITIONS,  
EACH PORT \_\_\_\_\_

NO. OF CONTACTS  
EACH PORT \_\_\_\_\_  
(4 or 6)

NO. OF PORTS (2-8) \_\_\_\_\_

| No. Of Jacks | Dimension mm (Inch) |                |                |                |
|--------------|---------------------|----------------|----------------|----------------|
|              | A                   | B              | C              | D              |
| 2 Jacks      | 11.00<br>.433       | 25.20<br>.992  | 28.20<br>1.110 | 25.20<br>.992  |
| 3 Jacks      | 22.00<br>.866       | 36.20<br>1.425 | 39.20<br>1.543 | 38.80<br>1.429 |
| 4 Jacks      | 33.00<br>1.299      | 47.20<br>1.858 | 50.20<br>1.976 | 40.80<br>1.862 |
| 5 Jacks      | 44.00<br>1.732      | 58.20<br>2.291 | 61.20<br>2.409 | 58.30<br>2.295 |
| 6 Jacks      | 55.00<br>2.163      | 60.20<br>2.724 | 72.20<br>2.842 | 69.40<br>2.732 |
| 7 Jacks      | 66.00<br>2.598      | 80.20<br>3.157 | 83.20<br>3.275 | 80.40<br>3.165 |
| 8 Jacks      | 77.00<br>3.031      | 91.20<br>3.590 | 94.20<br>3.709 | 92.50<br>3.602 |

# LZR



# MODULAR TELEPHONE ACCESSORIES

## SPECIFICATION:

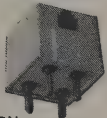
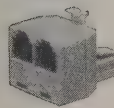
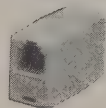
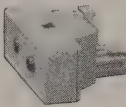
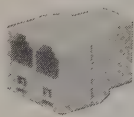
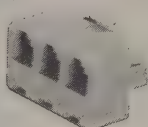
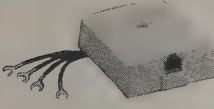
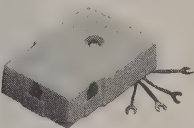
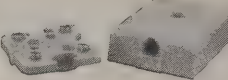
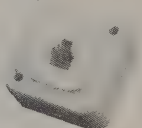
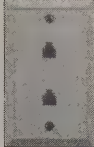
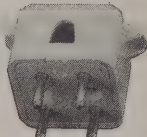
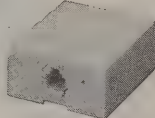
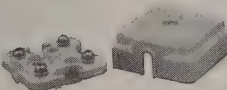
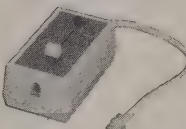
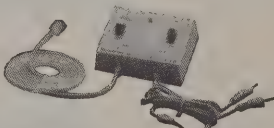
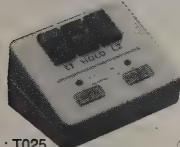
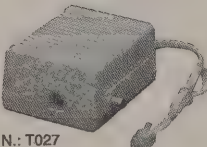
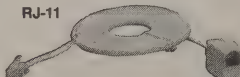
Insulation Resistance: :  $\geq 500$  megohms  
 Dielectric Strength : 500 Vac rms, 60 Hz  
 Contact Resistance :  $\leq 15$  milliohms  
 Current Rating : 1 1/2 AMP

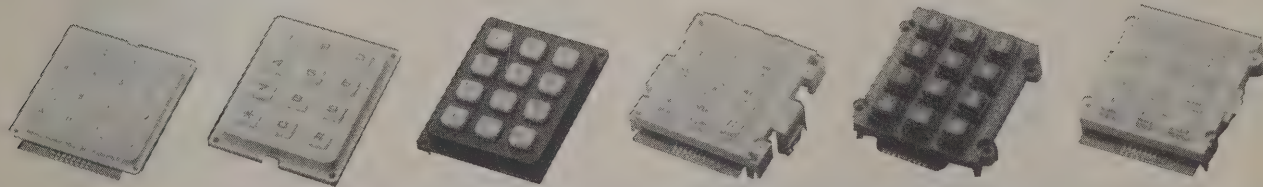
## BLISTER PACKS:

1. Blister Packs are available at slightly higher cost.
2. Minimum order is 2,000 units per each item.
3. Your own brand name is available too.

\*Add S or R after the P.N.

S = Straight thru wiring. R = Reverse sequence wiring.

|                                                                                                                                                                                                    |                                                                                                                                                                                                  |                                                                                                                                                                                               |                                                                                                                                                             |                                                                                                                                                                                                                   |                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4 PRONG TO MODULAR ADAPTER</b><br><br>P.N. TA 101                                                               | <b>DUPLEX MODULAR SPLITTER</b><br><br>P.N. TA10244 S/R* 4 Cond.<br>TA10266 S/R* 6 Cond.<br>TA10248 S/R* 8 Cond. | <b>MODULAR CORD COUPLER</b><br><br>P.N. TA10344 S/R* 4 Cond.<br>TA10366 S/R* 6 Cond.<br>TA10388 S/R* 8 Cond. | <b>RETRO-FIT ADAPTER</b><br><br>P.N. TA104<br>DESCR. 4 Cond.               | <b>THREE WAY COUPLER</b><br><br>P.N. TA106<br>DESCR. 4 Cond.                                                                    | <b>THREE WAY SPLITTER</b><br><br>P.N. TA108<br>DESCR. 4 Cond. |
| <b>MODULAR JACK COVER</b><br><br>P.N. TS201<br>TS222<br>DESCR. 4 Cond.<br>6 Cond.                                  | <b>THREE MODULAR JACKS COVER</b><br><br>P.N. TS234<br>DESCR. 4 Cond.                                            | <b>MODULAR JACK ASSEMBLY</b><br><br>P.N. TS202<br>TS225<br>DESCR. 4 Cond.<br>6 Cond.                         | <b>THREE MODULAR JACKS ASSEMBLY</b><br><br>P.N. TS235<br>DESCR. 4 Cond.    | <b>MODULAR JACK</b><br><br>P.N. TS203<br>DESCR. 4 Cond.                                                                        |                                                                                                                                                  |
| <b>WALL MOUNTED MODULAR JACK</b><br><br>P.N. TS2054C<br>TS2056C<br>TS2058C<br>DESCR. 4 Cond.<br>6 Cond.<br>8 Cond. | <b>DUPLEX WALL JACK</b><br><br>P.N. TS2074C<br>TS2076C<br>TS2078C<br>DESCR. 4 Cond.<br>6 Cond.<br>8 Cond.       | <b>STANDARD 4 PRONG PLUG</b><br><br>P.N. TS211<br>DESCR. 4 Cond.                                             | <b>STAINLESS STEEL WALL PHONE JACK</b><br><br>P.N. TS223<br>DESCR. 4 Cond. | <b>SURFACE JACK</b><br><br>P.N. TS226<br>TS227<br>TS214<br>TS231<br>DESCR. 4 Cond.<br>6 Cond.<br>8 Cond.<br>With Shorting Bars |                                                                                                                                                  |
| <b>MODULAR JACK</b><br><br>P.N. TS230<br>DESCR. 4 Cond.                                                          | <b>CONNECTIVE BLOCK</b><br><br>P.N. TS212<br>DESCR. 4 Cond.                                                   | <b>TELEPHONE HANDSET AMPLIFIER</b><br><br>P.N. T012<br>DESCR. 4 Cond.                                      | <b>LINE TESTER</b><br><br>P.N. T013<br>DESCR. 4 Cond.                    | <b>AUTO TEL. RECORDER</b><br><br>P.N. T015<br>DESCR. 4 Cond.                                                                  |                                                                                                                                                  |
| <b>TWO LINE HOLDER</b><br><br>P.N.: T025                                                                         | <b>ADJUSTABLE RINGER</b><br><br>P.N.: T027                                                                    | <b>EXTENSION CORD</b><br>RJ-11<br><br>P.N. TC615<br>TC625<br>DESCR. 15 ft.<br>25 ft.                       |                                                                                                                                                             | <b>DUPLEX EXTENSION CORD</b><br>RJ-11<br><br>P.N. TC515<br>TC525<br>DESCR. 15 ft.<br>25 ft.                                   |                                                                                                                                                  |



PLEASE REFER TO EEM PAGE B-1844 FOR A COMPLETE LINE OF STANDARD KEYPADS.

**LZR** *electronics, inc.*

8051 Cessna Ave., Gaithersburg, MD 20879  
 Telephone (301) 921-4600 Fax (301) 670-0436

**LZR**

# AC POWER ENTRY CONNECTORS

## PANEL MOUNTED RECEPTACLES

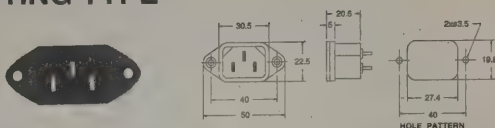


### General Specifications:

- **Insulation Resistance:** 100 Mohms at 500 VDC • **Dielectric Strength:** 2000 VAC for 1 minute
- **Contact Resistance:** 30 Mohms or less at 2.5 VDC, 1A • **Housing Material:** Black thermoplastic • **Terminals:** Copper alloy

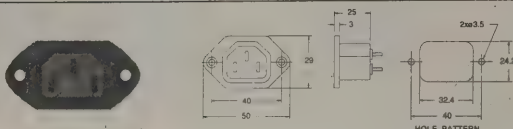
### SCREW MOUNTING TYPE

#### ACC008



- **Power Rating:** 10 A 250 VAC
- **Approval:** VDE, SEV, SEMKO, SETI, DEMKO, NEMKO
- **Power Rating:** 15 A 250 VAC
- **Approval:** UL, CSA

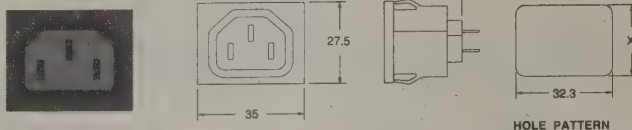
#### ACC010



- **Power Rating:** 10 A 250 VAC
- **Approval:** UL, CSA, VDE, SEV, SEMKO

### SNAP-IN MOUNTING TYPE

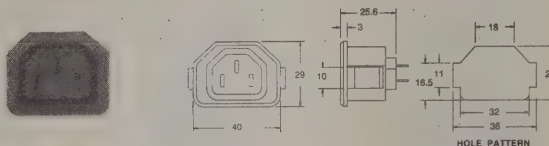
#### ACC014



- **Power Rating:** 10 A 250 VAC
- **Approval:** UL, CSA, VDE, SEV, SEMKO

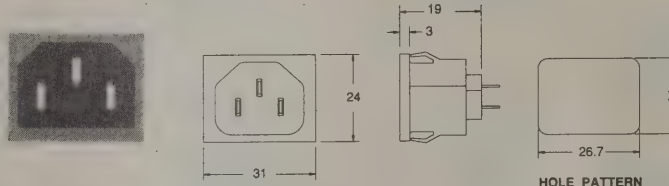
| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 25.2 |
| 1.3mm - 2.0mm   | 25.4 |

#### ACC014AR



- **Power Rating:** 10 A 250 VAC
- **Approval:** UL, CSA, VDE, SEV, SEMKO

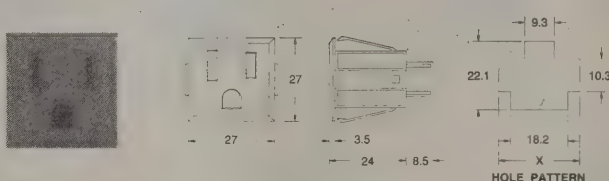
#### ACC016



- **Power Rating:** 10 A 250 VAC
- **Approval:** VDE, SEV, SEMKO, SETI, DEMKO, NEMKO
- **Power Rating:** 15 A 250 VAC
- **Approval:** UL, CSA

| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 20.3 |
| 1.3mm - 2.0mm   | 20.5 |

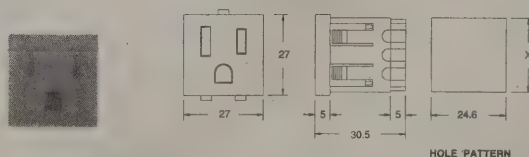
#### ACC011



- **Power Rating:** 15 A 125 VAC
- **Approval:** UL, CSA

| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm           | 24.0 |
| 1.0mm           | 24.6 |
| 1.2mm           | 25.2 |
| 1.6mm           | 26.2 |

#### ACC011 IDC FOR IDC WIRING (POWER STRIPS)

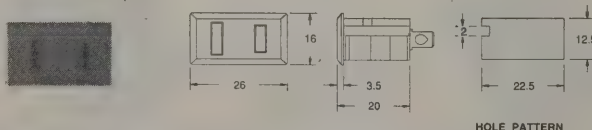


- **Power Rating:** 15 A 125 VAC
- **Approval:** UL, CSA

| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 24.6 |
| 1.3mm - 2.0mm   | 24.8 |

#### ACC004 POLARIZED

#### ACC005 NON-POLARIZED



- **Power Rating:** 15 A 125 VAC
- **Approval:** UL, CSA

PANEL THICKNESS  
0.8mm - 1.5mm MAX.

Notes: 1. All dimensions are in mm. 2. For termination options, see next page.

# LZRelectronics, inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

# LZR

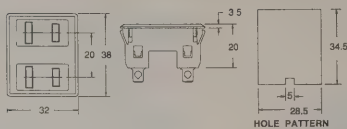


# AC POWER ENTRY CONNECTORS

## PANEL MOUNTED RECEPTACLES

### SNAP-IN MOUNTING TYPE (continued)

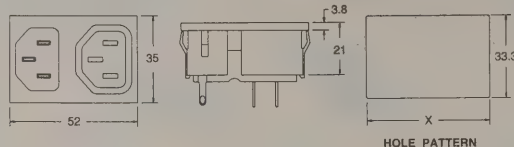
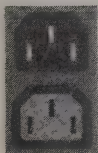
ACC0042P



- Power Rating: 15 A 125 VAC
- Approval: UL, CSA

PANEL THICKNESS  
0.8mm - 1.5mm MAX.

ACC020

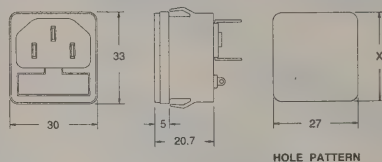


- Power Rating: 10 A 250 VAC
- Approval: UL, CSA, VDE, SEV, SEMKO

| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 50.3 |
| 1.3mm - 2.0mm   | 50.5 |

### PANEL MOUNT RECEPTACLES WITH FUSE HOLDER

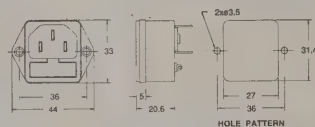
ACC013



- Power Rating: 10 A 250 VAC
- Approval: UL, CSA, VDE, SEV, SEMKO, SETI, DEMKO, NEMKO

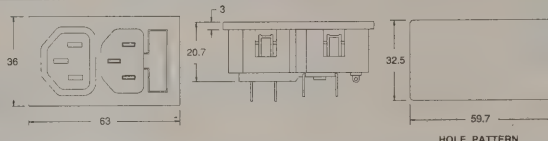
| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 31.4 |
| 1.3mm - 2.0mm   | 31.6 |

ACC012



- Power Rating: 10 A 250 VAC
- Approval: UL, CSA, VDE, SEV, SEMKO, SETI, DEMKO, NEMKO

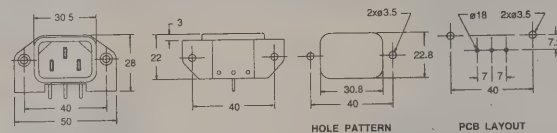
ACC020F



- Power Rating: 10 A 250 VAC
- Approval: UL, CSA, VDE, SEV, SEMKO

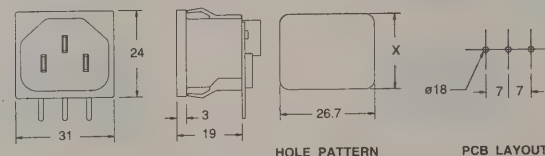
### PRINTED CIRCUIT BOARD MOUNTING RECEPTACLES

ACC009



- Power Rating: 10 A 250 VAC
- Approval: UL, CSA, VDE, SEV, SEMKO, SETI, DEMKO, NEMKO

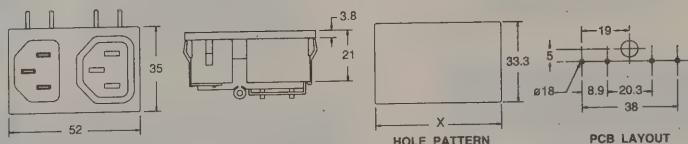
ACC016PC



- Power Rating: 10 A 250 VAC
- Approval: VDE, SEV, SEMKO, SETI, DEMKO, NEMKO
- Power Rating: 15 A 250 VAC
- Approval: UL, CSA

| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 20.3 |
| 1.3mm - 2.0mm   | 20.5 |

ACC020PC



- Power Rating: 10 A 250 VAC
- Approval: UL, CSA, VDE, SEV, SEMKO

| HOLE PATTERN    |      |
|-----------------|------|
| PANEL THICKNESS | X    |
| 0.8mm - 1.2mm   | 50.3 |
| 1.3mm - 2.0mm   | 50.5 |

Notes: 1. All dimensions are in mm.  
2. For termination options, see Termination Options.

| TERMINATION OPTIONS                                          |  |                                                                     |
|--------------------------------------------------------------|--|---------------------------------------------------------------------|
| <b>TERMINAL TYPE</b><br>6.3mm/.250"<br>FAST-ON TAB<br>CODE-1 |  | <b>TERMINAL TYPE</b><br>4.8mm/.187"<br>SOLDER/FAST-ON TAB<br>CODE-2 |
|                                                              |  | <b>TERMINAL TYPE</b><br>2.8mm<br>SOLDER TAB<br>CODE-3               |
|                                                              |  |                                                                     |

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# LZR

## "D"-SUB CONNECTORS

### PANEL MOUNT SOLDER CUP

MALE

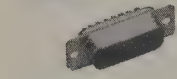
FEMALE



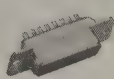
DB9MP



DB9FP



DB15MP



DB15FP



DB23MP



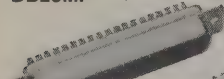
DB23FP



DB25MP



DB25FP



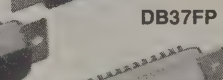
DB37MP



DB37FP



DB50MP



DB50FP

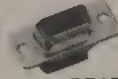
### CRIMP TERMINAL HOUSING

MALE

FEMALE



DB9MC



DB9FC



DB15MC



DB15FC



DB25MC



DB25FC

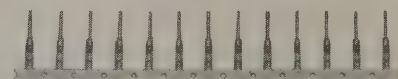


DB37MC

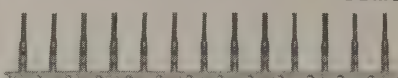


DB37FC

Crimp Terminal:



DBMC



DBFC

### PC BOARD VERTICAL MOUNT

MALE

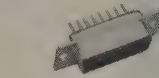
FEMALE



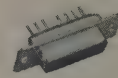
DB9MV



DB9FV



DB15MV



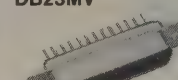
DB15FV



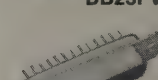
DB23MV



DB23FV



DB25MV



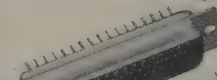
DB25FV



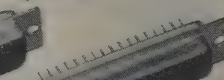
DB37MV



DB37FV



DB50MV



DB50FV

## RIGHT ANGLE, PC BOARD MOUNT

SHORT BODY .485"

LONG BODY 0.75"

MALE

FEMALE



DB9MR



DB9FR



DB15MR



DB15FR



DB25MR



DB25FR



DB37MR



DB37FR

MALE

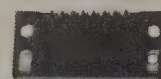
FEMALE



DB9MRL



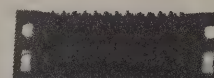
DB9FRL



DB15MRL



DB15FRL



DB25MRL



DB25FRL



DB37MRL



DB37FRL

ALL MODELS ARE SUPPLIED WITH HEX JACK SCREWS.  
ADD "C" TO PART NO. FOR PCB RETENTION CLIP.  
ADD "D" FOR #4-40 THREADED BUSHING FOR PCB SCREW-MOUNTING.

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# LZR



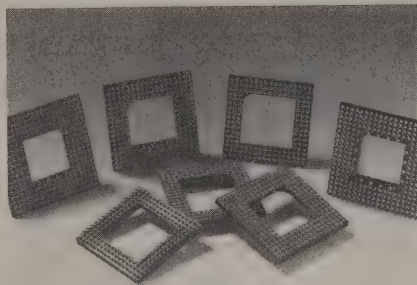
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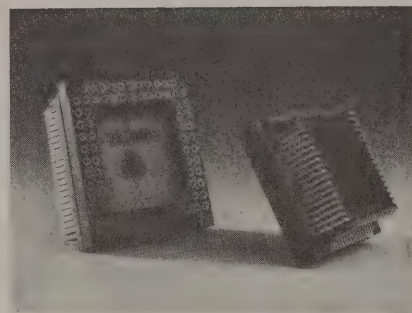
|                |                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alabama:       | Century Fasteners (205) 883-5344                                                                                                                                                                                                                                                                                                                                           |
| Arizona:       | DC Electronics (602) 483-1234<br>Force Electronics (602) 437-1060<br>TTI (601) 431-1191                                                                                                                                                                                                                                                                                    |
| California:    | Abacus Electronics (408) 732-2000<br>Components Center (714) 979-0433<br>DC Electronics (408) 453-2400, (714) 259-9066<br>Force Electronics (213) 772-1324, (408) 748-1324, (619) 569-9661<br>Kent Electronics (408) 262-5300, (619) 453-7133, (714) 773-0781<br>R&D Electronic Parts (408) 262-7144<br>TTI (818) 891-8885, (714) 641-9393, (619) 748-2025, (408) 946-5577 |
| Colorado:      | Alliance Electronics Colorado (303) 433-1648<br>TTI (303) 429-6806                                                                                                                                                                                                                                                                                                         |
| Connecticut:   | Heilind Electronics, Inc. (800) 800-1666<br>TTI (203) 284-7474                                                                                                                                                                                                                                                                                                             |
| Florida:       | Electronic Precepts of Florida, Inc. (813) 544-3636<br>TTI (407) 859-1000                                                                                                                                                                                                                                                                                                  |
| Georgia:       | TTI (404) 662-0911                                                                                                                                                                                                                                                                                                                                                         |
| Illinois:      | TTI (708) 884-6500                                                                                                                                                                                                                                                                                                                                                         |
| Massachusetts: | Heilind Electronics, Inc. (203) 262-1700<br>TTI (508) 851-2000                                                                                                                                                                                                                                                                                                             |
| Minnesota:     | Electronic Depot Supply Co. (612) 439-9409<br>Parts 1 (612) 633-8079<br>TTI (612) 933-8555<br>TTI (410) 995-1331                                                                                                                                                                                                                                                           |
| Maryland:      | TTI (410) 995-1331                                                                                                                                                                                                                                                                                                                                                         |
| New Hampshire: | Astrum Electronics (603) 898-3399                                                                                                                                                                                                                                                                                                                                          |
| New Jersey:    | TTI (609) 234-6400                                                                                                                                                                                                                                                                                                                                                         |
| New York:      | RBD (516) 589-7717<br>TTI (516) 737-2000                                                                                                                                                                                                                                                                                                                                   |
| Oregon:        | Component Resources, Inc. (503) 641-8488                                                                                                                                                                                                                                                                                                                                   |
| Ohio:          | CAM RPC Electronic (216) 461-4700<br>TTI (216) 328-9755, (513) 898-8330                                                                                                                                                                                                                                                                                                    |
| Pennsylvania:  | Century Electronic Components (215) 631-5400                                                                                                                                                                                                                                                                                                                               |
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PLCC Sockets



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## EMI Filtered D Subminiature Connectors

### PRODUCT BENEFITS

- Provides optimum positioning of interference control at interconnect interface.
- Provides maximum volumetric efficiency.
- Design is based on proprietary ceramic technology of proven reliability and RF performance.
- Connectors mount in existing chassis hole pattern.
- A cost effective solution to electro-magnetic compatibility (EMC).
- Provides a wide range of filter performance options.
- Adaptor styles provide for ease of retrofitting existing equipment.
- Testing 100% for key parameters ensures quality levels.
- Designed to provide compatibility with EIA RS-232 and RS-449.

M.C.I. has the world's largest inventory of filtered D-Subminiature connectors. These connectors are manufactured by the leader of the industry... Spectrum Control, Inc. Spectrum Control's Filtered D Subminiature connectors are designed to provide a cost effective method of complying with FCC Part 15, Sub Part J, VDE and MIL STD 461 A/B regulations. The filters are feed-thru capacitors and pi sections.

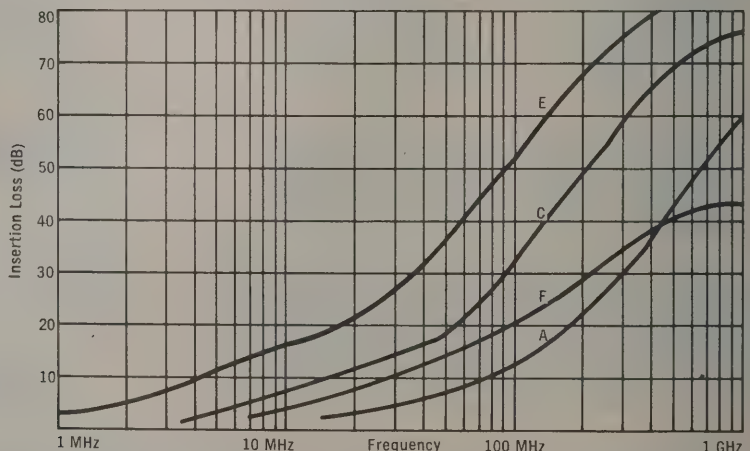
Our in-house stock includes all five shell sizes, 9, 15, 25, 37 and 50 position connectors in pin contacts (plugs), socket contacts (receptacles) and in the very versatile pin/socket adaptors. The four standard electrical configurations along with their performance values follows:

### EMI FILTER PERFORMANCE

| Filter Designation | *Filter Circuits | Capacitance |             | 3 dB Max Cut-Off Frequency (MHz) | Dielectric W/standing Voltage | Contact Rating | Contact Resist. | DC Working Voltage<br>-55°C to +125°C | Minimum Insertion Loss — Decibels (dB) |        |        |        |         |         |         |       |
|--------------------|------------------|-------------|-------------|----------------------------------|-------------------------------|----------------|-----------------|---------------------------------------|----------------------------------------|--------|--------|--------|---------|---------|---------|-------|
|                    |                  | Value       | Tolerance   |                                  |                               |                |                 |                                       | 5 MHz                                  | 10 MHz | 20 MHz | 50 MHz | 100 MHz | 200 MHz | 500 MHz | 1 GHz |
| A                  | Pi               | 310 pF      | ±20%        | 17                               | 300V                          | 5A             | .010 Ω Max.     | 100V                                  | —                                      | —      | —      | 5      | 10      | 18      | 39      | 52    |
| C                  | Pi               | 1000 pF     | +100<br>-0% | 3.2                              | 300V                          | 5A             | .010 Ω Max.     | 100V                                  | —                                      | 5      | 9      | 15     | 25      | 43      | 65      | 70    |
| E                  | Pi               | 4000 pF     | +100<br>-0% | 0.8                              | 150V                          | 5A             | .010 Ω Max.     | 50V                                   | 8                                      | 13     | 18     | 31     | 46      | 60      | 75      | 75    |
| F                  | FT               | 830 pF      | ±20%        | 6.4                              | 600V                          | 5A             | .010 Ω Max.     | 200V                                  | —                                      | 3      | 6      | 12     | 17      | 23      | 30      | 35    |

### TYPICAL PI FILTER AND FEED THROUGH CAPACITOR PERFORMANCE\*

The following pages depict HM RS-232 series (shell size 25)



All EMI Filtered D Subminiature Connectors stocked by MCI are manufactured in the U.S.A. by Spectrum Control, Inc...

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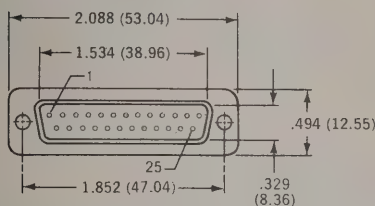
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## EMI Filtered D Subminiature Connectors: 25 Pin Plug

### PIN CONTACT (PLUG)

FRONT VIEW  
(All Configurations)

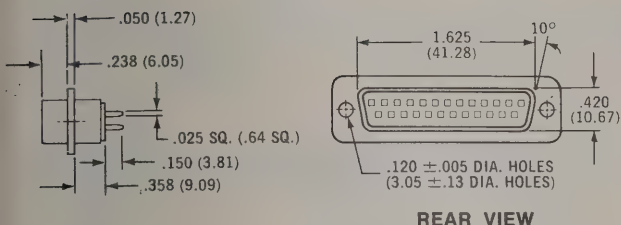


### MOUNTING OPTIONS THREADED SELF-LOCKING INSERTS

Self-locking, threaded and soldered #4-40 UNC inserts available for all connectors and adaptors. Allows ease in fastening and mounting from pin or socket side. Ordering information adding L.I. for Locking Inserts to end of Part Number (eS-56-725-005LI).

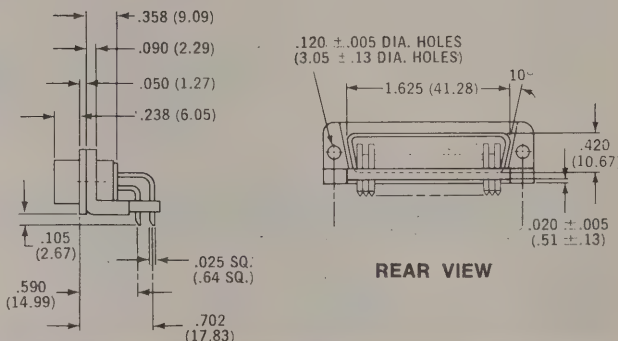
Dimensions Shown in Inches (mm)

### PRINTED CIRCUIT BOARD MOUNT



REAR VIEW

### PRINTED CIRCUIT RIGHT ANGLE MOUNT

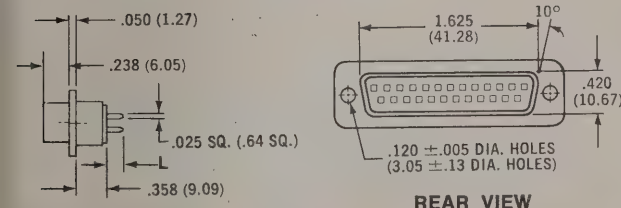


REAR VIEW

| Part Number | EMI Filter |            |                | Voltage Rating |
|-------------|------------|------------|----------------|----------------|
|             | Type*      | Cap Value  | Lines Filtered |                |
| 56-721-001  | A          | 310 pF Pi  | 25             | 100 VDC        |
| 56-721-003  | C          | 1000 pF Pi | 25             | 100 VDC        |
| 56-721-005  | E          | 4000 pF Pi | 25             | 50 VDC         |
| 56-721-033  | F          | 830 pF FT  | 25             | 200 VDC        |

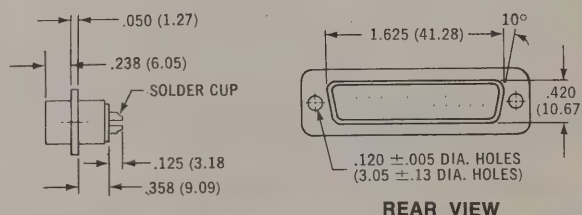
| Part Number | EMI Filter |            |                | Voltage Rating |
|-------------|------------|------------|----------------|----------------|
|             | Type*      | Cap Value  | Lines Filtered |                |
| 56-722-001  | A          | 310 pF Pi  | 25             | 100 VDC        |
| 56-722-003  | C          | 1000 pF Pi | 25             | 100 VDC        |
| 56-722-005  | E          | 4000 pF Pi | 25             | 50 VDC         |
| 56-722-008  | F          | 830 pF FT  | 25             | 200 VDC        |

### SOLDERLESS WIRE WRAP



REAR VIEW

### SOLDER CUP TERMINATION



REAR VIEW

| Part Number | L .500 | L .375 | L .225 | EMI Filter |            |                | Voltage Rating |
|-------------|--------|--------|--------|------------|------------|----------------|----------------|
|             |        |        |        | Type*      | Cap Value  | Lines Filtered |                |
| 56-721-     | 006    | 028    | 024    | A          | 310 pF Pi  | 25             | 100 VDC        |
| 56-721-     | 008    | 030    | 026    | C          | 1000 pF Pi | 25             | 100 VDC        |
| 56-721-     | 010    | 032    | 027    | E          | 4000 pF Pi | 25             | 50 VDC         |
| 56-721-     | 042    | 039    | 036    | F          | 830 pF FT  | 25             | 200 VDC        |

| Part Number | EMI Filter |            |                | Voltage Rating |
|-------------|------------|------------|----------------|----------------|
|             | Type*      | Cap Value  | Lines Filtered |                |
| 56-721-011  | A          | 310 pF Pi  | 25             | 100 VDC        |
| 56-721-013  | C          | 1000 pF Pi | 25             | 100 VDC        |
| 56-721-015  | E          | 4000 pF Pi | 25             | 50 VDC         |
| 56-721-045  | F          | 830 pF FT  | 25             | 200 VDC        |

All EMI Filtered D Subminiature Connectors stocked by MCI are manufactured in the U.S.A. by Spectrum Control, Inc...

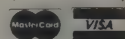
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# METUCHEN CAPACITORS INC.

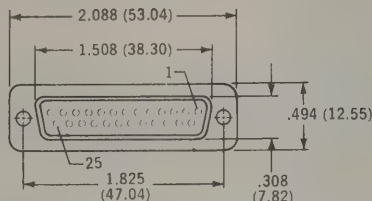
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## EMI Filtered D Subminiature Connectors: 25 Socket Receptacle

### SOCKET CONTACT (RECEPTACLE)

FRONT VIEW  
(All Configurations)

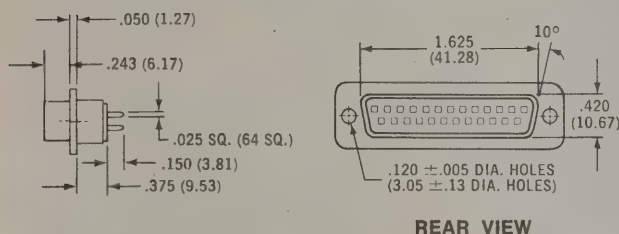


### MOUNTING OPTIONS THREADED SELF-LOCKING INSERTS

Self-locking, threaded and soldered #4-40 UNC inserts available for all connectors and adaptors. Allows ease in fastening and mounting from pin or socket side. Ordering information adding L.I. for Locking Inserts to end of Part Number (eS-56-725-005LI).

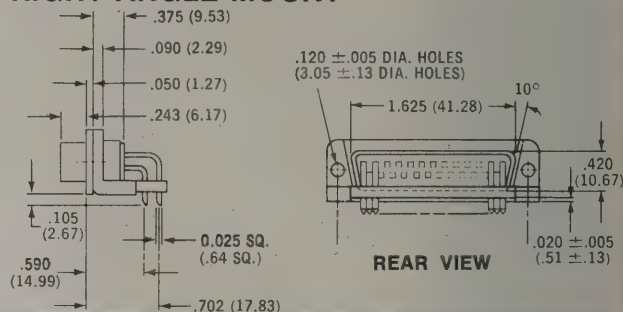
Dimensions Shown in Inches (mm)

### PRINTED CIRCUIT BOARD MOUNT



REAR VIEW

### PRINTED CIRCUIT RIGHT ANGLE MOUNT

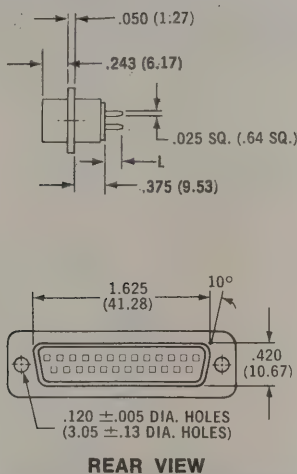


REAR VIEW

| Part Number | Type* | EMI Filter |                |  | Voltage Rating |
|-------------|-------|------------|----------------|--|----------------|
|             |       | Cap Value  | Lines Filtered |  |                |
| 56-723-001  | A     | 310 pF Pi  | 25             |  | 100 VDC        |
| 56-723-003  | C     | 1000 pF Pi | 25             |  | 100 VDC        |
| 56-723-005  | E     | 4000 pF Pi | 25             |  | 50 VDC         |
| 56-723-023  | F     | 830 pF FT  | 25             |  | 200 VDC        |

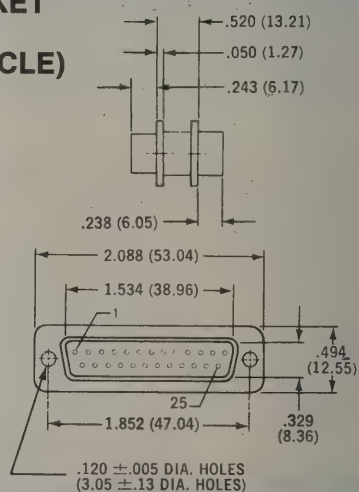
| Part Number | Type* | EMI Filter |                |  | Voltage Rating |
|-------------|-------|------------|----------------|--|----------------|
|             |       | Cap Value  | Lines Filtered |  |                |
| 56-724-001  | A     | 310 pF Pi  | 25             |  | 100 VDC        |
| 56-724-003  | C     | 1000 pF Pi | 25             |  | 100 VDC        |
| 56-724-005  | E     | 4000 pF Pi | 25             |  | 50 VDC         |
| 56-724-008  | F     | 830 pF FT  | 25             |  | 200 VDC        |

### SOLDERLESS WIRE WRAP



REAR VIEW

### EMI FILTERED CONNECTOR ADAPTOR: PIN/SOCKET (PLUG/ RECEPTACLE)



| Part Number | L   | .500 | .375 | .250 | Type* | EMI Filter |                | Voltage Rating |
|-------------|-----|------|------|------|-------|------------|----------------|----------------|
|             |     |      |      |      |       | Cap Value  | Lines Filtered |                |
| 56-723-     | 006 | 017  | 012  | A    |       | 310 pF Pi  | 25             | 100 VDC        |
| 56-723-     | 008 | 019  | 014  | C    |       | 1000 pF Pi | 25             | 100 VDC        |
| 56-723-     | 010 | 021  | 016  | E    |       | 4000 pF Pi | 25             | 50 VDC         |
| 56-723-     | 032 | 029  | 026  | F    |       | 830 pF FT  | 25             | 200 VDC        |

| Part Number | Type* | EMI Filter |                |  | Voltage Rating |
|-------------|-------|------------|----------------|--|----------------|
|             |       | Cap Value  | Lines Filtered |  |                |
| 56-725-001  | A     | 310 pF Pi  | 25             |  | 100 VDC        |
| 56-725-003  | C     | 1000 pF Pi | 25             |  | 100 VDC        |
| 56-725-005  | E     | 4000 pF Pi | 25             |  | 50 VDC         |
| 56-725-019  | F     | 830 pF FT  | 25             |  | 200 VDC        |

All EMI Filtered D Subminiature Connectors stocked by MCI are manufactured in the U.S.A. by Spectrum Control, Inc...

The world's leading manufacture of Electro-Magnetic Components. Distributed for Spectrum Control, Inc.

Metuchen Capacitors Inc./139 WHITE OAK LANE/P.O. BOX 499/OLD BRIDGE, N.J. 08857/908-679-3366/FAX 908-679-3222





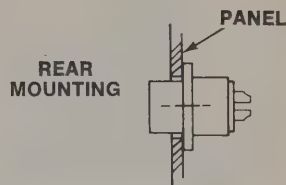
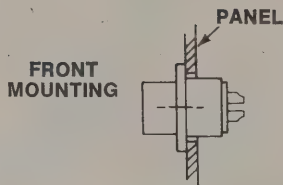
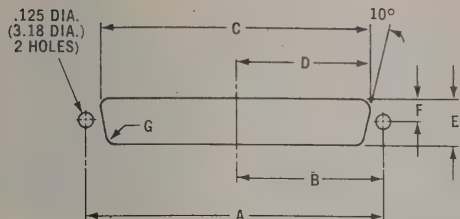
METUCHEN CAPACITORS INC.

For your convenience we welcome credit card purchases (min. \$35.00).



Application Notes

25 D SUBMINIATURE PANEL CUTOUTS



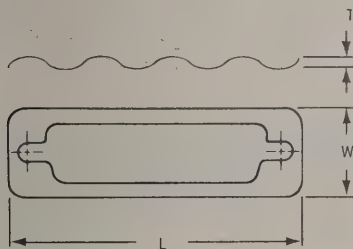
| Mounting Method* | A<br>±.005 (0,13) | B<br>±.005 (0,13) | C<br>±.005 (0,13) | D<br>±.005 (0,13) | E<br>±.005 (0,13) | F<br>±.005 (0,13) | G<br>±.002 (0,05) |
|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Front Mounting   | 1.852 (47,04)     | .926 (23,52)      | 1.645 (41,78)     | .822 (20,89)      | .440 (11,18)      | .220 (5,59)       | .150 (3,81)       |
| Rear Mounting    | 1.852 (47,04)     | .926 (23,52)      | 1.528 (38,81)     | .764 (19,41)      | .360 (9,14)       | .180 (4,57)       | .110 (2,79)       |

\* When Rear Mounting Pin (Plug) Connector use Front Mounting Panel Cutout.

Waved Metal Gaskets Complete EMI Protection For Filtered or Non-Filtered D Subminiature

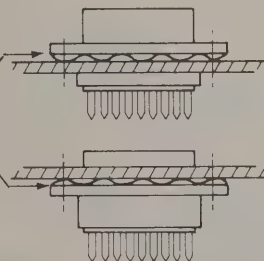
Proper mounting of any EMI filter — including the EMI filtered D Subminiature — is critical to the achievement of electromagnetic compatibility. The mounting surface for grounding the connector must be free from paint or any other insulating ma-

terial. The sketches below indicate the use of one of Spectrum's EMI gaskets to fill any tolerance gaps and adjust for irregularities in the flatness of the mounting surface.



WAVED METAL GROUNDING/SHIELDING GASKET

(Shown in Free State)



FRONT MOUNT

REAR MOUNT

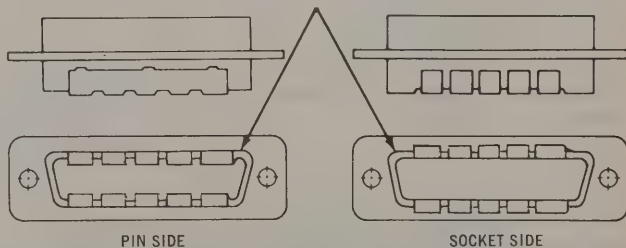
| Shell Size | Mounting Configuration | L             | W            | T<br>Free State | T<br>Compressed | Part No.        |
|------------|------------------------|---------------|--------------|-----------------|-----------------|-----------------|
| 25         | Front Pin - Socket     | 2.088 (53,04) | .600 (15,24) | .030 (0,76)     | .005 (0,13)     | 572019-00102-70 |
|            | Rear - Pin             |               |              |                 |                 |                 |
|            | Rear - Socket          | 2.088 (53,04) | .600 (15,24) | .030 (0,76)     | .005 (0,13)     | 572019-00107-70 |

Spectrum EMI Filtered D Subminiature... Unique

Spectrum D subminiature connectors feature a unique ground plane to effectively block bulkhead leakage of EMI. The design also provides line to line isolation separation to limit cross talk (line to line mutual coupling) to an absolute minimum. Another, and a most important feature, is the coaxial spring contact that provides proper electrical grounding when mating one connector to another connector.

R. F. GROUNDING SPRING CONTACT\*

COAXIAL SPRING CONTACTS



PIN SIDE

SOCKET SIDE

\* Provided on all shell sizes — all termination styles Patent Pending.

All EMI Filtered D Subminiature Connectors stocked by MCI are manufactured in the U.S.A. by Spectrum Control, Inc...

The world's leading manufacturer of Electro-Magnetic Components. Distributed for Spectrum Control, Inc.

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## MINIGLOSSARY CONNECTORS

**Connector terminology** is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.



## NOBODY TURNS OUT THE VOLUME LIKE MILL-MAX

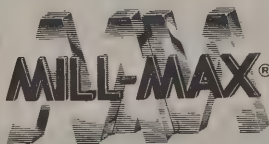


**N**eed interconnect components in record time? Mill-Max is your ticket. By producing over 80 million machined parts per week, we top the U.S. charts for our wide variety of items from stock.

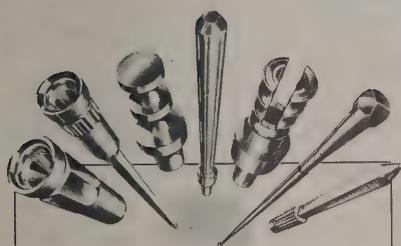
But what makes Mill-Max "the King" is the superior quality we attain by manufacturing under one roof. And instrumental to the reliability of all our sockets is the "multi-finger" inner contact made famous by Mill-Max.

Sure, we've become very popular, but we never turn down a small gig: our prototypes and custom products are big hits.

Looking for a connector supplier in tune with your needs? Then make a note to get a free Mill-Max or Preci-Dip catalog by writing Mill-Max, 190 Pine Hollow Rd., Oyster Bay, NY 11771. Or by calling us at (516) 922-6000. Fax (516) 922-9253. For the Mill-Max rep nearest you, consult the EEM Yellow Pages.



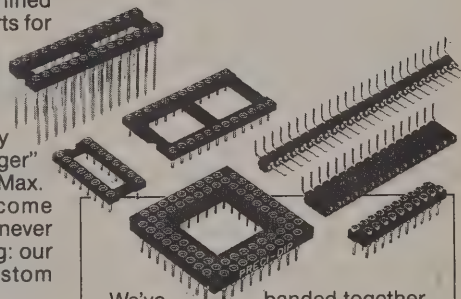
### TAKING THE LEAD



Bar none, Mill-Max is America's leading source for interconnect components. Here's a brief medley of our top selling hits:

- PCB pins
- Pin receptacles
- I.C. socket pins
- Solder terminals
- Wrapost receptacles and terminals
- Custom products

**MILL-MAX®**



We've banded together a complete line of Preci-Dip IC sockets and connectors that are real crowd pleasers.

- DIP, SIP and PGA sockets
- Disposable socket carriers
- Square and round pin headers
- Sockets for automatic insertion or surface mount
- PCB connectors
- Custom products

**PRECI-DIP®**

# The Industry Performance Standard: Connectors from Multi-Contact.

**Outstanding Design.  
Experienced Manufacturing.  
Guaranteed Safety. Excellent  
Quality. Superior Service.**

From design to manufacturing, Multi-Contact connectors are produced to satisfy the highest industry standards of performance and reliability.

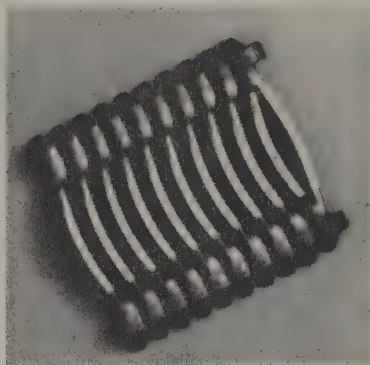
Sophisticated R&D efforts, in-house testing, and stringent quality controls have one simple, critical result: state-of-the-industry connector technology.

Multi-Contact connectors are made from solid brass (CuZn40Pb2), first nickel plated, then sealed with either a hard gold or hard silver plating.

MC-MULTILAM™ connectors exemplify Multi-Contact's innovative technology and commitment to quality. The precision, multiple louvered contact interface assures optimum contact performance. The MC-MULTILAM™ contact band is made from beryllium-copper, then precision-stamped and tempered, and finally hard gold- or hard silver-plated.

MC-MULTILAM™ connectors can be used for unlimited applications due to their design flexibility and advanced features:

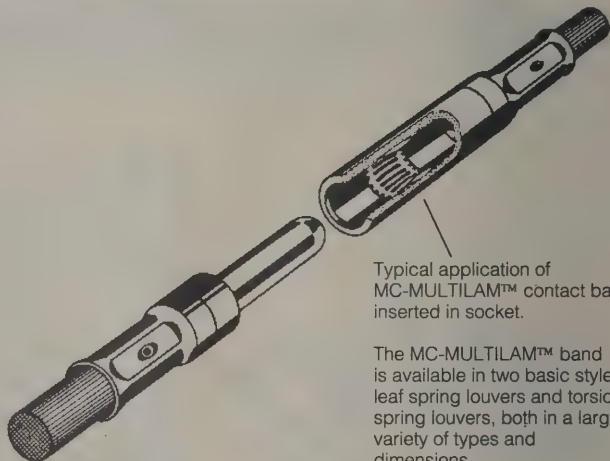
- High contact pressure—yet low insertion force
- High specific current capacity
- Lowest contact resistance
- Low voltage drop—minimal heat rise
- Mechanical strength—tens of thousands of mating operations
- Precious metal plating—excellent corrosion protection, even in aggressive and hostile environments



## The MC-MULTILAM™ System...

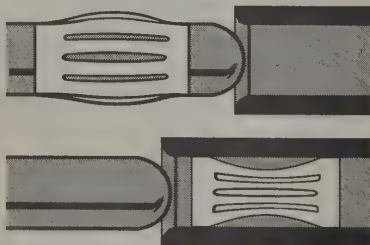
...efficient solutions for all applications.

MC-MULTILAM™ contact band with overlapping, silver-inlaid torsion spring louvers for high current connectors.



Typical application of MC-MULTILAM™ contact band inserted in socket.

The MC-MULTILAM™ band is available in two basic styles: leaf spring louvers and torsion spring louvers, both in a large variety of types and dimensions.



MC-MULTILAM™ contact band convex-fitted to plug

MC-MULTILAM™ contact band concave-inserted into socket

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# From Low Current to High Current: Always the Right Connector.\*

\* If we don't have it on the shelf, we can custom design it.

## Comprehensive Selection. Ongoing Innovation. Reliable Service.

Multi-Contact offers connectors for virtually any low or high current application—from signal currents to kilo-amperes. The stock includes connectors in a wide variety of sizes, configurations, dimensions and colors. In addition to this wide range of standard products, Multi-Contact offers assembly of stock parts to customer specifications.

## True Custom Design.

New designs often demand novel components for optimum performance. Over many years, Multi-Contact has established an enviable record of successful custom-engineered and produced connectors that have satisfied numerous electronic and electrical applications. First-hand experience in conjunction with knowledge of the industry makes Multi-Contact an ideal source for customers needing specific or unique solutions. Very low minimum quantities are required: An average of only 200 units for custom-assembled products, only 3,000 units for custom-produced units.

However, regardless of how unusual or complicated the newly custom-produced unit may be, it still carries the guarantee of top performance and unsurpassed reliability.

## Low Current Connectors and Accessories



Connectors for  
PCBs in  
0.5, 0.8, 1.0 and  
2.0 mm Dia.



Connecting  
plugs in 1.0 ,  
2.0 and 4.0 mm  
Dia.



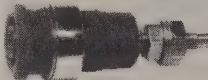
MC-MULTILAM  
plugs



Test plugs  
with  
separate  
insulations



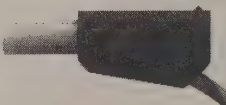
Test leads  
in 7 lengths  
and  
10 colors



Sockets for  
power  
supplies



Touchproof  
connecting  
plugs



Touchproof  
test leads



Adaptors to  
safety  
systems



Test leads  
with  
retractable  
safety-sleeve



Safety-  
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\* If we don't have it on the shelf, we can custom design it.

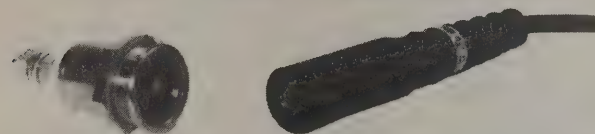


Plugs and sockets with external threads for connection to bus bars from 10 to 5000 Amps

## High Current Contact Devices



Plugs and sockets with rear copper sleeves for crimp connections from 10 to 2500 Amps



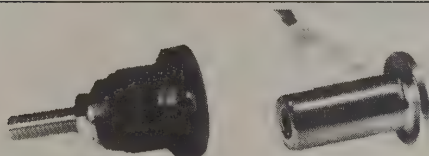
Panel-mount and cable in-line connectors for 180 and 280 Amps with quick-lock device



Plugs with threaded studs and sockets with spade-lug rear connections from 90 to 280 Amps with quick-lock device

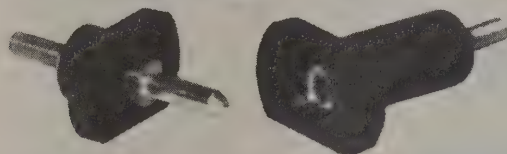


Insulated, color-coded panel-mount plugs and sockets for 90 Amps with quick-lock device



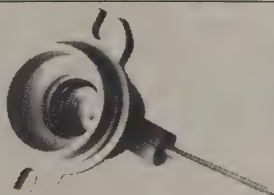
Rotating grounding connectors for medical environments

## Equipotential Grounding Connectors



Custom connectors made from tellurium-copper with floating contacts

## Custom Designs



Custom connector for high temperature applications

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USA

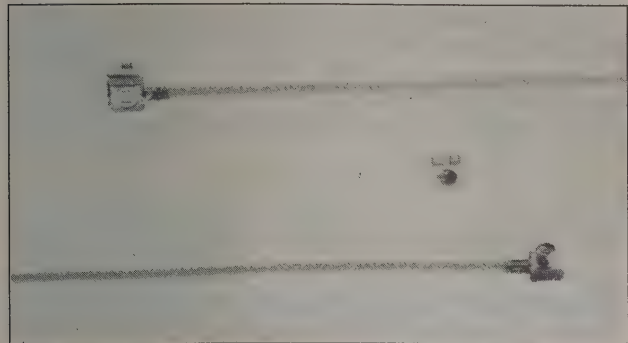
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# COAXIAL CONNECTORS SMT, MICROMINIATURE



### FEATURES

- Ultra-miniature for High density mounting (11.6mm<sup>2</sup>).
- Ultra-low profile (3.2mm Max.).
- SMD and reflow solderable.
- Tape and reel packaging.
- High performance. (VSWR: 1.2 Max. at 3GHz)
- Available with ultra-thin FEP coaxial cables (1.25mm dia.).

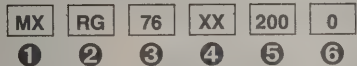
### APPLICATIONS

Portable, mobile and cordless telephone, GPS, any other microwave radio and measurement equipment, high-end workstations.

### PART NUMBERING – RECEPTACLE

| PART NUMBER    | PACKAGING         | QUANTITY     |
|----------------|-------------------|--------------|
| MM6329-2700    | Bulk package      | Specify      |
| MM6329-2700TB1 | 178mm Dia. Taping | 1000pcs/reel |
| MM6329-2700TB2 | 330mm Dia. Taping | 4000pcs/reel |

### PART NUMBERING – CABLE ASSEMBLY



- ① Cable assembly
- ②④ Connector code for each end of cable

| Code | Connector               |
|------|-------------------------|
| RG   | ESC type Plug connector |
| XX   | No connector            |

#### ③ Cable code

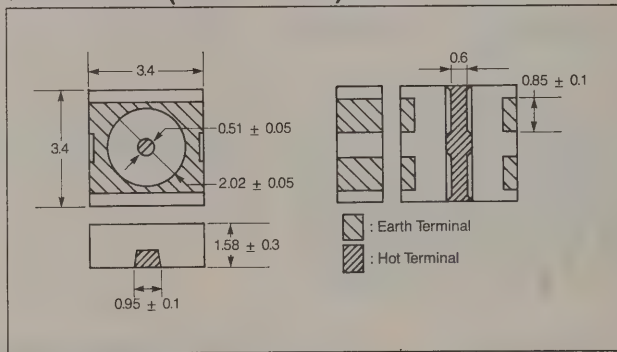
| Code | Cable | Outer Diameter | Outer conductor construction | Minimum Bending radius |
|------|-------|----------------|------------------------------|------------------------|
| 76   | 0.8D  | 1.25mm         | Single shield                | 6mm                    |
| 79   | 0.8D  | 1.25mm         | Single shield                | 6mm                    |

- ⑤⑥ Full length of cable assembly  
Length L(mm) = ⑤ × 10<sup>⑥</sup>  
Ex. 500mm = 500 × 10<sup>0</sup> = 5000  
1000mm = 100 × 10<sup>1</sup> = 1001

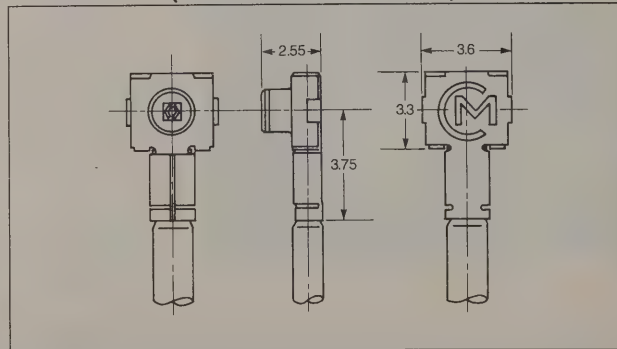
### SPECIFICATIONS

| Item                  | Rating and Characteristics |
|-----------------------|----------------------------|
| Frequency             | From DC to 3GHz            |
| VSWR                  | 1.2 Max.                   |
| Nominal Impedance     | 50Ω                        |
| Temperature Range     | -40°C to +90°C             |
| Voltage               | 250Vrms                    |
| Contact Resistance    | 15mΩ Max.                  |
| Withstand Voltage     | 300VAC rms                 |
| Insulation Resistance | 500MΩ Min.                 |
| Mating Cycles         | 50cycles                   |

### DIMENSIONS (MM6329-2700): mm



### DIMENSIONS (MXRG□□□□□□□□): mm





**PANEL  
COMPONENTS  
CORPORATION**

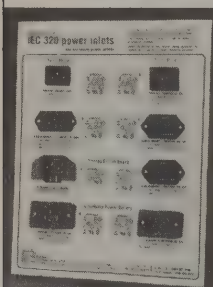
## Designing for Export? We make it easy!

- **Export Designer's Reference/Catalog** gives detailed information about world electrical requirements; each product section begins with a review of international regulations. Call toll free for your free copy of our current edition.
- Components carry approvals by UL, CSA, VDE, SEMKO, SEV, etc.
- Most items are available for fast shipment from our large inventory.
- We have no minimum order and can ship prototype orders quickly.
- Designer's Kits, shown below, aid design of international products.
- "Time to market" component packages permit quick design of the primary power section of export products



## Interpower™ International Designer's Kits & Panels

### Panel of IEC 320 Inlets/Outlets



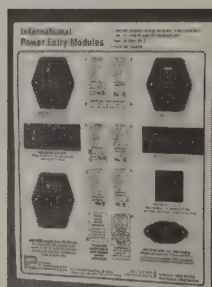
For convenience in designing the power entry portion of your product, this panel contains four IEC 320 power inlets and four accessory power outlets. Both 10A international/15A North American and 16A international/20A North American models are included. Push-in, panel- and pc-mounting types are included in this panel.

**#83010010:** Designer's Panel of IEC 320 Inlets & Outlets

Size: 9 x 12 x 2"; approx. 2#

*This panel is free upon request.*

### Panel of Power Entry Modules



Designer's panel contains seven international multifunction power entry modules, rated 6-10A/250VAC. Depending on model, these modules combine: IEC 320 power inlet, voltage selector, fuse, RFI filter, power switch, accessory outlet

**#83111010:** Designer's Panel of Power Entry Modules

Size: 9 x 12 x 2"; approx. 3#

*This panel is free upon request.*

### Kit of International Plugs



For use in designing electrical and electronic equipment that will be exported with foreign power cords/cordsets, this kit contains nine of the most common international plugs.

**#88090020:** Designer's Kit of International Plugs

Size: 12 x 13 x 4"; approx. 2#

### Kit of International Sockets



For use in design and burn in of electrical and electronic equipment that will be exported with foreign power cords/cordsets. Kit contains nine of the most common international sockets.

**#88090030:** Designer's Kit of International Sockets

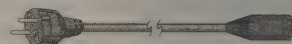
Size: 12 x 13 x 4"; approx. 2#

### Designer's Kit of International Cordsets

The nine cordsets in this kit represent the major plug standards used in the world today. For use in designing the power entry portion of export products, the kit can also be used by international travelers who carry and use equipment which must be properly plugged in and grounded (be sure to set equipment at the proper voltage and frequency before operation). Each cordset is terminated with the IEC 320 connector, a common standard in the industrialized world. Complete specifications on each cordset are included for use in developing your purchasing specifications. The kit also contains information on world plug and socket standards and world electrical voltages and frequencies.

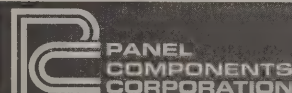
**#86599010:** Designer's Kit of International Cordsets

Size: 19 x 15-1/2 x 4"; approx. 9#



*Cordsets are illustrated and described in EEM section 6000*

**DESIGNING FOR EXPORT? WE MAKE IT EASY! See also EEM sections 4050, 4300, 5600, & 6000**



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# IEC 320 Power Inlets & Connectors



10-15A/65°C



10-15A/120°C



16-20A/65°C

The IEC 320 power inlet is the most commonly used means of connecting a detachable cordset to electrical or electronic equipment that consumes up to 16A at 220-240V (20A/120V) or less. (European voltages and frequencies are typically 220-240VAC, 50Hz). IEC 320 inlets are used in Europe, North America, and throughout the industrialized world. An IEC 320 power inlet allows the manufacturer to

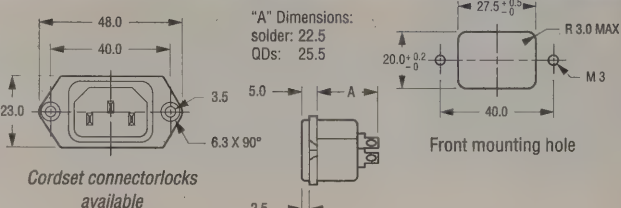
attach the correct international cordset just before shipment (see Sec. 6000 for cordsets).

Modules that combine an IEC 320 power inlet and other functions and accessory power connections based on IEC 320 are shown on the following pages. All items normally available from stock; no minimum order.

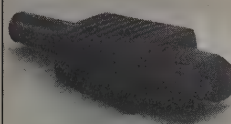
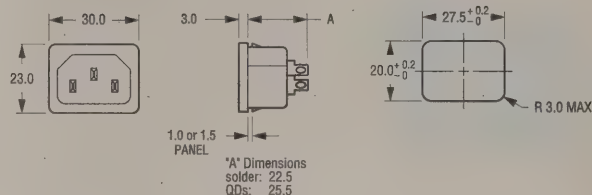
## IEC 320 inlets & connector — 10A international (15A North America)



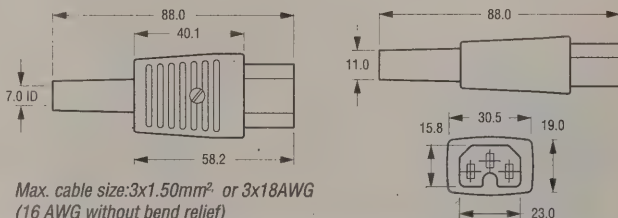
**#8301211:** with solder tabs  
**#8301212:** with 4.8 mm (.187") solder/QDs  
**#8301213:** with 6.3 mm (1/4") solder/QDs  
 Screw mount. Nickel-plated brass contacts; UL 94-V2 polyamide thermoplastic insulator.  
**Approvals:** VDE, DEMKO, IMQ, KEMA, NEMKO, OVE, SEMKO, SETI, SEV (10A/250VAC); UL & CSA (15A/250VAC).



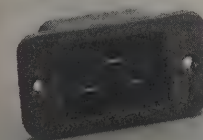
**#8301311:** 1.5mm panel, solder tabs  
**#8301312:** 1.5mm panel, 6.3mm sold./QDs  
**#83013121:** 1.0mm panel, 6.3mm sold./QDs  
 Push-in mount. Nickel-plated brass contacts; UL 94-V2 polyamide thermoplastic insulator.  
**Approvals:** VDE, DEMKO, IMQ, KEMA, NEMKO, OVE, SEMKO, SETI, SEV (10A/250VAC); UL & CSA (15A/250VAC).



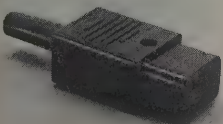
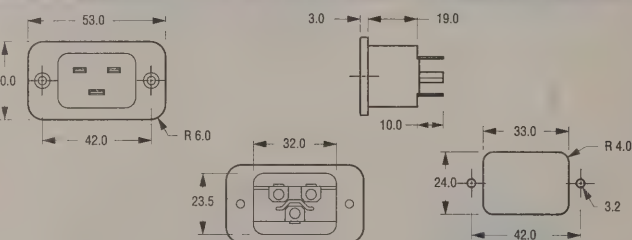
**#8943.W.60:** Rewirable IEC 320 power cord connector for use at 120°C. Mates with both 10A/65°C (above) and 10A/120°C standard receptacles (not shown). Screw-type connections. UL 94-V2 polyamide-type thermoplastic insulator.  
**Approvals:** OVE, SECV, SEMKO, SEV, VDE (10A/250VAC), CSA cert. & UL recog. (15A/250VAC)



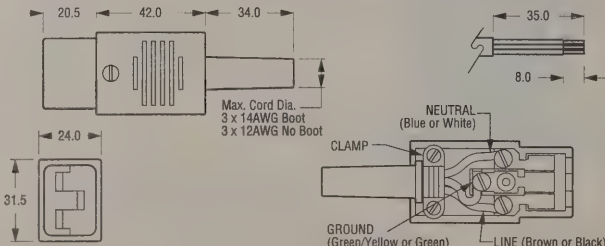
## IEC 320 inlet & connector — 16A international (20A North America)



**#83011340:** IEC 320 (C-20) power inlet (65°C) for detachable connections at higher ratings. UL 94-V0 nylon insulator. Nickel-plated brass contacts. Solder tabs.  
**Approvals:** UL recog., CSA cert. (21A/250VAC); VDE (16A/250VAC)  
 Accessory outlet and receptacle also available—see following pages



**#83011380:** Rewirable IEC 320 (C-19) power connector for detachable connections at higher ratings. Nylon insulator. Nickel-plated brass contacts. Screw-type connections. Made to order cable assembly services available.  
**Approvals:** UL recog.; CSA cert. (21A/250VAC); VDE (16A/250VAC)  
 See Sec. 6000 for cordsets with molded on connectors.



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# International Power Entry Modules

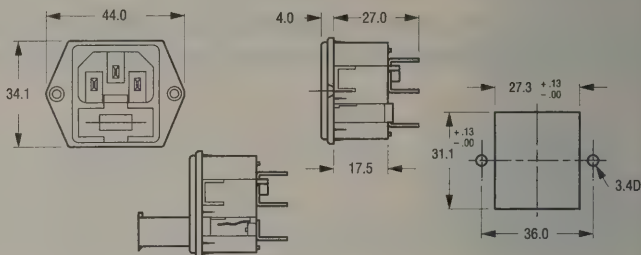


Power modules aid in configuring a product with the correct cord-set, voltage, and fusing for international or North American markets, and can also save on space, assembly costs, and components management because several functions are combined in one unit. A power module can also make a product safer; because it is possible to

interlock the power entry connector with access to a fuseholder or voltage selector, the equipment user must remove the power cord before changing a fuse or adjusting a voltage selector. See Sec. 4300 for fuses. All items normally available from stock with no minimum order.

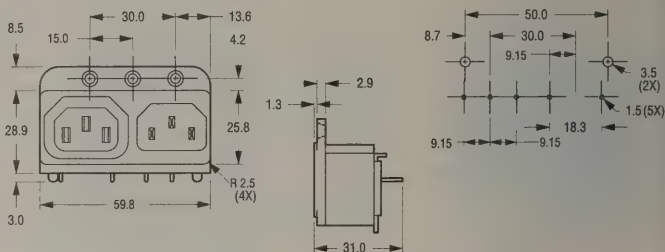
## 2 Function Module

**#83110111:** solder contacts  
**#83110131:** 6.3mm solder/QDs  
 Combines 1) IEC 320 inlet and 2) carrier for 5x20 mm fuse (with space for spare fuse); order fuse separately.  
**Approvals:** VDE, SEMKO, SEV, UL recog., CSA cert. at 10A/250VAC  
*Push-in mount models are also available.*



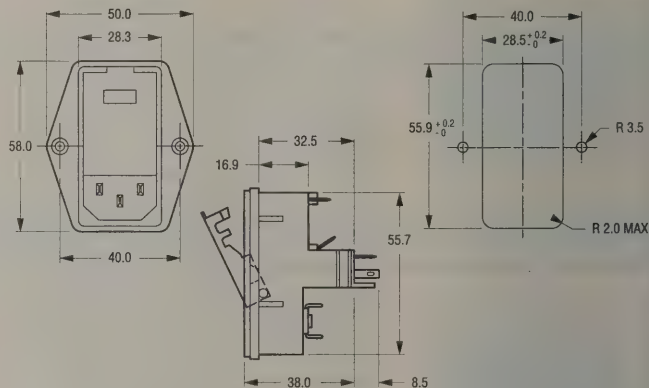
## 2 Function Module

**#83511400:** Printed circuit board mounting power entry module combines: 1) IEC 320 inlet; 2) accessory outlet. Connections made by solder pins.  
**Approvals:** UL recog., CSA cert., VDE at 10-15A/250VAC



## 3 Function Module

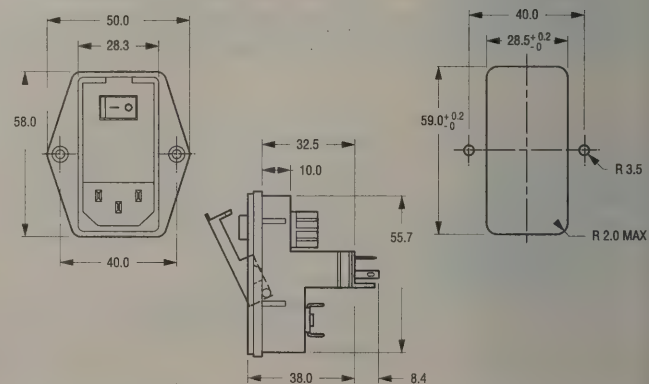
**#83110011:** Power entry module combines: 1) IEC 320 inlet; 2) fusing for international 5 x 20mm or North American 1/4 x 1-1/4" fuse; 3) 4-position voltage selector (100, 120, 220 & 240V). Connections made via solder tabs.  
**Approvals:** UL, CSA, VDE, 6A/250VAC  
**Order fuse carrier separately:**  
 #83110050: for int'l. 5x20mm fuse  
 #83110040: for 1/4 x 1-1/4" 3AG-fuse



## 3 Function Module

**#83110032:** Panel-mount power entry module combines: 1) IEC 320 inlet; 2) carrier for int'l. 5 x 20 mm fuse or North American 3AG fuse; 3) double-pole off/on rocker switch. Connections made via solder tabs & 4.8mm solder/QDs.  
**Approvals:** UL, CSA, VDE, 4-6A/250VAC

**Order fuse carrier separately:**  
 #83110050: for int'l. 5x20mm fuse  
 #83110040: for 1/4 x 1-1/4" 3AG-fuse



Dimensions are in mm

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# International Power Entry Modules, continued

Normally available from stock • No minimum order

## 2 Function Module

#83510311: 1A

#83510351: 3A

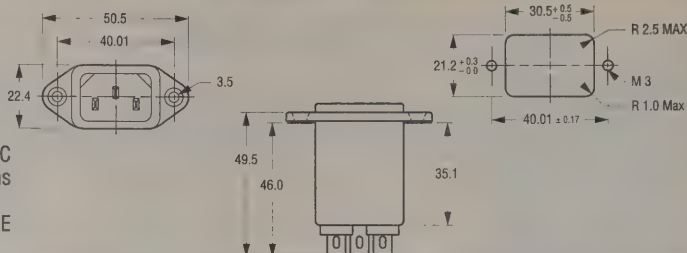
#83510411: 6A

#83510441: 10A

Power entry module combines: 1) IEC 320 inlet; 2) RFI filter. Connections made by 6.3mm solder/QDs.

Approvals: UL recog., CSA cert., VDE

Block style filters also available

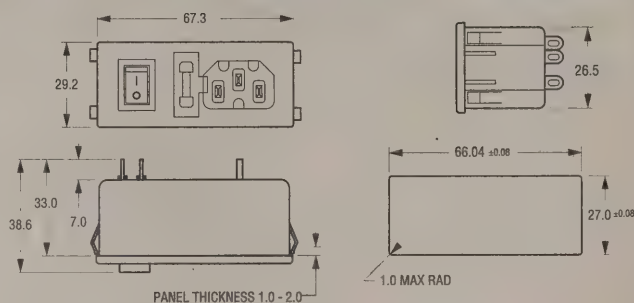


### INSERTION LOSS DATA FOR 2 FUNCTION MODULE ABOVE

| Part Number | Current Rating (250VAC) | X Capacitors | Y Capacitors | Inductor | Min. Common Mode Insertion Loss (L-G) (dB in 50Ω system) Frequency—MHz |     |     |     |    |    | Min. Differential Mode Insertion Loss (L-L) (dB in 50Ω system) Frequency—MHz |     |     |     |    |    |
|-------------|-------------------------|--------------|--------------|----------|------------------------------------------------------------------------|-----|-----|-----|----|----|------------------------------------------------------------------------------|-----|-----|-----|----|----|
|             |                         |              |              |          | .15                                                                    | .50 | 1.0 | 5.0 | 10 | 30 | .15                                                                          | .50 | 1.0 | 5.0 | 10 | 30 |
| 83510311    | 1A                      | 0.015 μF X2  | 3300 pF Y    | 1.9 mH   | 23                                                                     | 35  | 40  | 48  | 55 | 50 | 15                                                                           | 20  | 22  | 32  | 50 | 55 |
| 83510351    | 3A                      | 0.015 μF X2  | 3300 pF Y    | 1.1 mH   | 18                                                                     | 28  | 32  | 52  | 55 | 50 | 0                                                                            | 6   | 10  | 25  | 25 | 20 |
| 83510411    | 6A                      | 0.015 μF X2  | 3300 pF Y    | 0.55 mH  | 12                                                                     | 21  | 26  | 42  | 50 | 44 | 0                                                                            | 0   | 2   | 10  | 10 | 25 |
| 83510441    | 10A                     | 0.015 μF X2  | 3300 pF Y    | 0.25 mH  | 5                                                                      | 15  | 20  | 37  | 45 | 50 |                                                                              |     |     |     |    |    |

## 3 Function Module

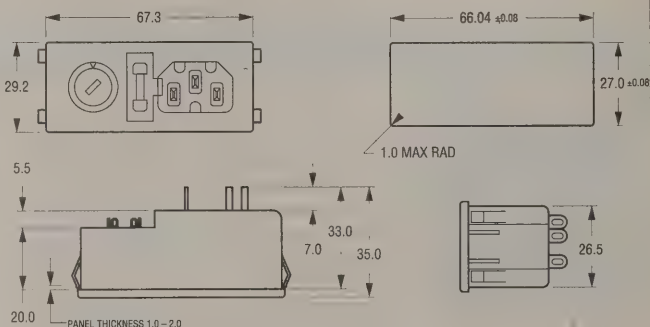
#83510160: Power entry module combines: 1) IEC 320 inlet; 2) integral carrier for 5 x 20 mm fuse; 3) double-pole off/on rocker switch. Snap-in mounting for panel thickness of 1.0-2.0mm (0.04-0.08"). Connections made via solder tabs. Approvals: UL and CSA—6A/125VAC (4A/250VAC); VDE—4A/250VAC



## 3 Function Module

#83510170: Power entry module combines: 1) IEC 320 inlet; 2) integral carrier for 5x20mm fuse; 3) and 2-position voltage selector for No. Amer. 110VAC & Cont. European 220VAC. Snap-in mounting for panel thickness of 1.0-2.0mm (0.04-0.08"). Connections are made via solder tabs. Order fuses separately (see Section 4300).

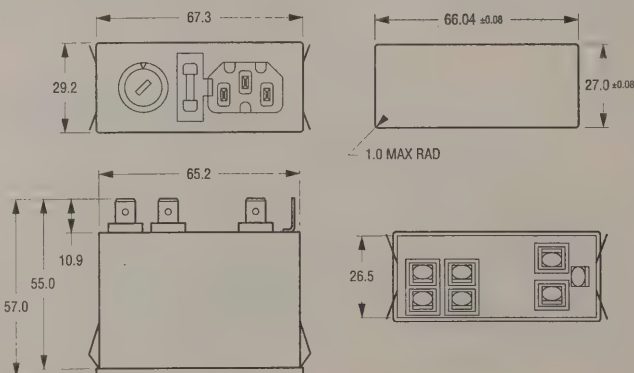
Approvals: VDE, UL recog., CSA cert. at 6A/250VAC



## 4 Function Module

#83510071: Power entry module combines: 1) IEC 320 inlet; 2) integral carrier for 5x20mm fuse; 3) 2-position voltage selector for No. Amer. 110VAC & Cont. European 220VAC; 4) RFI line filter. Snap-in mounting for panel thickness of 1.0-2.0mm (0.04-0.08"). Connections are made 6.3mm QDs. Order fuses separately (see Section 4300).

Approvals: VDE (4A/250VAC), UL recog., CSA cert. at 6A/125VAC



Note: Voltage selector is not designed to be switched while power is applied; selection must be made before connecting the unit to the power mains.

Note: Voltage selector is not designed to be switched while power is applied; selection must be made before connecting the unit to the power mains.

Dimensions are in mm

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# International Power Entry Modules, continued

Normally available from stock • No minimum order

## 5-Function Module

**#83511420:** Power entry module combines: 1) IEC 320 inlet; 2) carrier for 5x20mm or No. Amer. 3AG fuse; 3) double-pole off/on rocker switch; 4) 2-position voltage selector (110-120VAC No. Amer. or 220-240 int'l); 5) RFI power line filter. Screw mount. Voltage selector, filter, and connections are internally wired; make connections via 6.3mm/sold. QDs.

**Approvals:** UL recog., VDE, 10A/250VAC; CSA cert., 6A/250VAC

*The integral fuse drawer doubles as a voltage selector by rotating the drawer. Insert a North American 3AG fuse in the "110-120VAC" side of the fuse drawer or an international 5x20mm fuse in the "220-240VAC" side.*

### SPECIFICATIONS:

**Body:** UL 94-V0 rated polyamide-type thermoplastic

**Max. leakage current:** L to G @ 115VAC, 60Hz: 0.25mA

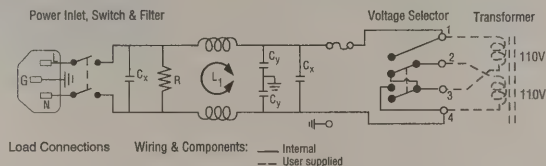
L to G @ 250VAC, 50Hz: 0.45mA

**Hipot rating (one minute):** L to G: 2250VDC

L to L: 1450 VDC

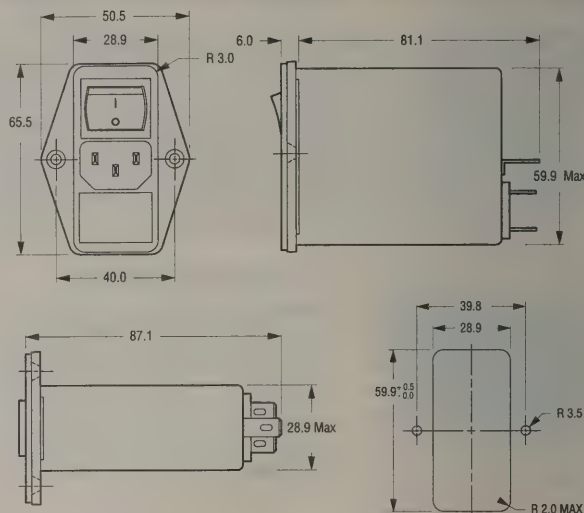
**Operating Frequency:** 50-60Hz

**Rating:** 115-250VAC, 65°C



### Filter Performance:

| Minimum insertion loss<br>in dB (50 ohm system) | Frequency—MHz |     |     |     |     |     |    |    |
|-------------------------------------------------|---------------|-----|-----|-----|-----|-----|----|----|
|                                                 | .05           | .10 | .15 | .50 | 1.0 | 5.0 | 10 | 30 |
| Common mode, L-G                                | 10            | 15  | 15  | 25  | 30  | 40  | 40 | 30 |
| Differential mode, L-G                          | 2             | 5   | 3   | 35  | 45  | 40  | 40 | 30 |



Dimensions are in mm

## 5-Function Medical Modules—with low leakage RFI filter



These power entry modules combine the features of Part #83511420 shown above, but utilize a low-leakage RFI power line filter rated at 6A for use in medical applications. Two models are available to accommodate the different fusing requirements for international and North American medical applications:

**#83511430:** for international medical applications requiring two 5x20 mm fuses (to fuse both line and neutral where the connections are unpolarized).

**Approvals:** VDE, 6A/250VAC

**#83511440:** for North American medical applications which requires the use of only one 3AG fuse.

**Approvals:** UL recog., CSA cert., 6A/250VAC

*See model #83511420 above for dimensional drawings*

### SPECIFICATIONS:

**Body:** UL 94-V0 rated polyamide-type thermoplastic

**Max. leakage current:**

Line to ground @ 115VAC, 60Hz: 2.0  $\mu$ A

Line to ground @ 250VAC, 50Hz: 5.0  $\mu$ A

**Hipot rating (one minute):**

Line to ground: 2250VDC

Line to line: 1450 VDC

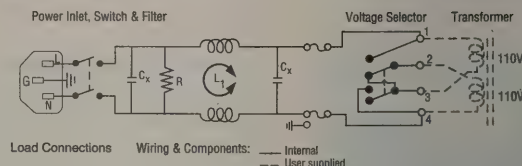
**Operating Frequency:** 50-60Hz

**Rating:** 115-250VAC, 65°C

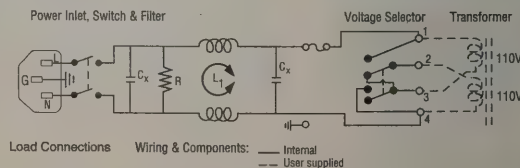
### Filter Performance:

| Minimum insertion loss<br>in dB (50 ohm system) | Frequency—MHz |     |     |     |     |     |    |    |
|-------------------------------------------------|---------------|-----|-----|-----|-----|-----|----|----|
|                                                 | .05           | .10 | .15 | .50 | 1.0 | 5.0 | 10 | 30 |
| Common mode, L-G                                | 10            | 15  | 20  | 30  | 35  | 25  | 20 | 10 |
| Differential mode, L-G                          | 2             | 5   | 3   | 40  | 50  | 40  | 40 | 35 |

### #83511430 schematic:



### #83511440 schematic:



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# Accessory Power Outlets & Connectors

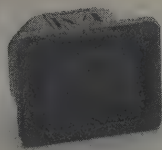
Normally available from stock  
No minimum order

Accessory power connections based on IEC 320. For multiple accessory connections, see the International Power Strip and Jumper Cordset on the following page.

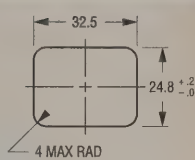
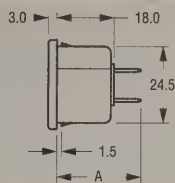
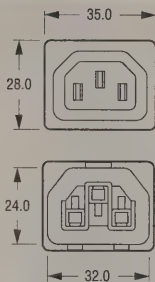
We offer in-house made-to-order cord assembly services; contact us for a quotation.

## Accessory Power Outlets

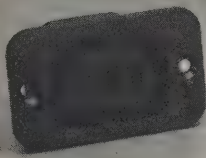
Normally available from stock • No minimum order



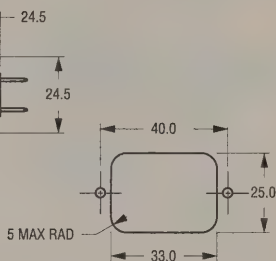
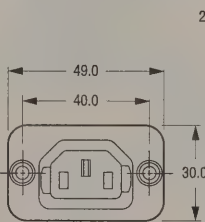
**#8301611:** with solder tabs  
**#8301612:** with 6.3 (.25") solder/QDs  
Accessory power outlet in two contact styles. Push-in mounting for 1.5mm panel. Insulators molded from UL 94-V2 polyamide-type thermoplastic. 65°C. Nickel-plated brass contacts.  
**Approvals:** VDE, IMQ, SEV, FI, OVE, SEMKO, KEMA at 10A/250VAC; UL recognized, CSA certified at 15A/250VAC.  
*Screw mount models also available.*



"A" Dimension:  
solder tabs: 24.1  
QDs: 27.9



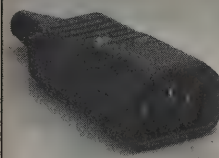
**#83011220:** with 6.3 (.25") QDs  
Accessory power outlet. Special safety feature: line & neutral contacts are shuttered to prevent contact with object other than mating plug. Insulators molded from UL 94-V0 polyamide-type thermoplastic. 65°C. tin-plated lead contacts.  
**Approvals:** VDE, BEAB, SEV, UL recognized, CSA certified at 10A/250VAC.  
Push-in mount model also available.



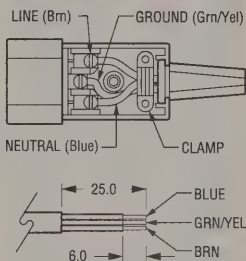
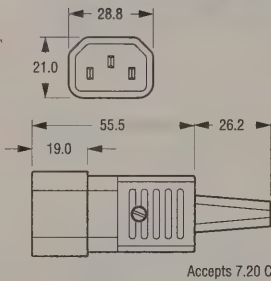
Note: line & neutral are shuttered

## Accessory Power Cable Connectors

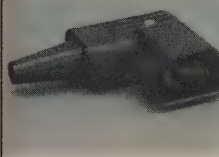
Made-to-order Assembly Services Available



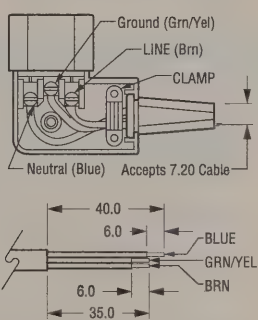
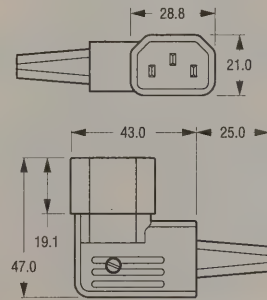
**#83011080:** Cable-mount accessory power connector. Insulator molded from polyamide-type thermoplastic. 65°C. Nickel-plated brass contacts. Screw-type connections.  
**Approvals:** BEAB, VDE, SEV, UL recog., CSA cert. (10A/250VAC)



Accepts 7.20 Cable



**#83011090:** Angled entry cable-mount accessory power connector. Insulator molded from polyamide-type thermoplastic. 65°C. Nickel-plated brass contacts. Screw-type connections.  
**Approvals:** BEAB, VDE, SEV, UL recog., CSA cert. (10A/250VAC)



Accepts 7.20 Cable

Dimensions are in mm

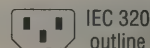
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# International Power Strip & Jumper Cords



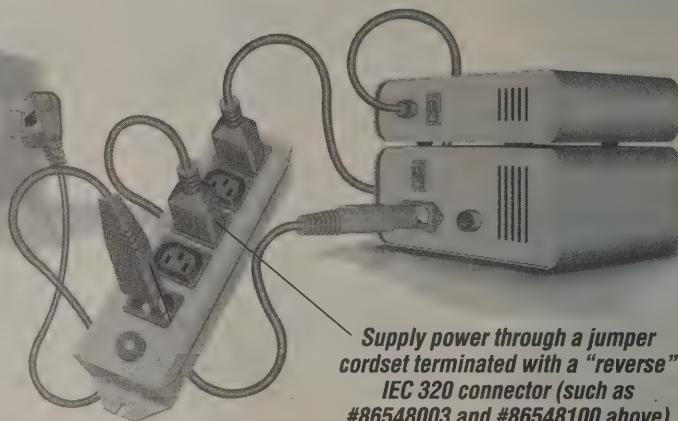
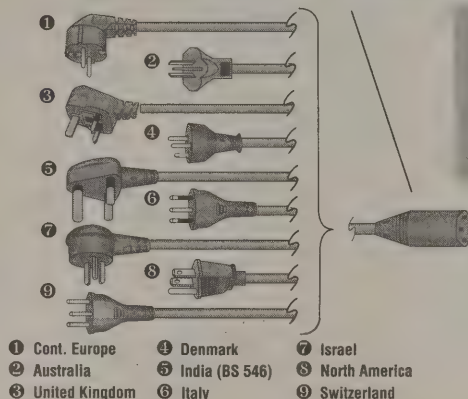
A power distribution system based on IEC 320 (instead of country-specific sockets) is ideal when you are designing a product for both

International and North American markets. See "Universal" Power Distribution System below. All items normally available from stock.

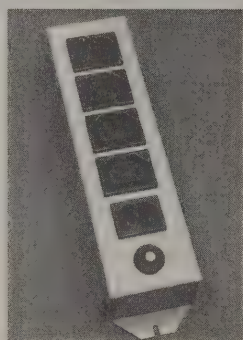
## A "Universal" Power Distribution System based on IEC 320

This power distribution system is based on the standard IEC 320 connector outline which makes it easy to design a power distribution system for both North American and international markets.

*Supply input power to the International Power Strip through a cordset terminated with an IEC 320 connector.*



## International Power Strip

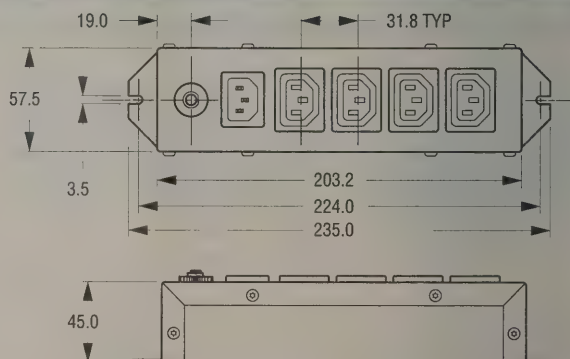


**Now rated at 10 Amps!**

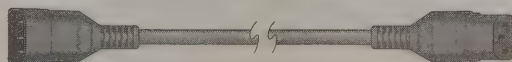
**#85010070:** Interpower™ International power strip contains one IEC 320 power inlet; 4 "reverse" IEC 320 power outlets. Gray metal casing; 10 amp single pole circuit breaker.

**Approvals:** UL recognized, CSA certified, VDE Gutachten (10A/250VAC)

*Dimensions are in mm*



## "Universal" Jumper Cordsets (UL, CSA, SEV & VDE)



**#86548003:** Jumper cordset for use with International Power Strip; meets requirements of North American and international safety agencies. 1 meter long.

**Approvals:** VDE, SEV, UL recog., CSA cert. (10A/250VAC)

**#86548100:** same as 86548003 except 2.5 meters long.

| Part #   | Current Rating | Maximum Temperature    | Color | Length (±0.1m) | Cordage                       |
|----------|----------------|------------------------|-------|----------------|-------------------------------|
| 86548003 | 10A<br>250VAC  | 60°/UL, CSA<br>65°/VDE | Black | 1 meter        | 3 x 18 AWG/SJT PVC Harmonized |
| 86548100 | 10A<br>250VAC  | 60°/UL, CSA<br>65°/VDE | Black | 2.5 meter      | 3 x 18 AWG/SJT PVC Harmonized |

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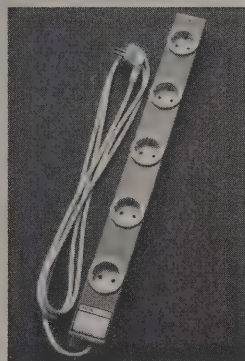
# International Socket Strips

All items normally available from stock.  
No minimum order.

For power distribution systems based on specific socket patterns. See "Universal" Power Distribution System shown on previous page if

you are designing a product for both International and North American markets.

## "Continental Europe" (German)\*



**Continental European socket strip with 5, 9 or 13 CEE 7 sockets** (see below). Cable is 2.5M long, terminated with CEE 7/4 plug. Metal casing. Color: Orange. Current Rating: 16A/250VAC. Approval:

| Part No. | # of skts. | Dimensions (mm)    |
|----------|------------|--------------------|
| 85023050 | 5          | 52W x 38H x 566L   |
| 85023090 | 9          | 52W x 38H x 966L   |
| 85023130 | 13         | 52W x 38H x 1365L* |

\*length includes mounting flange



### With lighted rocker switch

**Continental European socket strip with rocker switch and 4, 8 or 12 CEE 7 sockets** (see below). Cable is 2.5M long, terminated with CEE 7/4 plug. Metal casing. Color: Orange. Current Rating: 16A/250VAC. Approval: VDE.

| Part No. | # of skts. | Dimensions (mm)    |
|----------|------------|--------------------|
| 85003040 | 4          | 52W x 38H x 546L*  |
| 85003080 | 8          | 52W x 38H x 946L*  |
| 85003120 | 12         | 52W x 38H x 1346L* |

\* length includes mounting flanges



### With circuit breaker

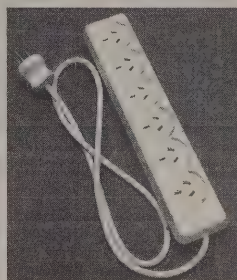
**Continental European socket strip with circuit breaker and 4 CEE 7 sockets.** Cable is 2.5M long, terminated with CEE 7/4 plug. Metal casing. Color: Orange. Current Rating: 16A/250VAC. Approval: VDE.

| Part No. | # of skts. | Dimensions (mm)   |
|----------|------------|-------------------|
| 85013040 | 4          | 52W x 38H x 611L* |

\*length includes mounting flanges

\* Continental European CEE 7 sockets are used in Germany, Austria, Finland, the Netherlands, Norway, Sweden. French and Belgian socket strip (with male grounding pin in socket) also available.

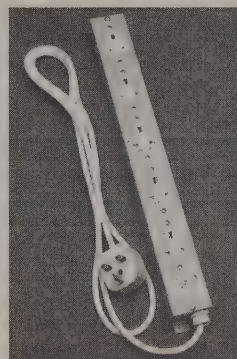
## Australia/New Zealand



**Australian socket strip with six AS 3112 sockets and circuit breaker.** Used in Australia, New Zealand, Fiji, Papua New Guinea. Also used in People's Republic of China. Cable is 1.75M long, terminated with an Australian plug. Current rating: 10A/250VAC. Plastic casing. Color: White. Approval: EANSW.

| Part No. | # of skts. | Dimensions (mm)    |
|----------|------------|--------------------|
| 85010050 | 6          | 64W x 32.5H x 310L |

## United Kingdom

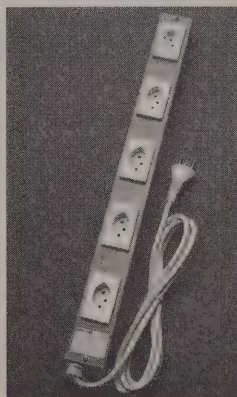


**British socket strip with six BS 1363 sockets and fuse.** Used in the U.K. & Ireland. Cable is 2.4M long, terminated with a BS 1363 plug. Current rating: 13A/250VAC. Metal casing. Color: Gray.

| Part No. | # of skts. | Dimensions (mm)     |
|----------|------------|---------------------|
| 85031052 | 5          | 51W x 38.3H x 474L* |

\* length includes mounting flanges

## Switzerland



**Swiss socket strip with five SEV 1011 sockets.** Cable is 2.5M long, terminated with a SEV 1011 plug. Current rating: 10A/250VAC. Metal casing. Color: Orange.

| Part No. | # of skts. | Dimensions (mm)     |
|----------|------------|---------------------|
| 85030050 | 5          | 51W x 39.5H x 565L* |

\* length includes mounting flanges

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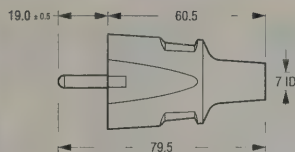
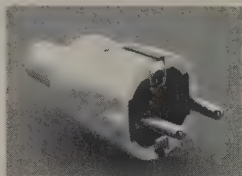
# International Plugs & Sockets

All items normally available from stock  
In-house made-to-order assembly services available

International sockets are used for power distribution and in test and burn-in racks for equipment that is being exported (note our International Power Source in EEM Section 4050).

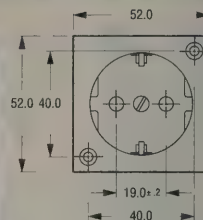
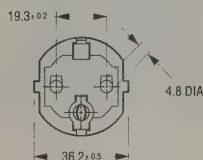
International cords and cordsets are available—see EEM Section 6000. Designer's Kits of International Plugs and Sockets also available.

## "Continental Europe" (German standard)



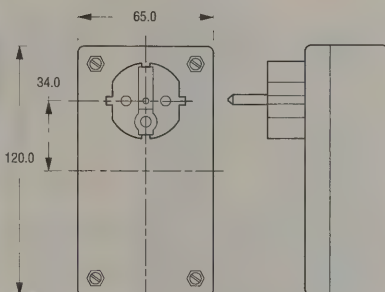
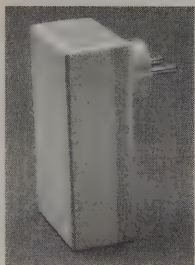
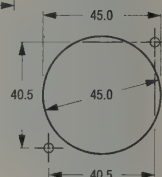
**#88010801:** Cont. European "Schuko" CEE 7/7 plug used in Germany, Austria, Finland, the Netherlands, Norway, Sweden. Color: Gray.

**Approvals:** VDE, OVE, KEMA, NEMKO, SEMKO, SETI, 16A/250VAC



**#88010610:** Cont. European "Schuko" CEE 7 socket used in Germany, Austria, Finland, the Netherlands, Norway, Sweden. Color: Ivory.

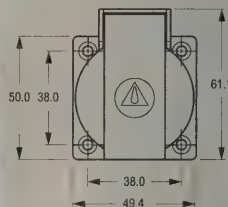
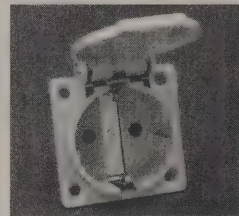
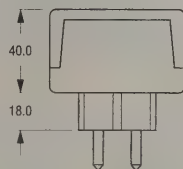
**Approvals:** VDE, KEMA, SEMKO, 16A/250VAC



**#88010120:** Cont. European "Schuko" CEE 7 plug box (no circuitry included) for use in design and manufacture of the power supply or control circuit of your export product. Color: Gray.

**Approvals:** VDE, OVE, KEMA, NEMKO, SEMKO, SETI, 16A/250VAC

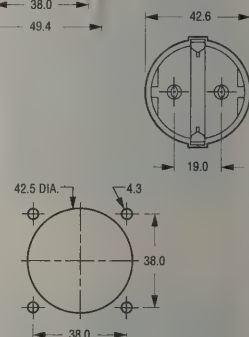
**NOTE:** Europlug, British, and North American models also available



**#88010300:** Cont. European "Schuko" CEE 7 socket with snap cover. Used in Germany, Austria, Finland, the Netherlands, Norway. Mounting box available separately. Color: Gray.

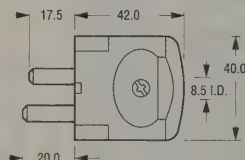
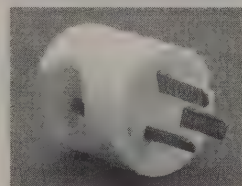
**Approvals:** VDE, NEMKO, SETI, OVE, KEMA, 16A/250VAC

**NOTE:** French/Belgian and Swiss snap-cover models also available



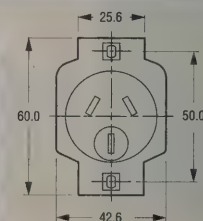
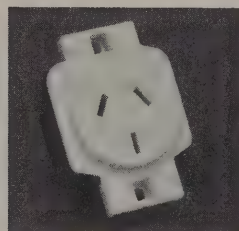
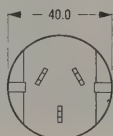
## Australia/New Zealand

In-house made-to-order assembly services available



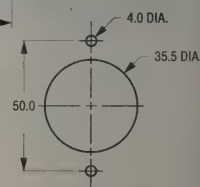
**#88010713:** Australian AS 3112 plug. Color: white.

**Approval:** EANSW, 10A/250VAC



**#88010512:** Panel-mount Australian AS 3112 socket. Color: white.

**Approval:** EANSW, 10A/250VAC



Dimensions are in mm

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Toll-free FAX (800) 645-5360

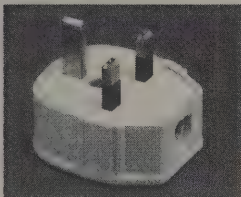


International Plugs & Sockets, continued

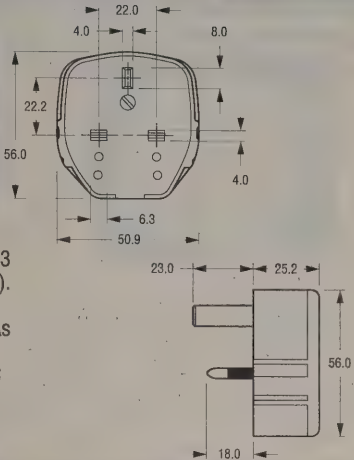
All items normally available from stock

United Kingdom & Ireland

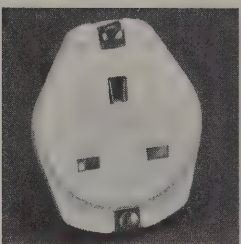
In-house made-to-order assembly services available



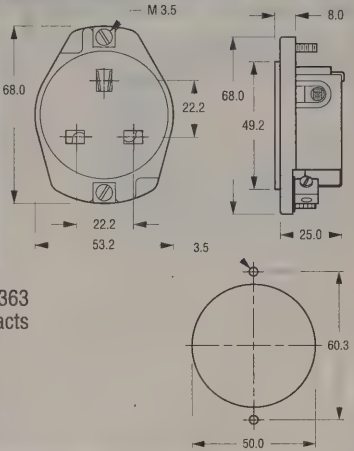
#88010720: British BS 1363 plug (contains 13-amp fuse). Color: white.  
#88010721 (not pictured): As above but black.  
Approvals: ASTA, 13A/250VAC



Top view dimensions: 22.0, 4.0, 8.0, 22.2, 56.0, 6.3, 50.9, 4.0.  
Side view dimensions: 23.0, 25.2, 56.0, 18.0.



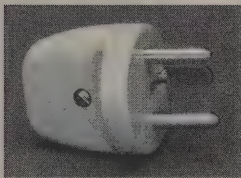
#88010621: British BS 1363 socket. Line and neutral contacts shuttered. Color: white.  
Approvals: BSI, 13A/250VAC



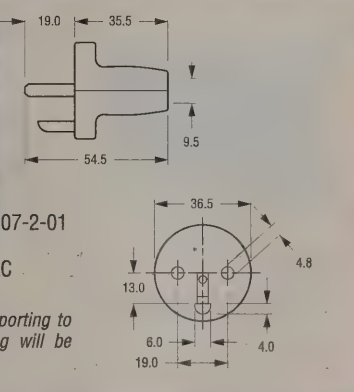
Top view dimensions: 68.0, 22.2, 53.2, 3.5, 8.0.  
Side view dimensions: 68.0, 49.2, 25.0.  
Front view dimensions: 60.3, 50.0.

Denmark

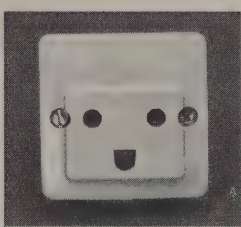
In-house made-to-order assembly services available



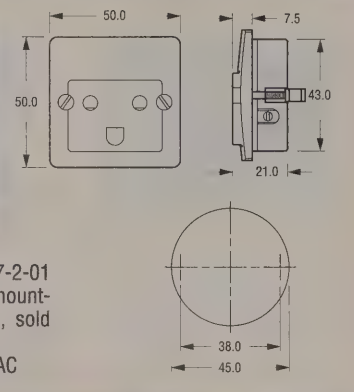
#88010740: Danish Afsnit 107-2-01 plug. Color: gray.  
Approval: DEMKO, 10A/250VAC



Side view dimensions: 19.0, 35.5, 54.5, 9.5.  
Front view dimensions: 36.5, 4.8, 13.0, 6.0, 19.0, 4.0.



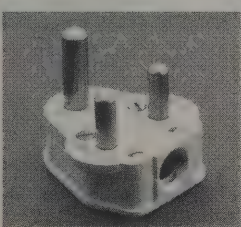
#88010540: Danish Afsnit 107-2-01 socket. Color: gray. Requires mounting bracket, Part #55020100, sold separately.  
Approval: DEMKO, 10A/250VAC



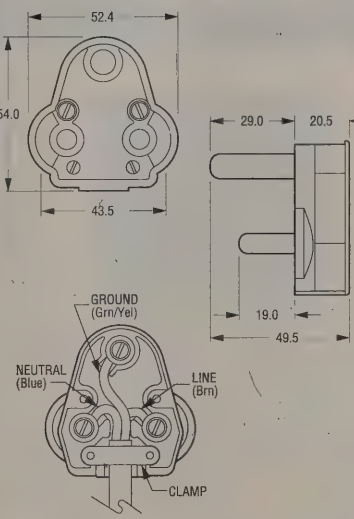
Top view dimensions: 50.0, 50.0, 7.5.  
Side view dimensions: 43.0, 21.0.  
Front view dimensions: 38.0, 45.0.

India (old British standard BS 546)

In-house made-to-order assembly services available



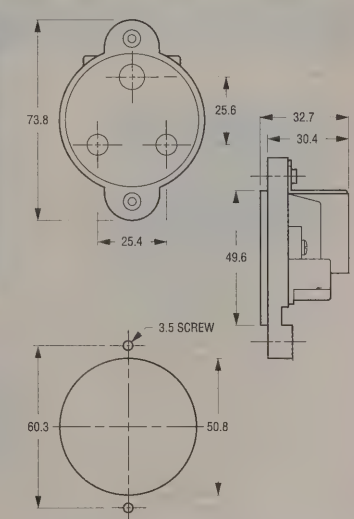
#88010763: Old British standard BS 546 plug used in India & Hong Kong. Color: white.  
Current rating: 15A/250VAC



Top view dimensions: 52.4, 54.0, 43.5.  
Side view dimensions: 29.0, 20.5, 19.0, 49.5.  
Internal wiring diagram labels: GROUND (Grn/Yel), NEUTRAL (Blue), LINE (Brn), CLAMP.



#88010561: Old British standard BS 546 socket used in India & Hong Kong. Color: white. Line and neutral contacts are shuttered. Current rating: 15A/250VAC



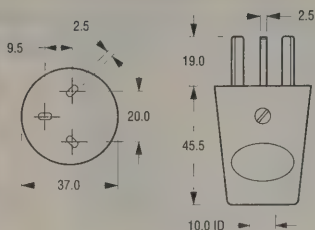
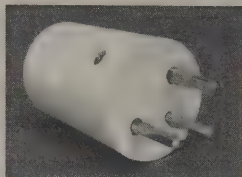
Top view dimensions: 73.8, 25.6, 32.7, 30.4, 25.4.  
Side view dimensions: 49.6.  
Front view dimensions: 60.3, 50.8, 3.5 SCREW.

# International Plugs & Sockets, continued

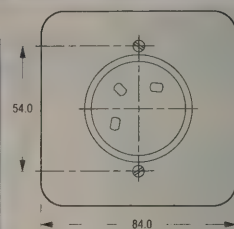
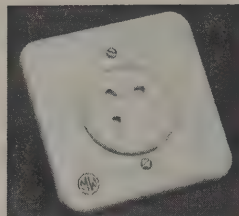
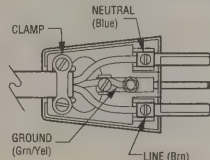
All items normally available from stock.

## Israel

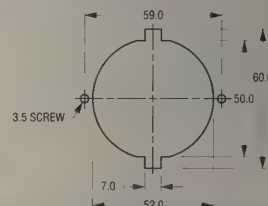
In-house made-to-order assembly services available



**#88010780:** Israeli SI 32 plug.  
Color: white.  
Approval: SII, 16A/250VAC

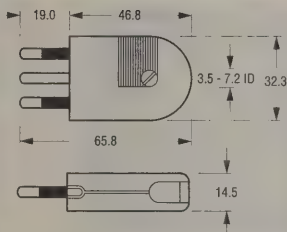
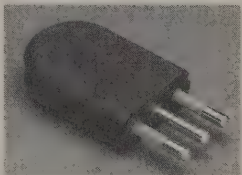


**#88010580:** Israeli SI 32 socket.  
Safety shuttering system reduces possibility of accidental shock.  
Color: white.  
Approval: SII, 16A/250VAC

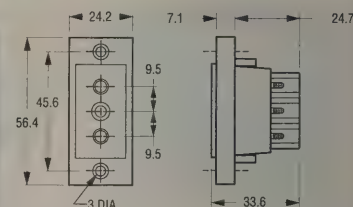
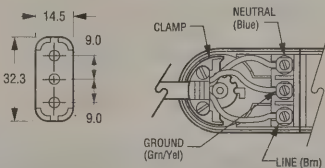


## Italy

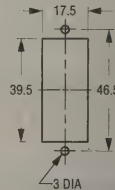
In-house made-to-order assembly services available



**#88010771:** Italian CEI 23-16/VII 10 amp plug.  
Color: dark gray.  
Approval: IMQ, 10A/250VAC

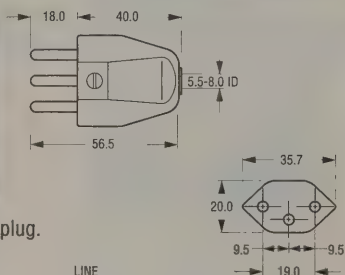


**#88010570:** Italian 10 amp socket.  
Color: brown.  
Approval: IMQ, 10A/250VAC

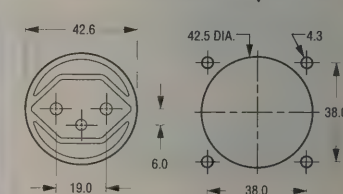
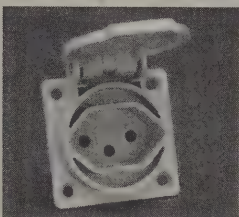
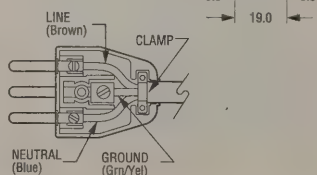


## Switzerland

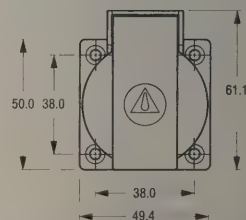
In-house made-to-order assembly services available



**#88010732:** Swiss SEV 1011 plug.  
Color: black.  
Approval: SEV, 10A/250VAC.



**#88010330:** Swiss SEV 1011 socket.  
Mounting box available separately.  
Color: gray.  
Approval: SEV, 10A/250VAC.  
Note: Continental European and French/Belgian snap-cover models also available.



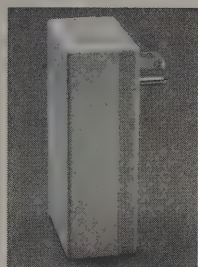
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# North American Plugs & Sockets

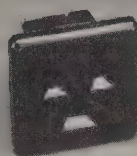
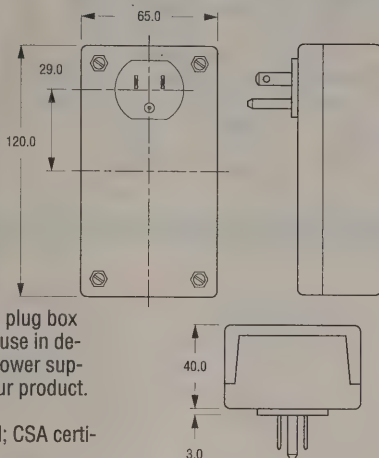
North American plugs, in-line connectors, and sockets rated 15-20A, 125-250VAC. Both straight blade and locking styles are available. Call our Customer Service Department for more information.

## 15A/125VAC Straight blade models (NEMA 5-15)



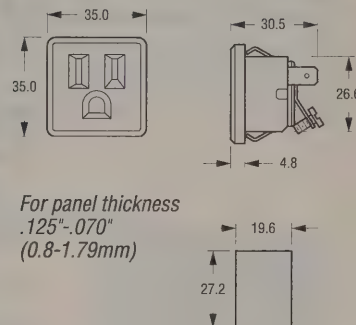
**#88010130:** NEMA 5-15P plug box (no circuitry included) for use in design and manufacture of power supply or control circuit of your product. Color: gray.

**Approvals:** UL recognized; CSA certified, 15A/125V AC/DC.

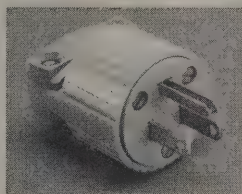


**#88010641:** NEMA 5-15R receptacle. Screw-type wire connections. Color: black.

**Approvals:** UL recognized; CSA certified, 15A/125V

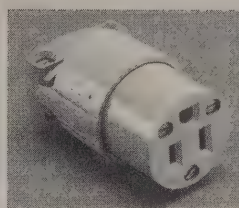
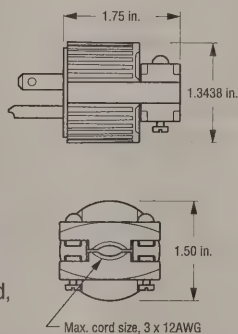


Dimensions are in mm



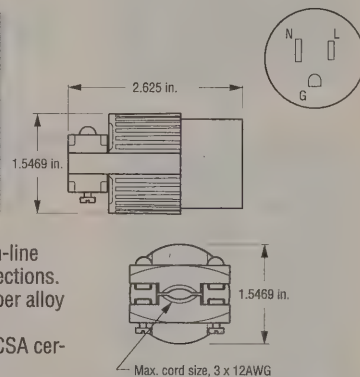
**#88020100:** NEMA 5-15P plug. Screw-type connections. Polycarbonate housing; copper alloy contacts. Color: gray.

**Approvals:** UL recognized; CSA certified, 15A/125VAC.

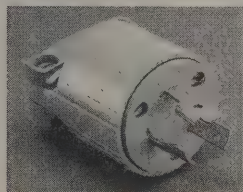


**#88020110:** NEMA 5-15R in-line connector. Screw-type connections. Polycarbonate housing; copper alloy contacts. Color: gray.

**Approvals:** UL recognized; CSA certified, 15A/125VAC

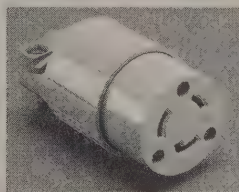
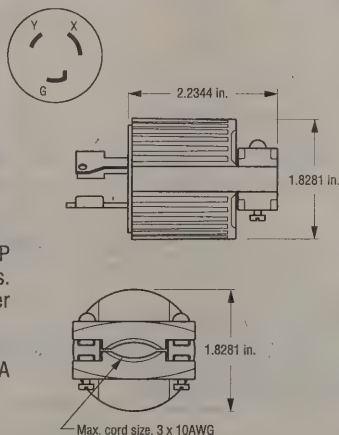


## 20A/250VAC Locking Pair (NEMA L6-20)



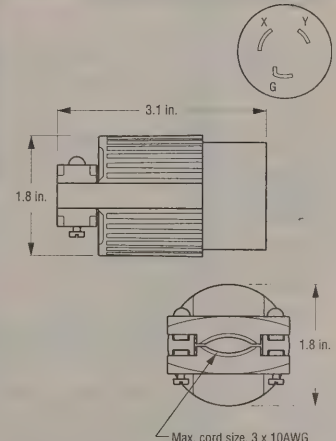
**#88020160:** NEMA L6-20P plug. Screw-type connections. Polycarbonate housing; copper alloy contacts. Color: gray.

**Approvals:** UL recognized; CSA certified, 20A/250VAC



**#88020170:** NEMA L6-20R in-line connector. Screw-type connections. Polycarbonate housing; copper alloy contacts. Color: gray.

**Approvals:** UL recognized; CSA certified, 20A/250VAC



DESIGNING FOR EXPORT? WE MAKE IT EASY! See also EEM sections 4050, 4300, 5600, & 6000



P. O. Box 115, Oskaloosa, IA 52577  
Telephone (515) 673-5000  
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FOR CATALOG, CALL/FAX (U.S., Can., VI, PR):  
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# International Socket Strips—test products before export

The International Socket Strip incorporates seven of the main overseas socket standards in one device. Connect it to your own power source in burn-in racks or test labs where products with international cords or cordsets are being prepared for export; or, use it for receiving inspection on international cords and cordsets.

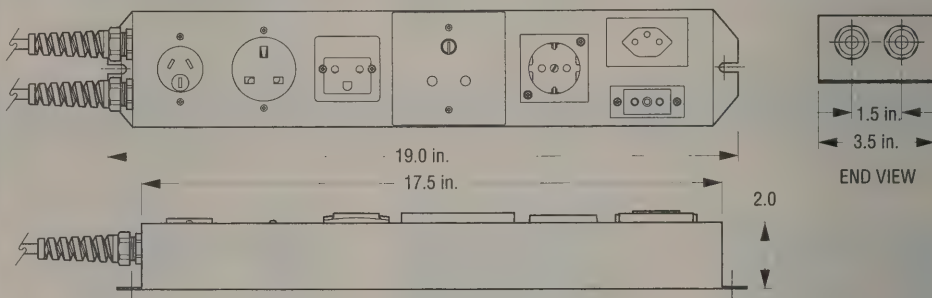
**Installation to your power source:** The International Socket Strip is equipped with two unterminated power cords—one for connection to your 220VAC/50Hz power source, the other to a 240VAC/50Hz power source. Conductor size is 1.5mm<sup>2</sup>—slightly larger than 16 AWG which is 1.23mm<sup>2</sup>. Each circuit is rated at 16 amps max. for all

of the sockets combined. Each cord is 2.5 meters long and clearly marked as to voltage. The jacket and primary insulation are stripped and ready for installation to the appropriate power source. The primary insulation is color-coded in accordance with international standards: green/yellow=ground • brown=line • blue=neutral. Usually available from stock.

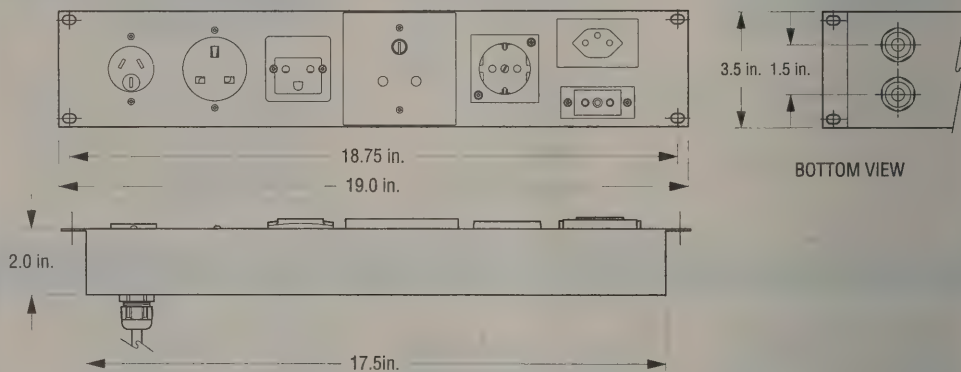
**Note:** Our "International Power Source" converts standard North American input voltage of 120V/60Hz to output voltages of 0-260VAC at 47-150Hz or 150-500Hz; see EEM section 4050.

*Dimensions are in inches*

## #85010101: Table mount model



## #85010111: Rack mount model



### INTERNATIONAL SOCKETS INCLUDED AND THEIR RATINGS:

#### 220VAC/50Hz circuit:

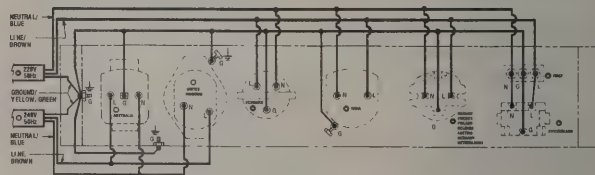
|                       |     |
|-----------------------|-----|
| Cont. Eur. (CEE 7/7)* | 16A |
| Danish                | 10A |
| Italian               | 10A |
| Indian (BS 546)       | 16A |
| Swiss                 | 10A |

#### 240VAC/50Hz circuit:

|                       |     |
|-----------------------|-----|
| Australia/New Zealand | 10A |
| United Kingdom        | 13A |

\* CEE 7/7 is used in Austria, Finland, Netherlands, Norway, Sweden, Germany; variation is used in France and Belgium.

**INTERNAL WIRING:** Each circuit is rated at 16 amps maximum for all of the sockets combined.



**DESIGNING FOR EXPORT? WE MAKE IT EASY!** See also EEM sections 4050, 4300, 5600, & 6000



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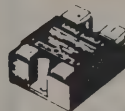
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**ELECTRONICS**

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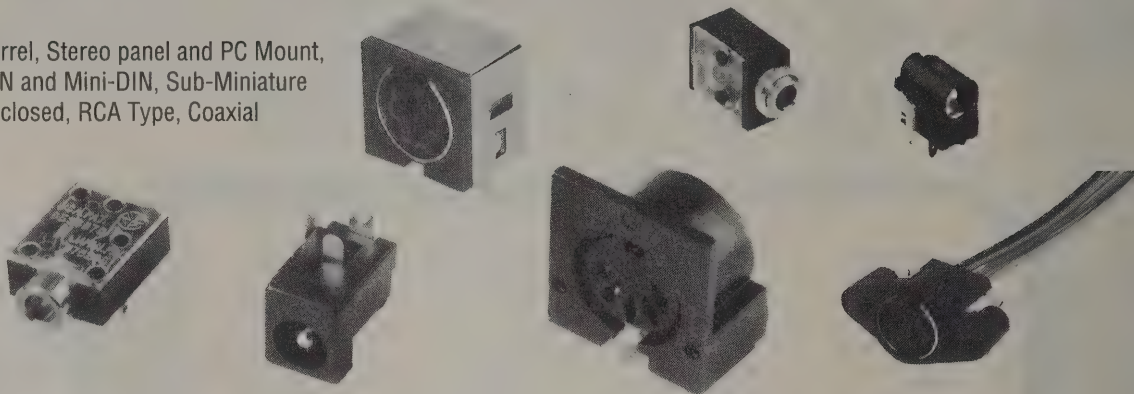
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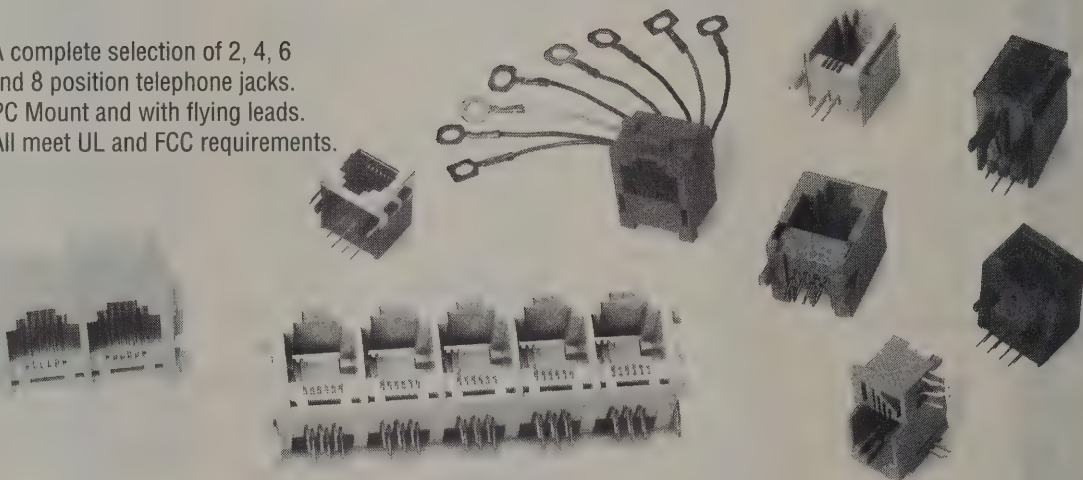
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- A complete selection of 2, 4, 6 and 8 position telephone jacks.
- PC Mount and with flying leads.
- All meet UL and FCC requirements.



## AC RECEPTACLES

### AC INLETS

- Panel or Chassis mount.
- With or without fuses.
- UL/CSA and VDE Approvals.



FROM PROTOTYPE TO PRODUCTION, SPECIFY RDI ELECTRONICS FOR QUALITY, SERVICE AND COMPETITIVE PRICING.

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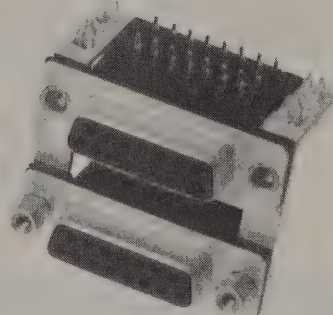
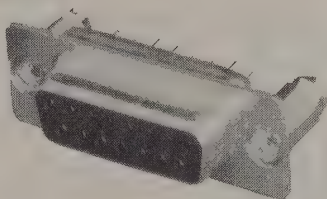
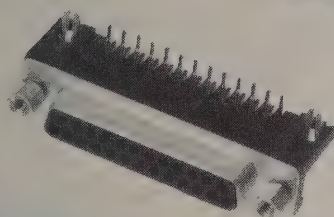
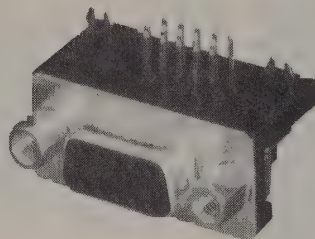
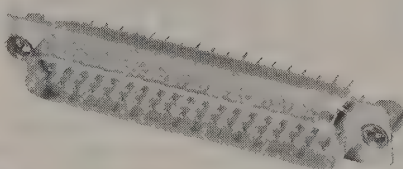
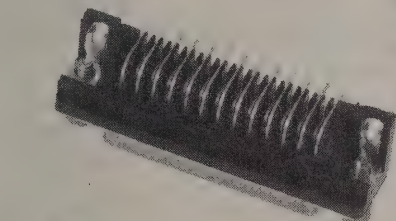


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## CONNECTORS

### D-SUB TYPE

- Right angle, vertical and high density PC Mount.
- Panel & Chassis Mount.
- UL/CSA Approved.



#### MATERIAL AND FINISH

**Shell** Steel zinc plated or tin plated

**Bracket** Brass Strip-H, Tin plated

**Pin contact** Phosphor bronze gold plated over nickel

**Rivet** Brass, nickel plated

**Insulator** PBT with glass fiber reinforced UL-94-V0,

**Color** Black

#### SPECIFICATIONS

**Rated Current** 5A

**Rated Voltage** 300V DC

**Withstand Voltage** 500V (r.m.s.) AC for 1 min

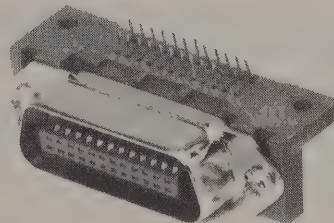
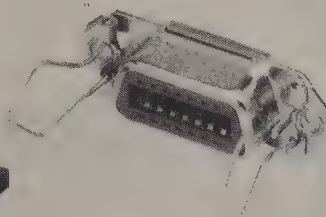
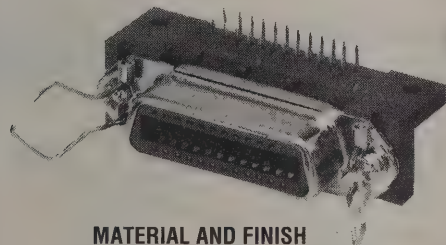
**Insulation Resistance** More than 1000M $\Omega$  Max at 500DC

**Dielectric Strength** 1000V for one min

**Temperature** -55°C~+105°C

### CENTRONIC TYPE

- Right angle and vertical PC Mount.
- I.D.C. in-line type.
- UL/CSA Approved.



#### MATERIAL AND FINISH

**Shell** Steel nickel plated

**Bracket** Steel tin plated

**Screw** Brass nickel plated

**Pin Contact** Phosphor bronze gold plated over nickel

**Insulator** PBT with glass fiber reinforced UL-94-V0,

**Color** Blue

#### SPECIFICATIONS

**Rated Current** 5A

**Rated Voltage** 500V (r.m.s.) AC for 1 min

**Insulation Resistance** More than 1000M $\Omega$  Max at 500DC

**Contact Resistance** 25 m $\Omega$  max

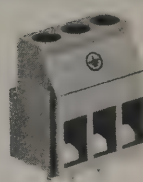
**Dielectric Strength** 1000V for one min

**Temperature** -55°C~+105°C

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# electronic connectors



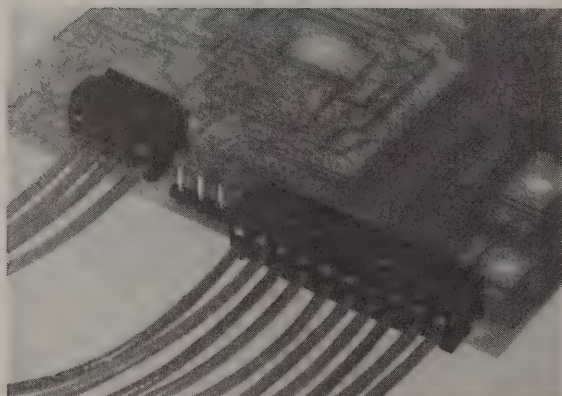
## Riacon® Terminal Strips

### The Best Less Money Can Buy.

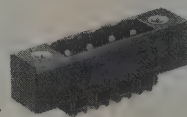
Up to now you've only been able to buy RIACON electronic terminal strips under the Buchanan name. But now you can get the full line of these versatile terminal strips from your distributor, delivered directly from the RIA corporation — the makers of RIACON terminal strips — with an even greater selection. We're introducing 13 new models you haven't seen before.

RIACON electronic terminal strips give you more connection options, more sizes, more shapes, more features — all with the high quality and reliable performance you're looking for. And RIA can custom design a connector with the pin length, mounting method, or even color to do your job.

Call (908-389-1300) or FAX (908-389-9066) for our catalog.



## Get More from RIACON connectors.



RIACON printed circuit board terminal strips & connectors for industrial & commercial field/factory wiring applications provide the widest variety of connection options, sizes, shapes, & features available. Styles include one-piece, two-piece pluggable and single-pole terminations. Centerlines range from 3.5mm (.138"), 5mm(.197"), 5.08mm (.200") up to 7.62mm (.300"). Wire protector & lift system termination versions. UL, CSA & VDE rated. Custom designed configurations can also be supplied. Call today for our catalog.

### NEW!

#### Type 165 Plug-in Mini Terminal Strip with a Screw-Type Terminal, 3.5mm(.138") Centerline

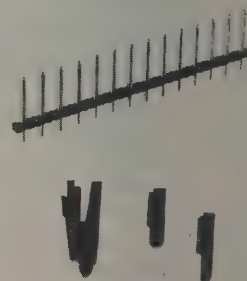


The new miniature (plug-in) terminal strip is designed to minimize the amount of board space required for an interconnection. A 3.5mm (.138") centerline, 8.9 (.351") width and 10mm (.394") height provide the smallest dimensions on the market. See pages that follow for more information.

### NEW!

#### Accessories for Plug-in Miniature Terminal Type 165

The range of field applications is increased with the addition of various accessories available with Type 165. Pin strip 24 provides a 2 piece connection with plug-in terminal strip Type 165. Type 24 is available in 2-24 position (3.5mm=.138") & 2-12 (7mm=.276"). Coding pins prevent misalignment.



ELECTRONIC CONNECTORS

**RIA electronic, Inc.**

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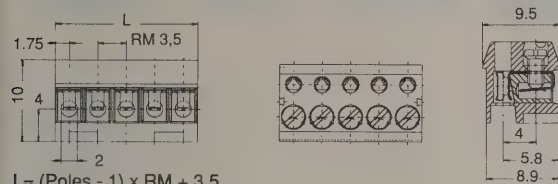


# electronic connectors

Products are UL, CSA and VDE approved.

**NEW!**

## Plug-in Mini Terminal Strip With A Screw-Type Terminal Type 165 - 3.5mm (.138") Centerline



### Description

A reliable electrical and mechanical connection is formed when the miniature terminal strip is plugged on to the header strip which features 1.3mm (.051") diameter pins. This allows easy pc board exchange for field servicing.

### The following accessories are available

Pin strip header Type 24 for vertical plug-in connections. Mounting flanges for 1mm (.040") and 1.5mm (.062") thick circuit boards. Coding pins — short or long.

### Configurations

2-24 circuit versions 3.5mm (.138") centerline. • 2-12 circuit versions 7.0mm (.276") centerline. • Dark brown color. Other colors available upon request. • Standard version is without numbering. • Numbering is available 1-xx upon request.

### Materials

**Molding** — Polyamid 6.6 (unbreakable), Temperature range: -40°C to +100°C, UL 94-V2

**Terminal body** — Brass 5µm tin plating over 2µm Ni plating.

**Terminal screw** — M2, Steel Zinc plated and yellow chromated

**Wire protection** — CuNi 18 Zn 20 — New Silver

### Specifications

Voltage  
UL 1059 Table 7.1/C  
Max. Current  
Wire Range

| Pin Spacing   |             |
|---------------|-------------|
| 3.5mm (.138") | 7mm (.276") |
| 125V          | 250V        |
| 10A           |             |
| 18-28 AWG     |             |
| Pin Spacing   |             |
| 3.5mm (.138") | 7mm (.276") |
| 2-24          | 2-12        |

No. Of Positions  
Recommended Tightening Torque  
Wire Strip Length  
Insertion/Withdrawals  
Plug In Force Newtons/Pole  
Withdrawal Force Newtons/Pole  
Contact Resistance  
Temperature

|                |     |     |  |
|----------------|-----|-----|--|
| 1.5 lbs. in.   |     |     |  |
| 5mm (.197")    |     |     |  |
| 1              | 10  | 20  |  |
| 4.1            | 2.4 | 2.2 |  |
| 3.4            | 2.4 | 2.2 |  |
| 10mΩ           |     |     |  |
| -40°C to 100°C |     |     |  |

### Part Numbers

| Pin Spacing 3.5mm (.138") |          |             |          | Pin Spacing 7mm (.278") |          |
|---------------------------|----------|-------------|----------|-------------------------|----------|
| No. of pins               |          | No. of pins |          | No. of pins             |          |
| 2                         | 31165102 | 14          | 31165114 | 2                       | 31165202 |
| 3                         | 31165103 | 15          | 31165115 | 3                       | 31165203 |
| 4                         | 31165104 | 16          | 31165116 | 4                       | 31165204 |
| 5                         | 31165105 | 17          | 31165117 | 5                       | 31165205 |
| 6                         | 31165106 | 18          | 31165118 | 6                       | 31165206 |
| 7                         | 31165107 | 19          | 31165119 | 7                       | 31165207 |
| 8                         | 31165108 | 20          | 31165120 | 8                       | 31165208 |
| 9                         | 31165109 | 21          | 31165121 | 9                       | 31165209 |
| 10                        | 31165110 | 22          | 31165122 | 10                      | 31165210 |
| 11                        | 31165111 | 23          | 31165123 | 11                      | 31165211 |
| 12                        | 31165112 | 24          | 31165124 | 12                      | 31165212 |
| 13                        | 31165113 |             |          |                         |          |

ELECTRONIC CONNECTORS



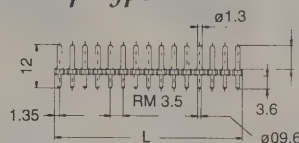
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**NEW!**

## Accessories for Miniature Plug-in Series 3.5mm (.138") Centerline

### Pin Strip Type 24



| mm   | inch |
|------|------|
| 0.96 | .038 |
| 1.3  | .051 |
| 2.7  | .106 |
| 3.5  | .138 |
| 3.6  | .142 |
| 6.55 | .258 |
| 12.0 | .472 |

The pin strip is designed for vertical insertion into the plug-in miniature electrical and mechanical connection is formed when together.

### Part Numbers

| Pin Spacing 3.5mm (.138") |          |             |          |
|---------------------------|----------|-------------|----------|
| No. of pins               |          | No. of pins |          |
| 2                         | 31024102 | 14          | 31024114 |
| 3                         | 31024103 | 15          | 31024115 |
| 4                         | 31024104 | 16          | 31024116 |
| 5                         | 31024105 | 17          | 31024117 |
| 6                         | 31024106 | 18          | 31024118 |
| 7                         | 31024107 | 19          | 31024119 |
| 8                         | 31024108 | 20          | 31024120 |
| 9                         | 31024109 | 21          | 31024121 |
| 10                        | 31024110 | 22          | 31024122 |
| 11                        | 31024111 | 23          | 31024123 |
| 12                        | 31024112 | 24          | 31024124 |
| 13                        | 31024113 |             |          |
| Pin Strip 7mm (.276")     |          |             |          |
| No. of Pins               |          | No. of pins |          |
| 2                         | 31024202 | 8           | 31024208 |
| 3                         | 31024203 | 9           | 31024209 |
| 4                         | 31024204 | 10          | 31024210 |
| 5                         | 31024205 | 11          | 31024211 |
| 6                         | 31024206 | 12          | 31024212 |
| 7                         | 31024207 |             |          |

### Materials

**Plug strip** — Polyamid 6.6 (unbreakable), Temperature range: 40°C to 100°C, UL 94-V2

**Pin** — Brass 5µm Silver over 2µm Ni.

**Pin Spacing** — 3.5mm (.138") or 7mm (.276")

### Mounting Flange



These connectors are designed to lock onto 1mm (.040") and 1.5mm (.062") thick pegboards. The mounting flanges lock securely onto the terminal strip molding.

### Part number

| Mounting flange for... |             |
|------------------------|-------------|
| Short coding pin       | 720158-01-0 |
| Long coding pin        | 720158-02-0 |

### Coding Pin

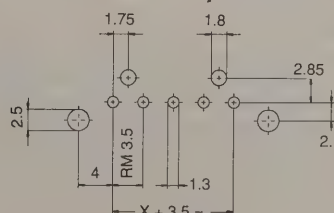


The coding pin prevents misalignment of the terminal strip to the pin header.

### Part number

|                  |             |
|------------------|-------------|
| Short coding pin | 720159-01-0 |
| Long coding pin  | 720159-02-0 |

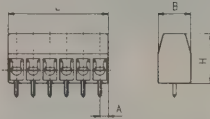
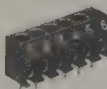
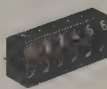
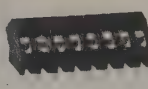
### Circuit board hole pattern



| mm   | inch |
|------|------|
| 1.3  | .051 |
| 1.75 | .069 |
| 1.8  | .071 |
| 2.1  | .083 |
| 2.5  | .099 |
| 2.85 | .112 |
| 3.5  | .138 |
| 4.0  | .157 |

# RIA CON<sup>®</sup> electronic connectors

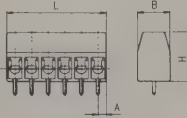
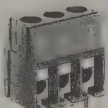
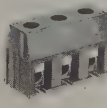
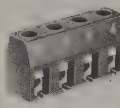
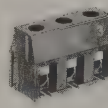
Products are UL, CSA and VDE approved.

|                                                                                                                                                                                         | Miniature terminal strips                                                         |                                                                                                              |                                                                                   | Terminal strips with wire protection                                               |                                                                                                    |                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|  <p>L=(number of pins-1) x pin spacing +2A<br/>Type 59-60 and 61-62 with or without wire protection</p> |  |  <p>horizontal mounting</p> |  |  |  <p>modular</p> |  <p>modular</p> |
| Type                                                                                                                                                                                    | 59 + 60                                                                           | 61 + 62                                                                                                      | 105                                                                               | 01                                                                                 | 55                                                                                                 | 57                                                                                                 |
| Dimensions (A x B x H)                                                                                                                                                                  | 1.75 x 6.5 x 8.2                                                                  | 1.75 x 6.5 x 8.2                                                                                             | 1.75 x 10.7 x 8.9                                                                 | 2.5 x 8 x 10                                                                       | 2.5 x 8 x 10                                                                                       | 2.54 x 8 x 10                                                                                      |
| Maximum current                                                                                                                                                                         | 10 A                                                                              | 10 A                                                                                                         | 10 A                                                                              | 15 A                                                                               | 15A                                                                                                | 15 A                                                                                               |
| Wire range                                                                                                                                                                              | 18-26 AWG                                                                         | 18-26 AWG                                                                                                    | 18-26 AWG                                                                         | 14-26 AWG                                                                          | 14-26 AWG                                                                                          | 14-26 AWG                                                                                          |
| Center spacing (mm)                                                                                                                                                                     | 3.5                                                                               | 3.5                                                                                                          | 3.5                                                                               | 5                                                                                  | 5                                                                                                  | 5.08                                                                                               |
| Number of pins                                                                                                                                                                          | 2-16                                                                              | 2-16                                                                                                         | 2-16                                                                              | 2-22                                                                               | 2-4                                                                                                | 2-3                                                                                                |

## Pin Spacing

| No. of Pins | P/N               | No. of Pins | P/N               | No. of Pins | P/N        | No. of Pins | P/N        | No. of Pins | P/N           |
|-------------|-------------------|-------------|-------------------|-------------|------------|-------------|------------|-------------|---------------|
| 2           | 31059102/31060102 | 2           | 31061102/31062102 | 2           | 31105102   | 2           | 31001102   | 3           | 31001203      |
| 3           | 31059103/31060103 | 3           | 31061103/31062103 | 3           | 31105103   | 3           | 31001103   | 4           | 31001204      |
| 4           | 31059104/31060104 | 4           | 31061104/31062104 | 4           | 31105104   | 4           | 31001104   | 5           | 31001205      |
| 5           | 31059105/31060105 | 5           | 31061105/31062105 | 5           | 31105105   | 5           | 31001105   | 6           | 31001206      |
| 6           | 31059106/31060106 | 6           | 31061106/31062106 | 6           | 31105106   | 6           | 31001106   | 7           | 31001207      |
| 7           | 31059107/31060107 | 7           | 31061107/31062107 | 7           | 31105107   | 7           | 31001107   | 8           | 31001208      |
| 8           | 31059108/31060108 | 8           | 31061108/31062108 | 8           | 31105108   | 8           | 31001108   | 9           | 31001209      |
| 9           | 31059109/31060109 | 9           | 31061109/31062109 | 9           | 31105109   | 9           | 31001109   | 10          | 31001210      |
| 10          | 31059110/31060110 | 10          | 31061110/31062110 | 10          | 31105110   | 10          | 31001110   | 11          | 31001211      |
| 11          | 31059111/31060111 | 11          | 31061111/31062111 | 11          | 31105111   | 11          | 31001111   |             | 55 - 5 mm     |
| 12          | 31059112/31060112 | 12          | 31061112/31062112 | 12          | 31105112   | 12          | 31001112   | 2           | 31055102      |
| 13          | 31059113/31060113 | 13          | 31061113/31062113 | 13          | 31105113   | 13          | 31001113   | 3           | 31055103      |
| 14          | 31059114/31060114 | 14          | 31061114/31062114 | 14          | 31105114   | 14          | 31001114   | 4           | 31055104      |
| 15          | 31059115/31060115 | 15          | 31061115/31062115 | 15          | 31105115   | 15          | 31001115   |             | 55 - 10 mm    |
| 16          | 31059116/31060116 | 16          | 31061116/31062116 | 16          | 31105116   | 16          | 31001116   | 2           | 31055202      |
|             | 59/60 - 7 mm      |             | 61/62 - 7 mm      |             | 105 - 7 mm |             | 31001117   |             | 57 - 5.08 mm  |
| 2           | 31059202/31060202 | 2           | 31061202/31062202 | 2           | 31105202   | 17          | 31001117   | 2           | 31057102      |
| 3           | 31059203/31060203 | 3           | 31061203/31062203 | 3           | 31105203   | 18          | 31001118   | 3           | 31057103      |
| 4           | 31059204/31060204 | 4           | 31061204/31062204 | 4           | 31105204   | 19          | 31001119   |             | 57 - 10.16 mm |
| 5           | 31059205/31060205 | 5           | 31061205/31062205 | 5           | 31105205   | 20          | 31001120   | 2           | 31057202      |
| 6           | 31059206/31060206 | 6           | 31061206/31062206 | 6           | 31105206   | 21          | 31001121   |             |               |
| 7           | 31059207/31060207 | 7           | 31061207/31062207 | 7           | 31105207   | 22          | 31001122   |             |               |
| 8           | 31059208/31060208 | 8           | 31061208/31062208 | 8           | 31105208   |             | 01 - 10 mm |             |               |
|             |                   |             |                   |             |            | 2           | 31001202   |             |               |

## Terminal strips with wire protection

|                                                                                                                                  | Terminal strips with wire protection                                                                                         |                                                                                                    |                                                                                                                  |                                                                                                    | Pin Spacing |               |             |               |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------|---------------|-------------|---------------|
|  <p>L=(number of pins-1) x pin spacing +2A</p> |  <p>modular<br/>double soldering pins</p> |  <p>modular</p> |  <p>double soldering pins</p> |  <p>modular</p> | No. of Pins | P/N           | No. of Pins | P/N           |
| Type                                                                                                                             | 87                                                                                                                           | 111                                                                                                | 117                                                                                                              | 125                                                                                                |             |               |             |               |
| Dimensions (A x B x H)                                                                                                           | 2.54 x 9.8 x 15                                                                                                              | 3.75 x 9.8 x 15                                                                                    | 3.75 x 9.8 x 15                                                                                                  | 3.81 x 9.8 x 15                                                                                    |             |               |             |               |
| Maximum current                                                                                                                  | 20 A                                                                                                                         | 20 A                                                                                               | 20 A                                                                                                             | 20 A                                                                                               |             |               |             |               |
| Wire range                                                                                                                       | 12-26 AWG                                                                                                                    | 12-26 AWG                                                                                          | 12-26 AWG                                                                                                        | 12-26 AWG                                                                                          |             |               |             |               |
| Center spacing (mm)                                                                                                              | 5.08                                                                                                                         | 5                                                                                                  | 7.5                                                                                                              | 7.62                                                                                               |             |               |             |               |
| Number of pins                                                                                                                   | 2-3                                                                                                                          | 2-4                                                                                                | 2-15                                                                                                             | 2-3                                                                                                |             |               |             |               |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 87 - 5.08 mm  | 6           | 31117106      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31087102      | 7           | 31117107      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31087103      | 8           | 31117108      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 87 - 10.16 mm | 9           | 31117109      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31087202      | 10          | 31117110      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 111 - 7.5 mm  | 11          | 31117111      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31111102      | 12          | 31117112      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31111103      | 13          | 31117113      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31111104      | 14          | 31117114      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 117 - 7.5 mm  | 15          | 31117115      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31117102      |             | 125 - 7.62 mm |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31117103      | 2           | 31251102      |
|                                                                                                                                  |                                                                                                                              |                                                                                                    |                                                                                                                  |                                                                                                    |             | 31117105      | 3           | 31251103      |

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| Terminal strips with wire protection                                               |              |                |                |                 |                 |                   |
|------------------------------------------------------------------------------------|--------------|----------------|----------------|-----------------|-----------------|-------------------|
| <p><math>L = (\text{number of pins} - 1) \times \text{pin spacing} + 2A</math></p> |              |                |                |                 |                 |                   |
|                                                                                    |              |                |                |                 |                 |                   |
| Type                                                                               | 63           | 03             | 81             | 83              | 109             | 05                |
| Dimensions (A x B x H)                                                             | 2.5 x 8 x 10 | 2.5 x 9.8 x 15 | 2.5 x 9.8 x 15 | 2.54 x 9.8 x 15 | 3.75 x 9.8 x 15 | 2.5 x 15.8 x 13.4 |
| Maximum current                                                                    | 15 A         | 20 A           | 20 A           | 20 A            | 20 A            | 20 A              |
| Wire range                                                                         | 14-26 AWG    | 12-26 AWG      | 12-26 AWG      | 12-26 AWG       | 12-26 AWG       | 12-26 AWG         |
| Center spacing                                                                     | 5            | 5              | 5              | 5.08            | 7.5             | 5                 |
| Number of pins                                                                     | 2-22         | 2-24           | 2-4            | 2-3             | 2-15            | 2-12              |

| Pin Spacing |                  |             |                   |             |                   |             |                      |             |                   |
|-------------|------------------|-------------|-------------------|-------------|-------------------|-------------|----------------------|-------------|-------------------|
| No. of Pins | P/N              | No. of Pins | P/N               | No. of Pins | P/N               | No. of Pins | P/N                  | No. of Pins | P/N               |
|             | <b>63 - 5 mm</b> |             | <b>63 - 10 mm</b> |             |                   |             |                      |             |                   |
| 2           | 31063102         | 2           | 31063202          | 14          | 31003113          | 12          | 31003212             | 12          | 31109112          |
| 3           | 31063103         | 3           | 31063203          | 15          | 31003114          |             | <b>81 - 5 mm</b>     | 13          | 31109113          |
| 4           | 31063104         | 4           | 31063204          | 16          | 31003115          | 2           | 31081102             | 14          | 31109114          |
| 5           | 31063105         | 5           | 31063205          | 17          | 31003116          | 3           | 31081103             | 15          | 31109115          |
| 6           | 31063106         | 6           | 31063206          | 18          | 31003117          | 4           | 31081104             |             | <b>05 - 5 mm</b>  |
| 7           | 31063107         | 7           | 31063207          | 19          | 31003118          |             | <b>81 - 10 mm</b>    | 2           | 31005102          |
| 8           | 31063108         | 8           | 31063208          | 20          | 31003119          | 2           | 31081202             | 3           | 31005103          |
| 9           | 31063109         | 9           | 31063209          | 21          | 31003120          |             | <b>83 - 5.08 mm</b>  | 4           | 31005104          |
| 10          | 31063110         | 10          | 31063210          | 22          | 31003121          | 2           | 31083102             | 5           | 31005105          |
| 11          | 31063111         | 11          | 31063211          | 23          | 31003122          | 3           | 31083103             | 6           | 31005106          |
| 12          | 31063112         |             | <b>03 - 5 mm</b>  | 24          | 31003123          |             | <b>83 - 10.16 mm</b> | 7           | 31005107          |
| 13          | 31063113         | 2           | 31003102          |             | 31003124          | 2           | 31083202             | 8           | 31005108          |
| 14          | 31063114         | 3           | 31003103          |             | <b>03 - 10 mm</b> |             | <b>109 - 7.5 mm</b>  | 9           | 31005109          |
| 15          | 31063115         | 4           | 31003104          | 2           | 31003202          | 2           | 31109102             | 10          | 31005110          |
| 16          | 31063116         | 5           | 31003105          | 3           | 31003203          | 3           | 31109103             | 11          | 31005111          |
| 17          | 31063117         | 6           | 31003106          | 4           | 31003204          | 4           | 31109104             | 12          | 31005112          |
| 18          | 31063118         | 7           | 31003107          | 5           | 31003205          | 5           | 31109105             |             | <b>05 - 10 mm</b> |
| 19          | 31063119         | 8           | 31003108          | 6           | 31003206          | 6           | 31109106             | 2           | 31005202          |
| 20          | 31063120         | 9           | 31003109          | 7           | 31003207          | 7           | 31109107             | 3           | 31005203          |
| 21          | 31063121         | 10          | 31003110          | 8           | 31003208          | 8           | 31109108             | 4           | 31005204          |
| 22          | 31063122         | 11          | 31003111          | 9           | 31003209          | 9           | 31109109             | 5           | 31005205          |
|             |                  | 12          | 31003112          | 10          | 31003210          | 10          | 31109110             | 6           | 31005206          |
|             |                  |             |                   | 11          | 31003211          | 11          | 31109111             |             |                   |

| Single terminal blocks |                       |                                         |                                               | Single-contact pins                                                                                        | Accessories                |
|------------------------|-----------------------|-----------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------|
|                        |                       |                                         |                                               |                                                                                                            |                            |
| Type                   | P/N 750122            | P/N 360304                              | P/N 360271                                    | Jumper                                                                                                     | Latching blocks            |
| Screw Size             | Terminal screw M2.5   | Terminal screw M2.6/M3                  | Terminal screw M3                             | Jumper is used to connect adjacent two pins of a terminal strip.<br>Pin spacing 5mm.<br>Pin diameter 1.3mm | for terminal strip Type 07 |
| Maximum current        | 5 A                   | 15 A                                    | 15 A                                          |                                                                                                            |                            |
| Wire range             | 20-26 AWG             | 14-26 AWG                               | 14-26 AWG                                     |                                                                                                            |                            |
| Number of pins         | Double soldering pins | Double soldering pins or crimping ridge | Double soldering pins or single soldering pin |                                                                                                            |                            |



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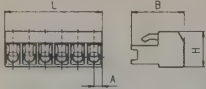
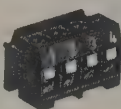
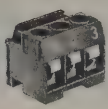
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|                                                                                  | Plugable terminal strips                                                          |                                                                                   |                                                                                   | Header                                                                            |                                                                                     |                                                                                     |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |
| Type                                                                             | 07                                                                                | 77                                                                                | 79                                                                                | 17 + 27                                                                           | 18 + 28                                                                             | 39                                                                                  |
| Dimensions (A x B x H)                                                           | 2.5 x 12.35 x 12.8                                                                | 2.5 x 12.35 x 12.8                                                                | 2.54 x 12.35 x 12.8                                                               | 2.4 x 2.7 x 12/16.5                                                               | 2.4 x 2.7 x 12/16.5                                                                 | 2.5 x 13 x 8.3                                                                      |
| Maximum current                                                                  | 15 A                                                                              | 15 A                                                                              | 15 A                                                                              | 15 A                                                                              | 15A                                                                                 | 15 A                                                                                |
| Wire range                                                                       | 14-26 AWG                                                                         | 14-26 AWG                                                                         | 14-26 AWG                                                                         | N/A                                                                               | N/A                                                                                 | N/A                                                                                 |
| Center spacing                                                                   | 5 (10)                                                                            | 5 (10)                                                                            | 5.08 (10.16)                                                                      | 5                                                                                 | 5.08                                                                                | 5                                                                                   |
| Number of pins                                                                   | 2-24 (2-12)                                                                       | 2-4 (2)                                                                           | 2-3 (2)                                                                           | 2-24                                                                              | 2-24                                                                                | 2-12                                                                                |

| Pin Spacing |                   |             |                      |             |                      |             |                         |             |                   |
|-------------|-------------------|-------------|----------------------|-------------|----------------------|-------------|-------------------------|-------------|-------------------|
| No. of Pins | P/N               | No. of Pins | P/N                  | No. of Pins | P/N                  | No. of Pins | P/N                     | No. of Pins | P/N               |
|             | <b>07 - 5 mm</b>  | 5           | 31007205             | 10          | 31017110/31027110    |             | <b>18/28 - 5.08 mm</b>  | 5           | 31018205/31028205 |
| 2           | 31007102          | 6           | 31007206             | 11          | 31017111/31027111    | 2           | 31018102/31028102       | 6           | 31018206/31028206 |
| 3           | 31007103          | 7           | 31007207             | 12          | 31017112/31027112    | 3           | 31018103/31028103       | 7           | 31018207/31028207 |
| 4           | 31007104          | 8           | 31007208             | 13          | 31017113/31027113    | 4           | 31018104/31028104       | 8           | 31018208/31028208 |
| 5           | 31007105          | 9           | 31007209             | 14          | 31017114/31027114    | 5           | 31018105/31028105       | 9           | 31018209/31028209 |
| 6           | 31007106          | 10          | 31007210             | 15          | 31017115/31027115    | 6           | 31018106/31028106       | 10          | 31018210/31028210 |
| 7           | 31007107          | 11          | 31007211             | 16          | 31017116/31027116    | 7           | 31018107/31028107       | 11          | 31018211/31028211 |
| 8           | 31007108          | 12          | 31007212             | 17          | 31017117/31027117    | 8           | 31018108/31028108       | 12          | 31018212/31028212 |
| 9           | 31007109          |             | <b>77 - 5 mm</b>     | 18          | 31017118/31027118    | 9           | 31018109/31028109       |             | <b>39 - 5 mm</b>  |
| 10          | 31007110          | 2           | 31077102             | 19          | 31017119/31027119    | 10          | 31018110/31028110       | 2           | 31039102          |
| 11          | 31007111          | 3           | 31077103             | 20          | 31017120/31027120    | 11          | 31018111/31028111       | 3           | 31039103          |
| 12          | 31007112          | 4           | 31077104             | 21          | 31017121/31027121    | 12          | 31018112/31028112       | 4           | 31039104          |
| 13          | 31007113          |             | <b>77 - 10 mm</b>    | 22          | 31017122/31027122    | 13          | 31018113/31028113       | 5           | 31039105          |
| 14          | 31007114          | 2           | 31077202             | 23          | 31017123/31027123    | 14          | 31018114/31028114       | 6           | 31039106          |
| 15          | 31007115          |             | <b>79 - 5.08 mm</b>  | 24          | 31017124/31027124    | 15          | 31018115/31028115       | 7           | 31039107          |
| 16          | 31007116          | 2           | 31079102             |             | <b>17/27 - 10 mm</b> | 16          | 31018116/31028116       | 8           | 31039108          |
| 17          | 31007117          | 3           | 31079103             | 2           | 31017202/31027202    | 17          | 31018117/31028117       | 9           | 31039109          |
| 18          | 31007118          |             | <b>79 - 10.16 mm</b> | 3           | 31017203/31027203    | 18          | 31018118/31028118       | 10          | 31039110          |
| 19          | 31007119          | 2           | 31079202             | 4           | 31017204/31027204    | 19          | 31018119/31028119       | 11          | 31039111          |
| 20          | 31007120          |             | <b>17/27 - 5 mm</b>  | 5           | 31017205/31027205    | 20          | 31018120/31028120       | 12          | 31039112          |
| 21          | 31007121          | 2           | 31017102/31027102    | 6           | 31017206/31027206    | 21          | 31018121/31028121       |             | <b>39 - 10 mm</b> |
| 22          | 31007122          | 3           | 31017103/31027103    | 7           | 31017207/31027207    | 22          | 31018122/31028122       | 2           | 31039202          |
| 23          | 31007123          | 4           | 31017104/31027104    | 8           | 31017208/31027208    | 23          | 31018123/31028123       | 3           | 31039203          |
| 24          | 31007124          | 5           | 31017105/31027105    | 9           | 31017209/31027209    | 24          | 31018124/31028124       | 4           | 31039204          |
|             | <b>07 - 10 mm</b> | 6           | 31017106/31027106    | 10          | 31017210/31027210    |             | <b>18/28 - 10.16 mm</b> | 5           | 31039205          |
| 2           | 31007202          | 7           | 31017107/31027107    | 11          | 31017211/31027211    | 2           | 31018202/31028202       | 6           | 31039206          |
| 3           | 31007203          | 8           | 31017108/31027108    | 12          | 31017212/31027212    | 3           | 31018203/31028203       |             |                   |
| 4           | 31007204          | 9           | 31017109/31027109    |             |                      | 4           | 31018204/31028204       |             |                   |

| Accessories |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       |
|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|             |  |  |  |  |  |  |
| Description | Mounting flange                                                                     | Mounting flanges                                                                    | End mounts                                                                          | Latches                                                                             | End mounts with latches                                                               | Coding pins                                                                           |
| Type        | for terminal strip Type 13                                                          | for terminal strips Type 77 + 79                                                    | for headers Type 33 + 34                                                            | for headers Type 33 + 34                                                            | for headers Type 33 + 34                                                              | for terminal strip Type 07                                                            |
| P/N         | P/N 360176                                                                          | Rt.-P/N 750150<br>Lt.-P/N 750151                                                    | Rt.-P/N 716841<br>Lt.-P/N 716840                                                    | Consult<br>Factory                                                                  | Consult<br>Factory                                                                    | Long-P/N 710122<br>Short-P/N 710121                                                   |



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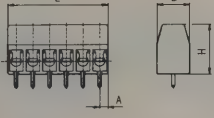
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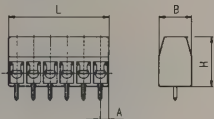
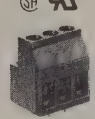
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|                                                                                                                                | Terminal strips with lift system                                                                                       |                                                                                                  |                                                                                                                                 |                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
|  <p>L=(number of pins-1) x pin spacing +2A</p> |  <p>Type 12 modular<br/>to 4 pins</p> |  <p>modular</p> |  <p>modular distributor<br/>terminal block</p> |  <p>modular<br/>Two-tier terminal block</p> |
| Type                                                                                                                           | 11 + 12                                                                                                                | 15                                                                                               | 65                                                                                                                              | 96 + 97                                                                                                                        |
| Dimensions (A x B x H)                                                                                                         | 2.5 x 10.5 x 14.6                                                                                                      | 2.54 x 10.5 x 14.6                                                                               | 2.5 x 10.5 x 14.6                                                                                                               | 2.5 x 22.5 x 31.5                                                                                                              |
| Maximum current                                                                                                                | 15 A                                                                                                                   | 15 A                                                                                             | 15A                                                                                                                             | 20 A                                                                                                                           |
| Wire range                                                                                                                     | 14-26 AWG                                                                                                              | 14-26 AWG                                                                                        | 14-26 AWG                                                                                                                       | 12-26 AWG                                                                                                                      |
| Center spacing                                                                                                                 | 5                                                                                                                      | 5.08 (10.16)                                                                                     | 5                                                                                                                               | 5 (5.08)                                                                                                                       |
| Number of pins                                                                                                                 | 2-16                                                                                                                   | 2-3 (2)                                                                                          | 2-4                                                                                                                             | 2-3 (2-3)                                                                                                                      |

|                                                                                                                                | Terminal strips with lift system                                                                         |                                                                                                  |                                                                                                                               |                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|  <p>L=(number of pins-1) x pin spacing +2A</p> |  <p>Type 72 modular</p> |  <p>modular</p> |  <p>Type 75 modular<br/>with test socket</p> |  <p>modular<br/>with test socket</p> |
| Type                                                                                                                           | 71 + 72                                                                                                  | 73                                                                                               | 74 + 75                                                                                                                       | 76                                                                                                                      |
| Dimensions (A x B x H)                                                                                                         | 2.5 x 11 x 18                                                                                            | 2.5 x 11 x 18                                                                                    | 2.5 x 12.8 x 18                                                                                                               | 2.5 x 12.8 x 18                                                                                                         |
| Maximum current                                                                                                                | 20 A                                                                                                     | 20 A                                                                                             | 20 A                                                                                                                          | 20 A                                                                                                                    |
| Wire range                                                                                                                     | 12-26 AWG                                                                                                | 12-26 AWG                                                                                        | 12-26 AWG                                                                                                                     | 12-26 AWG                                                                                                               |
| Center spacing (mm)                                                                                                            | 5 (10)                                                                                                   | 5.08 (10.16)                                                                                     | 5 (10)                                                                                                                        | 5.08 (10.16)                                                                                                            |
| Number of pins                                                                                                                 | 2-24 (2-12)                                                                                              | 2-3 (2)                                                                                          | 2-24 (2-12)                                                                                                                   | 2-3 (2)                                                                                                                 |

| Pin Spacing |                      |             |                         |             |                      |             |                      |             |                      |
|-------------|----------------------|-------------|-------------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|
| No. of Pins | P/N                  | No. of Pins | P/N                     | No. of Pins | P/N                  | No. of Pins | P/N                  | No. of Pins | P/N                  |
|             | <b>11/12 - 5 mm</b>  | 3           | 31015103                | 8           | 31071108             | 10          | 31071210             | 19          | 31074119             |
| 2           | 31011102/31012102    |             | <b>15 - 10.16 mm</b>    | 9           | 31071109             | 11          | 31071211             | 20          | 31074120             |
| 3           | 31011103/31012103    | 2           | 31015202                | 10          | 31071110             | 12          | 31071212             | 21          | 31074121             |
| 4           | 31011104/31012104    |             | <b>65 - 5 mm</b>        | 11          | 31071111             |             | <b>73 - 5.08 mm</b>  | 22          | 31074122             |
| 5           | 31011105             | 2           | 31065102                | 12          | 31071112             | 2           | 31073102             | 23          | 31074123             |
| 6           | 31011106             | 3           | 31065103                | 13          | 31071113             | 3           | 31073103             | 24          | 31074124             |
| 7           | 31011107             | 4           | 31065104                | 14          | 31071114             |             | <b>73 - 10.16 mm</b> |             | <b>74/75 - 10 mm</b> |
| 8           | 31011108             | 2           | 31065102-5 Blue         | 15          | 31071115             | 2           | 31073202             | 2           | 31074202/31075202    |
| 9           | 31011109             | 3           | 31065103-5 Blue         | 16          | 31071116             |             | <b>74/75 - 5 mm</b>  | 3           | 31074203             |
| 10          | 31011110             | 4           | 31065104-5 Blue         | 17          | 31071117             | 2           | 31074102/31075102    | 4           | 31074204             |
| 11          | 31011111             | 2           | 31065102-S Green/yellow | 18          | 31071118             | 3           | 31074103/31075103    | 5           | 31074205             |
| 12          | 31011112             | 3           | 31065103-S Green/yellow | 19          | 31071119             | 4           | 31074104/31075104    | 6           | 31074206             |
| 13          | 31011113             | 4           | 31065104-S Green/yellow | 20          | 31071120             | 5           | 31074105             | 7           | 31074207             |
| 14          | 31011114             |             | <b>96 - 5 mm</b>        | 21          | 31071121             | 6           | 31074106             | 8           | 31074208             |
| 15          | 31011115             | 2           | 31096102                | 22          | 31071122             | 7           | 31074107             | 9           | 31074209             |
| 16          | 31011116             | 3           | 31096103                | 23          | 31071123             | 8           | 31074108             | 10          | 31074210             |
|             | <b>11/12 - 10 mm</b> |             | <b>97 - 5.08 mm</b>     | 24          | 31071124             | 9           | 31074109             | 11          | 31074211             |
| 2           | 31011202/31012202    | 2           | 31097102                |             | <b>71/72 - 10 mm</b> | 10          | 31074110             | 12          | 31074212             |
| 3           | 31011203             | 3           | 31097103                | 2           | 31071202/31072202    | 11          | 31074111             |             | <b>76 - 5.08 mm</b>  |
| 4           | 31011204             |             | <b>71/72 - 5 mm</b>     | 3           | 31071203             | 12          | 31074112             | 2           | 31076102             |
| 5           | 31011205             | 2           | 31071102/31072102       | 4           | 31071204             | 13          | 31074113             | 3           | 31076103             |
| 6           | 31011206             | 3           | 31071103/31072103       | 5           | 31071205             | 14          | 31074114             |             | <b>76 - 10.16 mm</b> |
| 7           | 31011207             | 4           | 31071104/31072104       | 6           | 31071206             | 15          | 31074115             | 2           | 31076202             |
| 8           | 31011208             | 5           | 31071105                | 7           | 31071207             | 16          | 31074116             |             |                      |
|             | <b>15 - 5.08 mm</b>  | 6           | 31071106                | 8           | 31071208             | 17          | 31074117             |             |                      |
| 2           | 31015102             | 7           | 31071107                | 9           | 31071209             | 18          | 31074118             |             |                      |



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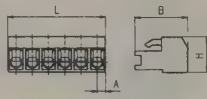
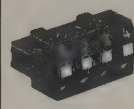
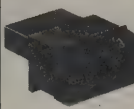
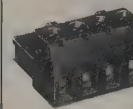
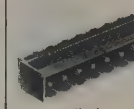
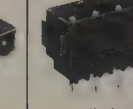
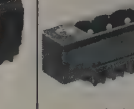
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|                                                                                                                                    | Plugable terminal strips                                                          |                                                                                   |                                                                                   | Headers                                                                                                            |                                                                                                                    |                                                                                                                     |                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
|  <p>L=(number of pins-1)<br/>x pin spacing +2A</p> |  |  |  |  <p>vertical +<br/>horizontal</p> |  <p>vertical +<br/>horizontal</p> |  <p>vertical +<br/>horizontal</p> |  <p>vertical +<br/>horizontal</p> |
| Type                                                                                                                               | 09                                                                                | 13                                                                                | 49                                                                                | 19 + 29                                                                                                            | 20 + 30                                                                                                            | 33 + 34                                                                                                             | 35 + 36                                                                                                              |
| Dimensions (A x B x H)                                                                                                             | 2.5 x 16.2 x 11                                                                   | 2.5 x 12.2 x 24.1                                                                 | 2.5 x 16.8 x 12.7                                                                 | 2.5 x 12.2 x 8.3                                                                                                   | 3.3 x 12.2 x 8.3                                                                                                   | 4.15 x 12.2 x 8.3                                                                                                   | 10 x 12.2 x 8.3                                                                                                      |
| Maximum current                                                                                                                    | 15 A                                                                              | 15 A                                                                              | 15A                                                                               | 15 A                                                                                                               | 15A                                                                                                                | 15 A                                                                                                                | 15 A                                                                                                                 |
| Wire range                                                                                                                         | 14-26 AWG                                                                         | 14-26 AWG                                                                         | 14-26AWG                                                                          | N/A                                                                                                                | N/A                                                                                                                | N/A                                                                                                                 |                                                                                                                      |
| Center spacing                                                                                                                     | 5 (10)                                                                            | 5 (10)                                                                            | 5 (10)                                                                            | 5                                                                                                                  | 5                                                                                                                  | 5                                                                                                                   | 5                                                                                                                    |
| Number of pins                                                                                                                     | 2-20 (2-10)                                                                       | 2-20 (2-10)                                                                       | 2-24 (2-12)                                                                       | 2-22                                                                                                               | 2-20                                                                                                               | 2-18                                                                                                                | 2-18                                                                                                                 |

## Pin Spacing

| No. of Pins | P/N        | No. of Pins | P/N        | No. of Pins | P/N               | No. of Pins | P/N               | No. of Pins | P/N               |
|-------------|------------|-------------|------------|-------------|-------------------|-------------|-------------------|-------------|-------------------|
| 2           | 31009102   | 14          | 31013114   | 3           | 31049203          | 2           | 31020102/31030102 | 14          | 31033114/31034114 |
| 3           | 31009103   | 15          | 31013115   | 4           | 31049204          | 3           | 31020103/31030103 | 15          | 31033115/31034115 |
| 4           | 31009104   | 16          | 31013116   | 5           | 31049205          | 4           | 31020104/31030104 | 16          | 31033116/31034116 |
| 5           | 31009105   | 17          | 31013117   | 6           | 31049206          | 5           | 31020105/31030105 | 17          | 31033117/31034117 |
| 6           | 31009106   | 18          | 31013118   | 7           | 31049207          | 6           | 31020106/31030106 | 18          | 31033118/31034118 |
| 7           | 31009107   | 19          | 31013119   | 8           | 31049208          | 7           | 31020107/31030107 | 19          | 31033119/31034119 |
| 8           | 31009108   | 20          | 31013120   | 9           | 31049209          | 8           | 31020108/31030108 | 20          | 31033120/31034120 |
| 9           | 31009109   |             | 13 - 10 mm | 10          | 31049210          | 9           | 31020109/31030109 |             | 33/34 - 10 mm     |
| 10          | 31009110   | 2           | 31013202   | 11          | 31049211          | 10          | 31020110/31030110 | 2           | 31033202/31034202 |
| 11          | 31009111   | 3           | 31013203   | 12          | 31049212          | 11          | 31020111/31030111 | 3           | 31033203/31034203 |
| 12          | 31009112   | 4           | 31013204   |             | 19/29 - 5 mm      | 12          | 31020112/31030112 | 4           | 31033204/31034204 |
| 13          | 31009113   | 5           | 31013205   | 2           | 31019102/31029102 | 13          | 31020113/31030113 | 5           | 31033205/31034205 |
| 14          | 31009114   | 6           | 31013206   | 3           | 31019103/31029103 | 14          | 31020114/31030114 | 6           | 31033206/31034206 |
| 15          | 31009115   | 7           | 31013207   | 4           | 31019104/31029104 | 15          | 31020115/31030115 | 7           | 31033207/31034207 |
| 16          | 31009116   | 8           | 31013208   | 5           | 31019105/31029105 | 16          | 31020116/31030116 | 8           | 31033208/31034208 |
| 17          | 31009117   | 9           | 31013209   | 6           | 31019106/31029106 | 17          | 31020117/31030117 | 9           | 31033209/31034209 |
| 18          | 31009118   | 10          | 31013210   | 7           | 31019107/31029107 | 18          | 31020118/31030118 |             | 35/36 - 5 mm      |
| 19          | 31009119   |             | 49 - 5 mm  | 8           | 31019108/31029108 | 19          | 31020119/31030119 | 2           | 31035102/31036102 |
| 20          | 31009120   | 2           | 31049102   | 9           | 31019109/31029109 | 20          | 31020120/31030120 | 3           | 31035103/31036103 |
|             | 09 - 10 mm | 3           | 31049103   | 10          | 31019110/31029110 |             | 20/30 - 10 mm     | 4           | 31035104/31036104 |
| 2           | 31009202   | 4           | 31049104   | 11          | 31019111/31029111 | 2           | 31020202/31030202 | 5           | 31035105/31036105 |
| 3           | 31009203   | 5           | 31049105   | 12          | 31019112/31029112 | 3           | 31020203/31030203 | 6           | 31035106/31036106 |
| 4           | 31009204   | 6           | 31049106   | 13          | 31019113/31029113 | 4           | 31020204/31030204 | 7           | 31035107/31036107 |
| 5           | 31009205   | 7           | 31049107   | 14          | 31019114/31029114 | 5           | 31020205/31030205 | 8           | 31035108/31036108 |
| 6           | 31009206   | 8           | 31049108   | 15          | 31019115/31029115 | 6           | 31020206/31030206 | 9           | 31035109/31036109 |
| 7           | 31009207   | 9           | 31049109   | 16          | 31019116/31029116 | 7           | 31020207/31030207 | 10          | 31035110/31036110 |
| 8           | 31009208   | 10          | 31049110   | 17          | 31019117/31029117 | 8           | 31020208/31030208 | 11          | 31035111/31036111 |
| 9           | 31009209   | 11          | 31049111   | 18          | 31019118/31029118 | 9           | 31020209/31030209 | 12          | 31035112/31036112 |
| 10          | 31009210   | 12          | 31049112   | 19          | 31019119/31029119 | 10          | 31020210/31030210 | 13          | 31035113/31036113 |
|             | 13 - 5 mm  | 13          | 31049113   | 20          | 31019120/31029120 |             | 33/34 - 5 mm      | 14          | 31035114/31036114 |
| 2           | 31013102   | 14          | 31049114   | 21          | 31019121/31029121 | 2           | 31033102/31034102 | 15          | 31035115/31036115 |
| 3           | 31013103   | 15          | 31049115   | 22          | 31019122/31029122 | 3           | 31033103/31034103 | 16          | 31035116/31036116 |
| 4           | 31013104   | 16          | 31049116   |             | 19/29 - 10 mm     | 4           | 31033104/31034104 | 17          | 31035117/31036117 |
| 5           | 31013105   | 17          | 31049117   | 2           | 31019202/31029202 | 5           | 31033105/31034105 | 18          | 31035118/31036118 |
| 6           | 31013106   | 18          | 31049118   | 3           | 31019203/31029203 | 6           | 31033106/31034106 |             | 35/36 - 10 mm     |
| 7           | 31013107   | 19          | 31049119   | 4           | 31019204/31029204 | 7           | 31033107/31034107 | 2           | 31035202/31036202 |
| 8           | 31013108   | 20          | 31049120   | 5           | 31019205/31029205 | 8           | 31033108/31034108 | 3           | 31035203/31036203 |
| 9           | 31013109   | 21          | 31049121   | 6           | 31019206/31029206 | 9           | 31033109/31034109 | 4           | 31035204/31036204 |
| 10          | 31013110   | 22          | 31049122   | 7           | 31019207/31029207 | 10          | 31033110/31034110 | 5           | 31035205/31036205 |
| 11          | 31013111   | 23          | 31049123   | 8           | 31019208/31029208 | 11          | 31033111/31034111 | 6           | 31035206/31036206 |
| 12          | 31013112   | 24          | 31049124   | 9           | 31019209/31029209 | 12          | 31033112/31034112 | 7           | 31035207/31036207 |
| 13          | 31013113   |             | 49 - 10 mm | 10          | 31019210/31029210 |             | 31033113/31034113 | 8           | 31035208/31036208 |
|             |            | 2           | 31049202   | 11          | 31019211/31029211 | 13          |                   | 9           | 31035209/31036209 |



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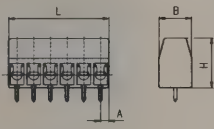
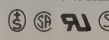
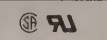
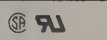
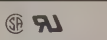
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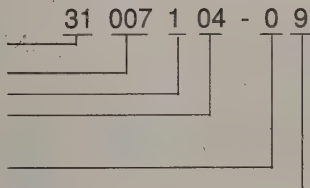
| Terminal strips with wire protection                                                                                           |                                                                                                                                                                                                 |                                                                                                                                                                                                            |                                                                                                                                                                        |                                                                                                                                                                                                            |                                                                                                                                                                            |     |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <br><br>L=(number of pins-1) x pin spacing +2A | <br><br>double soldering pins | <br><br>modular<br>double soldering pins | <br> | <br><br>modular<br>horizontal mounting | <br> |     |
|                                                                                                                                | Type                                                                                                                                                                                            | 69                                                                                                                                                                                                         | 85                                                                                                                                                                     | 141                                                                                                                                                                                                        | 151                                                                                                                                                                        | 153 |
| Dimensions (A x B x H)                                                                                                         | 2,5 x 9,8 x 15                                                                                                                                                                                  | 2,5 x 9,8 x 15                                                                                                                                                                                             | 2.5 x 11.5 x 13.5                                                                                                                                                      | 2.54 x 11.5 x 13.5                                                                                                                                                                                         | 2.54 x 11.5 x 13.5                                                                                                                                                         |     |
| Maximum current                                                                                                                | 20 A                                                                                                                                                                                            | 20 A                                                                                                                                                                                                       | 15 A                                                                                                                                                                   | 15 A                                                                                                                                                                                                       | 15 A                                                                                                                                                                       |     |
| Wire range                                                                                                                     | 12-26 AWG                                                                                                                                                                                       | 12-26 AWG                                                                                                                                                                                                  | 14-26 AWG                                                                                                                                                              | 14-26 AWG                                                                                                                                                                                                  | 14-26 AWG                                                                                                                                                                  |     |
| Center spacing                                                                                                                 | 5 (10)                                                                                                                                                                                          | 5 (10)                                                                                                                                                                                                     | 5                                                                                                                                                                      | 5.08                                                                                                                                                                                                       | 5.08                                                                                                                                                                       |     |
| Number of pins                                                                                                                 | 2-24 (2-12)                                                                                                                                                                                     | 2-4 (2)                                                                                                                                                                                                    | 2-24                                                                                                                                                                   | 2-3                                                                                                                                                                                                        | 2-24                                                                                                                                                                       |     |

| Pin Spacing |                  |             |                   |             |                    |             |                       |             |                       |
|-------------|------------------|-------------|-------------------|-------------|--------------------|-------------|-----------------------|-------------|-----------------------|
| No. of Pins | P/N              | No. of Pins | P/N               | No. of Pins | P/N                | No. of Pins | P/N                   | No. of Pins | P/N                   |
|             | <b>69 - 5 mm</b> |             | <b>69 - 10 mm</b> | 7           | 31141107           | 7           | 31141207              | 14          | 31153114              |
| 2           | 31069102         | 2           | 31069202          | 8           | 31141108           | 8           | 31141208              | 15          | 31153115              |
| 3           | 31069103         | 3           | 31069203          | 9           | 31141109           | 9           | 31141209              | 16          | 31153116              |
| 4           | 31069104         | 4           | 31069204          | 10          | 31141110           | 10          | 31141210              | 17          | 31153117              |
| 5           | 31069105         | 5           | 31069205          | 11          | 31141111           | 11          | 31141211              | 18          | 31153118              |
| 6           | 31069106         | 6           | 31069206          | 12          | 31141112           | 12          | 31141212              | 19          | 31153119              |
| 7           | 31069107         | 7           | 31069207          | 13          | 31141113           |             | <b>151 - 5.08 mm</b>  | 20          | 31153120              |
| 8           | 31069108         | 8           | 31069208          | 14          | 31141114           | 2           | 31151102              | 21          | 31153121              |
| 9           | 31069109         | 9           | 31069209          | 15          | 31141115           | 3           | 31151103              | 22          | 31153122              |
| 10          | 31069110         | 10          | 31069210          | 16          | 31141116           |             | <b>151 - 10.16 mm</b> | 23          | 31153123              |
| 11          | 31069111         | 11          | 31069211          | 17          | 31141117           | 2           | 31151202              | 24          | 31153124              |
| 12          | 31069112         | 12          | 31069212          | 18          | 31141118           |             | <b>153 - 5.08 mm</b>  |             | <b>153 - 10.16 mm</b> |
| 13          | 31069113         |             | <b>85 - 5 mm</b>  | 19          | 31141119           | 2           | 31153102              | 2           | 31153202              |
| 14          | 31069114         | 2           | 31085102          | 20          | 31141120           | 3           | 31153103              | 3           | 31153203              |
| 15          | 31069115         | 3           | 31085103          | 21          | 31141121           | 4           | 31153104              | 4           | 31153204              |
| 16          | 31069116         | 4           | 31085104          | 22          | 31141122           | 5           | 31153105              | 5           | 31153205              |
| 17          | 31069117         |             | <b>85 - 10 mm</b> | 23          | 31141123           | 6           | 31153106              | 6           | 31153206              |
| 18          | 31069118         | 2           | 31085202          | 24          | 31141124           | 7           | 31153107              | 7           | 31153207              |
| 19          | 31069119         |             | <b>141 - 5 mm</b> |             | <b>141 - 10 mm</b> | 8           | 31153108              | 8           | 31153208              |
| 20          | 31069120         | 2           | 31141102          | 2           | 31141202           | 9           | 31153109              | 9           | 31153209              |
| 21          | 31069121         | 3           | 31141103          | 3           | 31141203           | 10          | 31153110              | 10          | 31153210              |
| 22          | 31069122         | 4           | 31141104          | 4           | 31141204           | 11          | 31153111              | 11          | 31153211              |
| 23          | 31069123         | 5           | 31141105          | 5           | 31141205           | 12          | 31153112              | 12          | 31153212              |
| 24          | 31069124         | 6           | 31141106          | 6           | 31141206           | 13          | 31153113              |             |                       |

## Part Numbering System

### A. Hot stamp options

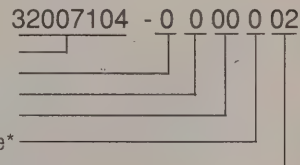
Standard P/N  
Series Type  
Center Spacing  
# of Positions  
Color of the housing standard style\*  
0 = standard  
Hot stamp options  
9 = Numbers left to right (1 2 3 4 ...)  
8 = Numbers right to left (4 3 2 1 ...)  
7 = Numbers upside down (4 3 2 1 ...)  
6 = Numbers upside down (1 2 3 4 ...)



### B. Plating options

Available for pluggable terminal types and headers only.  
When ordering plating options prefix part number with 32.

Part number options style  
Color of the housing standard style\*  
Hot stamp standard style\*  
Pin length standard style\*  
Screw size and material standard style\*  
Plating options  
02 = Gold (.000012")  
04 = Gold (.000030")



\* Various options on request.

Minimum order quantity for hot stamp options, plating and all other special options are 3000 circuits per item.



ELECTRONIC CONNECTORS

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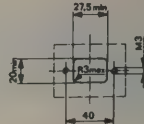
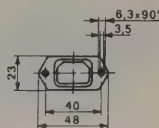
## AC POWER CONNECTORS AND PLUGS •

International Standards: CEE, IEC, DIN, SEV, SNV, EN

### Flange mount type - Class I

6100.3100 solder tabs (3.5 x 0.8mm)  
6100.3200 quick connect (4.8 x 0.8mm)  
6100.3300 quick connect (6.3 x 0.8mm)

UL, CSA 15A/125V VDE, SEMKO, SEV 10A/250V



### Flange mount type - Class II

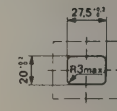
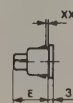
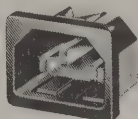
6102.3100 solder tabs (3.5 x 0.8mm)  
6102.3200 quick connect (4.8 x 0.8mm)  
6102.3300 quick connect (6.3 x 0.8mm)

E = solder 20.5 mm or quick connect 23.5mm

### Snap-in mount type - Class I

6100.41XX solder tabs (3.5 x 0.8mm)  
6100.42XX quick connect (4.8 x 0.8mm)  
6100.43XX quick connect (6.3 x 0.8mm)

UL, CSA 15A/125V VDE, SEMKO, SEV 10A/250V



### Snap-in mount type - Class II

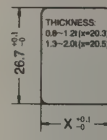
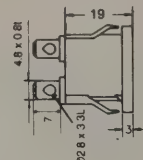
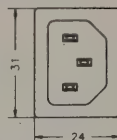
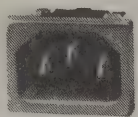
6102.51XX solder tabs (3.5 x 0.8mm)  
6102.52XX quick connect (4.8 x 0.8mm)  
6102.53XX quick connect (6.3 x 0.8mm)

XX = panel thickness: 1.0, 1.2, 1.5, 2.0, 2.5, 3.0mm (e.g. 6100.5110=1.0mm)

E = solder 22.5 mm or quick connect 25.5mm

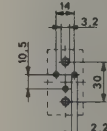
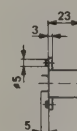
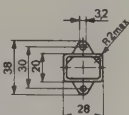
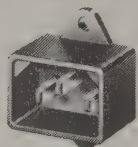
### Snap-in mount type - Class I

UL, CSA 15A/125V  
VDE, SEMKO, SEV 10A/250V  
4300.0704



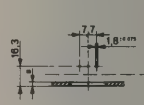
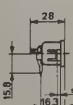
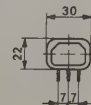
### PC board Flange mount type - Class I

UL, CSA 10A/250V  
VDE, SEMKO, SEV 10A/250V  
4300.0076



### PC board Snap-in mount type - Class I

UL, CSA 15A/125V  
VDE, SEMKO, SEV 10A/250V  
6130.56XX



XX = panel thickness: 1.0, 1.2, 1.5, 2.0, 2.5, 3.0mm (e.g. 6130.5610=1.0mm)

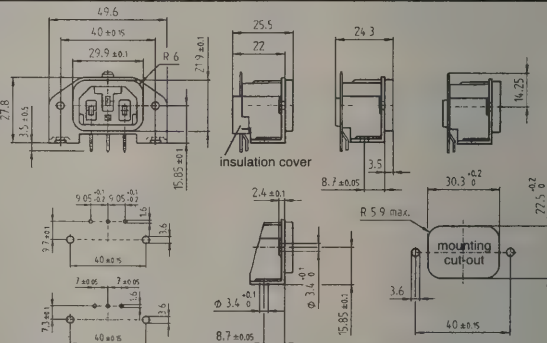
### PC board Flange mount type - Class I

UL, CSA 15A/250V  
VDE, SEMKO, SEV 10A/250V

GSP1.3101.1 9.05/9.7mm terminal spacings, holes for cylindric M3 screws, solder/quick-connect ground terminal 4.8x0.8mm (90° to connector axis)  
GSP1.4111.1 7.0/7.3mm terminal spacings, holes for cylindric M3 screws, solder/quick-connect ground terminal 4.8x0.8mm (90° to connector axis) with mounted insulation cover

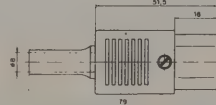
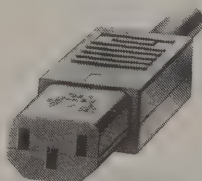
Request full-line catalog for complete ordering information.

Options include: flange for M3 or self-tapping 3mm screws, pre-inserted nuts, four different pcb terminal spacings, solder/quick-connect ground terminal in 4.8 x 0.8mm or 6.3 x 0.8mm for top or rear access, insulation cover (mounted or separate), protection class II (without ground)



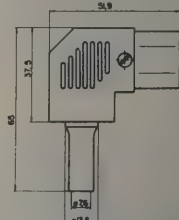
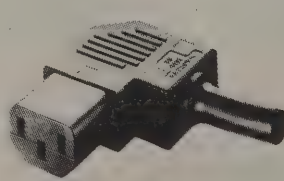
### Plug with straight cable entry - Class I

UL, CSA, VDE, SEMKO, SEV 10A/250V  
4300.0602



### Plug with angled cable entry - Class I

UL, CSA 10A/250V  
VDE, SEMKO, SEV 10A/250V  
4300.0606







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## AC POWER CONNECTORS AND PLUGS •

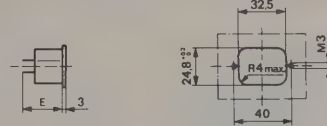
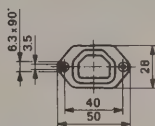


International Standards: CEE, IEC, DIN, SEV, SNV, EN

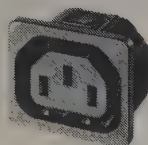


### Flange mount type - Class I

UL, CSA 15A/250V  
VDE, SEMKO, SEV 10A/250V  
6600.3100 solder tabs (3.5 x 0.8mm)  
6600.3200 quick connect (4.8 x 0.8mm)  
6600.3300 quick connect (6.3 x 0.8mm)

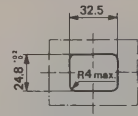
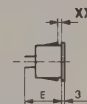


E = solder 24.1mm or quick connect 27.5mm



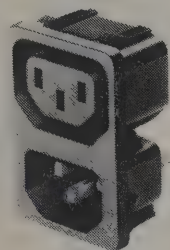
### Snap-in mount type - Class I

UL, CSA 15A/250V  
VDE, SEMKO, SEV 10A/250V  
6600.41XX solder tabs (3.5 x 0.8mm)  
6600.42XX quick connect (4.8 x 0.8mm)  
6600.43XX quick connect (6.3 x 0.8)



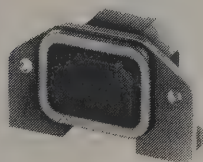
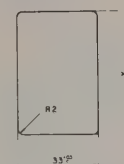
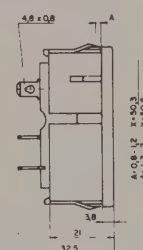
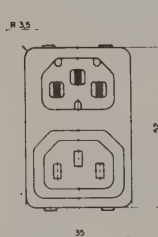
XX = panel thickness: 1.0, 1.5, 2.0, 2.5, 3.0mm (e.g. 6600.4110 = 1.0mm)

E = solder 24.1mm or quick connect 27.5mm



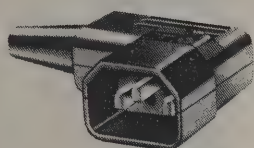
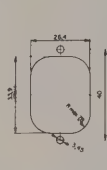
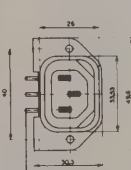
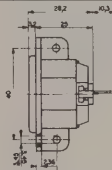
### Snap-in mount type - Class I

UL, CSA, VDE, SEMKO, SEV 10A/250V  
4300.0301



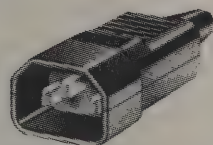
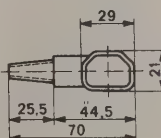
### PC board

Flange mount type - Class I  
UL, CSA 15A/250V  
VDE, SEMKO, SEV 10A/250V  
4300.0251



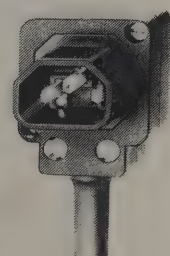
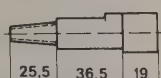
### Plug with angled cable entry - Class I

UL, CSA, VDE, SEV 10A/250V  
4300.0411



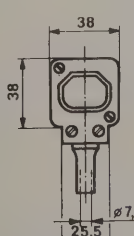
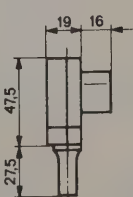
### Plug with straight cable entry - Class I

UL, CSA, VDE, SEV 10A/250V  
4300.0407



### Plug with angled cable entry - Class I

UL, CSA 10A/250V; SEV 6A/250V  
4300.0401

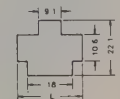
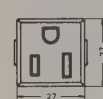


## NEMA 5-15R Outlets



### Snap-in mount type - Class I

UL, CSA 15A/125V  
Quick/solder terminals (.187" x .020")  
4300.0701



| L   | L    |
|-----|------|
| 0.8 | 24   |
| 1   | 24.6 |
| 1.2 | 25.2 |
| 1.6 | 26.2 |



### Snap-in mount type - Class I

UL, CSA 15A/125V  
V slotted terminals awg #14  
4300.0702

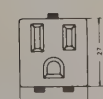
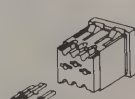


|                          |        |
|--------------------------|--------|
| 0.8 - 1.24<br>(X = 24.6) | X 1/2" |
| 1.3 - 1.64<br>(X = 24.6) |        |
| 24.6                     |        |



### Snap-in mount type - Class I

UL, CSA 15A/125V  
Quick/solder terminals (.205")  
or solid wire installation (awg #12-14)  
4300.0703



|                          |        |
|--------------------------|--------|
| 0.8 - 1.24<br>(X = 24.6) | X 1/2" |
| 1.3 - 2.04<br>(X = 24.6) |        |
| 24.6                     |        |



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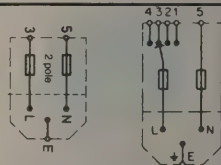
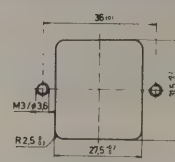
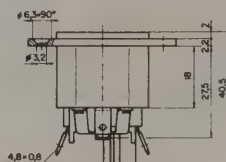
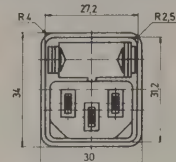
## POWER ENTRY MODULES • CS Australia

ISO 9001  
Quality certified

KEA = AC Power Connector with 1 or 2 pole fuseholder and optional 2-4 position voltage selector. KEC, KD = AC Power Connector with 1 or 2 pole fuseholder for 5×20mm or ¼×1¼" fuses and optional 2-4 position voltage selector. KD includes integral or remote on/off switch.



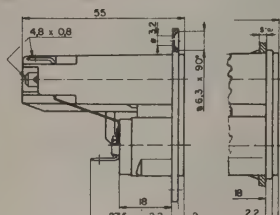
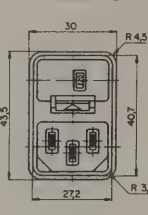
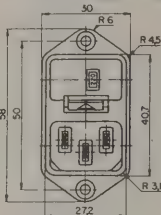
KEA



Internally wired 3-step voltage selector.  
Unwired types with 4-steps available



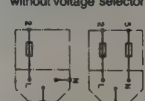
KEC



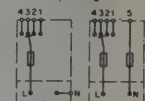
### Schematics

1 pole 2 pole

without voltage selector



with 4 step voltage selector



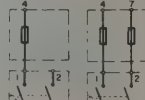
with 2 step voltage selector



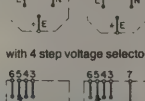
### Schematics

KD

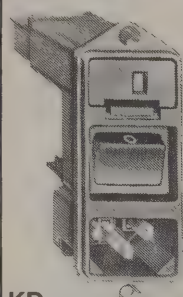
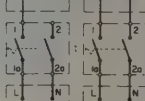
without voltage selector



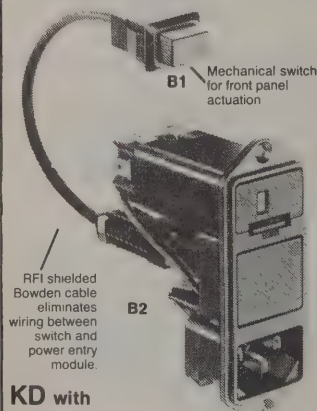
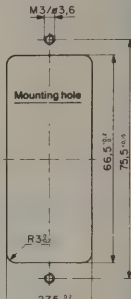
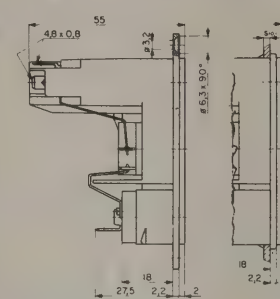
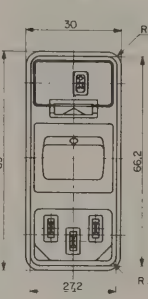
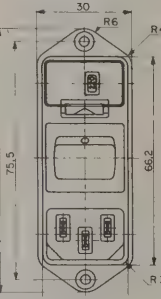
with 4 step voltage selector



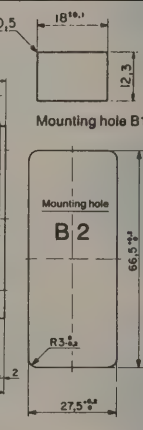
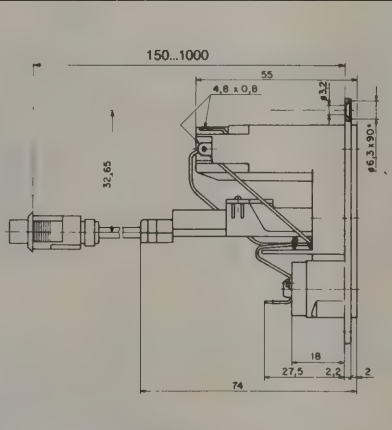
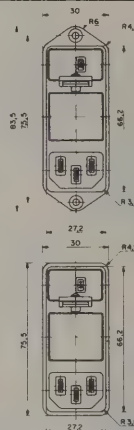
with 2 step voltage selector



KD



KD with  
Bowden cable



### KEA, KEC, KD Order Numbers (Casing, fusedrawer, and Bowden cable ordered separately)

| Casings, 2-pole      | Screw on | Snap-in 1.5mm | 2.0mm | 2.5mm | Fusedrawers                                                              |                                                                         |                                                                                                           |                                |
|----------------------|----------|---------------|-------|-------|--------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------|
| KEA 4301.0001        | •        |               |       |       | KEA, with voltage selector for 5×20mm fuses, markings 110, 150, 220      | KEA, without voltage selector for 5×20mm fuses                          | Standard                                                                                                  | Medical (IEC 601-1 VDE 0750-1) |
| KEA 4301.0002        |          | •             |       |       | 2-pole                                                                   | 2-pole w/shorting bar                                                   | 2-pole                                                                                                    | 2-pole w/shorting bar          |
| KEA 4301.0003        |          |               | •     |       | 4301.1014.01                                                             | 4301.3536.01                                                            | 4301.1401                                                                                                 | 4301.1413                      |
| KEA 4301.0004        |          |               |       | •     | 4301.1024.01                                                             | 4301.3537.01                                                            | 4301.1403                                                                                                 | 4301.1415                      |
| KEC 4303.0181        | •        |               |       |       | KEC, KD w/ voltage selector markings 100, 120, 220, 240 for 5×20mm fuses | KEC, KD w/ voltage selector markings 100, 120, 220, 240 for ¼×1¼" fuses |                                                                                                           |                                |
| KEC 4303.0182        |          | •             |       |       | 2-pole                                                                   | 2-pole w/shorting bar                                                   | 2-pole                                                                                                    | 2-pole w/shorting bar          |
| KEC 4303.0183        |          |               | •     |       | 4303.2014.01                                                             | 4303.2036.01                                                            | 4303.2714.01                                                                                              | 4303.2736.01                   |
| KEC 4303.0184        |          |               |       | •     | 4303.2024.01                                                             | 4303.2037.01                                                            | 4303.2724.01                                                                                              | 4303.2737.01                   |
| KD14.4101.151        | •        |               |       |       | KEC, KD without voltage selector for 5×20mm fuses                        | KEC, KD without voltage selector for ¼×1¼" fuses                        |                                                                                                           |                                |
| KD14.4101.105        |          | •             |       |       | 2-pole                                                                   | 2-pole w/shorting bar                                                   | 2-pole                                                                                                    | 2-pole w/shorting bar          |
| KD14.4101.107        |          |               | •     |       | 4303.2401                                                                | 4303.2411                                                               | 4303.2902                                                                                                 | 4303.2912                      |
| KD14.4101.109        |          |               |       | •     | 4303.2403                                                                | 4303.2413                                                               | 4303.2904                                                                                                 | 4303.2914                      |
| KD with Bowden cable |          |               |       |       | BOWDEN CABLE                                                             |                                                                         |                                                                                                           |                                |
| KD14.4199.151        | •        |               |       |       | 886.0101                                                                 | Standard cable < 500mm                                                  | 886.xxxx Custom cable (Note: For optimum actuation, specify according to guidelines in full-line catalog) |                                |
| KD14.4199.105        |          | •             |       |       | 886.0501                                                                 | Standard cable > 500mm                                                  |                                                                                                           |                                |
| KD14.4199.107        |          |               | •     |       |                                                                          |                                                                         |                                                                                                           |                                |
| KD14.4199.109        |          |               |       | •     |                                                                          |                                                                         |                                                                                                           |                                |





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## POWER ENTRY MODULES •

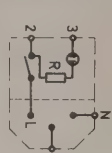
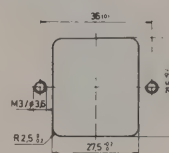
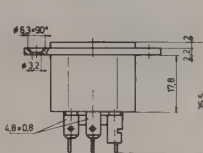
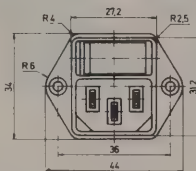
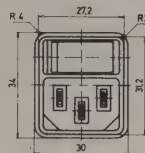


CS Australia

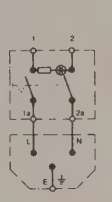
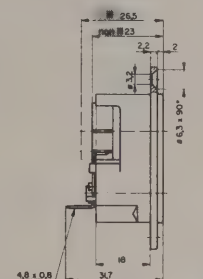
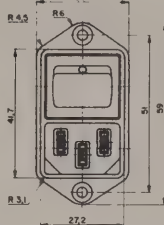
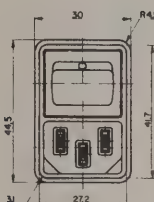
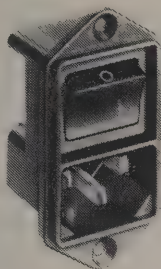
ISO 9001  
Quality certified

KEB  $\triangle$  AC Power Connector with 1 or 2 pole on/off switch. Optional 125V red or green lighted switch. KE, KG  $\triangle$  AC Power Connector with 1 or 2 pole fuseholder for 5x20mm or 1/4x1 1/4" fuses and optional 2-4 position series-parallel voltage selector. KG includes integral on/off switch.

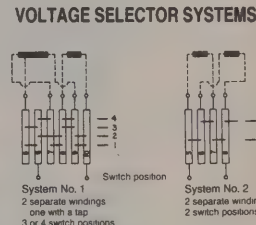
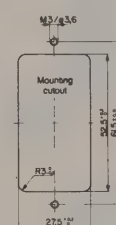
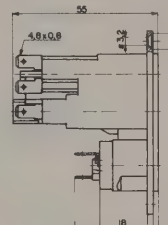
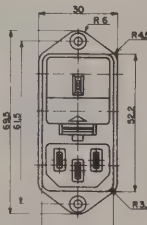
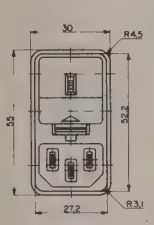
**KEB**  
1-pole



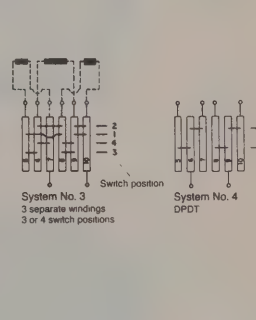
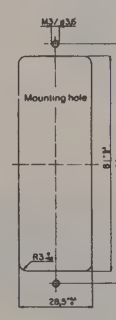
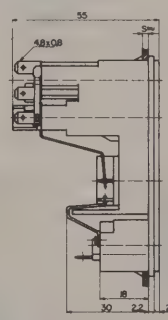
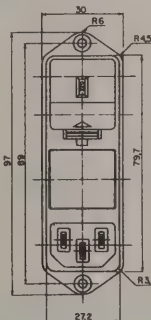
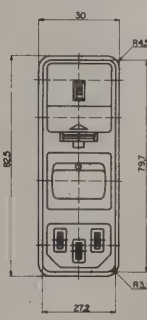
**KEB**  
2-pole



**KE**



**KG**



### KEB Order Numbers

| KEB 1-Pole<br>unlighted | red 250V     | red 125V     | Screw<br>on | Snap-in<br>1.5mm | 2.0mm | 2.5mm | KEB 2-pole<br>unlighted | red 125-250V | green 125-250V | Screw<br>on | Snap-in<br>1.5mm | 2.0mm | 2.5mm |
|-------------------------|--------------|--------------|-------------|------------------|-------|-------|-------------------------|--------------|----------------|-------------|------------------|-------|-------|
| KEB4302.0001            | KEB4302.0101 | KEB4302.0121 | •           |                  |       |       | KEB4302.2001            | KEB4302.2101 | KEB4302.2141   | •           |                  |       |       |
| KEB4302.0002            | KEB4302.0102 | KEB4302.0122 |             | •                |       |       | KEB4302.2002            | KEB4302.2102 | KEB4302.2142   |             | •                |       |       |
| KEB4302.0003            | KEB4302.0103 | KEB4302.0123 |             |                  | •     |       | KEB4302.2003            | KEB4302.2103 | KEB4302.2143   |             |                  | •     |       |
| KEB4302.0004            | KEB4302.0104 | KEB4302.0124 |             |                  |       | •     | KEB4302.2004            | KEB4302.2104 | KEB4302.2144   |             |                  |       | •     |

### KE, KG Order Numbers (Casing, Fusedrawer, and voltage selector insert ordered separately)

| Casing KE<br>1-pole | 2-pole        | Screw<br>on | Snap-in<br>1.5mm | 2.0mm | 2.5mm | Casing KG<br>1-pole | 2-pole        | Screw<br>on | Snap-in<br>1.5mm | 2.0mm | 2.5mm |
|---------------------|---------------|-------------|------------------|-------|-------|---------------------|---------------|-------------|------------------|-------|-------|
| KE16.5100.151       | KE10.6100.151 | •           |                  |       |       | KG16.5101.151       | KG10.6101.151 | •           |                  |       |       |
| KE16.5100.105       | KE10.6100.105 |             | •                |       |       | KG16.5101.105       | KG10.6101.105 |             | •                |       |       |
| KE16.5100.107       | KE10.6100.107 |             |                  | •     |       | KG16.5101.107       | KG10.6101.107 |             |                  | •     |       |
| KE16.5100.109       | KE10.6100.109 |             |                  |       | •     | KG16.5101.109       | KG10.6101.109 |             |                  |       | •     |

### Fusedrawers

| For 5x20mm fuses     |              |                                                    |
|----------------------|--------------|----------------------------------------------------|
| 1-pole black         | 2-pole black | 2-pole black with shorting bar in the neutral side |
| 4305.0006            | 4305.0001    | 4305.0021                                          |
| For 1/4x1 1/4" fuses |              |                                                    |
| 1-pole grey          | 2-pole grey  | 2-pole grey with shorting bar in the neutral side  |
| 4305.0017            | 4305.0012    | 4305.0027                                          |

### Voltage Selector Inserts

| Order No.    | System No. | Voltage Markings/Switch position |                  |     |     |
|--------------|------------|----------------------------------|------------------|-----|-----|
| 4305.0048.00 | 1, 2       | 1                                | 2                | 3   | 4   |
| 4305.0048.01 | 1          | 100                              | Without Markings | 120 | 240 |
| 4305.0048.03 | 2          | 110                              |                  |     | 220 |
| 4305.0048.05 | 2          | 115                              |                  |     | 230 |
| 4305.0050.00 | 3          | 130                              | Without Markings | 110 | 220 |
| 4305.0050.02 | 3          | 150                              |                  | 110 | 220 |
| 4305.0049.00 | 4          | Without Markings                 |                  |     |     |



# SCHURTER

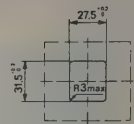
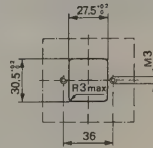
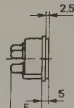
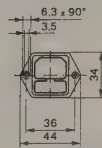
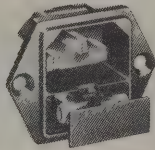
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## POWER ENTRY MODULES •



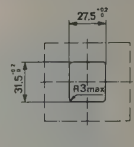
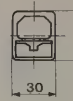
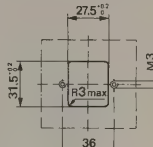
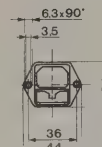
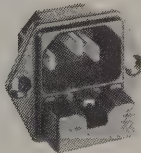
ISO 9001  
Quality Certified



E = solder terminals 22.5 mm, or quick disconnect 25.5 mm

S = panel thickness: 1.0, 1.5, 2.0, 2.5, 3.0 mm

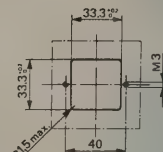
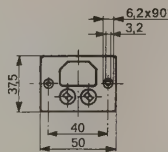
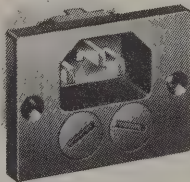
AC power connector with 1 pole fuseholder and spare fuse compartment



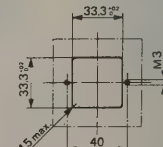
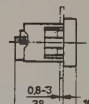
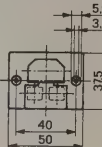
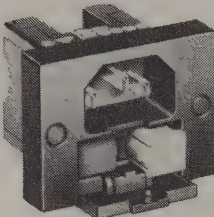
E = solder terminals 22.5 mm, or quick disconnect 25.5 mm

S = panel thickness: 1.0, 1.5, 2.0, 2.5, 3.0 mm

AC power connector with 2 pole fuseholder

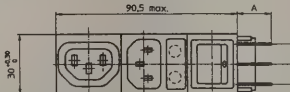
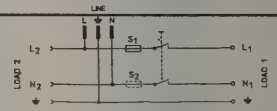
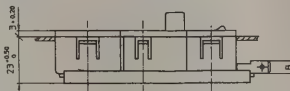
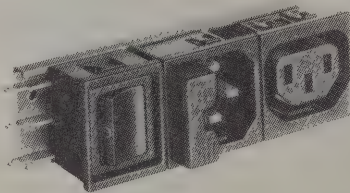


AC power connector with 1 or 2 pole fuseholder

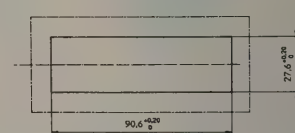


S = panel thickness 0.8-3 mm

AC power connector with 1 or 2 pole fuseholder for 5x20mm or 1/4x1-1/4 fuses



A = solder terminals 13.4 mm



### FELCOM® Custom Configurations

Available: AC inlet, outlet, 1 or 2 pole fuseholder, DPST switch

Series 6200, 6220, 0040 Order Numbers. See EEM section 4300 for Schurter fuses.

| 6200      |           | 6220      |           | Terminal types                               | 0040        | Color / Fusing |
|-----------|-----------|-----------|-----------|----------------------------------------------|-------------|----------------|
| Screw-on  | Snap-in * | Screw-on  | Snap-in * |                                              | Class I     |                |
| 6200.2100 | 6200.41XX | 6220.2100 | 6220.51XX | solder 3.5 x 0.8 mm (.138 x .032")           | 0040.5000.2 | black / 2-pole |
| 6200.2200 | 6200.42XX | 6220.2200 | 6220.52XX | quick disconnect 4.8 x 0.8 mm (.187 x .032") | 0040.5001.2 | grey / 2-pole  |
| 6200.2300 | 6200.43XX | 6220.2300 | 6220.53XX | quick disconnect 6.3 x 0.8 mm (.250 x .032") | 0040.5012   | black / 1-pole |

\* XX = panel thickness 1.0, 1.5, 2.0, 2.5, 3.0 mm (e.g. 6220.5110 = 1.0 mm)

Series 8843, FELCOM® Order Numbers. See EEM section 4300 for Schurter fuses.

| 8843 (casing and fuseholders ordered separately) |           |                                     |                                              | FELCOM® For Custom Configurations |                                                                |                               |                                 |
|--------------------------------------------------|-----------|-------------------------------------|----------------------------------------------|-----------------------------------|----------------------------------------------------------------|-------------------------------|---------------------------------|
| Casing, 2 pole                                   | Screw-on  | Snap-in                             | Terminal types                               | 6423.0#5Δ..                       | Appliance plug connector, fuseholder, appliance outlet         |                               |                                 |
| 8843.0361                                        | •         |                                     | solder 3.5 x 0.8 mm (.138 x .032")           | 6424.0#5Δ..                       | Appliance plug connector, fuseholder, switch                   |                               |                                 |
| 8843.0363                                        | •         |                                     | quick disconnect 4.8 x 0.8 mm (.187 x .032") | 6431.005Δ..                       | Appliance plug connector, switch, appliance outlet             |                               |                                 |
| 8843.0461                                        | •         |                                     | solder 3.5 x 0.8 mm (.138 x .032")           | 6432.0#5Δ..                       | Appliance plug connector, fuseholder, switch, appliance outlet |                               |                                 |
| 8843.0463                                        | •         |                                     | quick disconnect 4.8 x 0.8 mm (.187 x .032") | Order number key:                 |                                                                |                               |                                 |
| Fuseholders                                      | 8843.0901 | for 1/4 x 1-1/4" fuse (6.3 x 32 mm) |                                              | # = 1 fuse 5 x 20 mm              | Δ=1                                                            | solder terminals 3.5 x 0.8 mm | ** = panel thickness:           |
|                                                  | 8843.0902 | for 5 x 20 mm fuse                  |                                              | # = 2 fuses 5 x 20 mm             | Δ=3                                                            | quick disconnect 6.3 x 0.8 mm | 1.0, 1.2, 1.5, 2.0, 2.5, 3.0 mm |



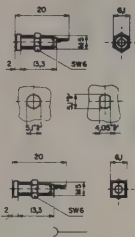


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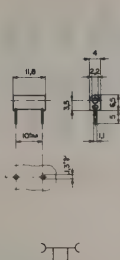


# TEST JACKS AND PROBES

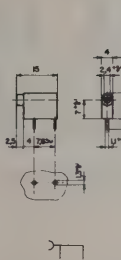
## .080" For Panel and PCB Mounting

**PBF**

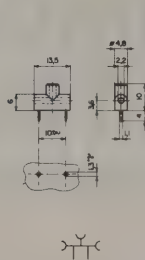
040.1031 black  
040.1032 red  
040.1033 green  
040.1034 blue  
040.1035 yellow

**PB**

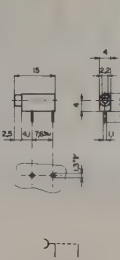
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040.1072 red  
040.1073 green  
040.1074 blue  
040.1075 yellow

**PB**

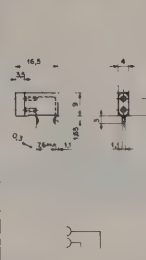
040.1011 black  
040.1012 red  
040.1013 green  
040.1014 blue  
040.1015 yellow

**PB**

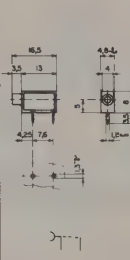
040.1021 black  
040.1022 red  
040.1023 green  
040.1024 blue  
040.1025 yellow

**PB**

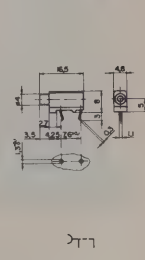
040.1101 black  
040.1102 red  
040.1103 green  
040.1104 blue  
040.1105 yellow

**PB**

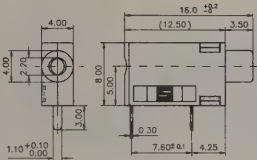
040.1151 black  
040.1152 red  
040.1153 green  
040.1154 blue  
040.1155 yellow

**PBD**

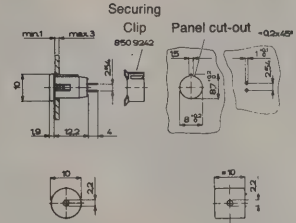
040.1211 black  
040.1212 red  
040.1213 green  
040.1214 blue  
040.1215 yellow

**PBD**

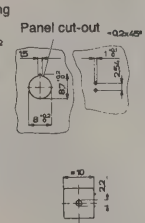
040.1281 black  
040.1282 red  
040.1283 green  
040.1284 blue  
040.1285 yellow

**PF**

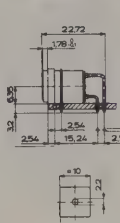
040.9231 black

**PBA**

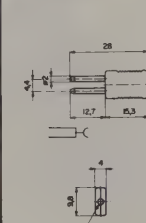
040.9202 red  
040.9206 black

**PBA**

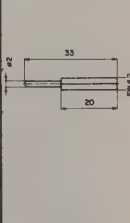
040.9212 red  
040.9216 black

**PBA**

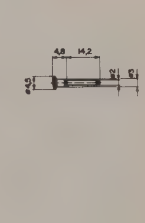
040.9222 red  
040.9226 black

**PS**

040.1161 black  
040.1162 red  
040.1163 green  
040.1164 blue  
040.1165 yellow

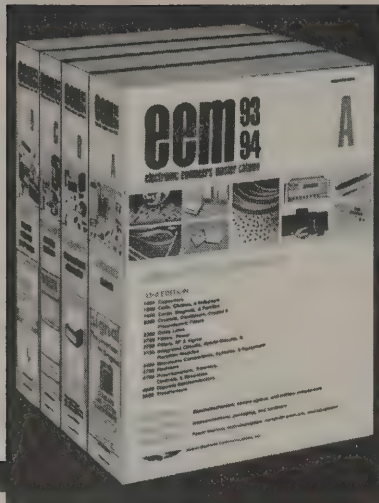
**PS**

040.1141 black  
040.1142 red  
040.1143 green  
040.1144 blue  
040.1145 yellow

**PS**

040.1061 black  
040.1062 red  
040.1063 green  
040.1064 blue  
040.1065 yellow

|                                                         | PB<br>040.1011<br>-.1015                | PB<br>040.1021<br>-.1025                | PBF<br>040.1031<br>-.1035               | PS<br>040.1061<br>-.1065                | PB<br>040.1071<br>-.1075                | PB<br>040.9230                          | PB<br>040.1111<br>-.1115                | PS<br>040.1141<br>-.1145                | PB<br>040.1151<br>-.1155                | PS<br>040.1161<br>-.1165                | PBD<br>040.1211<br>-.1215               | PBD<br>040.1281<br>-.1285               |                                         | PBA<br>040.9202<br>-.9226               |
|---------------------------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| Rated current                                           | 10 A                                    | 6.3 A                                   | 6.3 A                                   | 6.3 A                                   | 6.3 A                                   | 10 A                                    | 10 A                                    | 6.3 A                                   | 6.3 A                                   | 6.3 A                                   | 6.3 A                                   | 6.3 A                                   |                                         | 2 A                                     |
| Insulation resistance<br>dry, 500 V =                   | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma | Contact/Contact<br>->10 <sup>4</sup> ma |
| Contact resistance at 20 m V                            | <7ma                                    | <7ma                                    | <5ma                                    | -                                       | <10ma                                   | <7ma                                    | <7ma                                    | -                                       | <7ma                                    | <7ma                                    | <10ma                                   | <10ma                                   |                                         | <5ma                                    |
| Test voltage, dry<br>50 Hz, 1 min.                      | Contact/Contact<br>->2 kV               | Contact/Contact<br>->1 kV               | Contact/Contact<br>->1.5 kV             | Contact/Contact<br>->0.5 kV             | Contact/Contact<br>->0.5 kV             | Contact/Contact<br>->3 kV               | Contact/Contact<br>->3 kV               | Contact/Contact<br>->3 kV               | Contact/Contact<br>->2 kV               | Contact/Contact<br>->1.8 kV             | Contact/Contact<br>->2 kV               | Contact/Contact<br>->1.2 kV             |                                         | Contact/Contact<br>->1.5 kV             |
| Temperature rating                                      | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       | at no current<br>-25°C-<br>+100°C       |                                         | at no current<br>-25°C-<br>+100°C       |
|                                                         | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     | at rated current<br>-25°C-<br>+70°C     |                                         | at rated current<br>-25°C-<br>+70°C     |
| Solderability 2 sec. 235°C IEC 68-2-20 Test Ta method 1 | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       |                                         | ●                                       |
| Soldering Heat resistance 3 sec. 350°C                  |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |
| 5 sec. 260°C IEC 68-2-20 Test Tb method 1A              | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       | ●                                       |                                         | ●                                       |
| Contact material                                        | 0.5µm Au                                | 0.5µm Au                                | 0.5µm Au                                | 1µm Au                                  | 0.5µm Au                                | 0.5µm Au                                | 1µm Au                                  | 1.5µm Au                                | 2µm Au                                  | 2µm Au                                  | 2.5µm Au                                | 1µm Au                                  |                                         | 0.5µm Au<br>on 2µm Ni                   |
| Insulator material                                      | Polycarbonate                           |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         | Polybutylen-<br>terephthalate           |                                         | Polycar-<br>bonate                      |
| UL Flamability rating                                   | UL 94 V-2                               |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         |                                         | UL 94 V-O                               |                                         | UL 94 V-2                               |



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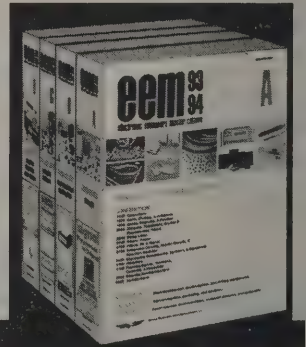
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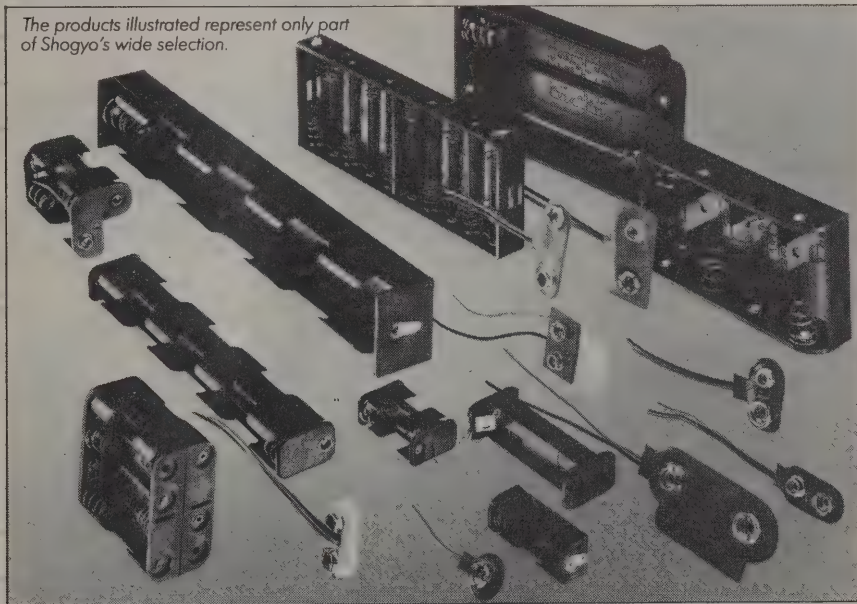
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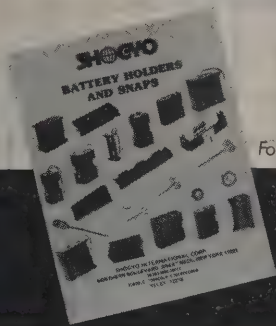
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• Audio:

shielded, unshielded, single or multi-conductor, with molded plugs and in-line jacks

• Zip:

standard or custom lengths, gauges, insulation thicknesses and jacket colors, with DC or phone plugs in a variety of sizes

• Computer/Video:

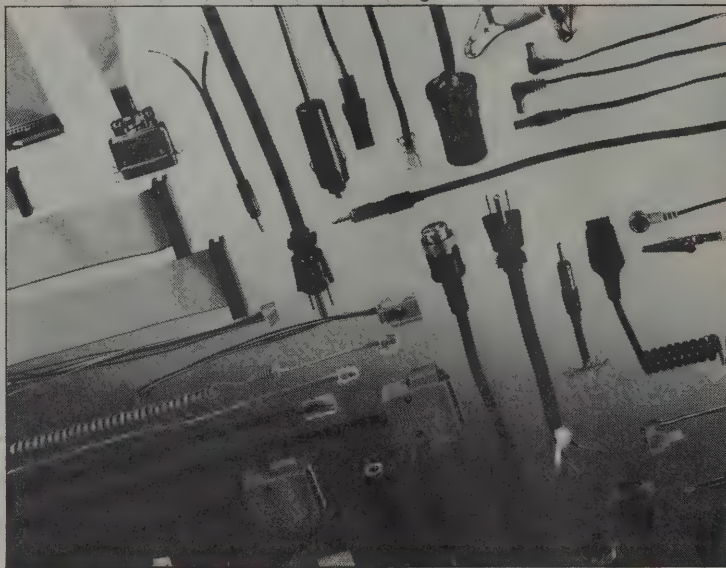
(from 9-50 pins, male or female; plastic or metal, low-profile, edgewise or multi-polar), DIN cables produced to spec (available with shielding), and RCA phono

• Power:

European or American, single or multi-conductor, custom made to specified current and temperature ratings, standard SPT-1 & 2, ST, SVT, SJT, XT or PXT, UL/CSA approved

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• Jacks:

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tenna, pin polarized, and banana

• Plugs:

phone, communication, barrel, microphone, DC, automobile, automobile antenna, DIN, RCA phono, pin, coaxial, banana, solderless, pin tip, and polarizing

• Modular telephone apparatus:

a full line of jacks, connectors, handset and line cords

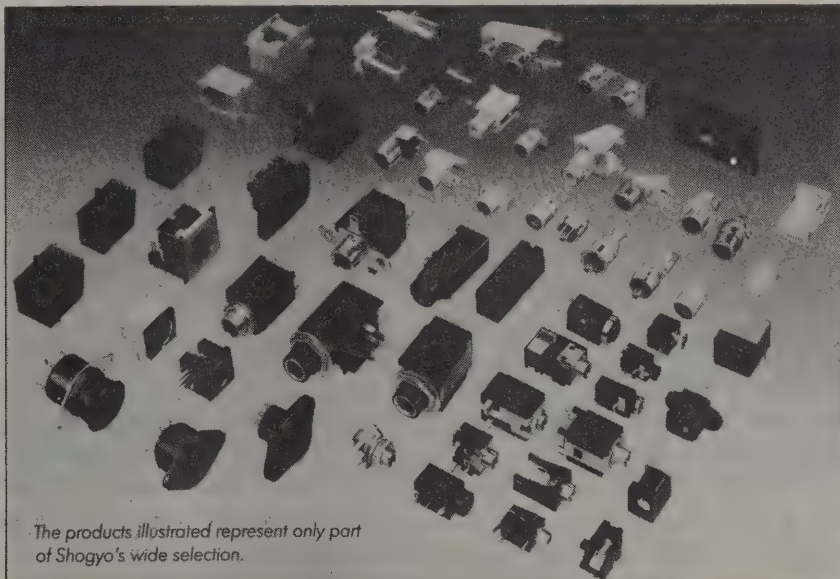
• Terminal boards, binding posts, barrier strips, clips, and fuse holders

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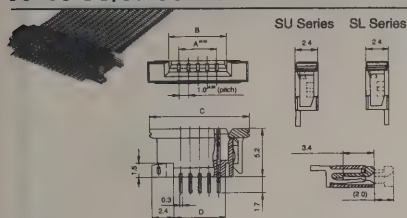
# Surface Mount Devices

■ CONNECTORS  
■ REFLOW PLUGS  
■ SWITCHES ■ JACKS

## FPC CONNECTORS

### FP-10 SU/SL Series

### 1.0 mm Spacing



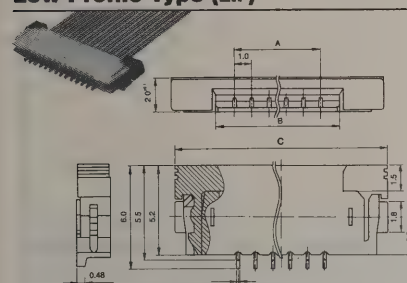
SU Series CFP05 □ □ -0201

SL Series CFP15 □ □ -0101

| □ □ | No. of Pins | A    | B    | C    | D    | □ □ | No. of Pins | A    | B    | C    | D    |
|-----|-------------|------|------|------|------|-----|-------------|------|------|------|------|
| 05  | 5           | 4.0  | 6.1  | 10.7 | 5.5  | 14  | 14          | 13.0 | 15.1 | 19.7 | 14.5 |
| 06  | 6           | 5.0  | 7.1  | 11.7 | 6.5  | 15  | 15          | 14.0 | 16.1 | 20.7 | 15.5 |
| 07  | 7           | 6.0  | 8.1  | 12.7 | 7.5  | 16  | 16          | 15.0 | 17.1 | 21.7 | 16.5 |
| 08  | 8           | 7.0  | 9.1  | 13.7 | 8.5  | 17  | 17          | 16.0 | 18.1 | 22.7 | 17.5 |
| 09  | 9           | 8.0  | 10.1 | 14.7 | 9.5  | 18  | 18          | 17.0 | 19.1 | 23.7 | 18.5 |
| 10  | 10          | 9.0  | 11.1 | 15.7 | 10.5 | 19  | 19          | 18.0 | 20.1 | 24.7 | 19.5 |
| 11  | 11          | 10.0 | 12.1 | 16.7 | 11.5 | 20  | 20          | 19.0 | 21.1 | 25.7 | 20.5 |
| 12  | 12          | 11.0 | 13.1 | 17.7 | 12.5 | 22  | 22          | 21.0 | 23.1 | 27.7 | 22.5 |
| 13  | 13          | 12.0 | 14.1 | 18.7 | 13.5 | 26  | 26          | 25.0 | 27.1 | 31.7 | 26.5 |

### Low Profile Type (zlf)

### 1.0 mm Spacing



#### Specifications

- Rating: AC/DC 50V, 1.0A
- Contact resistance: 30mΩ max.
- Insulation resistance: DC 500V 1,000MΩ min.
- Breakdown Voltage: AC 500V 1 minute
- Range of operating temperature: -25°C ~ +70°C

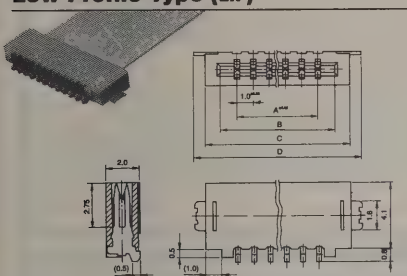
CFP20 □ □ -0101

NO. OF PINS

| □ □ | No. of Pins | A    | B    | C    | □ □ | No. of Pins | A    | B    | C    |
|-----|-------------|------|------|------|-----|-------------|------|------|------|
| 05  | 5           | —    | —    | —    | 14  | 14          | 13.0 | 15.2 | 20.3 |
| 11  | 11          | 10.0 | 12.2 | 17.3 | 20  | 20          | —    | —    | —    |

### Low Profile Type (LIF)

### 1.0 mm Spacing



#### Specifications

- Rating: AC/DC 50V, 0.5A
- Contact resistance: 30mΩ max.
- Insulation resistance: DC 500V, 1,000MΩ min.
- Breakdown Voltage: AC 100V for 1 minute
- Range of operating temperature: -25°C ~ +70°C

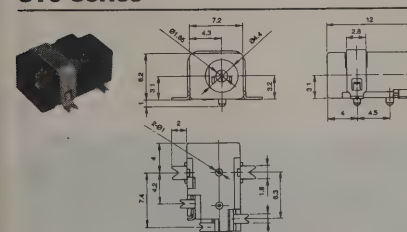
CFP02 □ □ -0101

NO. OF PINS

| □ □ | No. of Pins | A   | B   | C   | D   | □ □ | No. of Pins | A    | B    | C    | D    |
|-----|-------------|-----|-----|-----|-----|-----|-------------|------|------|------|------|
| 04  | 4           | —   | —   | —   | —   | 11  | 11          | —    | —    | —    | —    |
| 05  | 5           | 4.0 | 6.1 | 8.0 | 9.4 | 12  | 12          | 11.0 | 13.1 | 15.0 | 16.4 |
| 07  | 7           | —   | —   | —   | —   | 13  | 13          | —    | —    | —    | —    |
| 09  | 9           | —   | —   | —   | —   | 15  | 15          | —    | —    | —    | —    |

## DC POWER JACK

### STJ Series



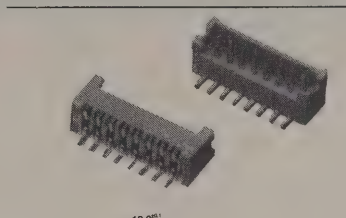
#### Specifications

- Rating: DC 6.3V, 2A
- Contact resistance: 30mΩ max.
- Insulation resistance: 1,000MΩ min. at DC 500V
- Breakdown Voltage: AC500V, 1 minute
- Range of operating temperature: -10 ~ +70°C, 85% RH or less

## REFLOW PLUGS

### HP Series

### 1.25 mm Spacing SMT Plug

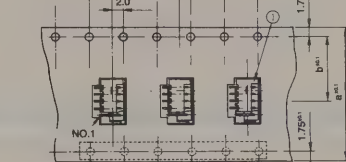


#### Specifications

- Rating: AC/DC 125V, 1A
- Contact resistance: 20 mΩ max.
- Insulation resistance: DC 500V, 1,000MΩ min.
- Breakdown Voltage: AC 500V, 1 minute
- Range of operating temperature: -25°C ~ +85°C

CHP27 □ □ -0101

NO. OF PINS

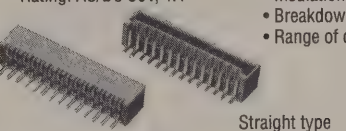


| □ □ | a  | b    | Part No.     |
|-----|----|------|--------------|
| 02  | 12 | 5.5  | CHP2702-0101 |
| 03  | —  | —    | CHP2703-0101 |
| 04  | —  | —    | CHP2704-0101 |
| 05  | 16 | 7.5  | CHP2705-0101 |
| 06  | —  | —    | CHP2706-0101 |
| 07  | —  | —    | CHP2707-0101 |
| 08  | 24 | 11.5 | CHP2708-0101 |

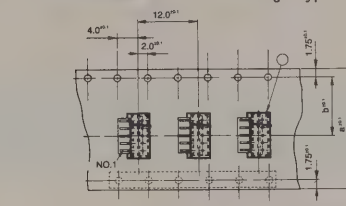
### EP Series

### 1.5 mm Spacing SMT Plug

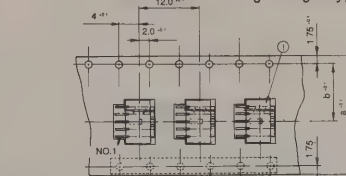
- Rating: AC/DC 50V, 1A



Straight type



Right-Angle Type



## CHIP SLIDE SWITCH

### JSC Series

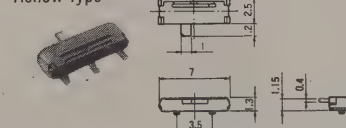
#### Specifications

- Rating: 0.1A @ 12V DC
- Insulation Resistance: 100MΩ min. @ 500VDC
- Initial Contact Resistance: 100mΩ max.
- Breakdown Voltage: 500VAC for 1 minute

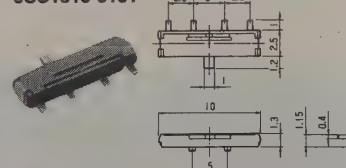
- Stroke: 1.5mm.
- Operating Force: 120±80gf
- Life: 10,000 cycles
- Changeover timing: Non-Shorting

### JSC1210-0101

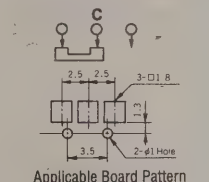
Reflow Type



### JSC1310-0101

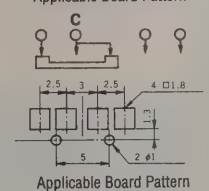


Circuit SPDT



Applicable Board Pattern

Circuit SP3T

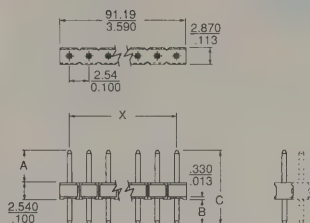


Applicable Board Pattern

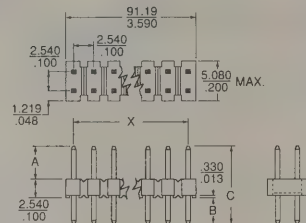
# Printed Circuit Board Interconnections

.025" Square, **Pin Headers** .100" centers

## Single Row 2H, 3H SERIES



## Dual Row 2H, 3H SERIES



## Part Number Description

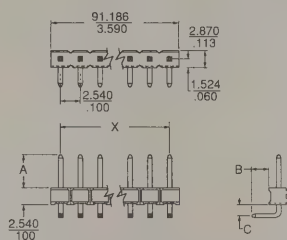
| Series                     | 2H | S | XX | S | XX | -XX | Tail Length           |
|----------------------------|----|---|----|---|----|-----|-----------------------|
| 2H "A" dim. = (5.84)/.230" |    |   |    |   |    |     | 01 = B = 3.75/.125    |
| 3H "A" dim. = (8.08)/.318" |    |   |    |   |    |     |                       |
| No. of Rows                |    |   |    |   |    |     | Plating               |
| S = Single Row             |    |   |    |   |    |     | 02-tin                |
| D = Dual Row               |    |   |    |   |    |     | 05-5µ selective gold  |
|                            |    |   |    |   |    |     | 15-15µ selective gold |
|                            |    |   |    |   |    |     | 30-30µ selective gold |
| Size                       |    |   |    |   |    |     | Post                  |
| No. of pins/row 01 thru 36 |    |   |    |   |    |     | S = Straight          |

EXAMPLE: 2HD30S02-01

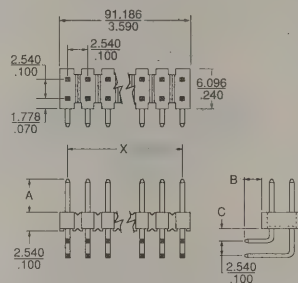
DESCRIPTION: A 2H series dual row pin header with 30 pins in each row, straight pins tin plated overall with .125" tail length.

- NOTES: 1. Consult factory for plating and product specifications.  
2. Available with PCB retention tails; for ordering information consult factory.  
3. For high temperature applications add the prefix "H" to the part number.  
Example: H2HSXXX-XX. Material: High temperature thermoplastic. Color: tan.  
4. Consult factory for other tail lengths.

## Single Row - Right Angle 2H, 3H SERIES



## Dual Row - Right Angle 2H, 3H SERIES



## Part Number Description

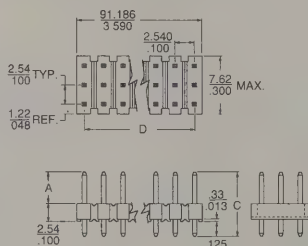
| Series                     | 2H | S | XX | R | XX | -XX | Tail Length           |
|----------------------------|----|---|----|---|----|-----|-----------------------|
| 2H "A" dim. = (5.84)/.230" |    |   |    |   |    |     | 01 = B = 3.75/.125    |
| 3H "A" dim. = (8.08)/.318" |    |   |    |   |    |     | C = 1.52/.060         |
| No. of Rows                |    |   |    |   |    |     | Plating               |
| S = Single Row             |    |   |    |   |    |     | 02-tin                |
| D = Dual Row               |    |   |    |   |    |     | 05-5µ selective gold  |
|                            |    |   |    |   |    |     | 15-15µ selective gold |
|                            |    |   |    |   |    |     | 30-30µ selective gold |
| Size                       |    |   |    |   |    |     | Post                  |
| No. of pins/row 01 thru 36 |    |   |    |   |    |     | R = Right Angle       |

EXAMPLE: 3HD22R02-01

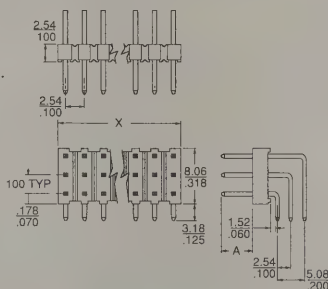
DESCRIPTION: A 3H series dual row pin header with 22 pins in each row, right angle pins tin plated overall.

- NOTES: 1. Consult factory for plating and product specifications.  
2. Available with PCB retention tails; for ordering information consult factory.  
3. For high temperature applications add the prefix "H" to the part number.  
Example: H2HSXXX-XX. Material: High temperature thermoplastic. Color: tan.

## Three Row - Straight 2H, 3H SERIES



## Three Row - Right Angle 2H, 3H SERIES



## Part Number Description

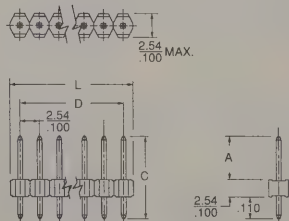
| Series                     | 2H | T | XX | R | XX | -XX | Tail Length           |
|----------------------------|----|---|----|---|----|-----|-----------------------|
| 2H "A" dim. = (5.84)/.230" |    |   |    |   |    |     | 01 = .125             |
| 3H "A" dim. = (8.08)/.318" |    |   |    |   |    |     |                       |
| No. of Rows                |    |   |    |   |    |     | Plating               |
| S = Single Row             |    |   |    |   |    |     | 02-tin                |
| D = Dual Row               |    |   |    |   |    |     | 05-5µ selective gold  |
|                            |    |   |    |   |    |     | 15-15µ selective gold |
|                            |    |   |    |   |    |     | 30-30µ selective gold |
| Size                       |    |   |    |   |    |     | Post                  |
| No. of pins/row 03 thru 36 |    |   |    |   |    |     | S = Straight          |
|                            |    |   |    |   |    |     | R = Right Angle       |

EXAMPLE: 2HT16R15-01

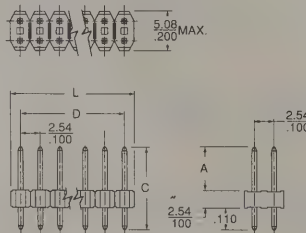
DESCRIPTION: A 2H series three row pin header with 16 pins in each row, right angle pins with 15µ selective gold plating and tin plated tails.

- NOTES: 1. "Straight" only.  
2. Consult factory for plating and product specifications.  
3. Available with PCB retention tails; for ordering information consult factory.  
4. For high temperature applications add the prefix "H" to the part number.  
Example: H5HSXXX-XX. Material: High temperature thermoplastic. Color: tan.  
5. Consult factory for other tail lengths.

## Economy - Single Row 2L, 3L SERIES



## Economy - Dual Row 2L, 3L SERIES



## Part Number Description

| Series                     | 2L | S | XX | S | XX | -XX | Tail Length           |
|----------------------------|----|---|----|---|----|-----|-----------------------|
| 2L "A" dim. = (5.84)/.230" |    |   |    |   |    |     | .110" Standard        |
| 3L "A" dim. = (8.08)/.318" |    |   |    |   |    |     |                       |
| No. of Rows                |    |   |    |   |    |     | Plating               |
| S = Single Row             |    |   |    |   |    |     | 03-pre-plated tin     |
| D = Dual Row               |    |   |    |   |    |     | 05-5µ selective gold  |
|                            |    |   |    |   |    |     | 10-10µ selective gold |
|                            |    |   |    |   |    |     | 06-5µ gold all over   |
|                            |    |   |    |   |    |     | 11-10µ gold all over  |
| Size                       |    |   |    |   |    |     | Post                  |
| No. of pins/row 01 thru 40 |    |   |    |   |    |     | S = Straight          |

EXAMPLE: 2LD12S10-01

DESCRIPTION: A 2L series dual row straight pin header with 12 pins in each row, 10µ selective gold plated with tin plated tails.

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-0. Color, black.  
• Contact Material: Phosphor bronze

- NOTES: 1. L = (No. of Positions - 1) X (.100) + .090  
2. D ± .005 = (No. of spaces) X .100  
3. Consult factory for plating and product specifications.

# SPECIALTY ELECTRONICS INCORPORATED

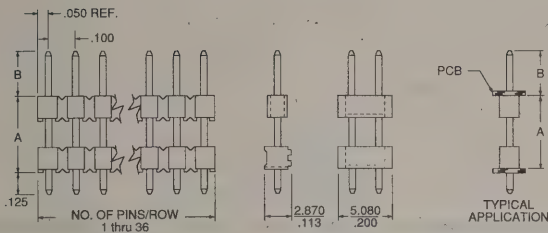
19200 Asheville Highway, Landrum, SC. 29356, TEL(803) 457-3824, FAX(803) 457-2535



# Printed Circuit Board Interconnections

## .025" Square, Pin Headers .100" centers

### Single & Dual Row SC SERIES



### Part Number Description

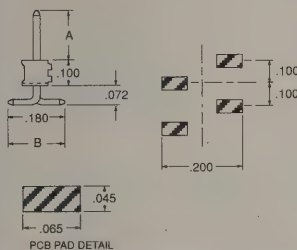
| Series          | SC         | S | XX | XXX | XXX-XX | Plating                                                  |
|-----------------|------------|---|----|-----|--------|----------------------------------------------------------|
| No. of Rows     |            |   |    |     |        | 02-tin<br>15-15µ selective gold<br>30-30µ selective gold |
| D               |            |   |    |     |        | Post Height<br>(3 digits)                                |
| Size            |            |   |    |     |        | Dimension<br>between P.C. board (3 digits)               |
| No. of pins/row | 01 thru 36 |   |    |     |        |                                                          |

EXAMPLE: SCD-25-1.45-.318-15

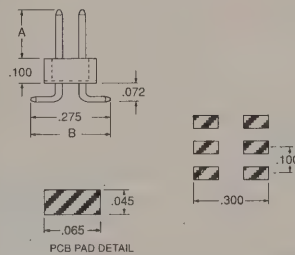
DESCRIPTION: Stacking connector dual 25 (50 pins) with the "A" dimension of 1.45, post height of .318". Selective plating 15 micro-inches of gold with tin plated tails.

- NOTES:
- Consult factory for plating and product specifications.
  - Available with PCB retention tails; for ordering information consult factory.
  - For high temperature applications add the prefix "H" to the part number.  
Example: HSCSXXXSXX-XX. Material: High temperature thermoplastic. Color, tan.
  - Consult factory for other tail lengths.

### SMT Single Row 2H, 3H SERIES



### SMT Dual Row 2H, 3H SERIES



### Part Number Description

| Series          | SM         | 3H | S | XX | S | XX-XX | Tail Length                                              |
|-----------------|------------|----|---|----|---|-------|----------------------------------------------------------|
| 2H "A" dim.     |            |    |   |    |   |       | see dimensions above                                     |
| 3H "A" dim.     |            |    |   |    |   |       |                                                          |
| No. of Rows     |            |    |   |    |   |       | Plating                                                  |
| S = Single Row  |            |    |   |    |   |       | 02-tin<br>15-15µ selective gold<br>30-30µ selective gold |
| D = Dual Row    |            |    |   |    |   |       | Post                                                     |
| Size            |            |    |   |    |   |       | S = Straight                                             |
| No. of pins/row | 01 thru 36 |    |   |    |   |       |                                                          |

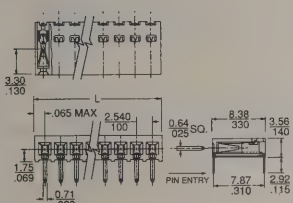
EXAMPLE: 2M3HD25S30-01

DESCRIPTION: A 3H series surface mounted dual row pin header with 25 pins in each row, 30µ selective gold plating and tin plated tails.

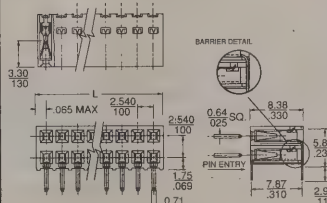
- NOTES:
- Consult factory for plating and product specifications see page 14.
  - Material: High temperature thermoplastic. Color, tan.
  - Available in other "A" and "B" dimensions. Consult factory.

## .025" Square, Receptacles Dual Beam Box

### Horizontal - Single Row 101 SERIES



### Horizontal - Dual Row 102 SERIES



### Part Number Description

| Series              | 101        | XX | XX-XXX | Tail Length                     |
|---------------------|------------|----|--------|---------------------------------|
| 101                 |            |    |        | as shown                        |
| 102                 |            |    |        | Plating                         |
| Size                |            |    |        | 02-tin<br>30-30µ selective gold |
| No. of contacts/row | 01 thru 64 |    |        |                                 |

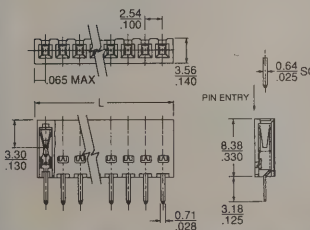
#### Material Selection

Standard glass filled thermoplastic  
Insert "1" for polyphenylene sulfide; color, brown  
Insert "2" for polyetherimide; color, blue  
Insert "3" for PET - polyethylene terephthalate; color, tan

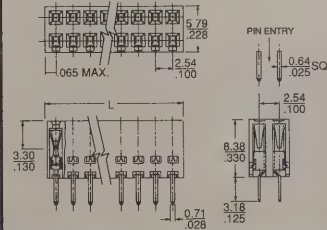
SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

NOTES: 1. Consult factory for plating and product specifications.

### Top Entry, Vertical - Single Row 103 SERIES



### Top Entry, Vertical - Dual Row 104 SERIES



### Part Number Description

| Series              | 103        | XX | XX-XXX | Tail Length                     |
|---------------------|------------|----|--------|---------------------------------|
| 103                 |            |    |        | 000 Standard Product            |
| 104                 |            |    |        | 010 Retention Tail              |
| Size                |            |    |        | Plating                         |
| No. of contacts/row | 01 thru 64 |    |        | 02-tin<br>30-30µ selective gold |

#### Material Selection

Standard glass filled thermoplastic  
Insert "1" for polyphenylene sulfide; color, brown  
Insert "2" for polyetherimide; color, blue  
Insert "3" for PET - polyethylene terephthalate; color, tan

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

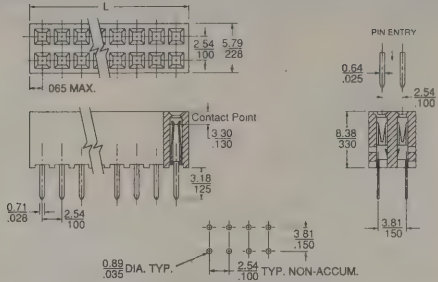
NOTES: 1. Consult factory for plating and product specifications.

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# Printed Circuit Board Interconnections

## Top Entry, Vertical - Dual Row - .100" x .150" PCB spacing 105 SERIES



### Part Number Description

|                     |            |    |          |                                                             |
|---------------------|------------|----|----------|-------------------------------------------------------------|
| Series              | 105        | XX | XX - XXX | Tail Length                                                 |
| Size                |            |    |          | .000 Standard Product                                       |
| No. of contacts/row | 02 thru 50 |    |          | .010 Retention Tail                                         |
|                     |            |    |          | Plating                                                     |
|                     |            |    |          | 02-tin                                                      |
|                     |            |    |          | 15-15µ selective gold                                       |
|                     |            |    |          | 30-30µ selective gold                                       |
|                     |            |    |          | Material Selection                                          |
|                     |            |    |          | Standard glass filled thermoplastic                         |
|                     |            |    |          | Insert "1" for polyphenylene sulfide, color, brown          |
|                     |            |    |          | Insert "2" for polyetherimide, color, blue                  |
|                     |            |    |          | Insert "3" for PET - polyethylene terephthalate, color, tan |

EXAMPLE: 1052002-010

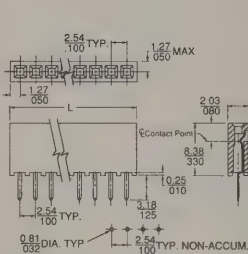
DESCRIPTION: A 105 series receptacle with 20 contacts in each row, tin plating with retention tails.

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

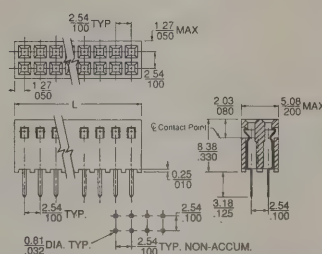
NOTES: 1. L = (No. of Positions - 1) X (.100) + .130  
2. Consult factory for plating and product specifications.

## .025" Square, Receptacles .100" center - Economy

### Top Entry, Vertical - Single Row 301 SERIES



### Top Entry, Vertical - Dual Row 302 SERIES



### Part Number Description

|                     |            |    |         |                       |
|---------------------|------------|----|---------|-----------------------|
| Series              | 302        | XX | XX - 01 | Tail Length           |
| Size                |            |    |         | .01 Standard Tail     |
| No. of contacts/row | 02 thru 52 |    |         | Plating               |
|                     |            |    |         | 02-tin                |
|                     |            |    |         | 05-5µ gold flash      |
|                     |            |    |         | 15-15µ selective gold |
|                     |            |    |         | 30-30µ selective gold |

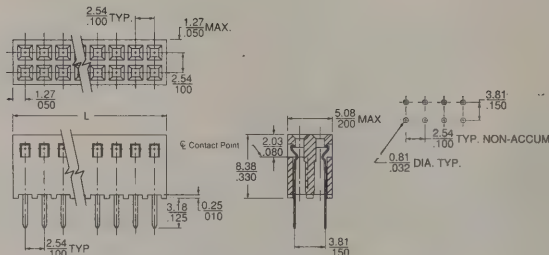
EXAMPLE: 3022015-01

DESCRIPTION: A 302 series receptacle with 20 contacts/row, 15µ selectively gold plated with tin plated tails.

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

NOTES: 1. L = (No. of Positions - 1) X (.100) + .100  
2. Consult factory for plating and product specifications.

### Top Entry, Vertical - Dual Row 303 SERIES



### Part Number Description

|                     |            |    |         |                       |
|---------------------|------------|----|---------|-----------------------|
| Series              | 303        | XX | XX - 01 | Tail Length           |
| Size                |            |    |         | .01 Standard Tail     |
| No. of contacts/row | 02 thru 50 |    |         | Plating               |
|                     |            |    |         | 02-tin                |
|                     |            |    |         | 05-5µ gold flash      |
|                     |            |    |         | 15-15µ selective gold |
|                     |            |    |         | 30-30µ selective gold |

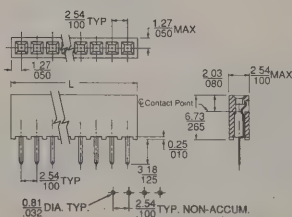
EXAMPLE: 3030815-01

DESCRIPTION: A 303 series receptacle with 8 contacts/row, 15µ selectively gold plated with tin plated tails.

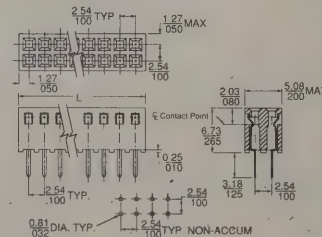
SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

NOTES: 1. L = (No. of Positions - 1) X (.100) + .100  
2. Consult factory for plating and product specifications.

### Top Entry, Vertical Low Profile - Single Row 304 SERIES



### Top Entry, Vertical Low Profile - Dual Row 305 SERIES



### Part Number Description

|                     |            |    |         |                       |
|---------------------|------------|----|---------|-----------------------|
| Series              | 305        | XX | XX - 01 | Tail Length           |
| Size                |            |    |         | .01 Standard Tail     |
| No. of contacts/row | 02 thru 52 |    |         | Plating               |
|                     |            |    |         | 02-tin                |
|                     |            |    |         | 05-5µ gold flash      |
|                     |            |    |         | 15-15µ selective gold |
|                     |            |    |         | 30-30µ selective gold |

EXAMPLE: 3051815-01

DESCRIPTION: A 305 series receptacle with 18 contacts/row, 15µ selectively gold plated with tin plated tails.

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

NOTES: 1. L = (No. of Positions - 1) X (.100) + .100  
2. Consult factory for plating and product specifications.

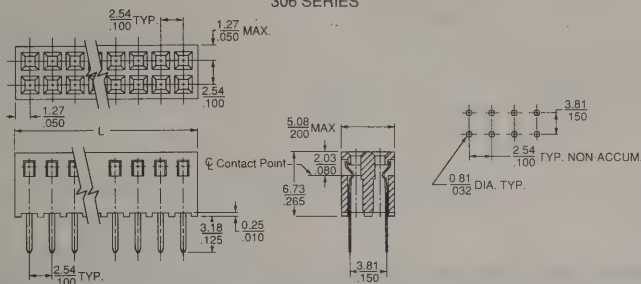
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**.025" Square, Receptacles .100" center - Economy**

## 306 SERIES



**Series** \_\_\_\_\_ **Tail Length**  
**Size** \_\_\_\_\_ 01 Standard  
 No. of contacts/row 02 thru 50 **Plating**

**Series** \_\_\_\_\_  
**Size** \_\_\_\_\_  
No. of contacts/row 02 thru 50

**Tail Length**  
01 Standard tail

**Plating**  
02-tin  
05-5 $\mu$ " gold flash  
15-15 $\mu$ " selective gold  
30-30 $\mu$ " selective gold

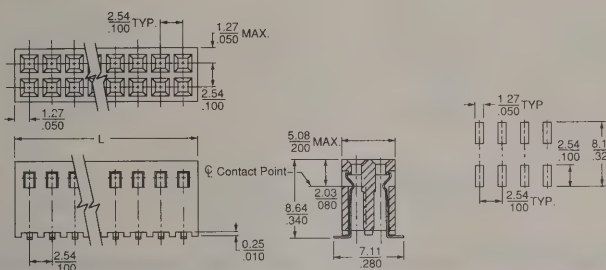
EXAMPLE: 3061515-01

**DESCRIPTION:** A 306 series receptacle with 15 contacts/row, 15µ" selectively gold plated with tin plated tails

**SPECIFICATIONS:** • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

**NOTES:** 1.  $L = (\text{No. of Positions} - 1) \times (.100) + .130$   
2. Consult factory for plating and product specifications.

## 307 SERIES



Series 307 XX XX - 01 Tail Length  
Size \_\_\_\_\_ 01 Standard Tail  
No. of contacts/row 02 thru 50 \_\_\_\_\_ Plating

Series                      307 XX XX - 01 Tail Length  
Size                      01 Standard Tail  
No. of contacts/row 02 thru 50 Plating  
02-tin  
05-5 $\mu$ " gold flash  
15-15 $\mu$ " selective gold  
30-30 $\mu$ " selective gold

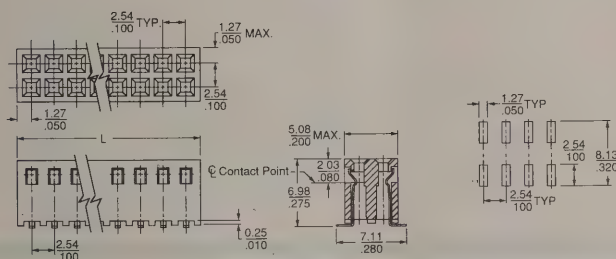
EXAMPLE: 3072015-01

**DESCRIPTION:** A 307 series receptacle with 20 contacts/row, 15u" selectively gold plated with tin plated tails

**SPECIFICATIONS:** • Housing Material: High temperature thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

**NOTES:** 1.  $L = (\text{No. of Positions} - 1) \times (.100) + .100$   
2. Consult factory for plating and product specifications.

## 308 SERIES



**Series** \_\_\_\_\_ **308** **XX** **XX - 01**

**Size** \_\_\_\_\_

No. of contacts/row 02 thru 50

**Tail Length**  
01 Standard Tail

**Plating**

**Series** \_\_\_\_\_ **308 XX XX - 01**

**Size** \_\_\_\_\_

No. of contacts/row 02 thru 50

**Tail Length**  
01 Standard Tail

**Plating**  
02-tin  
05-5µ" gold flash  
15-15µ" selective gold  
30-30µ" selective gold

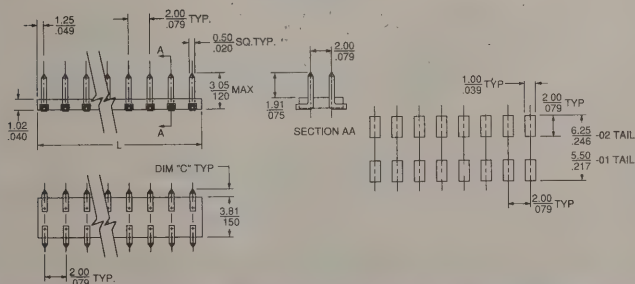
EXAMPLE: 3082015-01

**DESCRIPTION:** A 308 series receptacle with 20 contacts/row, 15u" selectively gold plated with tin plated tails

**SPECIFICATIONS:** • Housing Material: High temperature thermoplastic, UL flammability rating 94 V-O. Color, black  
• Contact Material: Phosphor bronze

**NOTES:** 1.  $L = (\text{No. of Positions} - 1) \times (.100) + .100$   
2. Consult factory for plating and product specifications.

## ULPSM SERIES



|                             |  |                           |
|-----------------------------|--|---------------------------|
| <b>ULPSM D 06 S XX - XX</b> |  | <b>Tail Configuration</b> |
| <b>Series</b>               |  | Dim. "C" - 01 0.38/015    |
| <b>No. of rows</b>          |  | - 02 0.76/030             |
| D = Dual                    |  |                           |
| <b>Size</b>                 |  | <b>Plating</b>            |
| No. of pins/row 02 thru 30  |  | 02-Tin/lead, all-over     |
|                             |  | 15-16/lead, all-over      |

EXAMPLE: UI PSMD06S02-01

**DESCRIPTION:** A ULPSM series dual row pin header with 6 pins in each row, 01 tail, tin plated all over.

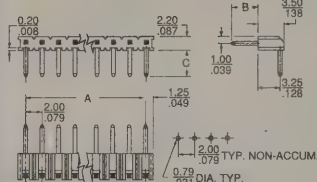
**SPECIFICATIONS:** • Housing Material: High temperature thermoplastic (4-6) nylon. flame retardant, UL flammability rating 94 V-O. Color, tan (natural)  
• Pin Material: Phosphor Bronze

**NOTES:** 1.  $L = (\text{No. of Postions} - 1) \times (.079) + .079$   
2. Consult factory for plating and product specifications.

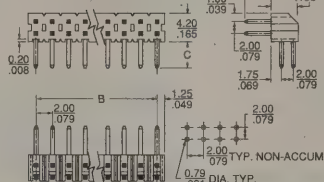
# Printed Circuit Board Interconnections

## 0.5mm Square, Pin Headers 2mm centers

### Single Row - Right Angle 2mm SERIES



### Dual Row - Right Angle 2mm SERIES



### Part Number Description

| Series                         | 2M              | S | XX | R | XX | - B - C |                                                                        |
|--------------------------------|-----------------|---|----|---|----|---------|------------------------------------------------------------------------|
| No. of Rows                    |                 |   |    |   |    |         | Tail Length (DIM C)<br>Specify in tenths of mm<br>3.0 Std. (30)        |
| S = Single Row<br>D = Dual Row |                 |   |    |   |    |         | Post (DIM C)<br>Specify in tenths of mm<br>3.7 & 4.0 mm Std. (37 & 40) |
| Size                           |                 |   |    |   |    |         | Plating<br>see below                                                   |
| No. of pins/row                |                 |   |    |   |    |         |                                                                        |
|                                | R = Right Angle |   |    |   |    |         |                                                                        |

EXAMPLE: 2MD15R30-37-30

DESCRIPTION: This is a 2 mm series dual row pin header with 15 pins in each row, right angle, 30µ" selectively gold plated, with a 3.7 mm post and a 3.0 mm tail.

### SPECIFICATIONS:

Housing Material: Glass filled thermoplastic. Flame retardant per UL 94 V-O. Color, black.

Contact Material: Drawn phosphor bronze wire 3/4 hard.

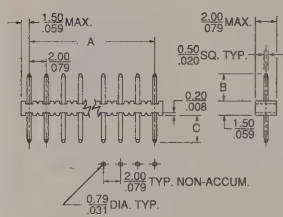
Contact Plating: All post-plated. All 1.27µm (50µ") minimum nickel underplate.

02: 3.81µm (150µ") 90/10 tin/lead all-over.

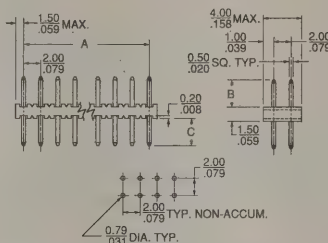
15: 0.38µm (15µ") gold contact area; 3.81µm (150µ") 90/10 tin/lead all-over.

30: 0.76 (30µ") gold contact area; 3.81µm (150µ") 90/10 tin/lead all-over.

### Single Row - Straight 2M SERIES



### Dual Row - Straight 2M SERIES



### Part Number Description

| Series                         | 2M           | S | XX | S | XX | - B - C |                                                                        |
|--------------------------------|--------------|---|----|---|----|---------|------------------------------------------------------------------------|
| No. of Rows                    |              |   |    |   |    |         | Tail Length (DIM C)<br>Specify in tenths of mm<br>3.0 Std. (30)        |
| S = Single Row<br>D = Dual Row |              |   |    |   |    |         | Post (DIM C)<br>Specify in tenths of mm<br>3.7 & 4.0 mm Std. (37 & 40) |
| Size                           |              |   |    |   |    |         | Plating<br>see below                                                   |
| No. of pins/row                |              |   |    |   |    |         |                                                                        |
|                                | S = Straight |   |    |   |    |         |                                                                        |

EXAMPLE: 2MD15S30-37-30

DESCRIPTION: This is a 2 mm series dual row pin header with 15 pins in each row, straight, 30µ" selectively gold plated, with a 3.7 mm post and a 3.0 mm tail.

### SPECIFICATIONS:

Housing Material: Glass filled thermoplastic. Flame retardant per UL 94 V-O. Color, black.

Contact Material: Drawn phosphor bronze wire 3/4 hard.

Contact Plating: All post-plated. All 1.27µm (50µ") minimum nickel underplate.

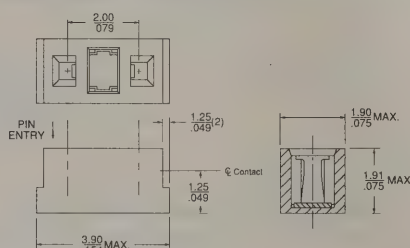
02: 3.81µm (150µ") 90/10 tin/lead all-over.

15: 0.38µm (15µ") gold contact area; 3.81µm (150µ") 90/10 tin/lead all-over.

30: 0.76 (30µ") gold contact area; 3.81µm (150µ") 90/10 tin/lead all-over.

### 2mm Shunt - Ultra-low Profile

2MS SERIES



### Part Number Description

| Series | 2MS | ULP | XX |                                             |
|--------|-----|-----|----|---------------------------------------------|
| Size   |     |     |    | Plating<br>02-tin<br>30-30µ" selective gold |

EXAMPLE: 2MS-ULP-30

DESCRIPTION: This is a 2 mm ultra low profile shunt, 30µ" gold plated.

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, LCP, UL

flameability rating 94 V-O. Color, black

• Contact Material: BeCu 0.10/.004 thk., fully hardened.

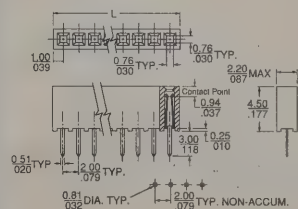
• Finish: 02: 3.81µm (150µ") 90/10 tin/lead over 1.27µm (50µ")

nickel all-over.

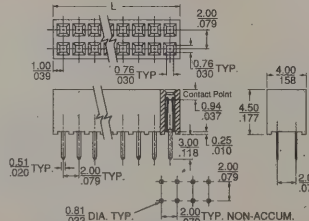
30: .76µm (30µ") gold over 1.27µm (50µ") nickel all-over.

## 0.5mm Square, Receptacles 2mm centers

### Top Entry, Vertical - Single Row 201 SERIES



### Top Entry, Vertical - Dual Row 202 SERIES



### Part Number Description

| Series              | 201 | XX | XX | - 01 |                                                                       |
|---------------------|-----|----|----|------|-----------------------------------------------------------------------|
| No. of contacts/row |     |    |    |      | 01 Solder Tail                                                        |
| Size                |     |    |    |      | Plating<br>02-tin<br>15-15µ" selective gold<br>30-30µ" selective gold |

EXAMPLE: 2012515-01

DESCRIPTION: A 201 series 2 mm single row straight receptacle with 25 contacts, 15µ" selectively gold plated with solder tails.

SPECIFICATIONS: • Housing Material: Glass filled thermoplastic, UL flameability rating 94 V-O. Color, black

• Contact Material: Phosphor bronze

NOTES: 1. L = (No. of Positions - 1) X (.079) + .079

2. Consult factory for plating and product specifications.

# SPECIALTY ELECTRONICS INCORPORATED

19200 Asheville Highway, Landrum, SC. 29356, TEL(803) 457-3824, FAX(803) 457-2535

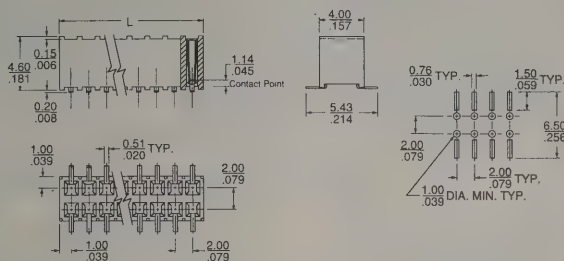


# Printed Circuit Board Interconnections

## 0.5mm Square, Receptacles 2mm centers

### Bottom Entry, SMT - Dual Row

203 SERIES



### Part Number Description

Series 203 XX XX-01 Tail Length  
 Size 01-SMT  
 No. of contacts/row 02 thru 50 Plating  
 02-tin  
 15-15µ" selective gold  
 30-30µ" selective gold

EXAMPLE: 2031515-01

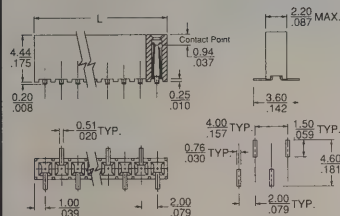
**DESCRIPTION:** A 203 series 2 mm dual row straight receptacle with 15 contacts/row, 15µ" selectively gold plated and tin plated SMT tails.

**SPECIFICATIONS:** • Housing Material: High temperature thermoplastic, UL flammability rating 94 V-O. Color, tan.  
 • Contact Material: Phosphor bronze

**NOTES:** 1. L = (No. of Positions - 1) X (.079) + .079  
 2. Contact factory for plating and product specification.

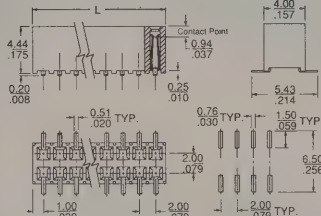
### Top Entry, SMT - Single Row

204 SERIES



### Top Entry, SMT - Dual Row

205 SERIES



### Part Number Description

Series 204 XX XX-01 Tail Length  
 Size 01-SMT  
 No. of contacts/row 02 thru 50 Plating  
 02-tin  
 15-15µ" selective gold  
 30-30µ" selective gold

EXAMPLE: 2042002-01

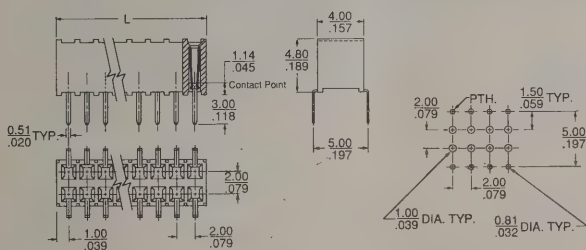
**DESCRIPTION:** A 204 series 2 mm single row straight receptacle with 20 contacts, tin plated SMT tails.

**SPECIFICATIONS:** • Housing Material: High temperature thermoplastic, UL flammability rating 94 V-O. Color, tan.  
 • Contact Material: Phosphor bronze

**NOTES:** 1. L = (No. of Positions - 1) X (.079) + .079  
 2. Contact factory for plating and product specification.

### Bottom Entry, Vertical - Dual Row

206 SERIES



### Part Number Description

Series 206 XX XX-01 Tail Length  
 Size 01 solder tail  
 No. of contacts/row 02 thru 50 Plating  
 02-tin  
 15-15µ" selective gold  
 30-30µ" selective gold

EXAMPLE: 2062530-01

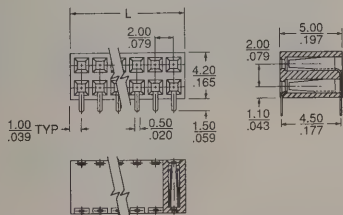
**DESCRIPTION:** A 206 series 2 mm dual row straight receptacle with 25 contacts/row, 30µ" selectively gold plated with solder tails.

**SPECIFICATIONS:** • Housing Material: Glass filled thermoplastic, UL flammability rating 94 V-O. Color, black  
 • Contact Material: Phosphor bronze

**NOTES:** 1. L = (No. of Positions - 1) X (.079) + .079  
 2. Contact factory for plating and product specification.

### Horizontal Receptacle

207 SERIES



**NOTE:** 2mm ultra low profile pin headers & receptacles available - contact factory TEL: (803) 457-3824

### Part Number Description

Series 207 25 30-MDI Tail Configuration  
 Size 02-tin  
 No. of contacts/row 02 thru 50 Plating  
 02-tin  
 15-15µ" selective gold  
 30-30µ" selective gold

EXAMPLE: 2072530-MDI

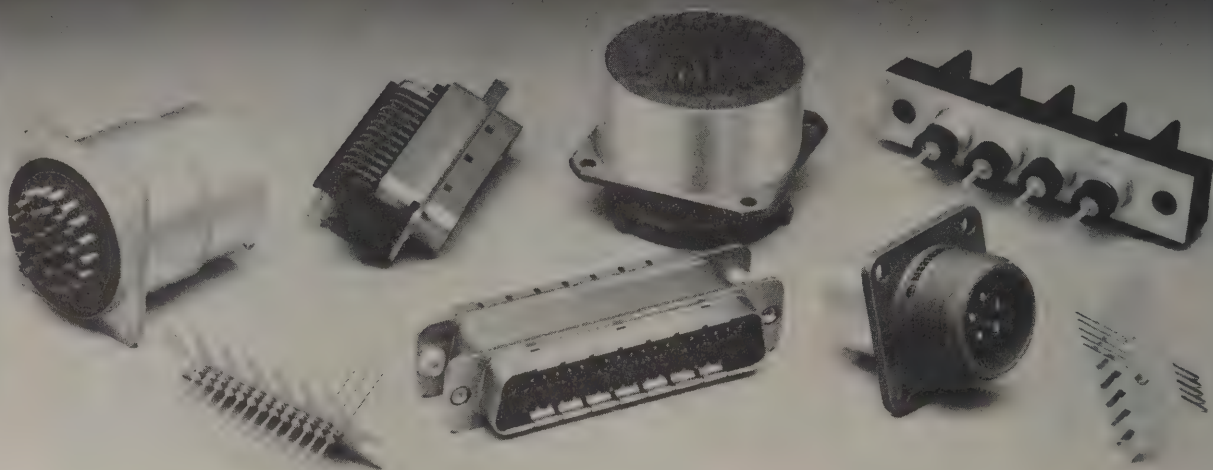
**DESCRIPTION:** A 207 series 2 mm dual row horizontal receptacle with 25 contacts/row, 30µ" selectively gold plated with solder tails for flexible circuit applications.

**SPECIFICATIONS:** • Housing Material: Glass filled polyester, UL flammability rating 94 V-O. Color, black  
 • Contact Material: 0.20 thick PH BR 521 X-hard, nickel all-over, 0.76µm min. gold selective in contact area, 3.8µm min. 60/40 tin/lead selective on tails.

# SPECIALTY ELECTRONICS INCORPORATED

19200 Asheville Highway, Landrum, SC. 29356, TEL(803) 457-3824, FAX(803) 457-2535

# Great Connections to Global EMC Compliance



## Solve your EMI problems with the industry's most complete line of filtered interconnect products

### EMI Filtering Expertise

Satisfying your requirements for EMC and physical packaging can be a challenging process. We can help. Our foundation as a producer of capacitors, EMI filters and filtered connectors gives us the design expertise and manufacturing flexibility to develop the most effective and space efficient solution to your EMI problem.

We offer a broad range of EMI filtered connectors including economical, capacitive types, high performance Pi filter connectors, and high reliability connectors for commercial and military applications.

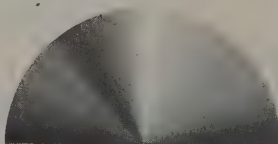
### Our Complete Filtered Interconnect Line

- D-subminiature connectors
- Hi-density D-subminiature connectors
- High reliability circular connectors
- MIL spec connectors
- Terminal blocks
- Filter plates

### Custom Connector Solutions

Despite the breadth of our EMI/RFI filter and connector product line, certain applications demand custom EMC solutions. Our engineering staff will work with your production team to design an EMI/RFI connector which meets your individual requirements for filtering and packaging. And we ensure a timely and dependable delivery schedule.

*For more information on our EMI filter products, see our catalog under Filters, RF & Signal.*



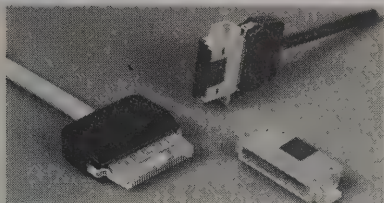
**SPECTRUM CONTROL INC.**

6000 West Ridge Road, Erie, PA 16506 ■ Phone: 814-835-4000 ■ Fax: 814-835-9000



# MODULAR INTERCONNECT SYSTEMS

Products are designed and manufactured to FCC specifications.



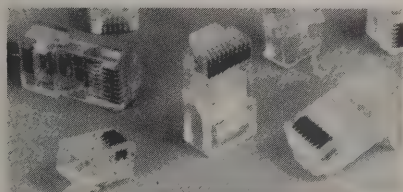
## COMPU-SHIELD PLUGS & JACKS

- Totally field installable.
- Shielded for EMI/RFI/ESD.
- Shielding enclosed by plastic.
- Contact selectively plated.
- Keying available.
- Completely modular.



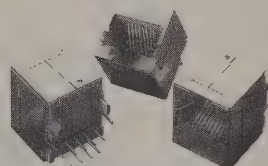
## CABLE ASSEMBLIES

- Custom cable assemblies any length.
- Connectors on one or both ends.
- Stranded, solid or shielded cable.
- Manufactured to your specifications.
- All cable individually tested.
- Small and large volume assemblies.



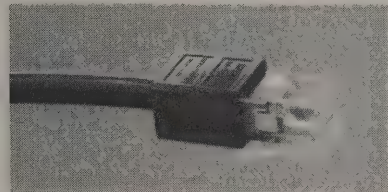
## MODULAR PLUG

- One-piece construction with preloaded contacts.
- Selectively gold plated contacts.
- Various positions and styles available.
- Semi-automatic and automatic termination capabilities.



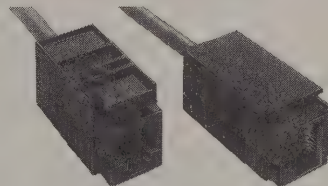
## SHIELDED JACKS

- Meets 1,000 volt dielectric requirement.
- Fully enclosed, individually guided contacts.
- Designed for direct mounting on PC boards.
- Shielded for RFI/EMI and ESD applications.
- Available, flangeless (with panel stop), and no flange.



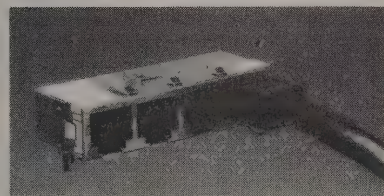
## SHIELDED MODULAR - 6 & 8 PLUGS

- Shielded for EMI/RFI & ESD.
- Completely modular.
- Low profile design.
- Keying available.
- Field installable plug.



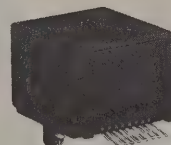
## CABLE READY JACK

- Available in 8 & 10 contact configurations.
- Quick "Load & Care" wire management.
- Narrow profile.
- For shielded versions contact factory.



## HARMONICAS

- Shielded available thru 8 ports.
- Unshielded available thru 13 ports.
- All contact leads are fully enclosed.
- Locating tabs allow for snapping into PCB.
- Housing can be shielded for EMI and RFI.
- Available in RJ-11 configurations.



## SMT JACKS WITH 'SOF-LOK' ATTACHMENT

- Coplanarity assured with "POGO" action contacts.
- "Sof-Lok" board attach for low impact mount.
- Keying available.
- Available in RJ45 styles. (consult factory for additional styles)
- Available as .040" centered footprint.



## STEWART CONNECTOR SYSTEMS

R.D. 2 BOX 2020, OLD TRAIL, GLEN ROCK, PA 17327

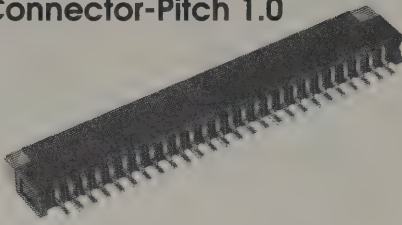
TEL. (717) 235-7512 • FAX (717) 235-7954



# STOCKO CONNECTORS

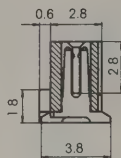
Your Source for Innovative Connector Technology. Call 1-800-STOCKO-3.

## FFC/FPC Connector-Pitch 1.0

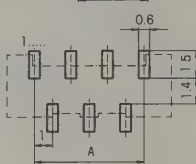
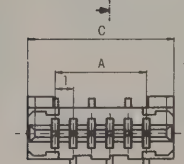
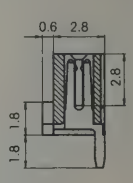
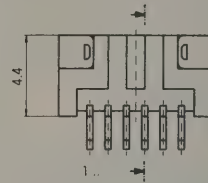
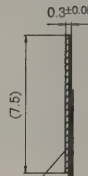
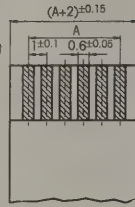


Flexible circuits with .3mm (.012") cable thickness in conjunction with Stocko 1.0 mm low insertion force (LIF) connectors are the answer to most applications where space is extremely limited. The SMT connector is designed for IR-reflow temperatures and uses a fork-type contact in tin plated phosphor bronze.

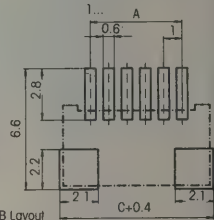
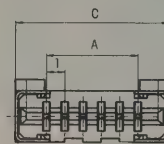
## 1,0 mm SMT



FFC/FPC Layout



PCB Layout



PCB Layout

## SMT Part Numbers

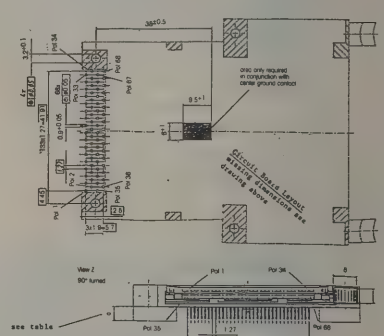
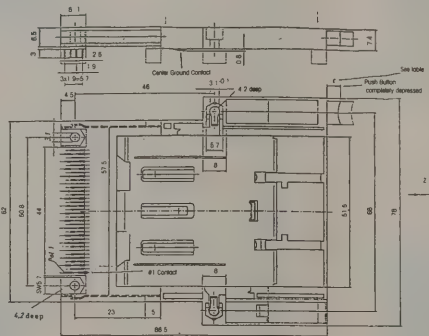
| Pos. | Straight            | Right Angle         | Pos. | Straight            | Right Angle         |
|------|---------------------|---------------------|------|---------------------|---------------------|
| 3    | MSX 10503-6-50-303  | MSX 10543-6-50-303  | 12   | MSX 10512-6-50-1212 | MSX 10552-6-50-1212 |
| 4    | MSX 10504-6-50-404  | MSX 10544-6-50-404  | 13   | MSX 10513-6-50-1313 | MSX 10553-6-50-1313 |
| 5    | MSX 10505-6-50-505  | MSX 10545-6-50-505  | 14   | MSX 10514-6-50-1414 | MSX 10554-6-50-1414 |
| 6    | MSX 10506-6-50-606  | MSX 10546-6-50-606  | 15   | MSX 10515-6-50-1515 | MSX 10555-6-50-1515 |
| 7    | MSX 10507-6-50-707  | MSX 10547-6-50-707  | 16   | MSX 10516-6-50-1616 | MSX 10556-6-50-1616 |
| 8    | MSX 10508-6-50-808  | MSX 10548-6-50-808  | 17   | MSX 10517-6-50-1717 | MSX 10557-6-50-1717 |
| 9    | MSX 10509-6-50-909  | MSX 10549-6-50-909  | 18   | MSX 10518-6-50-1818 | MSX 10558-6-50-1818 |
| 10   | MSX 10510-6-50-1010 | MSX 10550-6-50-1010 | 19   | MSX 10519-6-50-1919 | MSX 10559-6-50-1919 |
| 11   | MSX 10511-6-50-1111 | MSX 10551-6-50-1111 | 20   | MSX 10520-6-50-2020 | MSX 10560-6-50-2020 |

| Pos. | C (mm) | Pos. | C (mm) |
|------|--------|------|--------|
| 3    | 5.00   | 12   | 14.00  |
| 4    | 6.00   | 13   | 15.00  |
| 5    | 7.00   | 14   | 16.00  |
| 6    | 8.00   | 15   | 17.00  |
| 7    | 9.00   | 16   | 18.00  |
| 8    | 10.00  | 17   | 19.00  |
| 9    | 11.00  | 18   | 20.00  |
| 10   | 12.00  | 19   | 21.00  |
| 11   | 13.00  | 20   | 22.00  |

## 68-Pin Uni-Memory Card Connector/a Universal PCMCIA Connector

For all PCMCIA/JEIDA Applications, accepts:

Type I, II, III, IV cards; LAN, MODEM, I/O, including 1.8" and 1.3" HDA's



The Stocko Universal connector accepts all PCMCIA products. Cards: [I, II, III] Disk Drives, Modems, LANs, I/O's, Extended cards, etc. The proven design features: LH or RH ejector, flat or raised versions, ground-in (ESD), longer eject-buttons.

### Materials:

Connector Housing: LCP

Contacts: • Phosphor Bronze • 4μ" Gold over PdNi

Ejector Housing: PBT

Push Button: PBT

|          | STOCKO P/N          | OFF SET<br>a/mm | c/mm | Center<br>Ground<br>Contact |          | STOCKO P/N          | OFF SET<br>a/mm | c/mm | Center<br>Ground<br>Contact |
|----------|---------------------|-----------------|------|-----------------------------|----------|---------------------|-----------------|------|-----------------------------|
| LH-Eject | MVF 5068-6-024-8868 | 0               | 7.5  | YES                         | LH-Eject | MVF 5068-6-023-8868 | 0               | 7.5  | NO                          |
| LH-Eject | MVF 5070-6-024-8868 | 2               | 7.5  | YES                         | LH-Eject | MVF 5070-6-023-8868 | 2               | 7.5  | NO                          |
| LH-Eject | MVF 5069-6-024-8868 | 5               | 7.5  | YES                         | LH-Eject | MVF 5069-6-023-8868 | 5               | 7.5  | NO                          |
| LH-Eject | MVF 5068-6-022-8868 | 0               | 0.0  | YES                         | LH-Eject | MVF 5068-6-021-8868 | 0               | 0.0  | NO                          |
| LH-Eject | MVF 5070-6-022-8868 | 2               | 0.0  | YES                         | LH-Eject | MVF 5070-6-021-8868 | 2               | 0.0  | NO                          |
| LH-Eject | MVF 5069-6-022-8868 | 5               | 0.0  | YES                         | LH-Eject | MVF 5069-6-021-8868 | 5               | 0.0  | NO                          |
| RH-Eject | MVF 5068-6-004-8868 | 0               | 7.5  | YES                         | RH-Eject | MVF 5068-6-003-8868 | 0               | 7.5  | NO                          |
| RH-Eject | MVF 5070-6-004-8868 | 2               | 7.5  | YES                         | RH-Eject | MVF 5070-6-003-8868 | 2               | 7.5  | NO                          |
| RH-Eject | MVF 5069-6-004-8868 | 5               | 7.5  | YES                         | RH-Eject | MVF 5069-6-003-8868 | 5               | 7.5  | NO                          |
| RH-Eject | MVF 5068-6-002-8868 | 0               | 0.0  | YES                         | RH-Eject | MVF 5068-6-001-8868 | 0               | 0.0  | NO                          |
| RH-Eject | MVF 5070-6-002-8868 | 2               | 0.0  | YES                         | RH-Eject | MVF 5070-6-001-8868 | 2               | 0.0  | NO                          |
| RH-Eject | MVF 5069-6-002-8868 | 5               | 0.0  | YES                         | RH-Eject | MVF 5069-6-001-8868 | 5               | 0.0  | NO                          |



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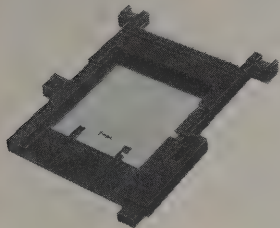


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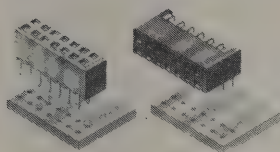


## Memory Card Connector



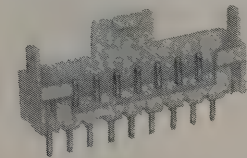
68-Pin connector with and without ejector, per PCMCIA 2.0 and JEIDA 4.0; 10,000 mating cycles, DIP and SMT; for type I, II and type III cards; 32 with and without ejector; for Mitsubishi BEE and MEL cards; Call for Custom adaptations.

## 2x2mm Board-Board System



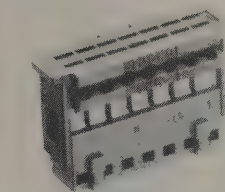
Headers and receptacles; straight and right-angle; gold-plated; closest board spacing less than 5mm; 4-50 positions.

## 2mm (.079") IDC & Crimp System



IDC-AWG 28-24; crimp-AWG 32-24; 2-15 positions; shrouded lock-headers; UL recognized.

## .100" IDC System



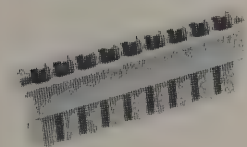
1-step termination; 5 Amps per line; AWG26-22; built-in strain relief, discrete and ribbon cable; cable notching not required; 3,4,5,6,7,8,9,10,12,14, 16,20 positions, shrouded lock headers for error-free insertion; UL approved.

## .100" Double Row System



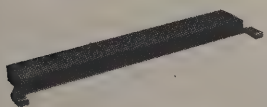
For standard 50 mil ribbon cable; gold-plated; 10,14,16,26, 34,40,50 positions; shrouded headers with and without lock latch; straight and right angle.

## 2.5mm Crimp System (Series 19000)



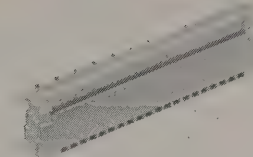
Low profile mini crimp connector; shrouded lock headers; round pins; in-line solder tails, kinked; AWG 28/22; max insulation diam. .075"; 2-20 position.

## Horizontal PCB Extension Connector



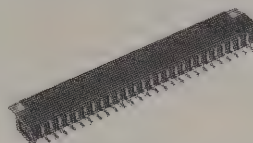
For laptop applications, 68 (XT) and 98 (AT) positions; solderless connector is secured in place with two rivets or screws (etc.).

## ZIF Connector for FFC / FPC, 1.25mm



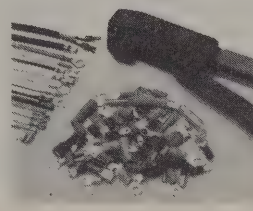
Straight and right angle; for cable thickness .1mm (.004") and .3mm; (.012") 3-35 positions.

## LIF Connector FFC/FPC 1.00mm



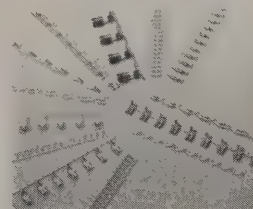
Straight and right angle, for .3mm (.012") cable thickness, SMT, 3-20 positions. For details, see opposite page.

## Solderless Terminals



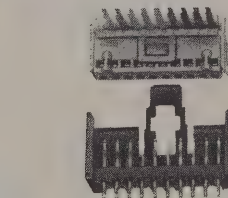
Ring/Spade terminals; brazed; insulated or non-insulated; pin terminals; butt/end splices; wire sleeves; .250/.187 quick disconnects; insulation sleeves/housings; application tooling.

## Chain / Strip Terminals



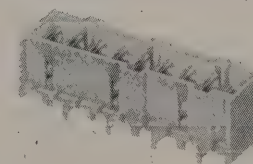
.250 / .187 / .110 crimp terminals and tabs; spades and lugs; splices; specialty items; tooling; AMP compatible applicators; UL approved.

## 2.5mm IDC & Crimp System



1-step termination; 5 Amps per line; AWG26-22; built-in strain relief; discrete and ribbon cable; cable notching not required; 2 through 20 positions, shrouded lock headers for error-free insertion.

## 5mm (.197") IDC Power Connector System



2-12 positions; additional pos. without loss of pitch, wide variety of codings and lock lings, European RAST 5 compliant; 1/4" tab connectors for shrouded headers and card edge type direct connectors; UL, CSA, VDE.

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### PART NUMBER CODING

#### MATERIALS (Insulator/Contact)

E = Valox/Phosphor Bronze  
 H = Valox/Beryllium Copper  
 R = Ryton/Phosphor Bronze  
 A = Ryton/Beryllium Copper  
 F = Ryton/Pfinodal\*\*  
 C = Ryton/Beryllium Nickel  
 Y = Xydar/Beryllium Copper  
 Z = Xydar/Pfinodal\*\*  
 X = Xydar/Beryllium Nickel

#### CONTACT FINISH

**Contact Surface**  
 Z = .000010 Gold  
 X = .000030 Gold  
 G = .000010 Gold  
 Y = .000030 Gold  
**Termination**  
 .000100 Tin  
 .000100 Tin  
 .000005 Gold  
 .000005 Gold

**Contact Surface**  
 S = .000010 Gold  
 M = .000030 Gold  
**Overall Plating**  
 .000010 Gold  
 .000010 Gold

#### CONTACT CENTERS

B = .050  
 C = .100  
 A = .125  
 J = .150  
 M = .156

**F X M 22 D RK S-S13**

#### MODIFICATIONS (Consult Factory)

Omit For Standard  
 S13 = Card Extender Formed to Fit .062" PCB

#### MOUNTING STYLE (See Opposite Page)

H = Clearance Hole  
 N = No Mounting Ears  
 S = Side Mounting  
 I = Threaded Insert  
 W = Flush Mounting  
 D = Flush Mounting  
 X = Flush Mounting with Threaded Insert  
 T = Flush Mounting with Threaded Insert

#### TERMINATION TYPE (See Table opposite)

RE, TE, SE = Eyelet  
 CM, RM = Wire Wrap  
 SX, SU, RT, RK, RY, RX, RU, RP,  
 CH, CS, CK, CT, CW, RJ, RS, TK = Dip Solder  
 CA, CB, CC, RA, SA, TA, TB, TM = Right Angle  
 CF = Surface Mount  
 CR = Card Extender

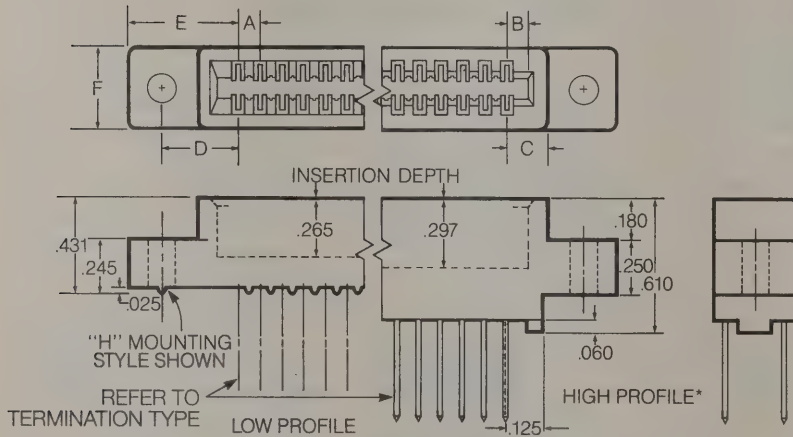
#### READOUT

D = Dual

#### NUMBER OF POSITIONS (See Table Below)

02 thru 110 Contact Pairs  
 (02 = 4 Contacts, 110 = 220 Contacts)

\*\*High tin solder cannot be used with Pfinodal contacts in applications greater than 150°C. Contact factory for recommendations.



#### CONTACT IDENTIFICATION

Type 2 shown



| CONTACT CENTERS | PROFILE | NUMBER OF POSITIONS (PAIRS) AVAILABLE                                      | A    | B    | C    | D    | E    | F    | CONTACT ID TYPE |
|-----------------|---------|----------------------------------------------------------------------------|------|------|------|------|------|------|-----------------|
| .050            | High    | 05 06 09 10 14 15 20 22 25 30 34 35 40 45                                  | .050 | .050 | .145 | .288 | .445 | .370 | N/A             |
|                 |         | 50 55 60 64 65 66 70 75 80 85 90 95 100 105 110                            | .050 | .050 | .145 | .288 | .445 | .370 | N/A             |
| .100            | Low     | 05 06 08 10 12 13 15 18 19 20 22 25 26 28 30 31<br>35 36 40 43 44 50 60    | .100 | .100 | .188 | .338 | .488 | .330 | 1               |
|                 | High    | 06 08 10 12 15 17 18 20 22 25 28 30 31 35 36 40<br>43 44 49 50 60 61 65 70 | .100 | .100 | .180 | .338 | .468 | .370 | 5               |
| .125            | Low     | 06 10 14 15 18 22 28 30 31 37<br>35 36<br>40 43 44 49 50                   | .125 | .125 | .205 | .335 | .475 | .330 | 2               |
|                 | High    | 06 10 15 18 22 28 30 31 32 35 36 40 43 44<br>49 50                         | .125 | .125 | .205 | .335 | .465 | .370 | 5               |
| .156            | Low     | 06 08 10 11 12 15 18 22 24 25<br>28<br>36<br>43                            | .156 | .160 | .220 | .376 | .548 | .325 | 3               |
|                 | High    | 02 03 06 08 10 12 15 18 22 24 25 30<br>28 31<br>36 40 43                   | .156 | .160 | .221 | .377 | .502 | .370 | 6               |

.156 contact centers, low profile, E dimension is shown as maximum rather than nominal.

| CONTACT ID TYPE | INSULATOR MARKINGS<br>LETTERS G, I O & Q NOT USED |   |     |     |    |     |     |    |     |     |   |  |
|-----------------|---------------------------------------------------|---|-----|-----|----|-----|-----|----|-----|-----|---|--|
| 1               | B                                                 | 1 | 2   | ... | 23 | 24  | ... | 45 | 46  | ... | B |  |
| 2               | A                                                 | 1 | 2   | ... | 23 | 24  | ... | 45 | 46  | ... | A |  |
| 3               | 1                                                 | 2 | ... | 23  | 24 | ... | 45  | 46 | ... |     |   |  |
| 4               | A                                                 | B | ... | a   | b  | ... | AA  | BB | ... |     |   |  |
| 5               | 1                                                 | 2 | ... | 23  | 24 | ... | 45  | 46 | ... |     |   |  |
| 6               | A                                                 | B | ... | a   | b  | ... | AA  | BB | ... |     |   |  |
| 7               | 1                                                 | 2 | ... | 23  | 24 | ... | 45  | 46 | ... |     |   |  |
| 8               | A                                                 | B | ... | a   | b  | ... | AA  | BB | ... |     |   |  |



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# Low and High Profile EDGE CARD CONNECTORS

## TERMINATION TYPE

| APPLICATION                                                                      | BEND                                                                              | PROFILE/BELLOWS                                                                   |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  |  |  |
| EYELET                                                                           | STRAIGHT                                                                          | FULL BELLOWS                                                                      |
|  |  |  |
| WIRE WRAP                                                                        | STAGGERED                                                                         | LOW PROFILE                                                                       |
|  |  |  |
| DIP SOLDER                                                                       | GULL WING                                                                         | HAIRPIN BELLOWS                                                                   |
|  |  |  |
| SURFACE MOUNT                                                                    | CENTERED                                                                          | LOOP BELLOWS                                                                      |
|  |  |  |
| CARD EXTENDER                                                                    | RIGHT ANGLE                                                                       | HIGH PROFILE                                                                      |

## FEATURES

- .050, .100, .125, .150 & .156 Contact centers
- High and Low Profile Insulators
- Wire Wrap, Solder Tail, SMT and Solder
- Eyelet Terminations
- Test and Burn-in contacts and materials
- Many mounting styles
- Over 600, 000 styles of connectors available
- Hundreds of modifications available

## MATERIALS

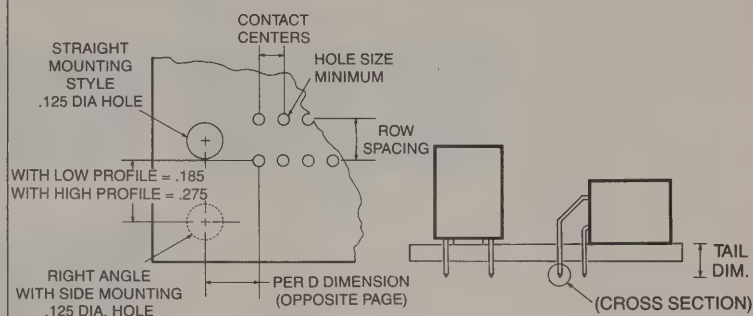
Insulator Material:

- VALOX – 65°C to +135°C (Glass-filled thermoplastic polyester)
- RYTON – 65°C to +220°C (Glass-filled polyphenylene sulfide)
- XYDAR – 65°C to +310°C (Liquid crystal polymer)

Contact Material:

- Phosphor bronze – 65°C to +125°C
- Beryllium copper – 65°C to +150°C
- Spinodal (Plinodal) – 65°C to +200°C
- Beryllium nickel – 65°C to +300°C

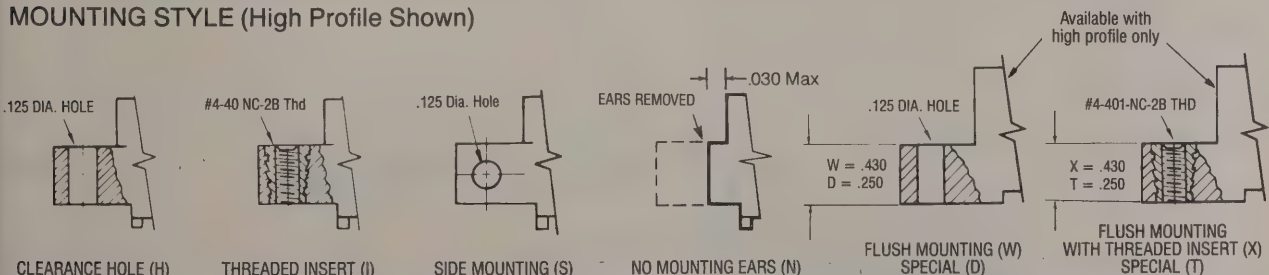
## PC BOARD LAYOUT



|            |               | .050 CONTACT CENTERS |         |         |             | .100 CONTACT CENTERS |               |           |             | .125 CONTACT CENTERS |               |           |             | .156 CONTACT CENTERS |               |           |             |
|------------|---------------|----------------------|---------|---------|-------------|----------------------|---------------|-----------|-------------|----------------------|---------------|-----------|-------------|----------------------|---------------|-----------|-------------|
| TERM. TYPE | APPLICATION   | BEND                 | PROFILE | BELLOWS | ROW SPACING | TAIL DIM.            | CROSS SECTION | HOLE SIZE | ROW SPACING | TAIL DIM.            | CROSS SECTION | HOLE SIZE | ROW SPACING | TAIL DIM.            | CROSS SECTION | HOLE SIZE | ROW SPACING |
| RE         | Eyelet        | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | .140        | .225                 | .007 x .060   | N/A       | .140        | .225                 | .007 x .060   | N/A       | .140        |
| TE         | Eyelet        | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | .140        | .275                 | .016 x .060   | N/A       | .140        | .275                 | .016 x .060   | N/A       | .140        |
| SE         | Eyelet        | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         |
| RM         | Wire Wrap     | Straight             | High    | Loop    | N/A         | N/A                  | N/A           | N/A       | .200        | .560                 | .025 Sq.      | .040      | .250        | .560                 | .025 Sq.      | .040      | .200        |
| CM         | Wire Wrap     | Straight             | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .200        | .560                 | .025 Sq.      | .040      | .250        | .560                 | .025 Sq.      | .040      | .200        |
| RT         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | .140        | .200                 | "V"           | .043      | .140        | .200                 | "V"           | .043      | .140        |
| RK         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | .225        |
| RY         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | .140        | .440                 | "V"           | .043      | .140        | .440                 | "V"           | .043      | .140        |
| RX         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | .200        | .185                 | .007 x .031   | .043      | .200        | .185                 | .007 x .031   | .043      | .200        |
| RU         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | .200        |
| RP         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | .408        |
| RJ         | Dip Solder    | Straight             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | .250        | .165                 | .007 x .031   | .043      | N/A         |
| RS         | Dip Solder    | Straight             | High    | Loop    | N/A         | N/A                  | N/A           | N/A       | .200        | .190                 | .025 Sq.      | .040      | .250        | .190                 | .025 Sq.      | .040      | .200        |
| TK         | Dip Solder    | Straight             | High    | Loop    | N/A         | N/A                  | N/A           | N/A       | .200        | .190                 | .026 Rd.      | .033      | .250        | .190                 | .026 Rd.      | .033      | .200        |
| CS         | Dip Solder    | Straight             | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .200        | .170                 | .025 Sq.      | .040      | .250        | .170                 | .025 Sq.      | .040      | .260        |
| CK         | Dip Solder    | Straight             | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .200        | .190                 | .026 Sq.      | .033      | .250        | .190                 | .026 Sq.      | .033      | .260        |
| CT         | Dip Solder    | Straight             | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .200        | .170                 | .015x.025     | .030      | .250        | .170                 | .015x.025     | .030      | .200        |
| CW         | Dip Solder    | Straight             | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .200        | .125                 | .015x.025     | .030      | .250        | .125                 | .015x.025     | .030      | .200        |
| CH         | Dip Solder    | Staggered            | High    | Hairpin | .100        | .125                 | .012x.018     | .040      | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         |
| SX         | Dip Solder    | Centered             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | Single      | .165                 | .016 x .031   | .043      | Single      | .165                 | .016 x .031   | .043      | Single      |
| SU         | Dip Solder    | Centered             | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | .110        |
| RA         | Dip Solder    | Right Angle          | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | .156        | .125                 | "V"           | .043      | .156        | .125                 | "V"           | .043      | .156        |
| SA         | Dip Solder    | Right Angle          | Low     | Full    | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | N/A         | N/A                  | N/A           | N/A       | .156        |
| TA         | Dip Solder    | Right Angle          | High    | Loop    | N/A         | N/A                  | N/A           | N/A       | .150        | .100                 | .025 Sq.      | .043      | .150        | .100                 | .025 Sq.      | .043      | .150        |
| TB         | Dip Solder    | Right Angle          | High    | Loop    | N/A         | N/A                  | N/A           | N/A       | .150        | .180                 | .025 Sq.      | .043      | .150        | .180                 | .025 Sq.      | .043      | .150        |
| TM         | Dip Solder    | Right Angle          | High    | Loop    | N/A         | N/A                  | N/A           | N/A       | .150        | .250                 | .025 Sq.      | .043      | .150        | .250                 | .025 Sq.      | .043      | .150        |
| CA         | Dip Solder    | Right Angle          | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .150        | .100                 | .025 Sq.      | .043      | .150        | .100                 | .025 Sq.      | .043      | .150        |
| CB         | Dip Solder    | Right Angle          | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .150        | .180                 | .025 Sq.      | .043      | .150        | .180                 | .025 Sq.      | .043      | .150        |
| CC         | Dip Solder    | Right Angle          | High    | Hairpin | N/A         | N/A                  | N/A           | N/A       | .150        | .250                 | .025 Sq.      | .043      | .150        | .250                 | .025 Sq.      | .043      | .150        |
| CR         | Card Extender | Card Extender        | High    | Hairpin | .062        | .100                 | .012x.018     | N/A       | .062        | .225                 | .025 Sq.      | N/A       | .062        | .205                 | .025 Sq.      | N/A       | .062        |
| CF         | Surface Mount | Gull Wing            | High    | Hairpin | N/A         | .100                 | .012x.018     | N/A       | N/A         | N/A                  | .070          | .015x.025 | N/A         | N/A                  | N/A           | N/A       | .070        |

\*02 Thru 25 Positions = .270; 28 Thru 36 Positions = .230; 43 Positions = .190

## MOUNTING STYLE (High Profile Shown)



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- Miniature size types rated 15 A, 1000 V working

The original five-way binding posts — the first choice of electrical and electronic equipment manufacturers — are now available with more selections than ever before. All are designed to prevent accidental contact with current-carrying parts. Captive thumbnuts have a positive stop that allows enough space to make connections yet reduces the likelihood of accidental contact with electrically "hot" surfaces.

Plastic parts are molded of either Lexan® polycarbonate resin or nylon plastic per MIL-P-20693A, Type IV for excellent resistance to corrosive atmospheres, heat, oil or grease, abrasion and impact, chipping and cracking. Color selections are red, white, blue, yellow, black and green to assure ready circuit and polarity identification and more attractive panels.

Most types are available with either gold, nickel or tin plated brass current-carrying parts for improved conductivity and corrosion resistance. All metal parts are recessed for user and instrument protection and none touch the metal panel. Panel collars have

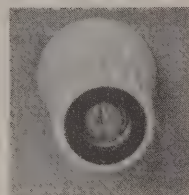
"D" type shoulders for locking in keyed panel holes if desired. Types with larger No. 10-32 studs are also available.

**Double Assembly Binding Posts** — Available in a wide choice of red and/or black thumbnut color combinations in Custom Color Ring, Standard, Miniature and Larger Stud Types. They provide faster, more accurate 3/4-inch (19 mm) center mounting on panels. Plastic insulating parts and metal current-carrying parts have the same specifications and features of single assembly types. All current-carrying parts are of gold plated finely machined brass. Thumbnut color combinations are red/black, black/black and red/red.

**Militarized Binding Posts** — Military specification types meet Military Specification MIL-P-55149/1B, a specification approved for use by all Departments and Agencies of the U.S. Department of Defense. They are available in standard size hexagonal nut and miniature size fluted nut types. Both styles are available with either black or red nylon plastic insulating parts. Current-carrying parts are gold plated brass per QQ-B-626. Operating temperatures are -40° to 225°F and dielectric strength is 3000 V.

## Custom Color Ring Binding Posts

Cataloged Custom Color Ring Series types have neutral gray plastic insulating parts with thumbnut rings in red, white, blue, yellow, black or green colors for panels with superb visual appearance. The gray plastic parts coordinate and harmonize with most modern equipment finish colors. Contingent on minimum quantity requirements, the colors of insulating parts can be customized to meet the specific needs of any application. Miniature fluted nut types are rated for 15 A, 1000 V working; standard and larger stud hex and fluted nut types for 30 A, 1000 V working.



## SUPERCON® Electrical Connectors



Socket and pin type single-conductor plugs and receptacles with nylon plastic parts and gold plated brass current-carrying parts. Wiring connections can be soldered or solderless with plug fastening screws that accept a wide range of cable sizes. Simple, 2-piece threaded plug construction in distinctive, functionally designed grip. Available in 25, 50, 100 and 250 A ratings. The 25, 50 and 100 A types are rated 125-250 VAC or DC current interrupting, 600 V unenergized connect or disconnect use only; 250 A types are rated 600 V unenergized connect or disconnect use only.

## 5-WAY® Test Probes



For test connections to PC boards and other components. Designed for fast, secure hook-on connections and will grip a component lead or IC package pin with 16 ounces of clamping force. For touch contact, the probe tip can be locked in the extended position. The large end of the probe has a banana plug receptacle for test lead connection. Current-carrying parts are beryllium copper and the plastic body is durable nylon available in either red or black. The compression spring is stainless steel for long life and resistance to corrosion.

Call 1-800-446-6161 today for immediate attention.

\*Lexan is a General Electric trademark.

# Superior Electric

383 Middle Street  
Bristol, Connecticut 06010 USA



TEL:203/582-9561 TELEX:96-2446 TWX:710-454-0682 CABLE:SUPELEC FAX:203/589-2136

# Switchcraft

A Raytheon Company

## AUDIO CONNECTORS

### Q-G® AUDIO CONNECTORS

"Quick-Ground" (Q-G) connectors have dual-point shell grounding. All-metal zinc die cast housing is extremely rugged and is available in satin nickel finish, non-reflective Black Velvet or gray chrome finishes. Gold contacts are available on 3-contact A, AA, QGP, D and E series versions. Plugs have efficient cable clamp and cable flex relief.

#### A Series Q-G Cord Plug Connectors

Industry-standard audio connector with high-performance "greenie" insulation, locking or FAS-DISCONNECT retention, dual pressure plates on flex relief for positive cable clamp.

#### D Series Q-G Receptacles

Panel mount receptacles for panel or chassis mounting in 3 to 7 pin configurations. Available with Black Velvet finish and gold-plated contacts.

#### E Series Q-G Receptacles

3-contact panel/PC mount receptacles. Quick-release insert for PC applications. Choice of three terminations - conical spring solder, straight PC and right-angle PC.



A3F



A3MB



E3F



D3MB

### Q-G CONNECTORS PART NUMBERING SYSTEM

Q-G connectors can be supplied in hundreds of variations for a wide variety of applications. Refer to the "Part Numbering System" for information. Contact Switchcraft for assistance in specifying, if required.

#### EXAMPLE:

#### E3MSTBAU

E series receptacle, 3 pins, straight PC terminals, black finish, gold-plated contacts.



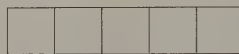
SERIES



PINS/CONTACTS



GENDER



ADDITIONAL FEATURES

3  
4  
5  
6  
7

F - Female  
M - Male

**A** - Female and male cord plugs  
**AA** - Female and male cord plugs, 1-piece cable clamp  
**B** - Panel mount female and male receptacles. Round escutcheon  
**C** - Panel mount female and male receptacles. Round escutcheon  
**D** - Panel mount female and male receptacles. Rectangular flange  
**E** - Panel mount female and male receptacles. Quick-release insert for PC applications. Also solder springs 3-contact version only

**J** - Wall plate with female receptacle  
**K** - Wall plate with 2 female receptacles  
**P** - Gooseneck mount male and female microphone plugs fit on standard 5/8-27 thread  
**R** - Right-angle female and male cord plugs  
**T** - Female cord plug with in-line switch for microphone control  
**Y** - Panel/chassis mount female and male receptacles with straight PC terminals.

**AU** - Gold contacts for low, stable resistance and corrosion resistance  
**B** - Black finish  
**BAU** - Black finish and gold contacts  
**D** - "FAS-DISCONNECT" detent  
**PC** - Straight PC terminals (Y series only)  
**RA** - Right-angle PC terminals  
**S** - Small cable relief - accepts up to .1/4" (6.35mm) cable diameter  
**ST** - Straight PC terminals

**NOTE:** Unless otherwise specified, cord plugs accept cables with .21-to .30-inch diameter.

**ORDERING:** Order by part number. Contact Switchcraft for part number, price and delivery information.

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# Switchcraft

A Raytheon Company

## AUDIO CONNECTORS

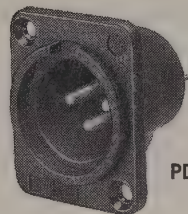
### PD Series Q-G® Receptacles

Light, compact, yet rugged PD series connectors come in 3-contact configurations and a variety of pin-out types. All feature PC mount terminals, and FRA, FRU, and FRR models have combination bifurcated PCB/solder lug terminals. Machined pins, glass reinforced, black, thermoplastic housing.

Contact Switchcraft for additional specifying assistance.

**PD3FRA2** 3-contact receptacle, right-angle (bottom) PC terminal exit. Separate ground lug, rear mount

**PD3MS1** 3-pin receptacle, straight, rear exit PC terminals. Front mount



PD3MS1

### TINI Q-G® Miniature Connectors

These high-quality audio plugs are miniature versions of our full-size Q-G line. They are ideal for use with miniature microphones, wireless belt packs, instrument pickups, and anywhere space is too tight for conventional microphone plugs. Features are: positive latch lock, secure cable strain relief, integral flex relief and nickel finish. Available in 3- to 6- contact configurations.

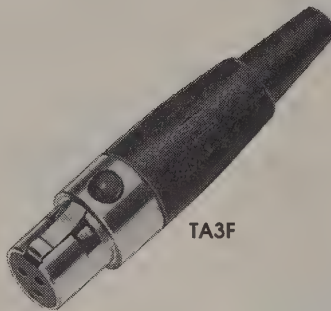
**TA3F** Female plug, 3 contacts, solder lugs

**TA3M** Male plug, 3 pins, solder lugs

**TB3M** Male receptacle, 3 pins, chassis/panel mount, solder lugs

**TRA3M** Male receptacle, 3-pins, right-angle PC mount. Threaded bushing for chassis/panel mount also

**TY3F** Female receptacle, 3 contacts, solder lug, separate ground lug



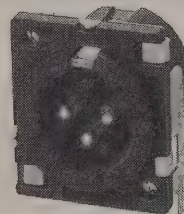
TA3F

### PQG Series PC Mount Receptacles

PQG 3-contact PC mount Q-G receptacles offer a variety of features to suit most any audio application. Vertical or right-angle mount, with optional chassis-grounded NiAg mounting plate. Also optional: "Tri-Mounting" plate with bifurcated PCB terminals for secure board retention during wave soldering. Durable glass reinforced, black, thermoplastic housing.

**PQG3MRA112** Male receptacle, 3 contacts. Right-angle PC terminals, latch lock, ground terminal. "Tri-Mounting" plate with bifurcated PC retainers for positive lock-in to PCB

**PQG3FST200** Female receptacle, 3 contacts. Straight PC terminals FAS-DISCONNECT (detent) latch



PQG3MRA112

### PQG SERIES PART NUMBERING SYSTEM

| P            | Q             | G                      | 3                                                               |                                                                |                           |                                                                                                                                   |  |  |
|--------------|---------------|------------------------|-----------------------------------------------------------------|----------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--|--|
| SERIES PQG-  | PINS/CONTACTS | GENDER                 | PC TERMINALS                                                    | LATCHING                                                       | GROUND TERMINAL           | MOUNTING PLATE                                                                                                                    |  |  |
| Composite QG | 3             | F - Female<br>M - Male | RA - Right-angle (bottom exit)<br><br>ST - Straight (rear exit) | 0 - None<br>1 - Latch Lock<br>2 - Fas-Disconnect (female only) | 0 - None<br>1 - Installed | 0 - None<br>1 - Plate with 2, M3 x 0.5 threaded holes<br>2 - Plate with 2, M3 x 0.5 threaded holes, panel grounds & PCB retainers |  |  |

# Switchcraft

A Raytheon Company

## TT AND LONG FRAME JACKS AND PLUGS

### TT-Jax® JACKS (BANTAM-TYPE)

Miniature telephone jacks with rugged die-cast frames and crossbar welded palladium contacts in shunts which mate with Switchcraft TT-Plugs, TT-Patch Cords and other BANTAM-TYPE plugs. Jack has .176" inside diameter bushing.

**TT34BDC** 3-conductor, shunted tip and ring, solder lugs

**WTT34BDC** 3-conductor, shunted tip and ring, wire-wrapping terminals



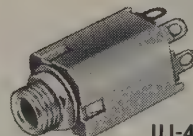
TT34BDC

### MINIATURE ENCLOSED JACKS

3-conductor chassis/panel/PC mount jacks mate with Switchcraft TT-Plugs, TT-Patch Cords and other BANTAM-TYPE plugs. Jack has .176" inside diameter bushing.

**UJ-2B** 3-conductor, open circuit, bushing and/or PC mount, solder lugs

**UJ-4B** 3-conductor, double closed-circuit, bushing and/or PC mount, solder lugs



UJ-4B

### TT-PLUGS (BANTAM-TYPE)

Miniature non-shorting plugs designed for use with Switchcraft TT-Jax and other BANTAM-TYPE jacks with .176" inside diameter bushings. Handle screws onto plug and cable for secure cable anchor.

**TT-253** 3-conductor, black handle, screw terminals

**TT-254** 3-conductor, red handle, screw terminals



TT-253

### MIL LITTEL PLUG® PLUGS

3-conductor plugs fit standard long frame telephone jacks.

**480** 3-conductor, screw terminals, black plastic handle, strain relief "U" clamp, .206" inside diameter bushing

**482** 3-conductor, screw terminals, red plastic handle, cable jacket threads into housing, 1/4" inside diameter bushing

**483** same as 482 but with black plastic handle, 1/4" inside diameter bushing



480

### "MT" 1/4" LONG FRAME TELEPHONE JACKS

Full size 3-conductor long frame jacks with shunted tips and rings. Accepts all 1/4" diameter finger, 3-conductor telephone plugs.

**MT-334B** 3-conductor, shunted tip and ring, solder lugs.

WEco equivalent - No. 239A; MIL equivalent M641/3-2

**WMT-334B** 3-conductor, shunted tip and ring, wire wrapping terminals. WEco equivalent - No. 239AM

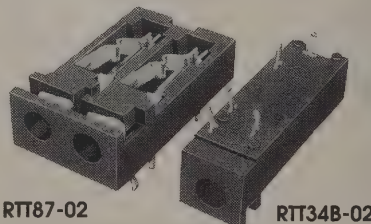


WMT-334B

### RTT RIGHT-ANGLE MINIATURE PHONE JACKS

Right-angle miniature phone jacks provide low profile packaging. Single and twin 3-conductor jacks provide plug/jack access to communication circuits for patching and/or testing. Tips and rings are shunted. These jacks mate with Switchcraft miniature "TT" plugs and patch cords.

Jacks are designed for right-angle mounting on .062" (1.6 mm) maximum thickness PC boards. Also available with "snap-in" terminals for PC mounting. Snap-on covers in colors are available and can be installed or removed in the field without special tools.



RTT87-02

RTT34B-02

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# Switchcraft

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## PHONE JACKS, POWER JACKS AND PLUGS

### LITTEL-JAX® 1/4" PHONE JACKS

2- and 3- conductor phone jacks to mate with 1/4" commercial phone plug. Mounts in 3/8" diameter hole in panels up to 5/32" thick.

- 11 2-conductor, open circuit
- 12A 2-conductor, single normally closed circuit
- 12B 3-conductor, double open circuit
- 14B 3-conductor, double normally closed circuit

### HI-D JAX® 1/4" ENCLOSED PHONE JACKS

2- and 3- conductor enclosed jacks for panel/chassis mount on .625" minimum centers. Mounts in 3/8" diameter hole in panels up to .156" thick. Also available with advanced spring lock PC terminals.

- 111 2-conductor, open circuit, solder lugs
- 112B 3-conductor, double open circuit, solder lugs
- 114BPC 3-conductor, double closed circuit, PC terminations

### 1/4" EXTENSION JAX

2- and 3-conductor extension phone jacks for standard 1/4" diameter finger phone plugs. Screw-on handle.

- 80 2-conductor, screw termination, black handle
- 88 2-conductor, solder termination, black handle
- 120 2-conductor, screw termination, shielded handle
- 121 2-conductor, solder termination, shielded handle
- 131 3-conductor, solder termination, shielded handle
- 830 3-conductor, screw termination, black handle
- 128 2-conductor, shielded handle, solder lugs
- 1238 3-conductor, shielded handle, solder lugs

### RIGHT-ANGLE PC MOUNT

#### 1/4" COMMERCIAL PHONE JACKS

Low profile 2- and 3-conductor phone jacks for PC and panel/chassis mount (via threaded bushing). Mates with 1/4" diameter finger phone plugs. PC board thickness: RA series; .625" maximum. RN series; .125" maximum.

- RA49B-11 2-conductor, open circuit
- RN-112APC 2-conductor, single closed circuit
- RA49C-14B 3-conductor, double closed circuit

### MINIATURE POWER JACKS

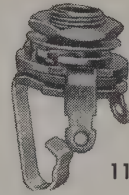
2-conductor straight and right-angle miniature power jacks for AC/DC power converters, solid state portable radios, tape recorders, TV receivers and battery charger connections. Automatic switchover from AC to DC.

- PC712A Mounts in .313" diameter hole in panels up to .125" thick (maximum). Pin outside diameter is .10". PC terminals
- PC722A Same as PC712A, except pin is .08" outside diameter
- RAPC712 Right-angle mount, PC terminals. Mounts in PCB up to .062" thick. Pin outside diameter is .10"
- RAPC722 Same as RAPC712, except pin is .08" outside diameter
- 712A Mounts in .313" diameter hole in panels up to .125" thick (maximum). Pin outside diameter is .10"
- 722A Same as 712A, except pin is .08" outside diameter

### MINIATURE POWER PLUGS

2-conductor battery charger plugs. Mates with Switchcraft power Jacks.

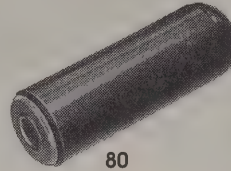
- S760 .08" center hole. Black handle, solder lugs. Mates with 722A
- S765 Same as S760, but has red handle
- 760 .10" center hole. Black handle, solder lugs. Mates with 712A
- 765 Same as 760, but has red handle
- 2P1628 .10" center hole. Black handle, solder lugs. Locking ring provides secure power connection. Mates with 712A



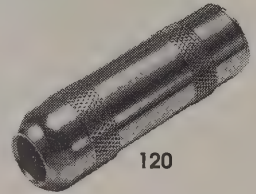
11



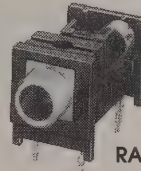
111



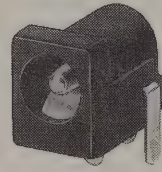
80



120



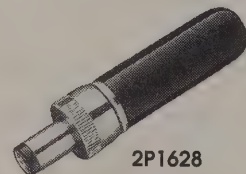
RA49B-11



RAPC712



PC712A



2P1628

# Switchcraft

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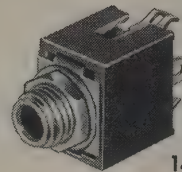
ENCLOSED PHONE JACKS, PHONE PLUGS, PHONO JACKS AND PLUGS

## MINIATURE ENCLOSED 3.5mm PHONE JACKS

2-conductor jacks mate with plugs having 3.5mm diameter fingers (Switchcraft 740). Panel or PC mount types.

**142A** 2-conductor, closed circuit, solder lugs. Mounts in 1/4" diameter hole in panels up to .125" thick

**PC-142A** 2-conductor, closed circuit, PC terminations



142A

## SUBMINIATURE ENCLOSED PHONE JACKS

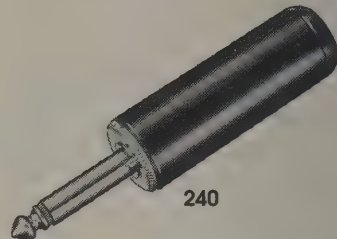
Super small 2-conductor jacks (.312" x .344" x .688") feature insulated box construction and mate with Switchcraft micro-plug (typical part number 850). PC, panel and right-angle mount types.

**MDSL-2A** 2-conductor, solder lug, threaded bushing; mounting washer and locknut supplied

**MDPC-2A** 2-conductor, PC lug

**MDSL-2A-RA** 2-conductor, right-angle solder lug, threaded bushing; mounting washer and locknut supplied

**MDPC-2A-RA** 2-conductor, right-angle PC plug



240

## Littell-Plug® 1/4" PHONE PLUG

Small handle phone plug, fits standard 1/4" phone jacks such as Littell-Jax.

**240** 2-conductor, screw termination, black handle

**245** 2-conductor, screw termination, red handle

**250** 2-conductor, solder lug, cable clamp, black handle

**260** 3-conductor, screw termination, black handle

**267** 3-conductor, solder termination, black handle, cable clamp.

**270** 2-conductor, screw termination, shielded handle.

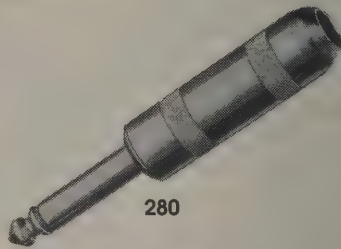
**280** 2-conductor, solder termination, shielded handle, cable clamp.

**285** 2-conductor, solder termination, shielded handle, cable clamp for larger cables (shipped unassembled)

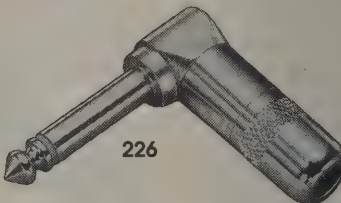
**285L** Same as 285 except handle has .375" diameter hole for larger cables

**290** 3-conductor, screw termination, shielded handle

**297** 3-conductor, combination clamp and solder termination, shielded handle



280



226

## RIGHT-ANGLE 1/4" PHONE PLUGS

Low profile 2- and 3-conductor phone plugs have all-metal exterior for ruggedness and long life. 3-piece construction.

**226** 2-conductor, solder termination, cable clamp

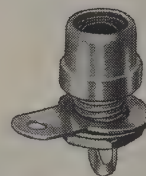
**236** 3-conductor, solder termination, cable clamp

## PHONO JACKS

2-conductor jacks for stereo components and home studio equipment.

**3501FP** Phono chassis jack for front panel mount in 1/4" diameter hole

**3503** Phono "Extension Jax", shielded screw-on handle, cable clamp



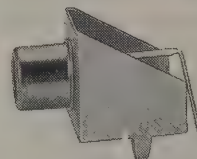
3501FP

## PC MOUNT PHONO JACKS

2-conductor, accepts plugs with pins up to .563" long.

**3514PC** 2-conductor

**3517PC** 2-conductor, right-angle



3517PC

## PHONO PLUGS

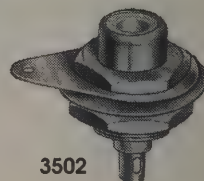
Economy 2-conductor plugs for stereo components and home studio equipment.

**3502** Shielded screw-on handle, cable clamp.

**3558-1** Red handle, cable clamp.

**3558-2** Black handle, cable clamp.

**3558-5** White handle, cable clamp.



3502

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# Switchcraft

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## AUDIO AND VIDEO PATCH PANELS AND CORDS

Audio patch panels are 19" wide and are rack-mountable with 48 premium performance 3-conductor jack circuits. Rear panel has insulation displacement connectors (IDCs) for inputs/outputs and are color-coded for easy identification.

Series 20Q audio patch cords have a 3-conductor telephone-type plug (1/4" diameter) on each end. Cords are available in 5 colors.

### AUDIO PATCH PANELS

**APP334BNO** Completely shielded and wired,  
48 jacks with normals out

**APP334BNS** Completely shielded and wired,  
48 jacks with normals at jacks

**APP336BNO** Completely shielded and wired,  
48 jacks with sleeve normals out

**APPM5334BNO** Wired with 4' cable for remote rear panel  
installation, 48 jacks with normals out

**APPM5334BNS** Same as APPM5334BNO, except  
normals are at jacks

Video Insulated Panels, Series VIP, patch 24 or 26 channels from DC to 400 MHz with high efficiency in a standard 19" wide rack. Dual jacks have open or 75-ohm terminations. Rear panel connections are via standard BNC receptacles. Through-connections are made without plugs or patch cords. Patching is achieved from the front with Video Patch Cords, Series VPC, or other standard plugs or patch cords. Cable is black, RG59B/U, 75-ohm nominal impedance. Handles are metal shielded and may be "booted"

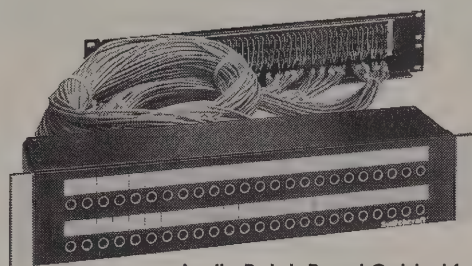
### VIDEO PATCH PANELS

**VIP2B224S08B** 24 jacks, light gray, open termination

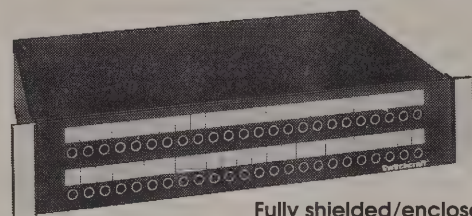
**VIP2B224S08C** 24 jacks, light gray, 75-ohm termination

**VIP2B226S08B** 26 jacks, light gray, open termination

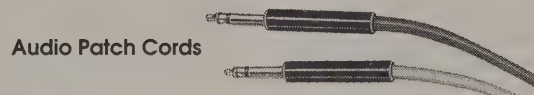
**VIP2B226S08C** 26 jacks, light gray, 75-ohm termination



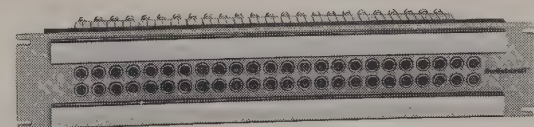
Audio Patch Panel Cabled for rear panel installation up to 4' away



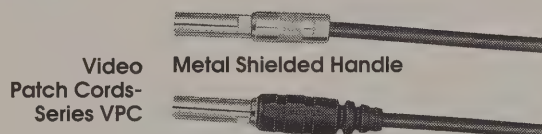
Fully shielded/enclosed Audio Patch Panel



Audio Patch Cords



Video Patch Panel - Series VIP



Video Patch Cords-Series VPC

Metal Shielded Handle

"Booted" Handle in Black or Colors

### SERIES 20Q 3-CONDUCTOR TELEPHONE-TYPE PATCH CORDS

1/4" diameter plug fingers, color cable

#### PART NUMBERING SYSTEM

| PLUG    | CABLE              | LENGTH (feet)* | PLUG    | FINGER FINISH   | CABLE COLOR* |
|---------|--------------------|----------------|---------|-----------------|--------------|
| 2 0     | Q                  |                | 2 0     |                 |              |
| 3-cond. | Shielded           | D - 2          | 3-cond. | N-Nickel plated | 0-Black      |
| 2-cond. | nylon-braid sheath | F - 3          |         | B-Natural brass | 2-Red        |
|         |                    | H - 4          |         |                 | 4-Yellow     |
|         |                    |                |         |                 | 5-Green      |
|         |                    |                |         |                 | 6-Blue       |

\* Contact Switchcraft for other lengths and colors.

### VIDEO PATCH CORDS

#### PART NUMBERING SYSTEM

| VPC               | LENGTH (inches) | CABLE COLOR | PP                         | BOOT COLOR |
|-------------------|-----------------|-------------|----------------------------|------------|
| VIDEO PATCH CORDS |                 |             | SINGLE PLUG TO SINGLE PLUG | Optional   |
|                   | 12              | 0 - Black   |                            | 0 - Black  |
|                   | 24              | 2 - Red     |                            | 2 - Red    |
|                   | 36              | 4 - Yellow  |                            | 4 - Yellow |
|                   | 48              | 5 - Green   |                            | 5 - Green  |
|                   | 72              | 6 - Blue    |                            | 6 - Blue   |

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# Switchcraft

A Raytheon Company

DIN AND EAC  
CONNECTORS

## CIRCULAR DIN CONNECTORS

Designed for low level circuitry, for unlimited use in computer, commercial, industrial, consumer and military applications. "Switchcraft/DIN" 2 to 8 contact connectors include male and female plugs and receptacles with bright nickel-plated barrels and plastic snap-on shells. Lock-ring coupling, silver-plated contact pins for low contact resistance, contact friction coupling for low mechanical interference noise, exclusive "automatic" grounding and polarization provisions. Full line of receptacles offer through-panel PC board and surface mounting. Positioning "Ground Key-Rib" or "Ground Contact" - electrically integral with the connector shell - is provided in each plug and receptacle (except those with plastic housing or shells) to ground or shield the connector shell. Right-angle PC board mount for common ground use also available.

## MINI-DIN RECEPTACLES

Miniature DIN right-angle connectors are designed for personal computer and enhancements, as well as data communications, medical and instrumentation equipment and systems.

## RIGHT-ANGLE PC MOUNT RECEPTACLES

Available with 3 through 8 contacts, receptacles also have a standard (and separate) ground contact system. Ground terminal can be straight or "snap-in" type. "Snap-in" terminals are bifurcated to assure tight hold down on PC board.

Dimensions: .552 inch (14mm) wide x .502 inch (12.8mm) maximum depth x .642 inch (16.3mm) high, including terminals.

## "EUROPEAN AC RECEPTACLES

**EAC-233** 2-pin, 10A, 250V male receptacle with right-angle housing for PC mount. PC terminals project .130 inch (3.3mm) to extend through PC board. Rear of panel mount. Two, .136 inch (3.45mm) diameter holes permit fastening to PC board; two additional .136 inch (3.45mm) holes are for fastening to panel or chassis, if required. UL, CSA, VDE, DEMKO and SEMKO recognized

**EAC-305** Grounding type, 3-contact female receptacle. Rated: 10A, 250V AC: UL and CSA listed. Front panel/chassis mount in 1.275 inch (32.39mm) x 1.56 inch (39.62mm) hole with 2, #5 screws or .125 inch (3.18mm) rivets (not supplied). EAC-405 is same except has "snap-in" mount

**EAC-309** Grounding type, 3-pin male receptacle. 10A, 250V AC: UL, CSA and VDE listed. Rear mounts in 1.201 inch (30.51mm) x .875 inch (22.22mm) hole or front mounts in 1.08 inch (27.43mm) x .785 inch (19.94mm) hole in chassis/panel with 2, #5 screws or .125 inch (3.18) diameter rivets (not supplied). Longer grounding pin allows ground circuit to "make" before power circuit, and "break" after power circuit disconnects. Pins .045 inch (1.14mm) x .157 inch (3.99mm) and terminals: silver-plated. EAC-409 is same except has "snap-in" mount

**EAC-311** 3-pin male receptacle with FASTON terminals. Mounts from front or rear of panel with 2, #5 screws or .125 inch (3.18mm) diameter rivets (not supplied)

**EAC-333** 3-pin, 10A, 250V male receptacle with right-angle housing for PC mount. PC terminal and hole mounting details are the same as for EAC-233. Ground pin is integral with ground solder lug on rear of receptacle. UL, CSA, VDE, DEMKO and SEMKO recognized

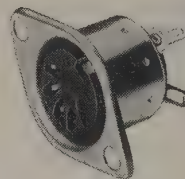
**EAC-333S** Similar to EAC-333, but with 2 snap-in retainers through mounting flanges for PC mount



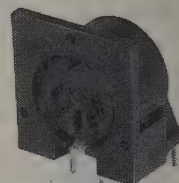
05GM5M



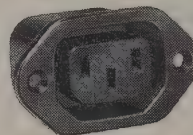
05BL5M



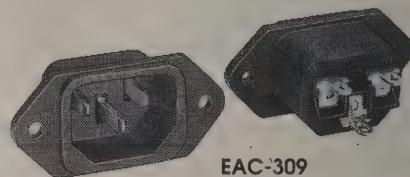
57GB5F



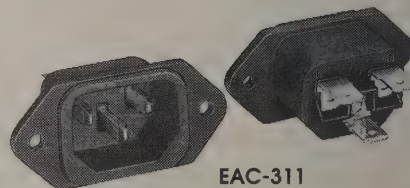
57PC5F



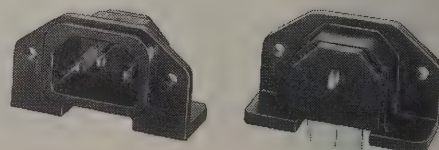
EAC-305



EAC-309



EAC-311



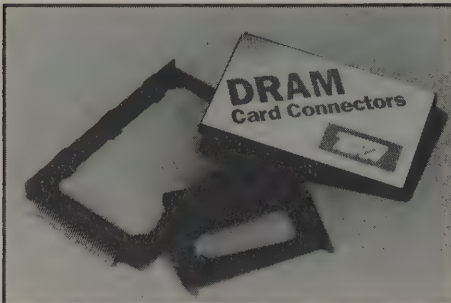
EAC-333





# COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

- A**  
A/D acrylonitrile butadiene-styrene  
A/D analog to digital  
ADC analog to digital converter  
ADP automatic data processing  
AFC audio frequency control  
AFT automatic filter test  
ALGOL algorithmic language  
AM a logical operator  
AQL acceptable quality level  
ASCI American national standard code for information interchange  
ASIC application specific IC  
ATE automatic test equipment  
ATG automatic test generation  
AWG American wire gauge
- B**  
BALUN balanced to unbalanced  
BASIC beginners' all-purpose symbolic instruction  
BCD binary-coded decimal  
BNC baby "N" connector  
BUS basic utility system
- C**  
CAD computer-aided design  
CAE computer-aided engineering  
CAM computer-aided manufacture  
CAMAC computer-automated measurement and control  
CAPP computer-aided process planning  
CAT computer-aided test  
CATV cable television or community antenna television  
CCC (lead) ceramic chip carriers  
CCD computer-controlled display  
CERMET ceramic metal element  
CIE computer-integrated engineering  
CIM computer-integrated manufacturing  
CLCC ceramic leadless chip carriers  
CMOS complementary metal-oxide semiconductor  
Comm. communications  
CPS characters per second  
CPU central processing unit
- D**  
D/A digital to analog  
DAC digital to analog converter  
DBMS data base management system  
DC direct current  
DFT design for testability  
DIAC bidirectional trigger diode  
DIL dual in-line  
DIN Deutsche Industrie Normenausschuss  
DIP dual in-line package  
DPM digital panel meter  
DRAM dynamic RAM  
DTL diode transistor logic
- E**  
EDA electronic design automation  
EDP electronic data processing  
EBCDIC extended binary coded decimal interchange code  
EEPROM electrically erasable PROM
- EIA** Electronic Industries Association  
EMC electromagnetic compatibility  
EMI electromagnetic interference  
EMP electromagnetic pulse  
EPROM erasable programmable ROM  
ESR equivalent series resistance
- F**  
FEP fluorinated ethylene propylene Copolymer, 200° Teflon  
FET field-effect transistor  
FM frequency modulation  
FORTRAN formula translator
- G**  
GaAsFET gallium arsenide FET  
CMIP commn management information protocol  
GPIB general purpose interface bus  
GPS global positioning system
- H**  
HF high frequency (3 to 30 MHz)  
HIPOT test, measurement, and diagnostic equipment  
HLL high level language  
HV high voltage  
Hz Hertz
- I**  
IAB Internet Activities Board  
IC integrated circuit  
IDC insulation displacement contact  
IF intermediate frequency  
IO input/output (devices)  
IR insulation resistance (or) infrared  
ISDN integrated services digital network  
ISO International Standards Organization
- J**  
JEDEC Joint Electronic Device Engineering Council  
JFET junction FET  
JMOS junction MOS
- K**  
kHz kilohertz ( $10^3$  hertz)  
KSR keyboard send/receive
- L**  
LAN local area network  
LC (filters) inductance/capacitance  
LCC leaded chip carrier  
LCD liquid crystal display  
LED light-emitting diode  
LF low frequency (30 to 300 kHz)  
LIF low insertion force  
LNA low noise amplifier  
LNB low noise band  
LSI large scale integration  
LVDT linear velocity displacement transformer
- M**  
MASER microwave amplification by stimulated emission of radiation  
MATV master antenna television
- $\mu$ F microfarad  
MHz megahertz  
MIC microwave IC  
MIPS million instructions per second  
MIB microcomputer interface board  
MOS metal oxide semiconductor  
MOSFET metal oxide semiconductor FET  
MOSIGT metal oxide semiconductor insulated-gate transistor  
MOV metal oxide varistor  
MPU microprocessor unit  
MSI medium scale integration
- N**  
NBS National Bureau of Standards  
NEMP nuclear electromagnetic pulse  
NIM national instrumentation module  
NOR not OR  
NTC negative temperature coefficient
- O**  
OCR optical character reader  
OEM original equipment manufacturer  
OR a logical operator  
OSI open systems interconnection
- P**  
PAL programmable array logic  
PC printed circuit  
PCB printed circuit board  
PCM pulse code modulation  
PCS plastic clad silica  
pF picofarad  
PGA pin grid array  
PIN positive-intrinsic-negative (transistor)  
PLA programmable logic array  
PLCC plastic leaded chip carrier  
PLL phased lock loop  
PPI plan position indicator  
PROM programmable ROM  
PTC positive temperature coefficient  
PUT programmable unijunction transistor
- Q**  
QAM quadrature amplitude modulation  
Q (meter) quality-factor meter
- R**  
RAM random access memory  
RC resistance-capacitance  
RFI radio frequency interference  
RMS root mean square  
ROM read only memory  
RF radio frequency  
RFC radio-frequency choke  
RFI radio-frequency interference  
RTD resistance-temperature detector  
RTL resistor transistor logic  
RTV room temperature vulcanizing  
RW read/write
- S**  
SAS silicon asymmetrical switch  
SBC single board (micro) computer
- SBS silicon bilateral switch  
SCR silicon-controlled rectifier  
SCS silicon-controlled switch  
SDA source & detector assemblies  
SGMP simple gateway monitoring protocol  
SIDAC bidirectional voltage-triggered switch  
SIMM single in-line memory module  
SIP single in-line package  
SMD surface mount device  
SMT surface mount technology  
SNMP simpole network management protocol  
SO small outline  
SOIC small outline IC  
SOT small outline transistor  
SSI small scale integration  
SSR solid-state relay  
STL Schottky transistor logic  
SUS silicon unilateral switch
- T**  
TC temperature coefficient  
TCE thermal coefficient of expansion  
TXCO temperature compensated crystal oscillator  
TFE tetrafluoride ethylene propylene Copolymer, 250° Teflon  
TRIAC bidirectional AC switch  
TTL transistor-transistor logic  
TTY teletypewriter
- U**  
UHF ultra high frequency (300 MHz to 3 GHz)  
UJT silicon unijunction transistor  
UL Underwriters Laboratory  
UPS uninterruptible power supply
- V**  
VAC volts (of) alternating current  
VAN value-added network  
VAR volt-ampere reactive  
VCR video cassette recorder  
VDC volts (of) direct current  
VHF very high frequency (30 kHz to 300 MHz)  
VHSIC very high speed integrated circuit  
VLF very low frequency (3 to 30 kHz)  
VLSI very large scale integration  
VME virtual machine environment  
VRM voice recognition module  
VTVM vacuum tube volt meter  
VU volume unit  
VSWR voltage standing wave ratio
- W**  
WPS word processing software
- Y**  
YIG yttrium iron garnet
- Z**  
ZIF zero insertion force



## TEKA 88 PIN DRAM CARD CONNECTOR

Conform to JEIDA / JEDEC Standards

### Header Features

- Meets JEIDA/JEDEC Standards
- 1.00 x 1.27mm centerline spacing
- SMT design
- Selective pin lengths and pin loading
- For other options consult Teka Customer Service.
- Polarized guide rails
- Locating feature for exact termination alignment (3 molded-in press-fit studs)
- Vapor phase and infrared compatible

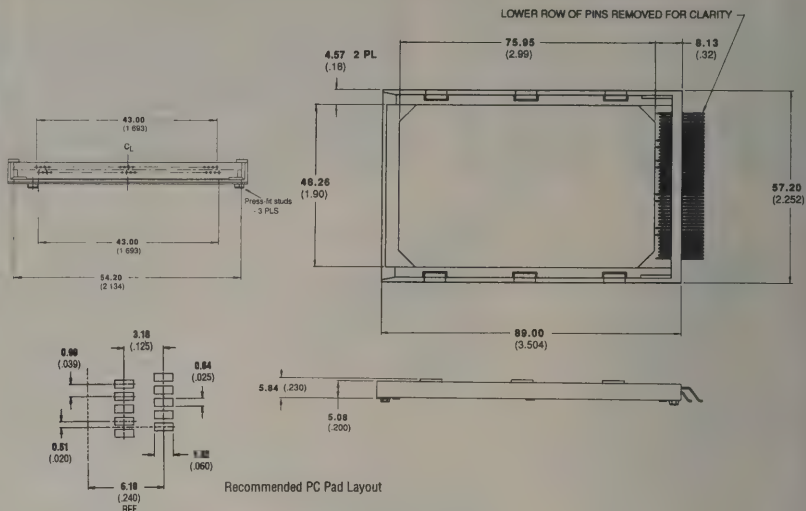
Call Teka Customer service for a quotation on your custom applications!

### Materials

- Contacts : PhosBronze drawn wire
- Hi-temp housings: GF LCP, UL 94VO
- Finish: 30μ" gold min. on contact area only over 50μ" nickel min. on entire contact area, .100μ" min. tin lead alloy tails.

For other plating options consult Teka Customer Service.

All Connectors  
Made in USA



### Performance

- Current rating = 1 amp max.
- Dielectric withstanding = 500 VAC RMS min.
- Insulation resistance = 1,000 megohms min.

### Configurations

- 705 - Standard with guide rails for DRAM card
- 706 - With guide rails for .015 printed circuit boards

## TEKA HIGH DENSITY .050 CONNECTOR SYSTEM

### General Information

Teka's proven High Density Connector System is in wide use throughout the industry in both through-board and SMT configurations. Custom and modified applications are welcome. Contact Teka Customer Service for connector size options, samples, technical information and catalogs.

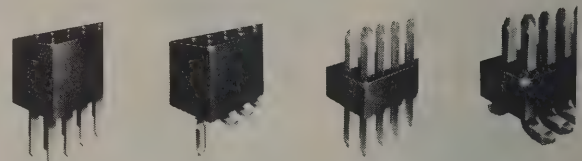
### Design Features

- .050 centerline spacing
- Receptacle mates with .018" square or round pin
- Dual-beam contact design
- Low insertion force receptacle
- Hold-down device available
- Vapor phase and infrared compatible

### Materials

- Contacts (Receptacles): BeCu
- Contacts (Headers): Copper alloy
- Hi-temp housings: GF LCP, UL 94VO
- Finish: 30μ" gold min. over 50μ" nickel min. on contact area only. 100μ" min. tin lead alloy tails.

For other plating options consult Teka Customer Service.

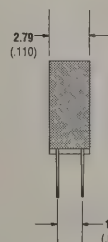


Soldertail  
Receptacle

SMT  
Receptacle

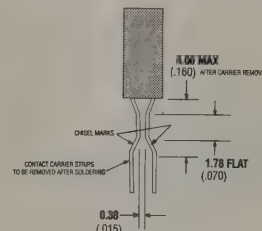
Soldertail  
Header

SMT Header

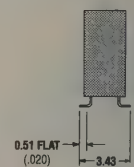


Through Board

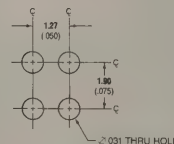
### Receptacle Tail Configurations



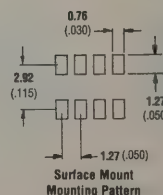
Card Extender



Surface Mount



Through Board  
Mounting Pattern



Surface Mount  
Mounting Pattern

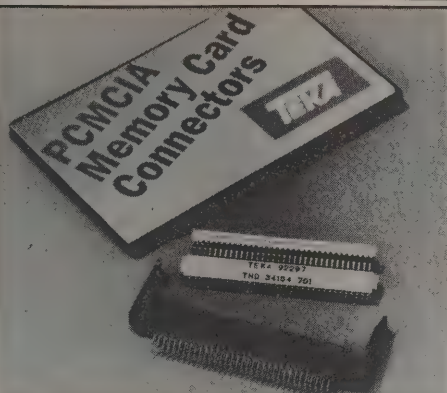


INTERCONNECTION  
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Interplex  
industries  
company

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(401) 785-4110 FAX: (401) 461-2310





# TEKA MEMORY CARD CONNECTORS

All Connectors  
Made in USA

Compatible with PCMCIA, Release 2.01

## Header and Receptacle Features

- Meets PCMCIA (Release 2.1) / JEIDA Standards (For Type III information, drawings and quotations contact Teka Customer Service.)
- .050" centerline spacing
- Dual-beam contacts mate with .017 round pins; closed entry design
- Selective pin lengths and pin loading per PCMCIA/JEIDA spec (for other options, consult factory)
- Polarized guide rails
- Locating feature for exact termination alignment (header only)
- Low insertion force receptacle
- Vapor phase and infrared compatible
- Designed for reliable performance in excess of 5,000 matings (cycles).

## Materials

- Contacts (Receptacles): BeCu
- Contacts (Headers): Copper alloy
- Hi-temp housings: GF-LCP, UL 94VO
- Finish: 30μ" gold min. on contact area only over 50μ" nickel min. on entire contact area, .100μ" min. tin lead alloy tails.

For other plating options consult Teka Customer Service.

## Performance

- Current rating = 1 amp max.
- Dielectric withstanding = 500 VAC RMS min.
- Insulation resistance = 1,000 megohms min.
- Contact resistance = 30 milliohms max.

## Available Configurations (with part code)

### Headers

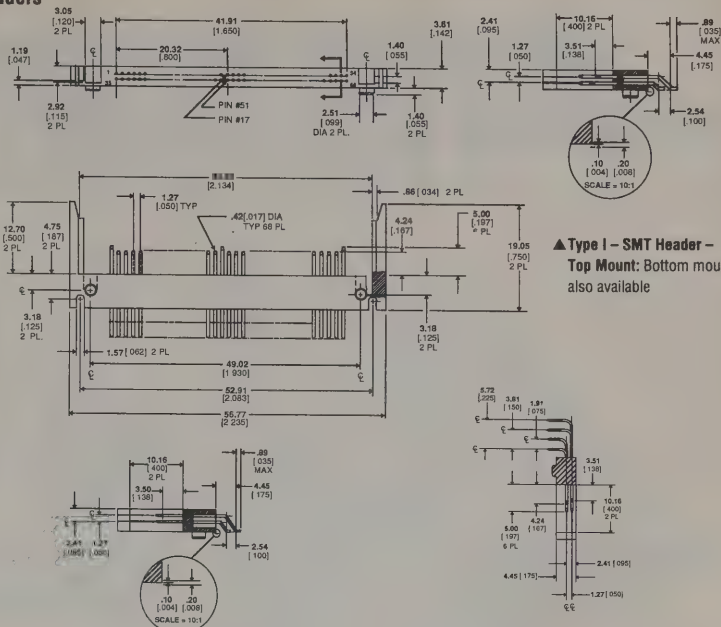
- 209 - Type I, Top Mount, Thru Board
- 201 - Type I, Top Mount, SMT
- 213 - Type I, Bottom Mount, Thru Board
- 211 - Type I, Bottom Mount, SMT
- 205 - Type II, Top Mount, Thru Board
- 202 - Type II, Top Mount, SMT
- 210 - Type II, Bottom Mount, Thru Board
- 212 - Type II, Bottom Mount, SMT

### Receptacles

- 701 - Card Extender
- 702 - Inline Topside Surface Mount
- 703 - Offset Straddle mount (flush to baseline)

For other ear configurations/options consult Teka Customer Service.

## Headers



▲ Type I - SMT Header - Top Mount: Bottom mount also available

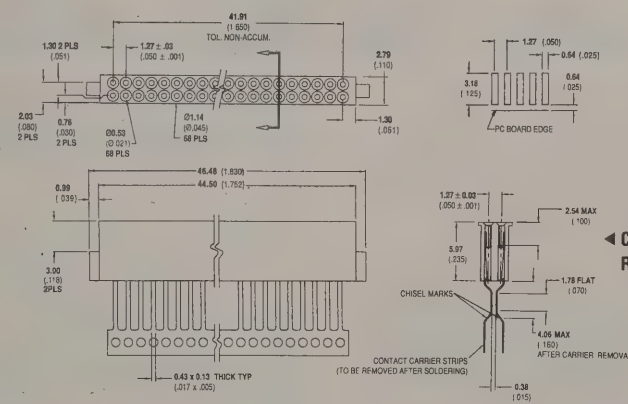
▲ Type II - SMT Header - Top Mount: Bottom mount also available

▲ Type II - Through Board Header - Top Mount: Bottom mount, and Type I versions also available

Recommended PC pad layout

Recommended PC board layout

## Receptacles



▲ Card Extender Receptacle

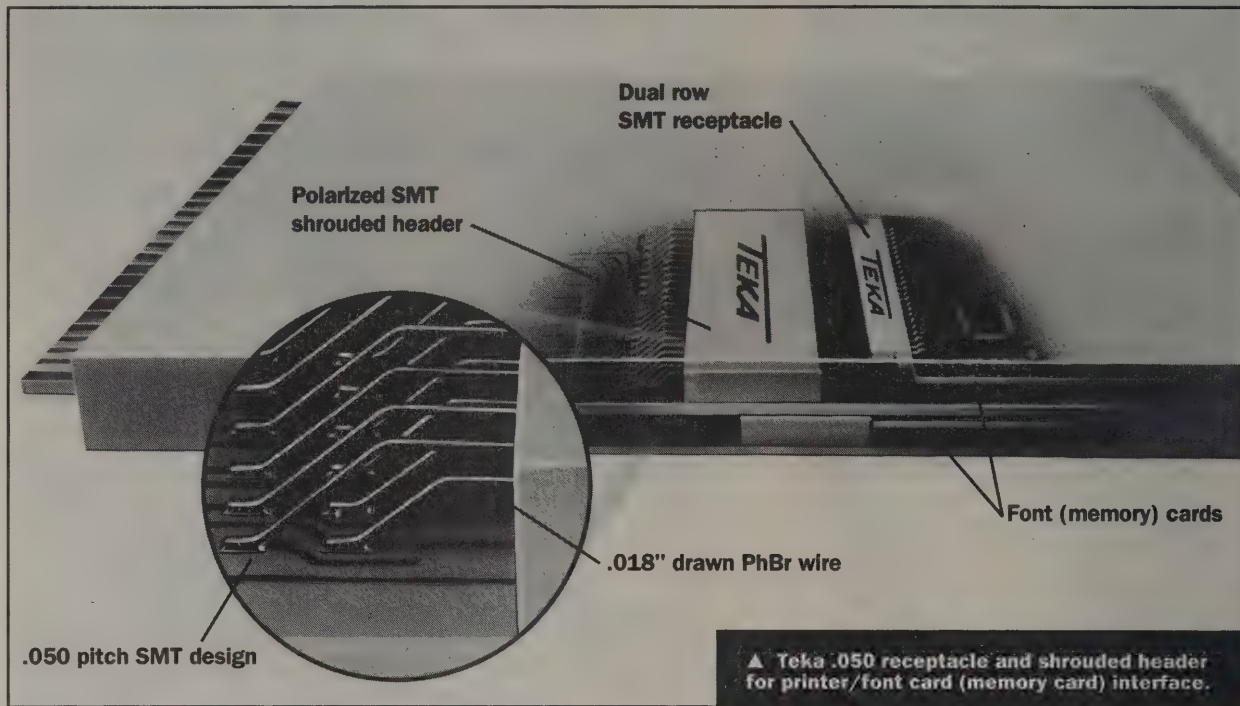
Inline  
Topside  
SMT

▲ Offset  
Straddle-  
mount



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# GET RAPID RESPONSE TO YOUR CUSTOM HIGH DENSITY APPLICATIONS.



## CALL THE TEKA/INTERPLEX TEAM.

### When the clock is ticking.

You want results, not excuses. Call Teka and you will get the proposal drawings, prototypes and test results you need quickly.

Teka's complete in-house design and production facilities are geared to provide you the fast turn-arounds you need to complete your electronic system and begin shipping product.

### Choose with confidence.

You are in good company when you choose Teka. Because we build advanced interconnects for some of the top electronics companies in the U.S. Including high-density and surface-mount designs, standard, modified and custom.

In fact we have achieved and maintain "Preferred Vendor" status with a number of major OEMs.

### A leader in U.S. memory card interconnection systems.

As one of the participants in the development of the PCMCIA standard, Teka is ready to apply this compact and cost-efficient technology to the growing number of memory card applications.

### Complete interconnect design and production capabilities.

#### Design

- Engineering consulting
- Proposal drawings
- Prototyping
- Testing

#### Production

- Molding
- Stamping
- Skiving
- Plating
- Assembly
- Testing

### Call us today!

For design consultation, samples, prints or just answers to your questions. We want to help you solve your high-density application problems.

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# NEED SPECIAL OR CUSTOM CONNECTORS FAST?

Custom  
Examples  
(enlarged):



High Density SMT  
Memory Card Connector



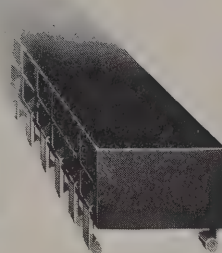
High Density Edgecard



Header with 30° Bend  
and Retentive Lead

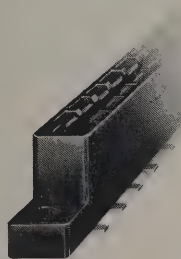


Solder-bearing Lead Butt Design  
Vertical TKO with Retentive Lead



Solder-bearing Lead Butt Design  
Horizontal TKO

Edgecard  
Special  
Examples:



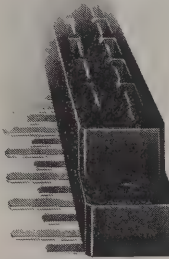
Surface-mount  
Edgecard



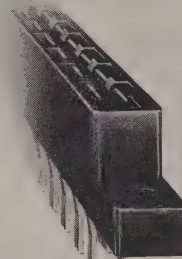
Right Angle Edgecard  
with Even Tails



3 Position Edgecard  
with Retentive Leads



Right Angle Edgecard  
.156" Spacing with Uneven Tails



Edgecard with  
.062" Card Extender

## CALL TEKA.

### YOUR PROBLEM IS THAT...

most connector companies are not organized to effectively respond to the demanding needs of the custom connector business. Fast-paced development and production schedules require extremely tight coordination of the manufacturing process, while the reliability of the end-product remains critical.

### YOUR SINGLE SOURCE

You need only make one call... Teka Interconnection Systems. We provide all the expertise you need *right in-house*—including connector design, tooling, molding, stamping, plating, assembly and testing. Applying the same advanced engineering skills and technology that built the broad line of quality Teka PCB connectors.

### SOLVING PCB CONNECTOR PROBLEMS

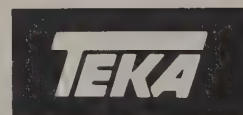
Teka harnesses the resources and experience within the entire group of Interplex Industries companies, and puts it to work for you. Your project benefits through increased cost-efficiency and faster turnaround.

### CALL US TODAY !

End your search for custom and modified standard PCB connectors right here.

Call Teka Interconnection Systems at (401) 785-4110. We have representatives nation-wide, ready to assist you.

**All Connectors  
Made in USA**



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# TEKA SPECIAL EDGE CARD

High Reliability

## General Information

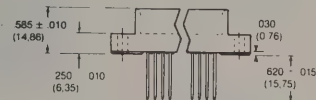
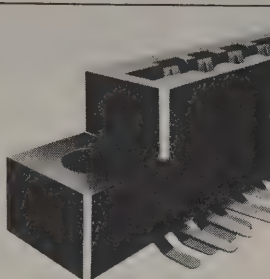
- Modified to fit your requirements
- Spacing: .100, .125 and .156"
- Flush mount or center mount
- Variety of tail configurations:
  - External PCB retention tail
  - Card extender
  - Wire wrap
  - DIP solder
  - Right angle-flush
  - Right angle-uneven
- 2 x 52 PC edgecard available

## Features

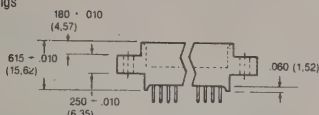
- High reliability pre-loaded bifurcated simple cantilever contact design
- Mates with .054" to .071" PC boards
- With or without mounting ears, threaded bushings or inserts
- Polarization keys: in-contact, in-between
- Standoffs
- Selective plating

## Technical Data

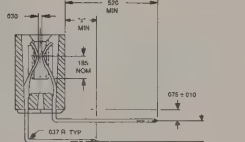
- Insulation Resistance: 5000 megohms min.
- Capacitance (picofarads): 2 max.
- Operating Temperature: -65° to +125° C
- Insertion Force: 16 oz. max. per contact pair
- Withdrawal Force: 1 oz. min. per contact pair
- Life: 500 cycles min.
- Normal Forces: 150 grams min. (.062 PCB)
- Housing: Glass-Filled Thermo-Plastic
  - Polyester UL 94 V-0
- Contact: CA510 Phosphor Bronze
  - CA 172 Beryllium Copper (Solder tail only)
  - CA725 Alloy Copper Nickel
- Floating Bushings: Brass, nickel plated (standard)
- Threaded Inserts: Brass, nickel plated (standard)
- \*Tin alloy: -40° C to +105° C
- \*\*For high temperature material consult factory.



Wire Wrap - .025" sq.



DIP Solder



Right Angle - .025" sq.

# TEKA LOW-COST DIN

Styles C & R

## General Information:

The Teka Econo DIN series is an economical alternative to existing female DIN connectors. The patented one piece dual-beam contact design offers a reliable board-to-board interconnection with optimum contact redundancy, without compromising performance. Teka Econo DIN meets the requirements of the 41612 specification.

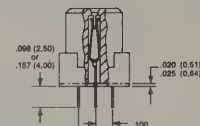
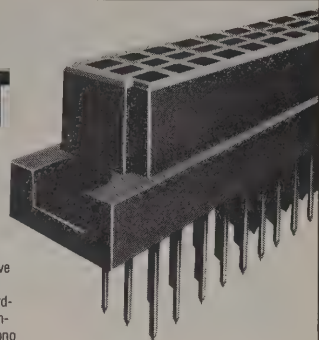
This design advance was made possible by a precision stamping process developed by Teka parent company, Interplex Industries Inc.

## Features

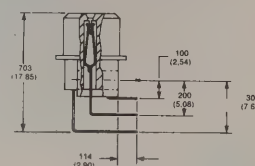
- Low cost/high performance design
- Density: up to 96 contacts in 3 rows
- Mounting: standard and inverse
- Contacts, female: self centering, pre-loaded
- Tails: DIP solder or compliant
- Housings: chamfered lead-ins
- Plating: selective gold on contact area, tin alloy tails
- Specifications: conforms to DIN 41612 styles C & R

## Technical Data

- Operating Voltage: 300 VRMS
- Current (Max): 3 amps per contact
- Contact Resistance: 20 Milliohms (max)
- Dielectric Strength: 1000 V
- Insulation Resistance:  $10^{12}$  Ohms
- Operating Temperature: -55° C to +125° C
- UL Flammability: 94 V-0
- Insertion Force: Style C, 20.2 pounds max. (96 positions)
- Withdrawal Force: Style C, 3.24 pounds min. (96 positions)
- Contacts: Phosphor Bronze
- Housing: Glass filled polyester



Style C - Standard



Style R - Inverse

# TEKA HI-TEMP HEADERS

Standard .025" Square Posts  
.100" x .100" Matrix

## General Information

- Single & dual row, vertical and right angle configurations
- Single row available in 1x36 position double row available in 2x36 position
- .100" centerline spacing; double row headers are on .100" x .100" grid
- Low cost I/O interconnection
- Standard mating pin lengths are .230" and .318"
- Stackable end-to-end
- Consult factory for optional pin lengths and plating

## Features

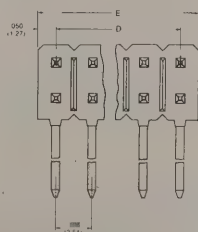
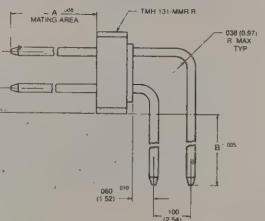
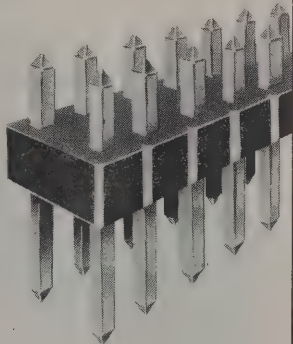
- High temperature plastic allows infra-red and vapor phase soldering.
- Standoffs permit cleaning of soldering contaminates.
- Barb feature provides improved retention.
- Drawn wire pins provide smooth contact surfaces on all sides.
- Selective gold plating available.

## Technical Data

- Current rating = 5 amps (maximum).
- Dielectric withstanding = 7500 VAC RMS (minimum).
- Insulation resistance = 10,000 megaohms (minimum).
- Operating temperatures = 600 VDC (sea level).
- Contact retention = 4 lbs. (minimum).
- Contact = copper alloy
- Insulator body = thermoplastic PET, UL flammability rating 94 V0.

## Test Data

Specifications, prints and samples are available upon request from Teka Customer Service.



# TEKA SMT HEADERS

Single and Double Row

## General Information

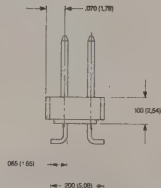
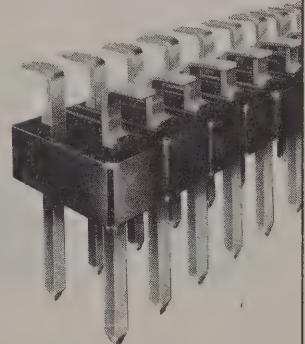
- Single row available in 1x36 position double row available in 2x36 position
- .100" centerline spacing; double row headers are on .100" x .100" grid
- Standard mating pin lengths are .230" and .318"
- Stackable end-to-end
- Consult factory for optional pin lengths and plating

## Features

- High temperature plastic allows infra-red and vapor phase soldering.
- Barb feature provides improved retention.
- Drawn wire pins provide smooth contact surfaces on all sides.
- Selective gold plating available.

## Technical Data

- Current rating = 5 amps (maximum).
- Dielectric withstanding = 7500 VAC RMS (minimum).
- Insulation resistance = 10,000 megaohms (minimum).
- Operating temperatures = 600 VDC (sea level).
- Contact retention = 4 lbs. (minimum).
- Contact = copper alloy
- Insulator body = thermoplastic PET, UL flammability rating 94 V0.



**TEKA**  
**INTERCONNECTION  
SYSTEMS, INC.**

45 Salem Street  
Providence, RI 02907-2888  
(401) 785-4110  
FAX: (401) 461-2310

All Connectors  
Made in USA

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# TELCO MODULAR JACKS

## Modular Jack Technical Information - 200 Series

### Features

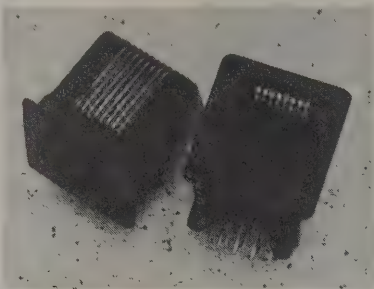
- Listed by Underwriters Laboratories Inc. File number E131564(N)
- Designed for flush mount application
- Selectively gold plated on contact area, tin-lead on solder tails
- Industry compatible profiles and footprints
- Flame retardant plastic material
- Meets FCC part 68
- Available in custom colors with orders of 5000 pieces or more

### Specifications

#### Electrical

Current Rating: 1.5 amps  
Voltage Rating: 150 volts AC max  
Dielectric Withstanding Voltage: 1000 VAC, RMS 60 Hz, 1 min.  
Insulation Resistance: 500 megohms min.  
Surge Test: To 1000 volts

### Parallel Flanged Mount



### Ordering Information

| Positions | Loaded | Plating 1   | Plating 2   |
|-----------|--------|-------------|-------------|
| 4         | 4      | GD241-44-15 | GD241-44-50 |
| 6         | 4      | GD242-64-15 | GD242-64-50 |
| 6         | 6      | GD242-66-15 | GD242-66-50 |
| 8         | 6      | GD243-86-15 | GD243-86-50 |
| 8         | 8      | GD243-88-15 | GD243-88-50 |
| 8K        | 6      | GD244-86-15 | GD244-86-50 |
| 8K        | 8      | GD244-88-15 | GD244-88-50 |

### Mechanical

Insertion Force: 3.58Kg (7.9 lb.) max.  
PC Board Retention: 0.45Kg (1 lb.) pull before soldering  
9.00Kg (20 lb.) pull after soldering

Durability: 750 mating cycles

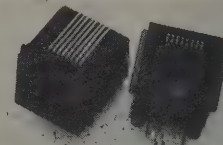
**Material and Finish** Noryl "PPO" or VALOX SEO

Housing: UL 94V-1 fire retardant or 94V-0 fire retardant

Contact Material: .014" Phosphor bronze

PC Board Thickness: .062" (1.57mm) thick

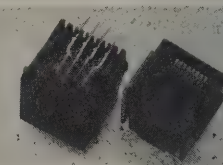
### Parallel Flangeless Mount



### Ordering Information

| Positions | Loaded | Plating 1   | Plating 2   |
|-----------|--------|-------------|-------------|
| 4         | 4      | GD249-44-15 | GD249-44-50 |
| 6         | 6      | GD250-66-15 | GD250-66-50 |
| 8         | 6      | GD251-86-15 | GD251-86-50 |
| 8         | 8      | GD251-88-15 | GD251-88-50 |
| 8K        | 6      | GD252-86-15 | GD252-86-50 |
| 8K        | 8      | GD252-88-15 | GD252-88-50 |

### Perpendicular Mount

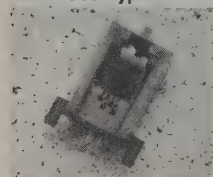


### Ordering Information

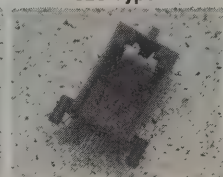
| Positions | Loaded | Plating 1   | Plating 2   |
|-----------|--------|-------------|-------------|
| 4         | 4      | GD257-44-15 | GD257-44-50 |
| 6         | 4      | GD258-64-15 | GD258-64-50 |
| 6         | 6      | GD258-66-15 | GD258-66-50 |
| 8         | 6      | GD259-86-15 | GD259-86-50 |
| 8         | 8      | GD259-88-15 | GD259-88-50 |
| 8K        | 6      | GD260-86-15 | GD260-86-50 |
| 8K        | 8      | GD260-88-15 | GD260-88-50 |

## Modular Jack Technical Information- 600 Series

### 616 Type



### 623 Type



### 641/647 Type



### Features

- Listed by Underwriters Laboratories Inc. File number E131564(N)
- Designed for flush mount application
- Industry compatible profiles and footprints
- Flame retardant plastic material
- Meets FCC part 68
- Available in custom colors with orders of 5,000 pieces or more

### Specifications

#### Electrical

Current Rating: 1.5 amps  
Voltage Rating: 20 milliohms max  
Dielectric Withstanding Voltage: 1000 VAC, RMS 60 Hz, 1 min.  
Insulation Resistance:  $\geq 10$  megohms

#### Mechanical

Total Mating Force: 500 grams for a 4 wire lead; 750 grams for a 6 wire lead; 900 grams for an 8 wire lead

Retention: 76N (17 lb.) between the jack and the plug

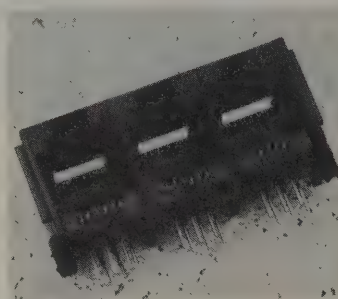
**Material and Finish:** ABS Molding Compound

Housing: UL 94V-0 fire retardant

Contact Material: .018" Phosphor bronze

PC Board Thickness: .062" (1.57mm) thick

## Low Profile Gang Jack PCB Mount Series



### Features

- Listed by Underwriters Laboratories Inc. File number E131564(N)
- From one to eight ports available for efficient use of board space
- From two to six loaded contacts available per port
- Meets FCC part 68
- Available in custom colors with orders of 5000 pieces or more

### Specifications

**Housing:** Zytel molding compound, Black, U.L. 94V-0

**Contact Material:** .018" Phosphor bronze

**Plating 1:** 15 $\mu$  hard gold over 50  $\mu$  nickel over tin

**Plating 2:** 50 $\mu$  hard gold over 50  $\mu$  nickel over tin

### Ordering Information

| Number of Parts | Positions | Loaded Contacts | Plating 1   | Plating 2   |
|-----------------|-----------|-----------------|-------------|-------------|
| 1               | 6         | 6               | GDL1-6/6-15 | GDL1-6/6-50 |
| 2               | 6         | 6               | GDL2-6/6-15 | GDL2-6/6-50 |
| 3               | 6         | 6               | GDL3-6/6-15 | GDL3-6/6-50 |
| 4               | 6         | 6               | GDL4-6/6-15 | GDL4-6/6-50 |
| 5               | 6         | 6               | GDL5-6/6-15 | GDL5-6/6-50 |
| 6               | 6         | 6               | GDL6-6/6-15 | GDL6-6/6-50 |
| 7               | 6         | 6               | GDL7-6/6-15 | GDL7-6/6-50 |
| 8               | 6         | 6               | GDL8-6/6-15 | GDL8-6/6-50 |

Available with 2 and 4 loaded contacts      Available with 4 positions



**TELCO INTERCONTINENTAL CORPORATION**

9812 WHITHORN DRIVE, HOUSTON, TEXAS 77095 • TEL: (713) 855-2218 • FAX: (713) 859-8825 • 1-800-678-3526



# TELCO INTERCONNECT

## Telco Pin Headers



## Low Profile Breakaway Headers Single Row Series

Ordering Information Dimension A = Mating Length, B = Tail Length, C = Overall Length

| Series No.                      | P1101                                                     | P1102                                                     | P1103                                                     | P1104                                                     |
|---------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Plating Option                  | A - .230" (5.84)<br>B - .100" (2.54)<br>C - .430" (10.92) | A - .230" (5.84)<br>B - .125" (3.18)<br>C - .455" (11.56) | A - .318" (8.08)<br>B - .100" (2.54)<br>C - .518" (13.16) | A - .318" (8.08)<br>B - .125" (3.18)<br>C - .543" (13.79) |
| 15μ Gold over 50μ Nickel        | P1101-XX-A                                                | P1102-XX-A                                                | P1103-XX-A                                                | P1104-XX-A                                                |
| 1μ Gold over 50μ Nickel         | P1101-XX-B                                                | P1102-XX-B                                                | P1103-XX-B                                                | P1104-XX-B                                                |
| 100μ Solder (Tin/Lead 90/10)    | P1101-XX-C                                                | P1102-XX-C                                                | P1103-XX-C                                                | P1104-XX-C                                                |
| 30μ Select Gold over 50μ Nickel | P1101-XX-D                                                | P1102-XX-D                                                | P1103-XX-D                                                | P1104-XX-D                                                |
| 15μ Select Gold over 50μ Nickel | P1101-XX-E                                                | P1102-XX-E                                                | P1103-XX-E                                                | P1104-XX-E                                                |

## Low Profile Breakaway Headers Double Row Series

Ordering Information Dimension A = Mating Length, B = Tail Length, C = Overall Length

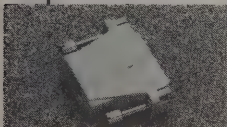
| Series No.                      | P2101                                                     | P2102                                                     | P2103                                                     | P2104                                                     |
|---------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|
| Plating Option                  | A - .230" (5.84)<br>B - .100" (2.54)<br>C - .430" (10.92) | A - .230" (5.84)<br>B - .125" (3.18)<br>C - .455" (11.56) | A - .318" (8.08)<br>B - .100" (2.54)<br>C - .518" (13.16) | A - .318" (8.08)<br>B - .125" (3.18)<br>C - .543" (13.79) |
| 15μ Gold over 50μ Nickel        | P2101-XX-A                                                | P2102-XX-A                                                | P2103-XX-A                                                | P2104-XX-A                                                |
| 1μ Gold over 50μ Nickel         | P2101-XX-B                                                | P2102-XX-B                                                | P2103-XX-B                                                | P2104-XX-B                                                |
| 100μ Solder (Tin/Lead 90/10)    | P2101-XX-C                                                | P2102-XX-C                                                | P2103-XX-C                                                | P2104-XX-C                                                |
| 30μ Select Gold over 50μ Nickel | P2101-XX-D                                                | P2102-XX-D                                                | P2103-XX-D                                                | P2104-XX-D                                                |
| 15μ Select Gold over 50μ Nickel | P2101-XX-E                                                | P2102-XX-E                                                | P2103-XX-E                                                | P2104-XX-E                                                |

NOTE: To order desired part, insert number of required circuits (02 thru 40) in place of XX  
Please consult us for availability of pin length and plating not shown above.

## Telephone Accessories and Data Interconnect Devices



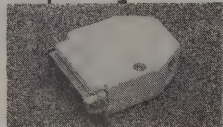
## One Piece Modular Adaptor - 890 Series



### Features

- Listed by Underwriters Laboratories, Inc. File number E131564(N)
- Available with male or female d-sub
- Flame retardant ABS housing
- One piece injection hood
- DEC jack available
- Thumb screws

## Two Piece Modular Adaptor - 870 Series



### Features

- Listed by Underwriters Laboratories Inc. File number E131564(N)
- One or two modular jacks available at side rear
- Available with male or female RS232
- Flame retardant ABS housing
- Two piece hood allows for internal modification
- DEC jack available

## Low Profile Breakaway Headers Single Row Right Angle

Ordering Information Dimension A = Mating Length

| Series No.                      | P1201                                                   | P1202                                                   | P1203                                                   | P1204                                                   |
|---------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Plating Option                  | A - .230" (5.84)<br>B - .100" (2.54)<br>C - .60" (1.52) | A - .230" (5.84)<br>B - .125" (3.18)<br>C - .60" (1.52) | A - .318" (8.08)<br>B - .100" (2.54)<br>C - .60" (1.52) | A - .318" (8.08)<br>B - .125" (3.18)<br>C - .60" (1.52) |
| 15μ Gold over 50μ Nickel        | P1201-XX-A                                              | P1202-XX-A                                              | P1203-XX-A                                              | P1204-XX-A                                              |
| 1μ Gold over 50μ Nickel         | P1201-XX-B                                              | P1202-XX-B                                              | P1203-XX-B                                              | P1204-XX-B                                              |
| 100μ Solder (Tin/Lead 90/10)    | P1201-XX-C                                              | P1202-XX-C                                              | P1203-XX-C                                              | P1204-XX-C                                              |
| 30μ Select Gold over 50μ Nickel | P1201-XX-D                                              | P1202-XX-D                                              | P1203-XX-D                                              | P1204-XX-D                                              |
| 15μ Select Gold over 50μ Nickel | P1201-XX-E                                              | P1202-XX-E                                              | P1203-XX-E                                              | P1204-XX-E                                              |

## Low Profile Breakaway Headers Double Row Right Angle

Ordering Information Dimension A = Mating Length

| Series No.                      | P2201                                                   | P2202                                                   | P2203                                                   | P2204                                                   |
|---------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Plating Option                  | A - .230" (5.84)<br>B - .100" (2.54)<br>C - .60" (1.52) | A - .230" (5.84)<br>B - .125" (3.18)<br>C - .60" (1.52) | A - .318" (8.08)<br>B - .100" (2.54)<br>C - .60" (1.52) | A - .318" (8.08)<br>B - .125" (3.18)<br>C - .60" (1.52) |
| 15μ Gold over 50μ Nickel        | P2201-XX-A                                              | P2202-XX-A                                              | P2203-XX-A                                              | P2204-XX-A                                              |
| 1μ Gold over 50μ Nickel         | P2201-XX-B                                              | P2202-XX-B                                              | P2203-XX-B                                              | P2204-XX-B                                              |
| 100μ Solder (Tin/Lead 90/10)    | P2201-XX-C                                              | P2202-XX-C                                              | P2203-XX-C                                              | P2204-XX-C                                              |
| 30μ Select Gold over 50μ Nickel | P2201-XX-D                                              | P2202-XX-D                                              | P2203-XX-D                                              | P2204-XX-D                                              |
| 15μ Select Gold over 50μ Nickel | P2201-XX-E                                              | P2202-XX-E                                              | P2203-XX-E                                              | P2204-XX-E                                              |

## Power Cords



### Features

- Custom mfg. to meet U.S. & International specifications
- UL/CSA and other agency approvals
- Compatible with industry standard cords
- Custom OEM jobs welcomed
- FAX us your requirements today at 1-713-859-8825

### Standard Part Numbers

| Part Number | Wire Type | Rating   | AWG Size & Stranding | Length Ft./Mtrs. | Nominal O.D. (In.) |
|-------------|-----------|----------|----------------------|------------------|--------------------|
| 33300-6F-BB | SVT       | 10A-125V | 18/3 (42 x 34)       | 6'/1.8           | .252               |
| 33300-8F-BB | SVT       | 10A-125V | 18/3 (42 x 34)       | 8'/2.4           | .252               |
| 33500-6F-GG | SJT       | 10A-125V | 18/3 (16 x 30)       | 6'/1.8           | .315               |
| 33500-8F-GG | SJT       | 10A-125V | 18/3 (16 x 30)       | 8'/2.4           | .315               |
| 31101-6F-BB | SPT-1     | 10A-125V | 18/2 (42 x 34)       | 6'/1.8           | .114/.232          |
| 31101-9F-BB | SPT-1     | 10A-125V | 18/2 (42 x 34)       | 9'/2.7           | .114/.232          |

### Foil Shielded PVC Jacketed:

|             |     |          |                |         |      |
|-------------|-----|----------|----------------|---------|------|
| 35626-2M-BB | SJT | 10A-125V | 18/3 (16 x 30) | 6.6/2.0 | .331 |
| 35627-2M-BB | SJT | 13A-125V | 16/3 (26 x 30) | 6.6/2.0 | .355 |

### Unshielded PVC Jacketed:

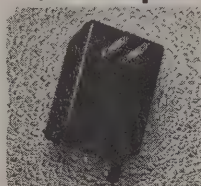
|             |     |          |                |         |      |
|-------------|-----|----------|----------------|---------|------|
| 35526-2M-BB | SJT | 10A-125V | 18/3 (16 x 30) | 6.6/2.0 | .315 |
| 35527-2M-BB | SJT | 13A-125V | 16/3 (26 x 30) | 6.6/2.0 | .343 |

### Foil Shielded PVC Jacketed:

|             |     |          |                |         |      |
|-------------|-----|----------|----------------|---------|------|
| 35650-2M-BB | SJT | 10A-125V | 18/3 (16 x 30) | 6.6/2.0 | .331 |
|-------------|-----|----------|----------------|---------|------|

Standard color codes are NA: Black—Hot, White—Neutral, Green—Ground  
For custom orders, color code can be changed to CEE: Brown—Hot, Blue—Neutral, Green/Yellow Stripe—Ground

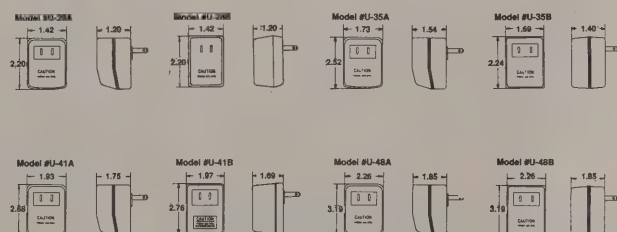
## AC/DC Adaptors



### Features

- Custom mfg. to meet U.S. & International specifications
- UL/CSA and other International approvals
- Specializing in large volume requirements
- Custom OEM jobs welcomed
- FAX us your requirements today at 713-859-8825

### U.S. Adaptor Dimensions



## TELCO INTERCONTINENTAL CORPORATION

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## MINIGLOSSARY CONNECTORS

**Connector terminology** is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

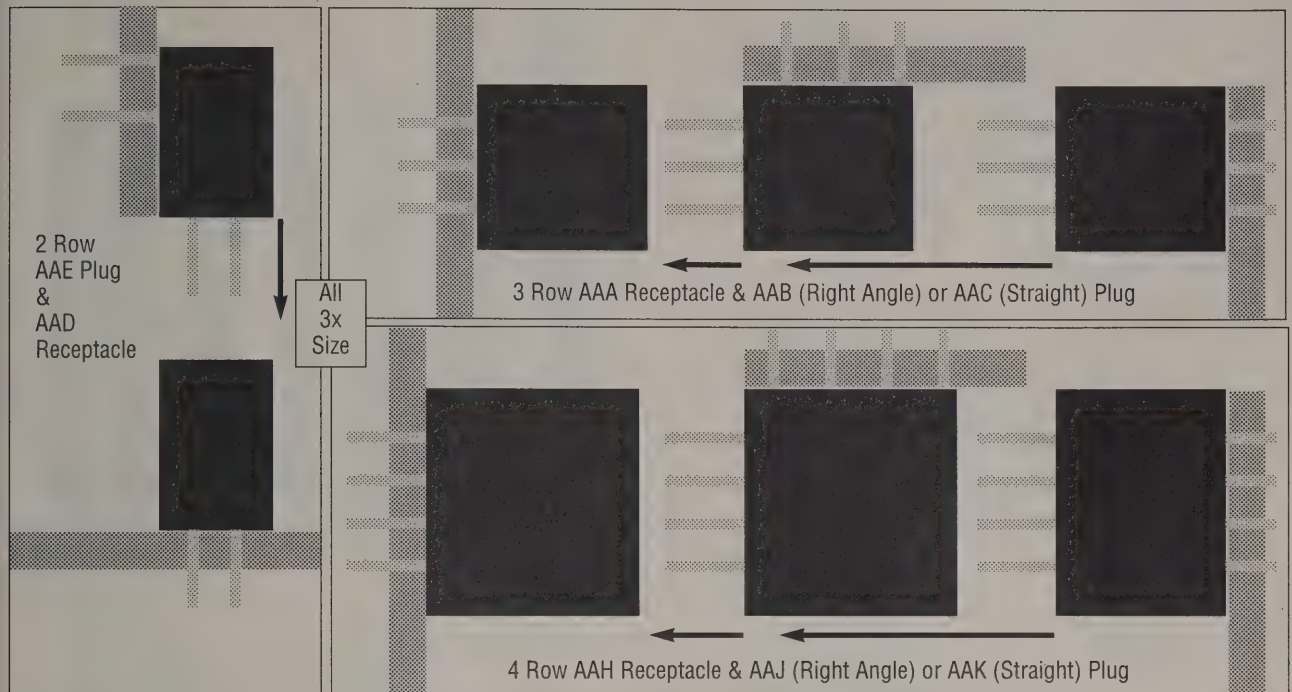
**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.





# VHD Series



The Texas Instruments VHD Series Contact System is on the QPL listings for MIL-C-55302 in a variety of slash configurations. These connectors are intended for very high density applications and are capable of handling currents up to 3 Amperes. The schematic representations above are intended to show the basic configurations available. Note that all receptacles have straight through bodies while the plugs can be either straight or right angle. In the figures above only printed circuit boards are shown. Several other options are available as shown on the next pages. The mating matrices provide guidance on which plugs fit which receptacles and which contacts and hardware will mate. Please contact your distributor or the factory for polarization details. Dozens of polarization schemes are available.

| Insulator (body) Mating Matrix |     |     |     |     |     |
|--------------------------------|-----|-----|-----|-----|-----|
| Plugs > Receptacles            | AAB | AAC | AAE | AAJ | AAK |
| AAA                            | X   | X   |     |     |     |
| AAD                            |     |     | X   |     |     |
| AAH                            |     |     |     | X   | X   |

Contact Mating Matrix

| Pins > Receptacles | A005 | A006 | A007 | A008 | A009 | A010 | A011 | A017 | A018 | A019 | A028 | A029 | A030 | A031 | A032 | A033 |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| A062               | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |      |      |      |      |      |      |
| A063               | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |      |      |      |      |      |      |
| A064               | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |      |      |      |      |      |      |
| A061               | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |      |      |      |      |      |      |
| A014               | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |      |      |      |      |      |      |
| A066               | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |      |      |      |      |      |      |
| A072               |      |      |      |      |      |      |      |      |      |      | X    | X    | X    | X    | X    | X    |
| A073               |      |      |      |      |      |      |      |      |      |      | X    | X    | X    | X    | X    | X    |
| A074               |      |      |      |      |      |      |      |      |      |      | X    | X    | X    | X    | X    | X    |
| A020               |      |      |      |      |      |      |      |      |      |      | X    | X    | X    | X    | X    | X    |
| A076               |      |      |      |      |      |      |      |      |      |      | X    | X    | X    | X    | X    | X    |

Hardware Mating Matrix

|      | A001 | A003 | A007 | A009 | A011 | A012 | A013 | A014 | A015 | A004 | A006 | A008 | A016 | A017 | A019 | A020 | R2YY | R1YY |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| A002 |      |      | X    |      |      | X    | X    |      | X    |      |      |      |      |      |      |      |      |      |
| A003 |      | X    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| A010 | X    |      |      | X    | X    |      |      | X    |      |      |      |      |      |      |      |      |      |      |
| A005 |      |      |      |      |      |      |      |      |      | X    |      | X    |      |      | X    |      |      |      |
| A006 |      |      |      |      |      |      |      |      |      |      | X    |      |      |      |      |      |      |      |
| A018 |      |      |      |      |      |      |      |      |      |      |      |      | X    | X    |      | X    |      |      |
| P2YY |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |      |
| P1YY |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | X    |

Polarized guide sets will mate only if both are "YY".



# VHD Series

The VHD Series of connectors are available in 2, 3, or 4 row configurations, straight plug or receptacles and right angle plugs. The 2 row design offers the option of choosing a 10-100 position connector (increment of 10). While the 3 row design is available with 80, 122, 152, or 206 positions. The 4 row connector is available in 210 positions. All VHD connectors meet or exceed MIL-C-55302 requirements and offer a wide variety of contact and hardware configurations.

## PERFORMANCE

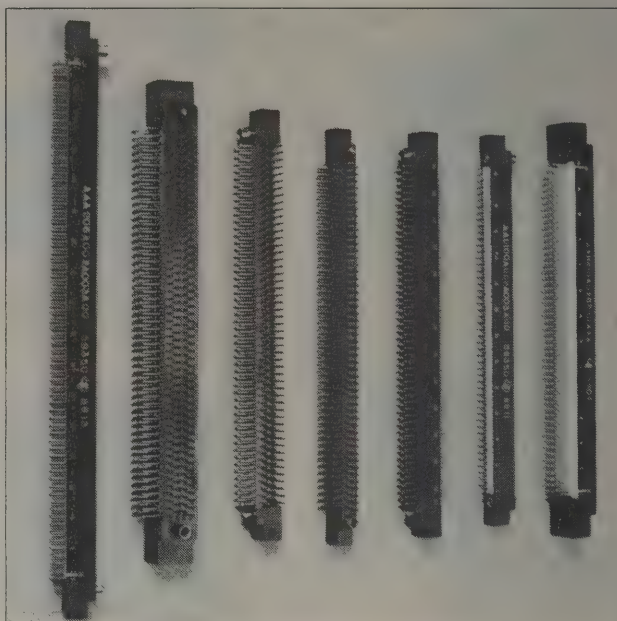
|                                 |                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------|
| Contact Rating                  | 3 Amperes                                                                                      |
| Contact Resistance              | .020 Ohms max. individual<br>.010 Ohms max. average<br>Per MIL-STD-1344/3004                   |
| Contact Engaging Force          | 2.5 oz. max. average<br>3 oz. max. individual<br>Tested with .0245" dia. pin<br>.5 oz. minimum |
| Contact Separation Force        | Tested with .0245" dia. pin<br>.25 lbs./contact max. mate<br>.04 lbs./contact min. unmate      |
| Gang Mating/Unmating            | 500 cycles per MIL-C-55302                                                                     |
| Durability                      | .033" dia. pin @ 21 oz. force<br>Per MIL-STD-202/208                                           |
| Oversize Pin Exclusion          | -65°C to +125°C per MIL-STD-1344/1003, 5 (1) hr. cycles                                        |
| Solderability                   | 750Vrms @ sea level<br>250Vrms @ 70,000 ft. per<br>MIL-STD-1344/3001                           |
| Temp. Cycling                   | 5000 megohms @ 500Vdc per<br>MIL-STD-1344/3001                                                 |
| Dielectric Withstanding Voltage | No discontinuities >1µsec per<br>MIL-STD-1344/2005, condition<br>III, 10-2000 Hz, 15G peak     |
| Insulation Resistance           | No discontinuities >1µsec per<br>MIL-STD-1344/2004                                             |
| Vibration                       | 100G sawtooth<br>Per MIL-STD-1344/1001,                                                        |
| Shock                           | 5% salt @ 95°F, 48 hrs.<br>Per MIL-STD-1344/1002, II,                                          |
| Salt Spray                      | 10 days @25-65°C,<br>80-98% relative humidity                                                  |
| Humidity                        |                                                                                                |

## SPECIFICATIONS

|                |                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contacts       | Base material - Beryllium<br>Copper per QQ-C-530<br>Plating - 50 µinch Au per MIL-G-45204, type II, grade C, class 1<br>over 50-150 µinch nickel per<br>QQ-N-290 |
| Body Insulator | Glass filled polyphenylene sulfide (ryton) per MIL-M-24519                                                                                                       |
| Hardware       | Stainless steel per ASTM-A582, passivated or beryllium copper per QQ-C-550, nickel plated per QQ-N-290, 50-150 µinch                                             |
| Marking        | Per MIL-STD-1285                                                                                                                                                 |

## REFERENCE MIL-C-55302 / 190-193

The designer must check that the contact and hardware styles added to the insulator produce a combination that is on the QPL.



## PART NUMBERING SYSTEM

|       |               | Mountings |      |     |      |          |
|-------|---------------|-----------|------|-----|------|----------|
|       |               | Earless   | Ears |     |      |          |
| 2 Row | Receptacle    | ACD       | AAD  | 100 | XXXX | XXXX A00 |
|       | Rt Ang Plug   | ACE       | AAE  | 100 | XXXX | XXXX A00 |
| 3 Row | Receptacle    | ACA       | AAA  | 122 | XXXX | XXXX A00 |
|       | Rt Ang Plug   | ACB       | AAB  | 122 | XXXX | XXXX A00 |
|       | Straight Plug | ACC       | AAC  | 122 | XXXX | XXXX A00 |
| 4 Row | Receptacle    | ACH       | AAH  | 210 | XXXX | XXXX A00 |
|       | Rt Ang Plug   | ACJ       | AAJ  | 210 | XXXX | XXXX A00 |
|       | Straight Plug | ACK       | AAK  | 210 | XXXX | XXXX A00 |

| Rows | Number of positions                     |
|------|-----------------------------------------|
| 2    | 010,020,030,040,050,060,070,080,090,100 |
| 3    | 080, 122,152,206                        |
| 4    | 210                                     |

| Contact Type | Straight Receptacle |       | Rt Angle Plug |       |       | Straight Plug |       |
|--------------|---------------------|-------|---------------|-------|-------|---------------|-------|
| Length       | 2-3 Row             | 4 Row | 2 Row         | 3 Row | 4 Row | 2-3 Row       | 4 Row |
| .109"Dip     | A062                | A072  | A017          | A005  | A028  | A008          | A031  |
| .140"Dip     | A063                | A073  | A018          | A006  | A029  | A009          | A032  |
| .172"Dip     | A064                | A074  | A019          | A007  | A030  | A010          | A033  |
| .234"Dip     | A014                |       |               |       |       |               |       |
| .100"Cup     | A061                | A071  |               |       |       | A011          | A085  |
| Wire wrap    | A066                | A076  |               |       |       |               |       |

| Hardware                                   | 2-3 Row | 4 Row |
|--------------------------------------------|---------|-------|
| Guide set                                  | A003    | A006  |
| Fixed jack set                             | A010    | A005  |
| Turning jackset, .490" long, slotted screw | A001    |       |
| Turning jackset, .500" long, slotted screw |         | A008  |
| Turning jackset, .700" long, slotted screw | A011    | A004  |
| Hex turning jackset, .545" long            | A014    |       |
| Short hex turning jackset, .200" long      | A009    | A019  |
| Polarized guide set (* = R or P)           | *2YY    | *1YY  |

P = Plug R = Receptacle

**No Variation or Special Variations - Consult factory**

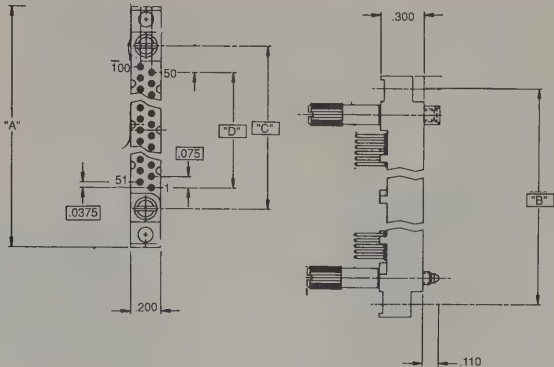
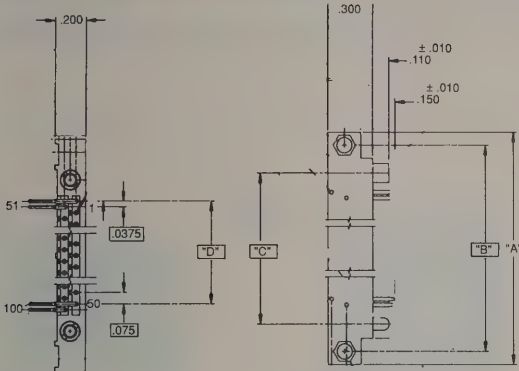




# VHD Series

## 2 Rows

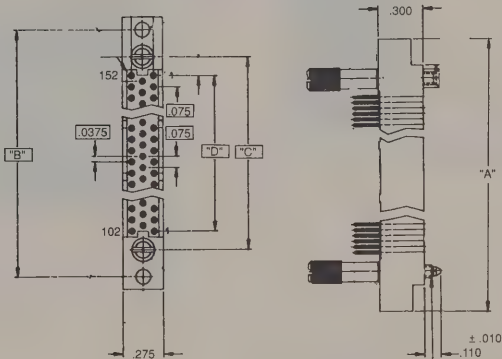
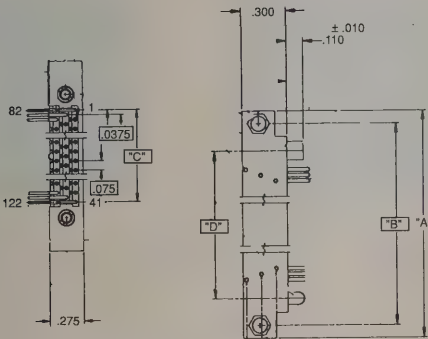
## VHD Series (MIL-C-55302), Plug & Receptacle Dimensions



| DIMENSIONS | NO. OF POSITIONS |       |       |       |       |       |       |       |       |       |
|------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            | 10               | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100   |
| "A" ± .010 | 1.138            | 1.513 | 1.888 | 2.263 | 2.638 | 3.013 | 3.388 | 3.763 | 4.138 | 4.513 |
| "B" BSC    | .968             | 1.343 | 1.718 | 2.093 | 2.468 | 2.843 | 3.218 | 3.593 | 3.968 | 4.343 |
| "C" BSC    | .618             | .993  | 1.368 | 1.743 | 2.118 | 2.493 | 2.868 | 3.243 | 3.618 | 3.993 |
| "D" BSC    | .300             | .675  | 1.050 | 1.425 | 1.800 | 2.175 | 2.550 | 2.925 | 3.300 | 3.675 |

| DIMENSIONS | NO. OF POSITIONS |       |       |       |       |       |       |       |       |       |
|------------|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|            | 10               | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100   |
| "A" ± .010 | 1.138            | 1.513 | 1.888 | 2.263 | 2.638 | 3.013 | 3.388 | 3.763 | 4.138 | 4.513 |
| "B" BSC    | .968             | 1.343 | 1.718 | 2.093 | 2.468 | 2.843 | 3.218 | 3.593 | 3.968 | 4.343 |
| "C" BSC    | .618             | .993  | 1.368 | 1.743 | 2.118 | 2.493 | 2.868 | 3.243 | 3.618 | 3.993 |
| "D" BSC    | .300             | .675  | 1.050 | 1.425 | 1.800 | 2.175 | 2.550 | 2.925 | 3.300 | 3.675 |

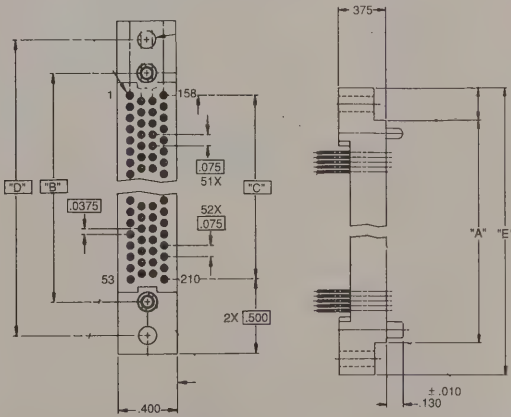
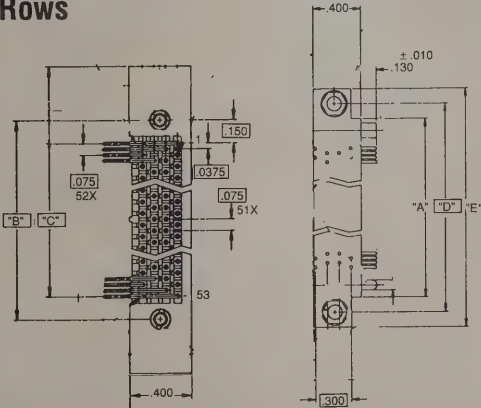
## 3 Rows



| DIMENSIONS | NO. OF POSITIONS |       |       |       |
|------------|------------------|-------|-------|-------|
|            | 80               | 122   | 152   | 206   |
| "A" ± .010 | 2.730            | 3.780 | 4.530 | 5.880 |
| "B" BSC    | 2.560            | 3.610 | 4.360 | 5.710 |
| "C" BSC    | 1.950            | 3.000 | 3.750 | 5.100 |
| "D" BSC    | 2.200            | 3.250 | 4.000 | 5.350 |

| DIMENSIONS | NO. OF POSITIONS |       |       |       |
|------------|------------------|-------|-------|-------|
|            | 80               | 122   | 152   | 206   |
| "A" ± .010 | 2.730            | 3.780 | 4.530 | 5.880 |
| "B" BSC    | 2.560            | 3.610 | 4.360 | 5.710 |
| "C" BSC    | 2.200            | 3.250 | 4.000 | 5.350 |
| "D" BSC    | 1.950            | 3.000 | 3.750 | 5.100 |

## 4 Rows



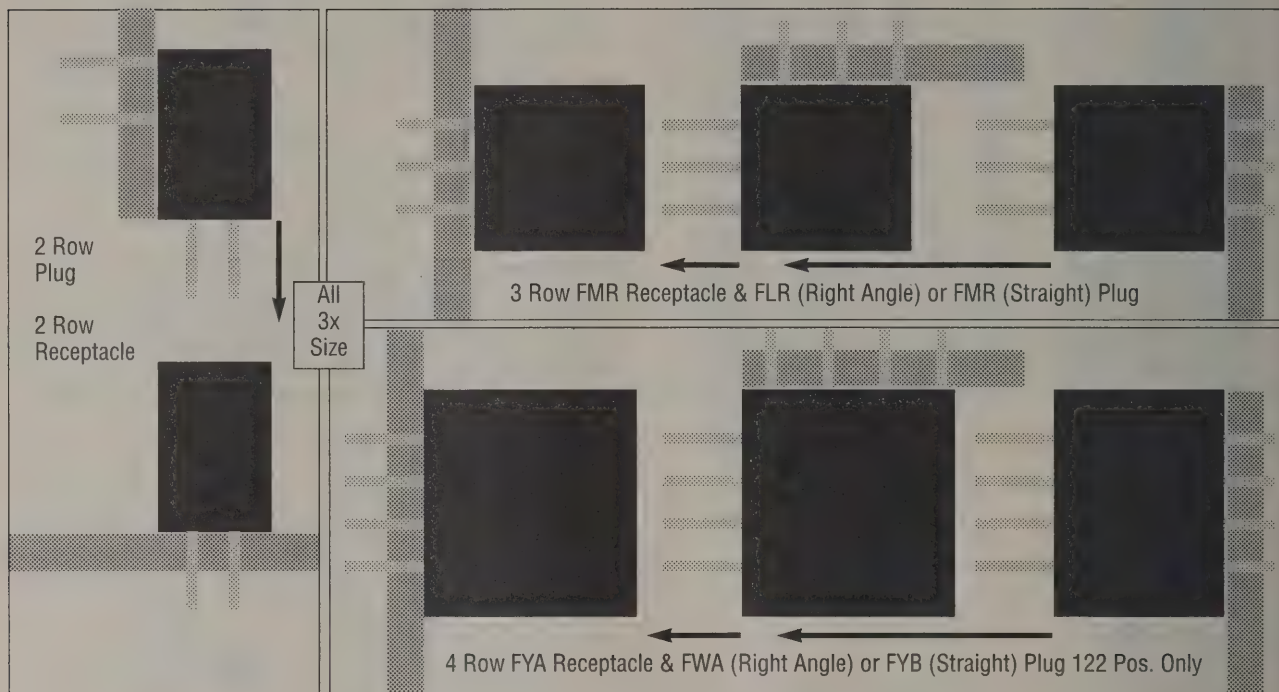
| DIMENSIONS | NO. OF POS. | DIMENSIONS | NO. OF POS. |
|------------|-------------|------------|-------------|
|            | 210         |            | 210         |
| "A" ± .010 | 4.400       | "D" BSC    | 4.650       |
| "B" BSC    | 4.200       | "E" .010   | 4.900       |
| "C" BSC    | 3.900       |            |             |

| DIMENSIONS | NO. OF POS. | DIMENSIONS | NO. OF POS. |
|------------|-------------|------------|-------------|
|            | 210         |            | 210         |
| "A" ± .010 | 4.400       | "D" BSC    | 4.650       |
| "B" BSC    | 4.200       | "E" .010   | 4.900       |
| "C" BSC    | 3.900       |            |             |



# F Series

10 to 208 Positions, .100" Centerline x .050" Offset  
2, 3 & 4 Row Receptacles & Plugs



The Texas Instruments F-Series Contact System is on the QPL listings for MIL-C-55302 in a variety of slash configurations. These Cable/PWB connectors are intended for PWB applications and are capable of handling currents up to 5 Amperes.

The schematic representations above are intended to show the basic configurations available. Note that all receptacles have straight through bodies while the plugs can be either straight or right angle. In the figures above only printed circuit boards are shown. Several other options are available as shown on the next pages.

The mating matrices provide guidance on which plugs fit which receptacles and which contacts and hardware will mate.

Please contact your distributor or the factory for polarization details. Dozens of polarization schemes are available.





# F Series (MIL-C-55302), .100" Centerline x .050" Offset Straight & Right angle Receptacles & Plugs 1, 2, 3 & 4 Rows, 3-208 Positions

F-Series connectors are available in 3 connector configurations, straight plug or receptacle and right angle plugs. F-Series offers you the option of selecting a 1, 2, 3, or 4 row style connector suitable to your application. All F-Series connectors meet or exceed the requirements of MIL-C-55302 and offer a wide variety of contact and hardware configurations.

## PERFORMANCE

|                                 |                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------|
| Contact Rating                  | 5 Amperes (22 & 24 AWG)                                                              |
| Contact Resistance              | .020 Ohms max. individual<br>.010 Ohms max. average<br>Per MIL STD-1344/3004         |
| Temp. Cycling                   | -65°C to +125°C per MIL-STD-1344/1003, 5 (1) hr. cycles                              |
| Dielectric Withstanding Voltage | 1000Vrms 60 Hz @ sea level<br>300Vrms 60 Hz @ 70,000 ft. per MIL-STD-1344/3001       |
| Insulation Resistance           | 5000 megohms @ 500Vdc per MIL-STD-1344/3001                                          |
| Vibration                       | No discontinuities >1μsec per MIL-STD-1344/2005, condition III, 10-2000 Hz, 15G peak |
| Salt Spray                      | Per MIL-STD-1344/1001, 5% salt @ 95°F, 48 hrs.                                       |
| Shock                           | No discontinuities >6ms per MIL-STD-1344/2004<br>100G sawtooth                       |
| Durability                      | 500 cycles per MIL-C-55302                                                           |
| Humidity                        | Per MIL-STD-1344/1002, II, 10 days @25-65°C, 80-98%RH                                |
| Gang Mating/Unmating (Low)      | .25 lbs/contact max. mate<br>.04 lbs/contact min. unmate                             |

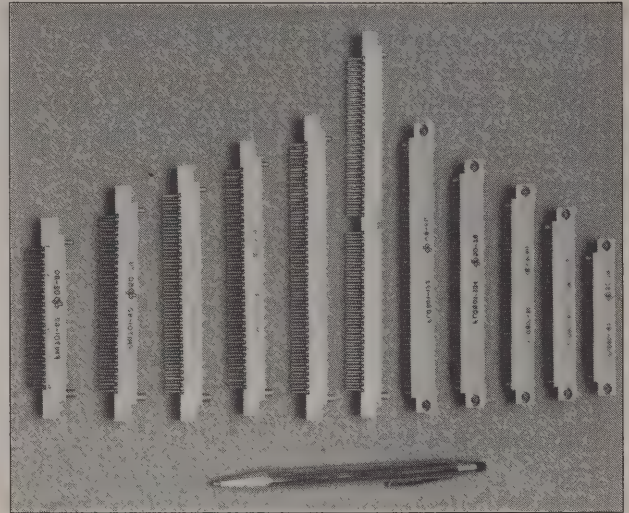
## SPECIFICATIONS

|                |                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contacts       | Base material - Beryllium<br>Copper per QQ-C-530<br>Plating - 50 μinch Au per MIL-G-45204, type II, grade C, class 1<br>over 50-150 μinch nickel per QQ-N-290 |
| Body Insulator | Glass filled Polypheneyne<br>Sulfide (Ryton)<br>per Mil-M-24519 or<br>Diallyl Phthalate per Mil-M-14.                                                         |
| Hardware       | Stainless steel per MIL-C-55302, or beryllium copper per QQ-C-530/Ni plate                                                                                    |
| Marking        | Per MIL-STD-1285                                                                                                                                              |

## REFERENCE

**MIL-C-55302 / 21, 22, 55-66, 59-60, & 138-139**

The designer must check that the contact and hardware styles added to the insulator produce a combination that is on the QPL.



## PART NUMBERING SYSTEM

**FAR0123-44-33-22**

|                                          |            |           |           |            |            |            |
|------------------------------------------|------------|-----------|-----------|------------|------------|------------|
| Body style                               | <b>FAR</b> | <b>01</b> | <b>23</b> | <b>-44</b> | <b>-33</b> | <b>-22</b> |
| Contact type                             |            |           |           |            |            |            |
| Hardware code                            |            |           |           |            |            |            |
| Number of positions                      |            |           |           |            |            |            |
| Polarization orientation (if applicable) |            |           |           |            |            |            |
| Special variation (if applicable)        |            |           |           |            |            |            |

## BODY STYLES

| Code    | Description                        | Positions                                     |
|---------|------------------------------------|-----------------------------------------------|
| FAR     | Plug, no mtg ears                  | 10,14,20,24,26,30,36,40, 44,50,54,56,60,66,70 |
| FBR     | Receptacle, no mtg ears            | 10 thru 70                                    |
| FCR     | Plug, mtg ears, RA mtg & trmnls    | 10-70, 90-100, 120                            |
| FDR     | Receptacle with mtg ears           | 10-70, 90-100, 120                            |
| FER     | Plug with mtg ears                 | 10 thru 70                                    |
| FFR     | Plug, no mtg ears RA mtg & trmnls  | 10 thru 70                                    |
| FG      | Plug, mtg ears, RA mtg, str trm    | 10 thru 70                                    |
| FKA     | Plug, crmp, rmvbl cntct, no ears   | 10 thru 70                                    |
| FKB     | Rcpt, crmp, no ears                | 10 thru 70                                    |
| FKD     | FKB with mtg ears                  | 10 thru 70                                    |
| FKE     | FKA with mtg ears                  | 10 thru 70                                    |
| FKM     | FKD, mtg ears, 3 rows only         | 50,62,80,92,104                               |
| FKN     | FKM with no mtg ears, 3 rows       | 50,62,80,92,104                               |
| FKW     | Rcpt, crmp, no ears, strain relief | 10 thru 70                                    |
| FKY     | FKB with mtg ears, strain relief   | 10 thru 70                                    |
| FLR     | Plug, 3 rows                       | 50,62,80,92,104,160, 208                      |
| FMR     | Rcpt, 3 rows                       | 50,62,80,92,104,160, 208                      |
| FRA/FRB | Receptacle/Plug                    | Quarter Round 59                              |
| FSA     | 1 row plug, no mtg ears            | 3 thru 22                                     |
| FSB     | 1 row receptacle, no ears          | 3 thru 22                                     |
| FSF     | Rt angle 1 row plug, no ears       | 3 thru 22                                     |
| FST     | Rt angle 1 row rcptcl, no ears     | 3 thru 22                                     |
| FTBR    | Rt angle rcptcl no ears            | 10 thru 70                                    |
|         | Test connector/Card extender       | 10 thru 70                                    |
| FTDR    | Rt angle test, with ears           | 10 thru 70                                    |
| FWA     | Plug, Ears, RA mtg, 4 row          | 122                                           |
| FYA     | Receptacle, Ears, 4 row            | 122                                           |
| FYB     | Straight plug, Ears, 4 row         | 122                                           |



INSTRUCTIONS:

To assure the correct mating of all F Series Connectors, please reference the following:

- 1. Connector Body Mates.  
(same position only).
- 2. Connector Contact Mates.
- 3. Connector Hardware Mates.

CONTACT MATING MATRIX

- Assure all plug connectors have male pin contacts
- Assure all receptacle connectors have female socket style contacts
- All pin contacts will mate with all socket contacts

Please note that straight-through connectors may utilize either straight pin contacts or straight sockets, hence the mating positions of offset contacts should be confirmed with the factory.

F SERIES PIN CONTACTS

| Pin Description* | 2-3 Row |       | 122 Pos. 3 Row |       |
|------------------|---------|-------|----------------|-------|
|                  | Code    | Term" | Code           | Term" |
| Solder Dip       | 01      | .140  | 301            | .100  |
| Solder Dip       | 02      | .172  | 302            | .132  |
| RA Sold Dip      | 07      | .109  |                |       |
| RA Sold Dip      | 08      | .140  | 307            | .115  |
| RA Sold Dip      | 09      | .172  | 309            | .147  |
| RA Sold Dip      | 10      | .468  |                |       |
| Solder Cup       | 11      | .100  | 311            | .060  |
| WW, Strt         | 14      | .625  | 314            | .585  |
| Flex, Strt       | 15      | .058  |                |       |
| RA, WW           | 18      | .530  | 318            | .505  |
| RA Sold Cup      | 20      | .140  |                |       |
| Flex Circ        | 22      | .100  | 322            | .053  |
| RA, WW           | 23      | .625  | 323            | .600  |
| RA               | 26      | .266  | 326            | .241  |

\*WW=Wire Wrap; RA=Right Angle; Strt=Straight; Flex=Flex Circuit

F SERIES HARDWARE: GUIDE SETS, JACKSETS & SOCKETS, TURNING HARDWARE

| Std | 122 | Crmp | FT  | Description                    |
|-----|-----|------|-----|--------------------------------|
| 00  | 300 | X    | 100 | No hardware                    |
| 01  | 301 | G    | 101 | Guide set                      |
| 02  | 302 |      | 102 | 2 guide pins                   |
| 03  | 303 |      | 103 | 2 guide sockets                |
| 04  | 304 |      |     | Long guide set                 |
| 05  | 305 |      |     | 2 long guide pins              |
| 06  | 306 |      |     | 2 long guide sockets           |
| 07  | 307 | F    | 107 | Fixed jackset                  |
| 08  | 308 | FR   | 108 | Fixed jackset reversed         |
| 09  | 309 |      | 109 | 2 fixed jackscrews             |
| 10  | 310 |      | 110 | 2 fixed jacksockets            |
| 11  | 311 |      |     | Long fixed jackset             |
| 12  | 312 |      |     | Long fixed jackset reversed    |
| 13  | 313 |      |     | 2 long fixed jackscrews        |
| 14  | 314 |      |     | 2 long fixed jacksockets       |
| 15  | 315 | S    | 115 | Short turning jackset          |
| 16  | 316 | SR   | 116 | Short turning jackset reversed |
| 17  | 317 | S2M  | 117 | 2 short turning jackscrews     |
| 18  | 318 | S2F  | 118 | 2 short turning jacksockets    |
|     |     | M2F  |     | 2 medium trng jacksockets      |
| 19  | 319 | M    |     | Long turning jackset           |
| 20  | 320 | MR   |     | Long turning jackset reversed  |
| 21  | 321 |      |     | 2 long turning jackscrews      |
| 22  | 322 | M2F  |     | 2 long turning jacksockets     |
| 23  | 323 | GR   | 123 | Guide set reversed             |
| 24  | 324 | LR   |     | Long guide set reversed        |

F Series Mating Matrix

CONNECTOR MATING MATRIX

| Male Plug Connectors | Female Receptacle Connectors |     |     |    |     |     |    |    |     |
|----------------------|------------------------------|-----|-----|----|-----|-----|----|----|-----|
|                      | FBR                          | FDR | FMR | FR | FSB | FSD | FT | FK | FYA |
| FAR                  | •                            | •   |     |    |     |     | •  | •  |     |
| FCR                  | •                            | •   |     |    |     |     | •  | •  |     |
| FE                   | •                            | •   |     |    |     |     | •  | •  |     |
| FF                   | •                            | •   |     |    |     |     | •  | •  |     |
| FG                   | •                            | •   |     |    |     |     |    |    |     |
| FLR                  |                              |     | •   |    |     |     |    |    |     |
| FR                   |                              |     |     | •  |     |     |    |    |     |
| FSA                  |                              |     |     |    | •   | •   |    |    |     |
| FSC                  |                              |     |     |    | •   | •   |    |    |     |
| FSE                  |                              |     |     |    | •   | •   |    |    |     |
| FSF                  |                              |     |     |    | •   | •   |    |    |     |
| FMR                  |                              |     | •   |    |     |     |    |    |     |
| FK                   | •                            | •   | •   |    |     |     |    | •  |     |
| FWA                  |                              |     |     |    |     |     |    |    | •   |
| FYB                  |                              |     |     |    |     |     |    |    | •   |

F SERIES SOCKET CONTACTS

| Socket Description* | 2-3 Row |       | 122 Pos. 3 Row |       |
|---------------------|---------|-------|----------------|-------|
|                     | Code    | Term" | Code           | Term" |
| Solder Cup          | 53      | .100  | 353            | .060  |
| Solder Dip          | 54      | .140  | 354            | .100  |
| Solder Dip          | 55      | .172  | 355            | .132  |
| WW                  | 56      | .625  | 356            | .585  |
| Solder Dip          | 62      | .109  | 362            | .069  |
| Solder Dip          | 63      | .203  | 363            | .163  |
| Flex, Strt          | 66      | .058  |                |       |
| Solder Dip          | 67      | .234  | 367            | .194  |
| Cnt, Sld Cup        | 69      | .525  | 369            | .485  |
| Flex Circ           | 71      | .094  | 371            | .053  |
| Solder Cup          | 77      | .140  | 377            | .100  |
| Solder Dip          | 78      | .212  | 378            | .172  |
| WW                  | 79      | .665  | 379            | .625  |
| WW, Strt            | 85      | .500  |                |       |
| Strt, WW            | 84      | .375  |                |       |
| Strt, Flex          | 59      | .140  |                |       |

\*WW=Wire Wrap; Sck=Socket; Strt=Straight; Flex=Flex Circuit

| Std | 122 | Crmp | FT  | Description                         |
|-----|-----|------|-----|-------------------------------------|
| 25  | 325 |      | 125 | Hex turning jackset                 |
| 26  | 326 |      | 126 | Hex turning jackset reversed        |
| 27  | 327 |      | 127 | 2 hex trning jackscrews             |
| 28  | 328 | S2FH | 128 | 2 hex turning jacksockets           |
| 29  | 329 |      |     | Fixed jackset .187"                 |
| 31  | 331 | L    |     | Long turning jackset .695"          |
| 32  | 332 |      |     | Long round gd set mtg ext .147"     |
| 33  | 333 | PG   | 133 | Guide set polarized                 |
| 34  | 334 |      |     | Long polarized guide set            |
| 35  | 335 |      |     | Extra long fixed jackset            |
| 36  | 336 |      |     | Long guide set cut to .187"         |
| 37  | 337 |      |     | Long plrzd gd set cut to .100"      |
| 38  | 338 |      |     | Long turning jkset rev to .695"     |
| 39  | 339 |      |     | Long gd set mtg ext to .160"        |
| 41  | 341 |      |     | Long turning jackset                |
| 42  | 342 |      |     | Turning jkset scrw .7" jksckt .2"   |
| 43  | 343 |      |     | Turning jksckt .7" lng, jkscrew .2" |
| 44  | 344 | L2F  | 2   | Long turning jackscrews .700"       |
| 45  | 345 |      |     | 2 Long turning jacksockets .700"    |
| 46  | 346 |      |     | Short trng jkset BeCu hex knb       |
|     |     | SH   |     | Short trng hex knob                 |
|     |     | SHR  |     | Short trng hex knob reverse         |
| 47  | 347 |      |     | Fixed jackset reversed .187"        |
| 48  | 348 |      |     | 2 long fixed jacksockets            |
| 50  | 350 |      |     | Special polarized guide set         |
| 57  |     |      |     | Long hex int trng jkset .25" knob   |



## Custom Components

Connectors  
Cable Assemblies



**Trompeter... Quality doesn't cost... It pays.**

31186 La Baya Drive, Westlake Village, CA 91362-4047

Phone (818) 707-2020 Fax (818) 706-1040

## Custom Components...

## A Trompeter Tradition...

The growth of **Trompeter's** product line from only 78 components in 1964, to over 7,000 end items with over 20,000 configurations is proof of our engineering and manufacturing capabilities. With our tradition of custom components comes our reputation for providing *rugged* products that have been *modified* or *specially designed* to perform to your expectations and to meet your specific mechanical requirements.

### Why compromise your design...

when a minor modification might be an affordable solution to your design needs?

### Why settle for less than Trompeter...

when investing in interconnect components for your most demanding applications?

**Trompeter** components meet your most demanding requirements...

when **performance** is critical...

when **compromise** is not an acceptable solution...

and when **cost savings** do little to save the integrity of your design.

**For more information on custom components, contact your local Rep or call... 800-982-2629**

## Cable Assemblies

## Coax, Twinax, Triax, Quadrax

**Trompeter** has been producing high quality cable assemblies for over 25 years.

- Over 850 custom coax cable assemblies
- Over 126 different connector configurations
- Eight standard coax cables
- Over 440 custom twinax/triax cable assemblies
- Over 200 different connector configurations
- Eight standard twinax/triax cables

### Custom Cable Assemblies: General scope of hardware & capabilities...

**Cable:** Coax, Twinax, Triax, Quadrax. Unless otherwise specified, cable assemblies will be made with **Trompeter** cables. **Connectors:** Any cable-attached product produced by **Trompeter**, including plugs, jacks, patch plugs, patch jacks, databus contacts, etc. **Other non-Trompeter products:** e.g. SMA/B/C, coax contacts for multi-pin connectors, etc. (Note: At least one **Trompeter** product required on assembly). **Custom Additions:** Special marking such as ID sleeves, tags, hot stamping, color coding, etc.

**Production Rates:** 24-hour turn-around on many products. **Quality Assurance:** QA to Mil-I-45208A **Testing:** 100% electrical testing for continuity and shorts is standard. Other electrical and mechanical testing available upon request. (Hi-Pot, DWV, Insertion loss, Tensile pull test, etc.) **Delivery:** Full capabilities for sustained high volume deliveries. Deliveries can be adjusted to meet customer needs.

### Standard Cable Assemblies: Coax, Twinax...

These represent only a small portion of **Trompeter's** capabilities for providing high quality cable assemblies. See our full-line catalog for additional standard cable assemblies.

#### Standard Coax Cable Assemblies

|             |                                  | L-Length in inches. Z-Cable impedance (50Ω or 75Ω) |                                              |                          |
|-------------|----------------------------------|----------------------------------------------------|----------------------------------------------|--------------------------|
| Connector 1 | Connector 1 Description          | Connector 2                                        | Cable Assembly Description                   | TEI Cable Assembly Part# |
| PL1C        | 50Ω Standard patch plug (RCA)    | PL1C                                               | Patch plug to patch plug                     | PC-L-Z                   |
| PL3C        | 50Ω Miniature patch plug         | PL3C                                               | Miniature patch plug to miniature patch plug | PCM-L-Z                  |
| PL1WC       | 75Ω Standard patch plug (WE)     | PL1WC                                              | Patch plug to patch plug                     | PCW-L-Z                  |
| PL1C        | 50Ω Standard patch plug (RCA)    | PL20                                               | Patch plug to cable plug                     | PCX-L-Z                  |
| PL20        | 50Ω BNC cable plug, Wrench Crimp | PL20                                               | Cable plug to cable plug                     | PCY-L-Z                  |
| UPL20       | 75Ω BNC cable plug, Wrench Crimp | UPL20                                              | Cable plug to cable plug                     | UPCY-L-Z                 |

#### Standard Twinax Cable Assemblies

|             |                                  | L-Length in inches. Z-Cable impedance (78Ω or 124Ω) |                                  |                          |
|-------------|----------------------------------|-----------------------------------------------------|----------------------------------|--------------------------|
| Connector 1 | Connector 1 Description          | Connector 2                                         | Cable Assembly Description       | TEI Cable Assembly Part# |
| PL71        | Standard patch plug              | PL71                                                | Patch plug to patch plug         | PTW-L-Z                  |
| PL75        | Miniature cable plug, TRB, 3-lug | PL75                                                | TRB cable plug to TRB cable plug | PTWY-L-Z                 |

**For more information on cable assemblies, contact your local Rep or call... 800-982-2629**

## Patching Systems

Coax/Twinax/Triax  
Normal-through Jacks



**Trompeter...** *Quality doesn't cost... It pays.*

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Phone (818) 707-2020 Fax (818) 706-1040

### Continuous Improvement...

### New Trompeter Patching Products!

*Trompeter is proud to announce **enhanced, more robust** versions of our normal-through jacks that you have been using for many years. The **New J24 Series** of coax patch jacks and the **New J74 Series** of twinax/triax patch jacks are **mechanically superior** to previous designs and are **rated at 30,000 cycles!***

### Standard Coax Patching...

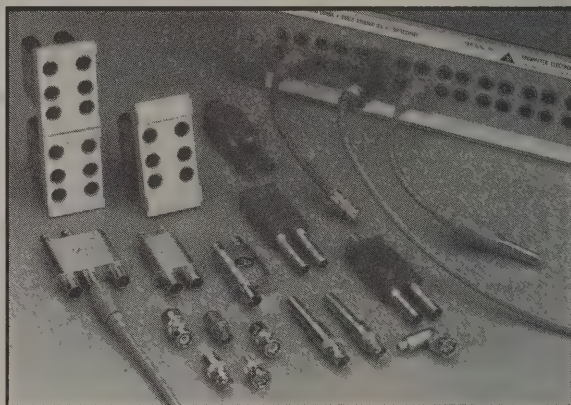
### New J20 Series

#### J24W(T)HF: Serial Digital Patch Jacks

- Rated at 30,000 cycles!
- Extended Bandwidth of DC to 720 MHz  
(For data rates up to 360 Mbits)
- Typical return loss of > 40 dB at 720 MHz
- True impedance matched components.
- 75Ω WE (Western Electric) ..... Center pin .090" dia.

#### J24(W): Analog Patch jacks

- Rated at 30,000 cycles!
- True impedance matched components.
- 75Ω WE (Western Electric) ..... Center pin .090" dia.  
Insertion Loss: 0.4 dB, Return Loss: >18 dB, DC-150 MHz
- 50Ω RCA ..... Center pin .070" dia.  
Insertion Loss: 0.5 dB, Return Loss: >40 dB, DC-550 MHz



*For a J20 Series New Product Bulletin, contact your local Rep or call... 800-982-2629*

### Standard Concentric Twinax/Triax Patching...

### New J74 Series

*Trompeter has championed the development of twinax patching and continues to be a leading innovator in twinax/triax patching.*

**Trompeter standard concentric twinax patching** is designed for use in mil/aero and commercial 78Ω/124Ω applications where signals are protected from extraneous noise (through non-signal carrying shielding). The contact surfaces of these interfacing connectors are isolated from each other and their outer shields. **Trompeter** components will meet or exceed **MIL-STD-1553B** requirements.

### Normal-through Patch jacks...

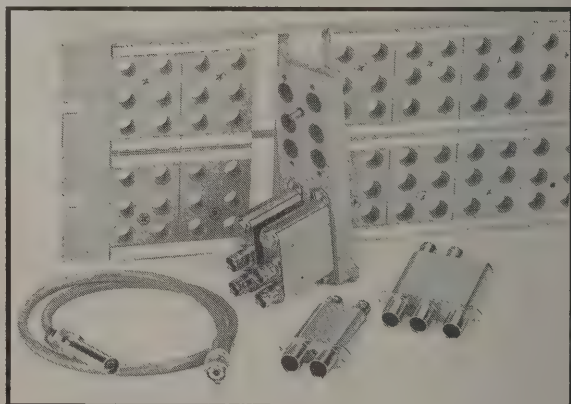
- Rated at 30,000 cycles!
- Same size as our standard coax jacks  
(Replace or mix on standard panels)

#### J74T-R: Self-terminating

Provides a resistive load to the unused side.  
(Plugging into the source side automatically terminates the load side. Plugging into the load side automatically terminates the source side).

#### J74MST-R: Self-terminating, Separate monitor

Provides a resistive load to the unused side.  
Separate monitor jack monitors signal without breaking the normal-through.



**Trompeter's J74** family of dual twinax/triax self-normalizing jacks are complimented by our complete lines of **jacks, plugs, looping plugs, monitor plugs, panels, patch cords and cable assemblies**. These matching components provide improved transmission capabilities in data transmission systems.

*For a J74 Series New Product Bulletin, contact your local Rep or call... 800-982-2629*



# Standard Patching Systems

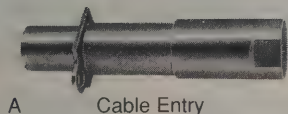
provide limitless flexibility to easily reroute video signals.



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## Patch Jacks



A Cable Entry



B BNC

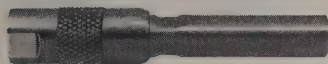


C BNC Self Terminating

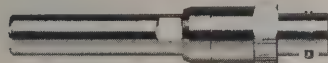


D Normal Thru  
(5/8" Centers Only)

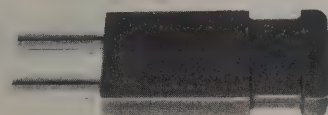
## Patch Plugs



E Patch Plug (Crimp)

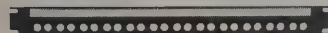


F BNC /TNC Adapter Plug

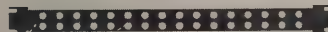


G Looping Plug

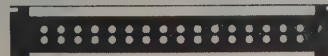
## Panels



H JS-24S



I JS-32S



J JS-32A  
(5/8" Spacing)

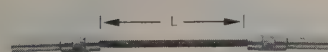


K JS-52S

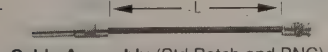


L JS-52W  
(1" Spacing)

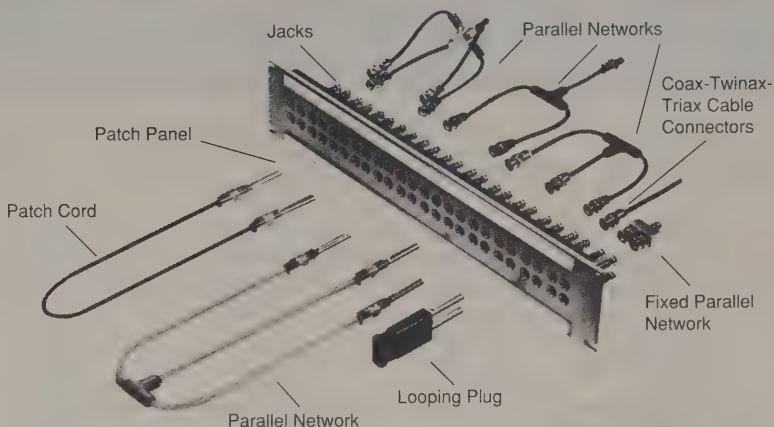
## Accessories



Patch Cord



Cable Assembly (Std Patch and BNC)



RCA 50Ω (pin size .070") and Western Electric (WE) 75Ω (pin size .090") available The two series are not interchangeable but can be intermixed on the same panel with TEI's audio patch jacks. **Call for FREE Catalog!** for our complete line of standard and miniature patching plugs, jacks & panels for coax, twinax and triax

## PATCH JACKS SINGLE / DUAL

| FIG | Function                 | Rear Entry                   | RCA 50Ω    | Western Electric 75Ω |
|-----|--------------------------|------------------------------|------------|----------------------|
| A   | Single                   | Cable Entry                  | J3E-Δ      | J3WE-Δ               |
| B   | Single                   | BNC Standard (TNC Available) | J3         | J3W                  |
|     | Single                   | Solder Pot                   | J3D        | J3WD                 |
|     | Single, Self Terminating | Cable, Crimped               | J13C-R     | J13WC-R              |
| C   | Single, Self-Terminating | BNC Standard (TNC Available) | J13-R      | J13W-R               |
| D   | Normal Thru              | BNC Standard (TNC Available) | J14 Series | J14W Series          |

## PLUGS

| FIG | Function            | RCA 50Ω | Western Electric 75Ω |
|-----|---------------------|---------|----------------------|
| E   | Patch Plugs (Crimp) | PL1C-Δ  | PL1WC-Δ              |
| F   | Adapter Plug        | AD1     | AD1W                 |
| G   | Looping Plug        | LP-Z    | LPW-Z                |

\*Δ: Cable Group Designation's

|          | 1  | 2  | 5   | 4   | 3   |
|----------|----|----|-----|-----|-----|
| RG Cable | 58 | 59 | 122 | 174 | 223 |

\* R: Substitute Resistance for R (1/2 W 5%)

| PANEL HEIGHT | NO. ROWS | FIG. | PANEL DESIGNATION AND NO. OF SINGLE JACKS ACCOMODATED |    |    |    |     |    |     |     |     |     |     |    |    |  |
|--------------|----------|------|-------------------------------------------------------|----|----|----|-----|----|-----|-----|-----|-----|-----|----|----|--|
| 1 3/4"       | 1        | H    | 12                                                    | 14 | 16 | 20 | 24S | 26 | 28  |     |     |     |     |    |    |  |
|              | 2        | I-K  |                                                       |    |    |    |     |    |     | 32S |     | 40S | 52S |    |    |  |
| 3 1/2"       | 2        | J-L  |                                                       |    |    |    | 24L |    | 28A | 32A | 36A | 40  | 48  | 52 | 56 |  |

## ORDERING INFORMATION

Panel Assemblies JSI - 12 / J3W  
 Panel Type \_\_\_\_\_  
 (JS-Aluminum)(JSI- Insulated)  
 # of Jack Holes \_\_\_\_\_  
 Jack Type \_\_\_\_\_  
 Panels Only- Leave "Jack Type" Blank)  
 Cable Assemblies PC - L - Z  
 Assembly Model \_\_\_\_\_  
 Standard Length in inches (6,12,18,24,or36) \_\_\_\_\_  
 Impedence (Ohms) (50,75,93) \_\_\_\_\_

# Coax Connectors

BNC • TNC • TPS • TCM



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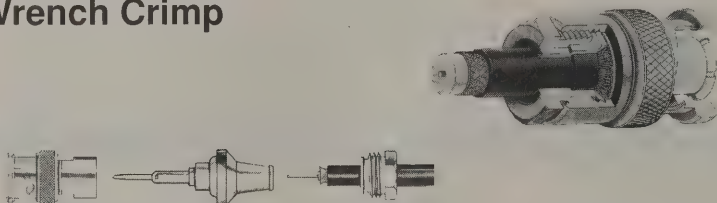
- Bulkhead Plugs • Adapters • Bulkhead Feedthru Jacks • Bulkhead jack • Circuitboard Jacks •
- Bulkhead Cable Jacks • Cable Plugs • Bulkhead Cable Plugs • Cable Jacks • Push Plugs •

## Quality is the Trompeter difference...

### We connect you with Quality...

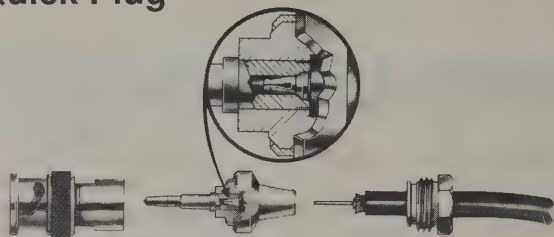
- Fully enclosed, heat treated beryllium copper outer conductor spring for positive electrical contact, improves EMI suppression
- "Pull to destruct force" approaching the tear strength of the cable itself
- 3-piece design for fast easy assembly
- Bayonet or Threaded Versions
- 50 ohm-75 ohm Versions

## Wrench Crimp



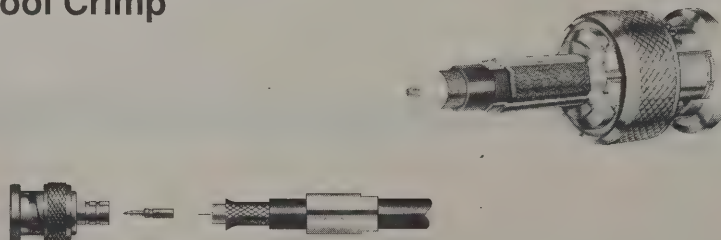
- No insulating material remaining between braid and clamping surfaces when fully assembled
- Holds TFE or similarly jacketed cable without the use of additional hardware
- Floating sleeve permits clamping of the braid without rotary movement
- Captive center contact does not rely on cable for positioning

## Quick Plug

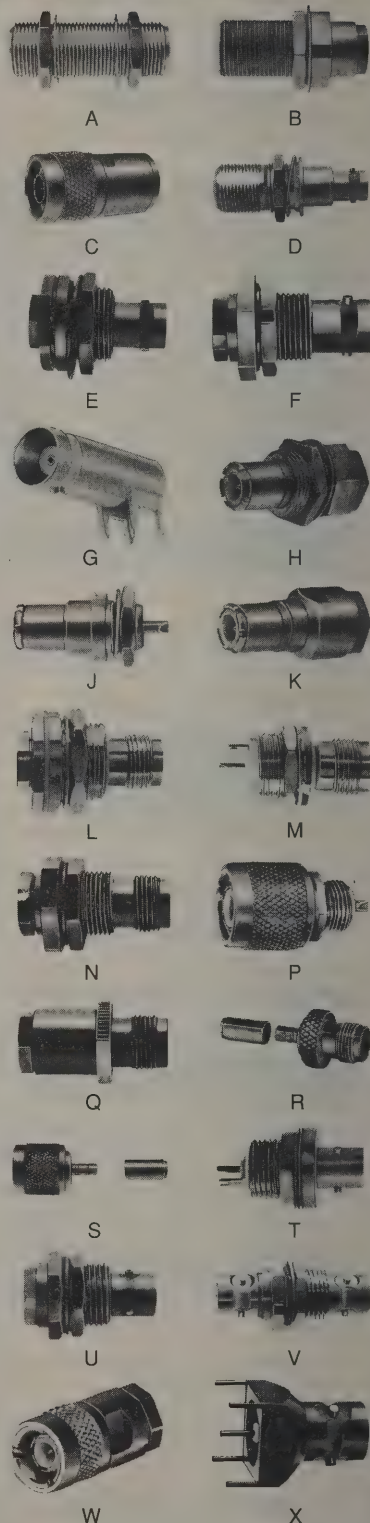


- Wrench crimp design utilizing a solderless, scratch free center conductor retention clamp. (BNC & TNC cable plugs for RG-59, solid center conductor wire only)

## Tool Crimp



- Meets MIL-C-39012B, Category "D" Requirements
- Stepped sleeve crimp provides strong attachment





# Coax Connectors

BNC • TNC • TPS • TCM



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## 90 Series: Standard Coax Threaded, N Connectors

| Fig | I | Description             | C | NOTES | 50 ohm    | 75 ohm     | Mounting   | Spot Face |
|-----|---|-------------------------|---|-------|-----------|------------|------------|-----------|
|     |   | Bulkhead jack           | S |       | J 95      | UJ 95      | D5.094     | SF10      |
| A   | I | Feed-thru bulkhead jack |   |       | BJ 98-2-L | UBJ 98-2-L | DD4/to2.25 | N/A       |
| B   |   | Bulkhead cable jack     | W |       | BJ 95-N   | UBJ 95-N   | DD4.203    | N/A       |
|     | I | Bulkhead cable jack     | W |       | BJ 96-N   | BJ 96-N    | DD4.203    | N/A       |
| C   | I | Cable plug              | W |       | PL 95-N   | UPL 95-N   |            |           |
|     | I | Coupling adapter        |   |       | AD 95     | UAD 95     | DD4.203    | N/A       |
| D   |   | Coupling adapter        |   |       | AD 95     | UAD 95     | DD4.310    | N/A       |

## 20 Series: Miniature Coax, BNC Connectors

| Fig | I | Description             | C | NOTES         | 50 ohm     | 75 ohm     | Mounting | Spot Face |
|-----|---|-------------------------|---|---------------|------------|------------|----------|-----------|
|     |   | Bulkhead jack           | S | Front mount   | BJ 20      | UBJ 20     | D5.125   | SF 5      |
|     | I | Bulkhead jack           | S | Rear mount    | BJ 21      | UBJ 21     | D3.147   | SF 6      |
| E   | I | Bulkhead jack           | W | Rear mount    | BJ 26-N    | UBJ 26-N   | D2.143   | SF 3      |
|     | I | Bulkhead jack           | W |               | BJ 26GF-N  | UBJ 26GF   | D8.094   | SF12      |
|     | I | Bulkhead jack           | S | Front mount   | BJ 27      | UBJ 27     | D3.147   | SF 7      |
|     | I | Bulkhead feed-thru jack |   |               | BJ 28      | UBJ 28     | D3.156   | SF 7      |
|     | I | Bulkhead feed-thru jack |   | Ground-filter | BJ 28GF    | UBJ 28GF   | D8.094   | SF11      |
| F   |   | Bulkhead cable jack     | W | Rear mount    | BJ 29-N    | UBJ 29-N   | D3.218   | N/A       |
|     | I | Bulkhead cable jack     | T | Rear mount    | BJ 226-N   | UBJ 226-N  | D2.143   | SF 3      |
|     | I | Bulkhead cable jack     | T | Ground-filter | BJ 226GF-N | BJ 226GF-N | D8.094   | SF12      |
|     |   | Bulkhead cable jack     | C | Rear mount    | BJ 229-N   | UBJ 229-N  | D3.218   | N/A       |
|     |   | Bulkhead plug           | S | Front mount   | PL 21      | UPL 21     | C2.085   | SF28      |
|     |   | Cable jack              | W |               | CJ 20-N    | UCJ 20-N   |          |           |
|     |   | Cable jack              | T |               | CJ 220-N   | UCJ 220-N  |          |           |
|     |   | Cable plug              | W |               | PL 20-N    | UPL 20-N   |          |           |
|     |   | Cable plug              | T |               | PL 220-N   | PL 220-N   |          |           |
|     |   | Quick plug              | W |               | QP 20-N    | N/A        |          |           |
|     |   | CB bulkhead jack        | S | Ground-filter | CBBJ 26GF  | CBBJ 26GF  | D8.094   | SF12      |
|     |   | CB jack                 | S | 3-leg         | CBJ 20     | UCBJ 20    |          |           |
|     |   | CB jack                 | S | 4-leg         | CBJ 22     | UCBJ 22    | DD8.250  |           |
| G   |   | Right angle CB jack     | S | 4-leg         | CBJR 20    | CBJR 20    |          |           |
|     |   | Right angle CB jack     | S | 4-leg, "Tall" | CBJR 20A   | UCBJR 20A  |          |           |
|     | I | Right angle CB jack     | S | 4-leg         | CBBJR 26   | UCBBJR 26  | D3.156   |           |
|     | I | Right angle CB jack     | S | 4-leg, "Tall" | CBBJR 26A  | UCBBJR 26A | D3.156   |           |
|     |   | Right angle CB jack     | S | 4-leg         | CBBJR 29   | UCBBJR 29  | D3.179   |           |
|     |   | Right angle CB jack     | S | 4-leg, "Tall" | CBBJR 29A  | UCBBJR 29A | D3.179   |           |
|     |   | Push-on bulkhead jack   | S |               | BJ 120     | UBJ 120    | C1.120   | SF28      |
|     |   | Push-on bulkhead jack   | T |               | BJ 120C-N  | UBJ 120C-N | C1.120   | SF28      |
| H   |   | Push-on panel plug      | W |               | PL 122-N   | UPL 122-N  | DD5.156  | SF 6      |
|     |   | Push-on panel plug      | S |               | PL 121     | UPL 121    | C2.085   | SF28      |
|     |   | Push-on cable plug      | T | BNC/TNC       | PL 223-N   | UPL 223-N  |          |           |
| K   |   | Push-on cable plug      | W | BNC/TNC       | PL 123-N   | UPL 123-N  |          |           |
|     |   | Coupling adapter        |   |               | AD 28      | UAD 28     |          |           |

## 40 Series: Miniature Coax Threaded, TNC Connectors

| Fig | I | Description               | C | NOTES         | 50 ohm     | 75 ohm     | Mounting | Spot Face |
|-----|---|---------------------------|---|---------------|------------|------------|----------|-----------|
|     |   | Bulkhead jack             | S |               | BJ 40      | UBJ 40     | D5.125   | SF 5      |
|     | I | Bulkhead jack             | S | Rear mount    | BJ 41      | UBJ 41     | D3.147   | SF 6      |
| L   | I | Bulkhead jack             | W | Rear mount    | BJ 46-N    | UBJ 46-N   | D2.143   | SF 3      |
|     |   | Bulkhead jack             | W | Ground-filter | BJ 46GF-N  | UBJ 46GF-N | D8.094   | SF12      |
| M   | I | Bulkhead jack             | S | Front mount   | BJ 47      | UBJ 47     | D3.147   | SF 7      |
|     | I | Bulkhead jack             | T | Rear mount    | BJ 246-N   | N/A        | D2.143   | SF 3      |
|     |   | Bulkhead cable jack       | T |               | BJ 249-N   | N/A        | N/A      |           |
|     |   | Bulkhead cable jack       | T | Ground-filter | BJ 246GF-N | N/A        | D8.094   | SF12      |
| N   |   | Bulkhead cable jack       | W |               | BJ 49-N    | N/A        | D3.218   | N/A       |
|     |   | Feed-thru bulkhead jack   |   |               | BJ 48      | UBJ 48     | D3.156   | SF 7      |
|     |   | Feed-thru bulkhead jack   |   | Ground-filter | BJ 48GF    | UBJ 48GF   | D8.094   | SF11      |
| P   |   | Bulkhead plug             | S |               | PL 41      | UPL 41     | C2.085   | SF28      |
| Q   |   | Cable jack                | W |               | CJ 40-N    | UCJ 40-N   |          |           |
| R   |   | Cable jack                | T |               | CJ 240-N   | N/A        |          |           |
|     |   | Cable plug                | W |               | PL 40-N    | N/A        |          |           |
| S   |   | Cable plug                | T |               | PL 240-N   | UPL 240-N  |          |           |
|     |   | Quick plug                | W |               | QP 40-N    | N/A        |          |           |
|     |   | CB bulkhead jack          | S | Ground-filter | CBBJ 46GF  | UCBBJ 46GF | D8.094   | SF12      |
|     |   | Rt angle CB bulkhead jack | S | 4-leg         | CBBJR 46   | UCBBJR 46  | D8.094   |           |
|     |   | Coupling adapter          |   |               | AD 48      | UAD 48     |          |           |

## 130 Series: Miniature coax Threaded, F Connectors

| Fig | I | Description              | C | NOTES | 50 ohm   | 75 ohm | Mounting Hole | Spot Face |
|-----|---|--------------------------|---|-------|----------|--------|---------------|-----------|
|     |   | Bulkhead cable jack      | S | F     | BJ 130   | N/A    | DD2.094       | SF14      |
|     |   | Bulkhead cable jack      | W | F     | BJ 139-N | N/A    | DD2.125       | SF30      |
|     |   | Male cable plug          | W | F     | PL 130-N | N/A    |               |           |
|     |   | Rt angle Male cable plug | W | F     | PL 131-N | N/A    |               |           |
|     |   | F jack/BNC plug adapter  | F |       | AD 133   | N/A    |               |           |
|     |   | F plug/BNC jack adapter  | F |       | AD 130   | N/A    |               |           |

## 50 Series: Subminiature Coax 3-lug, 4-lug and Threaded, TPS & TPM Connectors

| Fig | I | Description             | C | Notes | 3-lug    | 4-lug      | Threaded  | Mounting Hole | Spot Face |
|-----|---|-------------------------|---|-------|----------|------------|-----------|---------------|-----------|
|     |   | Bulkhead jack           | S |       | BJ 50    | BJ 50FL    | BJ 350    | D6.218        | N/A       |
| T   | I | Bulkhead jack           | S |       | BJ 57    | BJ 57FL    | BJ 357    | D4.171        | SF 2      |
| U   |   | Bulkhead jack           | W |       | BJ 59-N  | BJ 59FL-N  | BJ 359-N  | D4.125        | SF 4      |
| V   |   | Feed-thru bulkhead jack |   |       | BJ 58    | BJ 58FL    | BJ 358    | D5.171        | SF 9      |
|     |   | Cable jack              | W |       | CJ 50-N  | CJ 50FL-N  | CJ 350-N  |               |           |
| W   |   | Cable plug              | W |       | PL 50-N  | PL 50FL-N  | PL 350-N  |               |           |
|     |   | Cable plug              | T |       | PL 50C-N | PL 50CFL-N | PL 350C-N |               |           |
|     |   | Push on cable plug      | W |       | PL 53-N  | PL 53-N    | PL 353-N  |               |           |
| X   |   | CB jack                 | S | 4-leg | CBJ 50-N | CBJ 50FL   | CBJ 350   |               |           |

Codes: I-Insulated, N-Cable Group, S-Solder Pot, T-Tool Crimp, W-Wrench Crimp, N/A-Not Available / Applicable, Call-Call factory for availability

# Twinax / Triax Connectors

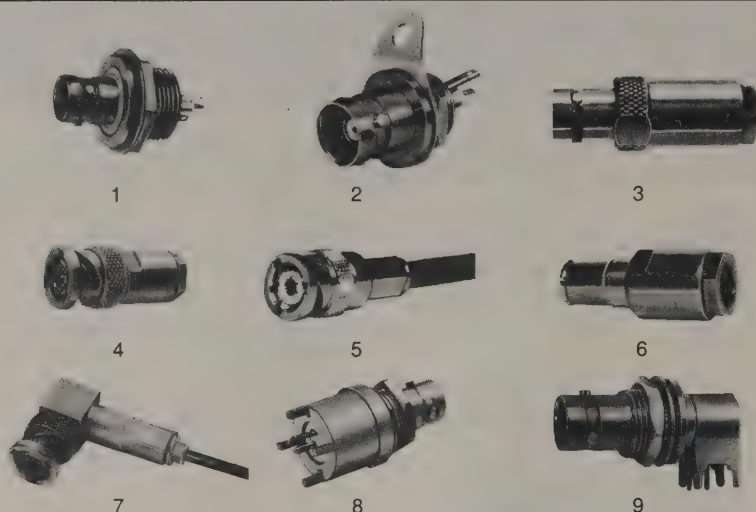
for MIL-STD-1553B Applications



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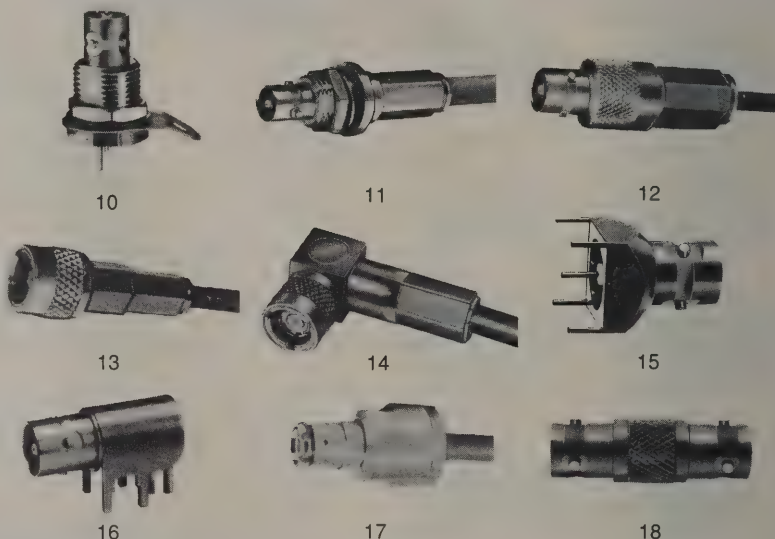


## Trompeter's Miniature 2, 3, and 4-lug 70 Series Miniature Threaded 370 Series

- Size identical to the BNC / TNC series.
- Available in wrench crimp and tool crimp.
- Twinax concentric connectors used for MIL-STD 1553B Data Bus applications.
- Rugged, dependable twinax and triax applications.
- Provide for polarized primary and redundant data bus needs.
- Concentric patching also available.

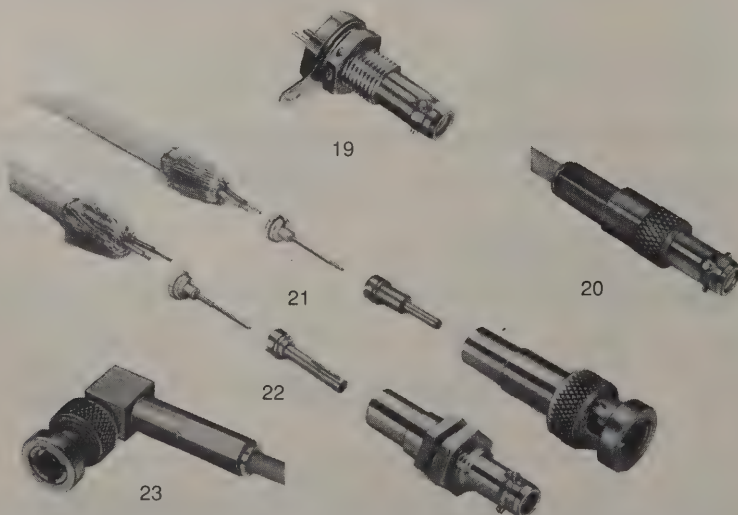
## Trompeter's Subminiature 150 Series

- Concentric twinax & triax jacks, plugs & receptacles for high density installations.
- Series designed specifically for Digital data bus applications where weight is of primary concern (MIL-STD-1553B), Video Pair, baseband circuit & other applications where "Noise Free Guarded" circuits are required.
- Do not require mechanical alignment for mating.
- Concentric patching also available.



## Trompeter's Subminiature 450 Series

- Concentric twinax connectors designed for airborne digital databus applications where weight is of primary concern (MIL-STD-1553B).
- Features "full crimp" design.
- Compatible with Raychem series.
- Available in 3-lug, 4-lug and threaded.
- 3 different keyings available in 3-lug configurations.
- Meets 500 hour (MIL-STD 1344) salt spray requirement.
- Weatherproof designs.
- Inspectable assembly.  
(No blind solder connections)





# Twinax / Triax Connectors

for MIL-STD-1553B Applications



A small business company

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## 70 Series: Miniature Twinax/Triax Concentric Connectors, TRB/TRT

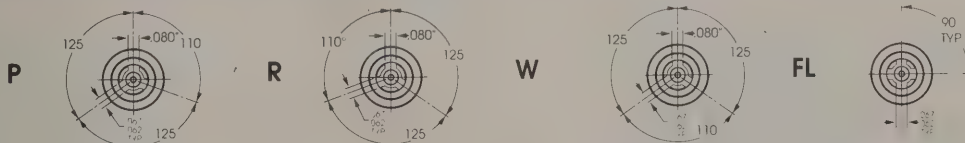
| Fig | Description               | I | C | Notes             | 2-Lug      | 3-Lug     | 4-Lug       | Threaded  | Mounting Hole | Spot Face |
|-----|---------------------------|---|---|-------------------|------------|-----------|-------------|-----------|---------------|-----------|
| 1   | Bulkhead cable jack       | I | C |                   | BJ 74CTL-N | BJ 74C-N  | BJ 74CFL-N  | BJ 374C-N | D2.140        | SF24      |
|     | Bulkhead cable jack       |   | W |                   | BJ 79TL-N  | BJ 79-N   | BJ 79FL-N   | BJ 379-N  | D3.109        | SF15      |
|     | Bulkhead cable jack       |   | C |                   | BJ 79CTL-N | BJ 79C-N  | BJ 79CFL-N  | BJ 379C-N | D3.109        | SF15      |
|     | Bulkhead jack             | I | S |                   | BJ 72TL    | BJ 72     | BJ 72FL     | BJ 372    | D2.140        | SF 8      |
| 2   | Bulkhead jack             | I | S | Rear mount        | BJ 75TL    | BJ 75     | BJ 75FL     | BJ 375    | D2.140        | SF24      |
|     | Bulkhead jack             |   | S | Rear mount        | BJ 76TL    | BJ 76     | BJ 76FL     | BJ 376    | D3.250        | N/A       |
|     | Bulkhead jack             |   | S | Front mount       | BJ 77TL    | BJ 77     | BJ 77FL     | BJ 377    |               |           |
|     | Feed-thru bulkhead jack   | I |   |                   | BJ 73TL    | BJ 73     | BJ 73FL     | BJ 373    | D2.140        | SF 8      |
| 3   | Feed-thru bulkhead jack   |   |   |                   | BJ 78TL    | BJ 78     | BJ 78FL     | BJ 378    | D3.187        | N/A       |
|     | Cable jack                |   | W |                   | CJ 70TL-N  | CJ 70-N   | CJ 70FL     | CJ 370-N  |               |           |
|     | Cable jack                |   | C |                   | CJ 70CTL-N | CJ 70C-N  | CJ 70CFL    | CJ 370C-N |               |           |
|     | Cable plug                |   | C |                   | N/A        | PL 73C-N  | N/A         | N/A       |               |           |
| 4   | Cable plug                |   | W |                   | PL 75-N    | PL 74-N   | PL 75FL-N   | PL 375C-N |               |           |
| 5   | Cable plug                |   | C |                   | PL 75C-N   | PL 74C-N  | PL 75CFL-N  | PL 375-N  |               |           |
| 6   | Push-on cable plug        |   | W |                   | N/A        | PL 73-N   | N/A         | N/A       |               |           |
| 7   | Right angle cable plug    |   | C |                   | PLR 75C-N  | PLR 74C-N | PLR 75CFL-N |           |               |           |
| 8   | CB bulkhead jack          |   | S |                   | CBBJ 79TL  | CBBJ 79   | CBBJ 79FL   | CBBJ 379  | D3.109        |           |
| 9   | Rt angle CB bulkhead jack |   | S |                   | CBBJR 79TL | CBBJR 79  | CBBJR 79FL  | CBBJR 379 | D3.125        |           |
|     | CB jack                   |   | S |                   | CBJ 70TL   | CBJ 70    | CBJ 70FL    | CBJ 370   |               |           |
|     | Coupling adapter          |   |   |                   | AD 78TL    | AD 78     | AD 78FL     | AD 378    |               |           |
|     | Fixed paralleling jack    |   |   | "2 plugs, 1 jack" | TN2TL      | TN2       | TN2FL       | TN2T      |               |           |
|     | Fixed paralleling jack    |   |   | "2 jacks, 1 plug" | TN2TLA     | TN2A      | TN2FLA      | TN2TA     |               |           |
|     | Tee adapter               |   |   | No chain          | BN 73TL    | BN 73     | BN 73FL     | BN 373    |               |           |
|     | RFI Cap for BJ77 jack     |   |   | No chain          | RFI 77TL-1 | RFI 77-1  | RFI 77FL-1  | RFI 377-1 |               |           |
|     | RFI Cap for PL75 plug     |   |   | No chain          | RFI 75TL-1 | RFI 75-1  | RFI 75FL-1  | RFI 375-1 |               |           |
|     | Termination jack          |   |   | 70 Series         | TNGBJ1-1-R | Call      | Call        | TNTF1-1-R | D3.218        | N/A       |
|     | Termination plug          |   |   | 70 Series         | TNG1-1-R   | Call      | Call        | TNT1-1-R  |               |           |
|     | Bulkhead jack             |   | S | Rear mount        | N/A        | BJ 150    | BJ 150FL    | BJ3150    | D4.218        | N/A       |

## 150 Series: Subminiature Twinax/Triax Concentric Connectors, TRS/TTM

| Fig | Description             | I | C | Notes        | 2-Lug       | 3-Lug     | 4-Lug         | Threaded    | Mounting Hole | Spot Face |
|-----|-------------------------|---|---|--------------|-------------|-----------|---------------|-------------|---------------|-----------|
| 10  | Bulkhead jack           | I | S | Front mount  | BJ 152      | N/A       | BJ 152FL      | BJ3152      | D9.208        | N/A       |
|     | Bulkhead jack           | I | W | Rear mount   | BJ 154-N    | N/A       | BJ 154FL-N    | BJ3154-N    | D9.116        | SF14      |
|     | Bulkhead jack           | I | C | Rear mount   | BJ 154AC-N  | N/A       | BJ 154ACFL-N  | BJ3154AC-N  | D9.116        | SF14      |
|     | Bulkhead jack           | I | S | Rear mount   | BJ 155      | N/A       | BJ 155FL      | BJ3155      | D9.148        | SF14      |
| 11  | Bulkhead jack           | I | S | D-hole mount | BJ 157      | N/A       | BJ 157FL      | BJ3157      | D6.187        | N/A       |
|     | Bulkhead jack           |   | S | Flange mount | Call        | N/A       | Call          | Call        | C1.187        | N/A       |
|     | Bulkhead jack           |   | W |              | BJ 159-N    | N/A       | BJ 159FL-N    | BJ3159-N    | D4.125        | SF 4      |
|     | Bulkhead jack           |   | C |              | BJ 159AC-N  | N/A       | BJ 159ACFL-N  | BJ3159AC-N  | D4.125        | SF 4      |
| 12  | Feed-thru bulkhead jack | I | S |              | BJ 153      | N/A       | BJ 153FL      | BJ3153      | D9.116        | SF14      |
|     | Feed-thru bulkhead jack |   |   |              | BJ 158      | N/A       | BJ 158FL      | BJ3158      | D5.171        | SF 9      |
|     | Cable jack              |   | W |              | CJ 150-N    | N/A       | CJ 150FL-N    | CJ3150-N    |               |           |
|     | Cable jack              |   | C |              | CJ 150AC-N  | N/A       | CJ 150ACFL-N  | CJ3150AC-N  |               |           |
| 13  | Cable plug              |   | C |              | PL 155-N    | N/A       | PL 155FL-N    | PL3155-N    |               |           |
|     | Cable plug              |   | C |              | PL 155AC-N  | N/A       | PL 155ACFL-N  | PL3155AC-N  |               |           |
|     | Cable plug              |   | C |              | PLR 155AC-N | N/A       | PLR 155ACFL-N | PLR3155AC-N |               |           |
|     | Right angle cable plug  |   | C |              | PLR 155AC-N | N/A       | PLR 155ACFL-N | PLR3155AC-N |               |           |
| 14  | Right angle cable plug  |   | C |              | PLR 155AC-N | N/A       | PLR 155ACFL-N | PLR3155AC-N |               |           |
| 15  | CB jack                 |   | S | 4-leg        | CBJ 157     | N/A       | CBJ 157FL     | CBJ3157     |               |           |
| 16  | Right angle CB jack     |   | S | 4-leg        | CBJR 157    | N/A       | CBJR 157FL    | CBJR3157    |               |           |
| 17  | Push-on bulkhead jack   |   | S | Front mount  | BJ 151      | N/A       | N/A           | N/A         | C1.063        | SF29      |
|     | Push-on cable plug      |   | W |              | PL 153-N    | N/A       | N/A           | N/A         |               |           |
|     | Push-on cable plug      |   | C |              | PL 153AC-N  | N/A       | N/A           | N/A         |               |           |
|     | Push-on bulkhead plug   |   | C |              | PL 151      | N/A       | N/A           | N/A         | C1.088        | SF27      |
| 18  | Coupling adapter        |   |   |              | AD 158      | N/A       | AD 158FL      | AD3158      |               |           |
|     | Tee adapter             |   |   | No chain     | BN 153      | N/A       | BN 153FL      | BN3153      |               |           |
|     | RFI Cap for PL155 plug  |   |   |              | RFI 155-1   | N/A       | RFI 155FL-1   | RFI3155-1   |               |           |
|     | Termination plug        |   |   | 150 Series   | N/A         | TNGM1-1-R | Call          | TNTM1-1-R   |               |           |

## 450 Series: Subminiature Twinax/Triax Keyed 3-lug, 4-lug and Threaded Concentric Connectors...

Includes three (3) different keyed 3-lug versions, a 4-lug version and a threaded version. Each version has two (2) pin and socket arrangements for a total of ten (10) different polarized and keyed combinations.



| Fig | Description            | Pin Socket | C | Notes          | 3-Lug P Key   | 3-Lug R Key   | 3-lug W Key   | 4-lug          | Threaded     | Mntg Hole-Spt Fc |
|-----|------------------------|------------|---|----------------|---------------|---------------|---------------|----------------|--------------|------------------|
| 19  | Bulkhead jack          | P          | S | Rear mounting  | BJ 450PP      | BJ 450RP      | BJ 450WP      | BJ 450FLP      | BJ3450P      | DD8.250          |
| 19  | Bulkhead jack          | S          | S | Rear mounting  | BJ 450PS      | BJ 450RS      | BJ 450WS      | BJ 450FLS      | BJ3450S      | DD8.250          |
|     | Bulkhead jack          | P          | S | Front mounting | BJ 457PP      | BJ 457RP      | BJ 457WP      | BJ 457FLP      | BJ3457P      | DD8.250          |
|     | Bulkhead jack          | S          | S | Front mounting | BJ 457PS      | BJ 457RS      | BJ 457WS      | BJ 457FLS      | BJ3457S      | DD8.250          |
| 20  | Cable jack             | P          | C |                | CJ 450ACPP-N  | CJ 450ACRP-N  | CJ 450ACWP-N  | CJ 450ACFLP-N  | CJ3450ACP-N  |                  |
| 20  | Cable jack             | S          | C |                | CJ 450ACPS-N  | CJ 450ACRS-N  | CJ 450ACWS-N  | CJ 450ACFLS-N  | CJ3450ACS-N  |                  |
| 21  | Cable plug             | P          | C |                | PL 455ACPP-N  | PL 455ACRP-N  | PL 455ACWP-N  | PL 455ACFLP-N  | PL3455ACP-N  |                  |
| 21  | Cable plug             | S          | C |                | PL 455ACPS-N  | PL 455ACRS-N  | PL 455ACWS-N  | PL 455ACFLS-N  | PL3455ACS-N  |                  |
| 22  | Bulkhead cable jack    | P          | C | Rear mounting  | BJ 459ACPP-N  | BJ 459ACRP-N  | BJ 459ACWP-N  | BJ 459ACFLP-N  | BJ3459ACP-N  | DD8.156 SF31     |
| 22  | Bulkhead cable jack    | S          | C | Rear mounting  | BJ 459ACPS-N  | BJ 459ACRS-N  | BJ 459ACWS-N  | BJ 459ACFLS-N  | BJ3459ACS-N  | DD8.156 SF31     |
| 23  | Right angle cable plug | P          | C |                | PLR 455ACPP-N | PLR 455ACRP-N | PLR 455ACWP-N | PLR 455ACFLP-N | PLR3455ACP-N |                  |
| 23  | Right angle cable plug | S          | C |                | PLR 455ACPS-N | PLR 455ACRS-N | PLR 455ACWS-N | PLR 455ACFLS-N | PLR3455ACS-N |                  |
|     | RFI Cap                |            |   |                | RFI 455       |               |               | RFI3455        |              |                  |
|     | Contact Assembly       | N          |   | Socket/pin     | SP 450AC-N    |               |               |                |              |                  |
|     | Termination            |            |   | In-line        | TBJ 451P-R-1  | TBJ 451P-R-1  | TBJ 451P-R-1  | TBJ 451FLP-R-1 | TBJ3451P-R-1 | DD8.156 /125     |
|     | Termination            |            |   | Bulkhead       | TNG 451P-R-1  | TNG 451P-R-1  | TNG 451P-R-1  | TNG 451FLP-R-1 | TNG3451P-R-1 |                  |

Codes: I-Insulated, N-Cable Group, R-Resistance, S-Solder Pot, T-Tool Crimp, W-Wrench Crimp, N/A-Not Available / Applicable, Call-Call factory for availability

**Ambient reference:** Refers to the temperature of the still air surrounding the power supply

**Case reference:** One of the specs that make up the nominal rating. The temperature of the case with the temperature of the surrounding still air at a stated temperature (usually 25°C).

**Crowbar circuit:** Protects the load. A protective circuit that applies a short circuit across the output immediately upon overload. (See overvoltage).

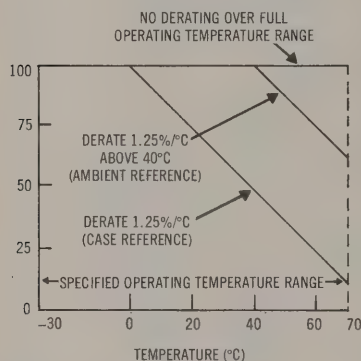


Fig. 1. Power output derating can be referred to ambient or case.

**Derating:** The degree output is reduced as temperature increases. Usually referenced to ambient case temperature and shown on a graph.

**Efficiency:** Ratio of the output power to the required input power. Usually expressed as a percentage given nominal environmental temperature.

**EMI/RFI:** Interference electronic circuitry caused by energy from electro-mechanical or radio frequency power supplies.

**Foldback:** Built-in protective circuits that automatically reduce the output voltage and/or current to very low levels in the event of an overload.

**Holdover (Holdup):** The interval that rated output will continue after input ceases. Usually milliseconds.

**Input reflected current:** The peak-to-peak alternating current generated by switching transients in DC/DC converters. Should not exceed 1%.

**Inrush current limiting:** Built-in circuits that monitor high currents through the rectifiers to the capacitors at turn ON. Circuit is usually inhibited as capacitors attain full charge.

**Nominal rating:** The spec value of the supply at stated conditions of input, output, and temperature.

**Overshoot:** A transient voltage change occurring during turn ON or OFF or during an abrupt load change.

**Overvoltage (Overload) protection:** Built-in circuits that protect the load or the supply by shutting it down or providing foldback.

**Recovery:** The time interval between the termination of an overload and restoration to normal operations.

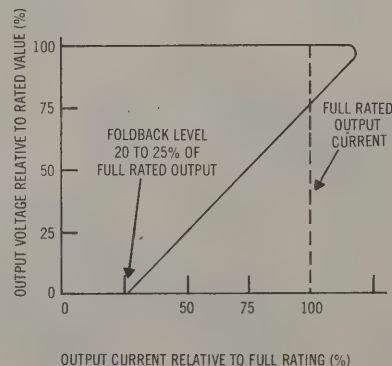


Fig. 2. Current foldback limiting self-resets with removal of fault.

**Response:** The time interval between a stated step change in input voltage or load current and return of output to normal operating conditions.

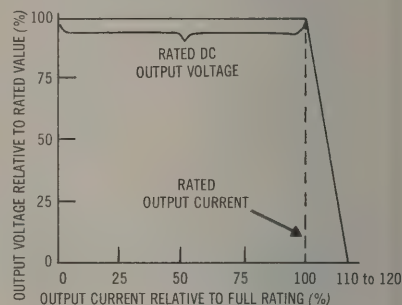


Fig. 3. Current limiting restrictions output current to a valve somewhat greater than full rated output; it resets when fault is removed.

**Sensing:** Regulation techniques that monitor output voltage and/or current. *Local sensing* refers to the output terminals. *Remote sensing* allows a feedback from the load circuit to the power supply.

**Soft start:** Allows the supply to start from zero current and/or voltage over a stated period of time during start up to prevent voltage overshoots and current imbalances.

**Switchers:** Power supplies using switching techniques to achieve high efficiency regulation. These techniques can have attendant EMI/RFI problems.

**Tracking:** The maintaining of fixed ratios between multiple outlets despite variations in line, load or temperature. Particularly important in supplies with symmetrical (+)(-) outputs.

**Transient protection:** Circuitry designed to protect the supply from high amplitude line transients. Generally expressed in terms of peak voltage and maximum transient time duration.





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Made in



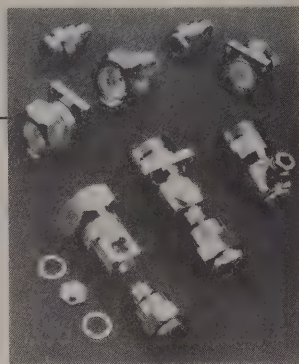
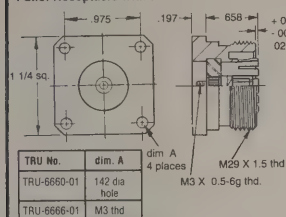
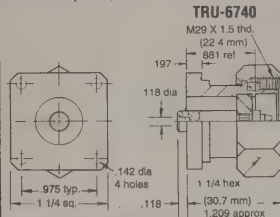
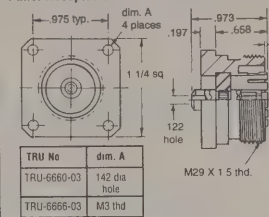
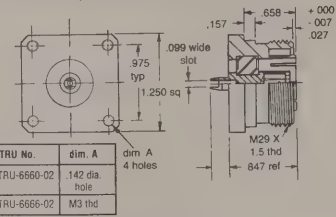
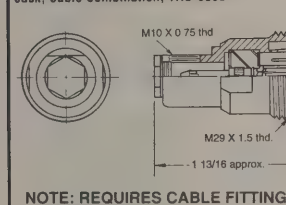
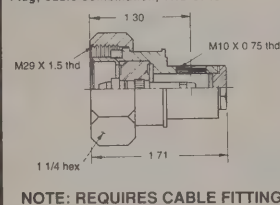
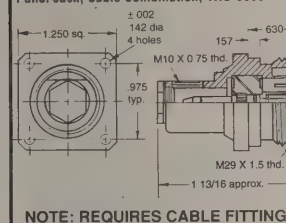
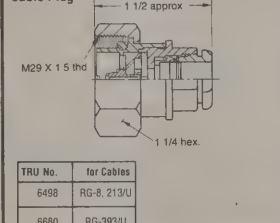
## IT PAYS TO BE WELL CONNECTED

For many years Tru-Connector Corporation has been a principal supplier of radio-frequency components to the great names in the electronics industry. Offering a sound engineering and development organization, backed with well-balanced production facilities, we are ready to meet your needs, large or small, whether they be standard items or special designs.

## 7/16 SERIES RF COAXIAL CONNECTORS

Our 7/16 DIN series connectors are fully compatible to DIN 47223 and IEC 169-4 specifications and designed for coaxial cable up to 0.685 inch dielectric diameter. A 50 ohm impedance, low reflection factor up to 7.5 GHz, and voltage rating of 2700 volts rms make them suitable for medium to high power VHF and UHF applications.

Typical materials and finishes are: Outer connector shell is brass nickel plated. Inner and outer conductors on female connectors are silver plated beryllium copper. Inner and outer conductors on male connectors are silver plated brass. Insulator: Teflon; Gasket: Silicone rubber.

Series 7-16  
Panel Receptacle with threaded stud M3Series 7-16  
Panel Receptacle, Male with solder bucketSeries 7-16  
Panel Receptacle with solder bucketSeries 7-16  
Panel Receptacle with solder slotSeries 7-16  
Jack, Cable Combination, TRU-6650Series 7-16  
Plug, Cable Combination, TRU-6745Series 7-16  
Panel Jack, Cable Combination, TRU-6655Series 7-16  
Cable Plug

## CABLE FITTINGS FOR 7/16 DIN COMBINATION CONNECTORS

## FIGURES

| COAXIAL CABLE TYPE                                   | CABLE ATTACHMENT                 | TRU PART NO. | FIG. | DIM L |    |
|------------------------------------------------------|----------------------------------|--------------|------|-------|----|
| RG-58, 58A, 58B, 58C/U M17/28-RG-58                  | Improved clamp wedge clamp crimp | TRU-6724     | 1    | 0.63  | 1  |
| RG-141, 141A/U                                       | Improved clamp wedge clamp crimp | TRU-6726     | 1    | 0.63  |    |
| RG-55, 55A, 55B, 223/U M17/84-RG-223                 | Improved clamp wedge clamp crimp | TRU-6724     | 1    | 0.63  | 2  |
| RG-142, 142A/U                                       | Improved clamp wedge clamp crimp | TRU-6737     | 4    | 0.97  |    |
| RG-59, 59A, 59B/U M17/29-RG-59                       | Improved clamp wedge clamp crimp | TRU-6721     | 1    | 0.63  | 3  |
| RG-62, 62A, 62B/U M17/30-RG-62                       | Improved clamp wedge clamp crimp | TRU-6727     | 1    | 0.63  |    |
| RG-210/U M17/97-RG-210                               | Improved clamp wedge clamp crimp | TRU-6739     | 4    | 0.97  | 4  |
| RG-71, 71A, 71B/U M17/90-RG-71                       | Improved clamp wedge clamp crimp | TRU-6721     | 1    | 0.63  |    |
| RG-5, 5A, 5B, 212/U M17/73-RG-212                    | Improved clamp wedge clamp crimp | TRU-6727     | 1    | 0.63  | 5  |
| RG-6, 6A/U M17/2-RG-6                                | Improved clamp wedge clamp crimp | TRU-6747     | 4    | 0.97  |    |
| RG-143, 143A/U M17/74-RG-213                         | Improved clamp wedge clamp crimp | TRU-6720     | 2    | 1.14  | 6  |
| RG-11, 11A/U M17/6-RG-11                             | Improved clamp wedge clamp crimp | TRU-6729     | 2    | 1.27  |    |
| RG-9, 9A, 9B, 214/U M17/75-RG-214                    | Improved clamp wedge clamp crimp | TRU-6720     | 2    | 1.14  | 7  |
| RG-13, 13A, 216/U M17/77-RG-216                      | Improved clamp wedge clamp crimp | TRU-6729     | 2    | 1.27  |    |
| RG-393/U M17/127-RG-393                              | Improved clamp wedge clamp crimp | TRU-6725     | 2    | 1.14  | 8  |
| RG-14, 14A, 217/U M17/78-RG-217                      | Improved clamp wedge clamp crimp | TRU-6730     | 2    | 1.14  |    |
| RG-402/U 0.141 dia. copper jacketed semi-rigid cable | solder clamp direct solder       | TRU-6731     | 1    | 0.63  | 9  |
| RG-401/U 0.250 dia. copper jacketed semi-rigid cable | solder clamp direct solder       | TRU-6733     | 2    | 1.14  |    |
| 0.325 dia. copper jacketed semi-rigid cable          | solder clamp direct solder       | TRU-6735     | 2    | 1.14  | 10 |
|                                                      |                                  | TRU-6736     | 6    | 0.63  |    |

1-800-COAXTRU / 1-800-262-9878

## U.G. &amp; Special Series

We maintain an assortment of piece parts for most U.G. and other special hard to find connectors and adapters. Including those that are no longer supplied by their original manufacturers. We maintain this inventory out of necessity for our valued long-time customers.

## LC/LT Series Connectors

Our large size LC, LC and LT threaded coupling connectors are fully gasketed and weatherproof, with standard impedance of 50 ohms nominal over the 0-1 GHz frequency range. Designed for peak voltages of 5,000 to 10,000 volts rms depending on the coaxial cable type, these connectors are manufactured to meet or exceed MIL-C-3650 specifications and are readily available in most styles.

## Triaxial Series Connectors

Our triax connectors are designed and manufactured to satisfy the most critical specifications for shielding and noise reduction. This series can be supplied in a wide variety of mechanical configurations to meet your exact specifications.

## SC Series Connectors

We manufacture a full line of SC series connectors that are electrically compatible to "C" series connectors, but offer a threaded (rather than bayonet) coupling for improved contact mating and reduced noise under conditions of shock and vibration. Full line in-series and in between adapters are available.

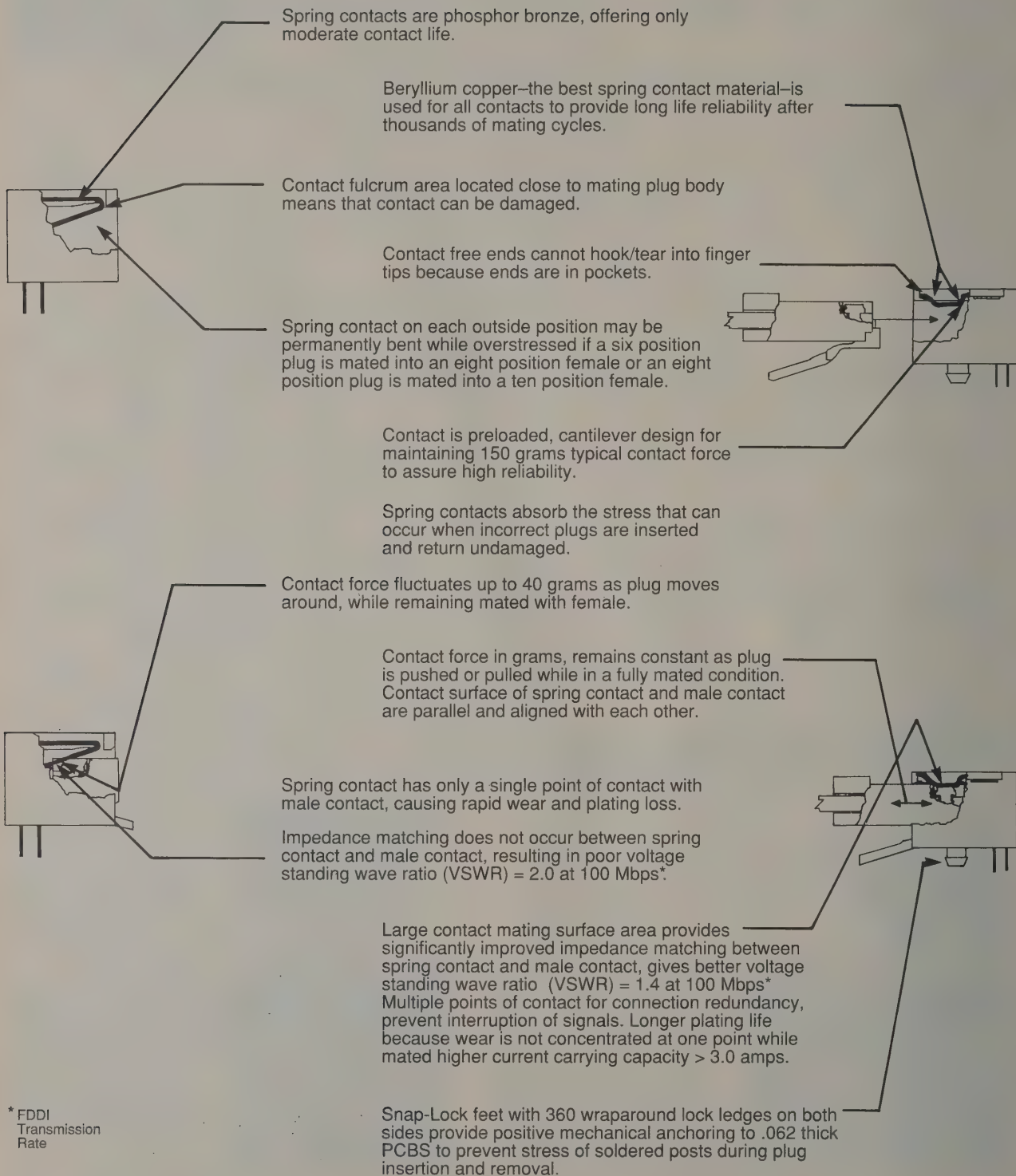


# VIRGINIA PLASTICS

1701 MIDLAND ROAD/SALEM, VA 24153  
P.O. BOX 4577/ROANOKE, VA 24015-0577  
703-375-0100  
FAX 703-375-0135

## TRADITIONAL MODULAR FEMALE CONNECTORS

## MODCOM-C® DT MODULAR FEMALE CONNECTORS



\* FDDI  
Transmission  
Rate

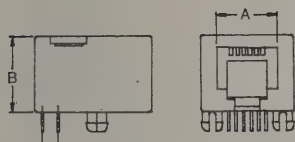




# VIRGINIA PLASTICS

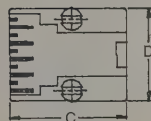
1701 MIDLAND ROAD/SALEM, VA 24153  
P.O. BOX 4577/ROANOKE, VA 24015-0577  
703-375-0100  
FAX 703-375-0135

## NEW MODCOM-C® MODULAR FEMALE CONNECTORS

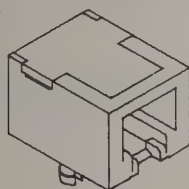


### Low profile features:

- Total height less than 1/2 (.50) inch
- Occupies minimum PCB real estate
- Connector depth less than .75 inch
- Universal connector body size
- One PCB layout fits all connectors in this product family



VIRGINIA PLASTICS  
U.S. PATENT  
4457570 4501464  
4577921 4717217



### Low Profile Female

#### New Features:

- Fully covered contacts
- 150 grams of contact force
- 1,000 cycle min. contact durability
- UL 1863, File No. E-136913

### SPECIALTY LOW PROFILE

High density DT Series  
Six Position Type 6/8  
Eight Position Type 8/10

| PART NUMBER | NO. OF POS. | NO. OF CONTACTS | SERIES DT//SP | DIMENSIONS    |               |                         |               |
|-------------|-------------|-----------------|---------------|---------------|---------------|-------------------------|---------------|
|             |             |                 |               | A             | B             | C                       | D             |
| 020.000.010 | 4           | 4               | DT            | .308<br>7.82  | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.463 | 6           | 4               | SP            | .390<br>9.91  | .490<br>12.45 | .736 REF.<br>18.69 REF. | .590<br>14.99 |
| 020.000.229 | 6           | 4               | DT            | .390<br>9.91  | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.461 | 6           | 6               | SP            | .390<br>9.91  | .490<br>12.45 | .736 REF.<br>18.69 REF. | .590<br>14.99 |
| 020.000.186 | 6           | 6               | DT            | .390<br>9.91  | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.996 | 8K          | 8               | SP            | .470<br>11.94 | .490<br>12.45 | .736 REF.<br>18.69 REF. | .590<br>14.99 |
| 020.000.184 | 8K          | 8               | DT            | .470<br>11.94 | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.997 | 8           | 8               | SP            | .470<br>11.94 | .490<br>12.45 | .736 REF.<br>18.69 REF. | .590<br>14.99 |
| 020.000.023 | 8           | 8               | DT            | .470<br>11.94 | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.024 | 6           | 8               | DT            | .470<br>11.94 | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.069 | 8K          | 10              | DT            | .470<br>11.94 | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |
| 020.000.068 | 8           | 10              | DT            | .470<br>11.94 | .490<br>12.45 | .682 REF.<br>17.32 REF. | .590<br>14.99 |

### Test Data

Contact Durability after bad way mating: All jacks exceeded 2000 cycles of overstress and maintained 150 grams of contact force.

Voltage Standing Wave Ratio (VSWR) : The ratio of the maximum effective voltage to the minimum effective voltage measured along the length of a mis-matched radio frequency transmission line.

|                  | 16Mbps | 50Mbps | 100Mbps | 200Mbps |
|------------------|--------|--------|---------|---------|
| MODCOM-C Jacks   | 1.3    | 1.4    | 1.4     | 1.3     |
| Competitors Jack | 1.4    | 1.5    | 2.0     | 2.3     |

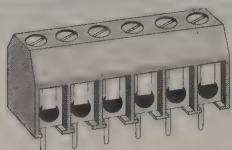
From the test it is obvious that the MODCOM-C connector will give better transmission rates up to and above the FDDI transmission rates.

Additional test data available upon request.



# SCREW CONNECTORS FOR PRINTED CIRCUIT BOARDS

## SERIES 93, 94, 95, 96 AND 97

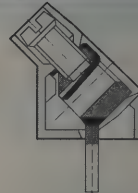
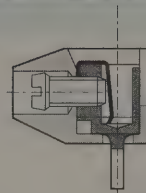
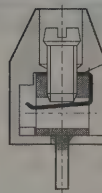


### Horizontal Wire Entry

| Type      | Center to center spacing | Height       | Width        | No. of poles |
|-----------|--------------------------|--------------|--------------|--------------|
| 930-DS    | 3.5mm/.138in             | 6.7mm/.26in  | 6.5mm/.26in  | 2-24         |
| 950-DS    | 5mm/.197in               | 10mm/.39in   | 8mm/.31in    | 2-32         |
| 970-DS    | 5mm/.197in               | 13mm/.51in   | 9mm/.35in    | 2-32         |
| 970-HSEDS | 5mm/.197in               | 27mm/1.063in | 10.5mm/.41in | 2-32         |
| 940-DS    | 5.08mm/.2in              | 11.5mm/.45in | 8mm/.31in    | 2-32         |
| 960-DS    | 5.08mm/.2in              | 13.5mm/.53in | 9mm/.35in    | 2-32         |
| 932-DS    | 7mm/.276in               | 8.7mm/.34in  | 6.5mm/.26in  | 2-12         |
| 977-DS    | 7.5mm/.295in             | 13mm/.51in   | 9.5mm/.38in  | 2-19         |
| 910-DS    | 10mm/.394in              | 14mm/.55in   | 9mm/.35in    | 2-12         |
| 952-DS    | 10mm/.394in              | 10mm/.39in   | 8mm/.31in    | 2-16         |
| 972-DS    | 10mm/.394in              | 13mm/.51in   | 9mm/.35in    | 2-16         |
| 942-DS    | 10.16mm/.4in             | 11.5mm/.45in | 8mm/.31in    | 2-16         |
| 962-DS    | 10.16mm/.4in             | 13.5mm/.53in | 9mm/.35in    | 2-16         |

### Vertical Wire Entry

| Type        | Center to center spacing | Height      | Width        | No. of poles |
|-------------|--------------------------|-------------|--------------|--------------|
| 931-DS      | 3.5mm/.138in             | 6.5mm/.26in | 6.5mm/.26in  | 2-24         |
| 951-HG-DS   | 5mm/.197in               | 8mm/.31in   | 10mm/.39in   | 2-32         |
| 971-HG-DS   | 5mm/.197in               | 9mm/.35in   | 13mm/.51in   | 2-32         |
| 941-DS      | 5.08mm/.2in              | 8mm/.31in   | 11.5mm/.45in | 2-32         |
| 961-DS      | 5.08mm/.2in              | 9mm/.35in   | 13.5mm/.53in | 2-32         |
| 933-DS      | 7mm/.276in               | 6.5mm/.26in | 8.7mm/.34in  | 2-12         |
| 977-OPSG-DS | 7.5mm/.295in             | 9mm/.35in   | 13mm/.51in   | 2-19         |
| 953-HG-DS   | 10mm/.394in              | 8mm/.31in   | 10mm/.39in   | 2-16         |
| 973-HG-DS   | 10mm/.394in              | 9mm/.35in   | 13mm/.51in   | 2-16         |
| 943-DS      | 10.16mm/.4in             | 8mm/.31in   | 11.5mm/.45in | 2-16         |
| 963-DS      | 10.16mm/.4in             | 9mm/.35in   | 13.5mm/.53in | 2-16         |



### Description

Series 93 to 97 screw connectors for printed circuit boards are available with both metric and imperial center to center spacings and offer a choice of horizontal, vertical or 45 degree wire entry. All horizontal wire entry versions have standoffs at the base to allow flux and solvents to drain during flow soldering operations. Wire protectors prevent damage to finely stranded wires from the turning screw. Series 93, 94 and 95 can be installed end to end while maintaining center to center spacing. T types feature a dovetail interlocking system and are available in 2 and 3 pole versions which can be combined to form larger configurations. Series 93 features captive screws.

### Technical Data

#### Center to center spacing:

Series 91: 10mm/.394in  
 Series 93: 3.5mm/.138in; 7mm/.276in  
 Series 94: 5.08mm/.200in; 10.16mm/.400in  
 Series 95: 5mm/.197in; 10mm/.394in  
 Series 96: 5.08mm/.200in; 10.16mm/.400in  
 Series 97: 5mm/.197in; 7.5mm/.295in; 10mm/.394in

#### Nominal Cross Section:

Series 91: 4mm<sup>2</sup>/6199mils<sup>2</sup>  
 Series 93: 1mm<sup>2</sup>/1550mils<sup>2</sup>  
 Series 94: 1.5mm<sup>2</sup>/2325mils<sup>2</sup>  
 Series 95: 1.5mm<sup>2</sup>/2325mils<sup>2</sup>  
 Series 96: 2.5mm<sup>2</sup>/3874mils<sup>2</sup>  
 Series 97: 2.5mm<sup>2</sup>/3874mils<sup>2</sup>

#### Breakdown Voltage:

3.5mm spacing >2500  
 5mm spacing >2500  
 7mm spacing >2500  
 7.5mm spacing >4000  
 10mm spacing >5000

#### Wire Stripping Length: 6mm/0.24in

#### Recommended Hole Ø in P.C. Board:

Series 91: 1.30mm/.05in  
 Series 93: 1.20mm/.047in  
 Series 94 - 97: 1.30mm/.05in

### International Approvals

Series UL: File No. E69841  
 91 18-10 AWG Cu; 300V, 25A  
 93 26-16 AWG Cu; 300V, 7A  
 94, 95 26-14 AWG Cu; 300V, 15A  
 96, 97 26-12 AWG Cu; 300V, 20A

Series CSA: File No. LR24322  
 91 26-10 AWG Cu; 300V, 25A  
 93 26-16 AWG Cu; 300V, 7A  
 94, 95 26-14 AWG Cu; 300V, 15A  
 96, 97 26-12 AWG Cu; 300V, 15A

In accordance with VDE 0110  
 VDE 0609 test report for types 970 - 975  
 will be provided on request.

### Material

**Moulding:** Polyamide, self-extinguishing to UL94 V-O, grey colour

#### Temperature Limits:

short time: 140°C/284°F  
 continuous: 80°C/176°F  
 cold resistant: -40°C/-40°F

#### Comparative Tracking Index: CTI>600

#### Terminal Body: tin-plated brass

#### Wire Protector: Copper alloy, tin plated

#### P.C. Pin: Ø1mm/0.04in ± 0.75mm<sup>2</sup>

All types with pin in right angle to wire entrance: tin plated copper.

All types with pin in axis to wire entrance: tin plated brass.

(HG versions: tin plated copper)

**Screw:** zinc-plated steel, yellow chromated

### Available Options

CN: Consecutive Numbering  
 SM: Special Marking (please provide sketch)

BS: Brass Screws

G05: Gold plating (5 microinches)

G30: Gold plating (30 microinches)

S30: Silver plating (30 microinches)

XXMM: Longer P.C. pins up to 75mm/3in. indicate length in millimeters (not available for 931-DS, 941-DS, 961-DS, 977-OPSG-DS, 943-DS and 963-DS).

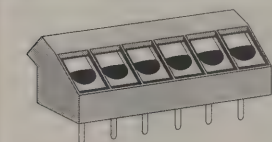
Note: All blocks are available without wire protector (delete -DS from type number)

### Accessories

#### Self Adhesive Marker Strips

| Type        | Center to center spacing | Marked  |
|-------------|--------------------------|---------|
| BST3.50/24  | 3.50mm/.138in            | 1 to 24 |
| BST5.00/12  | 5.00mm/.197in            | 1 to 12 |
| BST5.00/32  | 5.00mm/.197in            | 1 to 32 |
| BST5.08/12  | 5.08mm/.200in            | 1 to 12 |
| BST5.08/32  | 5.08mm/.200in            | 1 to 32 |
| BST7.50/19  | 7.50mm/.295in            | 1 to 19 |
| BST10.00/16 | 10.00mm/.394in           | 1 to 16 |
| BST10.16/16 | 10.16mm/.400in           | 1 to 16 |

Marker strips are UL recognized in the category of marking and labelling systems materials.



### 45° Wire Entry

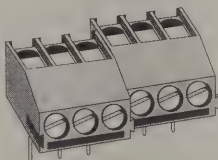
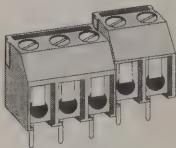
| Type   | Center to Center spacing | Height     | Width        | No. of poles |
|--------|--------------------------|------------|--------------|--------------|
| 974-DS | 5mm/.197in               | 12mm/.47in | 12.5mm/.49in | 2-26         |
| 976-DS | 7.5mm/.295in             | 12mm/.47in | 12.5mm/.49in | 2-3          |
| 975-DS | 10mm/.394in              | 12mm/.47in | 12.5mm/.49in | 2-13         |

### Double Level Horizontal Wire Entry

| Type    | Center to center spacing | Height       | Width        | No. of poles |
|---------|--------------------------|--------------|--------------|--------------|
| 970-EDS | 5mm/.197in               | 27mm/1.063in | 20.2mm/.80in | 4-64         |

### Dovetail Interlocking Versions

2 and 3 position terminal blocks can be assembled to required lengths while maintaining center to center spacing.

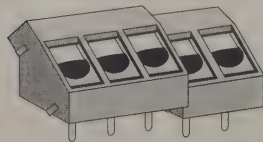


### Horizontal Wire Entry

| Type     | Center to center spacing | Height       | Width     | No. of poles |
|----------|--------------------------|--------------|-----------|--------------|
| 930-T-DS | 3.5mm/.138in             | 6.7mm/.26in  | 8mm/.31in | 2-3          |
| 950-T-DS | 5mm/.197in               | 10mm/.394in  | 8mm/.31in | 2-3          |
| 970-T-DS | 5mm/.197in               | 13mm/.51in   | 9mm/.35in | 2-3          |
| 940-T-DS | 5.08mm/.2in              | 11.5mm/.45in | 8mm/.31in | 2-3          |
| 960-T-DS | 5.08mm/.2in              | 13.5mm/.53in | 9mm/.35in | 2-3          |
| 977-T-DS | 7.5mm/.295in             | 13mm/.51in   | 9mm/.35in | 2-3          |

### Vertical Wire Entry

| Type     | Center to center spacing | Height    | Width        | No. of poles |
|----------|--------------------------|-----------|--------------|--------------|
| 931-T-DS | 3.5mm/.138in             | 6mm/.31in | 8mm/.31in    | 2-3          |
| 951-T-DS | 5mm/.197in               | 8mm/.31in | 10mm/.394in  | 2-3          |
| 971-T-DS | 5mm/.197in               | 9mm/.35in | 13mm/.51in   | 2-3          |
| 941-T-DS | 5.08mm/.2in              | 8mm/.31in | 11.5mm/.45in | 2-3          |
| 961-T-DS | 5.08mm/.2in              | 9mm/.35in | 13.5mm/.53in | 2-3          |
| 977-T-DS | 7.5mm/.295in             | 9mm/.35in | 13mm/.51in   | 2-3          |



### 45° Wire Entry

| Type     | Center to center spacing | Height     | Width        | No. of poles |
|----------|--------------------------|------------|--------------|--------------|
| 974-T-DS | 5mm/.197in               | 12mm/.47in | 12.5mm/.49in | 2-3          |
| 964-T-DS | 5.08mm/.2in              | 12mm/.47in | 12.5mm/.49in | 2-3          |
| 976-T-DS | 7.5mm/.295in             | 12mm/.47in | 12.5mm/.49in | 2-3          |

### Multiple Wire Entry

| Type      | Center to center spacing | Height     | Width     | No. of poles |
|-----------|--------------------------|------------|-----------|--------------|
| 970-TX-DS | 5mm/.197in               | 13mm/.51in | 9mm/.35in | 2 and 4      |
| 970-X-DS  | 5mm/.197in               | 13mm/.51in | 9mm/.35in | 6 and 10     |

U.S.A.

WECO Electrical Connectors Inc.  
 Trimex Building, Rt. 11, Moores, NY 12958  
 Tel: (518) 298-4810 Fax: (518) 298-5938  
 1-800-724-2928 CAGE Code Number 0AW35

CANADA:

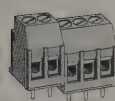
WECO Electrical Connectors Inc.  
 16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
 Tel: (514) 694-9136 Fax: (514) 694-0956





## SCREW CONNECTORS FOR PRINTED CIRCUIT BOARDS

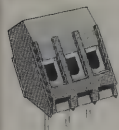
### SERIES 150 MULTILIFT



**Type** Center to center spacing  
150-A-111 5mm/0.197in  
150-A-112 10mm/0.394in  
**Dimensions**  
Height: 19.6mm/0.77in  
Width: 12.3mm/0.48in



**Type** Center to center spacing  
150-B-151 5mm/0.197in  
150-B-152 10mm/0.394in  
NOTE: Other configurations available on request  
**Dimensions**  
Height: 34mm/1.34in  
Width: 22.6mm/0.89in



**Type** Center to center spacing  
150-C-111 5mm/0.197in  
150-C-112 10mm/0.394in  
**Dimensions**  
Height: 16.5mm/0.65in  
Width: 19.3mm/0.76in



**Type** Center to center spacing  
150-B-111 5mm/0.197in  
150-B-112 10mm/0.394in  
**Dimensions**  
Height: 34mm/1.34in  
Width: 13.85mm/0.54in



**Type** Center to center spacing  
150-A-121 5mm/0.197in  
150-A-122 10mm/0.394in  
**Dimensions**  
Height: 12.3mm/0.48in  
Width: 19.6mm/0.77in



**Type** Center to center spacing  
150-B-153 5mm/0.197in  
150-B-154 10mm/0.394in  
NOTE: Other configurations available on request  
**Dimensions**  
Height: 34mm/1.34in  
Width: 22.6mm/0.89in

#### Description

These connectors with extra large clamping area have a lift-terminal which guarantees a high pressure fitting and a fatigue strength wire protection even after countless disconnections.

All types have captive screws and a dovetail interlocking system with 2 or 3 poles per strip. Blocks can be assembled to form required pole configurations.

Center to center spacing is 5mm/0.197in and 10mm/0.394in. All types have a test hole for a test plug with a diameter of 2.3mm/0.09in. All blocks are shipped unmarked as standard.

#### Technical Data

**Center to center spacing:**  
5.00mm/0.197in and 10.00mm/0.394in

**Nominal Cross Section:**  
4.0mm<sup>2</sup>/619mmils<sup>2</sup>

**Breakdown Voltage:** >2500V

**Wire Stripping Length:** 8.00mm/0.31in

**Recommended Hole Ø in P.C. Board:**  
1.30mm/0.05in

#### Material

**Moulding:** Break Resistant polyamide, self extinguishing, to UL94V-O, grey colour

#### Temperature Limits:

short time: 140°C/284°F  
continuous: 80°C/176°F  
cold resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI>600

**Terminal Body:** nickel-plated brass

**P.C. Pin/Wire Protector:** tin-plated brass

**P.C. Pin Profile:** 1 x 0.8mm/0.04 x 0.03in

**Screw:** M3 zinc-plated steel, yellow chromated tightening torque 4.5lb/in.

#### Available Options

CN: Consecutive Numbering

SM: Special Marking (please provide sketch)

BS: Brass Screws

G05: Gold plating (5 microinches)

G30: Gold plating (30 microinches)

S30: Silver plating (30 microinches)

**Note:** If more than one option is required, please separate each option by a dash (-).

#### Accessories

##### Self Adhesive Marker Strips

**Type** Center to center spacing

BST5.00/12 5.00mm/0.197in 1 to 12  
BST5.00/32 5.00mm/0.197in 1 to 32  
BST10.00/16 10.00mm/0.394in 1 to 16

Marker strips are UL recognized in the category of marking and labelling systems materials.

### How To ORDER

| TYPE |  | NUMBER OF POLES<br>02 AND 03 | OPTIONS |
|------|--|------------------------------|---------|
|      |  |                              |         |

#### International Approvals

UL: 300V, 20A

26-12 AWG Cu

File No: E69841



CSA: 300V, 20A

26-10 AWG Cu

File No. LR24322

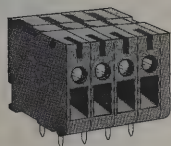


In accordance with VDE 0110



## SCREW CONNECTORS FOR PRINTED CIRCUIT BOARDS

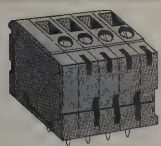
### SERIES 180 AND 182



Wire entrance and set screw are in line with circuit board.

**Type** Center to center spacing  
180-A-111 5mm/0.197in  
182-A-111 7.5mm/0.295in

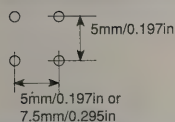
**Dimensions**  
Height: 19.5mm/0.77in  
Width: 18.5mm/0.73in



Wire entrance and set screw are at right angle to circuit board.

**Type** Center to center spacing  
180-A-121 5mm/0.197in  
182-A-121 7.5mm/0.295in

**Dimensions**  
Height: 18.5mm/0.73in  
Width: 19.5mm/0.77in



P.C. Board Hole Layout

#### Description

This design provides accessibility in tight spots, by arranging wire entrances in line with screw driver access. It does so in the horizontal or vertical direction, depending on the type. Reliable torque absorption of screw clamps is achieved by providing two exit pins per pole with center distances of 5.0 or 7.5 mm, and by the mechanical interlock features of the assembly. Connectors can be assembled in any desired length, preferably not exceeding 12 poles.

Beyond providing ease of systems service, the feed-through in-line feature provides designers with a component for dust protected systems by effectively reducing leakage to the environment.

The increasing importance of susceptibility to extraneous electro-magnetic interference (EMI), inter-stage coupling, or conversely, electromagnetic radiation, is also addressed by this connector design. Connections to the inner chassis or cabinet can be made through small holes in the openings in the enclosure, thereby maintaining its properties to the greatest extent, while permitting connecting service from the outside.

#### Technical Data

**Center to center spacing:**

Series 180: 5.00mm/0.197in

Series 182: 7.50mm/0.295in

Center to center spacing may be modified by inserting spacers of 2.5mm/0.098 in between individual connectors, thereby increasing the center to center pin distance to 7.5mm/0.295in. Special versions, or customer-assembled blocks may employ the spacer in any desired position to vary the pin spacing. The last individual connector in a block is closed by an end section.

**Nominal Cross Section:**  
2.5mm<sup>2</sup>/387mmils<sup>2</sup>

**Wire Stripping Length:** 9.00mm/0.37in

**Recommended Hole Ø in P.C. Board:**  
1.30mm/0.05in

#### International Approvals

UL: Pending

File No: E69841

CSA: Pending

File No: LR24322

In accordance with VDE 0110

#### Material

**Moulding:** Polyamide, break resistant self extinguishing, to UL94, V-O, grey colour

#### Temperature Limits:

short time: 140°C/284°F  
continuous: 80°C/176°F  
cold resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI>600

**Clamp and Pressure Pad:** zinc-plated steel, chromated

**Internal Bus with Solder Pins:** tin-plated copper, pin 1 x 0.8 mm

**Screw:** M2.5 steel, zinc-plated, chromated.  
tightening torque: 0.4 Nm/ 3.5 lb/in

#### Available Options

CN: Consecutive Numbering

SM: Special Marking (please provide sketch)

G05: Gold plating (5 microinches)

G30: Gold plating (30 microinches)

S30: Silver plating (30 microinches)

**Note:** If more than one option is required, please separate each option by a dash (-).

#### Accessories

##### Self Adhesive Marker Strips

**Type** Center to center spacing

BST-5.00/12 5.00mm/0.197in 1 to 12  
BST-5.00/32 5.00mm/0.197in 1 to 32  
BST-7.50/19 7.50mm/0.295in 1 to 19

Marker strips are UL recognized in the category of marking and labelling systems materials.

WECO Electrical Connectors Inc.  
Trimex Building, Rt. 11, Moores, NY 12958  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 CAGE Code Number 0AW36

WECO Electrical Connectors Inc.  
CANADA: 16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956

# PLUG-IN SCREW CONNECTORS FOR PRINTED CIRCUIT BOARDS

## SERIES 120 AND 121 CONECTA®



| Type      | Center to center spacing |
|-----------|--------------------------|
| 120-A-111 | 5.00mm/0.197in           |
| 121-A-111 | 5.08mm/0.200in           |

### Dimensions

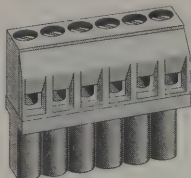
|         |               |
|---------|---------------|
| Height: | 15mm/0.59in   |
| Width:  | 18.4mm/0.72in |



| Type      | Center to center spacing |
|-----------|--------------------------|
| 120-D-111 | 5.00mm/0.197in           |

### Dimensions

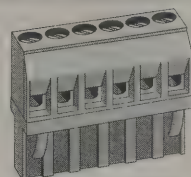
|         |               |
|---------|---------------|
| Height: | 26mm/1.02in   |
| Width:  | 12.5mm/0.49in |



| Type      | Center to center spacing |
|-----------|--------------------------|
| 120-D-121 | 5.00mm/0.197in           |

### Dimensions

|         |               |
|---------|---------------|
| Height: | 26mm/1.02in   |
| Width:  | 12.5mm/0.49in |



## Description

This plug-in screw connector system is available in various possible combinations.

A reliable connection is provided at the screw side with a lift-terminal and at the plug-in side with a locked contact. The lift system ensures a high pressure fitting and a fatigue strength wire protection even after countless disconnections.

Plugs are equipped with captive screws and are available up to 24 poles per strip. Double level headers are available up to 48 poles. All blocks are shipped unmarked as standard.

## Technical Data

### Center to center spacing:

Series 120: 5.00mm/0.197in  
Series 121: 5.08mm/0.200in

(10.00mm/0.394in and 10.16mm/0.400in available on request)

### Nominal Cross Section:

2.5mm<sup>2</sup> /3874mils<sup>2</sup>

### Breakdown Voltage:

>2500V

### Wire Stripping Length:

7.00mm/0.28in

### Recommended Hole Ø in P.C. Board:

1.40mm/0.06in

### International Approval

UL: 300V, 10A

26-12 AWG Cu

File No: E69841

CSA: 300V, 10A

26-12 AWG Cu

File No. LR24322

In accordance with VDE 0110



## Material

**Moulding:** Break Resistant polyamide 6.6, self extinguishing, to UL94 V-0 grey colour

### Temperature Limits:

short time: 160°C/320°F

continuous: 100°C/212°F

cold resistant: -40°C/-40°F

### Comparative Tracking Index: CTI>600

**Terminal Body:** nickel-plated brass

**Contact Spring:** tin-plated bronze

**P.C. Pin:** □1mm/0.04in tin-plated brass

**Screw:** M3 zinc-plated steel, yellow chromated tightening torque 4.5lb/in.

## Available Options

|      |                                         |
|------|-----------------------------------------|
| CN:  | Consecutive Numbering                   |
| SM:  | Special Marking (please provide sketch) |
| G05: | Gold plating (5 microinches)            |
| G30: | Gold plating (30 microinches)           |
| S30: | Silver plating (30 microinches)         |

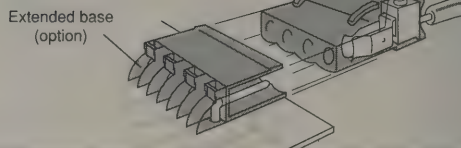
**Note:** If more than one option is required, please separate each option by a dash (—).

## Accessories

### Self Adhesive Marker Strips

| Type       | Center to center spacing | Marked  |
|------------|--------------------------|---------|
| BST5.00/12 | 5.00mm/0.197in           | 1 to 12 |
| BST5.00/32 | 5.00mm/0.197in           | 1 to 32 |
| BST5.08/12 | 5.08mm/0.200in           | 1 to 12 |
| BST5.08/32 | 5.08mm/0.200in           | 1 to 32 |

Marker strips are UL recognized in the category of marking and labelling systems materials.



### Series 120 and 121 Headers

Available 2 to 24 poles

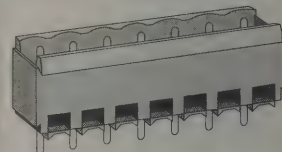
Double level versions available 4 to 48 poles

| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-121 | 5.00mm/0.197in              |
| 120-M-221 | 5.00mm/0.197in w. sidewalls |
| 121-M-121 | 5.08mm/0.200in              |
| 121-M-221 | 5.08mm/0.200in w. sidewalls |

### Dimensions

|         |              |
|---------|--------------|
| Height: | 12mm/0.47in  |
| Width:  | 8.4mm/0.33in |

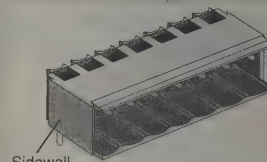


| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-111 | 5.00mm/0.197in              |
| 120-M-211 | 5.00mm/0.197in w. sidewalls |
| 121-M-111 | 5.08mm/0.200in              |
| 121-M-211 | 5.08mm/0.200in w. sidewalls |

### Dimensions

|         |              |
|---------|--------------|
| Height: | 8.4mm/0.33in |
| Width:  | 12mm/0.47in  |

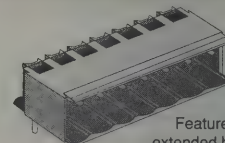


| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-311 | 5.00mm/0.197in              |
| 120-M-411 | 5.00mm/0.197in w. sidewalls |

### Dimensions

|         |               |
|---------|---------------|
| Height: | 8.4mm/0.3in   |
| Width:  | 14.8mm/0.58in |



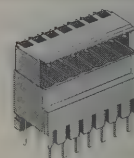
Features extended base.

| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-181 | 5.00mm/0.197in              |
| 120-M-281 | 5.00mm/0.197in w. sidewalls |
| 121-M-181 | 5.08mm/0.200in              |
| 121-M-281 | 5.08mm/0.200in w. sidewalls |

### Dimensions

|         |               |
|---------|---------------|
| Height: | 23.4mm/0.92in |
| Width:  | 12mm/0.47in   |

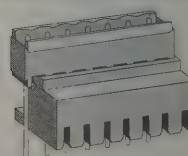


| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-191 | 5.00mm/0.197in              |
| 120-M-291 | 5.00mm/0.197in w. sidewalls |
| 121-M-191 | 5.08mm/0.200in              |
| 121-M-291 | 5.08mm/0.200in w. sidewalls |

### Dimensions

|         |               |
|---------|---------------|
| Height: | 22.8mm/0.89in |
| Width:  | 15mm/0.59in   |

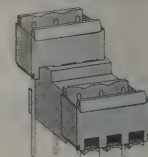


| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-161 | 5.00mm/0.197in              |
| 120-M-261 | 5.00mm/0.197in w. sidewalls |
| 121-M-161 | 5.08mm/0.200in              |
| 121-M-261 | 5.08mm/0.200in w. sidewalls |

### Dimensions

|         |               |
|---------|---------------|
| Height: | 22.8mm/0.89in |
| Width:  | 23.4mm/0.92in |

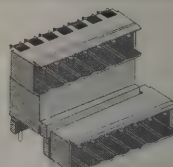


| Type | Center to center spacing |
|------|--------------------------|
|------|--------------------------|

|           |                             |
|-----------|-----------------------------|
| 120-M-151 | 5.00mm/0.197in              |
| 120-M-251 | 5.00mm/0.197in w. sidewalls |
| 121-M-151 | 5.08mm/0.200in              |
| 121-M-251 | 5.08mm/0.200in w. sidewalls |

### Dimensions

|         |               |
|---------|---------------|
| Height: | 23.4mm/0.92in |
| Width:  | 22mm/0.87in   |



## How To ORDER

| TYPE      | NUMBER OF POLES<br>02 to 24 | OPTIONS |
|-----------|-----------------------------|---------|
| 120-A-111 | 12                          |         |
| 120-D-111 | 12                          |         |
| 120-M-111 | 12                          |         |
| 120-M-211 | 12                          |         |
| 121-M-111 | 12                          |         |
| 121-M-211 | 12                          |         |
| 120-M-311 | 12                          |         |
| 120-M-411 | 12                          |         |

**WECO Electrical Connectors Inc.**  
Trimex Building, Rt. 11, Moores, NY 12958  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 CAGE Code Number 0AW35

**CANADA:**

**WECO Electrical Connectors Inc.**  
16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956



## PLUG-IN SCREW CONNECTORS FOR PRINTED CIRCUIT BOARDS

### TYPES 930-FL-DS AND 950-FL-DS

**WECO**®

#### Description

Types 930-FL-DS and 950-FL-DS plugs are available from 2 to 24 poles per strip. The male mating pins are offered in pin-strips up to 16 poles for 930-FL-DS (type 931-SLS) and 64 poles for 950-FL-DS (type 971-SLW) or individually soldered (type LST-1.3 x 6.5).

Pinstrip and connector base design provide directional orientation when mating the two parts. A specially shaped contact spring with integral wire protector ensures a secure contact with relatively small insertion and removal forces.

Type 950-FL-DS features captive screws.

#### Technical Data

##### Center to Center Spacing:

930-FL-DS: 3.5mm/0.138in

932-FL-DS: 7mm/0.276in

950-FL-DS: 5mm/0.197in

952-FL-DS: 10mm/0.394in

##### Nominal Cross Section:

950-FL-DS: 1.5mm<sup>2</sup>/2325 mils<sup>2</sup>

930-FL-DS: 1mm<sup>2</sup>/1550 mils<sup>2</sup>

Breakdown Voltage: 2500V

##### Wire Stripping Length:

930-FL-DS: 5mm/0.20in

950-FL-DS: 6mm/0.24in

##### Recommended Hole Ø in P.C. Board:

Type 931-SLS: 1.3mm/0.05in

Type 971-SLW: 1.3mm/0.05in

Type LST-1.3 x 6.5: 1.5mm/0.06in

#### International Approvals

UL: 950-FL-DS - 300V, 10A

26-14 AWG Cu.

File No. E69841

930-FL-DS - Pending

CSA: 950-FL-DS - 300V, 10A

26-14 AWG Cu.

File No. LR24322

930-FL-DS - Pending

In accordance with VDE 0110

#### Material

**Plug Moulding:** Break resistant polyamide, self extinguishing UL94 V-0, grey colour

#### Temperature Limits:

short time: 160°C/320°F

continuous: 100°C/212°F

cold resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI > 600

**Terminal Body:** nickel plated brass

**Contact Spring/Wire Protector:** copper alloy, tin plated

**Single Pins LST:** Ø1.3mm/0.05 in,

silver plated brass

**Pin Strip Moulding:** PBTP GF (fibreglass reinforced), self extinguishing UL94 V-0, black colour

**Pin:** Tin plated brass

**Screw: 950-FL-DS:** M 2 6 zinc plated steel. Tightening torque max. 0.4Nm/3.5 lb/in.

**930-FL-DS:** M 2 zinc plated steel.

Tightening torque max. 0.2Nm/2.0 lb/in.

#### Available Options

CN: Consecutive Numbering

SM: Special Marking (please provide sketch)

BS: Brass screws

PS: Passivated steel screws

G05: Gold plating (5 microinches)

G30: Gold plating (30 microinches)

S30: Silver plating (30 microinches)

NOTE: If more than one option is required, please separate each option with a dash (-).

#### Accessories

##### Self Adhesive Marker Strips:

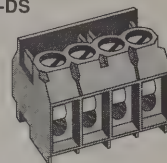
##### Center-to-Center

| Type        | Spacing       | Marked  |
|-------------|---------------|---------|
| BST-3.50/24 | 3.50mm/.138in | 1 to 24 |
| BST-5.00/12 | 5.00mm/.107in | 1 to 12 |
| BST-5.00/32 | 5.00mm/.197in | 1 to 32 |

Marker strips are UL recognized in the category of marking and labelling systems materials.

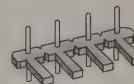
#### PLUG

Types 930-FL-DS and 950-FL-DS



#### PINSTRIP

Types 931-SLS and 971-SLW



#### INDIVIDUALLY SOLDERED PINS

Type LST-1.3 x 6.5



## How To Order

| TYPE | NUMBER OF POLES<br>02 to 24 | OPTIONS |
|------|-----------------------------|---------|
|      |                             |         |

## TAB CONNECTORS FOR PRINTED CIRCUIT BOARDS

### SERIES 900

**WECO**®

#### Description

Series 900 tab type connectors offer the advantage of using receptacle equipped conductors for quick connecting and disconnecting to printed circuit boards. Instead of individually inserting the quick connect blades onto the printed circuit board, the 900 Series combines the required number of tabs into a strip. This eases the handling and cuts down on assembly time and cost. The quick connect blades come in various styles and types to meet your required plug-in direction. All quick connect blades feature double pin soldering and are tightly interlocked into the polyamide insulation housing. This ensures a reliable relief for the solder points when fitting and removing receptables.

#### Technical Data

##### Center to center spacing: No. of Poles

5mm/0.197in 02 - 25

7.5mm/0.295in 02 - 17

10mm/0.394in 02 - 13

Other (please provide sketch)

##### Recommended Hole Ø in P.C. Board:

1.3mm/0.05in

##### CSA: 5mm and 7.5mm versions:

300V, 10A/50V, 15A

10mm versions:

300V, 10A/150V, 15A

File No. LR24322

In accordance with VDE 0110

#### Material

**Moulding:** Polyamide self extinguishing UL94 V-2, grey colour

#### Temperature Limits:

short time: 140°C/284°F

continuous: 80°C/176°F

cold resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI > 600

**Tab:** tin plated brass

**P.C. Pin:** Ø1 x 0.8mm/0.04 x 0.03in

#### Available Options

CN: Consecutive Numbering

SM: Special Marking (please provide sketch)

G05: Gold plating (5 microinches)

G30: Gold plating (30 microinches)

S30: Silver plating (30 microinches)

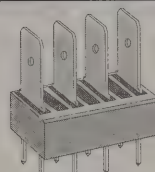
#### Accessories

##### Self Adhesive Marker Strips:

##### Center to center

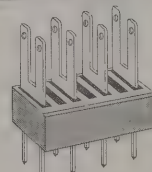
| Type         | spacing      | Marked  |
|--------------|--------------|---------|
| BST-5.00/12  | 5mm/.197in   | 1 to 12 |
| BST-5.00/32  | 5mm/.197in   | 1 to 32 |
| BST-7.50/19  | 7.5mm/.295in | 1 to 19 |
| BST-10.00/16 | 10mm/.394in  | 1 to 16 |

Marker strips are UL recognized in the category of marking and labelling systems materials.



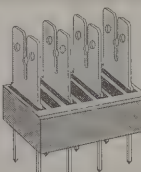
Type 900-SUN

(6.3mm/0.25in tabs)



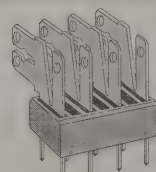
Type 900-SH

(2.8mm/0.11in tabs)



Type 900-S

(6.3mm/0.25in or 2.8mm/0.11in tabs)



Type 900-W

(6.3mm/0.25in or 2.8mm/0.11in tabs)

## How To Order

| TYPE | CENTER TO CENTER SPACING<br>5=5mm<br>7.5=7.5mm<br>10=10mm | NUMBER OF POLES | OPTIONS |
|------|-----------------------------------------------------------|-----------------|---------|
|      |                                                           |                 |         |

WECC Electrical Connectors Inc.  
Timex Building, Rt. 11, Mooers, NY 12958  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 CAGE Code Number 0AW35

CANADA:

WECC Electrical Connectors Inc.  
16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956

# MINI SCREW CONNECTORS FOR PRINTED CIRCUIT BOARDS SERIES 93 3.5MM CENTER TO CENTER SPACING



## Description

Series 93 screw connectors for printed circuit boards are one of the smallest available on the market. These "space savers" on PC boards are available from 2 to 24 poles and 2 and 3 pole dovetail versions. Both types have a center to center spacing of 3.5mm/.138in. Types with 7mm/.176in center to center spacing are also available. All types with pins at right angles relative to the wire entrance have standoffs at the base. This encourages the flow of flux and solvents during the soldering operation. The dovetail interlocking system provides excellent flexibility for the tailoring of connectors to a specific size. This also results in reduced delivery intervals and inventory.

The clamping area of type 938 is box shaped and is best suited for use with larger conductors. The wire protector prevents the clamping screw from damaging the wire. Captive screws are used throughout. All blocks will be shipped without markings as standard. Consecutive numbering, special marking and gold or silver plating are some of the options available.

## International Approvals:

UL File No. E69841



CSA File No. LR24322

| Rating | Current (A) | Voltage (V) | AWG   |
|--------|-------------|-------------|-------|
| UL     | 7           | 300         | 26-16 |
| CSA    | 7           | 150         | 26-16 |

## DIN/VDE Related Information:

VDE 6A, 600V at 30°C/86°F, ambient temp.

Acc. to DIN VDE 0110, pollution degree 1.

## Technical Data

**Center to Center Spacing:** 3.5mm/.138in.

**Nominal Cross Section:** 1.0mm<sup>2</sup>/1550 mils<sup>2</sup>

**Clamping Range:**

26-16AWG solid Cu wire

26-18 AWG stranded Cu wire

**Wire stripping Length:** 6.0mm/0.25in.

**Recommended Hole Ø in PC Board:** 1.2mm/0.05in.

## Material

**Moulding:** Polyamide, self-extinguishing to UL94 V-0, grey colour.

**Temperature Limits:**

short-time: 140°C/284°F

continuous: 80°C/176°F

cold-resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI>600

**Terminal Body:** Tin plated brass

**Wire Protector:** nickel tin

**Screw:** M2, zinc plated steel, yellow chromated

**Screw tightening torque:**

max: 0.2Nm/2lb/in

**Solder pin:** Ø .9mm/035in tin plated brass

## Options:

Please mark in "How to Order" box

CN: Consecutive numbering

SM: Special marking (please provide sketch)

BS: Brass screws

PS: Passivated steel screws

GO5: Gold plating (5 micro inches)

G30: Gold plating (30 micro inches)

S30: Silver plating (30 micro inches)

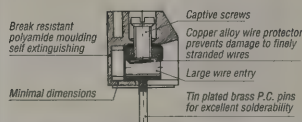
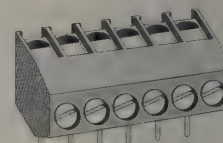
**NOTE:** If more than one option is required, please separate each option with a dash (-)

## Accessories

**Self Adhesive Marker Strips:**

**Type** **Center to Center** **Marked**  
BST-3.50/24 3.5mm/.138in 1-24

Marker strips are UL recognized in the category of marking and labelling systems materials.



## How To ORDER

| WIRE ENTRANCE | WIRE PROTECTOR       | POLES    | OPTIONS |
|---------------|----------------------|----------|---------|
| Round 0       | Without: leave blank | 02 to 24 |         |
| Box shaped 8  | With: - D S          |          |         |

9 3 / -

## Dovetail Version:

| WIRE ENTRANCE | WIRE PROTECTOR       | POLES     | OPTIONS |
|---------------|----------------------|-----------|---------|
| Round 0       | Without: leave blank | 02 and 03 |         |
| Box shaped 8  | With: - D S          |           |         |

9 3 - T / -

# MINI PLUG-IN SCREW CONNECTOR SYSTEM FOR PRINTED CIRCUIT BOARDS SERIES 93-FL 3.5MM CENTER TO CENTER SPACING



## Description

Series 93-FL plug-in screw connector system with its various available pin combinations represents a cost effective and high quality means to connect to circuit boards. Single pins of varying lengths, in addition to type 931-SLS pinstrips are offered for maximum flexibility of design.

The 3.5mm/0.138in pin spacing corresponds to existing industrial standards, which makes this product an excellent candidate for cost effective substitutions. Types with 7mm/0.176in center to center spacing are also available.

The plug moulding is made of polyamide, a self extinguishing material. The tin plated brass screw connector with optional wire protector ensures secure, low resistance connections under the most adverse operating conditions.

A specially shaped contact spring ensures an excellent electrical connection with relatively small insertion and removal forces.

The plug inserts flush with the circuit board to a low silhouette.

Although a generally applicable device, this type of plug-pin combination is used in computer-machine interfaces where low level signal processing meets power levels under industrial conditions.

It helps the service technician to exchange a board with minimum down time, and provides the ruggedness and reliability for an industrial environment.

## Material

**Moulding:** Polyamide, self extinguishing to UL94 V-0, colour grey

**Temperature Limits:**

short time: 140°C/284°F

continuous: 80°C/176°F

cold resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI >600

**Terminal Body:** Nickel plated brass

**Wire Protector:** Nickel silver

**Contact Spring:** Tin plated copper alloy

**Screw:** M2 zinc plated steel, yellow chromated. Maximum torque 0.4Nm/3.5 lb/in.

**Pinstrip 931-SLS:**

**Moulding:** PBTP GF to UL94 V-0, colour black

**Temperature Limits:**

short time: 200°C/392°F

continuous: 100°C/212°F

cold resistant: -40°C/-40°F

**Pin:** Ø1mm/0.04in. Tin plated brass

## Technical Data:

**Center to center spacing:**

3.5mm/0.138in

**Clamping range:** 30-18AWG, up to 0.75mm<sup>2</sup> (1mm<sup>2</sup> without DS)

**Wire stripping length:** 5mm/0.20in.

**Recommended Hole Ø in PC Board:**

1.3mm/0.05in.

## International Approvals:

UL File No. E69841

CSA File No. LR24322

| Rating | Current (A) | Voltage (V) | AWG   |
|--------|-------------|-------------|-------|
| UL     | 6           | 300         | 30-18 |
| CSA    | 6           | 300         | 30-18 |

## Options:

Please mark in the "How to Order" Box:

CN: Consecutive numbering

SM: Special marking (please provide sketch)

BS: Brass screws

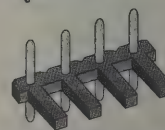
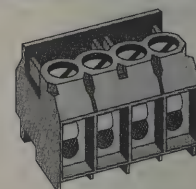
PS: Passivated steel screws

GO5: Gold plating (5 micro inches)

G30: Gold plating (30 micro inches)

S30: Silver plating (30 micro inches)

**NOTE:** If more than one option is required, please separate each option with a dash (-)



## Accessories:

**Self Adhesive Marker Strips**

**Type** **Center to Center** **Marked**  
BST-3.50/24 3.5mm/.138in 1 to 24

## How To ORDER

| PLUG | WIRE PROTECTOR       | POLES    | OPTIONS |
|------|----------------------|----------|---------|
|      | Without: leave blank | 02 to 24 |         |
|      | With: - D S          |          |         |

9 3 0 - F L / -

## PINSTRIP

| POLES    | OPTIONS |
|----------|---------|
| 02 to 16 |         |

9 3 1 - S L S / -

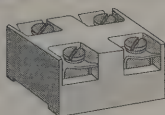
U.S.A.: WECO Electrical Connectors Inc.  
Trimex Building, Rt. 11, Mooers, NY 12958  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 GAGE Code Number 0AW35

CANADA: WECO Electrical Connectors Inc.  
16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956

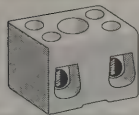




## CERAMIC TERMINAL BLOCKS



Type 560-K4DF



Types 2-DIN-46284 (2 pole)  
and 3-DIN-46284 (3 pole)



Types 4010-B (2 pole)  
and 4011-B (3 pole)

### How To ORDER

| TYPE | OPTIONS |
|------|---------|
|      |         |
|      |         |
|      |         |

#### Description

Ceramic Terminal Blocks are designed for high temperature applications and provide reliable electrical contact in environments up to 465°F/240°C including furnace construction, motors and intrinsically safe electrical equipment. Type 560-K4DF-V2A features stainless steel inserts and withstands temperatures of 940°F/500°C. For further information on our complete line of ceramic products please contact our head office.

#### Technical Data

##### Type 560-K4DF

Nominal Cross Section:

2.5mm<sup>2</sup>/3874mils<sup>2</sup>

Length x width x height:

40x32x20mm/1.57x1.26x0.79in

Types 2-DIN-46284, 3-DIN-46284

Nominal Cross Section:

2.5mm<sup>2</sup>/3874mils<sup>2</sup>

Types 4010-B, 4011-B

Nominal Cross Section:

10mm<sup>2</sup>/15500mils<sup>2</sup>

max Term.-space: 5AWG Cu/16mm<sup>2</sup>

#### International Approvals

UL

Type 560:

300V, 20A, 20-12AWG

File No. E69841



#### CSA

Types 2-DIN-46284, 3-DIN-46284,

300V, 20A, 18-12AWG

Type 560:

300V, 25A, 20-12AWG

600V, 5A, 20-12AWG

File No. LR24322



#### Material

Type 560 K4DF:

Mount: Steatite, KER 220 DIN 40685

Screw Terminal: nickel plated brass

Screw: M4 zinc plated steel

Binding Clip: zinc plated steel

Type 560-K4DF-V2A:

All metal parts (terminal, binding screw,

binding clip and spring washer B4 DIN

127) are made of stainless steel for

extreme temperatures up to 500°C/

940°F

Types 2-DIN-46284, 3-DIN-46284,

4010-B, 4011-B:

Moulding: Glazed porcelain KER 111

DIN 40685

Terminal Body: nickel plated brass

Screw: M3; 4010-B, 4011-B: M4 zinc

plated steel

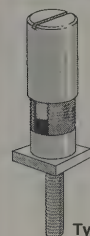
#### Available Options

V2A: Stainless steel inserts for  
940°F/500°C (type 560 K4DF  
only)

HDS: Wire protector (types 2-DIN-  
46284, 3-DIN-46284, 4010-B,  
4011-B only)



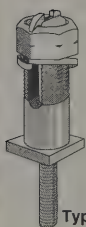
## GROUNDING TERMINALS



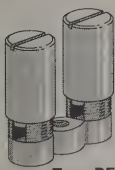
Type DFG



Type DFB



Type GS



Type DFD

| Type     | Nominal<br>Cross-Section<br>mm <sup>2</sup> (AWG Cu) | Rated<br>Current | Height      | Width       |
|----------|------------------------------------------------------|------------------|-------------|-------------|
| DFG-1-EN | 2x4 (2x11)                                           | 30A              | 32mm/1.26in | 8mm/31in    |
| DFG-2-EN | 2x6 (2x9)                                            | 40A              | 38mm/1.50in | 10mm/39in   |
| DFG-3-EN | 2x6 (2x9)                                            | 53A              | 46mm/1.81in | 11.5mm/45in |
| DFG-5-EN | 2x25 (2x3)                                           | 95A              | 67mm/2.63in | 16mm/63in   |

| Type     | Nominal<br>Cross-Section<br>mm <sup>2</sup> (AWG Cu) | Rated<br>Current | Height        | Width       |
|----------|------------------------------------------------------|------------------|---------------|-------------|
| DFB-1-EN | 2x4 (2x11)                                           | 30A              | 26mm/1.02in   | 8mm/31in    |
| DFB-2-EN | 2x6 (2x9)                                            | 40A              | 31.5mm/1.24in | 10mm/39in   |
| DFB-3-EN | 2x10 (2x7)                                           | 53A              | 38mm/1.50in   | 11.5mm/45in |
| DFB-5-EN | 2x25 (2x3)                                           | 95A              | 57mm/2.24in   | 16mm/63in   |

| Type   | Nominal<br>Cross-Section<br>mm <sup>2</sup> (AWG Cu) | Rated<br>Current | Height      | Width       |
|--------|------------------------------------------------------|------------------|-------------|-------------|
| GS-0-B | 2x2.5 (2x13)                                         | 25A              | 21mm/83in   | 10mm/39in   |
| GS-1-B | 2x4 (2x11)                                           | 34A              | 23mm/91in   | 12mm/47in   |
| GS-2-B | 2x6 (2x9)                                            | 44A              | 28mm/1.02in | 14mm/55in   |
| GS-3-B | 2x10 (2x7)                                           | 61A              | 31mm/1.22in | 17mm/67in   |
| GS-4-B | 2x16 (2x5)                                           | 82A              | 35mm/1.38in | 19mm/75in   |
| GS-5-B | 2x35 (2x2)                                           | 135A             | 44mm/1.73in | 24mm/94in   |
| GS-6-B | 2x50 (2x10)                                          | 168A             | 52mm/2.05in | 30mm/1.18in |
| GS-7-B | 2x70 (2x20)                                          | 207A             | 62mm/2.44in | 36mm/1.42in |

| Type     | Nominal<br>Cross-Section<br>mm <sup>2</sup> (AWG Cu) | Rated<br>Current | Height      | Width       |
|----------|------------------------------------------------------|------------------|-------------|-------------|
| DFD-1-EN | 1x4 (1x11)                                           | 30A              | 20mm/79in   | 18mm/71in   |
| DFD-3-EN | 1x10 (1x7)                                           | 63A              | 28mm/1.10in | 27mm/1.06in |
| DFD-5-EN | 1x70 (1x50)                                          | 180A             | 51mm/2.01in | 45mm/1.77in |
| DFD-6-EN | 1x120 (1x50)                                         | 255A             | 65mm/2.56in | 64mm/2.52in |

### How To ORDER

| TYPE | OPTIONS |
|------|---------|
|      |         |
|      |         |
|      |         |

#### Description

Grounding Terminals are suitable for installation in apparatus, machinery and installation equipment of all types. They are used mainly in applications requiring a locked screw connection. WECO grounding terminals provide maximum operational reliability and meet the requirements of the corresponding VDE regulations.

The DF type mantle terminals consist of an upper cylindrical nut, and a lower, tapered and slotted bolt. A pressure pad travels up or down within that slot, depending on the direction of rotation. A small spring, situated between pressure pad and cylindrical nut, transmits contact pressure to the wire and thereby insures the integrity of the electrical connection despite vibration or temperature cycling effects. In addition, the spring and pressure pad provide a very effective friction lock to assure a durable and stable connection.

#### Notes on installation:

The above specified terminals can be used for equipment of temperature classes T1 to T6 at ambient temperatures up to 40°C/104°F resulting from self-heating at the specified current. If the terminals are to be fitted as live parts in a terminal compartment — at least of enclosure IP 54 — the requirements in accordance with EN 50014-1977/VDE 0171, Part 1/5.78, Sections 14.2 to 14.4, must also be observed. In addition, the terminals must be locked at the base of the slotted bolt to prevent twisting.

#### Material

Slotted bolt, mantle nut and clamping member: nickel plated brass

Spiral Spring: spring steel, blue annealed (types DFG, DFB, DFD), zinc plated steel (type GSB)

#### Test Certificates



##### Type DFG

Part certificate of the German National Standards Laboratory (PTB), Braunschweig PTB No. Ex-81/3122 U dated 7.7.1981, Dimension sheet No. 200006

The locked mantle terminals DF are approved in accordance with European Standard DIN EN 50014/VDE 0171, Part 1/5.78 and DIN EN 50019/VDE 0171, Part 6/5.78.

##### Type DFB

Part certificate of the German National Standards Laboratory (PTB), Braunschweig PTB No. Ex-81/3122 U dated 7.7.1981, Dimension sheet No. 200006.

The locked mantle terminals DF are approved in accordance with European Standard DIN EN 50014/VDE 0171, Part 1/5.78 and DIN EN 50019/VDE 0171, Part 6/5.78.

##### Type DFD

Part certificate of the German National Standards Laboratory (PTB), Braunschweig PTB No. Ex-81/3132 U dated 23.10.1981, Dimension sheet No. 220003.

#### Available Options

G05: Gold Plating (5 microinches)

G30: Gold Plating (30 microinches)

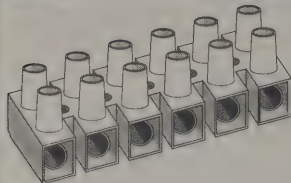
S30: Silver Plating (30 microinches)

WECO Electrical Connectors Inc.  
Trinex Building, Rt. 11, Moores, NY 12958  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 CAGE Code Number 0AW35

WECO Electrical Connectors Inc.  
CANADA: 16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956



TERMINAL STRIPS FOR PANEL / CHASSIS MOUNTING

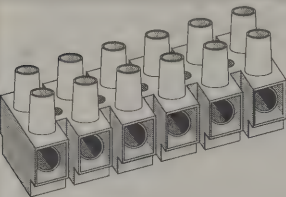


Series 300

These screw terminal strips are used for connecting stripped, unterminated, stranded or solid copper wires, ranging from 26-6 AWG depending on product type selected. Each strip has 12 circuits and can easily be field cut to the required number of poles. They can also be ordered factory-cut in any requested pole number.

| Type        | UL   |       |       | CSA  |       |       | Height       | Width       | Screw Size |
|-------------|------|-------|-------|------|-------|-------|--------------|-------------|------------|
|             | Amps | Volts | AWG   | Amps | Volts | AWG   |              |             |            |
| 302-NHDS    | 10   | 300   | 20-12 | 20   | 300   | 26-14 | 12mm/.47in   | 16mm/.63in  | M2.6       |
| 302-HDS     | 20   | 250   | 20-12 | 20   | 300   | 20-14 | 15mm/.59in   | 16mm/.63in  | M2.6       |
| 323-HDS     | 30   | 250*  | 20-10 | 20   | 300   | 18-12 | 16mm/.63in   | 21mm/.83in  | M3         |
| 323-V-HDS** | 30   | 250*  | 20-10 | 20   | 300   | 18-12 | 16mm/.63in   | 21mm/.83in  | M3         |
| 324-HDS     | 35   | 250*  | 14-8  | 35   | 250   | 14-8  | 18.5mm/.73in | 22mm/.87in  | M3.5       |
| 326-HDS     | 50   | 250   | 14-8  | 50   | 250   | 14-8  | 22.5mm/.89in | 30mm/1.18in | M4         |
| 327-HDS     | 65   | 300   | 14-6  | 80   | 300   | 14-6  | 25mm/.98in   | 30mm/1.18in | M5         |

\*600 volts with insulating base. \*\*With wire stop

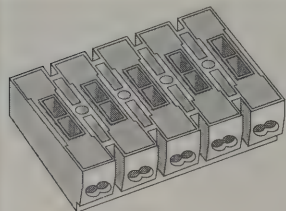


FU Versions

FU type terminal strips feature a raised base to increase creepage distance from the mounting surface. All other dimensions and components are identical to the standard versions

| Type           | UL   |       |       | CSA  |       |       | Height        | Width       | Screw Size |
|----------------|------|-------|-------|------|-------|-------|---------------|-------------|------------|
|                | Amps | Volts | AWG   | Amps | Volts | AWG   |               |             |            |
| 323-FU16.5-HDS | 30   | 250*  | 20-10 | 30   | 300   | 20-10 | 16.5mm/.65in  | 21mm/.83in  | M3         |
| 323-FU18.5-HDS | 30   | 250*  | 20-10 | 30   | 600   | 20-10 | 18.5mm/.73in  | 21mm/.83in  | M3         |
| 324-FU-HDS     | 35   | 300*  | 14-8  | 35   | 600   | 14-8  | 21.3mm/.84in  | 22mm/.87in  | M3.5       |
| 327-FU-HDS     | 65   | 600   | 14-6  | 80   | 600   | 14-6  | 28.5mm/1.12in | 30mm/1.18in | M5         |

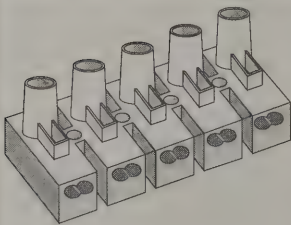
\*600 volts with insulating base.



Type 810

These quick connect strips have 4 terminal points which can be operated independently. The stripped conductor is inserted and clamped by the steel spring. To release the conductor from the clamp, insert a screwdriver through the appropriate opening and depress the spring clip.

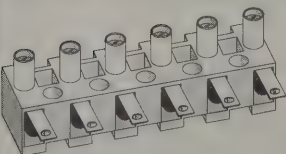
| Type | UL   |       |       | CSA  |       |       | Height       | Width         |
|------|------|-------|-------|------|-------|-------|--------------|---------------|
|      | Amps | Volts | AWG   | Amps | Volts | AWG   |              |               |
| 810  | 10   | 300   | 18-16 | 10   | 300   | 18-16 | 10.5mm/.41in | 26.5mm/1.04in |



Type 820-DS

Terminal strip Type 820-DS is provided with a double push-in connection similar to Type 810. The opposite side is equipped with a sturdy screw-type connection. A wire protector (DS-Types) prevents damage to the wire from the turning screw.

| Type   | UL   |       |        | CSA  |       |        | Height     | Width        | Screw Size |
|--------|------|-------|--------|------|-------|--------|------------|--------------|------------|
|        | Amps | Volts | AWG    | Amps | Volts | AWG    |            |              |            |
| 820-DS | 10   | 250   | 10 max | 10   | 250   | 10 max | 16mm/.63in | 19.2mm/.76in | M3.5       |

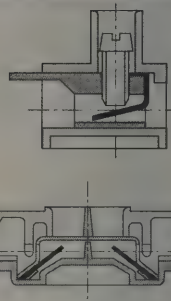
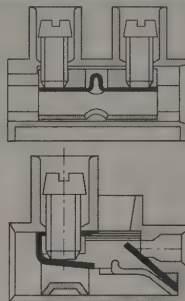


Types 302 LF-DS and 322 LFS-DS

These screw-solder terminal strips offer solder tabs on one side and screw terminations on the other.

| Type       | UL   |       |        | CSA  |       |       | Height       | Width        | Screw Size |
|------------|------|-------|--------|------|-------|-------|--------------|--------------|------------|
|            | Amps | Volts | AWG    | Amps | Volts | AWG   |              |              |            |
| 302-LF-DS  | 6    | 250   | 20-14* | 6    | 250*  | 20-14 | 15mm/.59in   | 22.5mm/.89in | M2.6       |
| 322-LFS-DS | 10   | 300   | 20-12  | 10   | 300   | 20-12 | 15.5mm/.61in | 21mm/.83in   | M3         |

\*600 volts with insulating base.



Description

All types are available from 1 to 12 poles. A mounting hole is provided between every circuit. The screws are captive and are backed-out and ready for wiring. Each circuit of the terminal strips has a wire protector to prevent damage to the wire from the turning screw. The wire protector is a thin steel or copper alloy plate placed between screw and wire. All metal parts of this terminal are completely recessed in the flexible polyamide moulding. This dead-front design ensures safety and prevents short circuiting. Its flexible construction allows use on uneven surfaces.

Technical Data

| Type       | Center to Center Spacing: |
|------------|---------------------------|
| 302, 302-N | 8mm/.315in                |
| 322, 323,  | 10mm/.394in               |
| 810, 820   | 10mm/.394in               |
| 324        | 11.5mm/.453in             |
| 326, 327   | 14.5mm/.571in             |

| Type     | Nominal Cross Section:                    |
|----------|-------------------------------------------|
| 302, 323 | 2.5mm <sup>2</sup> /3874mils <sup>2</sup> |
| 322      | 4mm <sup>2</sup> /6199mils <sup>2</sup>   |
| 324      | 6mm <sup>2</sup> /9298mils <sup>2</sup>   |
| 326      | 10mm <sup>2</sup> /15500mils <sup>2</sup> |
| 327      | 16mm <sup>2</sup> /24800mils <sup>2</sup> |
| 810      | 1.5mm <sup>2</sup> /2325mils <sup>2</sup> |
| 820      | 1.5mm <sup>2</sup> /2325mils <sup>2</sup> |

Breakdown Voltage: >4000V

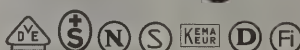
| Type     | Wire Stripping Length |
|----------|-----------------------|
| 302      | 5mm/.197in            |
| 322, 323 | 6.5mm/.25in           |
| 324      | 7mm/.27in             |
| 810, 820 | 7.5mm/.295in          |
| 326, 327 | 9mm/.35in             |

International Approvals

UL:  
File No. E69841



CSA:  
File No. LR 24322



Material

Type 810  
Moulding: Polyamide, self-extinguishing to UL94 V-2, white and red colour  
Terminal Body: Tin plated brass  
Spring: Stainless steel

Type 820

Moulding: Polyamide, self-extinguishing to UL94 V-2, white colour  
Terminal Body: Tin plated brass  
Spring: Stainless steel  
Wire Protector: Copper alloy, tin plated  
Screw: zinc plated steel, yellow chromated  
Types 302, 322, 323, 324  
Moulding: Polyamide, self-extinguishing to UL94 V-2, white colour  
Terminal Body: Nickel plated brass  
Wire Protector: Stainless steel  
Screw: Zinc plated steel, yellow chromated

Types 326, 327

Moulding: Polyamide, self-extinguishing to UL94 V-O, white colour  
Terminal Body: Nickel plated brass  
Wire Protector: Stainless steel  
Screw: Zinc plated steel, yellow colour  
Temperature Limits:  
(for all types):  
short time: 140°C/284°F  
continuous: 80°C/176°F  
cold resistant: -40°C/-40°F

Comparative Tracking Index: CTI>600

Available Options

BS: Brass Screws  
VB: Marked etc.  
VT: Marked etc.  
LH: Marked 1 2 3 4 5 etc.  
RH: Marked 12 11 10 9 8 etc.  
VBR: Marked etc.  
VTR: Marked etc.  
LHR: Marked etc.  
RHR: Marked etc.  
SM: Special Marking  
(please provide sketch)

Accessories

| Marker Strips | Type    | No. of Poles | Center to center spacing | For types |
|---------------|---------|--------------|--------------------------|-----------|
| BST-302       | 1 to 75 | 8mm          |                          | 302       |
| BST-322       | 1 to 60 | 10mm         |                          | 322       |
| BST-323       | 1 to 60 | 10mm         |                          | 323       |
| BST-324       | 1 to 52 | 11.5mm       |                          | 324       |
| BST-326       | 1 to 41 | 14.5mm       |                          | 326, 327  |

How To ORDER

| TYPE | NUMBER OF POLES<br>01 to 12 | OPTIONS |
|------|-----------------------------|---------|
|      |                             |         |
|      |                             |         |
|      |                             |         |

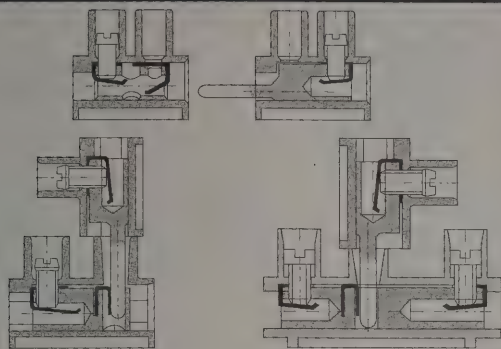
U.S.A.: WECO Electrical Connectors Inc.  
Trimex Building, Rt. 11, Mooers, NY 12954  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 CAGE Code Number 0AW35

CANADA: WECO Electrical Connectors Inc.  
16791 Hymus Blvd., Kirkland, Que, H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956



# PLUG-IN TERMINAL STRIPS FOR PANEL / CHASSIS MOUNTING

## SERIES 300-S

**WECO**®


### Description

Plug and socket connectors are particularly suitable for installations where simple circuit connection and disconnection is required. By pre-wiring various equipment sections, it is possible to use plug and socket connectors to provide a quick and reliable connection at final assembly.

The screws are captive; each screw connection can be equipped with a wire protector which avoids damage to the conductor from the turning screw.

Standard strips have 12 poles and can easily be field cut to required number of poles or ordered as required. A mounting hole is provided between each circuit. The terminal screws are backed out and ready for wiring. The dead front design is for safety and avoids short circuiting.

### Technical data

#### Center to Center Spacing:

Series 302: 8mm/.315in  
Series 322: 10mm/.394in  
Series 323: 10mm/.394in  
Series 324: 11.5mm/.453in

#### Nominal Cross-Section:

Series 302: 2.5mm<sup>2</sup>/3874mils<sup>2</sup>  
Series 322: 4mm<sup>2</sup>/6199mils<sup>2</sup>  
Series 323: 4mm<sup>2</sup>/6199mils<sup>2</sup>  
Series 324: 6mm<sup>2</sup>/9298mils<sup>2</sup>

#### Breakdown Voltage: >4000V

#### Wire Stripping Length:

Series 302: 5mm/0.2in  
Series 322: 7mm/0.275in  
Series 323: 7mm/0.275in  
Series 324: 7mm/0.275in

### International Approvals

UL CSA   
See table See table

In accordance with VDE 0110

### Material

**Moulding:** Polyamide, self-extinguishing to UL 94, V-2, white colour

#### Temperature Limits:

short-time 140°C/284°F  
continuous 80°C/176°F  
cold-resistant -40°C/-40°F

#### Comparative Tracking Index: CTI > 600

**Terminal Body:** Nickel plated brass

**Spring Clip:** Stainless steel strip

**Wire Protector:** Copper alloy, tin plated

**Screw:** Zinc plated steel, yellow chromated

### Available Options

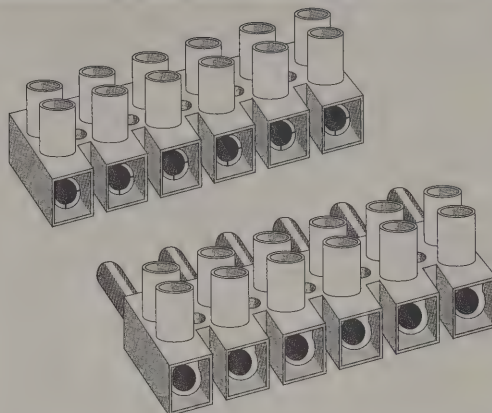
\*All versions are available without wire protectors (delete DS or HDS from type description)

BS: Brass Screws  
VB: Marked etc.  
VT: Marked etc.  
LH: Marked 1 2 3 4 5 etc.  
RH: Marked 12 11 10 9 8 etc.  
VBR: Marked etc.  
VTR: Marked etc.  
LHR: Marked etc.  
RHR: Marked etc.  
SM: Special Marking  
(please provide sketch)

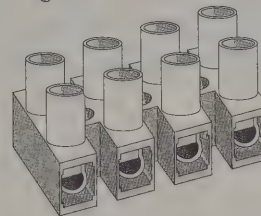
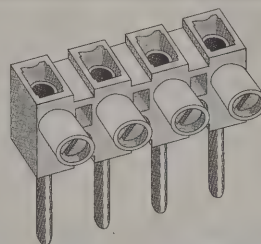
### Accessories

#### Marker Strips

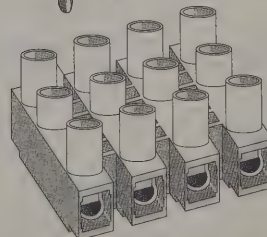
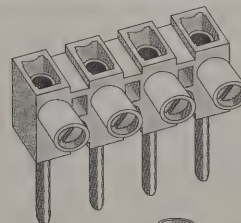
| Type    | No. of Poles | Center to Center Spacing | For Type |
|---------|--------------|--------------------------|----------|
| BST-302 | 1 to 75      | 8mm/.315in               | 302      |
| BST-322 | 1 to 60      | 10mm/.394in              | 322      |
| BST-323 | 1 to 60      | 10mm/.394in              | 323      |
| BST-324 | 1 to 52      | 11.5mm/.453in            | 324      |



| Type        | Male | Female      | Center to Center Spacing |
|-------------|------|-------------|--------------------------|
| 302-SV-DS   |      | 302-FB-DS   | 8mm/.315in               |
| 322-SV-DS   |      | 323-FB-HDS  | 10mm/.394in              |
| 324-STFS-DS |      | 324-STFB-DS | 11.5mm/.453in            |



| Type       | Male | Female     | Center to Center Spacing |
|------------|------|------------|--------------------------|
| 322-SVW-DS |      | 323-FBW-DS | 10mm/.394in              |



| Type       | Male | Female       | Center to Center Spacing |
|------------|------|--------------|--------------------------|
| 322-SVW-DS |      | 323-PHFBW-DS | 10mm/.394in              |

| Connector Designation |              | Length (with 12 circuits) |     | UL recognized for (File #E69841) |         | CSA Approved for (File #LR24322) |       | Screw Tightening Torque |
|-----------------------|--------------|---------------------------|-----|----------------------------------|---------|----------------------------------|-------|-------------------------|
| Male                  | Female       | No. of circuits           | mm  | in.                              | Volts   | Amps                             | AWG   | lb. / in.               |
| 302-SV-DS             | 302-FB-DS    | 1-12                      | 95  | 3.87                             | 250 (1) | 6                                | 20-14 | 3.5                     |
| 322-SV-DS             | 323-FB-HDS   | 1-12                      | 117 | 4.61                             | 250 (1) | 20                               | 18-12 | 4.5                     |
| 322-SVW-DS            | 323-FBW-DS   | 1-12                      | 117 | 4.61                             | 250 (1) | 20                               | 18-12 | 4.5                     |
| 322-SVW-DS            | 323-PHFBW-DS | 1-12                      | 117 | 4.61                             | 250 (1) | 20                               | 18-12 | 4.5                     |
| 324-STFS-DS           | 324-STFB-DS  | 1-12                      | 136 | 5.31                             | 250 (2) | 25                               | 18-10 | 7                       |

(1) 300V with insulating base

(2) 600V with insulating base

## How To ORDER

TYPE

 NUMBER OF  
POLES  
01 to 12

OPTIONS

WECO Electrical Connectors Inc.  
Trimex Building, Rt. 11, Mooers, NY 12958  
Tel: (518) 298-4810 Fax: (518) 298-5938  
1-800-724-2928 CAGE Code Number 0AW35

WECO Electrical Connectors Inc.  
16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956

# TAB CONNECTORS FOR PANEL / CHASSIS MOUNTING



## Description

Type 401 offers a tab connection and is available with 4.8mm/.187in or 6.3mm/.250in tabs.

Type 401LF combines a tab type connector on one side with a solder tab on the opposite side. Types 401 and 401-LF provide a mounting hole between each circuit and are available from 1 to 12 poles.

Types 406 and 407 are used as lead distributors equipped with 6.3mm/.250in tabs. Type 406 has a single connector on one side while the other side is equipped with a double connector. Both sides of type 407 have double connectors.

## Technical Data

### Center to Center Spacing:

401-4.8/-6.3: 12.3mm/0.48in  
401-LF (PA/PVC) 4.8/-6.3: 12mm/0.47in

### Nominal Cross Section:

Tab: 4.8mm/0.187in:  
2.5mm<sup>2</sup>/3874 mils<sup>2</sup>  
Tab: 6.3mm/0.250in:  
6.0mm<sup>2</sup>/9300 mils<sup>2</sup>

## Material

### 401-LFPA-4.8/-6.3

**Moulding:** Polyamide, self-extinguishing to UL94 V-2, white colour.

The polyamide material used for this connector passed the Spherical Pressure Test in compliance with VDE 0470 at 125°C/258°F; this test is required for insulation material in several CEE and VDE regulations.

## Temperature Limits:

short-time: 140°C/284°F  
continuous: 80°C/176°F  
cold-resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI>600

**401-4.8/-6.3 and 401-LFPVC-4.8/-6.3**

**Moulding:** Transparent plasticised PVC

## Upper Temperature Limits:

short-time approx: 80°C/176°F  
continuous approx: 70°C/158°F

**Comparative Tracking Index:** CTI>400

**Tab: 4.8/6.3x0.8 (0.187/0.25x0.03in)**

Nickel plated brass,

**LF-types:** tin plated brass

**406, 407-PVC**

**Moulding:** Transparent plasticised PVC

## Upper Temperature Limits:

short-time approx: 80°C/176°F  
continuous approx: 70°C/158°F

**Comparative Tracking Index:** CTI>400

**Tab (only 406, 407-PA/PVC):**

nickel plated brass

6.3x0.8mm (0.25x0.03in)

for receptacles to DIN 46247

## International Approvals:

### UL

Type 401

Type 401-LF

File No. E69841

### CSA

Type 401/4.8

Type 401/6.3

Type 401-LF

File No. LR24322



## Available Options:

G05: Gold Plating (5 microinches)

G30: Gold Plating (30 microinches)

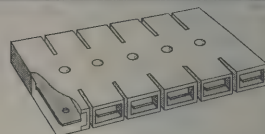
S30: Silver Plating (30 microinches)

## Type 401-4.8

1-12 poles, 4.8mm/.187in Tabs

## Type 401-6.3

1-12 poles, 6.3mm/.25in Tabs



## Type 401-LFPA-4.8

1-12 poles, 4.8mm/.187in Tabs

Polyamide moulding

## Type 401-LFPA-6.3

1-12 poles, 6.3mm/.250in Tabs

Polyamide moulding

## Type 401-LFPVC-4.8

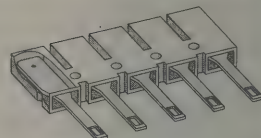
1-12 poles, 4.8mm/.187in Tabs

PVC moulding

## Type 401-LFPVC-6.3

1-12 poles, 6.3mm/.250in Tabs

PVC moulding



## Type 406

3 connections per pole

6.3mm/.250in Tabs

## Type 407-PA

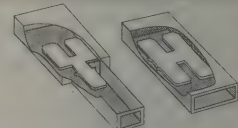
4 connections per pole

6.3mm/.250in Tabs

## Type 407-PVC

4 connections per pole

6.3mm/.250in Tabs



## How To ORDER

| TYPE | NUMBER OF POLES | OPTIONS |
|------|-----------------|---------|
|      |                 |         |
| / -  |                 |         |

# MULTI-POINT TAB CONNECTORS FOR PANEL / CHASSIS MOUNTING



## Description

Multi-point tab connectors are equipped with tab terminals of various sizes and combined assemblies on one strip or even on one contact.

Distributors and space-saving multi-tier designs increase the connection density. Tab connectors combined with either screw terminals or solder terminals on the other side provide an immediate solution to most connection problems thanks to the countless possible combinations.

## Technical Data

### Types 422 to 426

### Nominal Cross Section:

Tab: 2.8 (0.11in):

1mm<sup>2</sup>/1550 mils<sup>2</sup>

Tab: 4.8 (0.087in):

2.5mm<sup>2</sup>/3874 mils<sup>2</sup>

Tab: 6.3 (0.25in):

6mm<sup>2</sup>/9300 mils<sup>2</sup>

### Screw End:

4mm<sup>2</sup>/6199 mils<sup>2</sup>

### Types 983-F and 307-PCM

### Center to Center spacing:

Series 307: 11mm/0.43in

Type 983 F: 10mm/0.39in

### Nominal Cross Section:

2.5-6mm<sup>2</sup>/3874 to 9300 mils<sup>2</sup>

**Breakdown Voltage:** >5000V

**Wire Stripping Length (screw conn.):**

8.5mm/0.33in

## Material

### Types 422 to 426

**Moulding:** Polyamide, self-extinguishing to UL94 V-2, grey colour

## Temperature Limits:

short time: 140°C/284°F  
continuous: 80°C/176°F  
cold-resistant: -40°C/-40°F

**Comparative Tracking Index:** CTI>600

**Tab:** Nickel plated brass

**Soldering Tongue:** Tin plated brass

**Wire Protector:** Copper alloy, tin plated

**Screw:** zinc plated steel, yellow chromated

**Rivet:** Tin plated copper

## Type 307

**Moulding:** Grey polycarbonate, self-extinguishing to UL94 V-0

## Temperature Limits:

Short-time: 135°C/274°F  
Continuous: 135°C/274°F  
Cold-resistant: -100°C/-148°F

**Comparative Tracking Index:** CTI>175

**Tab, Flat Terminal:** Nickel plated brass

**Rivet:** Tin plated copper

**Terminal Screw:** M4 galvanized steel

**Spring and Washers:** galvanized steel, yellow chromated

## International Approvals:

### Type

422 to 426

983-F

307-PCM

(4.8 tabs)

307-PCM

(6.3 tabs)

File No. E69841

### Type

422 to 426

983-F

307-PCM

File No. LR 24322

### UL

422 to 426 250V, 20A, 18-12AWG

983-F 250V, 15A, 20-12AWG

307-PCM 250V, 15A, 12AWG

(4.8 tabs)

307-PCM 250V, 25A, 10AWG

(6.3 tabs)

File No. E69841

### CSA

422 to 426 300V, 20A, 22-12AWG

983-F 300V, 20A, 18-14AWG

307-PCM 300V, 25A, 18-14AWG

File No. LR 24322



## How To ORDER

| Tab Arrangements |   |   |   |
|------------------|---|---|---|
|                  |   |   |   |
| A                | B | C | D |
| POLES            |   |   |   |
| 2 to 6           |   |   |   |
| 4 2 - L - DS     |   |   |   |

## Tab Arrangements

4.8mm/.187in tabs

6.3mm/.25in tabs

(not available for type 983-F)

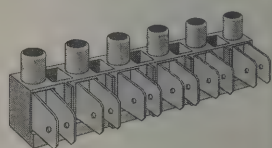
Note: Other arrangements available on request.

|       |       |       |
|-------|-------|-------|
|       |       |       |
| 8.011 | 8.077 | 8.066 |
|       |       |       |
| 8.019 | 8.022 | 8.033 |
|       |       |       |
| 3.011 | 3.077 | 3.066 |
|       |       |       |
| 1.019 | 1.022 | 1.033 |

## Type 42

Screw Terminal / Tab Connector

Center to center spacing: 14mm/.55in



## Type 983-F

Center to center spacing:

9.5mm/.375in



## Type 307-PCM

Center to center spacing:

11.1mm/.437in

## How To ORDER

| TYPE | NUMBER OF POLES | TAB ARRANGEMENT |
|------|-----------------|-----------------|
|      |                 |                 |
| / -  |                 |                 |

WECO Electrical Connectors Inc.

Trimex Building, Rt. 11, Mooers, NY 12958

Tel: (518) 298-4810 Fax: (518) 298-5938

1-800-724-2928 CAGE Code Number 0AW35

WECO Electrical Connectors Inc.

16791 Hymus Blvd., Kirkland, Que. H9H 3L4

Tel: (514) 694-9136 Fax: (514) 694-0956

U.S.A.:

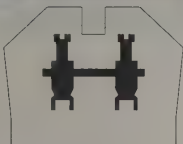
CANADA:



WECO®

# RAIL MOUNTED TERMINAL BLOCKS

## FOR DIN EN 50022, 50035 AND 50045 MOUNTING RAILS



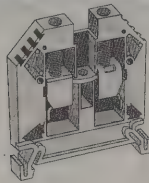
### Feed-Through

For DIN EN 50022 or 50035 Mounting Rails:

| Type       | Width       | Height      | Length      | Amps | Volts | AWG    | Colours                  |
|------------|-------------|-------------|-------------|------|-------|--------|--------------------------|
| Euro 4     | 6mm/.24in   | 36mm/1.42in | 44mm/1.73in | 20   | 600   | 18-12  | Grey, blue, yellow/green |
| Euro 6     | 7mm/.28in   | 36mm/1.42in | 50mm/1.97in | 20   | 600   | 18-8   | Grey, blue, yellow/green |
| Euro 10    | 9mm/.35in   | 44mm/1.73in | 50mm/1.97in | 65   | 600   | 18-6   | Grey, blue, yellow/green |
| Euro 18-25 | 12mm/.47in  | 49mm/1.93in | 56mm/2.20in | 85   | 600   | 14-4   | Grey, blue, yellow/green |
| Euro 35-50 | 16mm/.63in  | 61mm/2.40in | 62mm/2.44in | 140  | 600   | 14-10  | Grey, blue, yellow/green |
| Euro 70    | 26mm/1.02in | 75mm/2.95in | 74mm/2.91in | 175  | 600   | 14-3/0 | Grey, blue, yellow/green |

For DIN EN 50045 Mini Rail:

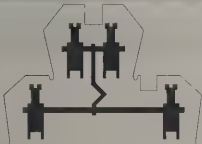
| Type   | Width     | Height      | Length      | Amps | Volts | AWG   | Colours |
|--------|-----------|-------------|-------------|------|-------|-------|---------|
| Euro 4 | 6mm/.24in | 28mm/1.10in | 32mm/1.26in | 20   | 300   | 18-12 | Grey    |



### Two Stage

For DIN EN 50022 or 50035 Mounting Rails

| Type      | Width     | Height      | Length      | Amps | Volts | AWG   | Colours                  |
|-----------|-----------|-------------|-------------|------|-------|-------|--------------------------|
| Euro D4-2 | 6mm/.24in | 55mm/2.17in | 68mm/2.60in | 20   | 600   | 18-12 | Grey, blue, yellow/green |



### Two Stage Cross Connect

For DIN EN 50022 or 50035 Mounting Rails

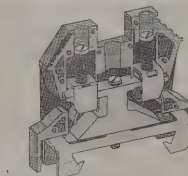
| Type      | Width     | Height      | Length      | Amps | Volts | AWG   | Colours                  |
|-----------|-----------|-------------|-------------|------|-------|-------|--------------------------|
| Euro D4/1 | 6mm/.24in | 55mm/2.17in | 68mm/2.60in | 20   | 600   | 18-12 | Grey, blue, yellow/green |



### Ground

For DIN EN 50022 or 50035 Mounting Rails

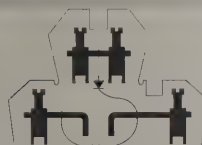
| Type     | Width      | Height      | Length      | Amps | Volts | AWG   | Colours      |
|----------|------------|-------------|-------------|------|-------|-------|--------------|
| Euro E4  | 7mm/.28in  | 36mm/1.42in | 44mm/1.73in | -    | -     | 18-12 | yellow/green |
| Euro E6  | 8mm/.31in  | 44mm/1.73in | 50mm/1.97in | -    | -     | 18-8  | yellow/green |
| Euro E16 | 12mm/.47in | 49mm/1.93in | 56mm/2.20in | -    | -     | 14-4  | yellow/green |



### Fuse

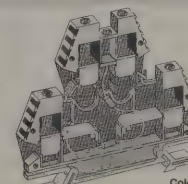
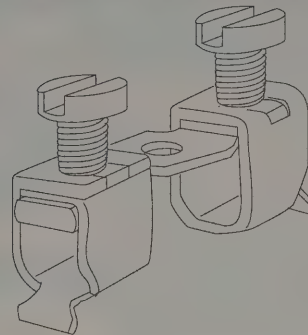
For DIN EN 50022 or 50035 Mounting Rails

| Type       | Fuse Holder    | Width      | Height      | Length      | Amp | Volts | AWG   | Colours | Fuse Size  |
|------------|----------------|------------|-------------|-------------|-----|-------|-------|---------|------------|
| Euro S4    | Plug-in        | 8mm/.31in  | 36mm/1.42in | 60mm/2.60in | 8   | 600   | 18-12 | grey    | 5x20, 5x25 |
| Euro S10   | Lever operated | 10mm/.39in | 50mm/1.97in | 82mm/3.23in | 8   | 600   | 18-6  | grey    | 25in       |
| Euro S10-5 | Lever operated | 10mm/.39in | 50mm/1.97in | 82mm/3.23in | 8   | 600   | 18-6  | grey    | 5x20, 5x25 |



### Diode

Please contact WECO for a list of available versions.  
Notes: May also be supplied without diodes for special component requirements

Colours  
Grey, blue,  
yellow/green

### Description

WECO offers a line of modular rail mounted terminal blocks designed for DIN standard mounting rails. These space saving terminals feature captive screws and polyamide 6.6 UL94 V-2 mouldings.

In addition to the standard feed-through blocks, the line also includes 2 stage, ground, fuse and diode blocks. Jumper combs, covers and marker tags are also available. These terminal blocks may also be used in conjunction with our rail mounted electronic modules for specific interface or component requirements.

### Materials

Moulding: Polyamide 6.6 UL94 V-2

### Tracking Resistance:

IEC Publication 112: CTI>600  
VDE 0303: KB-600

Clamp: Hardened steel, electroplated with zinc, chromated

Internal bus: High grade copper alloy, electro-plated with nickel

Screws: steel, zinc plated and chromated

Jumper comb: Electrolytic copper

### International Approvals

UL  
File No. 107887

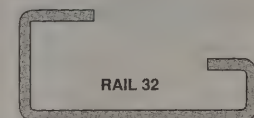
CSA  
File No. LR84816

VDE  
File No. 13464-1440-1001

SEV  
File No. ASEV 87.1 03010U

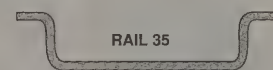


### Mounting Rails:



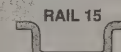
#### DIN EN 50035

"G Rail" – Unperforated – 2 meter length  
Article No. 51.W03.200  
"C Rail" – Perforated – 2 meter length  
Article No. 63.W03.200



#### DIN EN 50022

"C Rail" – Unperforated – 2 meter length  
Article No. 51.W02.200  
"C Rail" – Perforated – 2 meter length  
Article No. 63.W02.200



#### DIN EN 50045

"Mini Rail" – Unperforated – 2 meter length  
Article No. 51.W01.200  
"Mini Rail" – Perforated – 2 meter length  
Article No. 63.W01.200

### Marker Tags

Please contact WECO for a list of available versions

### Accessories:

|      |                        |
|------|------------------------|
| CO:  | Cover                  |
| ES:  | End Section            |
| EB:  | End Bracket            |
| JC2: | Jumper Comb 2 pos.     |
| JC3: | Jumper Comb 3 pos.     |
| JC4: | Jumper Comb 4 pos.     |
| JS:  | Jumper Strip 0.5 meter |

### Not Available for types:

|                         |
|-------------------------|
| Euro E, Euro S          |
| Euro E, Euro S, Euro 70 |
| Euro E, Euro S, Euro 70 |
| Euro E, Euro S, Euro 70 |
| Euro E, Euro S, Euro 70 |
| Euro E, Euro S, Euro 70 |
| Euro E, Euro S, Euro 70 |

## How To ORDER

| TYPE | SUITABLE FOR RAIL: | COLOUR:           | ACCESSORIES |
|------|--------------------|-------------------|-------------|
|      | 15 = 50045         | GR = GREY         |             |
|      | 32 = 50035         | BL = BLUE         |             |
|      | 35 = 50022         | YG = YELLOW/GREEN |             |

WECO Electrical Connectors Inc.  
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1-800-724-2928 CAGE Code Number 0AW35

WECO Electrical Connectors Inc.  
16791 Hymus Blvd., Kirkland, Que. H9H 3L4  
Tel: (514) 694-9136 Fax: (514) 694-0956

# ELECTRONIC MODULES FOR MOUNTING RAILS

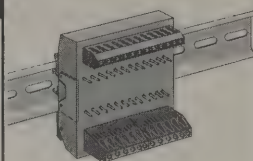
## TO DIN EN 50022, 50035 AND 50045



### Component Modules MBCA 8 and 12 poles

#### How To ORDER

| TYPE | NUMBER OF POLES |
|------|-----------------|
|      | 08<br>12        |
| MBCB | -PPZ            |



#### Description

MBCA component modules are available in 8 and 12 pole versions and are designed as "Do it yourself" modules. The units provide input and output terminal blocks, as well as solder posts (Y shaped) for connecting components (resistors, diodes, LEDs, etc.) and may also be used for prototyping and circuit testing. Mounting feet are suitable for DIN EN 50022, 50035 and 50045 mounting rails.

#### Technical Data

Rated Voltage: 250V\*

Rated current: 5A\*

\* depending on attached components, rated voltage and current may vary.

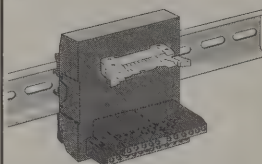
#### Dimensions:

Length: 8 pole version: 47mm/1.85in  
12 pole version: 69mm/2.72in  
Width: 76mm/3.00in  
Height: 51mm/2.01in

### Ribbon Cable Interface Modules MTB 10 - 64 poles

#### How To ORDER

| TYPE | NUMBER OF POLES                                                                                                                              |
|------|----------------------------------------------------------------------------------------------------------------------------------------------|
|      | 10 = 010 40 = 040<br>14 = 014 50 = 050<br>16 = 016 60 = 060<br>20 = 020 64 = 064<br>26 = 026 2x16 = 216<br>34 = 034 2x20 = 220<br>2x26 = 226 |
| MTB  | -PZ                                                                                                                                          |



#### Description

The MTB interface modules make it easy to change from ribbon cable systems to screw connectors. The standard models are available from 10 to 64 poles with DIN 41 651 plug strips and ejectors for spring strips with strain relief clamps; there are also modules with two flat cable connections for 22x16, 2x20 or 2x26 poles. When plugged, the ejectors lock the plug in place. The flat cable connection is made with DIN 41651 female connector strips with strain relief. Single wire connection is made via a sturdy screw connector accepting up to 12 AWG discrete wires.

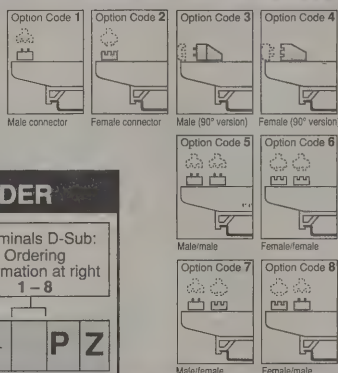
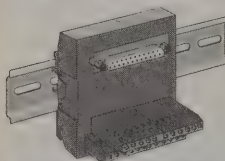
#### Technical Data

Dielectric strength: >500V DC  
Rated voltage: 60 VAC  
to DIN VDE 0110, pollution degree 2  
Rated current: 1A

#### Dimensions:

Height: 54mm/2.56in  
Length: 47mm/1.85in  
with 10, 14 poles  
with 16, 20 poles  
with 26, 2x16 poles  
with 34, 40, 2x20 poles  
with 50 poles  
with 2x26 poles  
with 60, 64 poles  
Width: 76mm/3.00in

### D-Subminiature Interface Modules MTD 9 - 50 poles



#### How To ORDER

| TYPE | NUMBER OF POLES           | Terminals D-Sub: Ordering information at right |
|------|---------------------------|------------------------------------------------|
|      | 009, 015<br>025, 037, 050 | 1 - 8                                          |
| MTD  | -PZ                       |                                                |

#### Description

##### Benefits

- Easy connections between the process/field equipment and the computer system.
- Interface D plug or receptacle equipped cable with up to 12 AWG discrete wires.
- Quick snap-on to DIN mounting rails.
- Saves time on system design.

##### Typical Applications:

- Computer communication links from measurement sensors/transmitters to industrial process controls, including programmable controllers, racks and panels.
- Flight and process simulators.
- CAD/CAM, Robotics and Machine Vision.

- Commercial and industrial heating environmental and security control systems.
- Power generation and distribution control circuits.

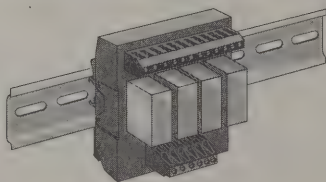
#### Technical Data

Rated voltage: 125V  
Rated current: 1.5A

#### Dimensions:

Height: 32mm/1.26in  
Length: 47mm/1.85in  
with 9 poles  
with 15 poles  
with 25 poles  
with 37 poles  
with 50 poles  
Width: 76mm/3.00in

### Relay Modules MRPA One change-over contact - SPDT - per relay



#### How To ORDER

| TYPE | With SPDT Relays A | Relay Mount: soldered = L plugged-in = S | Input Voltage: AC = A DC+ = P DC- = M | Number of relays: 1, 4, 8 | Input Voltage: 024 (DC or AC) 048 (DC only) 060 (DC only) 110 (AC only) 220 (AC only) |
|------|--------------------|------------------------------------------|---------------------------------------|---------------------------|---------------------------------------------------------------------------------------|
| MRPA | -                  | -                                        | -                                     | -                         | -MMZ                                                                                  |

#### Description

The relay modules MRPA are equipped with one, four or eight relays having a single change-over contact each. The relays can be supplied either soldered or as plug-in versions.

In order to prevent incorrect triggering, a reverse polarity protection diode is installed at the common minus terminal (plus terminal). An LED indicates the control status while one recovery diode per coil protects the circuitry against reverse voltage. For + switching relay modules, connect a positive control voltage to the input terminals. All relay coils are connected to the - coil via the input terminals. For the - switching versions, the coils have a common positive terminal. The relay is triggered by a negative signal. To obtain optimum switching characteristics, the relay modules should be mounted with the input side either down or in a horizontal direction.

\* Other relay versions are available on request

#### Technical Data

##### Control Circuit:

Input voltage: optional, see HOW TO ORDER

Rated power: 0.7W

##### Contact Circuit:

Contact material: AgCdO  
Switching voltage: 250 VAC  
Switching/continuous current: 8A/6A  
Switching Capacity: 2000 VA  
Contact life electrical: AC 1/3A: >7x10<sup>6</sup>  
Contact life mechanical: >10<sup>7</sup>  
Pick-up/Release time: <7ms/<9ms  
Rated Voltage: 240V to DIN VDE 0110, pollution degree 3  
Breakdown Voltage contact-contact 1000V  
Ambient temperature: -25°C to +40°C/-13°F to +104°F

##### Dimensions:

Height above the housing edge (total height depends on the mounting rail used):  
with plug-in relay 36mm/1.42in  
with soldered-in relay 23mm/0.91in  
Length: with 1 relay 24mm/0.95in  
with 4 relays 69mm/2.72in  
with 8 relays 137mm/5.40in  
Width: 76mm/3.00in

U.S.A.:

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CANADA:

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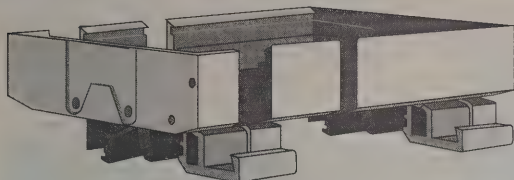




## MODULE HOUSINGS AND ACCESSORIES

### M-512 AND M-513

#### Empty Module Housing M-512



#### Description

Series 512 is a complete system of module housings for an extremely wide variety of P.C. Board sizes. Many accessories are available to satisfy special design requirements.

#### Side Elements and Intermediate Elements

These elements are available in four widths:

- 01: 76mm/3.00in
- 02: 90mm/3.55in
- 03: 104mm/4.10in
- 04: 118mm/4.65in

The P.C. board width must be 4mm/0.16in less than the width of the module housing. The smallest usable P.C. board length is 20mm/0.79in. The length of the board is extendable in step with dimensions of the intermediate elements.

Or simply: P.C. board length = total module length minus 3mm/0.12in.

#### Mounting Feet

The mounting feet slide into the housing of module elements and can be snapped onto all mounting rails according to DIN EN 50 022/035/045. All individual elements interlock and provide a mechanical integrity which can withstand vibrational stress.

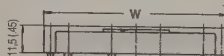
#### Material

**Moulding:** Polyamide, self-extinguishing to UL94 V-2, grey colour.

#### Upper Temperature Limits:

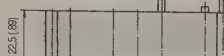
- Short time 140°C/284°F
- Continuous 80°C/176°F
- Cold resistant -40°C/-40°F

CODE  
See How to  
Order Box



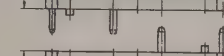
11

side  
element



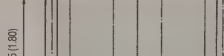
22

intermediate  
element



45

intermediate  
element



13

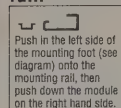
intermediate  
element



00

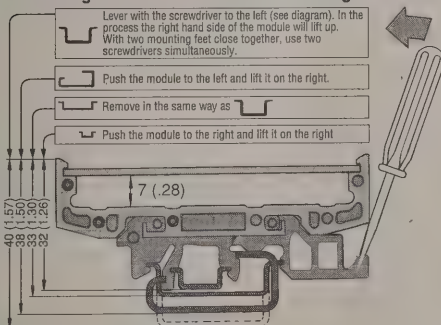
mounting  
foot

#### Mounting the module onto the mounting rail:



Push in the left side of the mounting foot (see diagram) onto the mounting rail, then push down the module on the right hand side.

#### Removing the module from the mounting rail:

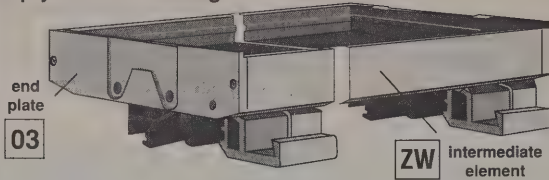


#### How To ORDER

| Module Housing<br>Series<br>M-512 | Width:   | Housing Elements: |              |    |  |
|-----------------------------------|----------|-------------------|--------------|----|--|
|                                   |          | 76mm 01           | Side element | 11 |  |
|                                   | 90mm 02  | Element 22.5mm    | 22           |    |  |
|                                   | 104mm 03 | Element 45mm      | 45           |    |  |
|                                   | 118mm 04 | Element 13.75mm   | 13           |    |  |
|                                   |          | Mounting foot     | 00           |    |  |

M - 5 1 2 -

#### Empty Module Housing M-513



#### Description

Series M-513 module housings feature single unit construction as opposed to the modular design of Series M-512. The housing width is 76mm (3in) and will accommodate a P.C. board width of 72mm (2.83in). The standard extrusion length is 1 meter (39.4in) which can be cut to desired lengths. End plates are secured to either end of the

intermediate element with mounting screws. Two screws are required per endplate. M-513 housings are designed for use with M-512 accessories and mounting feet, and will mount to all DIN EN 50022, 50035 and 50045 mounting rails.

#### Material

**Moulding:** Hard PVC, grey colour.

#### How To ORDER

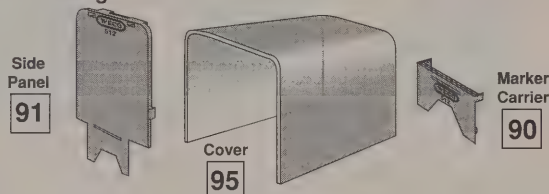
| Module Housing<br>Series M-513 | Width: | SC = Endplate mounting screw<br>03 = Endplate<br>ZW = Intermediate element (1M) |
|--------------------------------|--------|---------------------------------------------------------------------------------|
| 75mm 01                        |        |                                                                                 |

M - 5 1 3 - 0 1

#### Mounting Foot

M - 5 1 2 - 0 1 0 0

#### Module Housing Accessories M-512



#### Description

**Marker Carriers (Option code 90)** (for modules without cover and side panels).

These carriers are clipped into the side elements which otherwise could hold the side panels. They provide a name plate area of 25 x 6mm / 0.98in x 0.24in. Marking tags are not provided.

#### Side Panels and Covers (Option codes 91 and 95)

The side panels provide a name plate area of 18 x 8mm / 0.71 x 0.32in. This area is placed at the top of the side panels and later protected by the cover.

Two side panels and one cover are required for one complete module unit. Covers and side panels code-width should preferably be assigned to the same code-width of the module housings. It is, however, possible to

employ less wide or wider panels and covers if necessary, provided that neither exceeds the module housing-width minus 8mm (0.32in). The inner height of both cover and side panel is always 50mm (0.197in) above the printed circuit board.

#### Material

**Side Panels and Marker Carriers:** Polyamide, self extinguishing to UL94 V-2, grey colour

#### Upper Temperature Limits:

- Short time: 140°C/284°F
- Continuous 80°C/175°F
- Cold resistant: -50°C/-40°F

#### Covers:

PVC, transparent

#### Temperature Limits:

Continuous -20°C to 70°C/-4°F to 158°F

#### How To ORDER

| Module Housing<br>Accessories Series<br>M-512 | Width:  | Accessories       | Only for ordering covers:<br>Cover lengths (mm) |
|-----------------------------------------------|---------|-------------------|-------------------------------------------------|
|                                               |         |                   |                                                 |
|                                               | 45mm 01 | Side Panel 91     | 018.0mm/0.71in                                  |
|                                               | 59mm 02 | Cover 95          | 040.5mm/1.59in                                  |
|                                               | 73mm 03 | Marker Carrier 90 | 063.0mm/2.48in                                  |
|                                               | 87mm 04 |                   | 085.5mm/3.37in                                  |
|                                               |         |                   | 108.0mm/4.25in                                  |
|                                               |         |                   | 158.0mm/6.22in                                  |
|                                               |         |                   | 999.9mm/39.37in                                 |

M - 5 1 2 -

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Tel: (514) 694-9136 Fax: (514) 694-0956

## PANEL HARDWARE

| Manufacturer                | Starting EEM Page No. | Bezels | Dials, Instrument | Pointers, Dial | Handles | Knob Types              |                       |            |             |                    | Panel Markings | Plates, Escutcheon | Drives & Drive Mechanisms | Shaft Couplings | Shaft Locks | Speed Reducers |
|-----------------------------|-----------------------|--------|-------------------|----------------|---------|-------------------------|-----------------------|------------|-------------|--------------------|----------------|--------------------|---------------------------|-----------------|-------------|----------------|
|                             |                       |        |                   |                |         | Cast, Molded & Machined | Control-Shaft Locking | Limit Stop | Slip Clutch | Ratio Drive Torque |                |                    |                           |                 |             |                |
| Electronic Hardware         | C•1523                | √      | √                 | √              | √       | √                       | √                     | √          | √           | √                  |                |                    | √                         | √               | √           | √              |
| Elma Electronics            | C•1530                | √      | √                 | √              | √       | √                       | √                     |            |             |                    | √              |                    |                           |                 |             |                |
| JMJ Technical Products Inc. | C•1531                | √      |                   |                |         |                         |                       |            |             |                    |                |                    |                           |                 |             |                |
| MORS/ASC                    | C•1532                |        |                   |                |         | √                       | √                     |            |             |                    |                |                    |                           |                 |             |                |
| RMF Products                | C•1533                | √      |                   |                |         |                         |                       |            |             |                    |                |                    |                           |                 |             |                |
| S & S Associates            | C•1534                | √      | √                 | √              |         | √                       |                       |            |             |                    |                |                    |                           |                 |             |                |
| Selco Products              | C•1535                |        |                   |                |         |                         |                       |            |             |                    |                | √                  | √                         |                 |             |                |



REGENT  
SERIES



ELECTRONIC HARDWARE CORPORATION

320 BROAD HOLLOW ROAD, FARMINGDALE, NY 11735  
(516) 752-1950 • FAX (516) 752-1971  
Formerly JAN Hardware Mfg. Co.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                       |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>ROUND</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                               | <div>SKIRTED ROUND</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                          | <div>ROUND WITH DIAL</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                   | <div>DOUBLE BAR</div> <div></div>                                                                                                    | <div>SKIRTED DOUBLE BAR</div> <div></div>                                                                                        | <div>DOUBLE BAR WITH DIAL</div> <div></div>                                                                                                                           |
| <div>STYLE NOS. DIA. HGT.</div> <div>Plain</div> <div>EH 71-0N* ..... 500 .510</div> <div>EH 71-1N ..... 700 .610</div> <div>EH 71-2N ..... 900 .790</div> <div>EH 71-3N ..... 1.250 .700</div> <div>EH 71-4N ..... 1.750 .850</div> <div>W/Indicator Line</div> <div>EH 71-0C ..... 500 .510</div> <div>EH 71-1C ..... 700 .610</div> <div>EH 71-2C ..... 900 .790</div> <div>EH 71-3C ..... 1.250 .700</div> <div>EH 71-4C ..... 1.750 .850</div> <div>*See chart below for shaft hole specifications &amp; colors</div> | <div>STYLE NOS. DIA. HGT.</div> <div>Plain</div> <div>EH 71-0D* ..... 500 .660</div> <div>EH 71-1D ..... 700 .780</div> <div>EH 71-2D ..... 900 1.010</div> <div>EH 71-3D ..... 1.250 .850</div> <div>EH 71-4D ..... 1.750 1.070</div> <div>W/Indicator Line</div> <div>EH 71-0E ..... 500 .660</div> <div>EH 71-1E ..... 700 .780</div> <div>EH 71-2E ..... 900 1.010</div> <div>EH 71-3E ..... 1.250 .850</div> <div>EH 71-4E ..... 1.750 1.070</div> <div>*See chart below for shaft hole specifications &amp; colors</div> | <div>STYLE NOS. KNOB DIA. HGT. DIA. DIA.</div> <div>Plain</div> <div>EH 71-0G* ..... 500 .900 .660</div> <div>EH 71-1G ..... 700 1.150 .780</div> <div>EH 71-2G ..... 900 1.525 1.010</div> <div>EH 71-3G ..... 1.250 1.837 .850</div> <div>With Arrow</div> <div>EH 71-0F ..... 500 .900 .660</div> <div>EH 71-1F ..... 700 1.150 .780</div> <div>EH 71-2F ..... 900 1.525 1.010</div> <div>EH 71-3F ..... 1.250 1.837 .850</div> <div>*See chart below for shaft hole specifications &amp; colors</div> | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-1GG* ..... 700 .510</div> <div>EH 71-2GG ..... 900 .790</div> <div>*See chart below for shaft hole specifications &amp; colors</div>                                       | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-1HH* ..... 700 .660</div> <div>EH 71-2HH ..... 900 .780</div> <div>*See chart below for shaft hole specifications &amp; colors</div>                                    | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-1JJ* ..... 700 .660</div> <div>EH 71-2JJ ..... 900 .780</div> <div>*See chart below for shaft hole specifications &amp; colors</div>                                                                          |
| <div>POINTER</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                            | <div>SKIRTED POINTER</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                                       | <div>SINGLE BAR</div> <div></div>                                                                                                                                                                                                                                                                                                                                                                                       | <div>SKIRTED SINGLE BAR</div> <div></div>                                                                                           | <div>LOW POINTER KNOB</div> <div></div>                                                                                         | <div>ROUND WITH POINTER</div> <div></div>                                                                                                                            |
| <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-0P* ..... 500 .510</div> <div>EH 71-1P ..... 700 .610</div> <div>EH 71-2P ..... 900 .710</div> <div>*See chart below for shaft hole specifications &amp; colors</div>                                                                                                                                                                                                                                                                                                           | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-0K* ..... 500 .660</div> <div>EH 71-1K ..... 700 .780</div> <div>EH 71-2K ..... 900 1.010</div> <div>*See chart below for shaft hole specifications &amp; colors</div>                                                                                                                                                                                                                                                                                                              | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-0SB ..... 500 .510</div> <div>EH 71-1SB ..... 700 .610</div> <div>EH 71-2SB ..... 900 .790</div> <div>*See chart below for shaft hole specifications &amp; colors</div>                                                                                                                                                                                                                                                                                        | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-0DSB ..... 500 .510</div> <div>EH 71-1DSB ..... 700 .610</div> <div>EH 71-2DSB ..... 900 .790</div> <div>*See chart below for shaft hole specifications &amp; colors</div> | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-0LP ..... 500 .510</div> <div>EH 71-1LP ..... 700 .610</div> <div>EH 71-2LP ..... 900 .790</div> <div>*See chart below for shaft hole specifications &amp; colors</div> | <div>STYLE NOS. DIA. HGT.</div> <div>EH 71-0NP ..... 500 .510</div> <div>EH 71-1NP ..... 700 .610</div> <div>EH 71-2NP ..... 900 .790</div> <div>EH 71-3NP ..... 1.250 .700</div> <div>*See chart below for shaft hole specifications &amp; colors</div> |

## DUAL CONCENTRIC ROUND AND SKIRTED ROUND

**STYLE NOS. DIA. HGT.**

### *Plain Round*

|                  |               |       |
|------------------|---------------|-------|
| EH 71-1N+0*..... | .500/<br>.700 | 1.020 |
| EH 71-2N+1.....  | .700/<br>.900 | 1.320 |

### *Skirted Round*

|                 |               |       |
|-----------------|---------------|-------|
| EH 71-1D+0..... | .500/<br>.700 | 1.190 |
| EH 71-2D+1..... | .700/<br>.900 | 1.540 |

\*See chart below for shaft hole specifications & colors

## DUAL CONCENTRIC WITH DIAL

**STYLE NOS. KNOB DIA. HGT. DIA. DIA.**

### *Without Arrow*

|                   |               |       |       |
|-------------------|---------------|-------|-------|
| EH 71-1G+0*... .. | .500/<br>.700 | 1.150 | 1.020 |
| EH 71-2G+1.....   | .700/<br>.900 | 1.525 | 1.320 |

### *With Arrow*

|                 |               |       |       |
|-----------------|---------------|-------|-------|
| EH 71-1F+0..... | .500/<br>.700 | 1.150 | 1.020 |
| EH 71-2F+0..... | .700/<br>.900 | 1.525 | 1.320 |

\*See chart below for shaft hole specifications & colors

MATERIALS OF CONSTRUCTION

PLASTIC - Cyclocac. (Polycarbonate available upon special request.)  
BUSHINGS - Plated to withstand salt-spray. (Method 101, test condition B, of Mil. Std. 202)  
SET SCREWS - Each Knob to have two socket head set screws, Type III Style 4 of Specification FF-S-103.

Knobs are supplied with either 4-40 or 8-32 set screws.

SET SCREW SPECIFICATIONS EACH KNOB FURNISHED WITH (2) SET SCREWS

| Series | Diam. Size | 1/8" Shaft Hole | 1/4" Shaft Hole |
|--------|------------|-----------------|-----------------|
| 0      | .500       | 4-40 UNC-3A     | 4-40 UNC-3A     |
| 1      | .700       | 4-40 UNC-3A     | 4-40 UNC-3A     |
| 2      | .900       | 4-40 UNC-3A     | 8-32 UNC-3A     |
| 3      | 1.250      | —               | 8-32 UNC-3A     |
| 4      | 1.750      | —               | 8-32 UNC-3A     |

ORDERING INFORMATION

| TO SPECIFY                              | Bushing Number<br>(Shaft Hole Spec.)                                                                           | Color                                                                    | EXAMPLE                                                                                 |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Then indicate bushing number and color. | 1 - 1/8" round<br>2 - 1/4" round<br>3 - 1/8" "D" hole<br>4 - 1/4" "D" hole<br>5 - .190 round<br>6 - .267 round | B = Matte Black<br>S = Mirror Black<br>G = Matte Gray<br>J = Mirror Gray | <b>EH71-ON2S</b><br>EH71 = Series<br>O = Size<br>N = Style<br>2 = Brushing<br>S = Color |



# ELECTRONIC HARDWARE CORPORATION

320 BROAD HOLLOW ROAD, FARMINGDALE, NY 11735

(516) 752-1950 • FAX (516) 752-1971

Formerly JAN Hardware Mfg. Co.

## SLIP-CLUTCH KNOB with Spinners

The "slip clutch" (normally set for 3-6" lbs./in.) automatically disengages and slips when pre-determined torque has been exceeded.



K1375



K1357



SK1125

SPINNER KNOBS

## RETRACTABLE SPINNER CRANK KNOB

MS-91522-1-(DD)

K1622



K1358-(2)



K2131

## CAST ALUMINUM KNOBS

MS91523-1  
SMC91018  
MS91524  
SM91525  
SMB134094  
SMB134171  
SMB134884  
SMB179515  
SMB144319  
SMC414401  
SMC447226  
SMD415160  
SMD415161  
SMD415223  
SMC503203  
SCB35862-1  
SMC414393  
SMC414399  
SMC414680

K1996

MS91523

K2032

K1389

K1432

SMD 415160

SMC 503203

SMC 414401



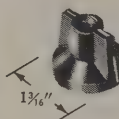
SMC414680



SMC 414393



SMC 414399



SCB35862-1



K1342



MS21360-1BID



NAS1553  
Style B



SMD500501

## MACHINED METAL KNOBS



SK630



K1105



AK-1326



K2007



NAS1553  
Style C



K1409



K2125



K2010



K1330



K1572



K2190



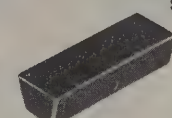
K2130



K2001



K1436



K1570



K1697



K1716



K2227



K2296



K1459

## HI-VOLTAGE INSULATED COUPLINGS

U.S. PATENT NO. 2,681,387

MEETS MILITARY SPECIFICATIONS-TEMPERATURE-HUMIDITY - SHOCK - VIBRATION - FUNGUS

15 KV Breakdown—10 lb/in. torque

Series No. AK-5079 and No. AK-5164

Stainless steel shaft and screwdriver tip molded-integrally with Diallyl Phthalate per Mil Specs. Shock, vibration and fungus proof, they operate with ease over an ambient temperature range of -75°C to +175°C. Supplied with mounting hardware.

Screwdriver tip fits standard slotted shafts (potentiometer, etc.) without further machining. Suited to adjust high voltage controls protecting operating personnel. Also used to reduce ground capacitance on other types of instrument controls.

For Commercial Instrument Applications...

Available in general purpose Bakelite.

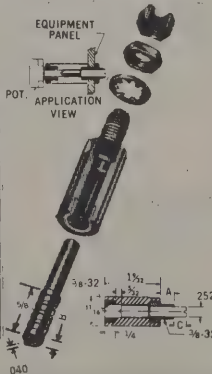
### STANDARD TYPE

| Cat. No.    | Dimensions in Inches |      |         |            |
|-------------|----------------------|------|---------|------------|
|             | "A"                  | "B"  | Shaft   | "C"        |
| AK-5164-X-1 | 3/8                  | 3/16 | Slotted | 5/16       |
| AK-5164-B-1 | 3/8                  | 1/16 | Slotted | 9/16       |
| AK-5164-X-2 | 3/8                  | 3/16 | Slotted | 15/32      |
| AK-5164-B-2 | 3/8                  | 1/16 | Slotted | 19/32      |
| AK-5164-X-3 | 3/8                  | 3/16 | No Slot | 19/16      |
| AK-5164-B-3 | 3/8                  | 1/16 | No Slot | 15/16      |
| AK-5164-X-4 | 3/8                  | 3/16 | No Slot | 17/16      |
| AK-5164-B-4 | 3/8                  | 1/16 | No Slot | 17/16      |
| AK-5164-X-5 | 3/8                  | 3/16 | Slotted | Minus 1/16 |
| AK-5164-B-5 | 3/8                  | 1/16 | Slotted | Minus 1/16 |

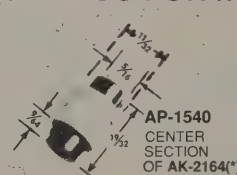
### WITH LOCKING TYPE BUSHING

|             |      |      |         |      |
|-------------|------|------|---------|------|
| AK-5079-X-1 | 9/16 | 3/16 | Slotted | 1/8  |
| AK-5079-B-1 | 9/16 | 1/16 | Slotted | 1/8  |
| AK-5079-X-2 | 9/16 | 3/16 | Slotted | 9/32 |
| AK-5079-B-2 | 9/16 | 1/16 | Slotted | 9/32 |

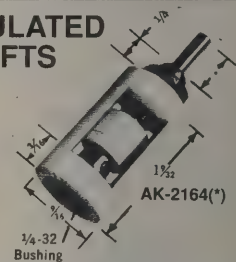
Note: (3/16") to be used with 1/8" long shaft.  
(1/16") to be used with 1/4" long shaft.



## VOLTAGE: 6000VDC INSULATED COUPLINGS FOR 1/8" SHAFTS



AP-1540  
CENTER  
SECTION  
OF AK-2164(\*)



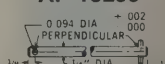
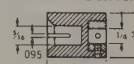
1/4-32  
Bushing

## OFFSET-SHAFT (INSULATED) COUPLINGS

10 KV Breakdown

±30° Offset

AP-15299



## AUTOLINEAR (INSULATED) SHAFT COUPLINGS

2.5-5 KV Breakdown Universal, Miniature, Self-aligning

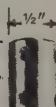
AP 1530

AP 1538



## SHAFT COUPLING

AP 15150



## 1/4" SHAFT COUPLING EXTENDER

AP 1010







# ELECTRONIC HARDWARE CORPORATION

320 BROAD HOLLOW ROAD, FARMINGDALE, NY 11735

(516) 752-1950 • FAX (516) 752-1971

Formerly JAN Hardware Mfg. Co.

## AK5610 INSULATED COUPLING

For 1/8" shaft, 3/8" dia. x 3/8" long.  
Permits linear and angular misalignment  
up to .005" and/or 10°.  
Breakdown voltage 3 KV.



## STUD, GROUND

Multi-termination ground lugs.

- Electrically sound
- Easily Installed
- Space saving



G1001  
G5008  
G7004

Material: Brass, Half Hard  
Finish: Tin Plate

## PANEL BEARING AND SHAFT ASSEMBLIES Cat. No. AP-15350 Series

For rotary control of components.  
Stainless steel shaft 1/4" dia. one end  
flatted completely assembled with  
retaining rings, jam nut and lock washer.  
Nickel plated, brass panel bearing. Fits  
panels up to 3/8" thick; mounts in 1/2" dia.  
hole

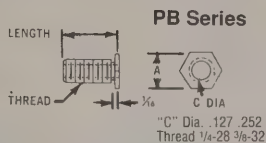
AP-15350 ( )

STAINLESS STEEL



## BUSHING, PANEL FOR 1/4" AND 1/8" SHAFT

Typical Pt. No. PB 60814-B = 1/4-28 Thd., 1/2 Lg. Brass w/.127 Hole.



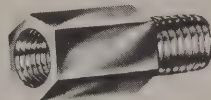
PB Series

"C" Dia. .127 .252  
Thread 1/4-28 3/8-32

## BUSHING EXTENDERS AK-5075-1 thru AK-5075-11

Permit staggered mounting of  
components having 1/4" shafts,  
behind a panel.  
Nickel plated brass.

AK-5075 ( )



## MICRO ADJUSTMENT KNOBS

- Integral assembly
- Zero Backlash
- Infinite resolution with absolute shaft registration
- Driving torque-10 oz./in.
- Saves space behind the panel
- Installation in seconds, without special tools
- Knobs and Component Shaft rotate in same direction



Dials can be  
supplied as  
an integral  
part of any  
assembly

Series 1500: (1:1, 10:1)  
Series 1700: (4:1, 40:1)  
or (10:1, 100:1)  
Others available

## MACROVERNIER REDUCTION DRIVE PRECISION TUNING BUILT INTO KNOB

## MACROVERNIER CONTROL KNOBS—VISUAL INDEX

Single Unit KRD15—  
"A" = 10:1 Vernier Drive  
"B" = 1:1 Direct Drive

Double Unit KRD17—  
"C" = Max. Ratio 100:1  
"D" = Min. Ratio 10:1 OR 40:1 4:1

FRONT FLANGE — Panel Mounted.  
2 Screws.

2 PINS ONLY  
Component Mounted.

PANEL BUSHING — Separate Spacer.  
Secured by bushing. Panel Mounted.

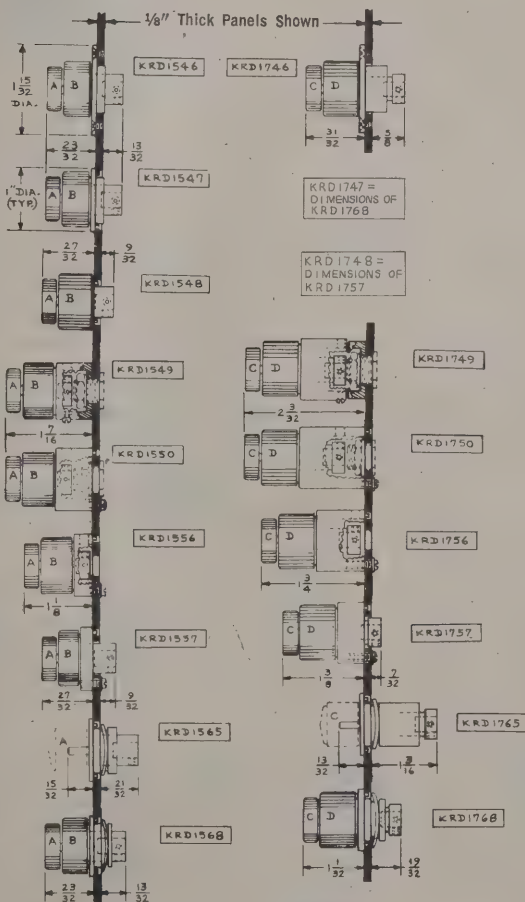
PANEL BUSHING — Integral Spacer.  
-7 2 Pins Only. Component Mounted.  
-8 2 Screws Only. Panel Mounted.

SCREWS AND/OR PINS THRU PANEL.  
-7 2 Pins Only. Component Mounted.  
-8 2 Screws Thru Panel.

SCREWS AND/OR PINS THRU PANEL.  
-7 2 Pins Only. Component Mounted.  
-8 2 Screws Thru Panel.

2 PINS AND BOWED RETAINING RING.  
Panel Mounted.  
Single Knob — Max. Ratio Only.  
(Various Size Knobs Available.)

2 PINS AND BOWED RETAINING RING.  
Panel Mounted.



## COMPLETE PART NUMBERS

**"A"**

**"A" BORE DIA.**

**"B" SPACER DIA.**

| "A" + .002<br>Bore Dia. | First<br>Dash No. |
|-------------------------|-------------------|
| .127                    | -2                |
| .190                    | -3                |
| .252                    | -4                |

**"B"**

| "B" Dia. Thru<br>Spacer | Second<br>Dash No. |
|-------------------------|--------------------|
| .252 + .002<br>- .000   | -4                 |
| 1/4-32 THD.             | -4T                |
| .377 + .002<br>- .000   | -6                 |
| 3/8-32 THD.             | -6T                |

**"A" BORE DIA.**

**"C"**

| Pins or Screws<br>(180° Apart) | Second<br>Dash No. |
|--------------------------------|--------------------|
| 2 Pins Only                    | -7                 |
| 2 Screws Only                  | -8                 |

**"D"**

| Knobs<br>Dia. | Lgth.  | Second<br>Dash No. |
|---------------|--------|--------------------|
| 2 1/32        | 29/32  | -07                |
| 19/16         | 29/32  | -09                |
| 19/32         | 13/16  | -12                |
| 1 25/32       | 3 1/32 | -17                |

### LOW RATIO SINGLE UNITS

(10:1 Ratio Only)

|              |                  |                  |
|--------------|------------------|------------------|
| KRD 1546-"A" | KRD 1549-"A"-"B" | KRD 1557-"A"-"C" |
| KRD 1547-"A" | KRD 1550-"A"-"C" | KRD 1565-"A"-"C" |
| KRD 1548-"A" | KRD 1556-"A"-"C" | KRD 1568-"A"     |

### HIGH RATIO DOUBLE UNITS

Ratios (100/10) or (40/4)

|                  |                  |                  |
|------------------|------------------|------------------|
| KRD 1746-"A"     | KRD 1756-"A"-"C" | KRD 1765-"A"-"C" |
| KRD 1749-"A"-"B" | KRD 1757-"A"-"C" | KRD 1768-"A"     |
| KRD 1750-"A"-"C" |                  |                  |

### TYPICAL PART NUMBERS

\*KRD 1550-4-8 \*KRD 1749-3-6-100/10



# ELECTRONIC HARDWARE CORPORATION

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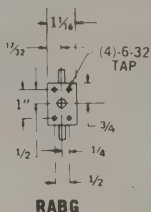
## RATIO DRIVES

### RIGHT ANGLE RATIO DRIVES — VERSATILE, MINIATURIZED, RIGHT ANGLE ROTARY CONTROLS

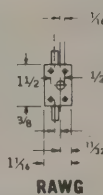


Dual output stainless steel shafts at right angles to input, provide ideal type instrument control. With matched bevel, worm gears cover wide range of ratios.

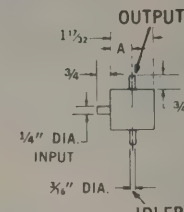
Especially useful for handling spring or gravity-loaded components. Output shaft automatically locks in any desired position yet remains free for smooth adjustment by input shaft. Assembled in dust-proof housings, gears are permanently pinned in place mounted in oilite bearings, and held under constant pressure.



RABG



RAWG



RAWG

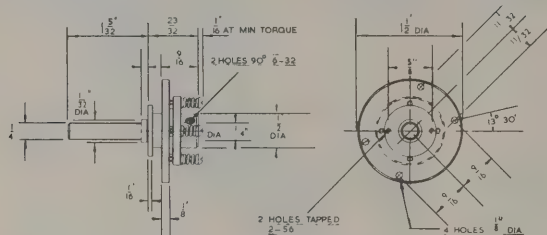
#### BEVEL GEAR RIGHT ANGLE DRIVES

| Cat. No. | Ratio | "A" |
|----------|-------|-----|
| RABG-1   | 1:1   | 7/8 |
| RABG-2   | 2:1   | 7/8 |
| RABG-3   | 3:1   | 7/8 |

#### WORM GEAR RIGHT ANGLE DRIVES

| Cat. No. | Ratio | "A" |
|----------|-------|-----|
| RAWG-1   | 5:1   | 3/4 |
| RAWG-2   | 10:1  | 3/4 |
| RAWG-3   | 20:1  | 3/4 |

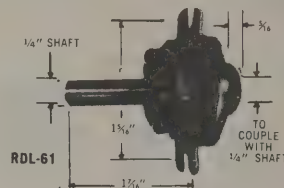
### ADJUSTABLE TORQUE BALL-DRIVE - RDLA-601 6-1 ratio.



Output torque range 20 to 60 oz./inches (Standard: 25 oz./in.)

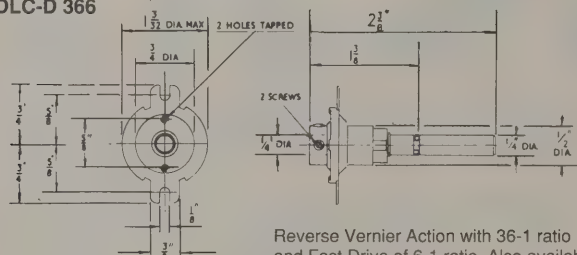
### IN-LINE RATIO DRIVE-6.3:1

For smooth rotary control of components requiring Vernier adjustments. Suitable for use where panel space is at a premium. Durable, ruggedized ball bearing mechanisms.



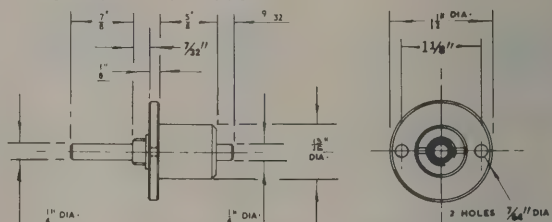
### DUAL RATIO DRIVE

RDL-C-366



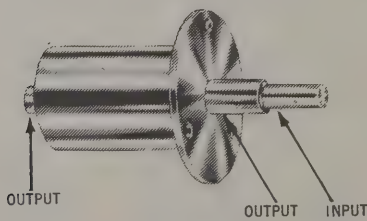
Reverse Vernier Action with 36-1 ratio and Fast Drive of 6-1 ratio. Also available with flange bushing P/N RDL-C-366-F

### RDL-C-101 10-1 ratio.



### REDUCTION DRIVES — BALL BEARING TYPE

For Fine Instrument and Machine Control



| Cat. No. | Ratio   |
|----------|---------|
| RDL-1    | 2.6:1   |
| RDL-2    | 7.0:1   |
| RDL-3    | 17.0:1  |
| RDL-4    | 45.0:1  |
| RDL-5    | 120.0:1 |
| RDL-6    | 300.0:1 |

All Ratios are  $\pm 10\%$ .

Employs precision ball bearings. For rotary control of components. Smooth motion. Ruggedly built, permanently sealed and lubricated.

Input and output shafts operate in SAME DIRECTION. Type "RDL" provides "in-line" input-output shafts. Type "RDL-C" is supplied with concentric shafts whereby the output envelops the input shaft. An added feature of Type "RDLCC" is the output shaft in the rear.

### DIRECT DRIVE, REVERSE VERNIER (RDS-R51) and CONTINUOUS DRIVE RDS-51 also available (5:1)

### SHAFT LOCKS

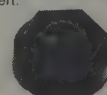
One-piece; fits standard 1/4" and 3/8"-32 thread of shaft bushing. Friction grip holds shaft to prevent accidental or vibrational disturbance of control settings. Adjustment for semi-permanent locking, provided. Note: Part No's. 1046, 1047, 1048, 1049 maximum tightening torque—5 lb.-in.

AK-1046 5/16" Hex OD. Metal w/plastic insert.

AK-1047 3/16" Hex OD. All Plastic.

AK-1048 7/16" Hex OD. Metal w/plastic insert.

AK-1049 7/16" Hex OD. All Plastic.



Ordering Data:

Nominal Shaft Dia.  
2 = 1/8"  
4 = 1/4"

Bushing Thd. Size  
4 = 1/4-32  
6 = 3/8-32

### SHAFT KNOB LOCK

Prevents movement of controls due to shock, vibration, or accidental contact. Available matte or glossy finish.



Cat. No.  
AK-1057-2 (\*) (1/8" shaft)  
AK-1057-4 (\*) (1/4" shaft)  
(Used with 71 Series Knob)  
AK-1059-4 (\*) (1/4" shaft)

(Used with 91 Series Knob)  
AK-1061-4 (\*) (1/4" shaft)  
(Used with 121 Series Knob)  
\* Specify "M" or "G" for matte or glossy finish.

Typical Part Numbers:  
AK-1057-2MA = For 1/8" Shaft/  
matte finish/Black  
AK-1059-4GA = For 1/4" Shaft/  
glossy finish/Black





# ELECTRONIC HARDWARE CORPORATION

320 BROAD HOLLOW ROAD, FARMINGDALE, NY 11735

(516) 752-1950 • FAX (516) 752-1971

Formerly JAN Hardware Mfg. Co.

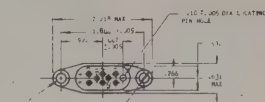
## RELAY SOCKETS with Fixed or Removable Contacts!

### 1000 SERIES

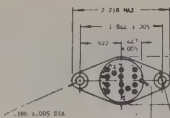


Jan's relay sockets are specifically designed for use with plug-in relays... in electronic circuit applications which demand quick and easy assembly and maintenance.

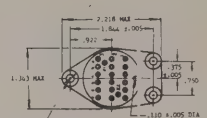
Available with dip-solder pin terminals for printed circuit assembly, or solder cup and turret terminals for direct wiring. For applications requiring removable contacts, solderless wire crimp terminations are available for #16, 20, 22, or 24 AWG wire sizes.



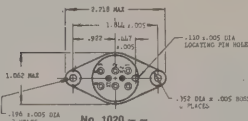
No. 1010



No. 1030



No. 1050

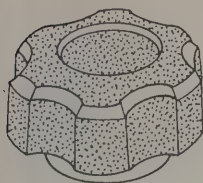


No. 1020

| MS No.  | JAN Part No. | MS No.  | JAN Part No. |
|---------|--------------|---------|--------------|
| MS25322 | No. 1010     | MS25456 | No. 1060     |
| MS25324 | No. 1020     | MS25458 | No. 1070     |
| MS25326 | No. 1030     | MS25460 | No. 1080     |
| MS25328 | No. 1040     | MS25462 | No. 1090     |
| MS25330 | No. 1050     | MS25464 | No. 1100     |

## CLAMPING KNOB CORONADA SERIES

ABS Molded thermoplastic material, the *Coronada* series features 3 sizes of clamping knobs, utilizing brass inserts and studs. Parts are semi-gloss textured and black.



### EI "20" SERIES FEMALE INSERT TYPE

DIM. A = 1.38 B = .75 C = .80 D = .39

| TYPE      | FIG | F DIM | THREAD  |
|-----------|-----|-------|---------|
| EI20-832  | 1   | —     | 8-32    |
| EI20-1032 | 1   | —     | 10-32   |
| EI20-2520 | 1   | —     | 1/4-20  |
| EI20-3118 | 1   | —     | 5/16-18 |

### EI "30" SERIES FEMALE INSERT

DIM. A = 1.75 B = .88 C = 1.25 D = .44

| TYPE      | FIG | F DIM | THREAD  |
|-----------|-----|-------|---------|
| EI30-1032 | 1   | —     | 10-32   |
| EI30-2520 | 1   | —     | 1/4-20  |
| EI30-3118 | 1   | —     | 5/16-18 |
| EI30-3716 | 1   | —     | 3/8-16  |

### EI "40" SERIES FEMALE INSERT TYPE

DIM. A = 2.38 B = 1 C = 1.38 D = .50

| TYPE      | FIG | F DIM | THREAD  |
|-----------|-----|-------|---------|
| EI40-2520 | 1   | —     | 1/4-20  |
| EI40-3118 | 1   | —     | 5/16-18 |
| EI40-3716 | 1   | —     | 3/8-16  |
| EI40-5013 | 1   | —     | 1/2-13  |

### ES "20" SERIES THREADED STUD TYPE

DIM. A = 1.38 B = .75 C = .80 D = .39

| TYPE        | FIG | F DIM | THREAD  |
|-------------|-----|-------|---------|
| ES20-252050 | 2   | 1 2   | 1/4-20  |
| ES20-252062 | 2   | 5/8   | 1/4-20  |
| ES20-252075 | 2   | 3/4   | 1/4-20  |
| ES20-252010 | 2   | 1     | 1/4-20  |
| ES20-252014 | 2   | 1-1/4 | 1/4-20  |
| ES20-311862 | 2   | 5/8   | 5/16-18 |
| ES20-311810 | 2   | 1     | 5/16-18 |
| ES20-311815 | 2   | 1-1/2 | 5/16-18 |
| ES20-371675 | 2   | 3/4   | 3/8-16  |
| ES20-371610 | 2   | 1     | 3/8-16  |
| ES20-371615 | 2   | 1-1/2 | 3/8-16  |

### ES "30" SERIES THREADED TYPE

DIM. A = 1.75 B = .88 C = 1.25 D = .44

| TYPE        | FIG | F DIM | THREAD  |
|-------------|-----|-------|---------|
| ES30-252050 | 2   | 1/2   | 1/4-20  |
| ES30-252062 | 2   | 5/8   | 1/4-20  |
| ES30-252075 | 2   | 3/4   | 1/4-20  |
| ES30-252010 | 2   | 1     | 1/4-20  |
| ES30-252014 | 2   | 1-1/4 | 1/4-20  |
| ES30-311862 | 2   | 5/8   | 5/16-18 |
| ES30-311810 | 2   | 1     | 5/16-18 |
| ES30-311815 | 2   | 1-1/2 | 5/16-18 |
| ES30-371675 | 2   | 3/4   | 3/8-16  |
| ES30-371610 | 2   | 1     | 3/8-16  |
| ES30-371615 | 2   | 1-1/2 | 3/8-16  |

### ES "40" SERIES THREADED STUD SERIES

DIM. A = 2.38 B = 1 C = 1.38 D = .50

| TYPE        | FIG | F DIM | THREAD  |
|-------------|-----|-------|---------|
| ES40-252050 | 2   | 1/2   | 1/4-20  |
| ES40-252062 | 2   | 5/8   | 1/4-20  |
| ES40-252075 | 2   | 3/4   | 1/4-20  |
| ES40-252010 | 2   | 1     | 1/4-20  |
| ES40-252014 | 2   | 1-1/4 | 1/4-20  |
| ES40-311862 | 2   | 5/8   | 5/16-18 |
| ES40-311810 | 2   | 1     | 5/16-18 |
| ES40-311815 | 2   | 1-1/2 | 5/16-18 |
| ES40-371675 | 2   | 3/4   | 3/8-16  |
| ES40-371610 | 2   | 1     | 3/8-16  |
| ES40-371615 | 2   | 1-1/2 | 3/8-16  |
| ES40-501310 | 2   | 1     | 1/2-13  |
| ES40-501315 | 2   | 1-1/2 | 1/2-13  |
| ES40-501320 | 2   | 2     | 1/2-13  |

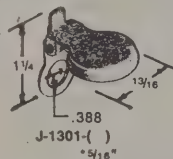
## JACK COVERS (TRIMMER COVERS)

Fit jack or panel bushings used to keep out dust and moisture and prevent inadvertent disturbance of control. Outer surfaces finished in standard colors of baked enamel.

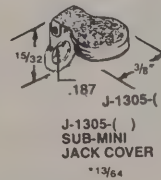
### To Order Colors Specify:

- (-1) Black Texture, (-2) Smooth Gray;
- (-3) Smooth Olive, (-4) Smooth Black,
- (-5) Bright Nickel Plate, (-6) Red (Top section only); (-7) White (Top section only).

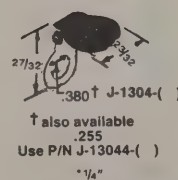
Example: Jack cover, color black texture, order as J-1301(-1)



J-1303(-) WATERPROOF JACK COVER GASKET & NUT  
\*13/32"



J-1305(-) SUB-MINI JACK COVER  
\*13/64"



J-1304(-) \*also available .255 Use P/N J-13044(-)  
\*1/4"

\*Overall height in closed position when mounted on panel

## JANSET<sup>®</sup> FUNCTIONAL KNOBS "PUSH-TO-SET OR "PUSH-TO-TURN"

- SLIP CLUTCH
- BRAKE KNOB
- PULL-TO-TURN
- PUSH-TO-ENGAGE
- PRESS-TO-TURN
- LIFT-TO-TURN

### INCREMENTAL KNOBS

Repositions to the exact point, with zero backlash. Easily provides precise setting to pre-determined positions. Can be repeated with finite exactness to as many as 32 or as few as a single position.



SLIP CLUTCH KNOBS



# ELECTRONIC HARDWARE CORPORATION

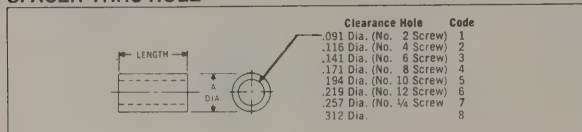
320 BROAD HOLLOW ROAD, FARMINGDALE, NY 11735

(516) 752-1950 • FAX (516) 752-1971

Formerly JAN Hardware Mfg. Co.

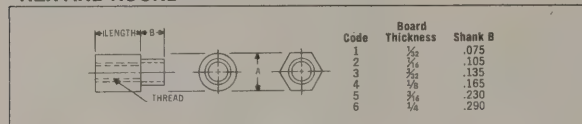
## STANDOFFS

### SPACER-THRU HOLE



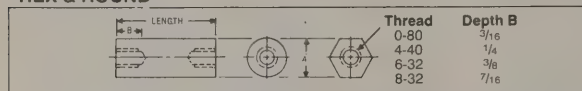
## STANDOFF-RIVET

### -HEX AND ROUND



## STANDOFF-THREADED ENDS

### -HEX & ROUND



SPECIAL SIZES AND MATERIALS MANUFACTURED TO ORDER NOTE: Ceramic and Steatite spacers and standoffs also available.

## FINISH

CA = Clear Anodize  
P = Passivate  
A = Black Anodize  
I = Iridite #14  
(Golden Yellow)  
C = Cadmium Plate  
CADY = Clear Anodize Yellow Green Seal  
Z = Zinc Plate

## MATERIALS

CCC = Cadmium Plate and Clear Chromate  
N = Nickel Plate  
X = Black Oxide  
ZD = Zinc Dichromate  
A = Allodin 1200

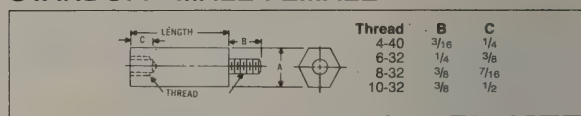
B = Brass  
A = Aluminum  
SS = Stainless Steel  
S = Steel  
N = Nylon  
PH = Phenolic  
T = Teflon

## STANDOFF-THREADED

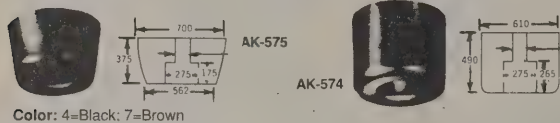
### -HEX & ROUND



## STANDOFF-MALE-FEMALE



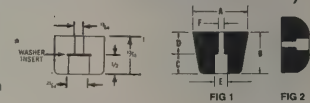
## CHASSIS AND CABINET BUMPERS



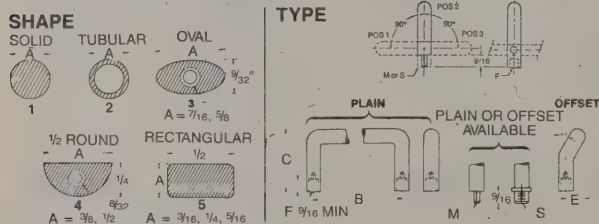
## NO. AK-576-4 HEAVY DUTY CHASSIS AND CABINET BUMPER (WITH STEEL WASHER INSERT)

Molded neoprene. 1" diameter, 1/8" high. Configuration similar to AK-574 above. Color: Black. Other colors on request.

\*No. AK-162610-4 New, improved non-marring, high tear strength, neoprene.



## EQUIPMENT HANDLES







# ELECTRONIC HARDWARE CORPORATION

320 BROAD HOLLOW ROAD, FARMINGDALE, NY 11735

(516) 752-1950 • FAX (516) 752-1971

Formerly JAN Hardware Mfg. Co.

## KNOBS

WE CATALOG & MANUFACTURE MORE THAN 10,000 DIFFERENT KNOBS FOR COMMERCIAL, INDUSTRIAL, MILITARY AND OTHER GOV'T AGENCIES (FSN, MS, SM, SC, ON, NAS, AN, ETC.) WE INVITE YOUR INQUIRIES. PLEASE SEND FOR FREE CATALOG.

### MS91528 STANDARD SERIES (QPL-3926)

#### MS91528 STANDARD SERIES

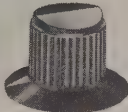
includes hundreds of knobs in many functional shapes, sizes and colors fully meeting MIL-K-3926 and MS91528.



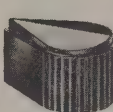
ROUND



ROUND-RING  
SKIRTED



DIAL SKIRTED



POINTER



SKIRTED POINTER



ROUND



RING SKIRT



DIAL SKIRT



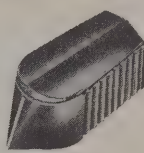
CONCENTRIC  
ROUND/ROUND



CONCENTRIC  
ROUND/RING SKIRT



CONCENTRIC  
ROUND/DIAL SKIRT



BAR POINTER



DIAL SKIRTED  
BAR POINTER



KNOB LOCK  
POINTER



KNOB LOCKS



CRANK

#### Standard Tactile Shape



INTENSITY-BLUE



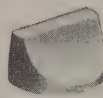
TUNE-ORANGE



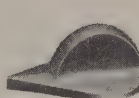
GAIN-RED



FOCUS-VIOLET



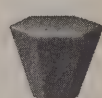
DIMMER-WHITE



RANGE-YELLOW



MARKER-GREEN



BEARING-GRAY

### TRANSILLUMINATED MOLDED PLASTIC KNOBS

MS24229-P1  
MS25165-1  
MS25166-1  
NAS539  
MS25169  
MS25170-P2  
MS25170-P1  
MS21382  
MS21384  
MS21385  
MS21386  
MS21387  
MS91528  
MS24167  
MS25167  
MS25168



USAF 61D 404 74  
K-977-(D)



MS25165-1-(D)



K1504-(B)



MS25170-P2A



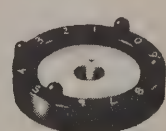
MS21384  
TYPE 3



MS21384  
TYPE 4



MS21382



K1456-(D.5)



MS21385  
Type 1



MS21385  
Type 2



MS21385  
Type 3



MS21385  
Type 4



MS21385  
Type 5



MS21385  
Type 6



MS21385  
Type 7



MS21385  
Type 8



MS21385  
Type 9



MS21385  
Type 10



MS21386  
Type 1



MS21386  
Type 2

### MOLDED PLASTIC KNOBS

AN3220  
SMC447976  
SMC447306  
NAS120  
NAS121  
NAS123  
NAS124  
NAS125  
NAS168



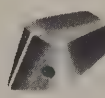
MS91531-3F2B



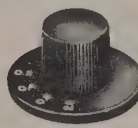
K1795-(DD)



K2217



K-1472



K1997-(4.25)



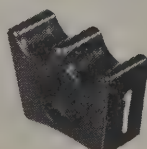
K1280-(3.25)



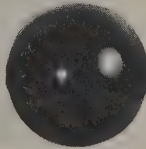
K2014



AN3220-1  
AN3220-3



K1942



K2172



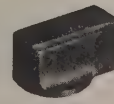
NAS 121



NAS 125



K1993

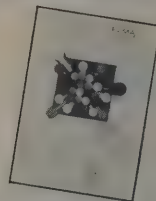


BAR KNOB  
K-783



ELMA Electronic Inc.  
A Member Of The Sulzer Group,  
44350 Grimmer Blvd.  
Fremont, CA 94538  
(510) 656-3400, Fax: 510-656-3783

# Collet Knobs and Front Panel Hardware



For complete information  
write or call for our *free*  
catalog today!

## Safety Knobs

### Modular Design

The modular design and the wide assortment of **ELMA** collet safety knobs offer countless possible combinations. The standard and wing knobs are of contemporary design, available in 7 sizes and various colors. A broad selection of accessory components is also available, including knobs, caps and pointers in no less than 7 colors, various printed dials, stators, sockets and nut covers are available in gloss or matte finish.

### Material

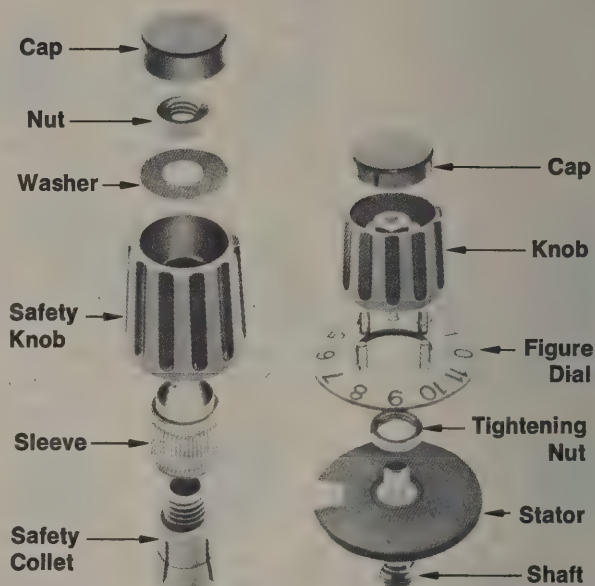
With the exception of the transparent figure dials all of the **ELMA** collet safety knobs and accessories are made of Polyamide.

### Safety

With the knob installed and the cap in place there is no possibility of shock hazard as there are no exposed metal parts, thus satisfying both O.S.H.A. and U.L. requirements.

### Colors

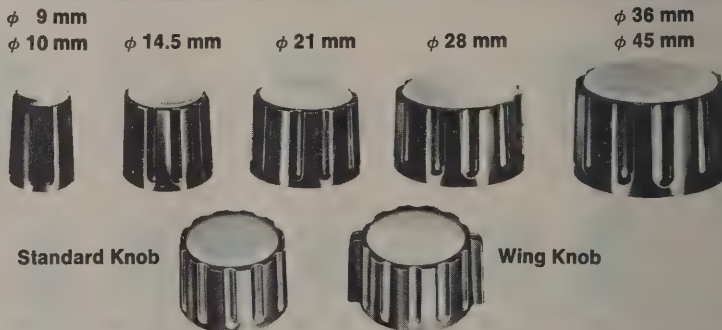
**ELMA** collet safety knobs offer a very wide choice of standard colors and color combinations in both glossy and matte finish. Collet knobs are available in light gray, black and red. Caps and pointers are available in light gray, black, red, blue, yellow, and green. In addition **ELMA** offers custom colors to meet your exacting requirements.



## Collet Knob Sizes/Designs

**ELMA** collet safety knobs are available in diameters of 9 mm, 10 mm, 14.5 mm, 21 mm, 28 mm, 36 mm and 45 mm.

Every **ELMA** knob is available from stock in both conventional and wing versions, each with or without setting line.



## Wide Range of Handles and Front Panel Components

### General Description

- Fixed handles for front panels, plastic and aluminum
- Injector/ejector handles for front panels
- Fixed handles for enclosures
- Strap handles for enclosures
- Tilt and bail handles for enclosures
- Fixed and tilt feet for enclosures
- LED arrays, Coded Switches, Test Sockets
- Huge array of other front panel products



See Section 1400 (Cabinet Enclosures), see Section 5100 (Switches),  
see Section 5150 (Keyboards & Keypads) for additional products.





Technical Products, Inc.

# STANDARD AND CUSTOM DIGITAL DISPLAY BEZELS

## DIE CAST SERIES



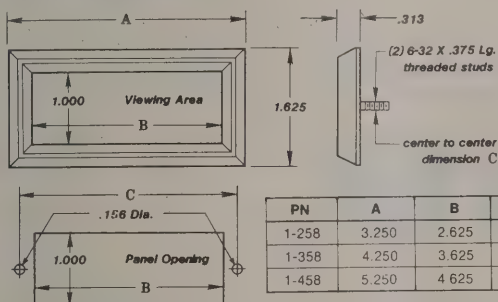
### FEATURES

#### DIE CAST METAL FRAME

- Nonreflective black finish
- Durable — heat resistant
- Integral 6-32 mounting studs
- No exposed hardware
- Mounts in panels up to 3/16" thick
- Includes mounting hardware
- Available in three sizes
- Filters available in 10 colors and clear

### DESCRIPTION

The DIE CAST SERIES of bezels consist of a special plastic screen and a die cast metal frame. Mounting is accomplished by two 6-32 studs which can also be used to mount PC boards or other components behind the panel. The high quality of the screen and frame, combined with the universal sizes and mounting flexibility, make the bezels usable for a wide range of applications.



## PLASTIC SERIES



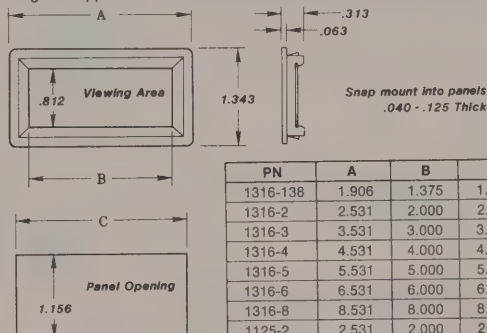
### FEATURES

#### INJECTION MOLDED PLASTIC FRAME

- Nonreflective black finish
- Impact resistant ABS
- Snaps into front panels
- No exposed hardware
- Mounts in panels up to .125" thick
- Available in eight sizes
- Filters available in 10 colors and clear

### DESCRIPTION

The PLASTIC SERIES of bezels consist of a special plastic screen and an injection molded ABS frame. Mounting is accomplished by a snap-fit into rectangular cut-outs from the outside. The combination of a high quality filter and an inexpensive, easy to mount bezel make this series ideal for a wide range of applications.



## LOW COST CUSTOM BEZELS

Our new fabricating facility is totally dedicated to the production of non-standard bezels. Using specially designed machines, we can now offer made-to-order sizes in proto-type or production quantities, without costly tooling or extended lead times.

### TYPICAL BEZEL MATERIALS

- Aluminum
- Stainless Steel
- Plastic

### VARIETY OF FILTER MATERIALS

- Anti-Reflective Coatings
- Polycarbonate
- Large Selection of Colors
- High Scratch Resistance

### DESIGN FLEXIBILITY

- Panel Seals
- Welded Studs
- Any Size Viewing Area
- Multi-Opening Bezels

### VARIETY OF FINISHING PROCESSES

- Anodizing
- Painting
- Screening

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MORS COMPONENTS INC

## HIGH QUALITY CONTROL KNOBS

Also see our 'World of Switching Capabilities' in Volume B

## FEATURES

- Cosmetic gloss finish
- Scratch & heat resistant
- Positive retention set screws
- Fits 1/4" dia. & 1/8" dia. shafts
- Functionally rugged
- Popular styling
- Special designs available

## MATERIALS

**KNOB:**  
General purpose phenolic,  
color black.

**INSERT:**  
Half hard free machining  
brass.

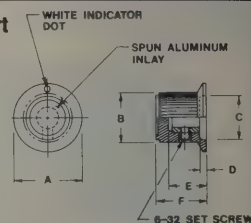
**SETSCREWS:**  
Heat treated high alloy  
steel, hex head, cup point.

**INDICATOR DOT & LINE:**  
White permanent paint.

**INLAY:**  
Aluminum alloy, uniform  
spun finish.

## MPK Series

## Straight knurl with dot indicator on skirt

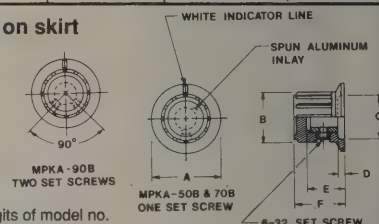


Dimensions in inches and (millimeters) Note: shaft size is last 3 digits of model no.

| MODEL NO. | A            | B           | C           | D           | E           | F           |
|-----------|--------------|-------------|-------------|-------------|-------------|-------------|
| MPK50B1/8 | .750 (19.0)  | .571 (14.5) | .580 (14.7) | .055 (1.40) | .461 (11.7) | .550 (14.0) |
| MPK50B1/4 | .750 (19.0)  | .571 (14.5) | .580 (14.7) | .055 (1.40) | .461 (11.7) | .550 (14.0) |
| MPK70B1/4 | 1.000 (25.4) | .740 (18.7) | .710 (18.0) | .080 (2.03) | .500 (12.7) | .590 (15.0) |
| MPK90B1/4 | 1.250 (31.7) | .988 (25.1) | .870 (22.1) | .090 (2.30) | .460 (11.7) | .590 (15.0) |

## MPKA Series

## Ribbed with line indicator on skirt

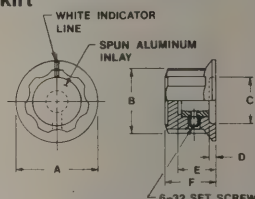
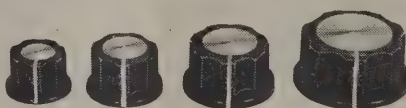


Dimensions in inches and (millimeters) Note: shaft size is last 3 digits of model no.

| MODEL NO.  | A            | B           | C           | D           | E           | F           |
|------------|--------------|-------------|-------------|-------------|-------------|-------------|
| MPKA50B1/8 | .790 (20.0)  | .580 (14.7) | .540 (13.7) | .080 (2.03) | .450 (11.4) | .590 (15.0) |
| MPKA50B1/4 | .790 (20.0)  | .580 (14.7) | .540 (13.7) | .080 (2.03) | .450 (11.4) | .590 (15.0) |
| MPKA70B1/4 | .980 (24.9)  | .580 (14.7) | .470 (12.0) | .160 (4.06) | .580 (14.7) | .680 (17.2) |
| MPKA90B1/4 | 1.360 (34.5) | .960 (24.3) | .680 (17.2) | .200 (5.08) | .740 (18.8) | .850 (21.5) |

## MPKES Series

## Fluted with line indicator on knob and skirt

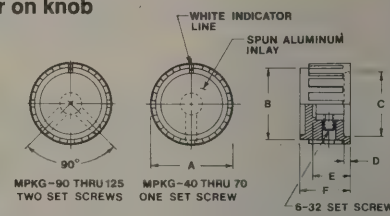
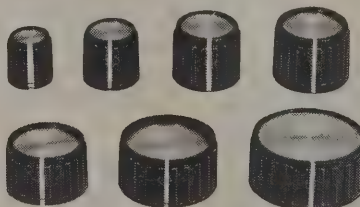


Dimensions in inches and (millimeters) Note: shaft size is last 3 digits of model no.

| MODEL NO.    | A            | B            | C            | D           | E           | F           |
|--------------|--------------|--------------|--------------|-------------|-------------|-------------|
| MPKES60B1/8  | .750 (19.0)  | .620 (15.7)  | .460 (11.6)  | .090 (2.29) | .370 (9.40) | .470 (11.9) |
| MPKES60B1/4  | .750 (19.0)  | .620 (15.7)  | .460 (11.6)  | .090 (2.29) | .370 (9.40) | .470 (11.9) |
| MPKES70B1/4  | .850 (21.5)  | .750 (19.0)  | .710 (18.1)  | .080 (2.03) | .420 (10.6) | .540 (13.7) |
| MPKES90B1/4  | 1.000 (25.4) | .890 (22.6)  | .870 (22.1)  | .080 (2.03) | .470 (11.9) | .570 (14.4) |
| MPKES120B1/4 | 1.300 (33.0) | 1.160 (29.4) | 1.000 (25.4) | .120 (3.05) | .500 (12.7) | .630 (16.0) |

## MPKG Series

## Ribbed with line indicator on knob

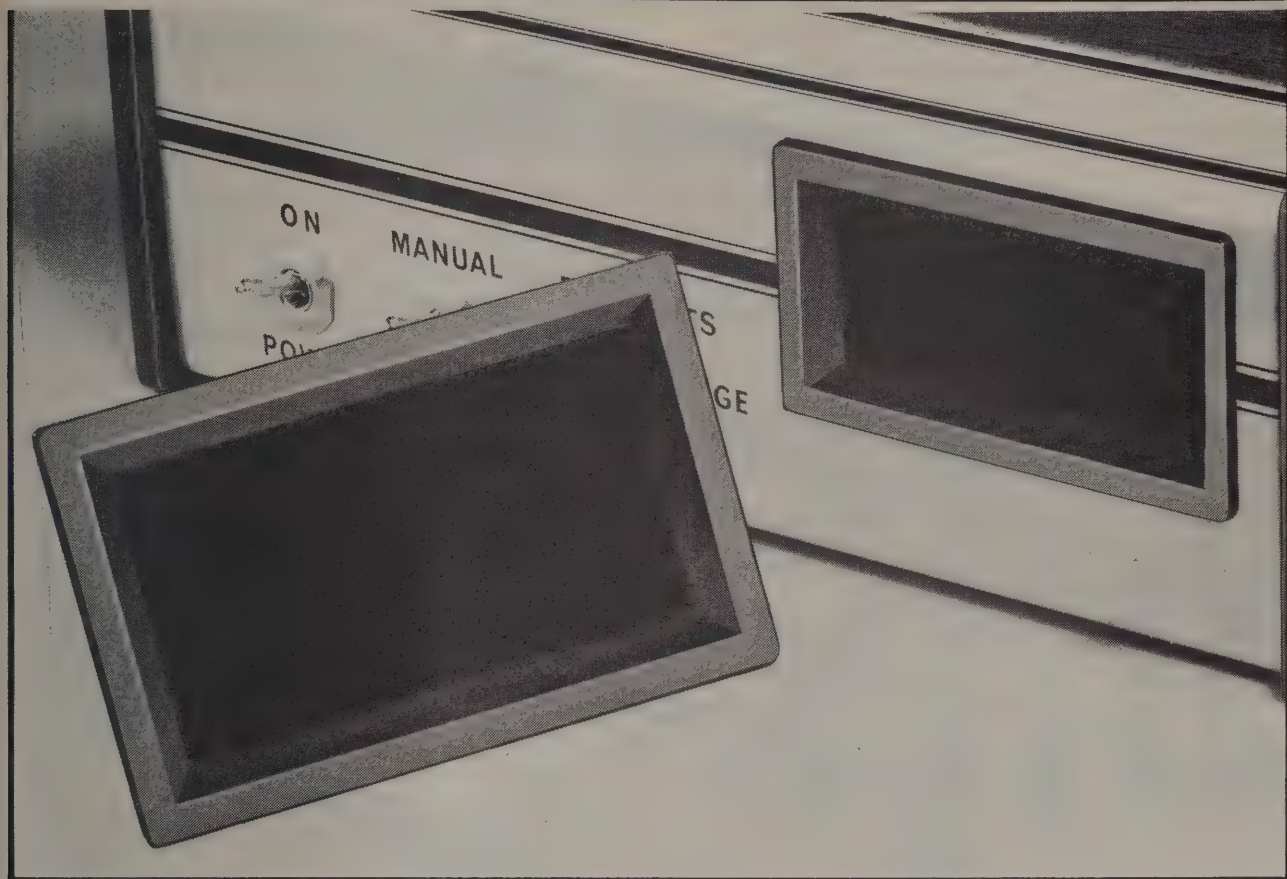


Dimensions in inches and (millimeters) Note: shaft size is last 3 digits of model no.

| MODEL NO.   | A            | B            | C           | D           | E            | F           |
|-------------|--------------|--------------|-------------|-------------|--------------|-------------|
| MPKG40B1/8  | .440 (11.1)  | .410 (10.4)  | .320 (8.13) | .080 (2.03) | .380 (9.65)  | .470 (11.9) |
| MPKG50B1/8  | .550 (14.0)  | .500 (12.7)  | .440 (11.1) | .056 (1.42) | .395 (10.03) | .520 (13.2) |
| MPKG50B1/4  | .550 (14.0)  | .500 (12.7)  | .440 (11.1) | .056 (1.42) | .395 (10.03) | .520 (13.2) |
| MPKG60B1/4  | .660 (16.7)  | .610 (15.5)  | .550 (14.0) | .080 (2.03) | .430 (10.9)  | .550 (14.0) |
| MPKG70B1/4  | .740 (18.8)  | .700 (17.8)  | .590 (15.0) | .080 (2.03) | .450 (11.4)  | .550 (14.0) |
| MPKG90B1/4  | .860 (21.8)  | .810 (20.6)  | .720 (18.3) | .080 (2.03) | .410 (10.4)  | .550 (14.0) |
| MPKG100B1/8 | 1.050 (26.6) | 1.000 (25.4) | .920 (23.3) | .080 (2.03) | .430 (10.9)  | .550 (14.7) |
| MPKG125B1/4 | 1.250 (31.8) | 1.200 (30.4) | .690 (17.5) | .080 (2.03) | .430 (10.9)  | .580 (14.7) |

(EXCEPT MODEL MPKG40B1/8 HAS 4-40 SET SCREW)





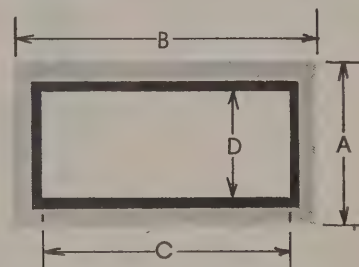
# RMF MODEL 140 SERIES BEZEL & FILTER ASSEMBLY

Whatever your application may be, these low-cost bezel and filter assemblies will improve the front panel appearance and make the display itself more readable.

Attractive ABS plastic bezels are available in many sizes to match the most popular types of displays.

The colored acrylic filters have a special non-glare surface to make viewing easier. Standard colors are red and clear for LED and LCD displays although any color is available on special order.

**INSTALLATION** is fast and simple... merely insert the filter into the slots on the rear of the bezel, then push the entire assembly into the panel cutout. A quick and easy operation without the use of any tools, adhesive or hardware. Recommended panel thickness is from .040 to .125 in.



| MODEL | DIMENSIONS |       |       |       | PANEL OPENING |       | FILTER* |       |
|-------|------------|-------|-------|-------|---------------|-------|---------|-------|
|       | A          | B     | C     | D     | HEIGHT        | WIDTH | HEIGHT  | WIDTH |
| 140-1 | 1.343      | 1.906 | 1.375 | .812  | 1.156         | 1.750 | .875    | 1.437 |
| 140-2 | 1.343      | 2.531 | 2.0   | .812  | 1.156         | 2.375 | .875    | 2.087 |
| 140-3 | 1.343      | 3.531 | 3.0   | .812  | 1.156         | 3.375 | .875    | 3.040 |
| 140-4 | 1.343      | 4.531 | 4.0   | .812  | 1.156         | 4.375 | .875    | 4.078 |
| 140-5 | 1.343      | 5.531 | 5.0   | .812  | 1.156         | 5.375 | .875    | 5.078 |
| 140-6 | 1.343      | 6.531 | 6.0   | .812  | 1.156         | 6.375 | .875    | 6.078 |
| 140-8 | 1.343      | 8.531 | 8.0   | .812  | 1.156         | 8.375 | .875    | 8.078 |
| 141-2 | 1.656      | 2.531 | 2.0   | 1.125 | 1.469         | 2.375 | 1.187   | 2.087 |

\*Filter Material is .030 thick



## RMF PRODUCTS, INC.

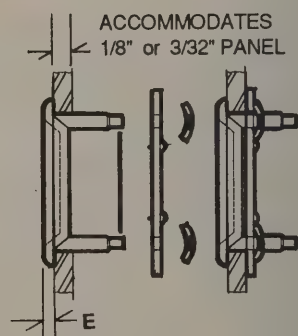
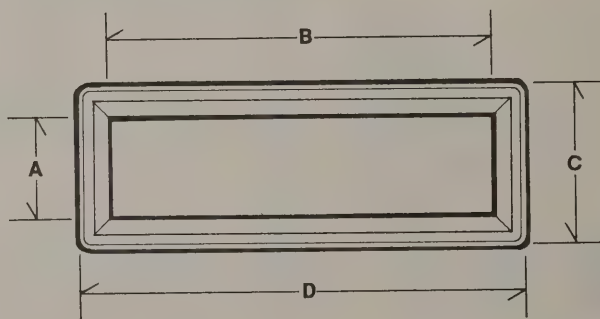
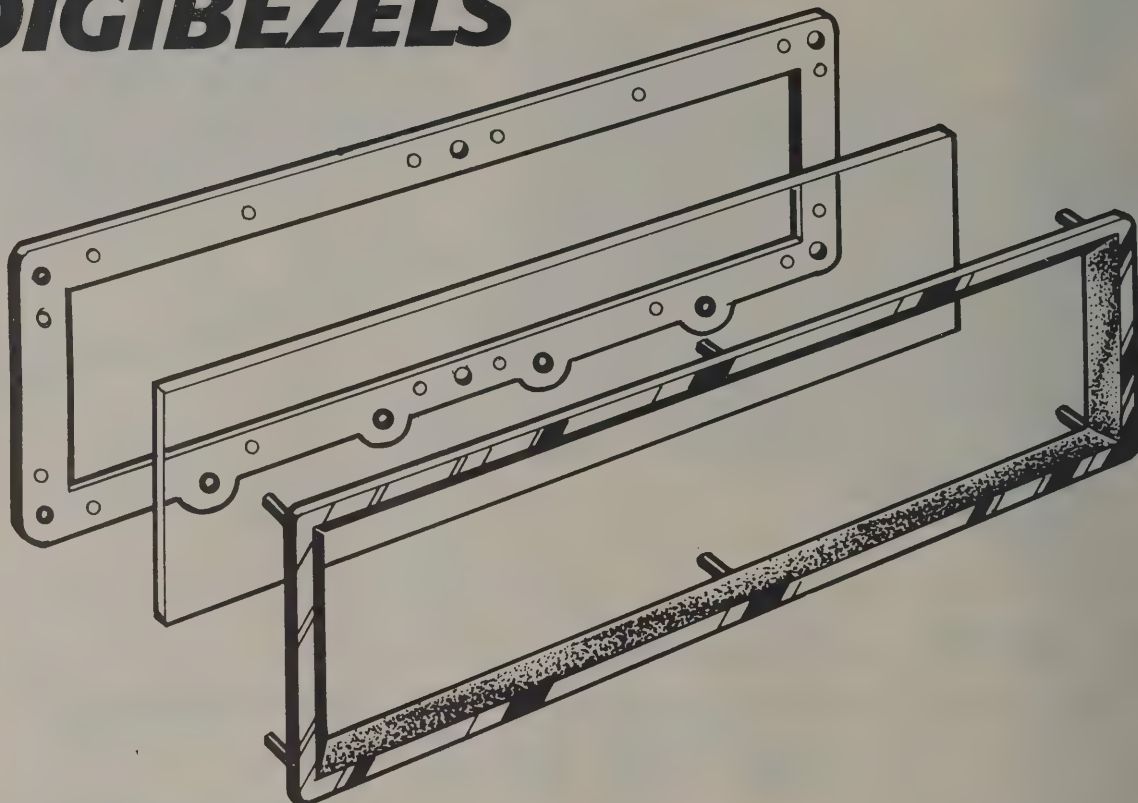
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**S&S ASSOCIATES, INC.**
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# DIGIBEZELS®



## SERIES 900 - DIGIBEZELS®

| PART NUMBER | DIMENSIONS (INCHES) |      |             |      |      |
|-------------|---------------------|------|-------------|------|------|
|             | VIEWING AREA        |      | BEZEL FRAME |      |      |
|             | A                   | B    | C           | D    | E    |
| 905         | 0.80                | 1.37 | 1.28        | 1.86 | 0.06 |
| 910         | 0.80                | 2.00 | 1.28        | 2.48 | 0.06 |
| 915         | 0.80                | 3.00 | 1.28        | 3.48 | 0.06 |
| 920         | 0.80                | 4.00 | 1.28        | 4.48 | 0.06 |
| 930         | 1.38                | 5.00 | 1.86        | 5.48 | 0.06 |
| 940         | 0.80                | 5.58 | 1.28        | 6.06 | 0.06 |
| 950         | 1.38                | 6.50 | 1.86        | 6.98 | 0.06 |

COLORS: FRAMES ARE BLACK

LENSES ARE AVAILABLE IN ASSORTED COLORS

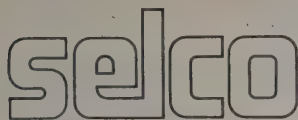
## Series 900 - Digibezels®

The patented bezel assembly features an attractive thermoplastic frame and a variety of lens materials and colors. Installation is easy and provides a secure panel fit with no mounting hardware externally visible. The available Polaroid® lenses improve read-out legibility by providing maximum visual contrast under high ambient light conditions.

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COLLET KNOBS

Function, styling, handling and simplicity of assembly were the designers' main criteria in the development of the Selco range of collet knobs. The various accessories (caps, pointers, figure dials and nut covers) push-fit into the basic knob to give added versatility. Caps are available in over 20 different colors.

MATERIALS

All knobs, caps, pointers and nut covers are made from Nylon and have a matte finish. The transparent figure dials are made from polycarbonate and the colored dials are of Nylon.

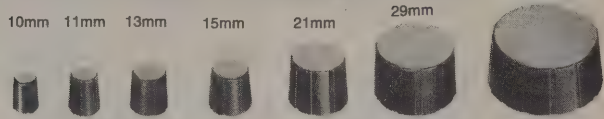
Collets, sleeves and nuts, installed into the knobs during manufacture, are of brass. They will accommodate a wide range of shaft lengths and bush lengths. All molded parts are stable in the temperature range -20°C to +70°C.

TURNING TORQUE

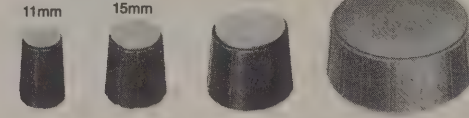
The torque that can be transmitted by knobs without slipping, assuming the knob has been adequately tightened on the shaft, is as follows:

| Knob Type                                                                                  | Torque                                  |          |                        |          |
|--------------------------------------------------------------------------------------------|-----------------------------------------|----------|------------------------|----------|
|                                                                                            | Shafts<br>2mm, 3mm, 4mm, 1/8" and 3/16" |          | Shafts<br>6mm and 1/4" |          |
|                                                                                            | In/Pds.                                 | Ft./Pds. | In/Pds.                | Ft./Pds. |
| S10, S11, SP11, K11                                                                        | 2.17                                    | .18      | —                      | —        |
| S15, SP15, SB15, SW15                                                                      | 3.47                                    | .288     | 6.94                   | .576     |
| K15, W15, S21, SP21, SB21, SW21, K21, W21, S29, SP29, SB29, SW29, K29, W29, S38, SC38, S47 | 5.21                                    | .432     | 10.42                  | .864     |

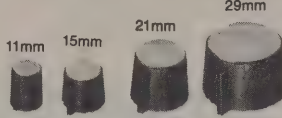
TYPE S (Short) KNOB BASE DIAMETER



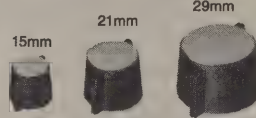
TYPE K (Tall)



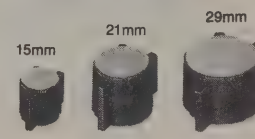
TYPE SP (Pointer)



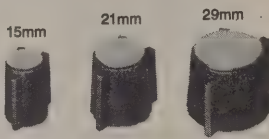
TYPE SB (2 Wings)



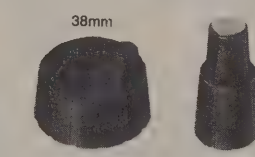
TYPE SW (3 Wings)



TYPE W (Tall 3 Wings)



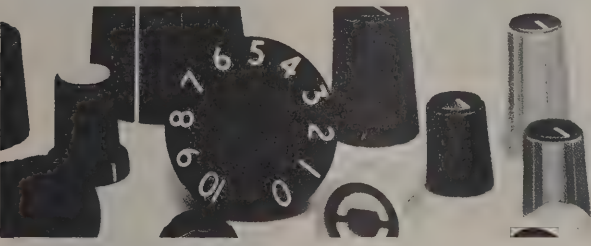
TYPE SC — CRANKED KNOB



**DUAL CONCENTRIC ASSEMBLIES**  
This table shows the knob combinations suitable for dual-concentric assemblies. Please contact sales office for details of special through-hole collets, if required.

|      |      |      |      |      |
|------|------|------|------|------|
| TOP  | 10mm | 11mm | 15mm | 21mm |
| BASE | 13mm | 15mm | 21mm | 29mm |

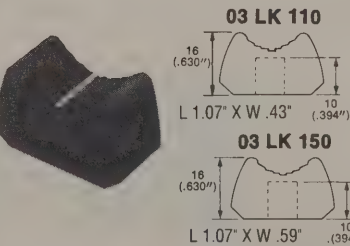
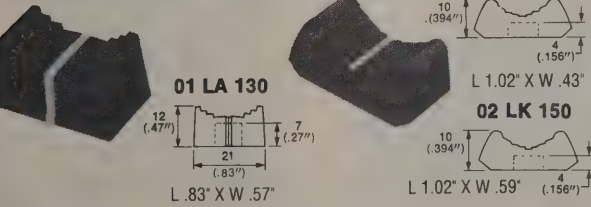
PUSH-ON KNOBS



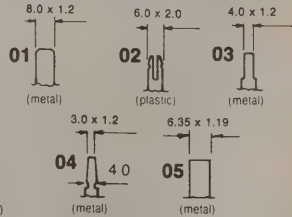
Selco push-on knobs provide a fast, secure method of shaft attachment. The internal molding is designed to grip the shaft securely with the option of a built-in metal compression ring. The knobs, molded from Nylon, are available in black and gray and have a matte finish. Colored caps are available in plain, with-line and with spot versions in over 20 different colors.

Selco also offers a full range of push-buttons for 3.33mm and 2.8mm switch shafts. (For use on ITT, Alps and other switches).

SLIDER KNOBS



TYPICAL TANG DETAILS



TWO PIECE/DOUBLE INJECTED/SOFT TOUCH PUSH-ON KNOBS



Most are available in 11mm and 13mm diameters. Contact SELCO for more details.



# COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

## A

**A/D** acrylonitrile butadiene-styrene  
**A/D** analog to digital  
**ADC** analog to digital converter  
**ADP** automatic data processing  
**AFC** audio frequency control  
**AFT** automatic filter test  
**ALGOL** algorithmic language  
**AM** a logical operator  
**AQL** acceptable quality level  
**ASCII** American national standard code for information interchange  
**ASIC** application specific IC  
**ATE** automatic test equipment  
**ATG** automatic test generation  
**AWG** American wire gauge

## B

**BALUN** balanced to unbalanced  
**BASIC** beginners' all-purpose symbolic instruction  
**BCD** binary-coded decimal  
**BNC** baby "N" connector  
**BUS** basic utility syste

## C

**CAD** computer-aided design  
**CAE** computer-aided engineering  
**CAM** computer-aided manufacture  
**CAMAC** computer-automated measurement and control  
**CAPP** computer-aided process planning  
**CAT** computer-aided test  
**CATV** cable television or community antenna television  
**CCC** (leaded) ceramic chip carriers  
**CCD** computer-controlled display  
**CERMET** ceramic metal element  
**CIE** computer-integrated engineering  
**CIM** computer-integrated manufacturing  
**CLCC** ceramic leadless chip carriers  
**CMOS** complementary metal-oxide semiconductor  
**Comm.** communications  
**CPS** characters per second  
**CPU** central processing unit

## D

**D/A** digital to analog  
**DAC** digital to analog converter  
**DBMS** data base management system  
**DC** direct current  
**DFT** design for testability  
**DIAC** bidirectional trigger diode  
**DIL** dual in-line  
**DIN** Deutsche Industrie Normenausschuss  
**DIP** dual in-line package  
**DPM** digital panel meter  
**DRAM** dynamic RAM  
**DTL** diode transistor logic

## E

**EDA** electronic design automation  
**EDP** electronic data processing  
**EBCDIC** extended binary coded decimal interchange code  
**EEPROM** electrically erasable PROM

**EIA** Electronic Industries Association

**EMC** electromagnetic compatibility  
**EMI** electromagnetic interference  
**EMP** electromagnetic pulse  
**EPROM** erasable programmable ROM  
**ESR** equivalent series resistance

## F

**FEP** fluorinated ethylene propylene Copolymer, 200° Teflon  
**FET** field-effect transistor  
**FM** frequency modulation  
**FORTTRAN** formula translator

## G

**GaAsFET** gallium arsenide FET  
**CMIP** commn management information protocol  
**GPIO** general purpose interface bus  
**GPS** global positioning system

## H

**HF** high frequency (3 to 30 MHz)  
**HIPOT** test, measurement, and diagnostic equipment  
**HLL** high level language  
**HV** high voltage  
**Hz** Hertz

## I

**IAB** Internet Activities Board  
**IC** integrated circuit  
**IDC** insulation displacement contact  
**IF** intermediate frequency  
**IO** input/output (devices)  
**IR** insulation resistance (or) infrared  
**ISDN** integrated services digital network  
**ISO** International Standards Organization

## J

**JEDEC** Joint Electronic Device Engineering Council  
**JFET** junction FET  
**JMOS** junction MOS

## K

**kHz** kilohertz ( $10^3$  hertz)  
**KSR** keyboard send /receive

## L

**LAN** local area network  
**LC (filters)** inductance/capacitance  
**LCC** leaded chip carrier  
**LCD** liquid crystal display  
**LED** light-emitting diode  
**LF** low frequency (30 to 300 kHz)  
**LIF** low insertion force  
**LNA** low noise amplifier  
**LNB** low noise band  
**LSI** large scale integration  
**LVD** linear velocity displacement transformer

## M

**MASER** microwave amplification by stimulated emission of radiation  
**MATV** master antenna television

$\mu$ F microfarad

**MHz** megahertz  
**MIC** microwave IC  
**MIPS** million instructions per second  
**MIB** microcomputer interface board  
**MOS** metal oxide semiconductor  
**MOSFET** metal oxide semiconductor FET  
**MOSIGT** metal oxide semiconductor insulated-gate transistor  
**MOV** metal oxide varistor  
**MPU** microprocessor unit  
**MSI** medium scale integration

## N

**NBS** National Bureau of Standards  
**NEMP** nuclear electromagnetic pulse  
**NIM** national instrumentation module  
**NOR** not OR  
**NTC** negative temperature coefficient

## O

**OCR** optical character reader  
**OEM** original equipment manufacturer  
**OR** a logical operator  
**OSI** open systems interconnection

## P

**PAL** programmable array logic  
**PC** printed circuit  
**PCB** printed circuit board  
**PCM** pulse code modulation  
**PCS** plastic clad silica  
**pF** picofarad  
**PGA** pin grid array  
**PIN** positive-intrinsic-negative (transistor)  
**PLA** programmable logic array  
**PLCC** plastic leaded chip carrier  
**PLL** phased lock loop  
**PPI** plan position indicator  
**PROM** programmable ROM  
**PTC** positive temperature coefficient  
**PUT** programmable unijunction transistor

## Q

**QAM** quadrature amplitude modulation  
**Q (meter)** quality-factor meter

## R

**RAM** random access memory  
**RC** resistance-capacitance  
**RFI** radio frequency interference  
**RMS** root mean square  
**ROM** read only memory  
**RF** radio frequency  
**RFC** radio-frequency choke  
**RFI** radio-frequency interference  
**RTD** resistance-temperature detector  
**RTL** resistor transistor logic  
**RTV** room temperature vulcanizing  
**RW** read/write

## S

**SAS** silicon asymmetrical switch  
**SBC** single board (micro) computer

**SBS** silicon bilateral switch  
**SCR** silicon-controlled rectifier  
**SCS** silicon-controlled switch  
**SDA** source & detector assemblies  
**SGMP** simple gateway monitoring protocol  
**SIDAC** bidirectional voltage-triggered switch  
**SIMM** single in-line memory module  
**SIP** single in-line package  
**SMD** surface mount device  
**SMT** surface mount technology  
**SNMP** simpole network management protocol  
**SO** small outline  
**SOIC** small outline IC  
**SOT** small outline transistor  
**SSI** small scale integration  
**SSR** solid-state relay  
**STL** Schottky transistor logic  
**SUS** silicon unilateral switch

## T

**TC** temperature coefficient  
**TCE** thermal coefficient of expansion  
**TXCO** temperature compensated crystal oscillator  
**TFE** tetrafluoride ethylene propylene Copolymer, 250° Teflon  
**TRIAC** bidirectional AC switch  
**TTL** transistor-transistor logic  
**TTY** teletypewriter

## U

**UHF** ultra high frequency (300 MHz to 3 GHz)  
**UJT** silicon unijunction transistor  
**UL** Underwriters Laboratory  
**UPS** uninterruptible power supply

## V

**VAC** volts (of) alternating current  
**VAN** value-added network  
**VAR** volt-ampere reactive  
**VCR** video cassette recorder  
**VDC** volts (of) direct current  
**VHF** very high frequency (30 kHz to 300 MHz)  
**VHSIC** very high speed integrated circuit  
**VLF** very low frequency (3 to 30 kHz)  
**VLSI** very large scale integration  
**VME** virtual machine environment  
**VRM** voice recognition module  
**VTVM** vacuum tube volt meter  
**VU** volume unit  
**VSWR** voltage standing wave ratio

## W

**WPS** word processing software

## Y

**YIG** yttrium iron garnet

## Z

**ZIF** zero insertion force

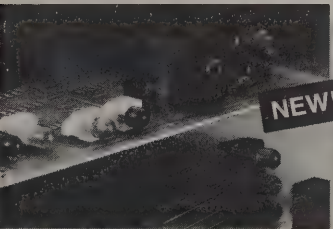


# Unique Problem Solvers For Printed Circuit Board Component Assembly & Packaging

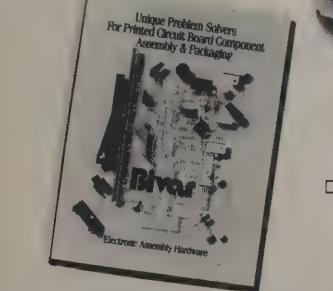
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SELECTION OF LOW-COST  
STANDARD PRODUCTS  
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More than 8,000...  
unique yet simple, time saving and low-cost products include a growing selection of mounts, spacers and printed circuit board packaging hardware. In addition, an all-new selection of LED holders, PCB card stops, and manufacturing and assembly products are now available from stock. You can eliminate costly rejects and rework in assembly, while adding quality and uniformity to your product.

MIL-M-38527 & DESC Types



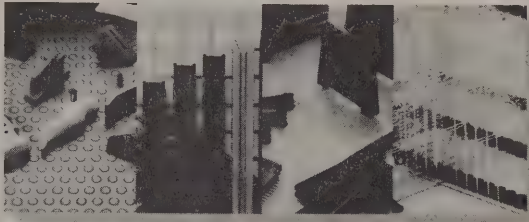
**90° LED Holders For Single & Bi-Level Displays**  
Choose between individual and interlocking styles for rigid arrays. Use any combination of LED colors and intensities. 16 styles available from stock.



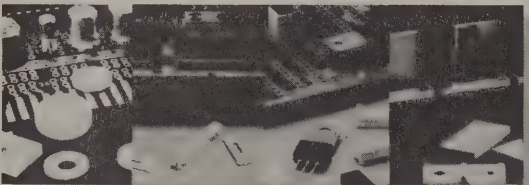
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Circular card guides reduce inventory, snap-in anywhere



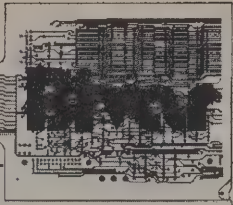
Permanent mounts and spacers molded from 94 V-2 & 94 V-O Nylon  
Discrete component and capacitor mounts  
TO-202/TO-220 power transistor mounts  
Crystal mounts and insulators

**Nylon L.E.D. Mounts**  
• T-1 & T-1 3/4 LED strip mounts in 60 different elevations and sizes  
• T-1, T-1 3/4 and 90° LED mounts

**Wash-away Spacers**  
Over 500 versatile styles and sizes to improve positioning, protect leads during assembly, and reduce rework & rejects



PCB hole plugs prevent solder from flowing onto top of board  
Self-retaining nylon screw spacers simplify assembly  
Connector cutout covers for "D" subminiature, microribbon & "D" hole cutouts



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TO-18 SPREADERS  
IC MOUNTS & SPREADERS  
IC CONVERTERS  
DIP SPREADERS  
CRYSTAL MOUNTS & INSULATORS

**LED MOUNTS**  
EXTRUDED LED MOUNTS  
T-1 & T-1 3/4 LED MOUNTS  
T-1 & T-1 3/4 LED STRIP MOUNTS  
90° LED MOUNTS  
MOLDED TUBULAR LED MOUNTS  
LED HOLDERS  
LED CLIPS & RINGS

**WASH-AWAY SPACERS**  
TO-5 & TO-18 SPACERS  
GENERAL PURPOSE  
SLOTTED SPACERS  
DIP SPACERS  
RECTANGULAR SPACERS  
TUBULAR SPACERS  
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## HEX SPACERS

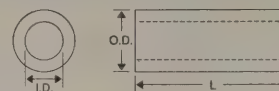
158 Governor Drive  
Orange, MA 01364-0720  
508-544-8255

| Item Number | Inside Diameter | Outside Diameter | Length |
|-------------|-----------------|------------------|--------|
| XPNY-001-9  | .091            | 1/4              | 1/4    |
| XPNY-008-9  | .115            |                  |        |
| XPNY-015-9  | .140            |                  |        |
| XPNY-002-9  | .091            |                  |        |
| XPNY-009-9  | .115            |                  | 3/8    |
| XPNY-016-9  | .140            |                  |        |
| XPNY-003-9  | .091            |                  | 1/2    |
| XPNY-010-9  | .115            |                  |        |
| XPNY-017-9  | .140            |                  | 5/8    |
| XPNY-004-9  | .091            |                  |        |
| XPNY-011-9  | .115            |                  |        |
| XPNY-018-9  | .140            |                  |        |

### HEX



### ROUND



| Item Number | Inside Diameter | Outside Diameter | Length |
|-------------|-----------------|------------------|--------|
| XPNY-0041-9 | .091            | 1/4              | 1 1/16 |
| XPNY-0111-9 | .115            |                  |        |
| XPNY-0181-9 | .140            |                  |        |
| XPNY-005-9  | .091            |                  |        |
| XPNY-012-9  | .115            |                  | 3/4    |
| XPNY-019-9  | .140            |                  |        |
| XPNY-006-9  | .091            |                  | 7/8    |
| XPNY-013-9  | .115            |                  |        |
| XPNY-020-9  | .140            |                  | 1      |
| XPNY-007-9  | .091            |                  |        |
| XPNY-014-9  | .115            |                  |        |
| XPNY-021-9  | .140            |                  |        |
| Tolerance ± | .005            | .010             |        |

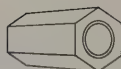


## ROUND SPACERS

|               |     | Outside Diameter (Inch) |           |            |           |           |           |             |           |           |            |            |           |            |           |           |            |            |            |
|---------------|-----|-------------------------|-----------|------------|-----------|-----------|-----------|-------------|-----------|-----------|------------|------------|-----------|------------|-----------|-----------|------------|------------|------------|
|               |     | 3/16 (.188)             |           | 1/4 (.250) |           |           |           | 5/16 (.313) |           |           |            | 3/8 (.375) |           | 1/2 (.500) |           |           |            |            |            |
|               |     | Inside Diameter         |           |            |           |           |           |             |           |           |            |            |           |            |           |           |            |            |            |
|               |     | #2 (.091)               | #4 (.115) | #2 (.091)  | #4 (.115) | #6 (.140) | #8 (.171) | #4 (.115)   | #6 (.140) | #8 (.171) | #10 (.194) | #6 (.140)  | #8 (.171) | #10 (.194) | #6 (.140) | #8 (.171) | #10 (.194) | #12 (.219) | #14 (.257) |
| Length (Inch) |     |                         |           |            |           |           |           |             |           |           |            |            |           |            |           |           |            |            |            |
| 1/8 (.125)    | 001 | 002                     | 031       | 032        | 033       | 034       | 091       | 092         | 093       | 094       | 158        | 159        | 160       | 203        | 204       | 205       | 206        | 207        |            |
| 3/16 (.188)   | 003 | 004                     | 035       | 036        | 037       | 038       | 095       | 096         | 097       | 098       | 161        | 162        | 163       | 208        | 209       | 210       | 211        | 212        |            |
| 1/4 (.250)    | 005 | 006                     | 039       | 040        | 041       | 042       | 099       | 100         | 101       | 102       | 164        | 165        | 166       | 213        | 214       | 215       | 216        | 217        |            |
| 5/16 (.313)   | 007 | 008                     | 043       | 044        | 045       | 046       | 103       | 104         | 105       | 106       | 167        | 168        | 169       | 218        | 219       | 220       | 221        | 222        |            |
| 3/8 (.375)    | 009 | 010                     | 047       | 048        | 049       | 050       | 107       | 108         | 109       | 110       | 170        | 171        | 172       | 223        | 224       | 225       | 226        | 227        |            |
| 7/16 (.438)   | 011 | 012                     | 051       | 052        | 053       | 054       | 111       | 112         | 113       | 114       | 173        | 174        | 175       | 228        | 229       | 230       | 231        | 232        |            |
| 1/2 (.500)    | 013 | 014                     | 055       | 056        | 057       | 058       | 115       | 116         | 117       | 118       | 176        | 177        | 178       | 233        | 234       | 235       | 236        | 237        |            |
| 9/16 (.563)   | 015 | 016                     | 059       | 060        | 061       | 062       | 119       | 120         | 121       | 122       | 179        | 180        | 181       | 238        | 239       | 240       | 241        | 242        |            |
| 5/8 (.625)    | 017 | 018                     | 063       | 064        | 065       | 066       | 123       | 124         | 125       | 126       | 182        | 183        | 184       | 243        | 244       | 245       | 246        | 247        |            |
| 11/16 (.688)  | 019 | 020                     | 067       | 068        | 069       | 070       | 127       | 128         | 129       | 130       | 185        | 186        | 187       | 248        | 249       | 250       | 251        | 252        |            |
| 3/4 (.750)    | 021 | 022                     | 071       | 072        | 073       | 074       | 131       | 132         | 133       | 134       | 188        | 189        | 190       | 253        | 254       | 255       | 256        | 257        |            |
| 13/16 (.813)  | 023 | 024                     | 075       | 076        | 077       | 078       | 135       | 136         | 137       | 138       | 191        | 192        | 193       | 258        | 259       | 260       | 261        | 262        |            |
| 7/8 (.875)    | 025 | 026                     | 079       | 080        | 081       | 082       | 139       | 140         | 141       | 142       | 194        | 195        | 196       | 263        | 264       | 265       | 266        | 267        |            |
| 15/16 (.938)  | 027 | 028                     | 083       | 084        | 085       | 086       | 143       | 144         | 145       | 146       | 197        | 198        | 199       | 268        | 269       | 270       | 271        | 272        |            |
| 1             | 029 | 030                     | 087       | 088        | 089       | 090       | 147       | 148         | 149       | 150       | 200        | 201        | 202       | 273        | 274       | 275       | 276        | 277        |            |

To arrive at the desired Catamount part number, simply insert the appropriate 3 digit number from the chart above.

for NATURAL SPACERS: SPNY- \_\_\_\_ - 9      for BLACK SPACERS: SPNY- \_\_\_\_ - 0



Hex Spacer



Hex Tapped Spacer



Round Tapped Spacer

- Molded in 6/6 Nylon per ASTM D-4066.
- Item Numbers shown are for thru-hole spacers. Tapped Spacers are available in a variety of lengths and threads in Hex and Round styles.
- Consult your Catamount Distributor for availability in special materials, or contact your Catamount Customer Service Representative at the toll-free number listed below.
- Catamount products are sold through stocking Catamount Distributors.

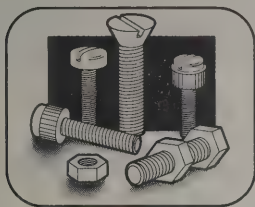
FSCM 65664



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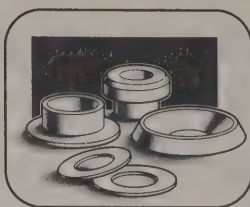
FAX 508-544-8351  
**800-222-5969**





### MOLDED NYLON MACHINE SCREWS

Catamount Machine Screws are molded of 6/6 nylon and available in a variety of head styles and lengths. A complete line of nylon Hex Nuts compliments our full selection of screws. Hex Cap and Slotted Hex Cap Head Screws are also available.



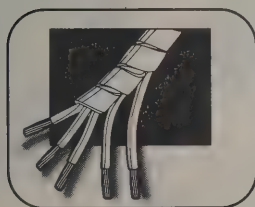
### MOLDED NYLON WASHERS

Catamount Washers are stocked in many sizes and styles including; flat, shoulder, bevel head shoulder, finishing and flat stamped. Washers are molded in natural nylon and are also available dyed black. Contact your Catamount Distributor for details when you require custom sizes or colors. An assortment of 45 standard screw insulators complete a full line.



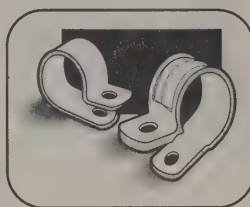
### SERRATED GROMMETING

Catamount Grommet edging is available in 2 styles, either molded or extruded. Molded grommeting is to MS21266 (1-4N) and available in nylon, flame retardant nylon and DuPont Tefzel. Molded grommeting protects panel edges from .015" to .192". Extruded grommeting is supplied in 100 foot rolls and will protect panel edges from .030" to .250" in nylon, polyethylene and flame retardant polyethylene.



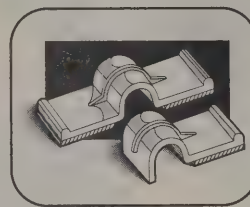
### EXTRUDED CABLE WRAP

Catamount Spiral Wrap is extruded by Catamount in Polyethylene, UV Polyethylene, Flame Retardant Polyethylene, and Nylon. Warm-cut for smoother edges, Spiral Wrap is ideal for wiring harnesses where break-outs are frequent and flexibility is required. The tubing may be butted when protection from abrasion is a concern or gapped for greater flexibility.



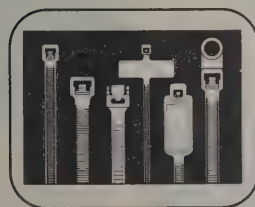
### MOLDED NYLON CABLE CLAMPS

Cable Clamps are molded in 2 styles, 2 widths, 19 diameters and with 2 standard mounting holes. Self-aligning clamps have a molded-in saddle washer for extra strength and are ideal for assembly applications. Plain edge clamps are molded in natural white or black nylon. Self-aligning clamps are stocked in nylon, flame retardant nylon and DuPont Tefzel.



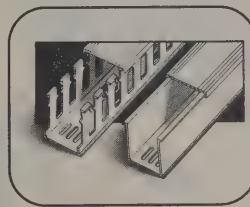
### ADHESIVE BACK PRESS CLIPS

Catamount Press Clips are molded in 6/6 nylon in two styles and 8 sizes. Bundle ranges are from .125" to .500" diameter. Press clips are mounted "2-up" on a synthetic polymer closed-cell foam adhesive. Overall length ranges from .493" to 1.590". Press Clips and Half Press Clips should be applied to clean dry surfaces, are moisture resistant once applied, and are non-conductive/non-corrosive.



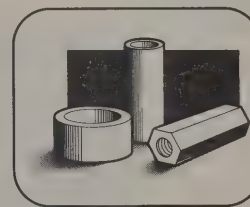
### CABLE TIES

Cable Ties are stocked in standard lengths from 4" to our exclusive 48" ties. Standard materials include 6/6 Nylon, UV Nylon, Heat Stabilized Nylon and a variety of colors — including fluorescents. Our Cable Ties are available from stock in bulk or standard 100 pack quantities. Catamount Cable Ties are sold only through stocking Catamount Distributors. Ask for a sample today. Styles include Miniature, Light, Standard, Heavy Duty, Extra Heavy Duty, Restricted Bundle, Identification, Releasable and Mounting Hole. A complete line of accessories and installation tools is also available.



### PANEL CHANNEL WIRING DUCT

Catamount's Panel Channel Wiring Duct is available in 2 styles, 2 stock colors and 20 sizes. Sizes range from 1 x 1" to 4 x 4" diameters and come supplied with matching covers. Duct is stocked in standard 6 foot lengths in non-flammable rigid PVC. Catamount Wiring Duct has attained a UL flammability rating of 94V-0 with a maximum continuous temperature of 122°F (50°C). UL Recognized and CSA Approved.



### MOLDED NYLON SPACERS

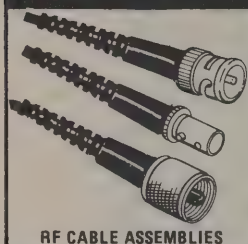
Round and Hex Spacers are available in over 300 standard sizes. Round O.D.'s range from 3/16" to 1/2" and stock lengths run from 1/8" to 1". Spacers in custom sizes and materials may also be quoted. Round and Hex Spacers are available tapped in a variety of stock sizes.



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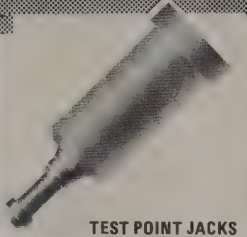
RF CONNECTORS



BINDING POST TO DOUBLE BANANA PLUG



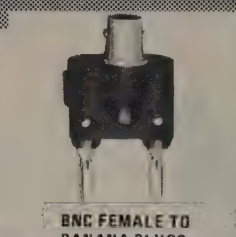
KNOBS



TEST POINT JACKS



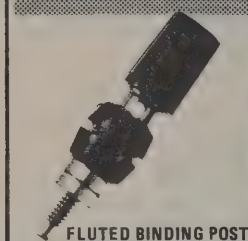
PANEL JACKS



BNC FEMALE TO BANANA PLUGS



P.C. PINS



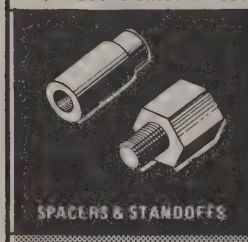
FLUTED BINDING POSTS

BREAKOUTS  
BNC AND ALLIGATOR  
CLIPTEST  
ACCESSORIES

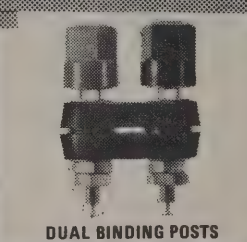
SHORTING PLUGS



OSCILLOSCOPE PROBES



SPACERS &amp; STANDOFFS



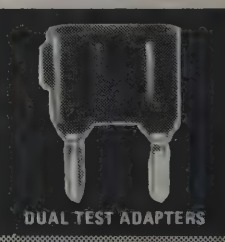
DUAL BINDING POSTS



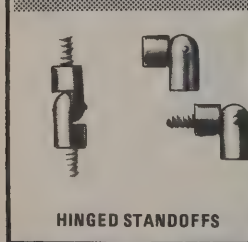
90° NYLON P.C. JACK



MIL-C-39024 JACKS



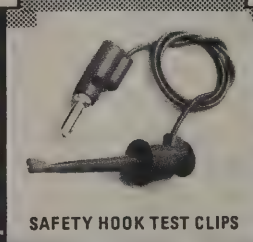
DUAL TEST ADAPTERS



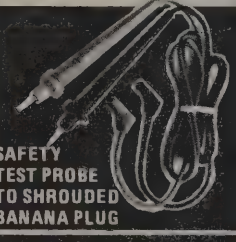
HINGED STANDOFFS



TEFLON® PANEL JACKS



SAFETY HOOK TEST CLIPS

SAFETY  
TEST PROBE  
TO SHROUDED  
BANANA PLUG

HANDLES

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*Steel racks with spools that are instantly  
removed and replaced. No fuss, no bother.*

### WIRE SPECIFICATIONS

#### STYLE

UL 1569/1007/CSA TR64  
300 Volts 105°/90° C

#### DESCRIPTION

Pvc. Tinned Copper  
600V Peak for Electronic  
circuits. Passes VW-1.

KT24: .....24 AWG .....7 x 32 .....225 feet per spool....6 colors  
KT22: .....22 AWG .....7 x 30 .....200 feet per spool....6 colors  
KT20: .....20 AWG .....10 x 30 .....150 feet per spool....6 colors  
KT18: .....18 AWG .....16 x 30 .....120 feet per spool....6 colors  
KT16: .....16 AWG .....26 x 30 .....80 feet per spool....6 colors  
KT14: .....14 AWG .....41 x 30 .....65 feet per spool....6 colors

#### STYLE

MIL-W-76B Type MW  
1000 Volts 80° C

Same as KT.

Part Number prefix KTM.

#### DESCRIPTION

Pvc. Tinned Copper  
Passes VW-1.

#### STYLE

UL Style 1015/1230/MTW  
CSA TEW 600 Volts 105° C

KTH22: .....22 AWG .....7 x 32 .....325 feet per spool....3 colors  
KTH20: .....20 AWG .....10 x 32 .....290 feet per spool....3 colors  
KTH18: .....18 AWG .....16 x 32 .....200 feet per spool....3 colors  
KTH16: .....16 AWG .....26 x 32 .....150 feet per spool....3 colors  
KTH14: .....14 AWG .....41 x 32 .....100 feet per spool....3 colors

#### STYLE

M16878/3 Type D  
3000 Volts 105° C

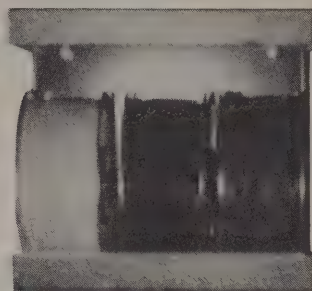
Same as KTH.

Part Number prefix KTHM.

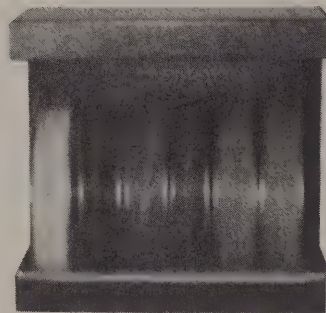
#### DESCRIPTION

Pvc. Tinned Copper  
Passes VW-1.

### WIRE KITS



**BENCH IT,  
HANG IT,  
STACK IT.**



### WIRE RACK SIZE

7 5/8 W x 7 3/8 H x 4 1/2 D

#### KT, KTM, Spool Size

Flange: 5 inches

Traverse: 1 inch

Barrel: 1 7/8 inch

#### KTH, KTHM Spool Size

Flange: 5 inches

Traverse: 2 inches

Barrel: 1 7/8 inch

### COLORS AVAILABLE

Black, Brown, Red, Orange,  
Yellow, Green, Blue, Violet, Gray,  
White, Tan, Pink, Dark Blue, Dark  
Green, Green/Yellow Stripe.

### OTHER WIRE KITS AVAILABLE

M16878/1...PVC .....600V .....80° C  
M16878/2...PVC .....1000V ...105° C  
M16878/3...PVC .....3000V ...105° C  
M16878/4...Teflon.....600V .....200° C  
M16878/5...Teflon.....1000V ...200° C  
M16878/6...Teflon.....250V .....200° C  
UL1061 .....PVC .....300V .....80° C  
THHN.....PVC/NYL ..600V .....90° C  
Bus Wire-Magnet Wire.

**FAX FOR CATALOG FOR OUR COMPLETE LIST.**

# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

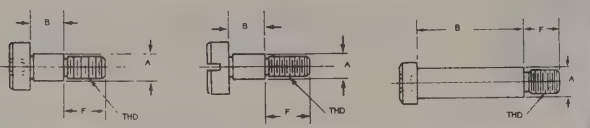
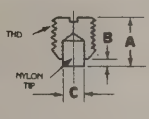
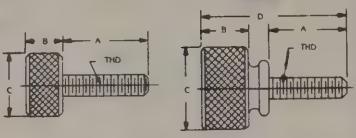
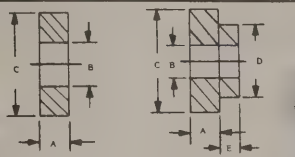
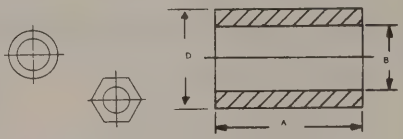
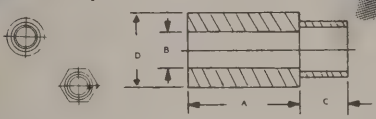
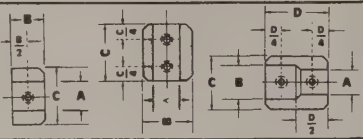
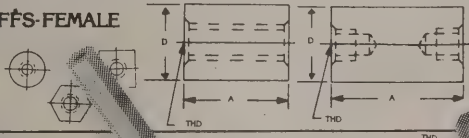
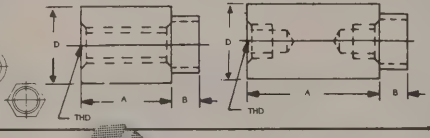
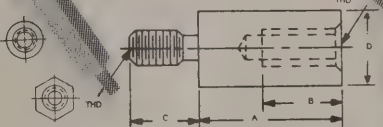
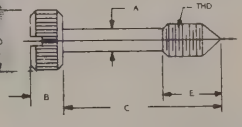
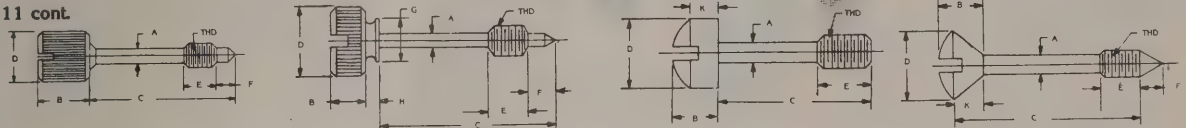
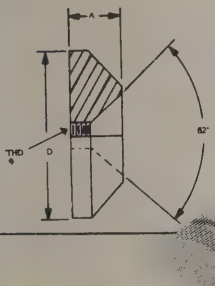
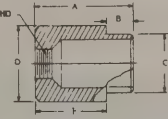
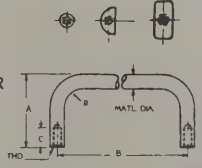
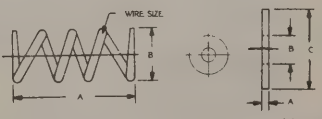
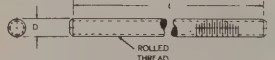
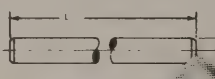
## WHERE TO FIND THEM IN THE 93/94 EDITION OF EEM

|                                                                                 |        |                                                                                |        |
|---------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------|
| AC Power Supplies, Product Selection Guide                                      | D•2221 | Keyboards & Keypads, Product Selection Guide                                   | B•1818 |
| Batteries, Product Selection Guide                                              | D•1419 | Lamps, Lights, & Indicators, Product Selection Guide                           | B•1131 |
| Cabinets, Enclosures, Racks & Chassis, Product Selection Guide                  | C•1003 | Microwave Components, Product Selection Guide                                  | A•1719 |
| Capacitors, Product Selection Guide                                             | A•1003 | Military Qualified Products List                                               | B•1002 |
| Coils, Chokes, Inductors, Product Selection Guide                               | A•1179 | Motors, Drives, & Rotating Components, Product Selection Guide                 | B•1231 |
| Connectors, Terminals & Sockets, Product Selection Guide                        | C•1139 | Oscilloscopes, Product Selection Guide                                         | D•1402 |
| Cores, Magnets & Ferrites                                                       | A•1317 | Panel Hardware, Product Selection Guide                                        | C•1522 |
| Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide | A•1326 | Panel Meters, Analog & Digital, Product Selection Guide                        | D•1336 |
| DC-DC Converters                                                                | D•2049 | Potentiometers, Trimmers, Controls, & Rheostats, Product Selection Guide       | A•2053 |
| DC Power Supplies, Product Selection Guide                                      | D•1488 | Power Supplies, AC, Product Selection Guide                                    | D•2221 |
| Delay Lines, Product Selection Guide                                            | A•1513 | Power Supplies, DC, Product Selection Guide                                    | D•1488 |
| Discrete Semiconductors, Product Selection Guide                                | A•2130 | Protective Components (Fuses, Circuit Breakers, etc.), Product Selection Guide | B•1341 |
| Displays, Readouts, & CRTs, Product Selection Guide                             | B•1017 | Relays, Product Selection Guide                                                | B•1401 |
| Fans, Blowers, Cooling Equipment, & Heat Exchangers, Product Selection Guide    | C•1557 | Resistors, Product Selection Guide                                             | A•1859 |
| Fiber Optics, Product Selection Guide                                           | B•1200 | Solenoids, Product Selection Guide                                             | B•1626 |
| Filters, Power, Product Selection Guide                                         | A•1584 | Switches, Product Selection Guide                                              | B•1658 |
| Filters, Signal, Product Selection Guide                                        | A•1617 | Thermal Components, Product Selection Guide                                    | B•1857 |
| Instruments, Test & Measuring, Product Selection Guide                          | D•1215 | Transducers & Encoders, Product Selection Guide                                | B•1911 |
| Interconnection Systems, Product Selection Guide                                | C•1670 | Transformers, Product Selection Guide                                          | A•2229 |
|                                                                                 |        | Wire & Cable, Product Selection Guide                                          | C•1701 |





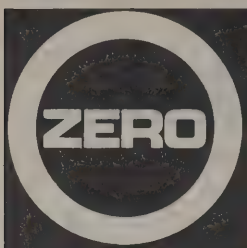
# STAINLESS STEEL ELECTRONIC HARDWARE

|                                                                                                                                                                                                                    |                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div><div>1. SHOULDER SCREWS</div><div>PRECISION SOCKET HEAD<br/>PRECISION SLOTTED HEAD<br/>STANDARD HEX SOCKET HEAD</div></div> |                                                                                                                                                                                                    |
| <div><div>2. NYLON TIPPED SET SCREWS</div><div>SLOTTED SOCKET</div></div>                                                         | <div><div>3. KNURLED THUMB SCREWS</div><div>PLAIN WASHER FACE</div></div>                                        |
| <div><div>4. INSULATING NON-METALIC WASHERS</div><div>FLAT SHOULDER</div></div>                                                   | <div><div>5. SPACERS</div><div>ROUND HEX</div></div>                                                             |
| <div><div>6. SWAGE SPACERS</div><div>ROUND HEX</div></div>                                                                        | <div><div>7. COLLARS &amp; COUPLING SLEEVES</div><div>SINGLE SHAFT SLEEVES<br/>REDUCED SHAFT SLEEVES</div></div> |
| <div><div>8. STANDOFFS-FEMALE</div><div>ROUND HEX<br/>SQUARE</div></div>                                                          | <div><div>9. STANDOFFS-SWAGE</div><div>ROUND HEX</div></div>                                                     |
| <div><div>10. STANDOFFS-MALE/FEMALE</div><div>ROUND HEX</div></div>                                                              | <div><div>11. CAPTIVE PANEL SCREWS</div><div>5 DIFFERENT TYPES OF SCREWS</div></div>                           |
| <div><div>11 cont.</div></div>                                                                                                  |                                                                                                                                                                                                    |
| <div><div>12. PANEL SCREW WASHERS</div></div>                                                                                    | <div><div>13. PANEL SCREW RETAINERS</div></div>                                                                 |
| <div><div>15. HANDLES</div><div>ROUND<br/>HALF ROUND<br/>RECTANGULAR</div></div>                                                | <div><div>14. PANEL SCREW SPRINGS &amp; WASHERS</div></div>                                                    |
| <div><div>16. THREADED RODS</div></div>                                                                                        |                                                                                                                                                                                                    |
| <div><div>17. PRECISION GROUND SHAFTINGS</div></div>                                                                           |                                                                                                                                                                                                    |

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### CATCHES

#### 83314-42 Series

83314 Catches Compact, Economical with internal compression springs for controlled, dependable tension.

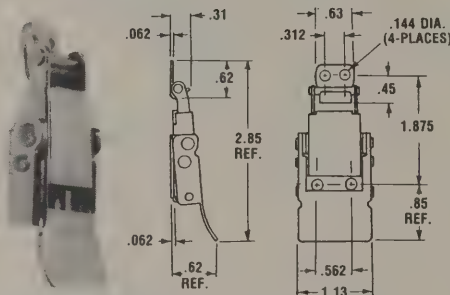
**Material:** Steel, Stainless Steel

**Finishes:** Plain, Cadmium, Zinc

**Mounting:** Rivet, Bolt, Weld

**Strike:** HS 83314

available with straight or down swept lever



#### Example Part Numbers:

HC 83314-42SS = Catch w/Holes,  
Upswept lever, Stainless  
HS 83314SS = Strike for above  
w/holes, Stainless

- Ship Wt/100: 12 lb. steel

#### 83314-42LK Series

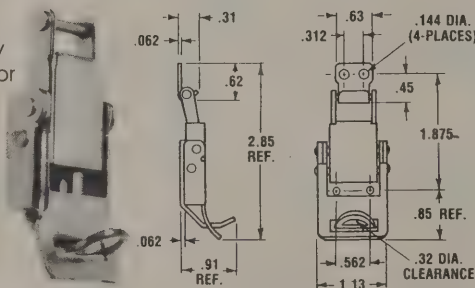
83314-42LK Catches with secondary padlock hasp and internal springs for controlled, dependable tension.

**Material:** Stainless Steel

**Finishes:** Plain

**Mounting:** Rivet, Bolt, Weld

**Strike:** HS 83314



#### Example Part Numbers:

HC 83314-42LKSS = Catch w/Holes,  
Stainless  
HS 83314SS = Strike for above  
w/holes, Stainless

- Ship Wt/100: 12.3 lb.

#### 204 Series

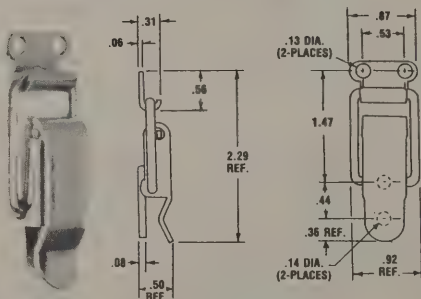
204 Catches Compact, Economical with straight loop. Strong and dependable.

**Material:** Steel, Stainless Steel

**Finishes:** Plain, Zinc

**Mounting:** Rivet, Bolt, Weld,  
Projection Weld

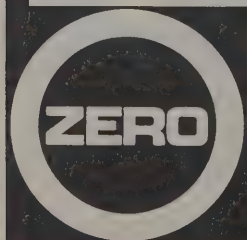
**Strike:** HS 200



#### Example Part Numbers:

HC 204 ZE = 204 Catch w/Holes, Zinc  
Plated  
HS 200 ZE = Strike for above w/holes,  
Zinc Plated

- For increased tension, increase  
catch/strike separation.
- Ship wt/100: 6.5 lb. steel  
6.7 lb. stainless steel



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## ZERO

## CATCHES • HANDLES • HARDWARE

### HANDLES

#### 945 Series

##### \*90° Stop With Return Spring

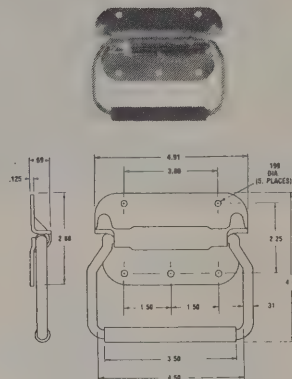
Our most rugged design make these handles the mainstay on military containers and other applications where strength and durability are a must.

These handles come to you completely assembled and ready for installation in a variety of sizes, finishes and configurations.

| Part No.    | Plate Material    | Plate Finish | Bail Material   | Bail Finish | Grip Diam. | Aluminum Sleeve |
|-------------|-------------------|--------------|-----------------|-------------|------------|-----------------|
| H945LS2RGZE | 3003 H14 Aluminum | None         | Steel           | Zinc        | .56        | Yes             |
| H945SS2RGSS | Stainless Steel   | None         | Stainless Steel | None        | .56        | Yes             |

MS18012-1 version also available.

Other finishes and material combinations are available. Give us a call to discuss your requirements.

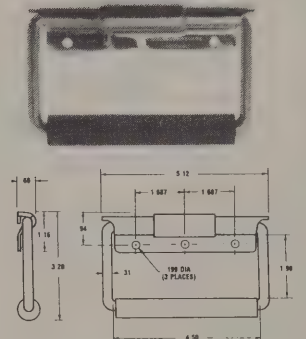


#### 990 Series

##### 90° Stop With Return Spring

Our newest handle incorporates reduced surface mounting area while maintaining the durability of our heavy duty handle design. A jam proof 90° stop, an oversized stainless steel return spring, and full coverage plating prior to assembly make the 990 Series the most durable half plate handle available.

| Part Number     | Material                             |
|-----------------|--------------------------------------|
| H990LS2RG75ZE   | Zinc Plated with 3/4" Grip           |
| H990LS2RG75ZEBK | Zinc and Black Plated with 3/4" Grip |



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For a copy of our full line catalog with over 50 pages of catches, handles, and other hardware items call or fax us today.

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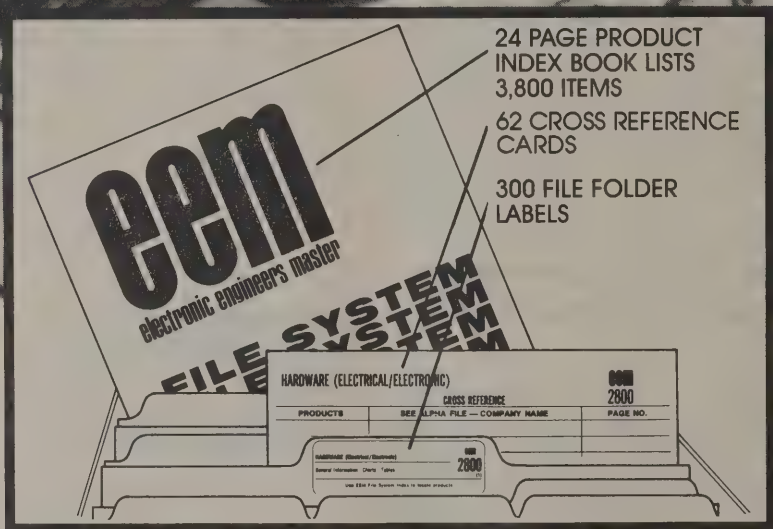
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*Electronic Solutions, Refer to Cabinets & Enclosures Section 1400*

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*Zero Enclosures, Refer to Cabinets & Enclosures Section 1400*

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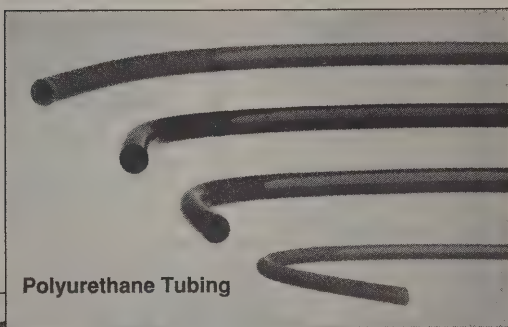
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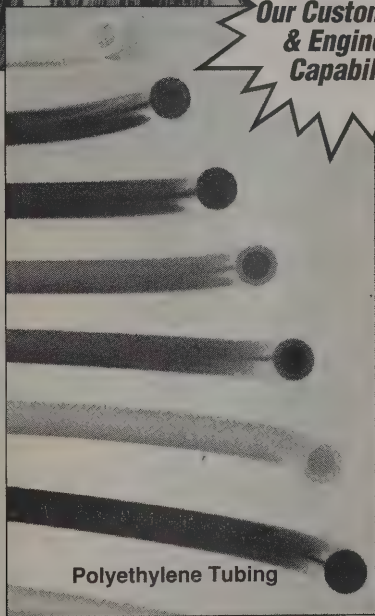
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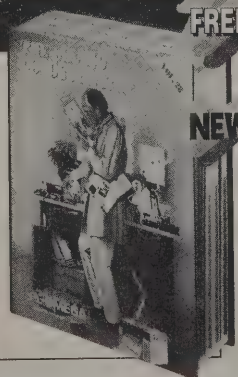


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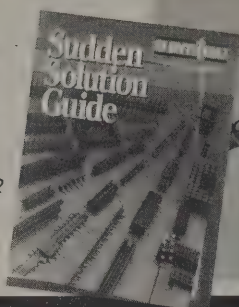
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# samtec

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SS-116-TT-2

SL-120-G-10

SS-124-T-1B

## SOCKET STRIPS SL, SDL, SS, SD & HSS SERIES

### Mates with:

TS-1, TD-1, HTS,  
BBS, BBD, BBL, BDL,  
BHS, LBS, HLT, TSB

### Specifications: SS, SD, SL, SDL

#### Insulator Material:

Black Glass Filled

Polyester

#### Flammability Rating:

UL 94V-O

#### Insulation Resistance:

5000 MΩ min

#### Operating Temp Range:

-65°C to +125°C

#### Dielectric Withstanding Voltage:

1000 VRMS

#### Contact: BeCu

#### Shell: Brass

#### Plating:

Au or Sn over 50μ" (1,27μm) Ni

#### Current Rating: 1A

#### Contact Resistance:

10 mΩ max

#### Socket Retention in Body:

5 lbs (22,25N) against barb

#### Lead Size Range:

.015" to .022" (0,38mm to 0,56mm) DIA and most IC leads

#### Insertion Force:

Standard=

9 oz (2,50N) avg,

16 oz (4,45N) max

(.017" (0,43mm) DIA probe)

#### Low Insertion Force=

2.5 oz (0,70N) avg,

5.5 oz (1,53N) max

(.018" (0,46mm) DIA probe)

#### Withdrawal Force:

Standard=

2.5 oz (0,70N) avg,

1.5 oz (0,42N) min (after

12 insertions with .017" (0,43mm) DIA probe);

#### Low Insertion Force=

2.0 oz (0,56N) avg,

0.35 oz (0,10N) min (after

12 insertions with .018" (0,46mm) DIA probe)

### Specifications: HSS HI-TEMP

Same as SS-1 except:

#### Insulator Material:

Black Liquid Crystal Polymer

#### Max Processing Temp:

230°C for 30 to 60 sec.

#### Note:

Non-standard strip lengths are non-returnable.

| TYPE STRIP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1            | NO. PINS PER ROW | PLATING OPTION                                                                                       | LEAD STYLE |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------|------------------------------------------------------------------------------------------------------|------------|------------|-------|-------------|-------------|-------------|--------------|-------------|-------------|------------|-------------|-------------|-------------|----|-------------|--------------|--------------|-----|-------------|--------------|--------------|
| <b>01 thru 32</b><br>= SS & SL Series<br>(32 positions standard)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |                  | <b>-G</b> = 30μ" (0,76μm) Gold contact<br>10μ" (0,25μm) Gold shell                                   |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <b>01 thru 36</b><br>= HSS & SD & SDL Series<br>(36 positions standard)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                  | <b>-T</b> = 30μ" (0,76μm) Gold contact<br>200μ" (5,08μm) Tin shell                                   |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                  | <b>-S</b> = 10μ" (0,25μm) Gold contact<br>200μ" (5,08μm) Tin shell (Styles 2 & 22 only)              |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                  | <b>-TT</b> = 200μ" (5,08μm) Tin contact and shell<br>(Styles 1, 2, 10, 11, 12, 18, 19, 21 & 22 only) |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <b>-1A, -1B or -1C</b><br>For LIF specify -21A, -21B or -21C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <div style="display: flex; align-items: center;"> <div style="flex: 1;"> </div> <div style="flex: 1;"> <table border="1"> <thead> <tr> <th>LEAD STYLE</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>-1A or -21A</td> <td>(9,14) .360</td> </tr> <tr> <td>-1B or -21B</td> <td>(12,95) .510</td> </tr> <tr> <td>-1C or -21C</td> <td>(6,80) .260</td> </tr> </tbody> </table> </div> </div>                                                                                                                                                                                                                                       |              |                  |                                                                                                      |            | LEAD STYLE | Y     | -1A or -21A | (9,14) .360 | -1B or -21B | (12,95) .510 | -1C or -21C | (6,80) .260 |            |             |             |             |    |             |              |              |     |             |              |              |
| LEAD STYLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Y            |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -1A or -21A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (9,14) .360  |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -1B or -21B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (12,95) .510 |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -1C or -21C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (6,80) .260  |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <b>-2*, -5A, -7 or -18</b><br>For LIF specify -22 or -38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <div style="display: flex; align-items: center;"> <div style="flex: 1;"> <table border="1"> <thead> <tr> <th>LEAD STYLE</th> <th>X DIA</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>-2 OR -22</td> <td>(0,51) .020</td> <td>(3,18) .125</td> <td>(7,62) .300</td> </tr> <tr> <td>-18 OR -38</td> <td>(0,51) .020</td> <td>(4,57) .180</td> <td>(8,89) .350</td> </tr> <tr> <td>-7</td> <td>(0,64) .025</td> <td>(10,41) .410</td> <td>(15,24) .600</td> </tr> <tr> <td>-5A</td> <td>(0,89) .035</td> <td>(12,95) .510</td> <td>(17,86) .703</td> </tr> </tbody> </table> </div> <div style="flex: 1;"> </div> </div> |              |                  |                                                                                                      |            | LEAD STYLE | X DIA | Y           | Z           | -2 OR -22   | (0,51) .020  | (3,18) .125 | (7,62) .300 | -18 OR -38 | (0,51) .020 | (4,57) .180 | (8,89) .350 | -7 | (0,64) .025 | (10,41) .410 | (15,24) .600 | -5A | (0,89) .035 | (12,95) .510 | (17,86) .703 |
| LEAD STYLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | X DIA        | Y                | Z                                                                                                    |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -2 OR -22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | (0,51) .020  | (3,18) .125      | (7,62) .300                                                                                          |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -18 OR -38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | (0,51) .020  | (4,57) .180      | (8,89) .350                                                                                          |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (0,64) .025  | (10,41) .410     | (15,24) .600                                                                                         |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| -5A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (0,89) .035  | (12,95) .510     | (17,86) .703                                                                                         |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <b>-10</b><br/>Low Profile<br/>For LIF<br/>Specify -30           </div> <div style="text-align: center;"> <b>-11</b><br/>Low Profile<br/>For LIF<br/>Specify -31           </div> <div style="text-align: center;"> <b>-12</b><br/>Micro-Socket<br/>For LIF<br/>Specify -32           </div> <div style="text-align: center;"> <b>-19</b><br/>Micro-Socket<br/>For LIF<br/>Specify -39           </div> </div>                                                                                                                       |              |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |
| <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                             |              |                  |                                                                                                      |            |            |       |             |             |             |              |             |             |            |             |             |             |    |             |              |              |     |             |              |              |

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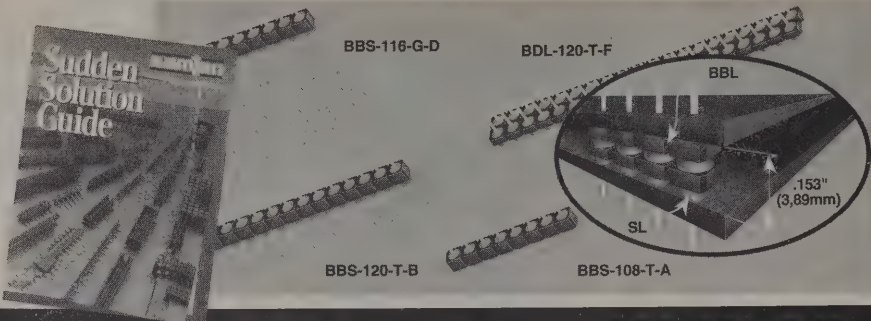
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Call 1-800-672-6832  
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INTERCONNECT STRIPS

BBS, BBL, BHS,  
BBD, BDL & LBS

Mates with:  
SS, SD, HSS, SL, SDL,  
ESS, ESD, HLS, SSF

Features:

- Low profile design achieves .153" (3.89mm) board spacings when mated with SL series
- Choice of precision machined (BXX Series) or coined (LBS Series) terminals
- Approach the reliability of a permanent connection with the flexibility of a separable connection

Specifications:  
BBS, BBD,  
BBL, BDL

Insulator Material:  
Black Glass Filled Polyester  
Flammability Rating:  
UL 94V-O  
Insulation Resistance:  
5000 MΩ min  
Temperature Range:  
-65°C to +125°C  
Withstanding Voltage:  
1000 VRMS  
Terminal Material:  
Phosphor Bronze or Brass  
Plating:  
Au or Sn over  
50μ" (1.27μm) Ni  
Current Rating:  
1A

Specifications:  
BHS HI-TEMP

Same as BBS except:  
Insulator Material:  
Black Liquid Crystal Polymer  
Max Processing Temp:  
230°C for 30 to 60 seconds

Specifications:  
LBS  
HI-TEMP

Same as BBS except:  
Insulator Material:  
Black High Temperature  
Thermoplastic  
Temperature Range:  
-65°C to +140°C  
Heat Deflection Tem:  
207°C @ 264 psi (1.8MPa)

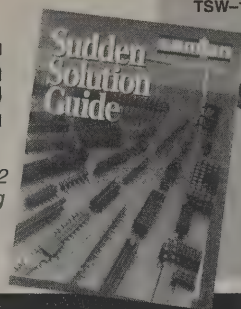
Note:  
Non-standard strip lengths  
are non-returnable.

| TYPE STRIP                             | 1 | NO. PINS PER ROW                           | PLATING OPTION                                                                       | LEAD STYLE                                                          |                 |
|----------------------------------------|---|--------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------|
| <b>BBS</b><br>= Standard Single Row    |   | (2.54) .100 x No. of Positions             | <b>-G</b><br>=20μ" (0.51μm)<br>Gold (except LBS)<br>= 10μ" (0.25μm)<br>Gold on tails | <b>-T</b><br>=200μ" (5.08μm)<br>Tin                                 |                 |
| <b>BBL</b><br>= Low Profile Single Row |   | (2.54) .100 TYP                            |                                                                                      |                                                                     |                 |
| <b>BHS</b><br>= High Temp Single Row   |   | (2.54) .100 TYP                            |                                                                                      |                                                                     |                 |
| <b>BBD</b><br>= Standard Double Row    |   | (2.54) .100 TYP                            |                                                                                      |                                                                     |                 |
| <b>BBL</b><br>= Low Profile Double Row |   | (2.54) .100 TYP                            |                                                                                      |                                                                     |                 |
| <b>LBS</b><br>= Coined Tail Single Row |   | (2.54) .100 x No. of Spaces<br>(2.41) .095 | <b>01 thru 32</b><br>= BBS & BBL<br>(32 positions standard)                          | <b>01 thru 36</b><br>= BBD, BDL BHS, LBS<br>(36 positions standard) |                 |
| <b>-A</b><br>Z= (5.33) .210            |   | (3.18) .125                                | <b>-B</b><br>Z= (8.61) .335                                                          |                                                                     | (0.46) .018 DIA |
| <b>-C</b><br>Z= (14.86) .585           |   | (0.46) .018 SQ                             | <b>-D</b><br>Z= (21.21) .835                                                         |                                                                     | (3.18) .125     |
| <b>-G</b><br>Z= (14.86) .585           |   |                                            | <b>-H</b><br>Z= (21.21) .835                                                         |                                                                     |                 |
| <b>-E</b><br>Z= (1.78) .070            |   |                                            | <b>-F</b><br>Z= (2.16) .085                                                          |                                                                     |                 |
| <b>BBS and BHS</b>                     |   |                                            | <b>BBD</b>                                                                           |                                                                     |                 |
| <b>LBS</b>                             |   |                                            | <b>BDL</b>                                                                           |                                                                     |                 |

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TSW-116-11-G-S

TSW-218-09-T-S-RE

## .025"sq TERMINAL STRIPS TSW SERIES

### Mates with:

SSW, SSQ, ESW, ESQ,  
BCS, BSW, IDSD, IDSS,  
CES, SLW

### Precision Drawn Terminal Strips

Samtec terminal strips are precision drawn Phosphor Bronze wire for a high quality low cost .025" square post. The basic interconnect and many of the available options are shown on this page. Additional styles are shown on the following pages. Samtec prides itself on being a full line supplier of square post products. If you don't see what you need in this catalog please give us a call and we'll help you locate it.

### Note:

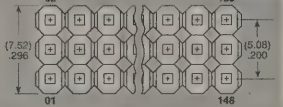
Non-standard strip lengths are non-returnable.

### Specifications: TSW

**Insulator Material:**   
Black Glass Filled Polyester  
**Flammability Rating:**   
UL 94V-O  
**Insulation Resistance:**  
5000 MW @ 500 VDC  
**Operating Temp Range:**  
-65°C to +125°C with Gold  
-65°C to +105°C with Tin  
**Withstanding Voltage:**  
1000 VRMS @ 60 Hz  
**Terminal Material:**  
Phosphor Bronze  
**Plating:**  
Au or Sn over 50µ" (1.27µm) Ni  
**Current Rating:**  
3 amp continuous  
**Terminal Retention in Body:**  
3 lb (13,35N)

### Specifications: HTSW

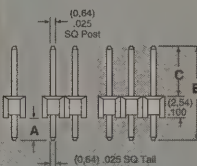
Same as TSW except:   
**Insulator Material:**  
Natural Liquid Crystal Polymer  
**Max Processing Temp:**  
260°C for 10 seconds and  
230°C for 30 to 60 seconds

| TYPE STRIP                                                                        | NO. PINS PER ROW | LEAD STYLE | PLATING OPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ROW OPTION                                                                                                        | OTHER OPTION                                                                                 |
|-----------------------------------------------------------------------------------|------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| TSW = Standard                                                                    |                  |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                   |                                                                                              |
| HTSW = Hi-Temp (Single & Double Only)                                             |                  |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                   |                                                                                              |
| 01 thru 50 (36 & 50 positions standard)                                           |                  |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                   |                                                                                              |
|  |                  |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                   |                                                                                              |
|                                                                                   |                  |            | <b>G</b> = 10µ" Gold on contact area; Gold flash on balance<br><b>T</b> = 200µ" Tin<br><b>S</b> = 30µ" Gold on contact area; 200µ" Tin on tail (N/A -05 & -06)<br><b>L</b> = 10µ" Gold on contact area, 200µ" Tin on tail (N/A -05, -06 & -26)<br><b>H</b> = 30µ" Gold contact area, Gold flash balance (Straight -07, -08, -09, -14, -15, -16, -18 & -23 only)<br><b>F</b> = Gold flash on contact area, 150µ" Tin on tail (Straight -05 thru -10 & -14 thru -17 only) | <b>S</b> = Single Row<br><b>D</b> = Double Row<br><b>T</b> = Triple Row<br><b>Q</b> = Double Row, 200µ" row space | <b>RA or RE</b> = Right Angle<br><b>"XXX"</b> = Polarized (Specify "xxx" as position number) |

### Straight Pin Versions

(Specify "LEAD STYLE" from chart)

| STYLE | A                | B                | C                |
|-------|------------------|------------------|------------------|
| *-05  | (3.30)<br>130    | (8.51)<br>335    | (2.67)<br>105    |
| *-06  | (2.41)<br>95     | (7.62)<br>300    | (2.67)<br>105    |
| *-07  | (2.54)<br>100    | (10.92)<br>430   |                  |
| *-08  | (5.08)<br>200    | (13.46)<br>530   |                  |
| *-09  | (10.16)<br>400   | (18.54)<br>730   |                  |
| -10   | (12.70)<br>500   | (21.08)<br>830   | (5.84)<br>230    |
| -11   | (15.24)<br>600   | (23.62)<br>930   |                  |
| -12   | (17.78)<br>700   | (26.16)<br>1,030 |                  |
| -13   | (22.86)<br>900   | (31.24)<br>1,230 |                  |
| *-14  | (2.79)<br>110    | (13.46)<br>530   | (8.13)<br>320    |
| *-15  |                  | (18.54)<br>730   | (13.21)<br>520   |
| *-16  | (7.87)<br>310    |                  | (8.13)<br>320    |
| *-17  | (2.79)<br>110    | (21.08)<br>830   | (15.74)<br>620   |
| *-18  |                  | (23.62)<br>930   | (18.29)<br>720   |
| *-19  | (2.79)<br>110    | (26.16)<br>1,030 | (20.83)<br>820   |
| *-20  |                  | (31.24)<br>1,230 | (25.91)<br>1,020 |
| *-21  |                  | (36.32)<br>1,430 | (30.99)<br>1,220 |
| *-22  | (7.62)<br>300    | (16.00)<br>630   | (5.84)<br>230    |
| *-23  | (2.92)<br>115    | (11.30)<br>445   | (8.13)<br>320    |
| *-24  | (5.33)<br>210    | (16.00)<br>630   | (8.13)<br>320    |
| -25   | (3.20)<br>126    | (11.58)<br>456   |                  |
| -26   | (25.40)<br>1,000 | (33.78)<br>1,330 | (5.84)<br>230    |
| -27   | (20.32)<br>800   | (28.70)<br>1,130 |                  |
| -28   | (23.11)<br>910   | (33.78)<br>1,330 | (8.13)<br>320    |
| -29   | (18.03)<br>710   | (28.70)<br>1,130 |                  |



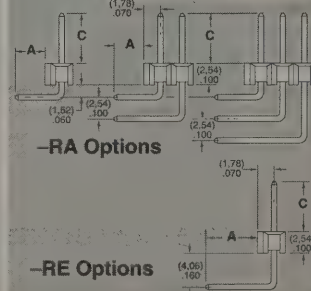
Except: Style -26  
(0.46) .018 DIA Tail

\*Available with -LL  
(Locking Lead) Option

### Right Angle Pin Versions

(Specify "LEAD STYLE" from chart)

| RA LEAD STYLE | SINGLE (-S)    | DOUBLE (-D)    | TRIPLE (-T & -Q) |
|---------------|----------------|----------------|------------------|
|               | A              | A              | A                |
| *-08          | (2.29)<br>90   | (2.29)<br>90   | (2.29)<br>90     |
| *-09          | (7.37)<br>290  | (7.37)<br>290  | (7.37)<br>290    |
| -10           | (9.91)<br>390  | (9.91)<br>390  | (9.91)<br>390    |
| -11           | (12.45)<br>490 | (12.45)<br>490 | (12.45)<br>490   |
| -12           | (14.99)<br>590 | (14.99)<br>590 | (14.99)<br>590   |
| -13           | (20.07)<br>790 | (20.07)<br>790 | N/A              |
| *-16          | (5.08)<br>200  | (8.13)<br>320  | (5.08)<br>200    |
| -21           | (25.15)<br>990 | (5.84)<br>230  | N/A              |
| *-22          | (4.83)<br>190  | (4.83)<br>190  | (4.83)<br>190    |
| *-25          | (2.54)<br>100  | (8.13)<br>320  | (2.54)<br>100    |
| -27           | (22.61)<br>890 | (5.84)<br>230  | N/A              |
| -28           | (17.53)<br>690 |                | (17.53)<br>690   |
| -29           | (20.32)<br>800 | (8.13)<br>320  | N/A              |
| -30           | (15.24)<br>600 |                | (15.24)<br>600   |



-RA Options

-RE Options

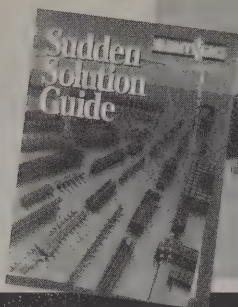
| RE LEAD STYLE | SINGLE A       | C             |
|---------------|----------------|---------------|
| -09           | (4.83)<br>190  |               |
| -10           | (7.37)<br>290  |               |
| -11           | (9.91)<br>390  | (5.84)<br>230 |
| -12           | (12.45)<br>490 |               |
| -13           | (17.53)<br>690 |               |
| -16           | (2.54)<br>100  | (8.13)<br>320 |
| -21           | (2.54)<br>100  |               |
| -22           | (2.29)<br>90   | (5.84)<br>230 |
| -27           | (20.07)<br>790 |               |
| -28           | (14.99)<br>590 |               |

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BCS-150-L-D-DE

BCS-150-L-D-HE

BCS-150-L-S-HE

## BOX CONNECTOR STRIPS BCS SERIES

Mates with:  
TSW, MTSW, LCW, TST,  
TSS, ZST, ZSS, DW,  
EW, ZW, TLW

### High Quality Box Connector Strips

Low profile Samtec box connector strips are available with top entry, dual entry horizontal entry, and a new pass through entry for use with plated-through holes.

BCS Strips feature a double beam contact with selective plating for highest reliability at lowest cost.

### Specifications: BCS

Insulator Material:   
Black Liquid Crystal Polymer  
Flammability Rating:  
UL 94V-O

Insulation Resistance:  
5000 MΩ min

Operating Temp Range:  
-65°C to +125°C

Max Processing Temp:  
260°C for 10 seconds and  
230°C for 30 to 60 seconds

Withstanding Voltage:  
1000 VRMS @ 60 Hz

Contact Material:  
Phosphor Bronze

Plating:  
Au, PdNi or Sn over  
50μ" (1,27μm) Ni

Current Rating:  
1 A

Contact Resistance:  
10 mΩ max

Lead Size Range:  
.024" (0,61mm) SQ to .026"  
(0,66mm) SQ

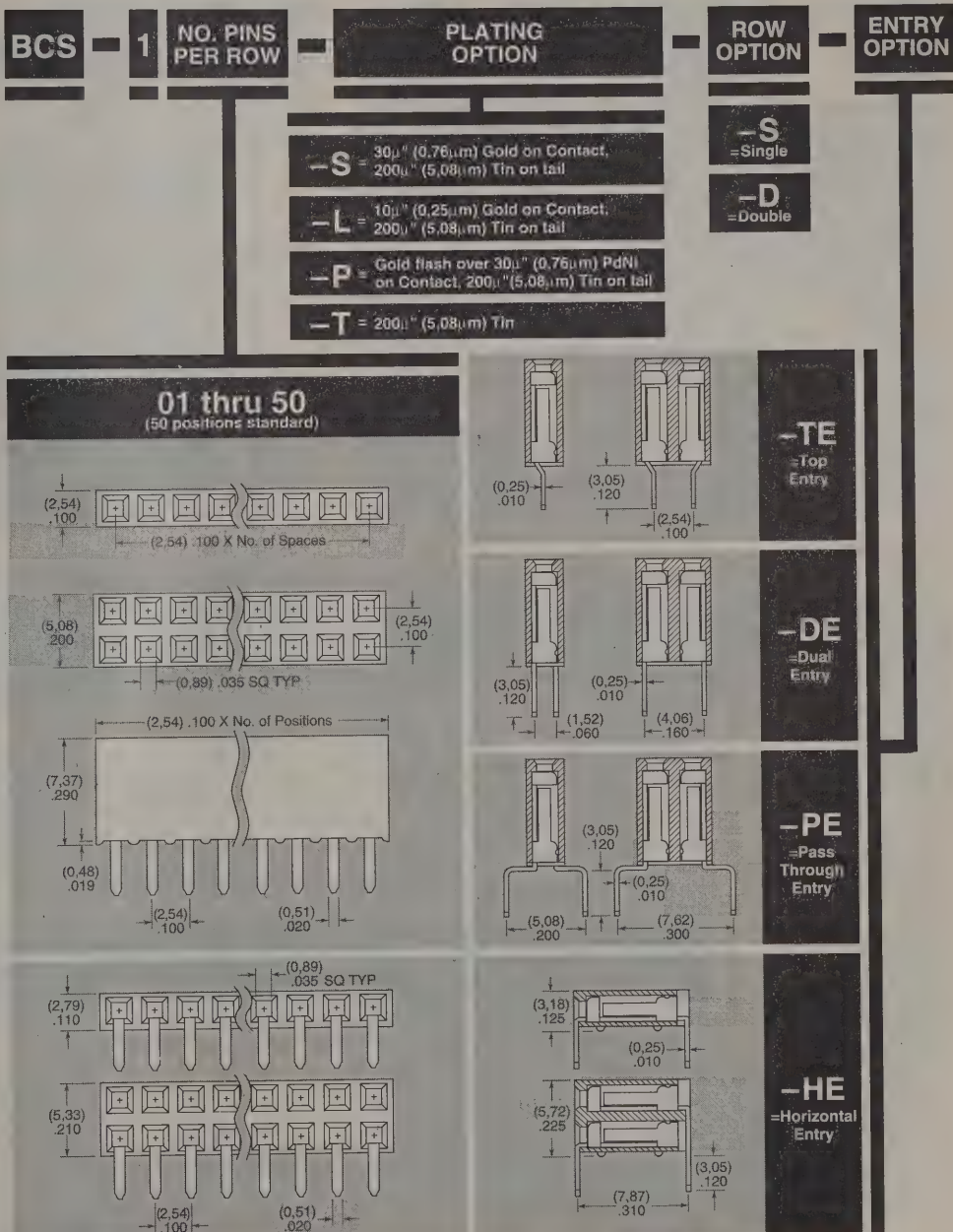
Insertion Depth:  
.180" (4,57mm) to .290"  
(7,37mm) except -HE is  
.180" (4,57mm) to .250"  
(6,35mm)

Insertion Force:  
5 oz (1,39N) avg (.025"  
(0,64mm) SQ pin)

Withdrawal Force:  
3 oz (0,83N) avg (.025"  
(0,64mm) SQ pin)

Note:  
Non-standard strip lengths  
are non-returnable.

**IMPORTANT NOTE:**  
-DE Style connectors cannot  
be used with plated-through  
holes for bottom entry.



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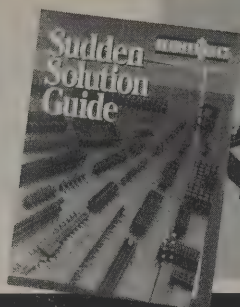
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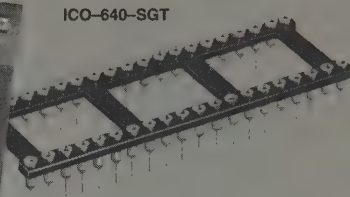
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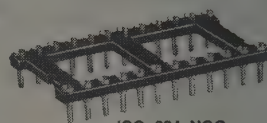
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ICO-640-SGT



ICO-624-NGG



## LOW PROFILE DIP SOCKETS

### ICO SERIES

Mates with:  
AP, APS, APO,  
APA, APE, APH

#### ICO

#### ROW SPACING & NO. OF CONTACTS

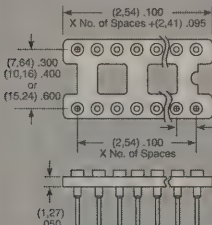
#### STYLE OPTION

#### PLATING OPTION

#### OPTION (Leave Blank for Standard Version)

Specify from chart below

- Low profile down to .083" (2,11mm) above printed circuit board
- Side & end stackable
- Open body design
- Surface mountable lead sockets



|      | Row Space    | Contacts |
|------|--------------|----------|
| -308 | .300 (7,62)  | 08       |
| -314 |              | 14       |
| -316 |              | 16       |
| -318 |              | 18       |
| -320 |              | 20       |
| -322 | .400 (10,16) | 22       |
| -324 |              | 24       |
| -422 |              | 22       |
| -624 | .600 (15,24) | 24       |
| -628 |              | 28       |
| -632 |              | 32       |
| -640 |              | 40       |

#### GG

= 30μ" (0,76μm) Gold Contact  
10μ" (0,25μm) Gold Shell

#### GT

= 30μ" (0,76μm) Gold Contact  
200μ" (5,08μm) Tin Shell

#### TT

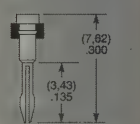
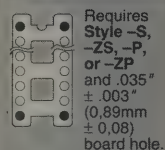
= 200μ" (5,08μm) Tin Contact  
and Shell  
(-C, -S, -ZS, -A,  
-L, -M, -N, only)

#### ST

= 10μ" (0,25μm) Gold Contact  
200μ" (5,08μm) Tin Shell  
(Styles -S & -ZS only)

#### -L

= Locking Socket



### Specifications:

#### ICO

Insulator Material: **RG**  
Black Glass Filled Polyester

Flammability Rating:  
UL 94V-0

Insulation Resistance:  
5000 MΩ min

Temperature Range:  
-65°C to +125°C

Withstanding Voltage:  
1000 VRMS @ 60 Hz

Contact: BeCu

Shell: Brass except style K  
Phosphor Bronze

Plating: Au or Sn over 50μ"

(1,27μm) Ni

Current Rating: 1A

Contact Resistance:  
10 mΩ max

Lead Size Range:  
.015" to .022" (0,38mm to  
0,56mm) DIA and most IC  
leads except C, L, M, and N

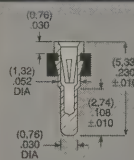
Insertion Force:  
Standard = 9 oz avg, 16 oz  
max (.017" DIA probe); Low  
Insertion Force = 2.5 oz avg,  
5.5 oz max (.018" DIA probe,  
except styles ZM and ZN  
.017" DIA probe)

Withdrawal Force: Standard  
= 2.5 oz avg, 1.5 oz min (after  
12 insertions with .017" DIA  
probe); Low Insertion Force =  
2.0 oz avg, 0.35 oz min (after  
12 insertions with .018" DIA  
probe) except Styles ZM and  
ZN = 2.0 oz avg, 0.5 oz min (with  
.017" DIA probe)

Low Insertion Force (LIF) Contacts Available.

#### -L

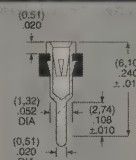
= Low Profile  
For LIF Specify -ZL



Lead DIA Accepted  
= .015" to .020"  
(0,38mm to 0,51mm)

#### -M

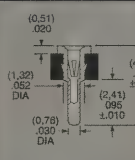
= Low Profile  
For LIF Specify -ZM



Lead DIA Accepted  
= .016" to .021"  
(0,41mm to 0,53mm)

#### -N

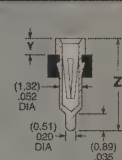
= Micro Socket  
For LIF Specify -ZN



Lead DIA Accepted  
= .016" to .020"  
(0,41mm to 0,51mm)

#### -P or -T

= Short Tail  
For LIF Specify -ZP or -ZT

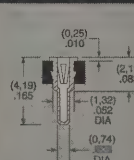


| LEAD<br>STYLE | Z              | Y              |
|---------------|----------------|----------------|
| -P or<br>-ZP  | (5,20)<br>.205 | (0,76)<br>.030 |
| -T or<br>-ZT  | (4,24)<br>.167 | (0,51)<br>.020 |

Locking  
lead (-L)  
available.  
See  
OPTION.

#### -C

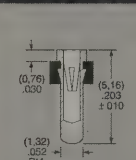
= Micro Socket  
For LIF Specify -ZC



Lead DIA Accepted  
= .016" to .020"  
(0,41mm to 0,51mm)

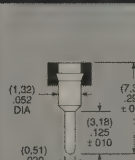
#### -B

= Body Only  
For LIF Specify -ZB



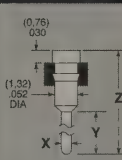
#### -F

= Flush Top



#### -S\*, -A\*, -J, or -K

= Printed Circuit  
For LIF Specify -ZS or -ZA



| LEAD<br>STYLE | X<br>DIA       | Y<br>TAIL       | Z               |
|---------------|----------------|-----------------|-----------------|
| -S or -ZS     | (0,51)<br>.020 | (3,18)<br>.125  | (7,62)<br>.300  |
| -A or -ZA     | (0,51)<br>.020 | (4,57)<br>.180  | (8,89)<br>.350  |
| -J            | (0,64)<br>.025 | (10,41)<br>.410 | (15,24)<br>.600 |
| -K            | (0,89)<br>.035 | (12,95)<br>.510 | (17,86)<br>.703 |

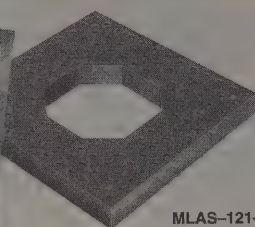
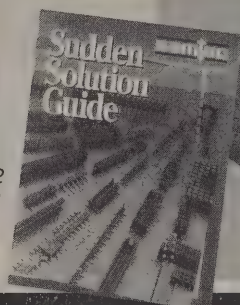
Locking lead (-L) available.  
See OPTION.

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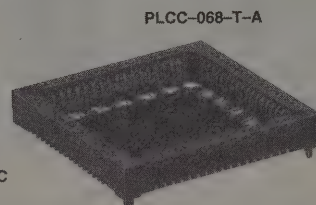


The logo for Samtec, featuring the word "samtec" in a bold, lowercase, sans-serif font. The letters are black and have a slightly distressed or industrial feel. The "s" and "a" are connected, as are the "m" and "t". The "e" and "c" are also connected. The logo is positioned at the bottom left of the page.

Call 1-800-672-6832  
for Full Line Catalog



MLAS-121-S-13C



PLCC-068-T-A

# LIF PGA & PLCC SOCKETS

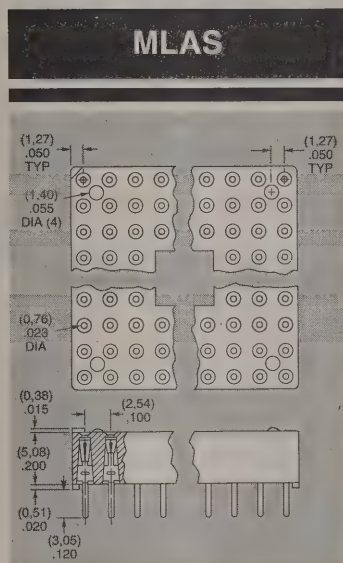
## Specifications:

### MLAS

**Insulator Material:**  
Glass Filled Polyester  
**Flammability Rating:**  
UL 94V-O  
**Insulation Resistance:**  
5000 MΩ min  
**Operating Temp Range:**  
-65 to +125°C  
**Withstanding Voltage:**  
1000 VAC  
**Plating:** Au, PdNi or Sn over  
50μm (1.27μm) Ni  
**Current Rating:** 1A  
**Contact Material:** BeCu  
**Contact Resistance:**  
10mΩ max  
**Lead Size Range:** 015" to  
.022" DIA and most IC leads  
**Normal Force:**  
45g (0.44N) avg  
**Insertion Force:**  
1 oz (0.28N) avg  
**Withdrawal Force:**  
0.5 oz (0.14N) avg

**IMPORTANT NOTE:**

**IMPORTANT NOTE:**  
Specifications are based on preliminary test data. Please call for current report before specifying.



| PIN<br>COUNT | PLATING<br>OPTION | PIN OUT<br>CODE |
|--------------|-------------------|-----------------|
| 18           | 1                 | 181             |
| 24           | 1                 | 241             |
| 28           | 1                 | 281             |
| 36           | 1                 | 361             |
| 40           | 1                 | 401             |
| 48           | 1                 | 481             |
| 64           | 1                 | 641             |
| 80           | 1                 | 801             |
| 96           | 1                 | 961             |
| 112          | 1                 | 1121            |
| 128          | 1                 | 1281            |
| 144          | 1                 | 1441            |
| 160          | 1                 | 1601            |
| 176          | 1                 | 1761            |
| 192          | 1                 | 1921            |
| 208          | 1                 | 2081            |
| 224          | 1                 | 2241            |
| 240          | 1                 | 2401            |
| 256          | 1                 | 2561            |
| 272          | 1                 | 2721            |
| 288          | 1                 | 2881            |
| 304          | 1                 | 3041            |
| 320          | 1                 | 3201            |
| 336          | 1                 | 3361            |
| 352          | 1                 | 3521            |
| 368          | 1                 | 3681            |
| 384          | 1                 | 3841            |
| 400          | 1                 | 4001            |
| 416          | 1                 | 4161            |
| 432          | 1                 | 4321            |
| 448          | 1                 | 4481            |
| 464          | 1                 | 4641            |
| 480          | 1                 | 4801            |
| 496          | 1                 | 4961            |
| 512          | 1                 | 5121            |
| 528          | 1                 | 5281            |
| 544          | 1                 | 5441            |
| 560          | 1                 | 5601            |
| 576          | 1                 | 5761            |
| 592          | 1                 | 5921            |
| 608          | 1                 | 6081            |
| 624          | 1                 | 6241            |
| 640          | 1                 | 6401            |
| 656          | 1                 | 6561            |
| 672          | 1                 | 6721            |
| 688          | 1                 | 6881            |
| 704          | 1                 | 7041            |
| 720          | 1                 | 7201            |
| 736          | 1                 | 7361            |
| 752          | 1                 | 7521            |
| 768          | 1                 | 7681            |
| 784          | 1                 | 7841            |
| 800          | 1                 | 8001            |
| 816          | 1                 | 8161            |
| 832          | 1                 | 8321            |
| 848          | 1                 | 8481            |
| 864          | 1                 | 8641            |
| 880          | 1                 | 8801            |
| 896          | 1                 | 8961            |
| 912          | 1                 | 9121            |
| 928          | 1                 | 9281            |
| 944          | 1                 | 9441            |
| 960          | 1                 | 9601            |
| 976          | 1                 | 9761            |
| 992          | 1                 | 9921            |
| 1008         | 1                 | 10081           |
| 1024         | 1                 | 10241           |
| 1040         | 1                 | 10401           |
| 1056         | 1                 | 10561           |
| 1072         | 1                 | 10721           |
| 1088         | 1                 | 10881           |
| 1104         | 1                 | 11041           |
| 1120         | 1                 | 11201           |
| 1136         | 1                 | 11361           |
| 1152         | 1                 | 11521           |
| 1168         | 1                 | 11681           |
| 1184         | 1                 | 11841           |
| 1200         | 1                 | 12001           |
| 1216         | 1                 | 12161           |
| 1232         | 1                 | 12321           |
| 1248         | 1                 | 12481           |
| 1264         | 1                 | 12641           |
| 1280         | 1                 | 12801           |
| 1296         | 1                 | 12961           |
| 1312         | 1                 | 13121           |
| 1328         | 1                 | 13281           |
| 1344         | 1                 | 13441           |
| 1360         | 1                 | 13601           |
| 1376         | 1                 | 13761           |
| 1392         | 1                 | 13921           |
| 1408         | 1                 | 14081           |
| 1424         | 1                 | 14241           |
| 1440         | 1                 | 14401           |
| 1456         | 1                 | 14561           |
| 1472         | 1                 | 14721           |
| 1488         | 1                 | 14881           |
| 1504         | 1                 | 15041           |
| 1520         | 1                 | 15201           |
| 1536         | 1                 | 15361           |
| 1552         | 1                 | 15521           |
| 1568         | 1                 | 15681           |
| 1584         | 1                 | 15841           |
| 1600         | 1                 | 16001           |
| 1616         | 1                 | 16161           |
| 1632         | 1                 | 16321           |
| 1648         | 1                 | 16481           |
| 1664         | 1                 | 16641           |
| 1680         | 1                 | 16801           |
| 1696         | 1                 | 16961           |
| 1712         | 1                 | 17121           |
| 1728         | 1                 | 17281           |
| 1744         | 1                 | 17441           |
| 1760         | 1                 | 17601           |
| 1776         | 1                 | 17761           |
| 1792         | 1                 | 17921           |
| 1808         | 1                 | 18081           |
| 1824         | 1                 | 18241           |
| 1840         | 1                 | 18401           |
| 1856         | 1                 | 18561           |
| 1872         | 1                 | 18              |

**-XXX**  
=Total  
Number of  
Filled  
Positions

## PLATING OPTION

### PIN OUT CODE

**-S** = 30 $\mu$ " Gold contact, 150 $\mu$ " Tin tail

**-P-** Gold flash over 30 $\mu$ " PdNi on contact,  
150 $\mu$ " Tin on tail

**-17=168 Pins**

-17A =169 Pins

**-14=132 Pins**

-13C=121 Pins

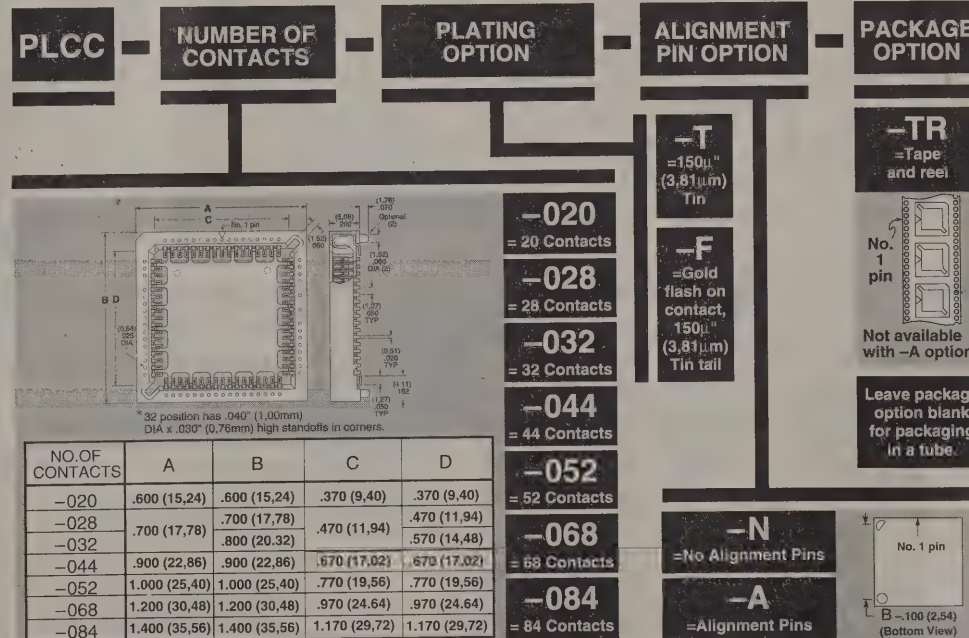
**-13A=121 Pins**

## Specifications

### PLCC



**Insulator Material:** \*  
**Black Liquid Crystal Polymer**  
**Flammability Rating:**  
UL94 V-0  
**Insulation Resistance:**  
5000MΩ min  
**Voltage Withstanding**  
Voltage: 600 VAC  
**Max Processing Temp:**  
230°C for 30 to 60 seconds.  
**Operating Temp Range:**  
-65°C to +105°C  
**Contact Material:** BeCu  
**Plating:** Sn over 50μ" (1,27μm) Ni  
**Current Rating:** 1A  
**Contact Resistance:**  
10mΩ max  
**Lead Coplanarity:**  
Less than 52 leads = .006" (0,15mm) max; 52 leads and more = .008" (0,20 mm) max



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## MINIGLOSSARY

### BASIC ASCII CODE

|    |    |    |    |    |     |     |    |   |   |   |   |     |
|----|----|----|----|----|-----|-----|----|---|---|---|---|-----|
|    |    |    |    | b7 | 0   | 0   | 0  | 0 | 1 | 1 | 1 | 1   |
|    |    |    |    | b6 | 0   | 0   | 1  | 1 | 0 | 0 | 1 | 1   |
|    |    |    |    | b5 | 0   | 1   | 0  | 1 | 0 | 1 | 0 | 1   |
| b4 | b3 | b2 | b1 |    | 0   | 1   | 2  | 3 | 4 | 5 | 6 | 7   |
| 0  | 0  | 0  | 0  | 0  | NUL | DLE | SP | 0 | @ | P | ` | p   |
| 0  | 0  | 0  | 1  | 1  | SOH | DC1 | !  | 1 | A | Q | a | q   |
| 0  | 0  | 1  | 0  | 2  | STX | DC2 | "  | 2 | B | R | b | r   |
| 0  | 0  | 1  | 1  | 3  | ETX | DC3 | #  | 3 | C | S | c | s   |
| 0  | 1  | 0  | 0  | 4  | EOT | DC4 | \$ | 4 | D | T | d | t   |
| 0  | 1  | 0  | 1  | 5  | ENQ | NAK | %  | 5 | E | U | e | u   |
| 0  | 1  | 1  | 0  | 6  | ACK | SYN | &  | 6 | F | V | f | v   |
| 0  | 1  | 1  | 1  | 7  | BEL | ETB | '  | 7 | G | W | g | w   |
| 1  | 0  | 0  | 0  | 8  | BS  | CAN | (  | 8 | H | X | h | x   |
| 1  | 0  | 0  | 1  | 9  | HT  | EM  | )  | 9 | I | Y | i | y   |
| 1  | 0  | 1  | 0  | 10 | LF  | SUB | *  | : | J | Z | j | z   |
| 1  | 0  | 1  | 1  | 11 | VT  | ESC | +  | ; | K | [ | k | {   |
| 1  | 1  | 0  | 0  | 12 | FF  | FS  | ,  | < | L | \ | l |     |
| 1  | 1  | 0  | 1  | 13 | CR  | GS  | -  | = | M | ] | m | }   |
| 1  | 1  | 1  | 0  | 14 | SO  | RS  | .  | > | N | ^ | n | ~   |
| 1  | 1  | 1  | 1  | 15 | SI  | US  | /  | ? | O | _ | o | DEL |

#### Control Character Representations

|      |                            |     |                                |
|------|----------------------------|-----|--------------------------------|
| NUL  | Null                       | DLE | Data Link Escape (CC)          |
| SOH  | Start of Heading (CC)      | DC1 | Device Control 1               |
| STX  | Start of Text (CC)         | DC2 | Device Control 2               |
| ETX  | End of Text (CC)           | DC3 | Device Control 3               |
| EOT  | End of Transmission (CC)   | DC4 | Device Control 4               |
| ENQ  | Enquiry (CC)               | NAK | Negative Acknowledge (CC)      |
| ACK  | Acknowledge (CC)           | SYN | Synchronous Idle (CC)          |
| BEL  | Bell                       | ETB | End of Transmission Block (CC) |
| BS   | Backspace (FE)             | CAN | Cancel                         |
| HT   | Horizontal Tabulation (FE) | EM  | End of Medium                  |
| LF   | Line Feed (FE)             | SUB | Substitute                     |
| VT   | Vertical Tabulation (FE)   | ESC | Escape                         |
| FF   | Form Feed (FE)             | FS  | File Separator (IS)            |
| CR   | Carriage Return (FE)       | GS  | Group Separator (IS)           |
| SO   | Shift Out                  | RS  | Record Separator (IS)          |
| SI   | Shift In                   | US  | Unit Separator (IS)            |
| (CC) | Communication Control      | DEL | Delete                         |
| (FE) | Format Effector            |     |                                |
| (IS) | Information Separator      |     |                                |

#### Special Graphic Characters

|    |                        |   |                                                                            |
|----|------------------------|---|----------------------------------------------------------------------------|
| SP | Space                  | < | Less Than                                                                  |
| !  | Exclamation Point      | = | Equals                                                                     |
| l  | Logical OR             | > | Greater Than                                                               |
| "  | Quotation Marks        | ? | Question Mark                                                              |
| #  | Number Sign            | @ | Commercial At                                                              |
| \$ | Dollar Sign            | [ | Opening Bracket                                                            |
| %  | Percent                | \ | Reverse Slant                                                              |
| &  | Amperсанд              | ] | Closing Bracket                                                            |
| '  | Apostrophe             | ^ | Circumflex                                                                 |
| (  | Opening Parenthesis    | ~ | Logical NOT                                                                |
| )  | Closing Parenthesis    | _ | Underline                                                                  |
| *  | Asterisk               | ` | Grave Accent                                                               |
| +  | Plus                   | { | Opening Brace                                                              |
| ,  | Comma                  |   | Vertical Line (This graphic is stylized to distinguish it from Logical OR) |
| -  | Hyphen (Minus)         | } | Closing Brace                                                              |
| .  | Period (Decimal Point) | ~ | Tilde                                                                      |
| /  | Slant                  |   |                                                                            |
| :  | Colon                  |   |                                                                            |
| ;  | Semicolon              |   |                                                                            |

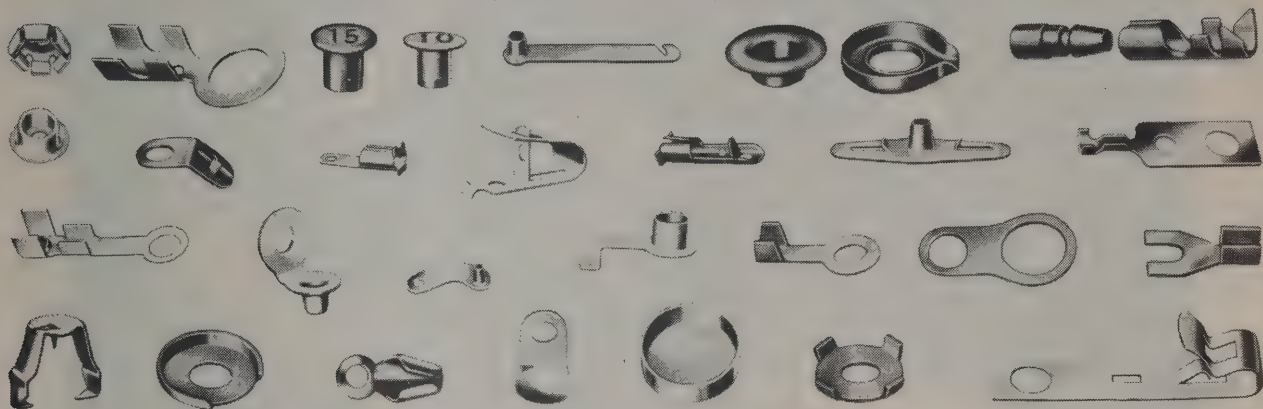


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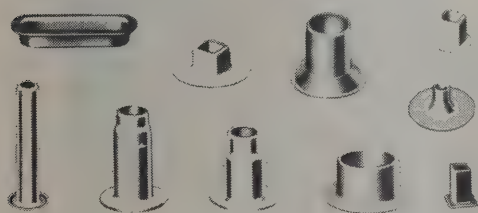
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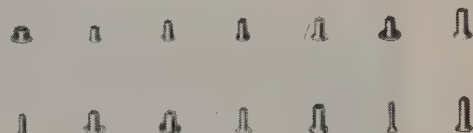
### EYELETS

ANY SHAPE, ANY SIZE, ANY STYLE

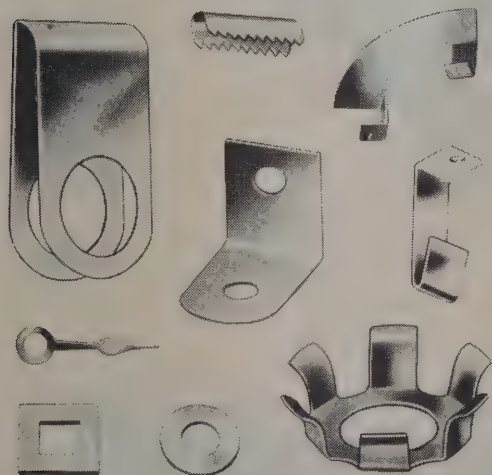


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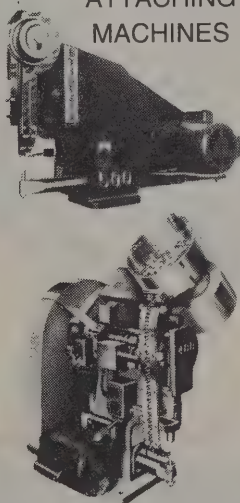
ELECTRONIC MINIATURES



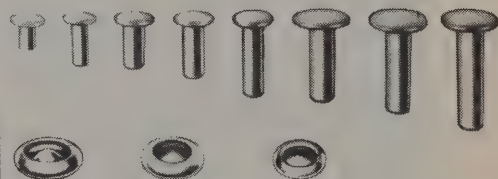
STAMPINGS



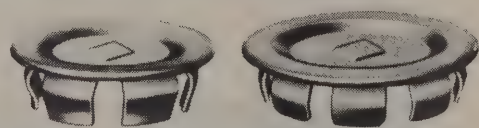
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## FANS & BLOWERS

| Manufacturer        | Starting EEM Page No. | Model/ Series                            | AC | DC | Type |        | Noise dB | Capacity (CFM) |       |         |          | Variable Speed Control | Customized Options |
|---------------------|-----------------------|------------------------------------------|----|----|------|--------|----------|----------------|-------|---------|----------|------------------------|--------------------|
|                     |                       |                                          |    |    | Fan  | Blower |          | 1-49           | 50-99 | 100-499 | 500 & up |                        |                    |
| Advanced Technology | C•1562                | JCL/JCR                                  | ✓  | ✓  | ✓    |        | 31-62    | ✓              | ✓     | ✓       | ✓        | ✓                      |                    |
|                     |                       | AD04                                     |    | ✓  | ✓    |        | 30-32    | ✓              |       |         |          |                        |                    |
|                     |                       | AD06                                     |    | ✓  | ✓    |        | 20-33    | ✓              |       |         |          |                        |                    |
|                     |                       | AD08                                     |    | ✓  | ✓    |        | 23-32    | ✓              |       |         |          |                        |                    |
|                     |                       | AD09                                     |    | ✓  | ✓    |        | 25-40    | ✓              |       |         |          |                        |                    |
|                     |                       | AD12                                     |    | ✓  | ✓    |        | 35-47    |                | ✓     |         |          |                        |                    |
|                     |                       | UF240                                    | ✓  |    |      | ✓      | 50-53    |                |       |         | ✓        | ✓                      |                    |
|                     |                       | UF260                                    | ✓  |    |      | ✓      | 51-53    |                |       |         | ✓        | ✓                      |                    |
|                     |                       | UF280                                    | ✓  |    |      | ✓      | 51-53    |                |       |         | ✓        | ✓                      |                    |
| AMCO Engineering    | C•1574                | BMIA                                     | ✓  |    |      | ✓      | 55       |                |       | ✓       | ✓        | ✓                      |                    |
|                     |                       | BRDS                                     | ✓  |    |      | ✓      | 55       |                |       | ✓       | ✓        | ✓                      |                    |
|                     |                       | BTA4-HF                                  | ✓  |    | ✓    |        | 38       |                | ✓     |         |          |                        |                    |
|                     |                       | BTA4-LF                                  | ✓  |    | ✓    |        | 24       |                | ✓     |         |          |                        |                    |
| Crouzet Corp.       | C•1576                | 120 x 38mm                               | ✓  |    | ✓    |        | 43/48    |                | ✓     |         |          |                        |                    |
|                     |                       | 92 x 25mm                                | ✓  |    | ✓    |        | 36/39    | ✓              |       |         |          |                        |                    |
|                     |                       | 80 x 38mm                                | ✓  |    | ✓    |        | 31/35    | ✓              |       |         |          |                        |                    |
|                     |                       | 80 x 25mm                                | ✓  |    | ✓    |        | 29/33    | ✓              |       |         |          |                        |                    |
|                     |                       | 120 x 38mm                               |    | ✓  | ✓    |        | 49       |                | ✓     | ✓       |          |                        |                    |
|                     |                       | 120 x 38mm ball bearing                  |    | ✓  | ✓    |        | 36       |                | ✓     |         |          |                        |                    |
|                     |                       | 92 x 25mm                                |    | ✓  | ✓    |        | 33       |                | ✓     |         |          |                        |                    |
|                     |                       | 80 x 25mm                                |    | ✓  | ✓    |        | 35       | ✓              |       |         |          |                        |                    |
|                     |                       | 60 x 25mm                                |    | ✓  | ✓    |        | 34       | ✓              |       |         |          |                        |                    |
| EBM Industries      | C•1578                | Tubeaxial                                | ✓  | ✓  | ✓    |        | 30-60    | ✓              | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Axial                                    | ✓  | ✓  | ✓    |        | 30-80    | ✓              | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Impellers                                | ✓  | ✓  |      | ✓      | 28-68    | ✓              | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Centrifugal                              | ✓  | ✓  |      | ✓      |          | ✓              | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Blowers                                  | ✓  | ✓  |      | ✓      | 24-60    | ✓              | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Crossflow                                | ✓  | ✓  | ✓    |        | 30-60    |                | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Fan Trays                                | ✓  | ✓  | ✓    |        | 40-66    |                | ✓     | ✓       | ✓        | ✓                      | ✓                  |
|                     |                       | Flo-Thru-Modules                         | ✓  | ✓  |      |        | 32-58    |                | ✓     | ✓       | ✓        | ✓                      | ✓                  |
| ETRI, Inc.          | C•1585                | 98, 99, 113                              | ✓  |    | ✓    |        | 23       | ✓              |       | ✓       |          | ✓                      |                    |
|                     |                       | 125                                      | ✓  |    | ✓    |        | 8        |                | ✓     | ✓       |          | ✓                      |                    |
|                     |                       | 126                                      | ✓  |    | ✓    |        | 8        |                | ✓     | ✓       |          | ✓                      |                    |
|                     |                       | 141                                      | ✓  |    | ✓    |        |          |                |       | ✓       |          | ✓                      |                    |
|                     |                       | 146                                      |    | ✓  | ✓    |        | 31       | ✓              |       | ✓       |          | ✓                      |                    |
|                     |                       | 148                                      | ✓  |    | ✓    |        | 33-51    |                |       | ✓       |          | ✓                      |                    |
|                     |                       | 159, 162                                 |    | ✓  | ✓    |        | 31       | ✓              |       |         |          | ✓                      |                    |
| IERC                | C•1592                | Active Cooling System Heat Sink Assembly |    |    | ✓    |        |          |                |       |         |          |                        |                    |
| Indek Corp.         | C•1593                | EP                                       | ✓  |    | ✓    |        | 27 ~ 49  | ✓              | ✓     | ✓       |          |                        |                    |
|                     |                       | HDF                                      |    | ✓  | ✓    |        | 19 ~ 50  | ✓              | ✓     | ✓       |          |                        |                    |
|                     |                       | QDF                                      |    | ✓  | ✓    |        | 27 ~ 30  | ✓              |       |         |          |                        |                    |
|                     |                       | SDF                                      |    | ✓  | ✓    |        | 22 ~ 36  | ✓              |       |         |          |                        |                    |
| Keymarc Electronics | C•1598                | San Ace (119mm sq)                       | ✓  |    | ✓    |        | 21/24    | ✓              |       |         |          |                        |                    |
|                     |                       | Mini Ace (92mm sq)                       | ✓  |    | ✓    |        | 21/24    | ✓              |       |         |          |                        |                    |
|                     |                       | Petit Ace (80mm sq)                      | ✓  |    | ✓    |        | 23/28    | ✓              |       |         |          |                        |                    |
|                     |                       | Pico Ace (60mm sq)                       | ✓  |    | ✓    |        | 21/23    | ✓              |       |         |          |                        |                    |
|                     |                       | Dyna Ace (150x172 mm)                    | ✓  |    | ✓    |        | 43/47    |                |       | ✓       |          |                        |                    |
|                     |                       | High Ace (16mm sq)                       | ✓  |    | ✓    |        | 56/60    |                |       | ✓       |          |                        |                    |
|                     |                       | Big Ace (260mm dia)                      | ✓  |    | ✓    |        | 49/53    |                |       |         | ✓        |                        |                    |
|                     |                       | Fine Ace (40mm sq)                       |    | ✓  | ✓    |        | 20       | ✓              |       |         |          |                        |                    |
| McLean Engineering  | C•1606                | Micro Ace (52mm sq)                      |    | ✓  | ✓    |        | 22       | ✓              |       |         |          |                        |                    |
|                     |                       | Pico Ace (60mm sq)                       |    | ✓  | ✓    |        | 20       | ✓              |       |         |          |                        |                    |
| McLean Engineering  | C•1606                | Centrifugal blower                       | ✓  | ✓  |      | ✓      |          | ✓              | ✓     | ✓       | ✓        |                        |                    |
|                     |                       | Packaged blower                          | ✓  | ✓  |      | ✓      |          | ✓              | ✓     | ✓       | ✓        | ✓                      |                    |
| McLean Midwest      | C•1608                | Card cooler                              |    |    |      |        |          |                |       |         |          |                        |                    |
|                     |                       | FF-0516-001                              | ✓  |    | ✓    |        | 42       | ✓              |       |         |          |                        |                    |
|                     |                       | FF-0526-001                              | ✓  |    | ✓    |        | 42       |                |       |         |          |                        |                    |
|                     |                       | FF-0916-001                              | ✓  |    | ✓    |        | 51       |                | ✓     |         |          |                        |                    |
|                     |                       | FF-0926-001                              | ✓  |    | ✓    |        | 51       |                |       |         |          |                        |                    |
|                     |                       | FF-1016-001                              | ✓  |    | ✓    |        | 52       |                |       | ✓       |          |                        |                    |
|                     |                       | FF-1026-001                              | ✓  |    | ✓    |        | 52       |                |       | ✓       |          |                        |                    |
|                     |                       | FF-1316-001                              | ✓  |    | ✓    |        | 70       |                |       | ✓       |          |                        |                    |
|                     |                       | FF-1326-001                              | ✓  |    | ✓    |        | 70       |                |       | ✓       |          |                        |                    |

## FANS & BLOWERS (cont'd.)

| Manufacturer           | Starting EEM Page No. | Model/ Series                                              | AC | DC | Type |        | Noise dB | Capacity (CFM) |       |         |          | Variable Speed Control | Customized Options |
|------------------------|-----------------------|------------------------------------------------------------|----|----|------|--------|----------|----------------|-------|---------|----------|------------------------|--------------------|
|                        |                       |                                                            |    |    | Fan  | Blower |          | 1-49           | 50-99 | 100-499 | 500 & up |                        |                    |
| Mechatronics Inc.      | C•1610                | F4012                                                      |    | ✓  | ✓    |        | 21-25    | ✓              |       |         |          |                        |                    |
|                        |                       | F4020                                                      |    | ✓  | ✓    |        | 23-32    | ✓              |       |         |          |                        |                    |
|                        |                       | F6025                                                      |    | ✓  | ✓    |        | 22-36    | ✓              |       |         |          | ✓                      |                    |
|                        |                       | F8025                                                      |    | ✓  | ✓    |        | 20-32    | ✓              |       |         |          | ✓                      |                    |
|                        |                       | E9225                                                      |    | ✓  | ✓    |        | 24-39    | ✓              | ✓     |         |          | ✓                      |                    |
|                        |                       | E1225                                                      |    | ✓  | ✓    |        | 28-44    | ✓              | ✓     |         |          | ✓                      |                    |
|                        |                       | F1238                                                      |    | ✓  | ✓    |        | 34-43    |                | ✓     | ✓       |          | ✓                      |                    |
|                        |                       | 2412PS                                                     | ✓  |    | ✓    |        | 29       | ✓              |       |         |          |                        |                    |
|                        |                       | 3110PS                                                     | ✓  |    | ✓    |        | 33       | ✓              |       |         |          |                        |                    |
|                        |                       | 3115PS                                                     | ✓  |    | ✓    |        | 25-44    | ✓              |       |         |          |                        |                    |
|                        |                       | 3610PS                                                     | ✓  |    | ✓    |        | 25-38    | ✓              |       |         |          |                        |                    |
|                        |                       | 4710PS                                                     | ✓  |    | ✓    |        | 30-38    |                | ✓     |         |          |                        |                    |
|                        |                       | 4715NS/PS                                                  | ✓  |    | ✓    |        | 28-46    |                | ✓     | ✓       |          |                        |                    |
|                        |                       | 5915PC                                                     | ✓  |    | ✓    |        | 38-56    |                |       | ✓       |          |                        |                    |
| Metuchen Capacitors    | C•1617                | 40 MM                                                      |    | ✓  | ✓    |        | 28       |                |       |         |          |                        |                    |
|                        |                       | 60 MM                                                      |    | ✓  | ✓    |        | 30       |                |       |         |          |                        |                    |
| Micronel U.S.          | C•1618                | D240                                                       |    | ✓  | ✓    |        | 37       | ✓              |       |         |          | ✓                      |                    |
|                        |                       | D/300/350/360                                              |    | ✓  | ✓    |        | 41-52    | ✓              |       |         |          | ✓                      |                    |
|                        |                       | D460                                                       |    | ✓  | ✓    |        | 28       | ✓              |       |         |          |                        |                    |
|                        |                       | D480                                                       |    | ✓  | ✓    |        | 55       | ✓              |       |         |          |                        |                    |
|                        |                       | D570/580                                                   |    | ✓  | ✓    |        | 27       | ✓              |       |         |          |                        |                    |
|                        |                       | D590/600                                                   |    | ✓  | ✓    | ✓      | 56       |                | ✓     |         |          |                        |                    |
|                        |                       | F41LM/MM                                                   |    | ✓  | ✓    |        | 22       | ✓              |       |         |          |                        |                    |
|                        |                       | F62LM/MM                                                   |    | ✓  | ✓    |        | 23-38    | ✓              |       |         |          |                        |                    |
|                        |                       | F75/F80                                                    |    | ✓  | ✓    |        | 23-41    | ✓              |       |         |          |                        |                    |
|                        |                       | F62LM/MM                                                   |    | ✓  | ✓    |        | 20-26    | ✓              |       |         |          |                        |                    |
| Musashino Corp.        | C•1627                | 0615                                                       |    | ✓  | ✓    |        | 30       | ✓              |       |         |          |                        |                    |
|                        |                       | 0620                                                       |    | ✓  | ✓    |        | 33       | ✓              |       |         |          |                        |                    |
|                        |                       | 0815                                                       |    | ✓  | ✓    |        | 32       | ✓              |       |         |          |                        |                    |
| NMB Technologies       | C•1630                |                                                            | ✓  | ✓  | ✓    |        | 25-56    | ✓              | ✓     | ✓       |          |                        |                    |
|                        |                       |                                                            |    | ✓  | ✓    |        | 20-52    | ✓              | ✓     | ✓       |          |                        |                    |
| Papst Mechatronic      | C•1632                | 600/3400/8400                                              |    | ✓  | ✓    |        | 21-40    | ✓              |       |         |          | ✓                      |                    |
|                        |                       | 800/3300/3400/8300/8400                                    |    | ✓  | ✓    |        | 21-40    | ✓              |       |         |          | ✓                      |                    |
|                        |                       | 800/3300/3400/4100/4300/4400/6200/8100/8300/8400/RL Series |    | ✓  | ✓    | ✓      | 21-55    | ✓              | ✓     | ✓       |          | ✓                      |                    |
|                        |                       | 3900/2500/4600/                                            | ✓  |    | ✓    |        | 21-60    | ✓              | ✓     | ✓       |          |                        |                    |
|                        |                       |                                                            |    |    |      |        |          |                |       |         |          |                        |                    |
| Qualtek Electronics    | C•1638                | Guards<br>Filters<br>Cords                                 |    |    |      |        |          |                |       |         |          |                        |                    |
| Rodale Technical Sales | C•1640                | A1215HTS                                                   | ✓  |    | ✓    |        | 48       |                |       | ✓       |          |                        |                    |
|                        |                       | A08M15HWS                                                  | ✓  |    | ✓    |        | 35       | ✓              |       |         |          |                        |                    |
|                        |                       | D12M12HWS                                                  |    | ✓  | ✓    |        | 46       |                |       | ✓       |          |                        |                    |
|                        |                       | D12M12LWS                                                  |    | ✓  | ✓    |        | 36       |                |       |         |          |                        |                    |
|                        |                       | D09T12HWS                                                  |    | ✓  | ✓    |        | 33       |                | ✓     |         |          |                        |                    |
|                        |                       | D08T12HWS                                                  |    | ✓  | ✓    |        | 35       | ✓              |       |         |          |                        |                    |
|                        |                       | D06T12HWS                                                  |    | ✓  | ✓    |        | 34       | ✓              |       |         |          |                        |                    |
|                        |                       | D04T12HWS                                                  |    | ✓  | ✓    |        | 30       | ✓              |       |         |          |                        |                    |
| TUS, Electronics       | C•1649                | 0615                                                       |    | ✓  | ✓    |        | 30       | ✓              |       |         |          |                        |                    |
|                        |                       | 0620                                                       |    | ✓  | ✓    |        | 33       | ✓              |       |         |          |                        |                    |
|                        |                       | 0815                                                       |    | ✓  | ✓    |        | 32       | ✓              |       |         |          |                        |                    |
|                        |                       |                                                            |    |    |      |        |          |                |       |         |          |                        |                    |
| U.S. Toyo Fan Corp.    | C•1652                | TF120                                                      | ✓  |    | ✓    |        | 35       |                |       | ✓       |          | ✓                      |                    |
|                        |                       | TFDD120                                                    |    | ✓  | ✓    |        | 39       |                |       | ✓       |          |                        |                    |
|                        |                       | UST120                                                     | ✓  |    | ✓    |        | 38       |                |       | ✓       |          |                        |                    |
|                        |                       | TF92                                                       | ✓  |    | ✓    |        | 36       | ✓              |       |         |          |                        |                    |
|                        |                       | TFDD92                                                     |    | ✓  | ✓    |        | 28       | ✓              |       |         |          | ✓                      |                    |
|                        |                       | UST92                                                      | ✓  |    | ✓    |        | 35       | ✓              |       |         |          |                        |                    |
|                        |                       | TF80                                                       | ✓  |    | ✓    |        | 32       | ✓              |       |         |          |                        |                    |



## AIR CONDITIONERS, COOLERS, HEAT PUMPS, HEAT SINKS

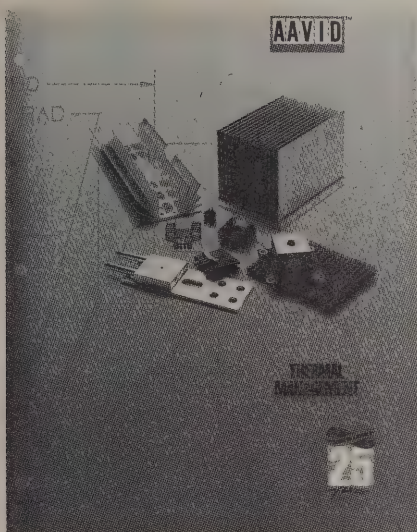
| Manufacturer            | Starting EEM Page No. | Type of System                                                                                                                           | Model/Series                                                                                                          | Capacity Cooling (BTU/hr.)                                                                                            | Features/Applications                                                                                                                                                                                         |
|-------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aavid Engineering       | C•1561                | PCB heat sinks<br>Extruded head sinks<br>Liquid cold plates<br>Liquid chill blocks<br>Bonded fin assemblies<br><br>Heat sink accessories | JEDEC packages<br>JEDEC and modules<br>Modules<br>Press packs<br>Modules, press packs,<br>JEDEC, etc.<br>Various      | Low & medium power<br>Medium & high power<br>Medium & high power<br>Medium & high power<br>Medium & high power        | Standard & custom design<br>Standard & custom design<br>Standard & custom design<br>Standard & custom design<br>Standard & custom design<br><br>Kon-Dux, Rubber-Duc, Tin Tabs,<br>Kool Klips, In-Sil-8 pads   |
| Control Resources, Inc. | C•1575                | AC speed controllers<br>DC speed controllers<br>Temperature alarms<br>Fan/blower speed alarms                                            | AC-N<br>Omni S-DC<br>Hot Spot<br>Tach alarm                                                                           |                                                                                                                       | Reduce acoustical noise<br>Regulate temperature<br>Monitor system temperature<br>Monitor fan/blower speed custom engineering                                                                                  |
| EG & G Wakefield        | C•1580                | Heat sinks<br>Heat sinks<br>Heat sinks<br>Heat exchangers<br>Liquid cold plates<br>Accessories<br>Custom cold plates                     | Standard & custom<br>Standard<br>Standard<br>Standard<br>Standard<br>Various<br>Custom                                | 1-1000 watts<br>1-25 watts<br>1-6 watts<br>720 Series<br>180 Series<br><br>100-2,000 watts                            | Power transistors, SCRs<br>Microprocessors, ICs<br>Deltem™ for PQFPs, PLCCs<br>Liquid-to-air for system cooling<br>For system cooling<br>Thermal compounds, pads, adhesives<br>For system cooling             |
| IERC                    | C•1592                | PGA Heat sinks<br>Heat sink with fan<br>Extruded heat sinks<br>Standard heat sinks<br><br>PCB retainers<br>Machined coldwalls            | JEDEC packaging<br>21 x 21 pin PGAs<br>Standard & custom<br>JEDEN packaging<br><br>ZIF I, II, & III<br>Custom designs | Low & medium power<br>Medium-high power<br>Low & medium power<br>Low & medium power<br><br>1.2°C/w/inch<br>High power | High speed CPUs/Clip attachment<br>Large scale $\mu$ Ps<br>High power dissipating components<br>TO-3, TO-66, TO-5, TO-220,<br>TO-18, TO-8, DIPs, SCRs<br>MIL-approved, easy use<br>Incorporates PCB retainers |
| ITI Ferrotec            | C•1597                | Thermoelectric coolers<br>Solid state heat pumps                                                                                         | 6300<br>9500                                                                                                          | (See catalog pages)                                                                                                   | Ability to cool below ambient<br>High temperature capability                                                                                                                                                  |
| Marlow Industries       | C•1602                | Thermoelectric coolers<br>Heat pumps                                                                                                     |                                                                                                                       |                                                                                                                       | Solid state cooling and heating<br>(No moving parts)                                                                                                                                                          |

## AIR CONDITIONERS, COOLERS, HEAT PUMPS, HEAT SINKS (cont'd)

| Manufacturer     | Starting EEM Page No. | Type of System                                                                                       | Model/Series                                                                                                                                                                                                                                   | Capacity Cooling (BTU/hr.)                                                                      | Features/Applications                                                                                                                                                                                                                                                              |
|------------------|-----------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| McLean Midwest   | C•1608                | Vertical mount air conditioner                                                                       | 13-0116-014, 13-0116-114<br>17-02216-009<br>24-0216-007, 28-0216-013,<br>CR29-0216-002<br>28-0416-007, 33-0416-010,<br>CR29-0416-002<br>36-0616-136, 36-0616-307<br>CR43-0616-002<br>52-0816-032<br>C1243-0816-002<br>52-1016-038, 52-1216-017 | 1000, 1200<br>1800<br>2000<br><br>4000<br><br>6000<br>6100<br>8000<br>8500<br>10000, 12000      | Cooling of electronic components inside NEMA 12, 4, 4X enclosures in industrial environments                                                                                                                                                                                       |
| Melcor           | C•1613                | Thermoelectric/peltier heat pump                                                                     | FC<br>CP<br>Cascades                                                                                                                                                                                                                           | 0.2-9.0 watts<br>1.0-125 watts<br>0.4-60 Watts                                                  | Solid state miniature spot cooling<br>Solid state high capacity cooling<br>Solid state large temperature differential                                                                                                                                                              |
| R-Theta          | C•1643                | Heat sinks                                                                                           |                                                                                                                                                                                                                                                |                                                                                                 |                                                                                                                                                                                                                                                                                    |
| TECA             | C•1644                | Americool<br>Chiller<br>Cold plate<br>Liquid cooled AC<br>Air cooled AC                              | 2-4000<br>ALC-750<br>AHP-1000CP<br>LHP-1700FF<br>AHP-1801X                                                                                                                                                                                     | 1-3000<br>750<br>560<br>1500<br>1500                                                            | High capacity<br>Laser/fluid cooling<br>Sample cooler<br>Explosive environments<br>NEMA 4X hostile environments                                                                                                                                                                    |
| Thermalloy, Inc. | C•1646                | Heat sink with fan<br>Heat sinks<br><br>Extruded heat sinks<br><br>Pin Fin heat sinks<br>Accessories | TCM's<br>Standard & custom<br><br>Standard & custom<br><br>2300 Series<br>Various                                                                                                                                                              | Medium & high power<br>Low & medium power<br><br>Medium & high power<br><br>Medium & high power | Near recirculated liquid efficiency<br>Plastic case transistors, surface mount, T0-5, T0-8, T0-18, axial lead diode, etc.<br>DC-DC converters, ASICs, power semi-conductors, modular SCR's, DIP's, SIP's, etc.<br>Gate arrays/ASICs<br>Insulators, plastics, labor-saving options. |



# World's largest selection of extruded and stamped heat sinks and other THERMAL MANAGEMENT SOLUTIONS



## 112-PAGE FULL LINE CATALOG

### Design and technical capabilities

Aavid can apply any thermal management discipline to meet your design requirements. No one else has our depth of experience in providing innovative, cost-effective solutions to complex thermal management problems. Our extensive thermal and mechanical CAD abilities are available to help satisfy your specific needs. Ask for application support.

### Hundreds of standard heat sinks for PCBs

- For TO-3, TO-8, TO-18, TO-66, TO-92, TO-126, TO-127, TO-202, TO-218, TO-220, TO-247, TO-251 devices, etc.
- For pin grid array (PGA) packages: Intel 80486, Motorola 68040, etc.
- For leadless chip carrier sockets.
- For DIPs (plastic and ceramic), SIPs, and multiwatts.

### Labor-saving options

- **New Shur-Lock™ tabs** ensure stability during wave soldering.
- **Spring clips** for mounting plastic power devices to heat sinks without bolts.
- **Interface pads**, grease free.
- **Tabs and standoffs**. Hot tin solder dipped for mounting heat sinks to PCBs.

### Over 3000 standard extrusion profiles

Aavid offers the most complete selection of extruded heat sinks in the world. Some of the most unusual and complex extruded heat sinks are available. They are designed to cool all kinds of semiconductors—from power transistors to high-current SCRs, rectifiers, solid state relays and power modules.

### Standard fabricated extrusions

Many standard fabricated extrusions are available for cooling press packs (hockey pucks), stud-mount devices, power modules, DC-DC converters, TO-3s and other high-power JEDEC packages.

### Forced convection coolers

Optimum thermal performance and low air flow resistance. Maximum heat transfer per ounce at minimum cost.

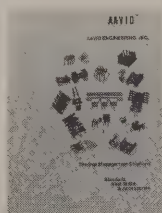
### High power cooling products

- **Bonded-fin** heat sinks. 2-4 times more cooling per unit volume, lighter weight, and more design flexibility than extrusions.
- **Folded-fin** heat sinks. Lightest weight product for heavy-duty cooling.
- **Epoxy isolation** systems. Isolated heat spreaders and multi-piece isolation assemblies. High thermal conductivity.
- **Liquid-cooled** cold plates and bus bars. 10-30 times more cooling than air.
- **Clamps** for press pack semiconductors.
- **Heat pipe** assemblies.

### Total manufacturing, fabricating, bonding, finishing

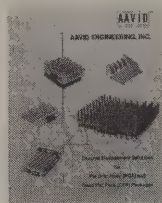
Aavid's capabilities go far beyond the usual stamping, extruding, casting and machining technologies, such as:

- Metallurgical, adhesive and mechanical bonding.
- Surface coating of all kinds.
- EDM machining, lapping, vibratory tumbling.



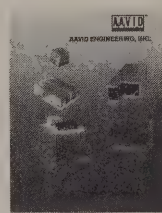
### BOARD-LEVEL SELECTOR GUIDE

Board-level heat sinks and other cooling devices. Focuses on quick attachment products that reduce assembly costs.



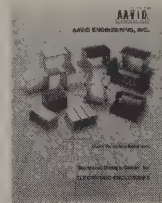
### HEAT SINKS FOR PGAs

For Intel 80486 and Motorola 68040 PGAs. Mount quickly with PGA-Klips™, double-face tape, socket-based clips, etc.



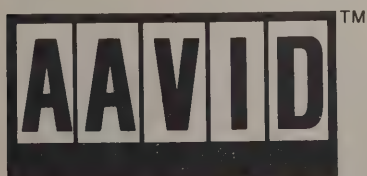
### BONDED FIN HEAT SINKS

With standard base plates, you get fast prototypes. 2-4 times more cooling per unit volume, and lighter weight.



### EXTRUDED ELECTRONIC ENCLOSURES

Extruded aluminum enclosures in many sizes and shapes. Improve product appearance at lower packaging cost.



**AAVID ENGINEERING, INC.**

#### USA - EAST:

One Kool Path, Laconia, NH 03247-0400  
TEL: 603-528-3400 • FAX: 603-528-1478

#### USA - WEST:

3030 Kilson Dr., Santa Ana, CA 92707-4203  
TEL: 714-556-2665 • FAX: 714-556-5140

#### EUROPE:

Aavid Engineering, Ltd.  
26 Hockerill Ct., London Rd., Bishop's  
Stortford, Herts. CM23 5SB, England  
TEL: (0279) 757259 • FAX: (0279) 507986

#### ASIA:

Aavid Engineering (S) Pte. Ltd.  
20 Tagore Lane, Singapore 2678  
TEL: (65) 452-8827 • FAX: (65) 456-5595



Advanced Technology Company

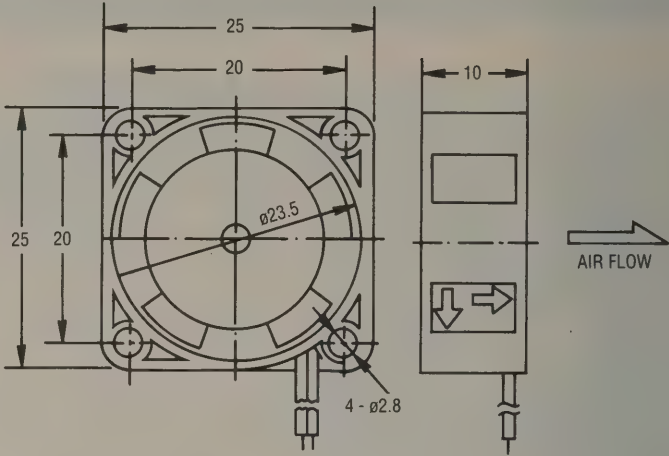
1280 LIBERTY WAY, VISTA, CA 92083 U.S.A. • 619-727-7430 • FAX 619-727-4436

AD02

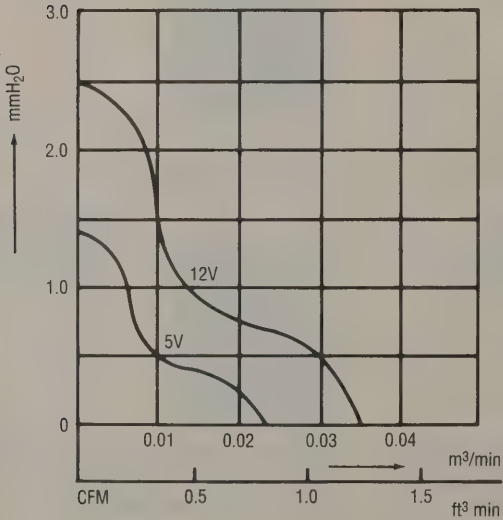
25 X 25 X 10

SPOT COOLING, ALSO SUITABLE FOR SMALL SPACE REQUIREMENTS-LAP-TOPS PC'S AND NOTEBOOK, PC.

| VOLTAGE AVAILABLE |    |    |    |
|-------------------|----|----|----|
| 5                 | 12 | 24 | 48 |
| X                 | X  |    |    |



| MODEL        | NOMINAL VOLTAGE (V) | INPUT CURRENT (A) | INPUT POWER (W) | SPEED (rpm) | AIR FLOW (CFM) | STATIC PRESSURE (INCH-H2O) | NOISE LEVEL (dB A) | WEIGHT (g) |
|--------------|---------------------|-------------------|-----------------|-------------|----------------|----------------------------|--------------------|------------|
| AD0205HB-G51 | 5                   | .02               | 0.45            | 8000        | 0.8            | 0.06                       | 25                 | 8          |
| AD0212HB-G51 | 12                  | .08               | 0.96            | 8000        | 1.13           | 0.1                        | 29                 | 8          |



| Type                       |        | AD0205HB-G51 |
|----------------------------|--------|--------------|
| Rated Voltage (V)          |        | 5            |
| Rated Current (A)          | Locked | 0.20         |
|                            | Moved  | 0.09         |
| Max. Air Flow (m³/min)     |        | 0.023        |
| Max. Air Pressure (mmH₂O)  |        | 1.4          |
| Noise (dB) at 1m           |        | 25           |
| Operating Voltage (V)      |        | 4.5 - 5.5    |
| Operating Temperature (°C) |        | -10 - +60    |
| Life Expectancy (h)        |        | 30,000       |
| Weight (g)                 |        | 8            |

| Type                       |        | AD0212HB-G51 |
|----------------------------|--------|--------------|
| Rated Voltage (V)          |        | 12           |
| Rated Current (A)          | Locked | 0.20         |
|                            | Moved  | 0.08         |
| Max. Air Flow (m³/min)     |        | 0.035        |
| Max. Air Pressure (mmH₂O)  |        | 2.5          |
| Noise (dB) at 1m           |        | 29           |
| Operating Voltage (V)      |        | 10.2 - 13.8  |
| Operating Temperature (°C) |        | -10 - +60    |
| Life Expectancy (h)        |        | 30,000       |
| Weight (g)                 |        | 8            |

NOTE: THE BEARING TYPE IS NOTED AT THE EIGHTH PLACE IN THE PART NUMBER. "S"—FOR SLEEVE AND "B"—FOR BALL. BOTH TYPES ARE AVAILABLE.

LIFE EXPECTANCY: BALL BEARINGS 50K/HRS AT 25°C, 65%RH. SLEEVE BEARINGS 20K/HRS AT 25°C, 65%RH.

WARRANTY: FAN MOTORS ARE WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF DELIVERY.

SAFETY APPROVALS UL E132139 CSA LR85488 \* APPLIED UL





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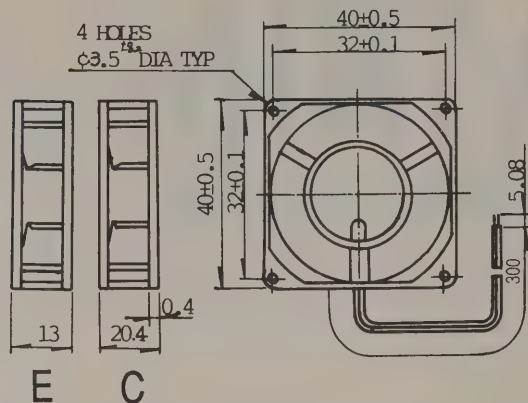
# AD04

40 × 40 × 13

40 × 40 × 20

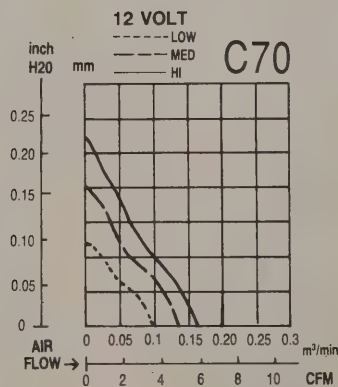
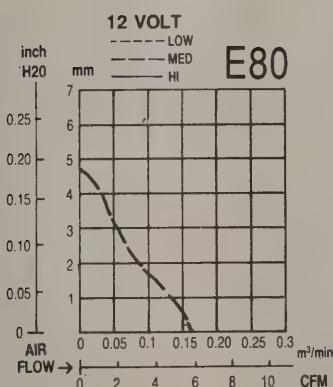
SPOT COOLING, ALSO SUITABLE FOR  
SMALL SPACE REQUIREMENTS-LAP-  
TOPS AND PC'S

| VOLTAGE AVAILABLE        |                                     |                          |                          |
|--------------------------|-------------------------------------|--------------------------|--------------------------|
| 5                        | 12                                  | 24                       | 48                       |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



E C

| MODEL        | VOLTAGE<br>(V) | CURRENT<br>(Amp) | POWER<br>(W) | SPEED<br>(rpm) | AIR FLOW<br>(CFM) | STATIC<br>PRESSURE<br>(INCH-H <sub>2</sub> O) | SOUND<br>LEVEL<br>(dB A) | WEIGHT<br>(g) |
|--------------|----------------|------------------|--------------|----------------|-------------------|-----------------------------------------------|--------------------------|---------------|
| AD0412MS-E80 | 12             | 0.05             | 0.60         | 6000           | 5.3               | 0.18                                          | 30.0                     | 15.6          |
| AD0412LS-C70 | 12             | 0.10             | 1.20         | 5000           | 3.2               | 0.095                                         | 25.5                     | 33.8          |
| AD0412MS-C70 | 12             | 0.13             | 1.56         | 6000           | 4.2               | 0.160                                         | 29.0                     |               |
| AD0412HS-C70 | 12             | 0.15             | 1.8          | 7000           | 5.2               | 0.225                                         | 32.5                     |               |



**NOTE:** THE BEARING TYPE IS NOTED AT THE EIGHTH PLACE IN THE PART NUMBER. "S"—FOR SLEEVE AND "B"—FOR BALL. BOTH TYPES ARE AVAILABLE.

**LIFE EXPECTANCY:** BALL BEARINGS 50K/HRS AT 25°C, 65%RH. SLEEVE BEARINGS 20K/HRS AT 25°C, 65%RH.

**WARRANTY:** FAN MOTORS ARE WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF DELIVERY.

SAFETY APPROVALS UL E132139 CSA LR85488 \* APPLIED UL



# Advanced Technology Company

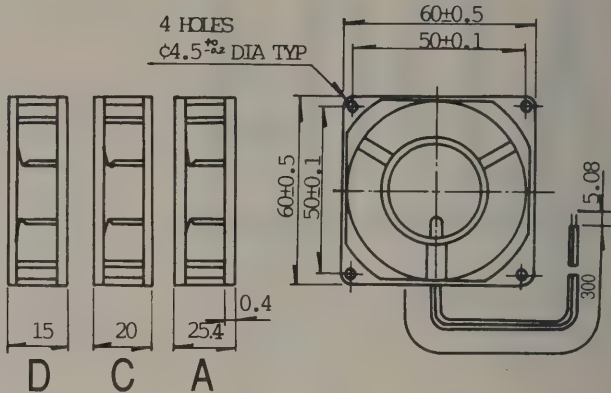
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# AD06

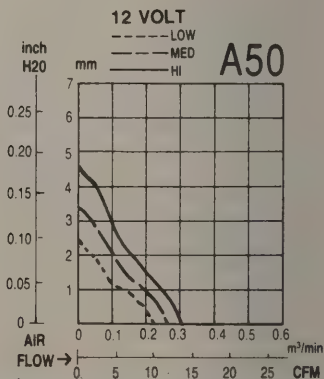
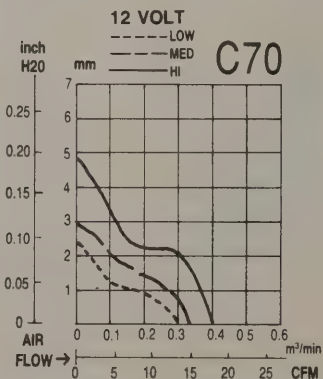
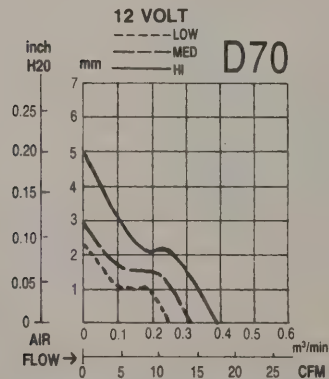
60 × 60 × 15  
60 × 60 × 20  
60 × 60 × 25

SUITABLE FOR PC'S WORD  
PROCESSORS TEST EQUIPMENT  
AND POWER SUPPLIES.

| VOLTAGE AVAILABLE |    |    |    |
|-------------------|----|----|----|
| 5                 | 12 | 24 | 48 |
|                   | X  | X  |    |



|   | MODEL        | VOLTAGE<br>(V) | CURRENT<br>(Amp) | POWER<br>(W) | SPEED<br>(rpm) | AIR FLOW<br>(CFM) | STATIC<br>PRESSURE<br>(INCH-H2O) | SOUND<br>LEVEL<br>(dB A) | WEIGHT<br>(g) |
|---|--------------|----------------|------------------|--------------|----------------|-------------------|----------------------------------|--------------------------|---------------|
| * | AD0612LS-D70 | 12             | 0.10             | 1.20         | 3500           | 11.5              | 0.10                             | 20.0                     | 20.0          |
| * | AD0612MS-D70 | 12             | 0.07             | 0.84         | 3900           | 13.1              | 0.11                             | 23.0                     |               |
| * | AD0612HS-D70 | 12             | 0.08             | 0.96         | 4500           | 16.7              | 0.17                             | 27.0                     |               |
|   | AD0612LS-C70 | 12             | 0.10             | 1.20         | 3500           | 13.6              | 0.10                             | 21.0                     | 49.2          |
|   | AD0612MS-C70 | 12             | 0.07             | 0.84         | 3900           | 14.1              | 0.12                             | 25.0                     |               |
|   | AD0612HS-C70 | 12             | 0.08             | 0.96         | 4500           | 17.7              | 0.19                             | 29.0                     |               |
|   | AD0612LS-A50 | 12             | 0.09             | 1.08         | 3500           | 10.0              | 0.100                            | 27.5                     | 68.0          |
|   | AD0612MS-A50 | 12             | 0.11             | 1.32         | 3900           | 11.5              | 0.14                             | 31.0                     |               |
|   | AD0612HS-A50 | 12             | 0.13             | 1.80         | 4500           | 13.6              | 0.185                            | 33.0                     |               |
| * | AD0624LS-D70 | 24             | 0.08             | 1.92         | 3400           | 10.5              | 0.10                             | 21.0                     | 20.0          |
| * | AD0624MS-D70 | 24             | 0.10             | 2.40         | 3700           | 13.5              | 0.12                             | 25.0                     |               |
| * | AD0624HS-D70 | 24             | 0.07             | 1.68         | 4300           | 16.7              | 0.19                             | 29.0                     |               |
|   | AD0624MS-C70 | 24             | 0.10             | 2.40         | 3700           | 14.1              | 0.12                             | 25.0                     | 49.2          |
|   | AD0624HS-C70 | 24             | 0.07             | 1.68         | 4300           | 17.7              | 0.19                             | 29.0                     |               |
|   | AD0624MS-A50 | 24             | 0.10             | 1.20         | 3900           | 14.1              | 0.12                             | 25.0                     |               |
|   | AD0624HS-A50 | 24             | 0.07             | 1.68         | 4500           | 17.7              | 0.19                             | 29.0                     | 68.0          |



**NOTE:** THE BEARING TYPE IS NOTED AT THE EIGHTH PLACE IN THE PART NUMBER. "S"—FOR SLEEVE AND "B"—FOR BALL. BOTH TYPES ARE AVAILABLE.

**LIFE EXPECTANCY:** BALL BEARINGS 50K/HRS AT 25°C, 65%RH. SLEEVE BEARINGS 20K/HRS AT 25°C, 65%RH.

**WARRANTY:** FAN MOTORS ARE WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF DELIVERY.

**SAFETY APPROVALS** UL E132139 CSA LR85488 \* APPLIED UL





# Advanced Technology Company

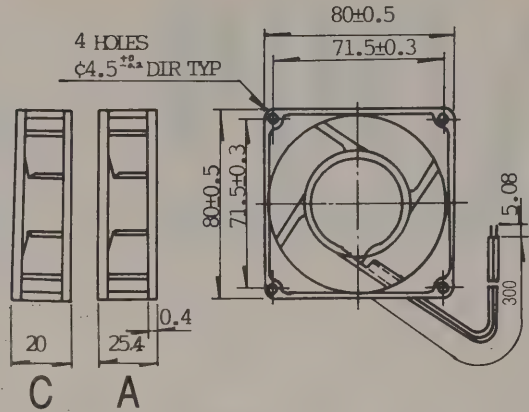
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# AD08

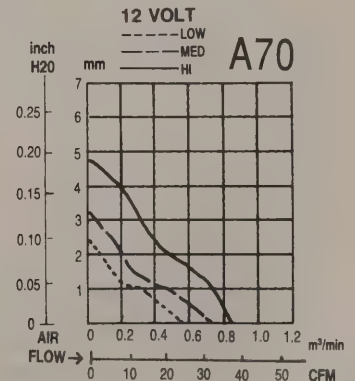
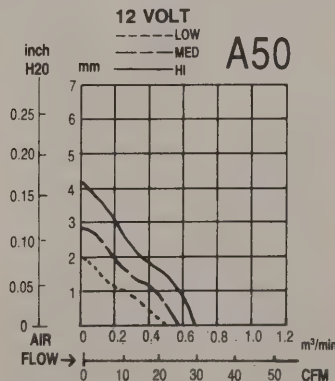
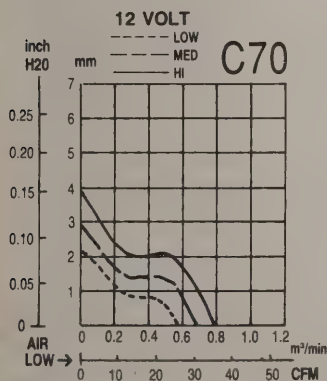
80 × 80 × 20  
80 × 80 × 25-5  
80 × 80 × 25-7

LARGER AIR FLOW LOWER NOISE.  
SUITABLE FOR POWER SUPPLIES  
AND MEASURING INSTRUMENTS.

| VOLTAGE AVAILABLE |    |    |    |  |
|-------------------|----|----|----|--|
| 5                 | 12 | 24 | 48 |  |
|                   | X  | X  |    |  |



|   | MODEL        | VOLTAGE<br>(V) | CURRENT<br>(Amp) | POWER<br>(W) | SPEED<br>(rpm) | AIR FLOW<br>(CFM) | STATIC PRESSURE<br>(INCH-H2O) | SOUND LEVEL<br>(dB A) | WEIGHT<br>(g) |
|---|--------------|----------------|------------------|--------------|----------------|-------------------|-------------------------------|-----------------------|---------------|
| * | AD0812LS-C70 | 12             | 0.09             | 1.08         | 2030           | 26.5              | 0.07                          | 23.0                  | 70.1          |
| * | AD0812MS-C70 | 12             | 0.12             | 1.44         | 2440           | 30.0              | 0.10                          | 27.0                  |               |
| * | AD0812HS-C70 | 12             | 0.17             | 2.04         | 3010           | 37.1              | 0.15                          | 32.0                  |               |
|   | AD0812LS-A50 | 12             | 0.10             | 1.20         | 2100           | 21.0              | 0.08                          | 25.0                  | 108.8         |
|   | AD0812MS-A50 | 12             | 0.12             | 1.44         | 2550           | 25.0              | 0.12                          | 30.0                  |               |
|   | AD0812HS-A50 | 12             | 0.17             | 2.04         | 3000           | 30.0              | 0.165                         | 36.0                  |               |
|   | AD0812LS-A70 | 12             | 0.09             | 1.08         | 2030           | 26.5              | 0.07                          | 23.0                  | 83.2          |
|   | AD0812MS-A70 | 12             | 0.12             | 1.44         | 2440           | 30.0              | 0.10                          | 27.0                  |               |
|   | AD0812HS-A70 | 12             | 0.17             | 2.04         | 3010           | 37.1              | 0.15                          | 32.0                  |               |
| * | AD0824LS-C70 | 24             | 0.08             | 1.92         | 2030           | 26.5              | 0.07                          | 23.0                  | 70.1          |
| * | AD0824MS-C70 | 24             | 0.12             | 2.88         | 2440           | 30.0              | 0.10                          | 27.0                  |               |
| * | AD0824HS-C70 | 24             | 0.17             | 4.08         | 3010           | 37.1              | 0.15                          | 32.0                  |               |
|   | AD0824LS-A50 | 24             | 0.08             | 1.92         | 2100           | 26.0              | 0.10                          | 25.0                  | 108.8         |
|   | AD0824MS-A50 | 24             | 0.10             | 2.40         | 2550           | 31.0              | 0.13                          | 27.0                  |               |
|   | AD0824HS-A50 | 24             | 0.12             | 2.88         | 3000           | 36.0              | 0.18                          | 29.0                  |               |
| * | AD0824LS-A70 | 24             | 0.08             | 1.92         | 2030           | 26.5              | 0.07                          | 23.0                  | 83.2          |
| * | AD0824MS-A70 | 24             | 0.12             | 2.88         | 2440           | 30.0              | 0.10                          | 27.0                  |               |
| * | AD0824HS-A70 | 24             | 0.17             | 4.08         | 3010           | 37.1              | 0.15                          | 32.0                  |               |



**NOTE:** THE BEARING TYPE IS NOTED AT THE EIGHTH PLACE IN THE PART NUMBER. "S"—FOR SLEEVE AND "B"—FOR BALL. BOTH TYPES ARE AVAILABLE.

**LIFE EXPECTANCY:** BALL BEARINGS 50K/HRS AT 25°C, 65%RH. SLEEVE BEARINGS 20K/HRS AT 25°C, 65%RH.

**WARRANTY:** FAN MOTORS ARE WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF DELIVERY.

**SAFETY APPROVALS** UL E132139 CSA LR85488 \* APPLIED UL



# Advanced Technology Company

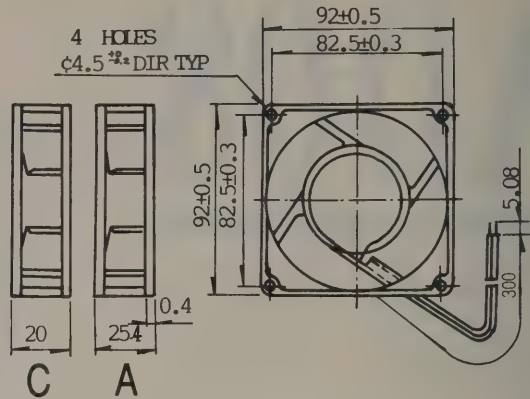
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# AD09

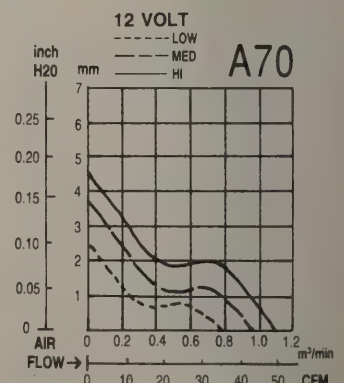
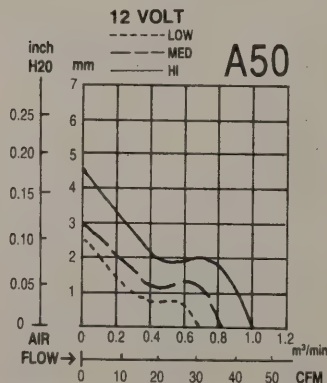
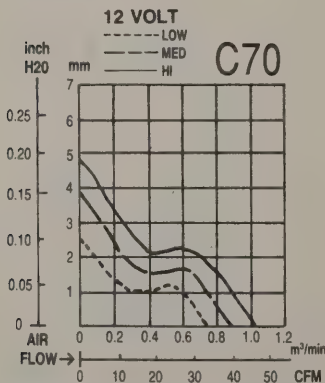
90 × 90 × 20  
90 × 90 × 25-5  
90 × 90 × 25-7

THIS FAN IS SUITABLE FOR LARGE  
AIR FLOW, LOW NOISE APPLICATION  
PERIPHERALS.

| VOLTAGE AVAILABLE |    |    |    |
|-------------------|----|----|----|
| 5                 | 12 | 24 | 48 |
|                   | X  | X  |    |



|   | MODEL        | VOLTAGE<br>(V) | CURRENT<br>(Amp) | POWER<br>(W) | SPEED<br>(rpm) | AIR FLOW<br>(CFM) | STATIC PRESSURE<br>(INCH-H2O) | SOUND LEVEL<br>(dB A) | WEIGHT<br>(g) |
|---|--------------|----------------|------------------|--------------|----------------|-------------------|-------------------------------|-----------------------|---------------|
| * | AD0912LS-C70 | 12             | 0.13             | 1.56         | 2030           | 34.6              | 0.09                          | 25.0                  | 85.1          |
| * | AD0912MS-C70 | 12             | 0.16             | 1.92         | 2430           | 41.7              | 0.14                          | 30.0                  |               |
| * | AD0912HS-C70 | 12             | 0.22             | 2.64         | 2740           | 47.7              | 0.17                          | 33.0                  |               |
|   | AD0912LS-A50 | 12             | 0.15             | 1.8          | 2100           | 31.5              | 0.10                          | 31.0                  | 124.6         |
|   | AD0912MS-A50 | 12             | 0.18             | 2.16         | 2550           | 37.0              | 0.12                          | 35.0                  |               |
|   | AD0912HS-A50 | 12             | 0.26             | 3.12         | 3000           | 43.0              | 0.17                          | 40.0                  |               |
|   | AD0912LS-A70 | 12             | 0.13             | 1.56         | 2030           | 34.6              | 0.09                          | 25.0                  | 99.0          |
|   | AD0912MS-A70 | 12             | 0.16             | 1.92         | 2430           | 41.7              | 0.14                          | 30.0                  |               |
|   | AD0912HS-A70 | 12             | 0.22             | 2.64         | 2740           | 47.7              | 0.17                          | 33.0                  |               |
| * | AD0924LS-C70 | 24             | 0.08             | 1.92         | 2030           | 34.6              | 0.09                          | 25.0                  | 85.9          |
| * | AD0924MS-C70 | 24             | 0.10             | 2.40         | 2430           | 41.7              | 0.14                          | 30.0                  |               |
| * | AD0924HS-C70 | 24             | 0.10             | 2.40         | 2740           | 47.7              | 0.17                          | 33.0                  |               |
|   | AD0924LS-A50 | 24             | 0.10             | 2.40         | 2100           | 31.5              | 0.11                          | 27.0                  | 124.6         |
|   | AD0924MS-A50 | 24             | 0.12             | 2.88         | 2550           | 37.0              | 0.15                          | 30.0                  |               |
|   | AD0924HS-A50 | 24             | 0.14             | 3.36         | 3000           | 43.0              | 0.19                          | 32.0                  |               |
| * | AD0924LS-A70 | 24             | 0.10             | 1.92         | 2030           | 34.6              | 0.09                          | 25.0                  | 99.0          |
| * | AD0924MS-A70 | 24             | 0.10             | 2.40         | 2430           | 41.7              | 0.14                          | 30.0                  |               |
| * | AD0924HS-A70 | 24             | 0.08             | 2.40         | 2740           | 47.7              | 0.17                          | 33.0                  |               |



**NOTE:** THE BEARING TYPE IS NOTED AT THE EIGHTH PLACE IN THE PART NUMBER. "S"—FOR SLEEVE AND "B"—FOR BALL. BOTH TYPES ARE AVAILABLE.

**LIFE EXPECTANCY:** BALL BEARINGS 50K/HRS AT 25°C, 65%RH. SLEEVE BEARINGS 20K/HRS AT 25°C, 65%RH.

**WARRANTY:** FAN MOTORS ARE WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF DELIVERY.

**SAFETY APPROVALS** UL E132139 CSA LR85488 \* APPLIED UL





# Advanced Technology Company

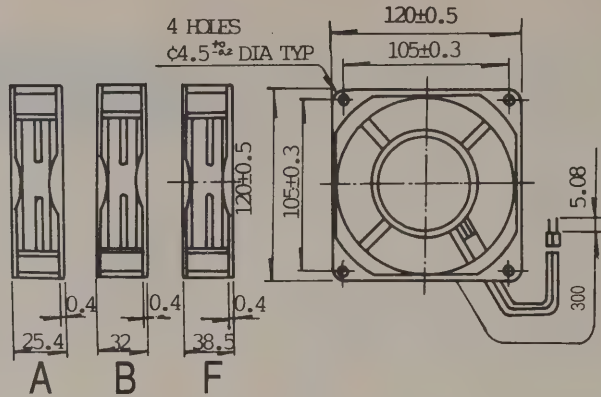
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# AD12

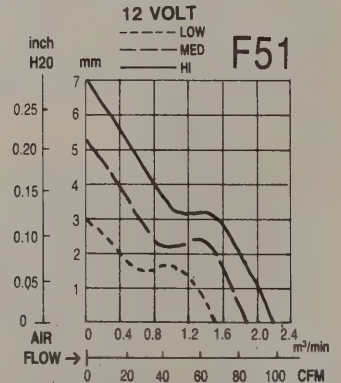
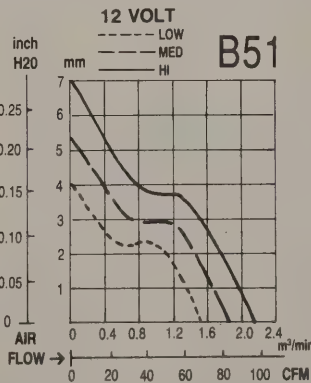
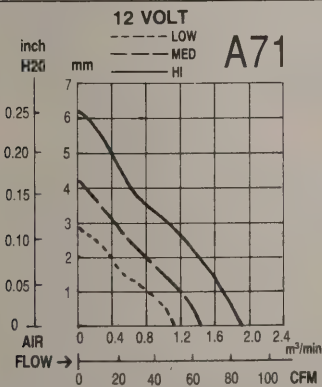
120 × 120 × 25  
120 × 120 × 32  
120 × 120 × 38.5

IDEA FOR COPY MACHINES & COMPUTERS

| VOLTAGE AVAILABLE        |                                     |                                     |                                     |
|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 5                        | 12                                  | 24                                  | 48                                  |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |



| MODEL          | VOLTAGE<br>(V) | CURRENT<br>(Amp) | POWER<br>(W) | SPEED<br>(rpm) | AIR FLOW<br>(CFM) | STATIC PRESSURE<br>(INCH-H <sub>2</sub> O) | SOUND LEVEL<br>(dB A) | WEIGHT<br>(g) |
|----------------|----------------|------------------|--------------|----------------|-------------------|--------------------------------------------|-----------------------|---------------|
| AD1212LS-A71   | 12             | 0.14             | 1.44         | 1650           | 52.9              | 0.11                                       | 35.0                  | 156.0         |
| AD1212MS-A71   | 12             | 0.20             | 2.04         | 1950           | 67.0              | 0.17                                       | 40.0                  |               |
| AD1212HS-A71   | 12             | 0.34             | 3.72         | 2400           | 84.7              | 0.25                                       | 45.0                  |               |
| * AD1212LS-B51 | 12             | 0.25             | 3.0          | 1950           | 70.6              | 0.15                                       | 35.0                  | 222.8         |
| * AD1212MS-B51 | 12             | 0.35             | 4.20         | 2540           | 84.7              | 0.21                                       | 40.0                  |               |
| * AD1212HS-B51 | 12             | 0.45             | 5.40         | 2800           | 95.35             | 0.29                                       | 47.0                  |               |
| * AD1212LS-F51 | 12             | 0.24             | 2.88         | 1950           | 67.0              | 0.12                                       | 34.0                  | 270.8         |
| * AD1212MS-F51 | 12             | 0.35             | 4.20         | 2540           | 84.7              | 0.21                                       | 40.0                  |               |
| * AD1212HS-F51 | 12             | 0.45             | 5.40         | 2800           | 95.35             | 0.29                                       | 47.0                  |               |
| AD1224LS-A71   | 24             | 0.20             | 1.92         | 1650           | 52.9              | 0.11                                       | 35.0                  | 156.0         |
| AD1224MS-A71   | 24             | 0.12             | 2.80         | 1950           | 67.0              | 0.17                                       | 40.0                  |               |
| AD1224HS-A71   | 24             | 0.19             | 4.32         | 2400           | 84.7              | 0.25                                       | 45.0                  |               |
| * AD1224LS-B51 | 24             | 0.10             | 2.40         | 1950           | 70.6              | 0.15                                       | 35.0                  | 222.8         |
| * AD1224MS-B51 | 24             | 0.20             | 4.80         | 2540           | 84.7              | 0.21                                       | 40.0                  |               |
| * AD1224HS-B51 | 24             | 0.30             | 7.20         | 2800           | 95.35             | 0.29                                       | 47.0                  |               |
| * AD1224LS-F51 | 24             | 0.14             | 3.36         | 1950           | 67.0              | 0.13                                       | 34.0                  | 270.8         |
| * AD1224MS-F51 | 24             | 0.21             | 5.04         | 2540           | 84.75             | 0.21                                       | 40.0                  |               |
| * AD1224HS-F51 | 24             | 0.27             | 6.48         | 2800           | 95.35             | 0.29                                       | 47.0                  |               |



**NOTE:** THE BEARING TYPE IS NOTED AT THE EIGHTH PLACE IN THE PART NUMBER. "S"—FOR SLEEVE AND "B"—FOR BALL. BOTH TYPES ARE AVAILABLE.

**LIFE EXPECTANCY:** BALL BEARINGS 50K/HRS AT 25°C, 65%RH. SLEEVE BEARINGS 20K/HRS AT 25°C, 65%RH.

**WARRANTY:** FAN MOTORS ARE WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR FROM DATE OF DELIVERY.

**SAFETY APPROVALS** UL E132139 CSA LR85488 \* APPLIED UL



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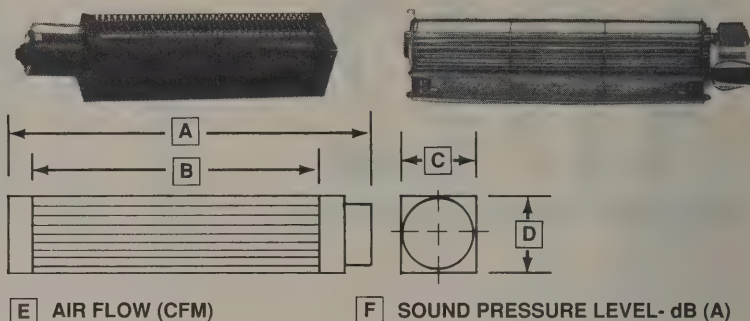
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## CROSS FLOW FAN

### APPLICATIONS

- Air Movers
- Rack Cooling
- Main Frames
- Copy Machines
- Electronic Cabinets

All Advanced Technology Cross Flow Fans are custom assembled from standard subassemblies. Rotor speeds, CFM, noise levels and motor voltages can be varied to meet our customer special requirements.



| SERIES |                             | 30 mm AR ROTOR<br>110/220 V. (AC)<br>SHADED POLE MOTOR |      |       |       | 33 mm AR ROTOR<br>12 VDC, 24 VDC,<br>BRUSHLESS<br>DC MOTOR |       |                                                      |       | 40 mm AR ROTOR<br>110/220 V. (AC)<br>SHADED POLE MOTOR |       |       |       |
|--------|-----------------------------|--------------------------------------------------------|------|-------|-------|------------------------------------------------------------|-------|------------------------------------------------------|-------|--------------------------------------------------------|-------|-------|-------|
| A      | OVERALL LENGTH              | 6.62                                                   | 8.59 | 10.56 | 14.5  | 6.50                                                       | 8.47  | 10.44                                                | 14.38 | 7.53                                                   | 10.68 | 14.62 |       |
| B      | AIR FLOW LENGTH             | 3.94                                                   | 5.91 | 7.88  | 11.82 | 4.26                                                       | 6.23  | 8.20                                                 | 12.14 | 4.73                                                   | 7.88  | 11.82 |       |
| C      | WIDTH                       | 2.52                                                   | 2.52 | 2.52  | 2.52  | 1.77                                                       | 1.77  | 1.77                                                 | 1.77  | 2.36                                                   | 2.36  | 2.36  |       |
| D      | HEIGHT                      | 1.97                                                   | 1.97 | 1.97  | 1.97  | 1.77                                                       | 1.77  | 1.77                                                 | 1.77  | 2.36                                                   | 2.36  | 2.36  |       |
| E      | AIR FLOW (CFM)              | 14                                                     | 24.5 | 31.5  | 56    | 38.5                                                       | 56    | 80.5                                                 | 100   | 31.5                                                   | 49    | 73.5  |       |
| F      | SOUND PRESSURE LEVEL dB (A) | 31                                                     | 31   | 32    | 35    | 43                                                         | 43    | 43                                                   | 47    | 39                                                     | 40    | 43    |       |
| SERIES |                             | 50 mm AR ROTOR<br>110/220 V. (AC)<br>SHADED POLE MOTOR |      |       |       |                                                            |       | 50 mm AR ROTOR<br>110/220 V. (AC)<br>CAPACITOR MOTOR |       |                                                        |       |       |       |
| A      | OVERALL LENGTH              | 7.40                                                   | 8.59 | 8.98  | 12.14 | 14.50                                                      | 16.86 | 8.20                                                 | 9.38  | 10.56                                                  | 12.92 | 15.29 | 17.65 |
| B      | AIR FLOW LENGTH             | 4.73                                                   | 5.91 | 7.09  | 9.46  | 11.82                                                      | 14.18 | 4.73                                                 | 5.91  | 7.09                                                   | 9.46  | 11.82 | 14.18 |
| C      | WIDTH                       | 3.35                                                   | 3.35 | 3.35  | 3.35  | 3.35                                                       | 3.35  | 2.84                                                 | 2.84  | 2.84                                                   | 2.84  | 2.84  | 2.84  |
| D      | HEIGHT                      | 2.76                                                   | 2.76 | 2.76  | 2.76  | 2.76                                                       | 2.76  | 2.76                                                 | 2.76  | 2.76                                                   | 2.76  | 2.76  | 2.76  |
| E      | AIR FLOW (CFM)              | 38.5                                                   | 49   | 56    | 77    | 94.5                                                       | 101.5 | 70                                                   | 84    | 98                                                     | 105   | 161   | 178.5 |
| F      | SOUND PRESSURE LEVEL dB (A) | 43                                                     | 40   | 38    | 39    | 41                                                         | 42    | 52                                                   | 53    | 54                                                     | 54    | 53    | 53    |
| SERIES |                             | 60 mm AR ROTOR<br>110/220 V. (AC)<br>SHADED POLE MOTOR |      |       |       |                                                            |       | 60 mm AR ROTOR<br>110/220 V. (AC)<br>CAPACITOR MOTOR |       |                                                        |       |       |       |
| A      | OVERALL LENGTH              | 7.64                                                   | 8.83 | 10.80 | 12.37 | 14.74                                                      | 17.10 | 8.59                                                 | 9.77  | 10.95                                                  | 13.32 | 15.68 | 18.05 |
| B      | AIR FLOW LENGTH             | 4.81                                                   | 5.99 | 7.17  | 9.53  | 11.90                                                      | 14.26 | 4.73                                                 | 5.91  | 7.09                                                   | 9.46  | 11.82 | 14.18 |
| C      | WIDTH                       | 3.74                                                   | 3.74 | 3.74  | 3.74  | 3.74                                                       | 3.74  | 3.15                                                 | 3.15  | 3.15                                                   | 3.15  | 3.15  | 3.15  |
| D      | HEIGHT                      | 3.23                                                   | 3.23 | 3.23  | 3.23  | 3.23                                                       | 3.23  | 3.15                                                 | 3.15  | 3.15                                                   | 3.15  | 3.15  | 3.15  |
| E      | AIR FLOW (CFM)              | 42                                                     | 52.5 | 66.5  | 84    | 129.5                                                      | 136.5 | 70                                                   | 87.5  | 87.5                                                   | 112   | 105   | 126   |
| F      | SOUND PRESSURE LEVEL dB (A) | 39                                                     | 40   | 42    | 38    | 47                                                         | 43    | 54                                                   | 56    | 56                                                     | 56    | 53    | 53    |

Rotor Material (AR) Aluminum (PR) Plastic





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| SERIES |                             | 90 mm PR ROTOR<br>110 V. (AC)<br>CAPACITOR MOTOR      |       |       |                                                      |       |       |       |       |                                                      |                                                       |       |       |
|--------|-----------------------------|-------------------------------------------------------|-------|-------|------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------|-------------------------------------------------------|-------|-------|
| A      | OVERALL LENGTH              | 8.43                                                  | 11.98 | 15.52 | 19.07                                                | 22.62 | 26.56 | 28.96 |       |                                                      |                                                       |       |       |
| B      | AIR FLOW LENGTH             | 3.43                                                  | 6.97  | 10.52 | 14.07                                                | 17.61 | 21.55 | 23.52 |       |                                                      |                                                       |       |       |
| C      | WIDTH                       | 5.00                                                  | 5.00  | 5.00  | 5.00                                                 | 5.00  | 5.00  | 5.00  |       |                                                      |                                                       |       |       |
| D      | HEIGHT                      | 5.07                                                  | 5.07  | 5.07  | 5.07                                                 | 5.07  | 5.07  | 5.07  |       |                                                      |                                                       |       |       |
| E      | AIR FLOW (CFM)              | 70                                                    | 112   | 185.5 | 252                                                  | 287   | 374.5 | 406   |       |                                                      |                                                       |       |       |
| F      | SOUND PRESSURE LEVEL dB (A) | 43                                                    | 44    | 46    | 47                                                   | 46    | 49    | 50    |       |                                                      |                                                       |       |       |
| SERIES |                             | 90 mm AR ROTOR<br>110 V. (AC)<br>CAPACITOR MOTOR      |       |       |                                                      |       |       |       |       |                                                      |                                                       |       |       |
| A      | OVERALL LENGTH              | 8.83                                                  | 10.80 | 11.98 | 14.34                                                | 16.71 | 19.07 | 21.43 | 24.59 | 28.53                                                |                                                       |       |       |
| B      | AIR FLOW LENGTH             | 4.61                                                  | 5.80  | 6.97  | 9.34                                                 | 11.70 | 14.07 | 16.42 | 19.58 | 23.52                                                |                                                       |       |       |
| C      | WIDTH                       | 5.00                                                  | 5.00  | 5.00  | 5.00                                                 | 5.00  | 5.00  | 5.00  | 5.00  | 5.00                                                 |                                                       |       |       |
| D      | HEIGHT                      | 5.07                                                  | 5.07  | 5.07  | 5.07                                                 | 5.07  | 5.07  | 5.07  | 5.07  | 5.07                                                 |                                                       |       |       |
| E      | AIR FLOW (CFM)              | 91                                                    | 101.5 | 112   | 178.5                                                | 217   | 252   | 283.5 | 357   | 423.5                                                |                                                       |       |       |
| F      | SOUND PRESSURE LEVEL dB (A) | 43                                                    | 44    | 44    | 46                                                   | 46    | 47    | 47    | 49    | 49                                                   |                                                       |       |       |
| SERIES |                             | 90 mm PR ROTOR<br>110 V. (AC)<br>CAPACITOR MOTOR      |       |       | 90 mm AR ROTOR<br>110/220 V. (AC)<br>CAPACITOR MOTOR |       |       |       |       | 90 mm AR ROTOR<br>110/220 V. (AC)<br>CAPACITOR MOTOR |                                                       |       |       |
| A      | OVERALL LENGTH              | 16.90                                                 | 21.28 | 23.88 | 10.87                                                | 13.24 | 15.60 | 17.97 | 20.33 | 22.69                                                | 25.84                                                 | 29.79 |       |
| B      | AIR FLOW LENGTH             | 4.11                                                  | 18.44 | 20.80 | 9.46                                                 | 11.82 | 14.18 | 16.55 | 18.91 | 21.28                                                | 24.43                                                 | 28.37 |       |
| C      | WIDTH                       | 4.93                                                  | 4.93  | 4.93  | 4.93                                                 | 4.93  | 4.93  | 4.93  | 4.93  | 4.93                                                 | 4.93                                                  | 4.93  |       |
| D      | HEIGHT                      | 5.12                                                  | 5.12  | 5.12  | 5.12                                                 | 5.12  | 5.12  | 5.12  | 5.12  | 5.12                                                 | 5.12                                                  | 5.12  |       |
| E      | AIR FLOW (CFM)              | 227.5                                                 | 385   | 420   | 80.2                                                 | 126   | 168   | 196   | 245   | 392                                                  | 465.5                                                 | 563.5 |       |
| F      | SOUND PRESSURE LEVEL dB (A) | 52                                                    | 53    | 54    | 61                                                   | 61    | 62    | 62    | 63    | 54                                                   | 54                                                    | 55    |       |
| SERIES |                             | 110 mm AR ROTOR<br>110/220 V. (AC)<br>CAPACITOR MOTOR |       |       |                                                      |       |       |       |       |                                                      | 140 mm AR ROTOR<br>110/220 V. (AC)<br>CAPACITOR MOTOR |       |       |
| A      | OVERALL LENGTH              | 8.16                                                  | 9.34  | 10.91 | 13.28                                                | 16.04 | 18.40 | 20.76 | 24.03 | 27.97                                                | 16.98                                                 | 25.81 | 30.93 |
| B      | AIR FLOW LENGTH             | 4.61                                                  | 5.79  | 6.97  | 9.34                                                 | 11.70 | 14.07 | 16.43 | 19.58 | 23.52                                                | 10.52                                                 | 18.40 | 23.52 |
| C      | WIDTH                       | 6.40                                                  | 6.40  | 6.40  | 6.40                                                 | 6.40  | 6.40  | 6.40  | 6.40  | 6.40                                                 | 8.27                                                  | 8.27  | 8.27  |
| D      | HEIGHT                      | 6.19                                                  | 6.19  | 6.19  | 6.19                                                 | 6.19  | 6.19  | 6.19  | 6.19  | 6.19                                                 | 7.71                                                  | 7.71  | 7.71  |
| E      | AIR FLOW (CFM)              | 84                                                    | 112   | 140   | 182                                                  | 217   | 301   | 385   | 455   | 630                                                  | 385                                                   | 700   | 910   |
| F      | SOUND PRESSURE LEVEL dB (A) |                                                       |       |       |                                                      |       |       |       |       |                                                      | 58                                                    | 60    | 62    |

Rotor Material (AR) Aluminum (PR) Plastic



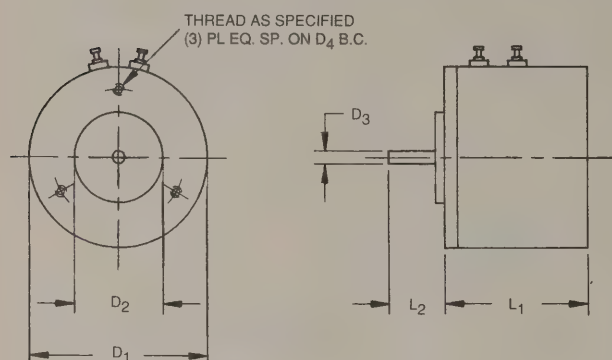
# Advanced Technology Company

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Advanced Technology Company's extensive experience and technical expertise in development and design of high performance electro-magnetic devices has been utilized to develop the products below. Our appreciation of the customer's system performance

requirements, thermal constraints, mechanical interfaces, and cost factors allows Advanced Technology Company to offer unique solutions to your electro-magnetic device needs. Try us.

## BRUSHLESS D.C. MOTORS — UNI DIRECTIONAL

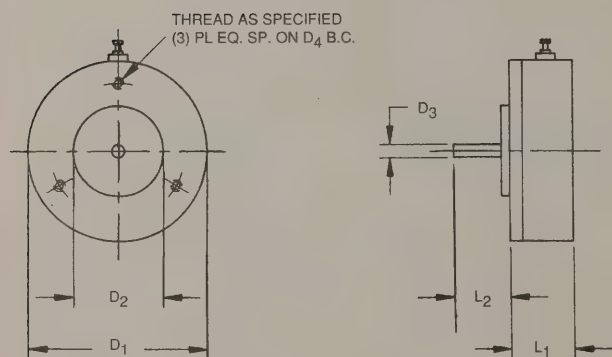


| PARAMETER  | BME-1300<br>-090 |       | BME-1500<br>-120 |       | BME-1700<br>-145 |       |
|------------|------------------|-------|------------------|-------|------------------|-------|
| VOLTAGE    | 12               | 24    | 12               | 24    | 12               | 24    |
| BACK EMF * | 0.013            | 0.026 | 0.026            | 0.052 | 0.021            | 0.042 |
| O.P. SPEED | 5600             | 5600  | 2800             | 2800  | 3500             | 3500  |
| DIMENSIONS |                  |       |                  |       |                  |       |
| D-1        | 1.3              |       | 1.5              |       | 1.70             |       |
| D-2        | 0.625            |       | 0.75             |       | 0.875            |       |
| D-3        | 0.79             |       | 0.118            |       | 0.118            |       |
| D-4        | 0.875            |       | 1.00             |       | 1.250            |       |
| L-1        | 0.9              |       | 1.20             |       | 1.45             |       |
| L-2        | 0.45             |       | 0.45             |       | 0.55             |       |

\*VOLT SEC/RADIAN

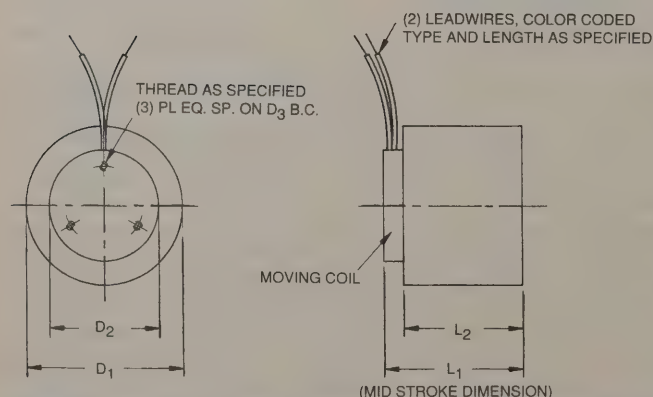
O.P. = OPERATING POWER SPEED

## BRUSHLESS D.C. LIMITED ANGLE TORQUER



| PARAMETER            | UNITS | 1125<br>-10 | 2000<br>-160 | 2500<br>-140 | 3500<br>-150 | 4000<br>-130 |
|----------------------|-------|-------------|--------------|--------------|--------------|--------------|
| PEAK TORQUE          | IN OZ | 2.0         | 22.0         | 15.0         | 56.0         | 42.0         |
| POWER @<br>Tp, 25 OZ | WATTS | 23          | 150          | 24           | 62           | 68           |
| ANGULAR<br>ROTATION  |       | 60          | 60           | 45           | 60           | 40           |
| DIMENSIONS           |       |             |              |              |              |              |
| D-1                  | 1.125 | 2.000       | 2.500        | 3.500        | 4.000        |              |
| D-2                  | 0.600 | 0.875       | 1.000        | 1.500        | 2.000        |              |
| D-3                  | 0.125 | 0.187       | 0.250        | 0.250        | 0.250        |              |
| D-4                  | 0.750 | 1.250       | 1.500        | 2.000        | 3.000        |              |
| L-1                  | 1.00  | 1.60        | 1.40         | 1.50         | 1.30         |              |
| L-2                  | 0.50  | 0.50        | 0.50         | 0.50         | 0.50         |              |

## LINEAR VOICE COIL ACTUATOR



| PARAMETER           | 1500<br>-150                  | 2000<br>-250 | 2500<br>-200 | 3000<br>-350 | 3500<br>-400 | 4000<br>-500 |
|---------------------|-------------------------------|--------------|--------------|--------------|--------------|--------------|
| PEAK FORCE LBS.     | 3.0                           | 6.0          | 7.0          | 15.0         | 18.0         | 22.0         |
| POWER @<br>Fp WATTS | 25.0                          | 50.0         | 70.0         | 200.         | 200.         | 220.         |
| STROKE IN.          | 0.05                          | 0.08         | 0.08         | 0.10         | 0.10         | 0.10         |
| DIMENSIONS          |                               |              |              |              |              |              |
| D-1                 | 1.50                          | 2.00         | 2.50         | 3.00         | 3.50         | 3.50         |
| D-2                 | PER CUSTOMER'S SPECIFICATIONS |              |              |              |              |              |
| L-1                 | 1.50                          | 2.50         | 2.00         | 3.50         | 4.00         | 5.00         |
| L-2                 | 1.25                          | 2.20         | 1.60         | 3.00         | 3.50         | 4.40         |





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## UFO FAN SERIES



UF-240



UF-260



UF-280

The new series of UFO Fans utilize a high efficiency - forward curved centrifugal impeller directly driven by two-phase capacitor run motors operating on 115/220 - 50/60 Hz power.

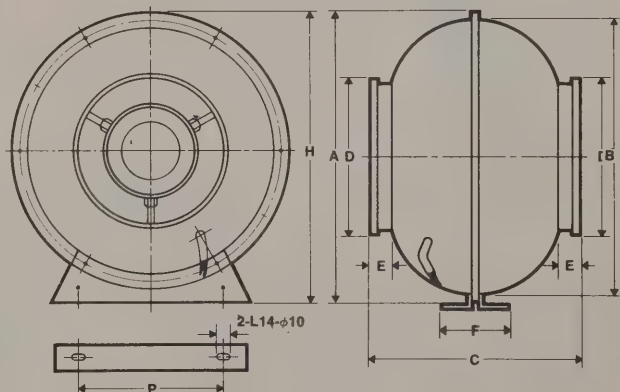
The unique design impeller-housing assembly results in high pressure capability over-wide range of flow values. (See pressure flow curves below.) Variable speed controls available.

### DIMENSIONS

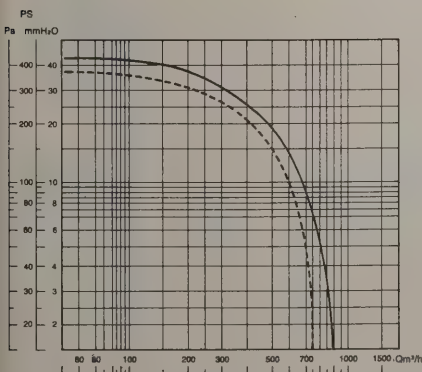
| Model  | A     | B     | C     | D    | E    | H     | W    | P    | F    |
|--------|-------|-------|-------|------|------|-------|------|------|------|
| UF-240 | 10.44 | 9.57  | 10.52 | 4.02 | 1.00 | 10.84 | 1.38 | 6.30 | 2.36 |
| UF-260 | 12.02 | 10.91 | 8.35  | 6.03 | 1.00 | 12.41 | 1.38 | 6.30 | 2.48 |
| UF-280 | 13.87 | 12.69 | 9.38  | 8.00 | 1.00 | 14.25 | 1.42 | 7.10 | 2.56 |

### SPECIFICATIONS (50/60 Hz)

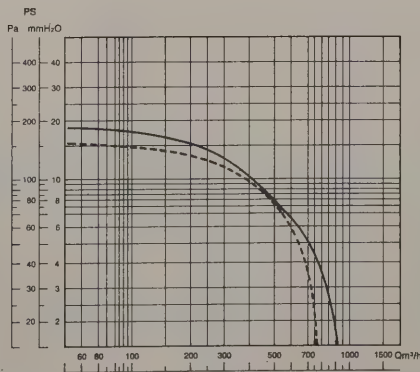
| Model  | A<br>Ampere | RPM<br>Revolution | m <sup>3</sup> /min<br>Velocity | mm W.G.<br>Pressure | db<br>Noise |
|--------|-------------|-------------------|---------------------------------|---------------------|-------------|
| UF-240 | 0.8/0.85    | 2800/2900         | 12/14                           | 38/40               | 51/53       |
| UF-260 | 0.5/0.4     | 1400/1630         | 12/15                           | 16/18               | 50/52       |
| UF-280 | 0.85/0.9    | 1390/1590         | 22/25                           | 18/20               | 51/53       |



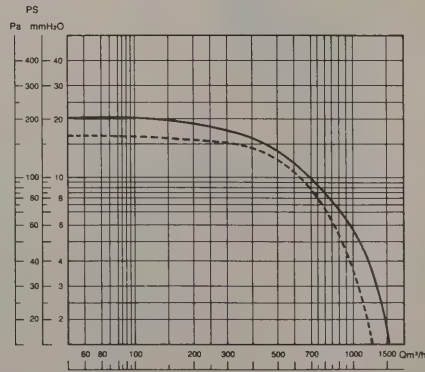
50Hz -----  
60Hz —————



UF-240



UF-260



UF-280



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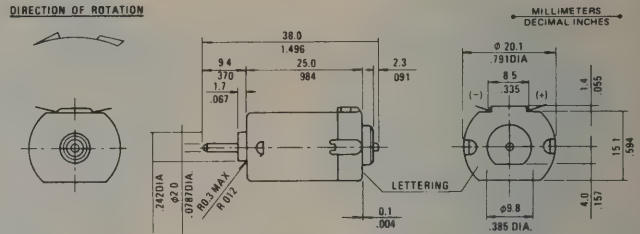
Advanced Technology's Sun Series of D.C. motors utilize self-aligning sinter bearings and copper graphite brushes for low noise and long operating life. Dynam-

ically balanced armatures result in low vibration motor operation. Special designs available for volume applications. Try us.

## SUN-10



WEIGH: 17g (APPROX.)

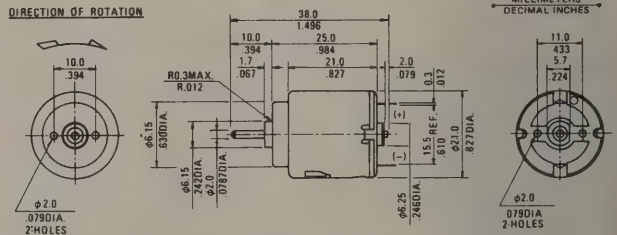


| MODEL        | VOLTAGE         |              | NO LOAD |         | AT MAXIMUM EFFICIENCY |         |        |      |        |      | STALL TORQUE |      |
|--------------|-----------------|--------------|---------|---------|-----------------------|---------|--------|------|--------|------|--------------|------|
|              | OPERATING RANGE | NOMINAL      | SPEED   | CURRENT | SPEED                 | CURRENT | TORQUE |      | OUTPUT | EFF. | STALL TORQUE |      |
|              |                 |              | rpm     | A       | rpm                   | A       | ozin   | g-cm | W      | %    | ozin         | g-cm |
| SUN-10-2270  | 1.5 ~ 3.0       | 1.5 CONSTANT | 8700    | 0.3     | 6500                  | 0.81    | 0.086  | 6.2  | 0.41   | 33.9 | 0.33         | 24   |
| SUN-10-2270  | 1.5 ~ 3.0       | 3.0 CONSTANT | 16300   | 0.38    | 12000                 | 1.15    | 0.138  | 10   | 1.23   | 35.6 | 0.61         | 44   |
| SUN-10-3460  | 1.5 ~ 3.0       | 1.5 CONSTANT | 10200   | 0.34    | 7750                  | 0.93    | 0.072  | 6.6  | 0.52   | 37.6 | 0.36         | 26   |
| SUN-10-3460  | 1.5 ~ 3.0       | 3.0 CONSTANT | 18500   | 0.43    | 14100                 | 1.42    | 0.159  | 11.5 | 1.66   | 38.7 | 0.66         | 48   |
| SUN-10-38120 | 1.5 ~ 3.0       | 1.5 CONSTANT | 4900    | 0.14    | 3375                  | 0.29    | 0.048  | 3.5  | 0.12   | 27.5 | 0.16         | 12   |
| SUN-10-38120 | 1.5 ~ 3.0       | 3.0 CONSTANT | 10300   | 0.17    | 7350                  | 0.44    | 0.104  | 7.5  | 0.56   | 42.3 | 0.34         | 25   |

## SUN-12



WEIGH: 19g (APPROX.)

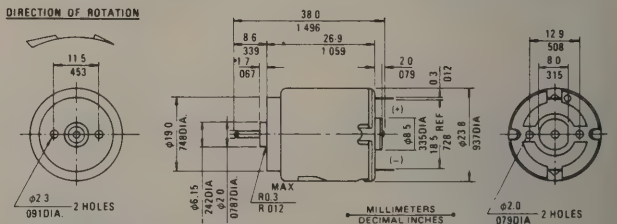


| MODEL        | VOLTAGE         |              | NO LOAD |         | AT MAXIMUM EFFICIENCY |         |        |      |        |      | STALL TORQUE |      |
|--------------|-----------------|--------------|---------|---------|-----------------------|---------|--------|------|--------|------|--------------|------|
|              | OPERATING RANGE | NOMINAL      | SPEED   | CURRENT | SPEED                 | CURRENT | TORQUE |      | OUTPUT | EFF. | STALL TORQUE |      |
|              |                 |              | rpm     | A       | rpm                   | A       | ozin   | g-cm | W      | %    | ozin         | g-cm |
| SUN-12-2270  | 1.5 ~ 3.0       | 1.5 CONSTANT | 7800    | 0.27    | 5800                  | 0.77    | 0.096  | 6.9  | 0.41   | 35.5 | 0.36         | 26   |
| SUN-12-2270  | 1.5 ~ 3.0       | 3.0 CONSTANT | 14000   | 0.35    | 10000                 | 1.183   | 0.174  | 12.5 | 1.28   | 36.1 | 0.72         | 52   |
| SUN-12-3460  | 1.5 ~ 3.0       | 1.5 CONSTANT | 8200    | 0.30    | 6000                  | 0.84    | 0.104  | 7.5  | 0.46   | 38.0 | 0.37         | 27   |
| SUN-12-3460  | 1.5 ~ 3.0       | 3.0 CONSTANT | 14500   | 0.4     | 9750                  | 1.29    | 0.213  | 15.4 | 1.54   | 39.7 | 0.76         | 55   |
| SUN-12-37100 | 1.5 ~ 3.0       | 1.5 CONSTANT | 5200    | 0.18    | 3750                  | 0.44    | 0.083  | 6    | 0.23   | 34.9 | 0.26         | 19   |
| SUN-12-37100 | 1.5 ~ 3.0       | 3.0 CONSTANT | 9900    | 0.22    | 7500                  | 0.68    | 0.138  | 10   | 0.71   | 37.7 | 0.55         | 40   |

## SUN-18



WEIGH: 28g (APPROX.)



| MODEL        | VOLTAGE         |               | NO LOAD |         | AT MAXIMUM EFFICIENCY |         |        |       |        |      | STALL TORQUE |      |
|--------------|-----------------|---------------|---------|---------|-----------------------|---------|--------|-------|--------|------|--------------|------|
|              | OPERATING RANGE | NOMINAL       | SPEED   | CURRENT | SPEED                 | CURRENT | TORQUE |       | OUTPUT | EFF. | STALL TORQUE |      |
|              |                 |               | rpm     | A       | rpm                   | A       | ozin   | g-cm  | W      | %    | ozin         | g-cm |
| SUN-18-2760  | 1.5 ~ 3.0       | 1.5V CONSTANT | 6900    | 0.25    | 4800                  | 0.84    | 0.163  | 11.75 | 0.59   | 46.8 | 0.64         | 46   |
| SUN-18-2760  | 1.5 ~ 3.0       | 3.0V CONSTANT | 13800   | 0.32    | 10000                 | 0.28    | 0.264  | 19    | 1.95   | 50   | 1.22         | 88   |
| SUN-18-22100 | 1.5 ~ 3.0       | 1.5V CONSTANT | 4100    | 0.15    | 3200                  | 0.44    | 0.131  | 9.5   | 0.31   | 47.2 | 0.44         | 32   |
| SUN-18-22100 | 1.5 ~ 3.0       | 3.0V CONSTANT | 8500    | 0.19    | 7000                  | 0.683   | 0.206  | 14.9  | 1.06   | 51.7 | 0.94         | 68   |
| SUN-18-19100 | 1.5 ~ 3.0       | 1.5V CONSTANT | 4200    | 0.14    | 2700                  | 0.37    | 0.121  | 8.7   | 0.24   | 43   | 0.33         | 24   |
| SUN-18-19100 | 1.5 ~ 3.0       | 3.0V CONSTANT | 8500    | 0.18    | 6000                  | 0.59    | 0.201  | 14.5  | 0.9    | 50   | 0.69         | 50   |





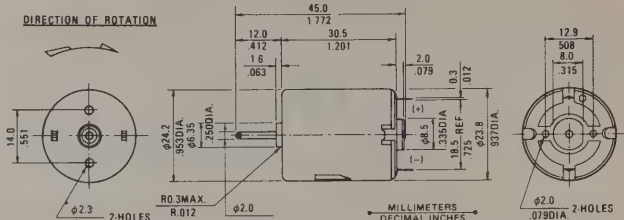
Advanced Technology Company

1280 LIBERTY WAY, VISTA, CA 92083 • 619-727-7430 • FAX 619-727-4436

SUN-28



WEIGH: 42g (APPROX.)

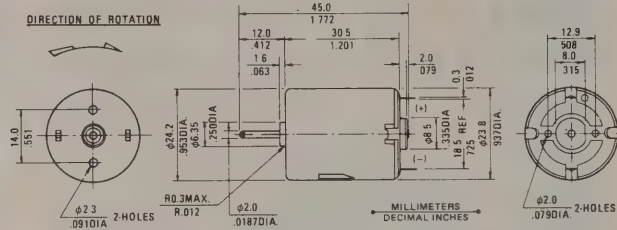


| MODEL        | VOLTAGE         |              | NO LOAD |         | AT MAXIMUM EFFICIENCY |         |        |      |        |      | STALL TORQUE |      |
|--------------|-----------------|--------------|---------|---------|-----------------------|---------|--------|------|--------|------|--------------|------|
|              | OPERATING RANGE | NOMINAL      | SPEED   | CURRENT | SPEED                 | CURRENT | TORQUE |      | OUTPUT | EFF. | TORQUE       |      |
|              |                 |              | rpm     | A       | rpm                   | A       | ozin   | g-cm | W      | %    | ozin         | g-cm |
| SUN-28-2865  | 1.5 ~ 3.0       | 1.5 CONSTANT | 4800    | 0.17    | 3300                  | 0.64    | 0.208  | 15   | 0.51   | 53.1 | 0.79         | 56   |
| SUN-28-2865  | 1.5 ~ 3.0       | 3.0 CONSTANT | 9600    | 0.22    | 8000                  | 0.99    | 0.278  | 20   | 1.64   | 55.2 | 1.56         | 112  |
| SUN-28-2570  | 1.5 ~ 3.0       | 1.5 CONSTANT | 4200    | 0.16    | 3050                  | 0.55    | 0.168  | 12   | 0.39   | 46.1 | 0.65         | 47   |
| SUN-28-2570  | 1.5 ~ 3.0       | 3.0 CONSTANT | 8900    | 0.20    | 6980                  | 0.84    | 0.250  | 18   | 1.29   | 51.1 | 1.35         | 97   |
| SUN-28-19120 | 1.5 ~ 3.0       | 1.5 CONSTANT | 5300    | 0.10    | 4250                  | 0.36    | 0.180  | 13   | 0.57   | 52.8 | 0.85         | 61   |
| SUN-28-19120 | 1.5 ~ 3.0       | 3.0 CONSTANT | 8000    | 0.12    | 6000                  | 0.48    | 0.292  | 21   | 1.29   | 59.7 | 1.26         | 91   |

SUN-28, 28(S)<sup>RC</sup>

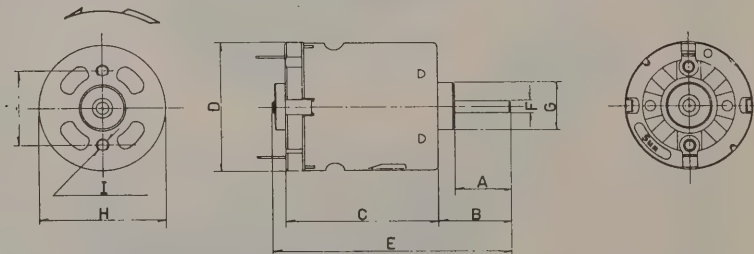


WEIGH: 42g (APPROX.)



| MODEL          | VOLTAGE         |              | NO LOAD |         | AT MAXIMUM EFFICIENCY |         |        |      |        |      | STALL TORQUE |      |
|----------------|-----------------|--------------|---------|---------|-----------------------|---------|--------|------|--------|------|--------------|------|
|                | OPERATING RANGE | NOMINAL      | SPEED   | CURRENT | SPEED                 | CURRENT | TORQUE |      | OUTPUT | EFF. | TORQUE       |      |
|                |                 |              | rpm     | A       | rpm                   | A       | ozin   | g-cm | W      | %    | ozin         | g-cm |
| SUN-28-2570    | 4.5 ~ 6.0       | 4.5 CONSTANT | 11300   | 0.30    | 9000                  | 1.19    | 0.417  | 30   | 2.77   | 51.9 | 1.703        | 137  |
| SUN-28-2570    | 4.5 ~ 6.0       | 6.0 CONSTANT | 15000   | 0.34    | 12500                 | 1.45    | 0.50   | 36   | 4.67   | 53.7 | 2.496        | 179  |
| SUN-28(S)-2865 | 4.5 ~ 6.0       | 4.5 CONSTANT | 11000   | 0.29    | 9000                  | 1.29    | 0.444  | 35   | 3.23   | 55.6 | 2.625        | 189  |
| SUN-28(S)-2865 | 4.5 ~ 6.0       | 6.0 CONSTANT | 14400   | 0.32    | 11000                 | 1.56    | 0.667  | 48   | 5.42   | 57.9 | 3.277        | 236  |

SUN-363



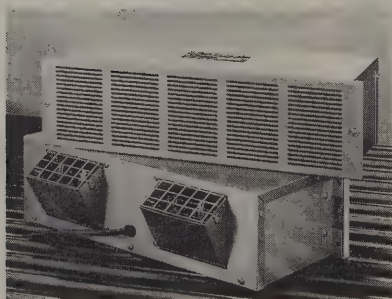
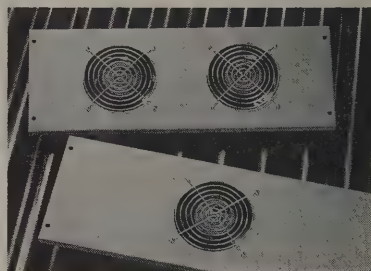
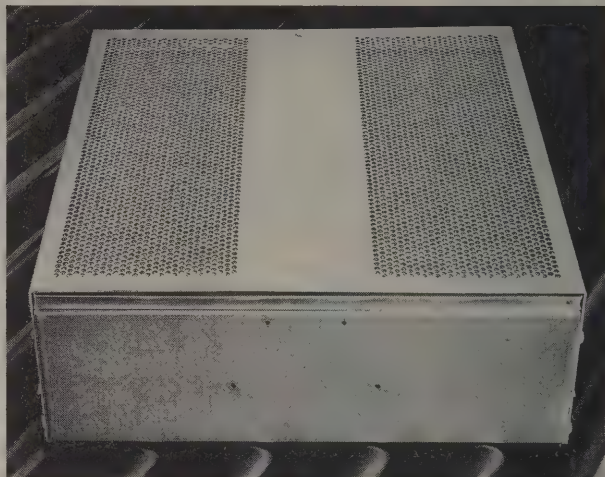
| LETTER         | A     | B     | C     | D          | E          | F          | G          | H          | I           | J     |
|----------------|-------|-------|-------|------------|------------|------------|------------|------------|-------------|-------|
| MILLIMETER     | 12.0  | 15.5  | 32.6  | Ø27.7      | 51.0       | Ø2.3       | Ø10.0      | Ø27.5      | M2.6 × 0.45 | 16.0  |
| DECIMAL INCHES | 0.472 | 0.610 | 1.283 | 1.091 Dia. | 2.008 Dia. | 0.091 Dia. | 0.394 Dia. | 1.083 Dia. | ---         | 0.630 |

| MODEL     | VOLTAGE         |         | FREE LOAD   |             | AT MAX. EFFICIENCY |                |             |             |               |                | STALL TORQUE |         |
|-----------|-----------------|---------|-------------|-------------|--------------------|----------------|-------------|-------------|---------------|----------------|--------------|---------|
|           | OPERATING RANGE | NOMINAL | CURRENT (A) | SPEED (RPM) | TORQUE (GM-CM)     | TORQUE (OZ-IN) | CURRENT (A) | SPEED (RPM) | OUTPUT (WATT) | EFFICIENCY (%) | (GM-CM)      | (OZ-IN) |
|           |                 |         |             |             |                    |                |             |             |               |                |              |         |
| SUN 363-A | 6 ~ 24          | 6       | 0.10        | 5800        | 31.63              | 0.439          | 0.469       | 4780        | 1.551         | 55.11          | 180          | 2.50    |
| SUN 363-B | 6 ~ 24          | 12      | 0.20        | 13500       | 55.39              | 0.769          | 0.883       | 11000       | 6.25          | 59.01          | 300          | 4.166   |
| SUN 363-D | 12 ~ 24         | 24      | 0.07        | 11000       | 52.17              | 0.725          | 0.333       | 9090        | 4.86          | 60.92          | 300          | 4.166   |
| SUN 363-F | 12 ~ 24         | 18      | 0.09        | 8100        | 48.87              | 0.679          | 0.39        | 6580        | 3.30          | 47.10          | 260          | 3.611   |
| SUN 363-G | 12 ~ 36         | 18      | 0.05        | 6100        | 31.18              | 0.433          | 0.23        | 4990        | 1.60          | 39.29          | 192          | 2.666   |
| SUN 363-H | 6 ~ 12          | 12      | 0.30        | 18400       | 69.2               | 0.961          | 1.53        | 15380       | 10.92         | 59.47          | 422          | 5.860   |
| SUN 365-A | 6 ~ 12          | 6       | 0.45        | 12500       | 42.89              | 0.596          | 1.44        | 9520        | 4.19          | 48.52          | 180          | 2.50    |
| SUN 365-B | 12 ~ 24         | 12      | 0.20        | 13500       | 41.32              | 0.574          | 0.768       | 10710       | 4.54          | 49.24          | 200          | 2.777   |
| SUN 365-G | 12 ~ 24         | 12      | 0.20        | 10000       | 51.65              | 0.717          | 0.63        | 8050        | 4.27          | 56.22          | 215          | 2.986   |

# t u b e   a x i a l   f a n s m o t o r i z e d   i m p e l l e r s c e n t r i f u g a l   b l o w e r s

**I**n applications where temperature control is essential, AMCO-engineered cooling devices have been the components-of-choice for generations of design engineers. Why? For the very same reasons AMCO enclosures are specified—quality design, precise manufacturing, performance and service that give you peace-of-mind.

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# COOLING



# Optimize Your Cooling System with SmartFan® Speed Controllers and Alarms

### Reduce Noise

SmartFan causes air movers to run at lower speeds under normal conditions, reducing acoustical noise levels by 15 dB(A) or more.

### Regulate Temperature

SmartFan's exclusive closed-loop, high gain control principle closely regulates air temperature and holds critical component temperatures nearly constant.

### How SmartFan Works

Designers of electronic equipment, constrained to use fixed speed cooling fans or blowers, often face a dilemma. If air flow is set high enough for worst-case thermal conditions, the system may be excessively noisy. If flow is set low enough for acceptable noise, reliability may be compromised. SmartFan solves this dilemma by automatically adapting cooling air flow to the need of the moment and, under typical conditions, reducing noise by 15 dB(A) or more.

SmartFan senses temperature inside fan- or blower-cooled equipment and controls the speed of air movers to hold temperature constant against changes in inlet air temperature, equipment power, flow resistance, and altitude. The sensor is often placed in the exhaust air stream as shown in Figure 1. However, it can be mounted at any downstream location or mounted on a surface to regulate surface temperature.

### AC SmartFan Speed Controllers

AC Controllers operate at 115 or 230 volts AC with up to 6.0 amp current ratings. Safety features including temperature alarms are available. AC controllers use a triac phase control operating principle and have UL, CSA, and TUV approvals.

### DC SmartFan Speed Controllers

DC Controllers operate at 12, 24, and 48 volts DC with up to 7.0 amp power ratings. Safety features including temperature alarms are available. DC Controllers use either a linear or switching operating principle depending on power requirements.

### SmartFan Alarms

Failure of a cooling system in electronic equipment can be disastrous. Without the necessary air flow, component temperatures increase causing operational failure and even permanent damage.

Methods of detecting failure include sensing air, or component temperature, fan speed, or fan current. SmartFan alarms are available separately or in combination with SmartFan Speed Controllers. Alarms can warn an operator, automatically switch equipment to idle mode or completely shut it down.

### SmartFan for HVAC Applications

SmartFan can also be used in many HVAC applications. The basic principle remains the same. Fan speed is proportionally controlled to maintain nearly constant temperature. Under normal thermal load conditions, fan noise and energy usage is reduced and the thermal shock, discomfort, and inconvenience associated with fans that switch on and off, is avoided.

### Custom SmartFan Products

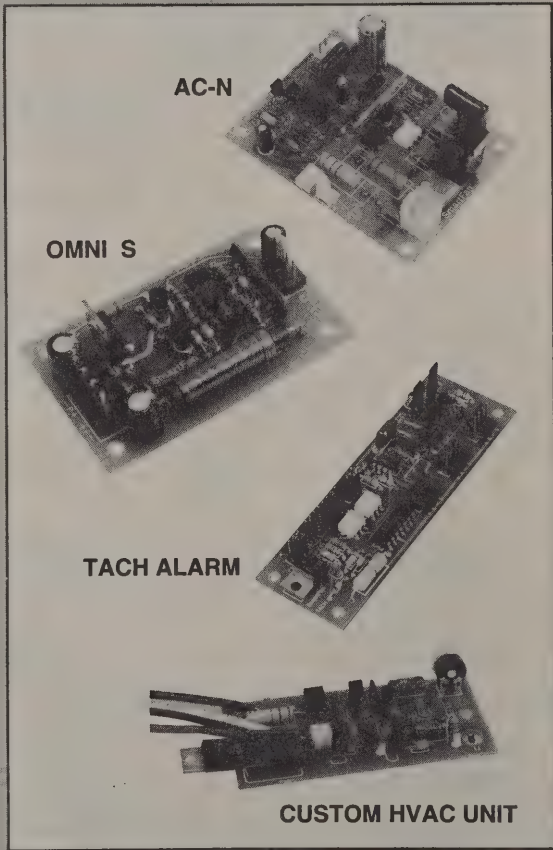
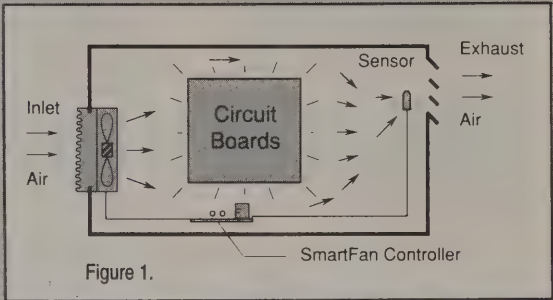
In addition to our line of standard SmartFan Speed Controllers and Alarms, Control Resources, Inc. offers complete custom design, engineering, and testing services. Contact our Engineering Department to discuss any custom applications.

### Increase Safety

SmartFan alarms monitor temperature, fan speed (tach), or fan current. Alarm outputs can drive logic circuitry, LEDs, audible alarms, or circuit breakers.

### Improve Reliability

SmartFan enhances system reliability through temperature control, extended air mover service life, reduced dust intrusion, and energy savings.



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# Crouzet® Axial Fans

## General information

### Warranty

Every Crouzet fan carries an unconditional 3 year warranty. If the fan should fail for any reason during the first three years of operation, by the end user, we will replace the fan free of charge. Fans must be returned to Crouzet Corp. freight prepaid. This warranty is for the replacement of the fan only.

### Overload

All Crouzet fans have integral protection against locked rotor condition so that there will be no damage on windings and electronic component. Restart is automatic as soon as any constraint to running has been released.

### Noise data

Acoustical measurements made at distance 1.0 meter from the surface of fan (inner side) and 45° radially off axis of fan.

### Air flow performance data

The performance data has been determined in accordance with AMCA standard 210-74 on a double chamber test set up with measurement on suction side.

### Operation voltage

AC: 115 VAC : 85 V - 125 V  
220 VAC : 185 V - 245 V  
DC: 12 VDC : 10.2 V - 13.8 V  
24 VDC : 20.4 V - 27.6 V

### Dielectric strength

AC : 1500 VAC at one minute  
DC : 500 VDC at one minute

### Safety

All fans are designed and manufactured in conformance with the requirements of UL, CSA and VDE.

### Bearing systems

All Crouzet fans have specially designed and precision lubricated sleeve bearings for long, maintenance free performance at low noise level.

Ball bearings are available on request.

### Operation temperature

AC : -10°C to +70°C  
DC : -10°C to +65°C

### Storage temperature

AC : -30°C to +75°C  
DC : -30°C to +70°C

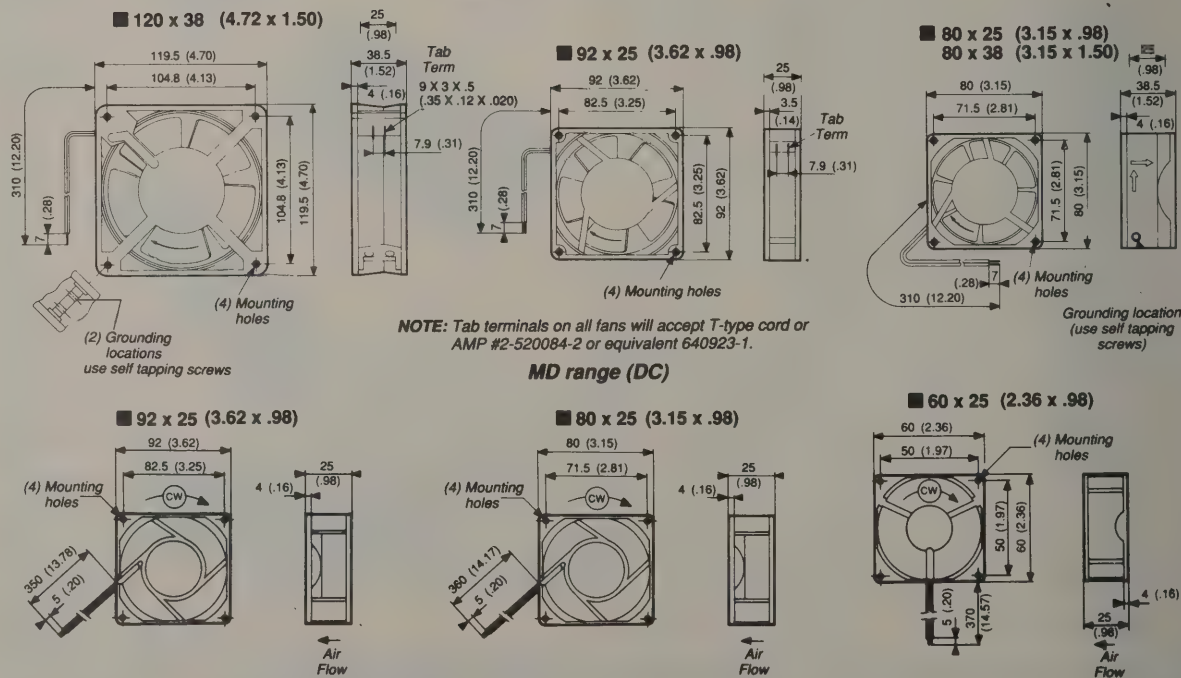
## Dimensions

### SP-DP-SF ranges

(A.C. fan)

SD range (D.C. Brushless fan)

Dimensions in mm (inches)





Axial Fans (cont.)

A.C. fan



Bearings: sleeve  
Ball bearings on request for:  
■ 92 x 25 mm  
80 x 38 mm  
80 x 25 mm  
Cast aluminum  
Fan: PBT reference UL 94-VO  
Motor: asynchronous with dephasing rings  
Insulation: class B  
Approvals: UL, CSA, VDE pending

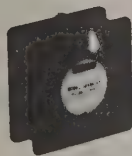
Weight (g)  
■ 120 x 38 mm = 550 g  
92 x 25 mm = 270 g  
80 x 38 mm = 340 g  
80 x 25 mm = 260 g

To order  
specify AC fan & part number

Example: AC fan 99 487 411

| Dimension           | Volt<br>(VAC) | Frequency<br>(Hz) | Current<br>(A) | Power<br>(W) | Locked<br>(A) | Speed<br>(RPM) | Noise<br>(dB A) | Max. air flow<br>(CFM) | Part Number |               |
|---------------------|---------------|-------------------|----------------|--------------|---------------|----------------|-----------------|------------------------|-------------|---------------|
| SP - DP - SF Ranges |               |                   |                |              |               |                |                 |                        |             |               |
|                     |               |                   |                |              |               |                |                 |                        | Wire Leads  | Tab Terminals |
| ■ 120 x 38 mm       | 115           | 50/60             | 0.21/0.18      | 20/18        | 0.23/0.21     | 2550/2900      | 43/48           | 85/105                 | 99 487 410  | 99 487 411    |
| (ballbearing)*      | 115           | 50/60             | 0.21/0.18      | 20/18        | 0.23/0.21     | 2550/2900      | 43/48           | 85/105                 | 99 489 410  | 99 489 411    |
|                     | 220/230       | 50/60             | 0.12/0.11      | 20/19        | 0.14/0.12     | 2550/2900      | 43/48           | 85/105                 | 99 487 400  | 99 487 401    |
| (ballbearing)*      | 220/230       | 50/60             | 0.12/0.11      | 20/19        | 0.14/0.12     | 2550/2900      | 43/48           | 85/105                 | 99 489 400  | 99 489 401    |
|                     | 115           | 50/60             | 0.12/0.11      | 11/11        | 0.14/0.11     | 2000/2200      | 36/38           | 70/76                  | 99 487 415  | 99 487 413    |
| (ballbearing)*      | 115           | 50/60             | 0.12/0.11      | 11/11        | 0.14/0.11     | 2000/2200      | 36/38           | 70/76                  | 99 489 415  | 99 489 413    |
|                     | 220/230       | 50/60             | 0.07/0.06      | 10/10        | 0.10/0.08     | 2000/2200      | 36/38           | 70/76                  | 99 487 405  | 99 487 403    |
| (ballbearing)*      | 220/230       | 50/60             | 0.07/0.06      | 10/10        | 0.10/0.08     | 2000/2200      | 36/38           | 70/76                  | 99 489 405  | 99 489 403    |
| ■ 92 x 25 mm        | 115           | 50/60             | 0.12/0.11      | 13/12        | 0.14/0.13     | 2250/2700      | 36/39           | 29/36                  | 99 487 114  | 99 487 112    |
|                     | 220/230       | 50/60             | 0.07/0.06      | 14.5/14      | 0.10/0.09     | 2250/2700      | 36/39           | 29/36                  | 99 487 104  | 99 487 102    |
| (ballbearing)*      | 220/230       | 50/60             | 0.07/0.06      | 14.5/14      | 0.10/0.09     | 2250/2700      | 36/39           | 29/36                  |             | 99 489 102    |
| ■ 80 x 38 mm        | 115           | 50/60             | 0.15/0.13      | 13.5/12      | 0.15/0.14     | 2300/2750      | 31/35           | 23/30                  | 99 486 914  |               |
|                     | 220/230       | 50/60             | 0.07/0.07      | 14/13.5      | 0.11/0.10     | 2300/2750      | 31/35           | 23/30                  | 99 486 904  |               |
|                     | 220/230       | 50/60             | 0.05/0.05      | 9.3/9.3      | 0.08/0.07     | 1500/1800      | 28/32           | 15/22                  | 99 486 903  |               |
| ■ 80 x 25 mm        | 115           | 50/60             | 0.12/0.11      | 12/11        | 0.14/0.13     | 2350/2800      | 29/33           | 17/21                  | 99 486 814  |               |
|                     | 220/230       | 50/60             | 0.07/0.07      | 14/13.5      | 0.10/0.09     | 2350/2800      | 29/33           | 17/21                  | 99 486 804  |               |

D.C. Brushless fan



Material MD range  
- Frame: PBT UL 94-VO  
- Fan: PBT UL 94-VO  
Insulation class: class E  
  
Tab terminals and ball bearings available on 120 x 38 mm.

Weight (g)  
■ 120 x 38 mm = 340 g  
92 x 25 mm = 110 g  
80 x 38 mm = 100 g  
80 x 25 mm = 60 g

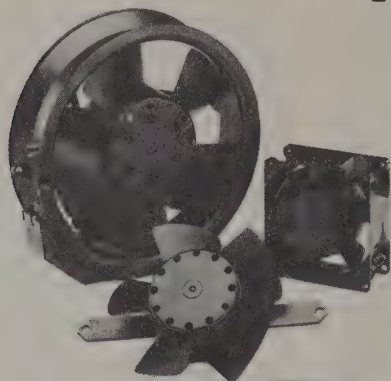
To order  
specify DC fan & part number

Example: DC fan 99 487 477

| Dimension      | Rated voltage (V) | Rated current (A) | Rated input (W) | Speed (RPM) | Max. air pressure (INCH - H <sub>2</sub> O) | Acoustical noise (dBA) | Max. air flow (CFM) | Part number |
|----------------|-------------------|-------------------|-----------------|-------------|---------------------------------------------|------------------------|---------------------|-------------|
| ■ 120 x 38 mm  | 12                | 0.53              | 6.4             | 3000        | 0.34                                        | 49                     | 106                 | 99 487 477  |
|                | 24                | 0.27              | 6.5             | 3000        | 0.34                                        | 49                     | 106                 | 99 487 487  |
|                | 12                | 0.28              | 3.4             | 2350        | 0.21                                        | 38                     | 80                  | 99 487 476  |
| ■ 120 x 38 mm  | 24                | 0.17              | 4.1             | 2300        | 0.29                                        | 36                     | 84                  | 99 487 489  |
| (ballbearing)* | 24                | 0.28              | 6.7             | 3000        | 0.29                                        | 46                     | 109                 | 99 489 487  |
| ■ 92 x 25 mm   | 12                | 0.22              | 2.6             | 3400        | 0.19                                        | 33                     | 50                  | 99 486 377  |
|                | 24                | 0.11              | 2.6             | 3400        | 0.19                                        | 33                     | 50                  | 99 486 387  |
|                | 12                | 0.11              | 1.3             | 2500        | 0.11                                        | 29                     | 36                  | 99 486 379  |
|                | 24                | 0.07              | 1.7             | 2500        | 0.11                                        | 29                     | 36                  | 99 486 389  |
| ■ 80 x 25 mm   | 12                | 0.20              | 2.4             | 3100        | 0.18                                        | 35                     | 34                  | 99 486 277  |
|                | 24                | 0.12              | 2.9             | 3100        | 0.18                                        | 35                     | 34                  | 99 486 287  |
|                | 12                | 0.12              | 1.4             | 2350        | 0.10                                        | 27                     | 24                  | 99 486 279  |
|                | 24                | 0.07              | 1.7             | 2350        | 0.10                                        | 27                     | 24                  | 99 486 289  |
| ■ 80 x 25 mm   | 12                | 0.12              | 1.4             | 4600        | 0.20                                        | 34                     | 17                  | 99 486 177  |
|                | 24                | 0.09              | 2.2             | 4600        | 0.23                                        | 34                     | 17                  | 99 486 187  |
|                | 12                | 0.09              | 1.0             | 3400        | 0.11                                        | 28                     | 13                  | 99 486 176  |
|                | 24                | 0.06              | 1.3             | 3400        | 0.11                                        | 28                     | 13                  | 99 486 189  |

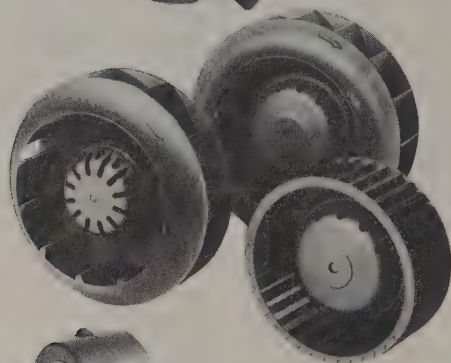


# Fans, Impellers, Blowers



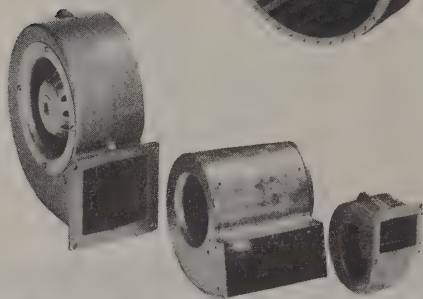
## TUBEAXIAL FANS

- Brushless DC or AC voltages
- Air performance to 265 CFM
- Quiet, long-life, high quality
- All kinds of options & accessories



## AXIAL FANS

- Compact, shallow, high performance design
- Air Performance to 8,000 CFM
- Speed controllable Brushless DC or AC



## MOTORIZED IMPELLERS

- Open blade design with 360° cooling
- Brushless DC or AC with speed control
- Operate efficiently without a housing
- Air performance from 75 to 10,870 CFM

## CENTRIFUGAL BLOWERS

- High pressure performance
- Impeller sizes from 4" to 16"
- Dual inlet or single inlet models
- Brushless DC or AC external rotor motors

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## DESIGN & APPLICATION ENGINEERING HELP

- Experienced Thermal Engineers always available
- Choose from the industry's most complete product line
- Custom solutions to your specific problems with standard products
- Comprehensive solutions which consider form-factor, air movement, static pressure, acoustic, electrical and mechanical requirements
- Complete air testing, acoustic and CAD Laboratory to assist you



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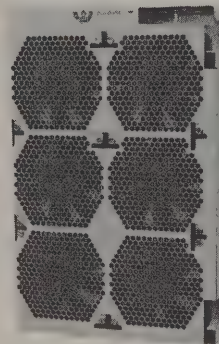




# Air Moving Packages

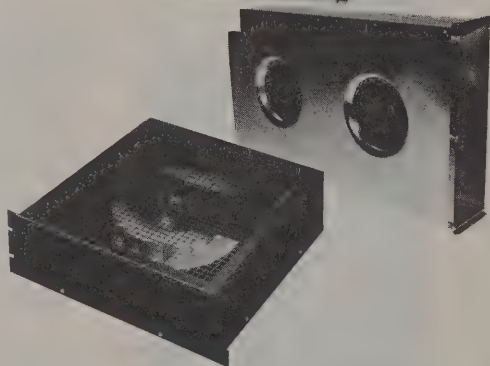
## FAN TRAYS

- Compact, self-contained air moving packages
- Choice of fans and tray sizes
- Custom units available to meet your needs
- Cost-effective solutions for World-Class products



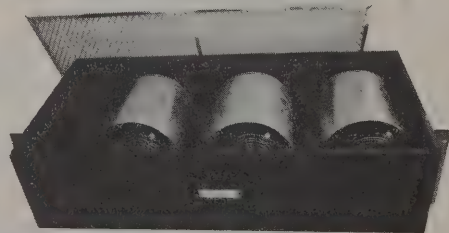
## FLO-THRU MODULES

- Quiet, efficient air moving packages
- Standard models for rack enclosures
- Custom-engineered to user specifications
- Higher CFM per U than competitive units
- Adaptable to your pressure, flow, acoustic and dimensional parameters



## BLOWER PACKAGES

- Custom engineered air moving packages
- Excellent for high static pressure applications
- High quality units built to your specifications
- Available with filters and EMI protection
- Compact single or dual inlet blowers assembled into multi-unit high velocity blower packages



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## ISO 9001 QUALITY, RELIABLE PERFORMANCE

- Proven superior quality, SPC documentation, PPM and 6-sigma programs
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- Knowledgeable people help you with ordering, expediting, questions
- Every product is manufactured by ebm as an integral assembly and tested for trouble-free, long-life performance
- Call today for help, assistance or just to request literature

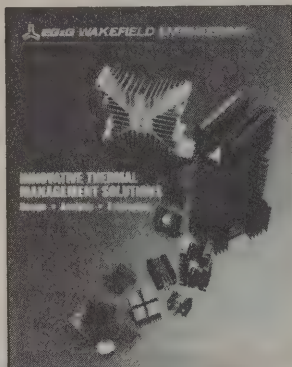


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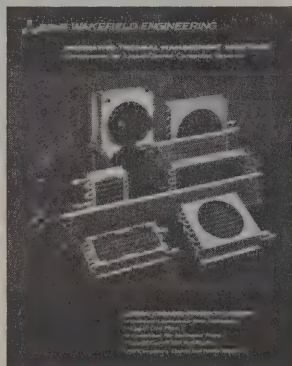
## THERMAL MANAGEMENT SOLUTIONS

EG&G Wakefield Engineering's design, manufacture, and fabrication expertise offers a wide range of standard and custom heat dissipation products and accessories providing innovative thermal management solutions for a diverse range of commercial, industrial, and military applications.



### HEAT DISSIPATION COMPONENTS CATALOG

- Power Semiconductor Heat Sinks
- Extrusions for Power Modules, IGBTs, SCR's, Cabinets
- High Fin Density Heat Sinks
- Liquid-to-Air Heat Exchangers
- Liquid Cold Plates
- SCR Mounting Clamps and Bus Blocks
- Thermally Conductive Adhesives, Pads, Joint Compounds
- Heat Sinks for 14- to 64-Pin DIPs
- Custom Designed and Manufactured Heat Sinks and Fabrications



### ACTIVE COOLING PRODUCTS CATALOG

- Compact Liquid-to-Air Heat Exchangers
- Liquid Cold Plates
- Convolute Fin Air-Cooled Plates and Heat Sinks
- Forced-Air Copper Coolers
- Liquid-Cooled SCR Bus Blocks
- Forced Convection Assemblies
- Special Fabrications



### HEAT SINKS FOR MICROPROCESSORS, ASICs, AND INTEGRATED CIRCUITS

- Standard Pin Fin Heat Sinks to 25 Watts
- Heat Sinks for 10x10 to 21x21 PGAs
- Heat Sinks for 44-Lead to 304-Lead PQFPs, CQFPs
- Omnidirectional Pin Fin Heat Sinks
- Unidirectional Fin Heat Sinks
- Omnidirectional Radial Fin Heat Sinks
- Heat Sink/Clip Assemblies for Intel, AMD, and Motorola Microprocessors
- Engineering Evaluation Kits
- Custom Design Capabilities for Multichip Module Heat Sinks
- Thermally Conductive Adhesives, Pads, Joint Compounds

For immediate assistance and specific information on products you require:

**Call our Applications Engineering Department today at (617) 245-5900**



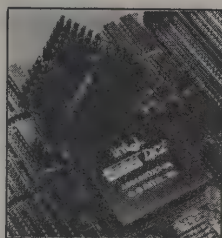
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# SpiderClip™ HEAT SINK AND CLIP ASSEMBLIES FOR MICROPROCESSORS, ASICs, and GATE ARRAYS



## 669 SERIES HEAT SINK SpiderClip™ ASSEMBLY FOR 17x17 PGAs

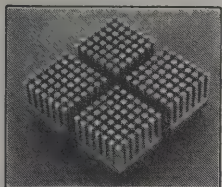
For Application to:

- Intel® 486™ Microprocessors: 80486DX, 80486SX, 80486DX2™
- Intel® OverDrive™ Processor and i860XR RISC Processor
- Intel® i960CA and i960CF™ Embedded Controller
- Intel® 82495 Cache RAM Controller
- AMD® Am29000, Am29050 Microprocessors
- AMD® Am486 Microprocessor
- Weitek Math Co-processors
- Direct attachment to 17x17 PGAs for gate arrays, ASICs

### 669 SERIES SpiderClip™ ASSEMBLY PART NUMBERS

- 669-32AG 1.70 in.-sq. 0.315 in. height, gold iridized heat sink with coated clip
- 669-33AB 1.70 in.-sq. 0.315 in. height, black anodized heat sink with coated clip
- 669-40AB 1.70 in.-sq. 0.400 in. height, black anodized heat sink with coated clip
- 669-52AB 1.70 in.-sq. 0.520 in. height, black anodized heat sink with coated clip
- 162-IT Volume Installation Tool (for rapid, high-volume assembly)
- 163-IT Manual Installation Tool (for R&D, lab, and low-volume assembly)

(Order one 163-IT Tool with any of the SpiderClip™ assemblies.)



## 649 SERIES HEAT SINK SpiderClip™ ASSEMBLY FOR 18x18 PGAs

For Application to:

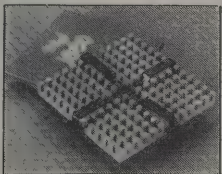
- Motorola 68040 Microprocessor (179PGA)
- Direct attachment to 18x18 PGAs for gate arrays, ASICs

The 649 Series SpiderClip™ Heat Sink/Clip Assembly (patent pending) designed for 1.86 in.-sq ceramic 18x18 PGAs provides rapid and secure mechanical heat sink attachment to the Motorola 68040 and other high-performance ICs.

### 649 SERIES SpiderClip™ ASSEMBLY PART NUMBERS

- 649-51AB 1.86 in.-sq. 0.510 in. height, black anodized heat sink with coated clip
- 163-IT Manual Installation Tool (for R&D, lab, and low-volume assembly)
- 165-IT Volume Installation Tool (for rapid, high-volume assembly)

(Order one 163-IT Tool with any of the SpiderClip™ assemblies.)



## 679 SERIES HEAT SINK SpiderClip™ ASSEMBLY FOR 19x19 PGAs

For Application to:

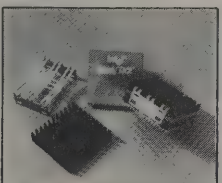
- Intel® i860XP™ RISC Processor (262PGA)
- Intel® 82496 Cache RAM Controller
- Intel 80486DX2™ OverDrive™
- Direct attachment to 19x19 PGAs for gate arrays, ASICs

The 679 Series SpiderClip™ Heat Sink/Clip Assembly (patent pending) designed for 1.95 in.-sq ceramic 19x19 PGAs provides rapid and secure mechanical heat sink attachment of the pin fin heat sink to the i860XP and other high-performance ICs.

### 679 SERIES SpiderClip™ ASSEMBLY PART NUMBERS

- 679-25AG 1.94 in.-sq. 0.250 in. height, gold iridized heat sink with coated clip
- 679-51AB 1.86 in.-sq. 0.510 in. height, black anodized heat sink with coated clip
- 163-IT Manual Installation Tool (for R&D, lab, and low-volume assembly)
- 164-IT Volume Installation Tool (for rapid, high-volume assembly)

(Order one 163-IT Tool with any of the SpiderClip™ assemblies.)



## 629 SERIES HEAT SINK SocketClip™ ASSEMBLY FOR AMP 17x17 PGA LIF SOCKETS

For Application to:

- Intel 80486DX2™, Microprocessor
- Intel 80486SX, 80486DX, 80487SX
- Intel i960CA, CF Embedded Controller
- Intel 80486SX OverDrive™ Microprocessor

The 629 Series SocketClip™ Heat Sink/Clip Assembly attaches directly to AMP Inc. 17x17 PGA LIF Sockets [P/N 382624-1 (169 PGA) or P/N 382624-2 (168 PGA)]. Each SocketClip™ assembly includes

both the clip and the heat sink, providing rapid and secure heat sink retention and proper heat transfer. The heat sink pin spacing and density are optimized for power, airflow, and spacing requirements typical of PC, workstation, and server applications.

### 629 SERIES ASSEMBLY PART NUMBERS

- 629-25AB 1.70 in.-sq. 0.250 in. height, black anodized heat sink with clip
- 629-40AB 1.70 in.-sq. 0.400 in. height, black anodized heat sink with clip
- 629-65AB 1.70 in.-sq. 0.650 in. height, black anodized heat sink with clip
- Three heat sink heights available for different power, airflow, and spacing requirements
- Eliminates adhesives for heat sink attachment; minimizes assembly time
- Excellent clip loading for reliable heat sink retention and heat transfer
- No thermal compound required

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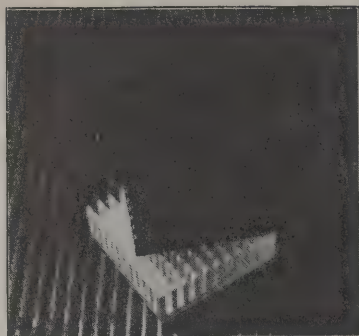


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## THERMAL MANAGEMENT SOLUTIONS FOR ASICs, MICROPROCESSORS, GATE ARRAYS, CACHE RAM



### 698 SERIES PIN FIN HEAT SINKS FOR INTEL PENTIUM™ AND 21X21 PGAs

#### For Application to:

- Intel Pentium™ Processors
- Hewlett-Packard PA RISC
- Siemens SH100E Gate Arrays
- MIPS R4000

The 698 Series Pin Fin Heat Sinks are designed for Intel Pentium™ processors, and other 21x21 PGAs requiring enhanced heat dissipation and cooling to 18 watts. An optional pre-attached pressure sensitive adhesive is available for ease of installation and reduced assembly time and cost while eliminating the need for thermal compounds.

#### 698 SERIES ASSEMBLY PART NUMBERS

- 698-40AB 2.10 in.-sq. 0.400 in. height, black anodized heat sink
- 698-80AB 2.10 in.-sq. 0.800 in. height, black anodized heat sink
- 698-65AB 2.10 in.-sq. 0.650 in. height, black anodized heat sink
- 698-100AB 2.10 in.-sq. 1.000 in. height, black anodized heat sink

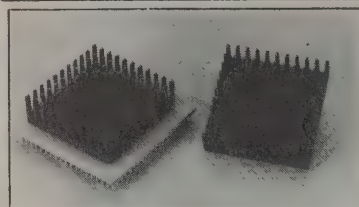
For applications utilizing Intel Pentium Cache Chip Sets, specify these EG&G Wakefield Penguin™ Coolers:

#### INTEL 82496 ADVANCED CACHE CONTROLLER (280-PIN PGA)

- 679-25AG SpiderClip™ Heat Sink/Clip Assembly
- 679-51AB SpiderClip™ Heat Sink/Clip Assembly

#### INTEL 82491 CACHE SRAM (84-LD PQFP)

- DELTEM™ D10650-40 Pin Fin Heat Sink



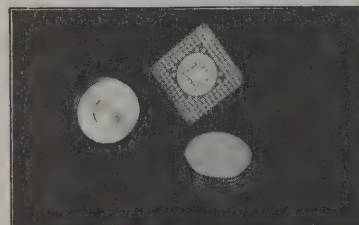
### HEAT SINKS FOR ADHESIVE ATTACHMENT TO 17x17 AND LARGER PGAs

#### For Application to:

- Intel® Microprocessors: 80486DX, 80486SX, 80486DX2™, OverDrive™
- Motorola 68040 Microprocessors
- AMD® Microprocessors: Am29000, Am29030, Am29050, Am486
- Intel® i860XR RISC Processor, i960CA Controller, 82495 Cache RAM Controller, 487SX™
- Weitek and other Math Co-Processors
- Gate Arrays, ASICs, Microprocessors, DVI, DSPs, and Controllers

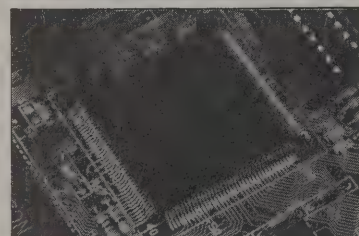
#### PIN FIN HEAT SINK PART NUMBERS FOR ADHESIVE ATTACHMENT TO 17x17 AND LARGER PGAs

- 628-65AB 1.70 in.-sq. 0.650 in. height, black anodized finish
- 655-26AB 1.60 in.-sq. 0.260 in. height, black anodized finish
- 663-35AB 1.53 in.-sq. 0.350 in. height, black anodized finish (Described in Intel® 80486 Product Family Data Books)
- 655-53B 1.60 in.-sq. 0.530 in. height, black anodized finish
- 662-15AG 1.71 in.-sq. 0.150 in. height, gold iridized finish



### HEAT SINKS FOR ASICs, GATE ARRAYS, MICROPROCESSORS FOR 16x16 AND SMALLER PGAs AND 128 TO 208-LD CQFPs

- 658-25AB 1.10 in.-sq. 0.250 in. H Pin Fin
- 658-45AB 1.10 in.-sq. 0.450 in. H Pin Fin
- 658-60AB 1.10 in.-sq. 0.600 in. H Pin Fin
- 660-29AB 1.53 in.-sq. 0.285 in. H, Unidirectional Fin
- 840-1081 1.45 in.-sq. 0.380 in. H Pin Fin
- 840-20B1 1.45 in.-sq. H Pin Fin
- 850-39AG 1.25 in.-dia. H Radial Fin
- 659-40AB 1.45 in.-sq. 0.650 in. H Straight Fin
- 851-36AG 1.00 in. dia. 0.0360 in. H Radial Fin
- 852-39AG 1.25 in. dia. 0.390 in. H Radial Fin



### DELTEM™ PLASTIC HEAT SINKS FOR PQFPs, PLCCs, AND CQFPs

#### For Application to:

- Intel® 80486SX™ Microprocessor (196-ld PQFP; Specify EG&G Wakefield P/N D10850-40)
- Intel® 82490 Cache RAM (100-ld PQFP; Specify EG&G Wakefield P/N D10650-40)
- Analog Devices ADSP2100A (Specify EG&G Wakefield P/N D10650-40)
- ASICs, Gate Arrays, Microprocessors, Embedded Controllers (PQFPs, PLCCs, CQFPs)

The DELTEM™ Plastic Heat Sinks are an innovative, cost-effective solution for heat dissipation from plastic IC packages. These are the only commercially available heat sinks designed

specifically to provide solutions for plastic package material compatibility, TCE mismatch, cost, and weight requirements.

#### DELTEM™ PART NUMBERS

- D10650-40 DELTEM™ 0.650 in.-sq. 0.400 in. H Pin Fin Heat Sink for 100 to 128-ld PQFPs, 44 to 52-ld PLCCs, 100 to 128-ld CQFPs
- D10850-40 DELTEM™ 0.850 in.-sq. 0.400 in. H Pin Fin Heat Sink for 128 to 208-ld PQFPs, 68 and 84-ld PLCCs, 128 to 208-ld CQFPs

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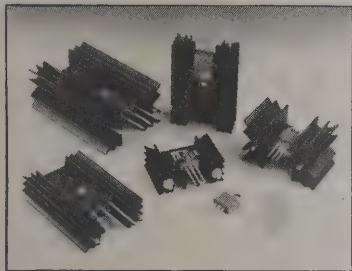
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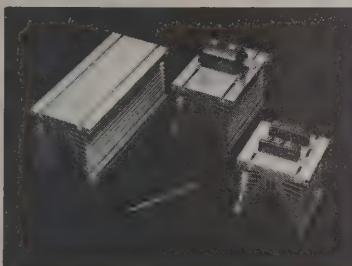
# THERMAL MANAGEMENT SOLUTIONS FOR ELECTRONICS



## HEAT SINKS AND ACCESSORIES FOR POWER SEMICONDUCTORS

EG&G Wakefield Engineering offers a complete line of cost-effective heat sinks for TO-3 through TO-247, DO-4, DO-5, and other industry-standard package power semiconductors. The **HEAT DISSIPATION COMPONENTS CATALOG** includes heat sinks, interface pads, and thermal compounds for use with these devices for direct PCB mounting.

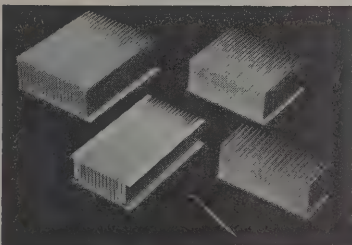
- **637-15ABP** Wavesolderable Heat Sink for TO-220 (1.50 in. H)
- **647-10ABP** Wavesolderable Heat Sink for TO-220 (1.00 in. H)
- **657-25ABP** Wavesolderable Heat Sink for TO-218 (2.50 in. H)
- **667-25ABSP** Wavesolderable Heat Sink for TO-220 (2.50 in. H), to be used with **330SC SpeedClip®** for rapid assembly. Stand-off pins
- **175 Series** Kapton® Thermally Conductive Dielectric Interface Pads



## HEAT SINKS FOR ISOLATED POWER MODULES

Our standard power module heat sinks for Isolated Power Modules have become the industry standard for efficient heat dissipation and multiple module mounting. These heat sinks and others in our **HEAT DISSIPATION COMPONENTS CATALOG** are available for standard mounting center patterns. Our new 394, 395, and 396 heat sinks offer cost-effective answers for high power needs.

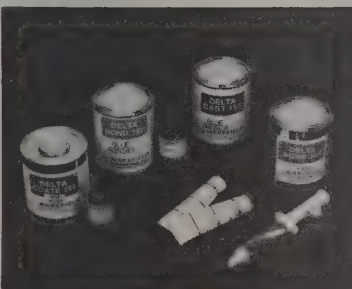
- **392-120AG** Heat Sink for 1-2 Power Modules (80mm mounting centers; 7.09 in. Long)
- **392-300AG** Heat Sink for 1-4 Power Modules (80mm mounting centers; 11.81 in. Long)
- **394-2AB** Heat Sink for 1-4 Power Modules (Flat Base, 5.50 in. Long, Mounting Legs)
- **395-2AB** Heat Sink, Double Fin Surface, for 1-4 Power Modules (5.50 in. Long)
- **396-1AB** Heat Sink for 1-2 Power Modules (Flat Back, 3.00 in. Long, Black Anodized)
- **396-2AB** Heat Sink for 1-4 Power Modules (Flat Back, 5.50 in. Long, Black Anodized)



## HIGH FIN DENSITY HEAT SINKS, HEAT SINKS FOR SCRs

EG&G Wakefield's High Fin Density 510 Series Heat Sinks for mounting and cooling power components offer the highest fin aspect ratio available in the industry. These 510 Series heat sinks are the answer for minimum weight, space, and cost. EG&G Wakefield is the leading manufacturer of SCR compression-pack heat sinks and clamp assemblies. Consult our **HEAT DISSIPATION COMPONENTS CATALOG** for all heat sink types and extrusion profiles available for cooling SCRs and other power devices.

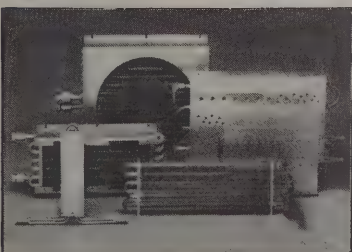
- **510-12U** High Fin Density Heat Sink (Flat Base, 3.136 in. H, 12 in. Long)
- **132-4.5B** Compression-Pack SCR Heat Sink (Used with **Type 139** Clamp)
- **133-10B** Compression-Pack SCR Heat Sink (Used with **Type 139** Clamp)
- **403A** Industry-Standard Double Surface Heat Sink for TO-3 Power Transistors



## THERMAL COMPOUNDS, THERMALLY CONDUCTIVE ADHESIVES, INSULATING PADS

Combine all your heat sink, heat sink extrusion, and accessory needs in one reliable source with EG&G Wakefield Engineering. Our thirty years of designing and manufacturing standard and custom heat sinks have provided a wealth of technical experience for selecting heat sinks and accessories. Call for information about these heat sink accessory materials:

- **126 Type** Silicone-Free Thermal Compound—Eliminates silicon "creep" with an ester base which meets AT&T Technologies Specification KS21343
- **120 Type** Silicone Thermal Compound (available in containers from 2 oz to 20 lbs)
- **156 DeltaBond™** Thermally Conductive Two-Part Acrylic Adhesive. Fixtures at room temperature in less than five minutes
- **175 Series** Kapton® Thermally Conductive Dielectric Interface Pads (available in a variety of shapes for standard TO-, DO-types)



## HEAT EXCHANGERS, COLD PLATES FOR SYSTEM COOLING

- **180 Series** Liquid Cold Plates for efficient, reliable liquid cooling of power transistor arrays, optical and laser components, power modules—in standard configurations available from factory stock
- **720 Series** Liquid-to-Air Heat Exchangers with copper tubing and copper fins for computer system cooling, power supply cooling, instruments—in standard configurations available from factory stock
- **730 Series** Liquid-to-Air Heat Exchangers with stainless steel tubing and copper fins for use in laser systems, instruments, and other applications requiring the use of deionized water

**REQUEST OUR ACTIVE COOLING PRODUCTS CATALOG FOR INFORMATION ABOUT STANDARD LIQUID COLD PLATES AND HEAT EXCHANGERS AND FOR CUSTOM DESIGNS.**

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# AC and DC Brushless Fans

## FEATURES

- AC fans, 110/220/DV VAC
- DC fans, 5/12/24/48 VDC
- Ball bearing construction.
- Reduced noise design.
- Locked rotor and reverse polarity protection.
- Low power consumption design.
- Speed sensing option available.
- All models designed to meet UL, CSA, and VDE standards.
- Low, medium and high speeds available, all options



E89061



LR59458-1



### DC 4020 Size: 40 x 40 x 20mm (1.57" x 1.57" x 0.78")

| Model No.              | Bearing     | Rated Voltage (V) | Operating Voltage (V) | Rated Current (A) | Rated Input Power (W) | Max. Air Flow CFM | Max. Air Pressure (mmH <sub>2</sub> O) | Noise dB(A) |
|------------------------|-------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|----------------------------------------|-------------|
| SP402012M<br>BP402012M | Sleeve Ball | 12                | 10.2-13.8             | 0.10              | 1.20                  | 5.4               | 3.60                                   | 27          |
| SP402012H<br>BP402012H | Sleeve Ball | 12                | 10.2-13.8             | 0.16              | 1.92                  | 7.56              | 4.50                                   | 33          |

### DC 6025 Size: 60 x 60 x 25mm (2.36" x 2.36" x 1")

|                        |             |    |           |      |      |      |     |    |
|------------------------|-------------|----|-----------|------|------|------|-----|----|
| SP602512M<br>BP602512M | Sleeve Ball | 12 | 10.2-13.8 | 0.11 | 1.32 | 15.5 | 3.0 | 25 |
| SP602524H<br>BP602524H | Sleeve Ball | 24 | 20.4-27.6 | 0.12 | 2.88 | 18.7 | 4.1 | 30 |

### DC 8025 Size: 80 x 80 x 25mm (3.15" x 3.15" x 1")

|                        |             |    |           |      |      |      |     |    |
|------------------------|-------------|----|-----------|------|------|------|-----|----|
| SP802512M<br>BP802512M | Sleeve Ball | 12 | 10.2-13.8 | 0.16 | 1.92 | 27   | 3.7 | 32 |
| SP802524H<br>BP802524H | Sleeve Ball | 24 | 20.4-27.6 | 0.13 | 3.12 | 32.4 | 5.5 | 35 |

### DC 9225 Size: 92 x 92 x 25mm (3.62" x 3.62" x 1")

|                        |             |    |           |      |      |      |     |    |
|------------------------|-------------|----|-----------|------|------|------|-----|----|
| SP922512M<br>BP922512M | Sleeve Ball | 12 | 10.2-13.8 | 0.20 | 2.4  | 32.4 | 3.5 | 35 |
| SP922524H<br>BP922524H | Sleeve Ball | 24 | 20.4-27.6 | 0.18 | 4.32 | 43.2 | 3.8 | 40 |

### DC 12025 Size: 120 x 120 x 25mm (4.72" x 4.72" x 1")

|                          |             |    |           |      |      |      |     |    |
|--------------------------|-------------|----|-----------|------|------|------|-----|----|
| SP1202512M<br>BP1202512M | Sleeve Ball | 12 | 10.2-13.8 | 0.42 | 5.04 | 64.8 | 4.7 | 46 |
| SP1202524H<br>BP1202524H | Sleeve Ball | 24 | 20.4-27.6 | 0.30 | 7.2  | 79.2 | 5.5 | 50 |

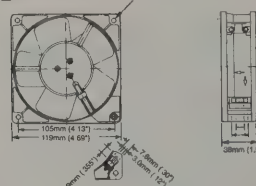
### AC 3E Size: 80 x 80 x 38mm (3.15" x 3.15" x 1.5")

| Model No.          | Bearing     | Voltage (VAC) | Frequency (Hz) | Current (mA) | Power (W) | Noise dB(A) | Air Flow CFM | Speed RPM |
|--------------------|-------------|---------------|----------------|--------------|-----------|-------------|--------------|-----------|
| 3E-115S<br>3E-115B | Sleeve Ball | 115           | 50/60          | 140/130      | 190/180   | 11/10       | 33/38        | 2700/3100 |
| 3E-230S<br>3E-230B | Sleeve Ball | 230/220       | 50/60          | 86/75        | 105/95    | 13/12       | 33/38        | 2700/3100 |
| 3E-DVS<br>3E-DVB   | Sleeve Ball | 115/230       | 50/60          | 150/80       | 190/95    | 13/13       | 33/38        | 2700/3100 |

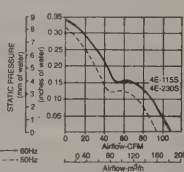
### AC 4E Size: 119 x 119 x 38mm (4.69" x 4.69" x 1.5")

|                    |             |         |       |         |         |       |       |        |           |
|--------------------|-------------|---------|-------|---------|---------|-------|-------|--------|-----------|
| 4E-115S<br>4E-115B | Sleeve Ball | 115     | 50/60 | 250/240 | 260/250 | 24/22 | 45/50 | 94/105 | 2650/3000 |
| 4E-230S<br>4E-230B | Sleeve Ball | 230/220 | 50/60 | 140/130 | 180/170 | 22/21 | 45/50 | 94/105 | 2650/3000 |
| 4E-DVS<br>4E-DVB   | Sleeve Ball | 115/230 | 50/60 | 250/130 | 260/170 | 22/21 | 45/50 | 94/105 | 2650/3000 |

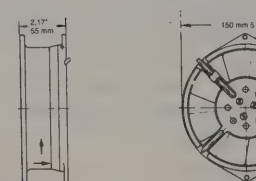
#### AC 4E Dimensions



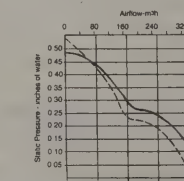
#### AC 4E Air Performance



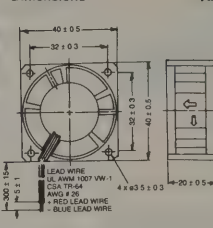
#### AC 5E Dimensions



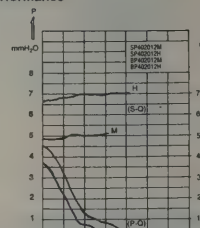
#### AC 5E Air Performance



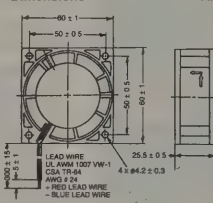
#### DC 4020 Dimensions



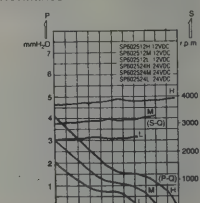
#### DC 4020 Air Performance



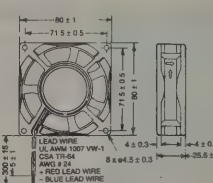
#### DC 6025 Dimensions



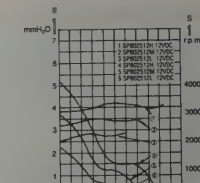
#### DC 6025 Air Performance



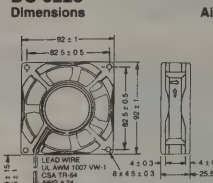
#### DC 8025 Dimensions



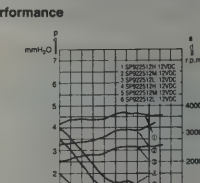
#### DC 8025 Air Performance



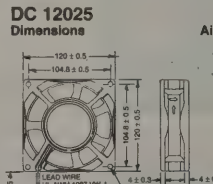
#### DC 9225 Dimensions



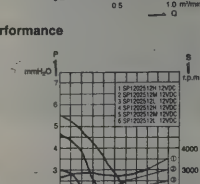
#### DC 9225 Air Performance



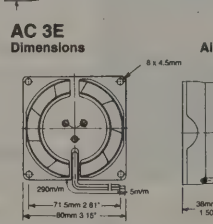
#### DC 12025 Dimensions



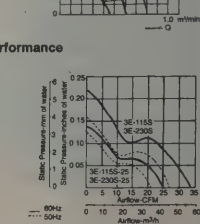
#### DC 12025 Air Performance



#### AC 3E Dimensions



#### AC 3E Air Performance



Asia - Europe - North America

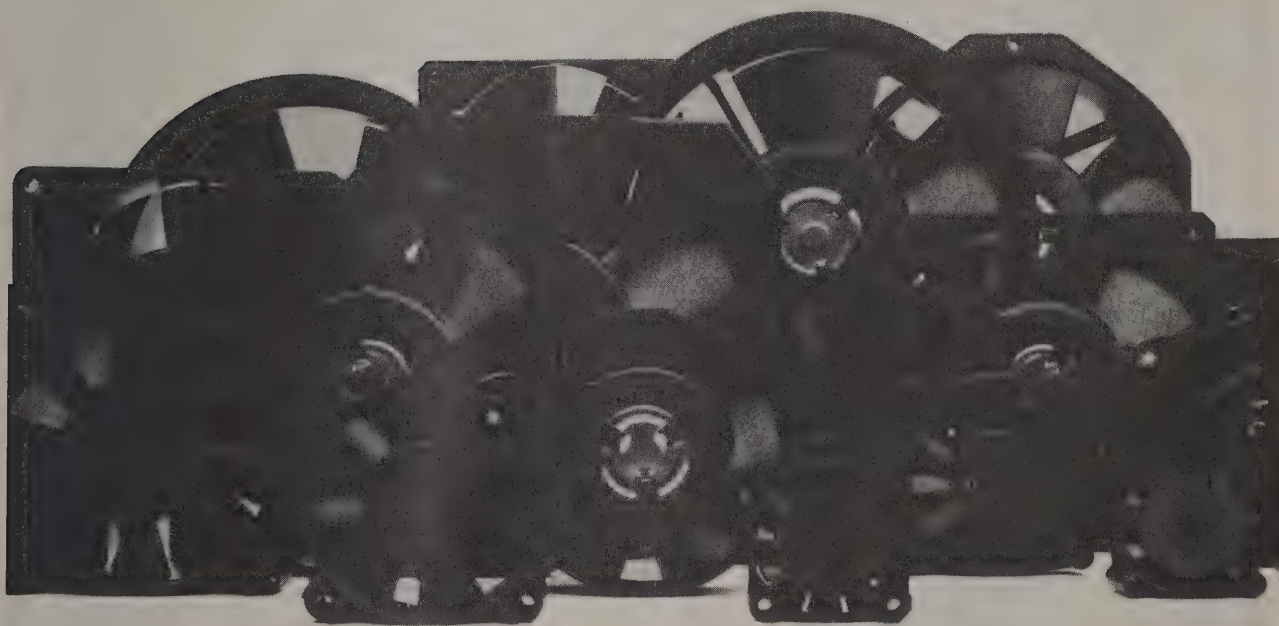
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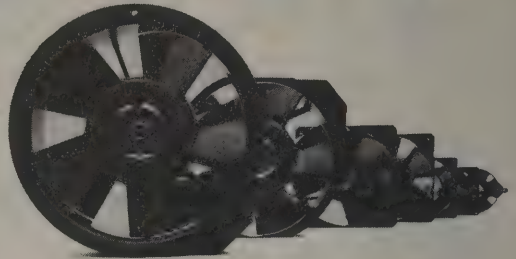
Quality fans for electronics.

**Note:** All 115 volt and 220 volt values are at 60 Hz; consult factory for 50 Hz performance. Noise is listed for sleeve bearing versions; ball bearing may be slightly higher. Most AC fans are UL, CSA and VDE approved. Most DC fans are UL and CSA approved with other approvals pending. Other voltages and terminal/lead configurations available upon request (consult factory). Specifications subject to change without notice. For full catalog or if more information is required, ask your local representative or call ETRI at 704/289-5423.

# ETRI AC Fans size & airflow

ETRI has long been a leader in the design of air-moving devices, from large mine ventilators to miniature flat axial fans. Today, ETRI air movers are cooling and protecting the most sophisticated of electronic packages, and our basic commitment to uncompromising quality and high performance standards have not changed.

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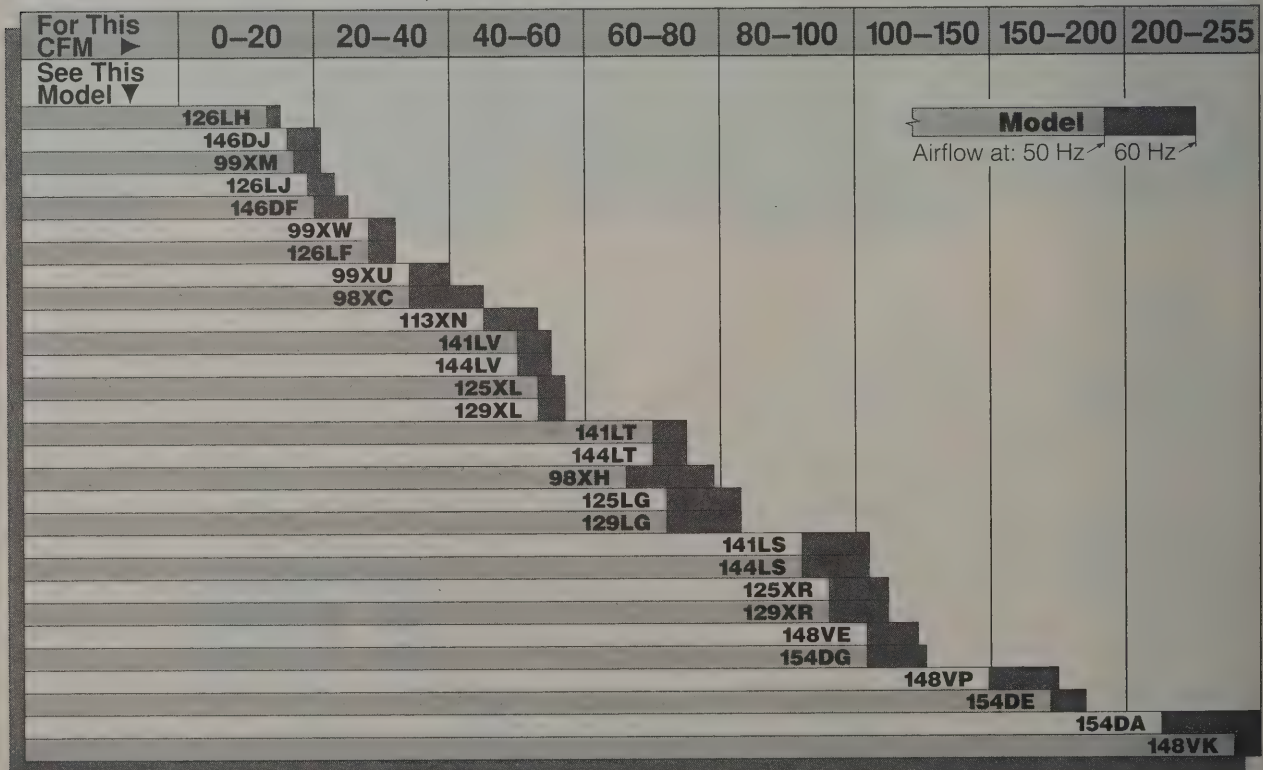


## Size

| Fan Size        |               | Shape | Weight |     | Fan Models         |
|-----------------|---------------|-------|--------|-----|--------------------|
| inches          | mm            |       | ounces | kg  |                    |
| 3.15 dia. × 1   | 80 dia. × 25  | ○     | 10.5   | 0.3 | 146                |
| 3.15 sq. × 1.5  | 80 sq. × 38   | □     | 14.0   | 0.4 | 126                |
| 3.6 sq. × 1     | 92 sq. × 25   | □     | 13.9   | 0.4 | 99                 |
| 3.6 sq. × 1.5   | 92 sq. × 38   | □     | 21.6   | 0.6 | 113                |
| 4.6 sq. × 1     | 120 sq. × 25  | □     | 16.3   | 0.5 | 98                 |
| 4.6 sq. × 1.5   | 120 sq. × 38  | □     | 25.5   | 0.7 | 125, 129, 141, 144 |
| 6.78 dia. × 1.5 | 172 dia. × 38 | ○     | 38.7   | 1.1 | 148                |
| 6.75 dia. × 2   | 172 dia. × 50 | ○     | 31.0   | 0.9 | 154                |



## Airflow





# ETRI AC Fans models

ETRI, 1503 Rocky River Road North, Monroe, NC 28110 • 704/289-5423 • Fax 704/283-7170

| Part Number    | Volts | Bearing Type | Input watts | Current mA | Speed RPM | Noise dBA | Airflow CFM | Size in / mm             |
|----------------|-------|--------------|-------------|------------|-----------|-----------|-------------|--------------------------|
| 98XH-0182-020  | 115   | ball         | 11          | 110        | 3000      | 44        | 79          | 4.6 × 1" / 120 × 25 mm   |
| 98XH-2182-000  | 115   | sleeve       | 11          | 110        | 3000      | 44        | 79          | 4.6 × 1" / 120 × 25 mm   |
| 98XH-0181-000  | 220   | ball         | 13          | 65         | 3000      | 44        | 79          | 4.6 × 1" / 120 × 25 mm   |
| 98XH-2181-000  | 220   | sleeve       | 13          | 65         | 3000      | 44        | 79          | 4.6 × 1" / 120 × 25 mm   |
| 98XC-0182-000  | 115   | ball         | 10          | 110        | 1700      | 28        | 45          | 4.6 × 1" / 120 × 25 mm   |
| 98XC-2182-000  | 115   | sleeve       | 10          | 110        | 1700      | 28        | 45          | 4.6 × 1" / 120 × 25 mm   |
| 98XC-0181-000  | 220   | ball         | 12          | 70         | 1700      | 28        | 45          | 4.6 × 1" / 120 × 25 mm   |
| 98XC-2181-000  | 220   | sleeve       | 12          | 70         | 1700      | 28        | 45          | 4.6 × 1" / 120 × 25 mm   |
| 99XU-0182-000  | 115   | ball         | 9           | 105        | 3200      | 41        | 40          | 3.6 × 1" / 92 × 25 mm    |
| 99XU-2182-000  | 115   | sleeve       | 9           | 105        | 3200      | 41        | 40          | 3.6 × 1" / 92 × 25 mm    |
| 99XU-0181-000  | 220   | ball         | 11          | 60         | 3200      | 41        | 40          | 3.6 × 1" / 92 × 25 mm    |
| 99XU-2181-000  | 220   | sleeve       | 11          | 60         | 3200      | 41        | 40          | 3.6 × 1" / 92 × 25 mm    |
| 99XW-0182-000  | 115   | ball         | 6           | 70         | 2500      | 33        | 32          | 3.6 × 1" / 92 × 25 mm    |
| 99XW-2182-000  | 115   | sleeve       | 6           | 70         | 2500      | 33        | 32          | 3.6 × 1" / 92 × 25 mm    |
| 99XW-0181-000  | 220   | ball         | 7           | 40         | 2500      | 33        | 32          | 3.6 × 1" / 92 × 25 mm    |
| 99XW-2181-000  | 220   | sleeve       | 7           | 40         | 2500      | 33        | 32          | 3.6 × 1" / 92 × 25 mm    |
| 99XM-0182-000  | 115   | ball         | 6           | 65         | 1700      | 25        | 21          | 3.6 × 1" / 92 × 25 mm    |
| 99XM-2182-000  | 115   | sleeve       | 6           | 65         | 1700      | 25        | 21          | 3.6 × 1" / 92 × 25 mm    |
| 99XM-0181-000  | 220   | ball         | 7           | 35         | 1700      | 25        | 21          | 3.6 × 1" / 92 × 25 mm    |
| 99XM-2181-000  | 220   | sleeve       | 7           | 35         | 1700      | 25        | 21          | 3.6 × 1" / 92 × 25 mm    |
| 113XN-0182-000 | 115   | ball         | 11          | 135        | 3300      | 40.5      | 53          | 3.6 × 1.5" / 92 × 38 mm  |
| 113XN-2182-000 | 115   | sleeve       | 11          | 135        | 3300      | 40.5      | 53          | 3.6 × 1.5" / 92 × 38 mm  |
| 113XN-0181-000 | 220   | ball         | 12          | 80         | 3300      | 40.5      | 53          | 3.6 × 1.5" / 92 × 38 mm  |
| 113XN-2181-000 | 220   | sleeve       | 12          | 80         | 3300      | 40.5      | 53          | 3.6 × 1.5" / 92 × 38 mm  |
| 125XR-0282-010 | 115   | ball         | 15          | 180        | 3250      | 47.5      | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 125XR-2282-010 | 115   | sleeve       | 15          | 180        | 3250      | 47.5      | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 125XR-0281-010 | 220   | ball         | 15          | 105        | 3250      | 47.5      | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 125XR-2281-010 | 220   | sleeve       | 15          | 105        | 3250      | 47.5      | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 125LG-0282-010 | 115   | ball         | 13          | 160        | 2400      | 39.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 125LG-2282-010 | 115   | sleeve       | 13          | 160        | 2400      | 39.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 125LG-0281-010 | 220   | ball         | 15          | 90         | 2400      | 39.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 125LG-2281-090 | 220   | sleeve       | 15          | 90         | 2400      | 39.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 125XL-0282-010 | 115   | ball         | 10          | 115        | 1650      | 32        | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 125XL-2282-030 | 115   | sleeve       | 10          | 115        | 1650      | 32        | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 125XL-0281-010 | 220   | ball         | 10          | 65         | 1650      | 32        | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 125XL-2281-030 | 220   | sleeve       | 10          | 65         | 1650      | 32        | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 129XR-0282-010 | 115   | ball         | 15          | 180        | 3250      | 54        | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 129XR-2282-010 | 115   | sleeve       | 15          | 180        | 3250      | 54        | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 129XR-0281-010 | 220   | ball         | 15          | 105        | 3250      | 54        | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 129XR-2281-010 | 220   | sleeve       | 15          | 105        | 3250      | 54        | 112         | 4.6 × 1.5" / 120 × 38 mm |
| 129XL-0282-010 | 115   | ball         | 10          | 115        | 1650      | 33.5      | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 129XL-2282-010 | 115   | sleeve       | 10          | 115        | 1650      | 33.5      | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 129XL-0281-010 | 220   | ball         | 10          | 65         | 1650      | 33.5      | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 129XL-2281-010 | 220   | sleeve       | 10          | 65         | 1650      | 33.5      | 57          | 4.6 × 1.5" / 120 × 38 mm |
| 129LG-0282-010 | 115   | ball         | 13          | 160        | 2400      | 47.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 129LG-2282-010 | 115   | sleeve       | 13          | 160        | 2400      | 47.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 129LG-0281-010 | 220   | ball         | 15          | 90         | 2400      | 47.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 129LG-2281-010 | 220   | sleeve       | 15          | 90         | 2400      | 47.5      | 83          | 4.6 × 1.5" / 120 × 38 mm |
| 126LF-0182-000 | 115   | ball         | 8           | 100        | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm |
| 126LF-2182-000 | 115   | sleeve       | 8           | 100        | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm |
| 126LF-0181-000 | 220   | ball         | 9           | 60         | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm |
| 126LF-2181-000 | 220   | sleeve       | 9           | 60         | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm |

# ETRI AC Fans models

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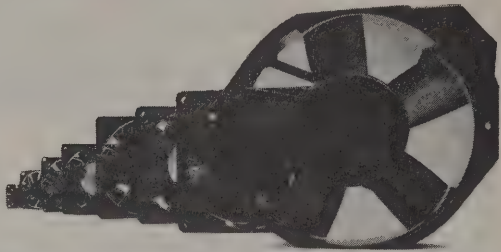
| Part Number    | Volts | Bearing Type | Input watts | Current mA | Speed RPM | Noise dBA | Airflow CFM | Size in/mm                |
|----------------|-------|--------------|-------------|------------|-----------|-----------|-------------|---------------------------|
| 126LJ-0182-000 | 115   | ball         | 6           | 65         | 2400      | 25        | 23          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LJ-2182-000 | 115   | sleeve       | 6           | 65         | 2400      | 25        | 23          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LJ-0181-000 | 220   | ball         | 7           | 40         | 2400      | 25        | 23          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LJ-2181-000 | 220   | sleeve       | 7           | 40         | 2400      | 25        | 23          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LH-2182-000 | 115   | sleeve       | 4           | 50         | 1550      | 11        | 15          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LH-2181-000 | 220   | sleeve       | 6           | 30         | 1550      | 15        | 15          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LF-0282-000 | 115   | ball         | 8           | 100        | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LF-2282-000 | 115   | sleeve       | 8           | 100        | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LF-0281-000 | 220   | ball         | 9           | 60         | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm  |
| 126LF-2281-000 | 220   | sleeve       | 9           | 60         | 3200      | 34        | 32          | 3.15 × 1.5" / 80 × 38 mm  |
| 146DF-0182-004 | 115   | ball         | 5           | 60         | 3000      | 32        | 25          | 3.15 × 1" / 80 × 25 mm    |
| 146DF-2182-004 | 115   | sleeve       | 5           | 60         | 3000      | 32        | 25          | 3.15 × 1" / 80 × 25 mm    |
| 146DF-0181-000 | 220   | ball         | 9           | 50         | 3000      | 32        | 25          | 3.15 × 1" / 80 × 25 mm    |
| 146DF-2181-000 | 220   | sleeve       | 9           | 50         | 3000      | 32        | 25          | 3.15 × 1" / 80 × 25 mm    |
| 146DJ-0182-004 | 115   | ball         | 5           | 55         | 2600      | 27.5      | 21          | 3.15 × 1" / 80 × 25 mm    |
| 146DJ-2182-030 | 115   | sleeve       | 5           | 55         | 2600      | 27.5      | 21          | 3.15 × 1" / 80 × 25 mm    |
| 141LS-0282-010 | 115   | ball         | 12          | 140        | 3200      | 47        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 141LS-2282-010 | 115   | sleeve       | 12          | 140        | 3200      | 47        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 141LS-0281-010 | 220   | ball         | 12          | 80         | 3200      | 47        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 141LS-2281-010 | 220   | sleeve       | 12          | 80         | 3200      | 47        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 141LT-0282-010 | 115   | ball         | 9           | 110        | 2300      | 38.5      | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LT-2282-010 | 115   | sleeve       | 9           | 110        | 2300      | 38.5      | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LT-0281-010 | 220   | ball         | 10          | 65         | 2400      | 38.5      | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LT-2281-010 | 220   | sleeve       | 10          | 65         | 2400      | 38.5      | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LV-0282-010 | 115   | ball         | 8           | 100        | 1700      | 28        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LV-2282-010 | 115   | sleeve       | 8           | 100        | 1700      | 28        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LV-0281-010 | 220   | ball         | 9           | 55         | 1700      | 28        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 141LV-2281-010 | 220   | sleeve       | 9           | 55         | 1700      | 28        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LS-0282-010 | 115   | ball         | 12          | 140        | 3200      | 54        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 144LS-2282-010 | 115   | sleeve       | 12          | 140        | 3200      | 54        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 144LS-0281-010 | 220   | ball         | 12          | 80         | 3200      | 54        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 144LS-2281-010 | 220   | sleeve       | 12          | 80         | 3200      | 54        | 105         | 4.6 × 1.5" / 120 × 38 mm  |
| 144LT-0282-010 | 115   | ball         | 9           | 110        | 2300      | 43        | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LT-2282-010 | 115   | sleeve       | 9           | 110        | 2300      | 43        | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LT-0281-010 | 220   | ball         | 10          | 65         | 2400      | 43        | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LT-2281-010 | 220   | sleeve       | 10          | 65         | 2400      | 43        | 75          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LV-0282-010 | 115   | ball         | 8           | 100        | 1700      | 33        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LV-2282-010 | 115   | sleeve       | 8           | 100        | 1700      | 33        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LV-0281-010 | 220   | ball         | 9           | 55         | 1700      | 33        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 144LV-2281-010 | 220   | sleeve       | 9           | 55         | 1700      | 33        | 55          | 4.6 × 1.5" / 120 × 38 mm  |
| 148VK-0282-030 | 115   | ball         | 32          | 270        | 3300      | 57        | 255         | 6.78 × 1.5" / 172 × 38 mm |
| 148VK-0281-030 | 220   | ball         | 33          | 170        | 3200      | 57        | 255         | 6.78 × 1.5" / 172 × 38 mm |
| 148VP-0282-030 | 115   | ball         | 18          | 160        | 2100      | 45.5      | 149         | 6.78 × 1.5" / 172 × 38 mm |
| 148VP-0281-030 | 220   | ball         | 22          | 100        | 2350      | 45.5      | 172         | 6.78 × 1.5" / 172 × 38 mm |
| 148VE-0282-030 | 115   | ball         | 11          | 90         | 1650      | 39        | 123         | 6.78 × 1.5" / 172 × 38 mm |
| 148VE-0281-030 | 220   | ball         | 14          | 60         | 1650      | 39        | 123         | 6.78 × 1.5" / 172 × 38 mm |
| 154DA-0282-030 | 115   | ball         | 29          | 260        | 3400      | 55.5      | 255         | 6.75 × 2" / 171.5 × 50 mm |
| 154DA-0281-030 | 220   | ball         | 30          | 160        | 3400      | 55.5      | 255         | 6.75 × 2" / 171.5 × 50 mm |
| 154DE-0282-030 | 115   | ball         | 15          | 130        | 2300      | 45        | 172         | 6.75 × 2" / 171.5 × 50 mm |
| 154DE-0281-030 | 220   | ball         | 16          | 75         | 2300      | 45        | 172         | 6.75 × 2" / 171.5 × 50 mm |
| 154DG-0282-030 | 115   | ball         | 11          | 90         | 1700      | 35        | 126         | 6.75 × 2" / 171.5 × 50 mm |
| 154DG-0281-030 | 220   | ball         | 14          | 60         | 1700      | 35        | 126         | 6.75 × 2" / 171.5 × 50 mm |



# ETRI DC Fans size & airflow

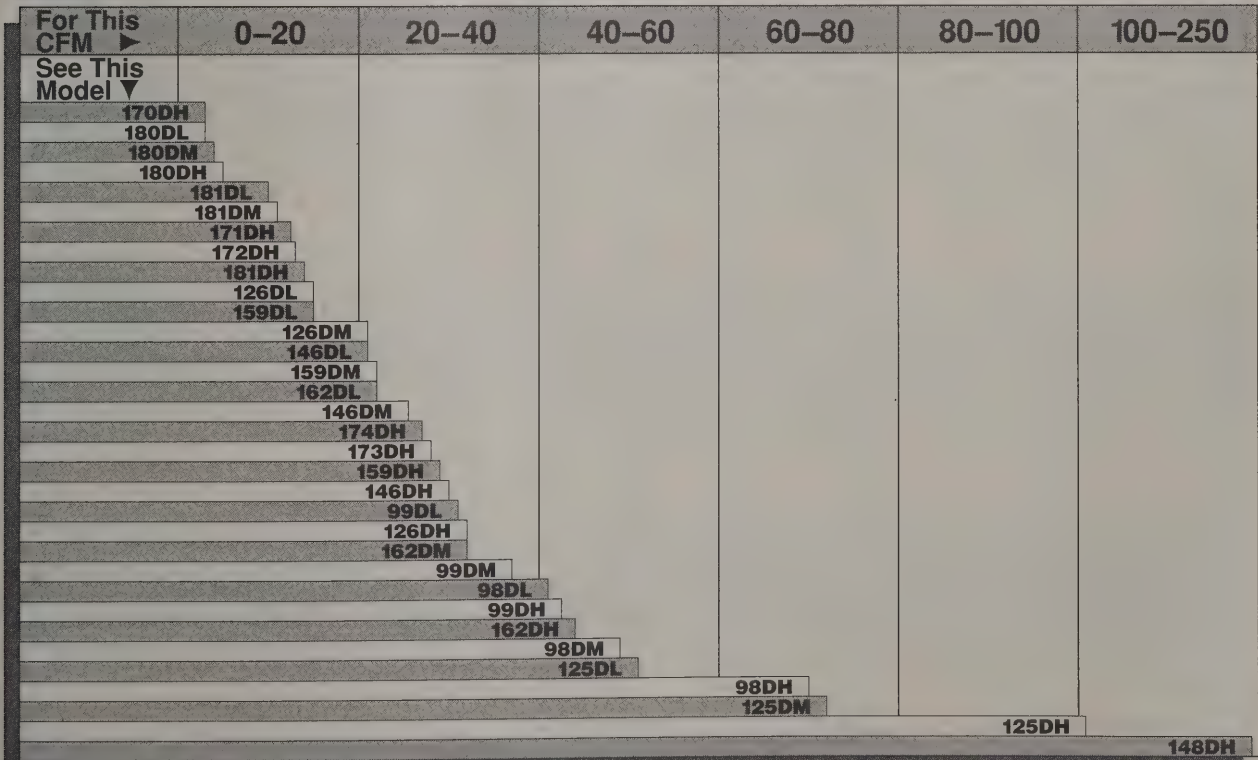
ETRI's line of DC fans offers the design engineer a wide range of product. Options in various voltages, speeds, bearing systems and termination configurations allow the engineer to precisely select the performance for his particular application.

## Size



| Fan Size        |               | Shape | Weight |       | Fan Models |
|-----------------|---------------|-------|--------|-------|------------|
| inches          | mm.           |       | ounces | kg    |            |
| 1.57 sq. x 0.39 | 40 sq. x 10   | □     | 0.635  | 0.018 | 170        |
| 1.57 sq. x 0.79 | 40 sq. x 20   | □     | 1.23   | 0.035 | 180        |
| 2.36 sq. x 0.59 | 60 sq. x 15   | □     | 1.48   | 0.042 | 171        |
| 2.36 sq. x 0.79 | 60 sq. x 20   | □     | 1.76   | 0.050 | 172        |
| 2.36 sq. x 1    | 60 sq. x 25   | □     | 2.40   | 0.068 | 181        |
| 3.15 sq. x 0.79 | 80 sq. x 20   | □     | 3.00   | 0.085 | 173        |
| 3.15 sq. x 1    | 80 sq. x 25   | □     | 3.88   | 0.110 | 146        |
| 3.15 sq. x 1.25 | 80 sq. x 32   | □     | 7.05   | 0.200 | 159        |
| 3.15 sq. x 1.5  | 80 sq. x 38   | □     | 7.76   | 0.220 | 126        |
| 3.6 sq. x 0.59  | 92 sq. x 15   | □     | 2.96   | 0.084 | 174        |
| 3.6 sq. x 1     | 92 sq. x 25   | □     | 4.41   | 0.125 | 99         |
| 3.6 sq. x 1.25  | 92 sq. x 32   | □     | 6.70   | 0.190 | 162        |
| 4.6 sq. x 1     | 120 sq. x 25  | □     | 5.47   | 0.155 | 98         |
| 4.6 sq. x 1.5   | 120 sq. x 38  | □     | 11.6   | 0.330 | 125        |
| 6.78 dia. x 1.5 | 172 dia. x 38 | ○     | 27.2   | 0.770 | 148        |

## Airflow



# ETRI DC Fans

## models

ETRI, 1503 Rocky River Road North, Monroe, NC 28110 • 704/289-5423 • Fax 704/283-7170

| Part Number     | Volts | Bearing Type | Input watts | Current mA | Speed RPM | Noise dBA | Airflow CFM | Size in / mm             |
|-----------------|-------|--------------|-------------|------------|-----------|-----------|-------------|--------------------------|
| 98DH-1LP31-000  | 12    | sleeve       | 3.72        | 310        | 2400      | 42        | 66          | 4.6 x 1" / 120 x 25 mm   |
| 98DH-2LP31-000  | 24    | sleeve       | 4.32        | 180        | 2400      | 42        | 66          | 4.6 x 1" / 120 x 25 mm   |
| 98DH-4LP31-000  | 48    | sleeve       | 4.7         | 100        | 2900      | 40        | 74          | 4.6 x 1" / 120 x 25 mm   |
| 98DM-1LP31-000  | 12    | sleeve       | 2.04        | 170        | 1950      | 35        | 49          | 4.6 x 1" / 120 x 25 mm   |
| 98DM-2LP31-000  | 24    | sleeve       | 2.8         | 115        | 1950      | 35        | 49          | 4.6 x 1" / 120 x 25 mm   |
| 98DL-1LP31-000  | 12    | sleeve       | 1.44        | 120        | 1650      | 30        | 41          | 4.6 x 1" / 120 x 25 mm   |
| 98DL-2LP31-000  | 24    | sleeve       | 1.92        | 80         | 1650      | 30        | 41          | 4.6 x 1" / 120 x 25 mm   |
| 99DH-1LP31-000  | 12    | sleeve       | 3.12        | 260        | 2760      | 40        | 42.5        | 3.6 x 1" / 92 x 25 mm    |
| 99DH-2LP31-000  | 24    | sleeve       | 3.36        | 140        | 2760      | 40        | 42.5        | 3.6 x 1" / 92 x 25 mm    |
| 99DM-1LP31-000  | 12    | sleeve       | 2.16        | 180        | 2430      | 35        | 37          | 3.6 x 1" / 92 x 25 mm    |
| 99DM-2LP31-000  | 24    | sleeve       | 2.88        | 120        | 2430      | 35        | 37          | 3.6 x 1" / 92 x 25 mm    |
| 99DL-1LP31-000  | 12    | sleeve       | 1.8         | 150        | 2030      | 31        | 31          | 3.6 x 1" / 92 x 25 mm    |
| 99DL-2LP31-000  | 24    | sleeve       | 2.4         | 100        | 2030      | 31        | 31          | 3.6 x 1" / 92 x 25 mm    |
| 125DH-1LP11-000 | 12    | ball         | 6.3         | 520        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-1LP31-000 | 12    | sleeve       | 6.3         | 520        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-2LP11-000 | 24    | ball         | 6           | 250        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-2LP31-000 | 24    | sleeve       | 6           | 250        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-4LP11-000 | 48    | ball         | 6.6         | 135        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-4LP31-000 | 48    | sleeve       | 6.6         | 135        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-1TP11-000 | 12    | ball         | 6.3         | 520        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-1TP31-000 | 12    | sleeve       | 6.3         | 520        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-2TP11-000 | 24    | ball         | 6           | 250        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-2TP31-000 | 24    | sleeve       | 6           | 250        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-4TP11-000 | 48    | ball         | 6.6         | 135        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DH-4TP31-000 | 48    | sleeve       | 6.6         | 135        | 3000      | 44.5      | 102         | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-1LP11-000 | 12    | ball         | 3.2         | 270        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-1LP31-000 | 12    | sleeve       | 3.2         | 270        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-2LP11-000 | 24    | ball         | 3.2         | 135        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-2LP31-000 | 24    | sleeve       | 3.2         | 135        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-4LP31-000 | 48    | sleeve       | 3.2         | 70         | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-1TP11-000 | 12    | ball         | 3.2         | 270        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-1TP31-000 | 12    | sleeve       | 3.2         | 270        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-2TP11-000 | 24    | ball         | 3.2         | 135        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-2TP31-000 | 24    | sleeve       | 3.2         | 135        | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DM-4TP31-000 | 48    | sleeve       | 3.2         | 70         | 2250      | 37.5      | 72          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-1LP11-000 | 12    | ball         | 1.7         | 140        | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-1LP31-000 | 12    | sleeve       | 1.7         | 140        | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-2LP11-000 | 24    | ball         | 1.9         | 80         | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-2LP31-000 | 24    | sleeve       | 1.9         | 80         | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-1TP11-000 | 12    | ball         | 1.7         | 140        | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-1TP31-000 | 12    | sleeve       | 1.7         | 140        | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-2TP11-000 | 24    | ball         | 1.9         | 80         | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 125DL-2TP31-000 | 24    | sleeve       | 1.9         | 80         | 1600      | 27        | 51          | 4.6 x 1.5" / 120 x 38 mm |
| 126DH-1LP11-000 | 12    | ball         | 3.5         | 290        | 3600      | 38.5      | 32          | 3.15 x 1.5" / 80 x 38 mm |
| 126DH-1LP31-000 | 12    | sleeve       | 3.5         | 290        | 3600      | 38.5      | 32          | 3.15 x 1.5" / 80 x 38 mm |
| 126DH-2LP11-000 | 24    | ball         | 3.6         | 150        | 3600      | 38.5      | 32          | 3.15 x 1.5" / 80 x 38 mm |
| 126DH-2LP31-000 | 24    | sleeve       | 3.6         | 150        | 3600      | 38.5      | 32          | 3.15 x 1.5" / 80 x 38 mm |
| 126DM-1LP11-000 | 12    | ball         | 1.7         | 140        | 2500      | 26.5      | 21          | 3.15 x 1.5" / 80 x 38 mm |
| 126DM-1LP31-000 | 12    | sleeve       | 1.7         | 140        | 2500      | 26.5      | 21          | 3.15 x 1.5" / 80 x 38 mm |
| 126DM-2LP11-000 | 24    | ball         | 2           | 80         | 2500      | 26.5      | 21          | 3.15 x 1.5" / 80 x 38 mm |
| 126DM-2LP31-000 | 24    | sleeve       | 2           | 80         | 2500      | 26.5      | 21          | 3.15 x 1.5" / 80 x 38 mm |
| 126DL-1LP11-000 | 12    | ball         | 1.1         | 90         | 1800      | 19.5      | 15          | 3.15 x 1.5" / 80 x 38 mm |
| 126DL-1LP31-000 | 12    | sleeve       | 1.1         | 90         | 1800      | 19.5      | 15          | 3.15 x 1.5" / 80 x 38 mm |



ETRI DC Fans

models

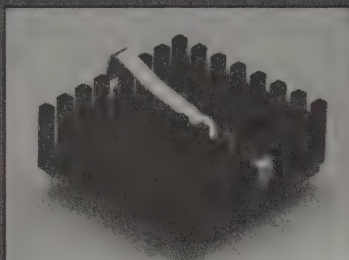
ETRI, 1503 Rocky River Road North, Monroe, NC 28110 • 704/289-5423 • Fax 704/283-7170

| Part Number     | Volts | Bearing Type | Input watts | Current mA | Speed RPM | Noise dBA | Airflow CFM | Size in / mm              |
|-----------------|-------|--------------|-------------|------------|-----------|-----------|-------------|---------------------------|
| 146DH-1LP31-000 | 12    | sleeve       | 2.04        | 170        | 3010      | 36        | 30          | 3.15 × 1" / 80 × 25 mm    |
| 146DH-2LP31-000 | 24    | sleeve       | 2.04        | 85         | 3010      | 36        | 30          | 3.15 × 1" / 80 × 25 mm    |
| 146DM-1LP31-000 | 12    | sleeve       | 1.44        | 120        | 2440      | 30        | 25.5        | 3.15 × 1" / 80 × 25 mm    |
| 146DM-2LP31-000 | 24    | sleeve       | 1.44        | 60         | 2440      | 30        | 25.5        | 3.15 × 1" / 80 × 25 mm    |
| 146DL-1LP31-000 | 12    | sleeve       | 1.2         | 100        | 2030      | 25        | 21          | 3.15 × 1" / 80 × 25 mm    |
| 146DL-2LP31-000 | 24    | sleeve       | 1.2         | 50         | 2030      | 25        | 21          | 3.15 × 1" / 80 × 25 mm    |
| 148DH-2TM11-000 | 24    | ball         | 17          | 700        | 3100      | 58        | 238         | 6.78 × 1.5" / 172 × 38 mm |
| 148DH-4TM11-000 | 48    | ball         | 17          | 350        | 3100      | 58        | 238         | 6.78 × 1.5" / 172 × 38 mm |
| 159DH-1LP11-000 | 12    | ball         | 2.6         | 220        | 3600      | 33        | 29          | 3.15 × 1.25" / 80 × 32 mm |
| 159DH-1LP31-000 | 12    | sleeve       | 2.6         | 220        | 3600      | 33        | 29          | 3.15 × 1.25" / 80 × 32 mm |
| 159DH-2LP11-000 | 24    | ball         | 2.6         | 105        | 3600      | 33        | 29          | 3.15 × 1.25" / 80 × 32 mm |
| 159DH-2LP31-000 | 24    | sleeve       | 2.6         | 105        | 3600      | 33        | 29          | 3.15 × 1.25" / 80 × 32 mm |
| 159DH-4LP11-000 | 48    | ball         | 3.6         | 75         | 3600      | 33        | 29          | 3.15 × 1.25" / 80 × 32 mm |
| 159DH-4LP31-000 | 48    | sleeve       | 3.6         | 75         | 3600      | 33        | 29          | 3.15 × 1.25" / 80 × 32 mm |
| 159DM-1LP11-000 | 12    | ball         | 1.9         | 160        | 2750      | 26        | 22          | 3.15 × 1.25" / 80 × 32 mm |
| 159DM-1LP31-000 | 12    | sleeve       | 1.9         | 160        | 2750      | 26        | 22          | 3.15 × 1.25" / 80 × 32 mm |
| 159DM-2LP11-000 | 24    | ball         | 2           | 80         | 2750      | 26        | 22          | 3.15 × 1.25" / 80 × 32 mm |
| 159DM-2LP31-000 | 24    | sleeve       | 2           | 80         | 2750      | 26        | 22          | 3.15 × 1.25" / 80 × 32 mm |
| 159DL-1LP11-000 | 12    | ball         | 1.1         | 90         | 1800      | 14        | 15          | 3.15 × 1.25" / 80 × 32 mm |
| 159DL-1LP31-000 | 12    | sleeve       | 1.1         | 90         | 1800      | 14        | 15          | 3.15 × 1.25" / 80 × 32 mm |
| 162DH-1LP11-000 | 12    | ball         | 3           | 250        | 3250      | 33.5      | 44          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DH-1LP31-000 | 12    | sleeve       | 3           | 250        | 3250      | 33.5      | 44          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DH-2LP11-000 | 24    | ball         | 3.6         | 150        | 3250      | 33.5      | 44          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DH-2LP31-000 | 24    | sleeve       | 3.6         | 150        | 3250      | 33.5      | 44          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DH-4LP11-000 | 48    | ball         | 3.9         | 80         | 3250      | 33.5      | 44          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DH-4LP31-000 | 48    | sleeve       | 3.9         | 80         | 3250      | 33.5      | 44          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DM-1LP11-000 | 12    | ball         | 2           | 165        | 2500      | 27.5      | 32          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DM-1LP31-000 | 12    | sleeve       | 2           | 165        | 2500      | 27.5      | 32          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DM-2LP11-000 | 24    | ball         | 2.1         | 90         | 2500      | 27.5      | 32          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DM-2LP31-000 | 24    | sleeve       | 2.1         | 90         | 2500      | 27.5      | 32          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DL-1LP11-000 | 12    | ball         | 1.1         | 90         | 1700      | 19        | 22          | 3.6 × 1.25" / 92 × 32 mm  |
| 162DL-1LP31-000 | 12    | sleeve       | 1.1         | 90         | 1700      | 19        | 22          | 3.6 × 1.25" / 92 × 32 mm  |
| 170DH-5LP31-000 | 5     | sleeve       | 1.2         | 240        | 4700      | 29        | 3           | 1.57 × .39" / 40 × 10 mm  |
| 170DH-1LP31-000 | 12    | sleeve       | 1.2         | 100        | 5200      | 29        | 3           | 1.57 × .39" / 40 × 10 mm  |
| 171DH-1LP31-000 | 12    | sleeve       | 1.8         | 150        | 3800      | 32        | 12.5        | 2.36 × .59" / 60 × 15 mm  |
| 171DH-2LP31-000 | 24    | sleeve       | 1.8         | 75         | 3800      | 32        | 12.5        | 2.36 × .59" / 60 × 15 mm  |
| 172DH-1LP31-000 | 12    | sleeve       | 2.7         | 200        | 4500      | 31        | 13          | 2.36 × .79" / 60 × 20 mm  |
| 172DH-2LP31-000 | 24    | sleeve       | 2.7         | 100        | 4500      | 31        | 13          | 2.36 × .79" / 60 × 20 mm  |
| 173DH-1LP31-000 | 12    | sleeve       | 2.2         | 210        | 2800      | 29        | 28          | 3.15 × .79" / 80 × 20 mm  |
| 173DH-2LP31-000 | 24    | sleeve       | 2.2         | 130        | 2800      | 29        | 28          | 3.15 × .79" / 80 × 20 mm  |
| 174DH-1LP31-000 | 12    | sleeve       | 2.2         | 180        | 3000      | 42        | 27          | 3.6 × .59" / 92 × 15 mm   |
| 174DH-2LP31-000 | 24    | sleeve       | 2.2         | 92         | 3000      | 42        | 27          | 3.6 × .59" / 92 × 15 mm   |
| 180DH-1LP31-000 | 12    | sleeve       | 1.8         | 150        | 7000      | 32.5      | 5           | 1.57 × .79" / 40 × 20 mm  |
| 180DH-2LP31-000 | 24    | sleeve       | 1.8         | 75         | 7000      | 32.5      | 5           | 1.57 × .79" / 40 × 20 mm  |
| 180DM-1LP31-000 | 12    | sleeve       | 1.56        | 130        | 6000      | 29        | 4           | 1.57 × .79" / 40 × 20 mm  |
| 180DL-1LP31-000 | 12    | sleeve       | 1.2         | 100        | 5000      | 25.5      | 3           | 1.57 × .79" / 40 × 20 mm  |
| 181DH-1LP31-000 | 12    | sleeve       | 1.8         | 130        | 4500      | 33        | 14          | 2.36 × 1" / 60 × 25 mm    |
| 181DH-2LP31-000 | 24    | sleeve       | 2.16        | 70         | 4500      | 33        | 14          | 2.36 × 1" / 60 × 25 mm    |
| 181DM-1LP31-000 | 12    | sleeve       | 1.32        | 110        | 3900      | 31        | 11          | 2.36 × 1" / 60 × 25 mm    |
| 181DM-2LP31-000 | 24    | sleeve       | 1.2         | 100        | 3900      | 31        | 11          | 2.36 × 1" / 60 × 25 mm    |
| 181DL-1LP31-000 | 12    | sleeve       | 1.08        | 90         | 3500      | 27.5      | 10          | 2.36 × 1" / 60 × 25 mm    |

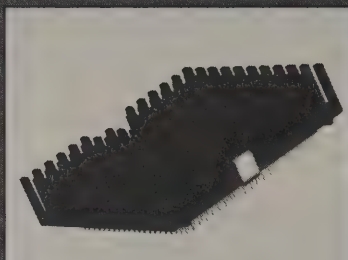


# **IERC - THE EXPERTS IN THE THERMAL MANAGEMENT OF ELECTRONICS**

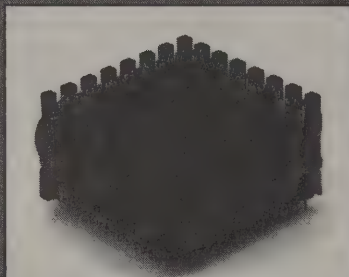
## **HEAT DISSIPATOR PRODUCTS**



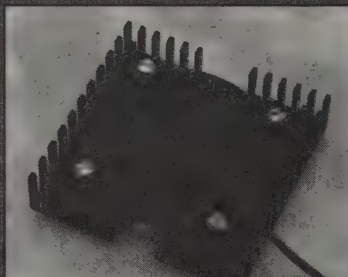
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- stamped
- extruded
- thermal links
- solderable studs
- pin grid arrays
- multi-watt packages

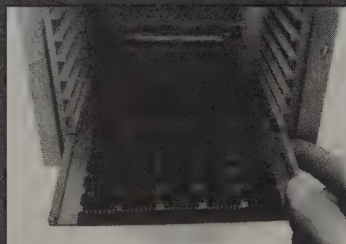
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- ZIF circuit board retainers
- tool-free modules • custom coldwalls • SEM card cages



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HDF 5216  
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HDF 4020  
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40mmX40mmX12mm



HDF3020  
30mmX30mmX20mm



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# ELINA DC FAN OVERVIEW

## HDF SERIES

DC

| Size (inches)              | Model          | Rated Voltage VDC | Operate Voltage VDC | Rated Current mA | Rated Input W | Rated Speed RPM | Max. Airflow m <sup>3</sup> /min. | CFM | Max. Static Pressure mmHg | inchAq | Noise Level dB(A)/m | Weight gr | oz   |
|----------------------------|----------------|-------------------|---------------------|------------------|---------------|-----------------|-----------------------------------|-----|---------------------------|--------|---------------------|-----------|------|
| 1.2" X .8" (30mm X 20mm)   | HDF3020L-05LLB | 5                 | 4.25-5.75           | 70               | 0.35          | 4300            | 0.039                             | 1.4 | 1.0                       | 0.04   | 19                  | 29        | 1.0  |
|                            | HDF3020L-05LB  | 5                 | 4.25-5.75           | 110              | 0.5           | 5300            | 0.042                             | 1.5 | 1.2                       | 0.05   | 21                  |           |      |
|                            | HDF3020L-12LB  | 12                | 10.2-13.8           | 54               | 0.6           | 4750            | 0.062                             | 2.5 | 3.3                       | 0.13   | 24                  |           |      |
|                            | HDF3020L-12MB  | 12                | 10.2-13.8           | 120              | 1.44          | 7700            | 0.062                             | 2.5 | 3.3                       | 0.13   | 24                  |           |      |
| 1.57" X .5" (40mm X 12mm)  | HDF4012L-05LB  | 5                 | 4.25-5.75           | 132              | 0.66          | 5200            | 0.12                              | 4.3 | 2.1                       | 0.10   | 23                  | 20        | 0.71 |
|                            | HDF4012L-12LB  | 12                | 10.2-13.8           | 55               | 0.66          | 5200            | 0.12                              | 4.3 | 2.1                       | 0.10   | 23                  |           |      |
|                            | HDF4012L-05HB  | 5                 | 4.25-5.75           | 240              | 1.32          | 7900            | 0.21                              | 7.4 | 4.9                       | 0.22   | 34                  |           |      |
|                            | HDF4012L-12HB  | 12                | 10.2-13.8           | 110              | 1.32          | 7900            | 0.21                              | 7.4 | 4.9                       | 0.22   | 34                  |           |      |
| 1.57" X .8" (40mm X 20mm)  | HDF4020L-05LLB | 5                 | 4.25-5.75           | 80               | 0.4           | 3550            | 0.08                              | 2.8 | 0.95                      | 0.05   | 21                  | 32        | 1.1  |
|                            | HDF4020L-05LB  | 5                 | 4.25-5.75           | 115              | 0.523         | 4300            | 0.10                              | 3.5 | 1.8                       | 0.07   | 23                  |           |      |
|                            | HDF4020L-12LB  | 12                | 10.2-13.8           | 57               | 0.69          | 4300            | 0.10                              | 3.5 | 1.8                       | 0.07   | 23                  |           |      |
|                            | HDF4020L-12MB  | 12                | 10.2-13.8           | 135              | 1.62          | 5750            | 0.16                              | 5.7 | 2.75                      | 0.14   | 26                  |           |      |
| 2" X .63" (52mm X 16mm)    | HDF5216L-05MB  | 5                 | 4.25-5.75           | 209              | 1.05          | 3500            | 0.21                              | 7.4 | 2.3                       | 0.09   | 24                  | 35        | 1.23 |
|                            | HDF5216L-12MB  | 12                | 10.2-13.8           | 88               | 1.06          | 3500            | 0.21                              | 7.4 | 2.3                       | 0.09   | 24                  |           |      |
|                            | HDF5216L-05HB  | 5                 | 4.25-5.75           | 363              | 1.82          | 4250            | 0.26                              | 9.2 | 3.3                       | 0.13   | 29                  |           |      |
|                            | HDF5216L-12HB  | 12                | 10.2-13.8           | 154              | 1.85          | 4250            | 0.26                              | 9.2 | 3.3                       | 0.13   | 29                  |           |      |
| 2.38" X .59" (60mm X 15mm) | HDF6015L-12LB  | 12                | 10.2-13.8           | 100              | 1.2           | 2300            | 0.23                              | 8.1 | 1.45                      | 0.06   | 21                  | 41        | 1.45 |
|                            | HDF6015L-12MB  | 12                | 10.2-13.8           | 130              | 1.56          | 3700            | 0.39                              | 14  | 2.45                      | 0.10   | 28                  |           |      |
|                            | HDF6015L-12HB  | 12                | 10.2-13.8           | 170              | 2.16          | 4500            | 0.46                              | 16  | 3.40                      | 0.13   | 34                  |           |      |
|                            | HDF6016L-05LB  | 5                 | 3.75-5.75           | 165              | 0.83          | 2800            | 0.27                              | 10  | 1.73                      | 0.07   | 20                  | 50        | 1.76 |
| 2.38" X .63" (60mm X 16mm) | HDF6016L-12LB  | 12                | 10.2-13.8           | 85               | 1.02          | 2800            | 0.28                              | 10  | 1.2                       | 0.06   | 20                  |           |      |
|                            | HDF6016L-05MB  | 5                 | 4.25-5.75           | 286              | 1.43          | 3350            | 0.35                              | 12  | 2.5                       | 0.10   | 25                  |           |      |
|                            | HDF6016L-12MB  | 12                | 10.2-13.8           | 110              | 1.32          | 3700            | 0.44                              | 14  | 3.1                       | 0.12   | 27                  |           |      |
|                            | HDF6016L-05HB  | 5                 | 4.25-5.75           | 396              | 1.98          | 4300            | 0.46                              | 17  | 3.9                       | 0.15   | 30                  |           |      |
|                            | HDF6016L-12HB  | 12                | 10.2-13.8           | 154              | 1.85          | 4300            | 0.46                              | 17  | 3.9                       | 0.15   | 30                  |           |      |
|                            | HDF6025L-12LB  | 12                | 10.2-13.8           | 70               | 0.66          | 2550            | 0.285                             | 10  | 1.7                       | 0.06   | 21                  |           |      |
|                            | HDF6025L-12MB  | 12                | 10.2-13.8           | 75               | 0.9           | 3000            | 0.32                              | 11  | 2.2                       | 0.09   | 26                  |           |      |
|                            | HDF6025L-24MB  | 24                | 20.4-27.6           | 50               | 1.2           | 3200            | 0.34                              | 12  | 2.2                       | 0.09   | 27                  |           |      |
| 2.38" X 1" (60mm X 25mm)   | HDF6025L-12HB  | 12                | 10.2-13.8           | 150              | 1.8           | 4500            | 0.52                              | 18  | 4.4                       | 0.19   | 35                  | 85        | 3.0  |
|                            | HDF6025L-24HB  | 24                | 20.4-27.6           | 80               | 1.92          | 4500            | 0.52                              | 18  | 4.4                       | 0.19   | 35                  |           |      |
|                            | HDF6025L-12HMB | 12                | 10.2-13.8           | 230              | 2.76          | 5350            | 0.63                              | 22  | 6.1                       | 0.24   | 41                  |           |      |
|                            | HDF6025L-24HMB | 24                | 20.5-25.9           | 120              | 2.88          | 5350            | 0.63                              | 22  | 6.1                       | 0.24   | 41                  |           |      |
| 3.15" X .8" (80mm X 25mm)  | HDF8025L-12LB  | 12                | 10.2-13.8           | 65               | 0.78          | 1850            | 0.55                              | 19  | 1.1                       | 0.06   | 27                  | 100       | 3.5  |
|                            | HDF8025L-12MB  | 12                | 10.2-13.8           | 95               | 1.14          | 2450            | 0.73                              | 26  | 2.1                       | 0.09   | 32                  |           |      |
|                            | HDF8025L-24MB  | 24                | 20.4-27.6           | 60               | 1.44          | 2600            | 0.86                              | 30  | 2.7                       | 0.11   | 33                  |           |      |
|                            | HDF8025L-12HB  | 12                | 10.2-13.8           | 160              | 1.92          | 3150            | 0.99                              | 35  | 3.4                       | 0.16   | 37                  |           |      |
|                            | HDF8025L-24HB  | 24                | 20.4-27.6           | 95               | 2.28          | 3150            | 0.99                              | 35  | 3.4                       | 0.16   | 37                  |           |      |
|                            | HDF8025L-12HMB | 12                | 10.2-13.8           | 270              | 3.24          | 3550            | 1.10                              | 39  | 4.3                       | 0.20   | 41                  |           |      |
|                            | HDF8025L-24HMB | 24                | 20.4-27.6           | 125              | 3.84          | 3550            | 1.10                              | 39  | 4.3                       | 0.20   | 41                  |           |      |
|                            | HDF9225L-12LB  | 12                | 10.2-13.8           | 110              | 1.32          | 2300            | 0.99                              | 35  | 2.7                       | 0.11   | 32                  | 130       | 4.9  |
| 3.62" X 1" (92mm X 25mm)   | HDF9225L-24LB  | 24                | 20.4-27.6           | 65               | 1.56          | 2300            | 0.99                              | 35  | 2.7                       | 0.11   | 32                  |           |      |
|                            | HDF9225L-12MB  | 12                | 10.2-13.8           | 155              | 1.86          | 2850            | 1.2                               | 42  | 3.8                       | 0.17   | 37                  |           |      |
|                            | HDF9225L-24MB  | 24                | 20.4-27.6           | 90               | 2.16          | 2850            | 1.2                               | 42  | 3.8                       | 0.17   | 37                  |           |      |
|                            | HDF9225L-12HB  | 12                | 10.2-13.8           | 240              | 2.88          | 3300            | 1.45                              | 51  | 5.7                       | 0.22   | 42                  |           |      |
|                            | HDF9225L-24HB  | 24                | 20.4-27.6           | 125              | 3.00          | 3300            | 1.45                              | 51  | 5.7                       | 0.22   | 42                  |           |      |
| 4.72" X 1" (120mm X 25mm)  | HDF1225L-12MB  | 12                | 10.2-13.8           | 135              | 1.62          | 1750            | 1.5                               | 63  | 2.0                       | 0.08   | 36                  | 180       | 6.3  |
|                            | HDF1225L-24MB  | 24                | 20.4-27.6           | 70               | 1.68          | 1750            | 1.5                               | 63  | 2.0                       | 0.08   | 36                  |           |      |
|                            | HDF1225L-12HB  | 12                | 10.2-13.8           | 325              | 3.90          | 2500            | 2.1                               | 74  | 3.6                       | 0.17   | 45                  |           |      |
|                            | HDF1225L-24HB  | 24                | 20.4-27.6           | 150              | 3.60          | 2500            | 2.1                               | 74  | 3.6                       | 0.17   | 45                  |           |      |
|                            | HDF1225L-12HMB | 12                | 10.2-13.8           | 580              | 6.96          | 3200            | 2.7                               | 96  | 5.2                       | 0.24   | 52                  |           |      |
|                            | HDF1225L-24HMB | 24                | 20.4-27.6           | 320              | 7.68          | 3200            | 2.7                               | 96  | 5.2                       | 0.24   | 52                  |           |      |
|                            | HDF1225L-12HMB | 12                | 10.2-13.8           | 580              | 6.96          | 3200            | 2.7                               | 96  | 5.2                       | 0.24   | 52                  |           |      |
|                            | HDF1225L-24HMB | 24                | 20.4-27.6           | 320              | 7.68          | 3200            | 2.7                               | 96  | 5.2                       | 0.24   | 52                  |           |      |

□ = PENDING

## KDA SERIES

DC

| Size (inches)              | Model      | Rated Voltage VDC | Operate Voltage VDC | Rated Current mA | Rated Input W | Rated Speed rpm | Max. Airflow m <sup>3</sup> /min | CFM | Max. Static Pressure mmHg | inchAq | Noise Level dB(A)/m | Weight gr | oz   |
|----------------------------|------------|-------------------|---------------------|------------------|---------------|-----------------|----------------------------------|-----|---------------------------|--------|---------------------|-----------|------|
| 1" X .4" (25mm X 10mm)     | KDA120210M | 12                | 10.2-13.8           | 80               | .96           | 10000           | 0.04                             | 1.3 | 1.78                      | 0.05   | 27                  | 41        | 1.45 |
| 1.57" X .4" (40mm X 10mm)  | KDA120410M | 12                | 10.2-13.8           | 60               | 0.8           | 5200            | 0.14                             | 5   | 2.66                      | 0.105  | 27                  | 20        | .70  |
| 1.57" X .8" (40mm X 20mm)  | KDA120420M | 12                | 10.2-13.8           | 70               | .84           | 6000            | 0.02                             | 7.0 | 4.31                      | 0.17   | 27                  | 28        | .99  |
| 1.57" X .8" (40mm X 20mm)  | KDA120420L | 12                | 10.2-13.8           | 50               | .60           | 4500            | 0.13                             | 4.5 | 1.80                      | 0.07   | 19                  | 29        | .99  |
| 2" X .63" (52mm X 16mm)    | KDA120615M | 12                | 10.2-13.8           | 130              | 1.6           | 5000            | 0.28                             | 10  | 3.05                      | 0.12   | 27                  | 38        | 1.40 |
| 2.38" X .63" (60mm X 16mm) | KDA120615M | 12                | 10.2-13.8           | 110              | 1.6           | 3000            | 0.37                             | 15  | 1.78                      | 0.07   | 22                  | 41        | 1.45 |
| 2.38" X .63" (60mm X 16mm) | KDA120625H | 12                | 10.2-13.8           | 190              | 2.3           | 4500            | 0.65                             | 23  | 5.08                      | 0.20   | 36                  | 130       | 4.59 |
| 2.38" X 1" (60mm X 25mm)   | KDA120625L | 12                | 10.2-13.8           | 100              | 1.1           | 3200            | 0.48                             | 17  | 2.79                      | 0.11   | 27                  | 130       | 4.59 |
| 3.15" X 1" (80mm X 25mm)   | KDA120825H | 12                | 9-14                | 230              | 2.8           | 3000            | 1.02                             | 36  | 5.08                      | 0.20   | 34                  | 114       | 4.02 |
|                            | KDA120825L | 12                | 9-14                | 130              | 1.6           | 2300            | 0.73                             | 26  | 3.30                      | 0.13   | 25                  | 114       | 4.02 |
|                            | KDB240825H | 24                | 20.4-27.6           | 170              | 4.1           | 3000            | 1.02                             | 36  | 5.08                      | 0.20   | 34                  | 114       | 4.02 |
|                            | KDB240825L | 24                | 20.4-27.6           | 100              | 2.4           | 2300            | 0.73                             | 26  | 3.30                      | 0.13   | 25                  | 114       | 4.02 |
| 3.62" X 1" (92mm X 25mm)   | KDA120925H | 12                | 9-14                | 230              | 2.8           | 3200            | 1.41                             | 50  | 4.82                      | 0.19   | 34                  | 128       | 4.52 |
|                            | KDA120925L | 12                | 9-14                | 130              | 1.6           | 2400            | 1.16                             | 41  | 3.56                      | 0.14   | 27                  | 128       | 4.52 |
|                            | KDB240925H | 24                | 20.4-27.6           | 160              | 3.84          | 3200            | 1.41                             | 50  | 4.82                      | 0.19   | 34                  | 128       | 4.52 |
|                            | KDB240925L | 24                | 20.4-27.6           | 80               | 1.92          | 2400            | 1.16                             | 41  | 3.81                      | 0.15   | 27                  | 128       | 4.52 |

□ = PENDING

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INDEK

2360 Gume Drive, Suite A  
San Jose, CA 95131



ELINA

AC FAN OVERVIEW

EP SERIES

AC

| Size (inches)               | Model         | Rated Voltage VAC | Frequency HZ | Rated Current mA | Rated Input W | Rated Speed RPM | Max. Airflow         |     | Max. Static Pressure mmHg | InchHg | Noise Level dB(A)/m | Weight gr | oz   |
|-----------------------------|---------------|-------------------|--------------|------------------|---------------|-----------------|----------------------|-----|---------------------------|--------|---------------------|-----------|------|
|                             |               |                   |              |                  |               |                 | m <sup>3</sup> /min. | CFM |                           |        |                     |           |      |
| 3.15" X 1" (80mm X 25mm)    | EP082515 LSL  | 115               | 60           | 100              | 8             | 2300            | 0.42                 | 15  | 3.05                      | 0.12   | 29                  | 270       | 8.7  |
|                             |               | 115               | 50           | 100              | 9             | 2100            | 0.34                 | 12  | 2.29                      | 0.09   | 27                  |           |      |
|                             | EP082530 LSL  | 230               | 60           | 50               | 8             | 2300            | 0.42                 | 15  | 3.05                      | 0.12   | 29                  |           |      |
|                             |               | 220               | 50           | 50               | 9             | 2100            | 0.34                 | 12  | 2.29                      | 0.09   | 27                  |           |      |
|                             | EP082515 HSL  | 115               | 60           | 110              | 10            | 2800            | 0.59                 | 21  | 3.81                      | 0.15   | 33                  |           |      |
|                             |               | 115               | 50           | 120              | 11            | 2350            | 0.48                 | 17  | 2.29                      | 0.09   | 29                  |           |      |
| 3.15" X 1.5" (80mm X 38mm)  | EP082530 HSL  | 230               | 60           | 60               | 11            | 2800            | 0.59                 | 21  | 3.81                      | 0.15   | 33                  | 388       | 12.5 |
|                             |               | 220               | 50           | 70               | 12            | 2350            | 0.48                 | 17  | 2.29                      | 0.09   | 29                  |           |      |
|                             | EP083815 LSL  | 115               | 60           | 110              | 8             | 2500            | 0.65                 | 23  | 3.56                      | 0.14   | 32                  |           |      |
|                             |               | 115               | 50           | 110              | 9             | 2100            | 0.51                 | 18  | 2.79                      | 0.11   | 29                  |           |      |
|                             | EP083830 LSL  | 230               | 60           | 60               | 9             | 2500            | 0.65                 | 23  | 3.56                      | 0.14   | 32                  |           |      |
|                             |               | 220               | 50           | 70               | 10            | 2100            | 0.51                 | 18  | 2.79                      | 0.11   | 29                  |           |      |
| 3.62" X 1" (92mm X 25mm)    | EP083815 HSL  | 115               | 60           | 130              | 11            | 2750            | 0.85                 | 30  | 4.32                      | 0.17   | 35                  | 298       | 9.6  |
|                             |               | 115               | 50           | 150              | 12            | 2300            | 0.64                 | 23  | 2.79                      | 0.11   | 31                  |           |      |
|                             | EP092530 HST  | 230               | 60           | 60               | 12            | 2750            | 0.85                 | 30  | 4.32                      | 0.17   | 35                  |           |      |
|                             |               | 220               | 50           | 70               | 13            | 2300            | 0.64                 | 23  | 2.79                      | 0.11   | 31                  |           |      |
|                             | EP092515 LST  | 115               | 60           | 90               | 8             | 2200            | 0.74                 | 26  | 3.05                      | 0.12   | 35                  |           |      |
|                             |               | 115               | 50           | 100              | 9             | 1900            | 0.59                 | 21  | 2.54                      | 0.10   | 33                  |           |      |
| 4.72" X 1.5" (120mm X 38mm) | EP092530 LST  | 230               | 60           | 50               | 9             | 2200            | 0.74                 | 26  | 3.05                      | 0.12   | 35                  | 550       | 17.7 |
|                             |               | 220               | 50           | 50               | 10            | 1900            | 0.59                 | 21  | 2.54                      | 0.10   | 33                  |           |      |
|                             | EP092515 HST  | 115               | 60           | 110              | 11            | 2700            | 1.02                 | 36  | 3.81                      | 0.15   | 39                  |           |      |
|                             |               | 115               | 50           | 120              | 12            | 2250            | 0.82                 | 29  | 2.79                      | 0.11   | 36                  |           |      |
|                             | EP123815 LST  | 230               | 60           | 60               | 12            | 2700            | 1.02                 | 36  | 3.81                      | 0.15   | 39                  |           |      |
|                             |               | 220               | 50           | 70               | 13            | 2250            | 0.82                 | 29  | 2.79                      | 0.11   | 36                  |           |      |
| 4.72" X 1.5" (120mm X 38mm) | EP123815 LST  | 115               | 60           | 100              | 13            | 2150            | 1.70                 | 60  | 4.06                      | 0.16   | 38                  | 550       | 17.7 |
|                             |               | 115               | 50           | 130              | 13            | 2000            | 1.56                 | 55  | 3.56                      | 0.14   | 36                  |           |      |
|                             | EP123830 LST  | 230               | 60           | 60               | 12            | 2150            | 1.70                 | 60  | 4.06                      | 0.16   | 38                  |           |      |
|                             |               | 220               | 50           | 70               | 12            | 2000            | 1.56                 | 55  | 3.56                      | 0.14   | 36                  |           |      |
|                             | EP123815M-MST | 115               | 60           | 140              | 16            | 2500            | 2.12                 | 75  | 5.59                      | 0.22   | 42                  |           |      |
|                             |               | 115               | 50           | 170              | 17            | 2300            | 1.84                 | 65  | 5.08                      | 0.20   | 39                  |           |      |
| 4.72" X 1.5" (120mm X 38mm) | EP123830M-MST | 230               | 60           | 80               | 15            | 2500            | 2.12                 | 75  | 5.59                      | 0.22   | 42                  | 550       | 17.7 |
|                             |               | 220               | 50           | 90               | 16            | 2300            | 1.84                 | 65  | 5.08                      | 0.20   | 39                  |           |      |
|                             | EP123815H-HST | 115               | 60           | 180              | 18            | 2900            | 2.97                 | 105 | 8.12                      | 0.32   | 48                  |           |      |
|                             |               | 115               | 50           | 210              | 20            | 2550            | 2.40                 | 85  | 6.35                      | 0.25   | 43                  |           |      |
|                             | EP123830H-HST | 230               | 60           | 110              | 19            | 2900            | 2.97                 | 105 | 8.12                      | 0.32   | 48                  |           |      |
|                             |               | 220               | 50           | 120              | 20            | 2550            | 2.40                 | 85  | 6.35                      | 0.25   | 43                  |           |      |

AF/AS SERIES

AC

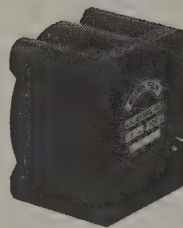
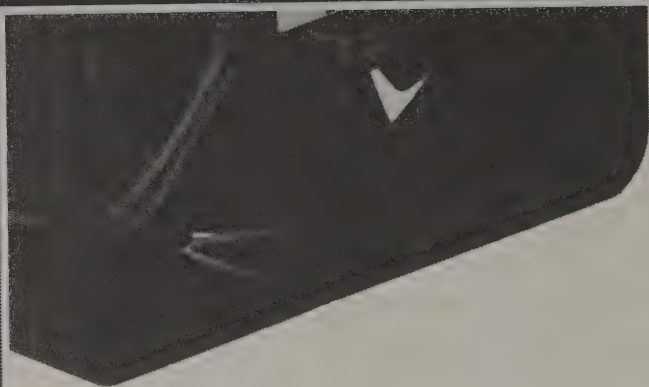
| Size (inches)              | Model         | Rated Voltage VAC | Frequency HZ | Rated Current mA | Rated Input W | Rated Speed RPM | Max. Airflow         |     | Max. Static Pressure mmHg | InchHg | Noise Level dB(A)/m | Weight gr | oz   |
|----------------------------|---------------|-------------------|--------------|------------------|---------------|-----------------|----------------------|-----|---------------------------|--------|---------------------|-----------|------|
|                            |               |                   |              |                  |               |                 | m <sup>3</sup> /min. | CFM |                           |        |                     |           |      |
| 3.1" X 1" (80mm X 25mm)    | AF8025L-115L  | 115               | 60           | 52               | 4.5           | 2000            | 0.42                 | 15  | 2.29                      | 0.09   | 32                  | 8.5       | 0.30 |
|                            |               | 230               | 60           | 26               | 4.5           | 2000            | 0.42                 | 15  | 2.29                      | 0.09   | 32                  |           |      |
|                            | AF8025L-115H  | 115               | 60           | 74               | 6             | 3000            | 0.68                 | 24  | 5.33                      | 0.21   | 36                  |           |      |
|                            |               | 230               | 60           | 37               | 6             | 3000            | 0.68                 | 24  | 5.33                      | 0.21   | 36                  |           |      |
|                            | AF9225T-115L  | 115               | 60           | 73               | 6             | 2000            | 0.79                 | 28  | 2.79                      | 0.11   | 34                  |           |      |
|                            |               | 230               | 60           | 37               | 6             | 2000            | 0.79                 | 28  | 2.79                      | 0.11   | 34                  |           |      |
| 3.6" X 1" (92mm X 25mm)    | AF9225T-115H  | 115               | 60           | 107              | 9             | 3000            | 1.17                 | 42  | 6.35                      | 0.25   | 39                  | 9.9       | 0.35 |
|                            |               | 230               | 60           | 54               | 9             | 3000            | 1.17                 | 42  | 6.35                      | 0.25   | 39                  |           |      |
|                            | AF1225T-115H  | 115               | 60           | 98               | 8             | 1800            | 1.50                 | 53  | 2.29                      | 0.09   | 36                  |           |      |
|                            |               | 230               | 60           | 49               | 8             | 1800            | 1.50                 | 53  | 2.29                      | 0.09   | 36                  |           |      |
|                            | AF1225T-230L  | 115               | 60           | 134              | 12            | 2750            | 2.29                 | 81  | 4.57                      | 0.18   | 45                  |           |      |
|                            |               | 230               | 60           | 150              | 12            | 2000            | 2.29                 | 81  | 4.57                      | 0.18   | 38                  |           |      |
| 4.7" X 1" (120mm X 25mm)   | AF1225T-230H  | 115               | 60           | 150              | 12            | 2000            | 2.01                 | 71  | 4.06                      | 0.16   | 38                  | 11.6      | 0.41 |
|                            |               | 230               | 60           | 75               | 12            | 2000            | 2.01                 | 71  | 4.06                      | 0.16   | 38                  |           |      |
|                            | AF1238T-115L  | 115               | 60           | 178              | 14            | 2000            | 2.40                 | 85  | 5.08                      | 0.20   | 42                  |           |      |
|                            |               | 230               | 60           | 89               | 14            | 2350            | 2.40                 | 85  | 5.08                      | 0.20   | 42                  |           |      |
|                            | AF1238T-230M  | 115               | 60           | 194              | 15            | 3000            | 2.99                 | 106 | 8.89                      | 0.35   | 49                  |           |      |
|                            |               | 230               | 60           | 97               | 15            | 3000            | 2.99                 | 106 | 8.89                      | 0.35   | 49                  |           |      |
| 4.7" X 1.5" (120mm X 38mm) | AF1238T-230H  | 115               | 60           | 358              | 27            | 2350            | 3.98                 | 141 | 6.10                      | 0.24   | 54                  | 29.3      | 1.03 |
|                            |               | 230               | 60           | 179              | 27            | 2350            | 3.98                 | 141 | 6.10                      | 0.24   | 54                  |           |      |
|                            | AS1358L-230LM | 115               | 60           | 383              | 30            | 2950            | 5.00                 | 177 | 10.92                     | 0.43   | 60                  |           |      |
|                            |               | 230               | 60           | 192              | 30            | 2950            | 5.00                 | 177 | 10.92                     | 0.43   | 60                  |           |      |
|                            | AS1538L-115HM | 115               | 60           | 399              | 33            | 2950            | 5.79                 | 205 | 8.89                      | 0.35   | 61                  |           |      |
|                            |               | 230               | 60           | 200              | 33            | 2950            | 5.79                 | 205 | 8.89                      | 0.35   | 61                  |           |      |
| 5.9" X 2.2" (150mm X 57mm) | AS1538L-230HM | 115               | 60           | 355              | 34            | 2750            | 5.00                 | 177 | 8.89                      | 0.35   | 55                  | 42.3      | 1.49 |
|                            |               | 230               | 60           | 177              | 34            | 2750            | 5.00                 | 177 | 8.89                      | 0.35   | 55                  |           |      |
|                            | AS1555L-115LM | 115               | 60           | 388              | 34            | 3050            | 5.79                 | 205 | 12.95                     | 0.51   | 59                  |           |      |
|                            |               | 230               | 60           | 194              | 34            | 3050            | 5.79                 | 205 | 12.95                     | 0.51   | 59                  |           |      |
|                            | AS1554L-230MM | 115               | 60           | 498              | 38            | 3050            | 6.69                 | 237 | 10.92                     | 0.43   | 63                  |           |      |
|                            |               | 230               | 60           | 249              | 38            | 3050            | 6.69                 | 237 | 10.92                     | 0.43   | 63                  |           |      |

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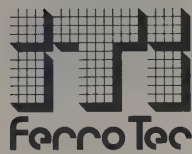
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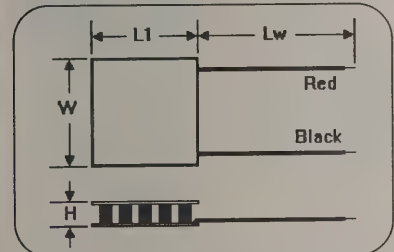


**International Thermoelectric, Inc.**  
131 Stedman Street, Chelmsford, MA 01824  
Phone 508-452-0212 FAX 508-452-0104

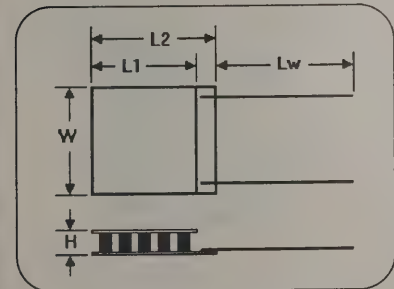
# Thermoelectrics From ITI

## "Cooling For The Future"

Summarized in the following table are specifications for many of the standard cooling modules normally available for prompt delivery in moderate quantities. We are regularly adding new TE devices to the "standard" product category and we suggest that you consult the factory for information on unlisted cooling modules. In addition to standard items, ITI FerroTec specializes in the design and manufacture of custom devices that will meet your exact needs. Please contact our engineering staff regarding your custom product requirements. Note that most thermoelectric modules are available with two different maximum temperature ratings. Devices rated for continuous operation at up to +150°C have a part number prefix of 63 and devices rated at up to +200°C have a 95 prefix.



Type 1 Module Configuration



Type 2 Module Configuration

Suffix code for height tolerance and face-plate configuration.

A = ± 0.3mm (± 0.01") Height tolerance and plain ceramic external surfaces

B = ± 0.03mm (± 0.001") Height tolerance and plain ceramic external surfaces

M = ± 0.3mm (± 0.01") Height tolerance and solderable metallized ceramic external surfaces

### STANDARD THERMOELECTRIC COOLING MODULES

| PART NUMBER                  | Suffix | Imax<br>(amps) | Qmax<br>(watts) | Vmax<br>(volts) | DTmax<br>(°C) | # of<br>couples | CONFIGURATION AND DIMENSIONS |              |              |             |              |            |
|------------------------------|--------|----------------|-----------------|-----------------|---------------|-----------------|------------------------------|--------------|--------------|-------------|--------------|------------|
|                              |        |                |                 |                 |               |                 | Type                         | W            | L1           | L2          | H*           | UNITS      |
| 6300/007/012<br>9500/007/012 | A, M   | 1.2            | 0.6             | 0.9             | 70            | 7               | 1                            | 0.16<br>4.0  | 0.16<br>4.0  | ----        | 0.092<br>2.3 | inch<br>mm |
| 6300/018/012<br>9500/018/012 | A, M   |                | 1.6             | 2.4             | 70            | 18              | 2                            | 0.24<br>6.1  | 0.24<br>6.1  | 0.30<br>7.6 | 0.102<br>2.6 | inch<br>mm |
| 6300/007/018<br>9500/007/018 | A, M   | 1.8            | 0.9             | 0.9             | 70            | 7               | 1                            | 0.16<br>4.0  | 0.16<br>4.0  | ----        | 0.080<br>2.0 | inch<br>mm |
| 6300/018/018<br>9500/018/018 | A, M   |                | 2.3             | 2.4             | 70            | 18              | 2                            | 0.24<br>6.1  | 0.24<br>6.1  | 0.30<br>7.6 | 0.090<br>2.3 | inch<br>mm |
| 6301/017/030<br>9501/017/030 | A,B,M  | 3.0            | 3.8             | 2.3             | 70            | 17              | 1                            | 0.45<br>11.5 | 0.45<br>11.5 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/023/030<br>9501/023/030 | A, B   |                | 5.2             | 3.1             | 70            | 23              | 1                            | 0.29<br>7.3  | 0.88<br>22.4 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/031/030<br>9501/031/030 | A,B,M  |                | 7.0             | 4.1             | 70            | 31              | 1                            | 0.60<br>15.1 | 0.60<br>15.1 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/071/030<br>9501/071/030 | A, B   |                | 16              | 9.4             | 70            | 71              | 1                            | 0.88<br>22.4 | 0.88<br>22.4 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/127/030                 | A, B   |                | 29              | 16.8            | 70            | 127             | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6301/017/040<br>9501/017/040 | A,B,M  |                | 5.1             | 2.3             | 70            | 17              | 1                            | 0.45<br>11.5 | 0.45<br>11.5 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/023/040<br>9501/023/040 | A, B   | 4.0            | 6.9             | 3.1             | 70            | 23              | 1                            | 0.29<br>7.3  | 0.88<br>22.4 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/031/040<br>9501/031/040 | A,B,M  |                | 9.3             | 4.1             | 70            | 31              | 1                            | 0.60<br>15.1 | 0.60<br>15.1 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/071/040<br>9501/071/040 | A, B   |                | 21              | 9.4             | 70            | 71              | 1                            | 0.88<br>22.4 | 0.88<br>22.4 | ----        | 0.125<br>3.2 | inch<br>mm |
| 6301/127/040                 | A, B   |                | 38              | 16.8            | 70            | 127             | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6300/017/040<br>9500/017/040 | A, B   | 4.0            | 5.1             | 2.3             | 70            | 17              | 1                            | 0.60<br>15.1 | 0.60<br>15.1 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/031/040<br>9500/031/040 | A, B   |                | 9.3             | 4.1             | 70            | 31              | 1                            | 0.79<br>20.0 | 0.79<br>20.0 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/035/040<br>9500/035/040 | A, B   |                | 10.5            | 4.6             | 70            | 35              | 1                            | 0.58<br>14.8 | 1.17<br>29.8 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/071/040<br>9500/071/040 | A, B   |                | 21              | 9.4             | 70            | 71              | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/127/040                 | A, B   |                | 38              | 16.8            | 70            | 127             | 1                            | 1.56<br>39.7 | 1.56<br>39.7 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/017/060<br>9500/017/060 | A, B   | 6.0            | 7.6             | 2.3             | 70            | 17              | 1                            | 0.60<br>15.1 | 0.60<br>15.1 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/031/060<br>9500/031/060 | A, B   |                | 14              | 4.1             | 70            | 31              | 1                            | 0.79<br>20.0 | 0.79<br>20.0 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/035/060<br>9500/035/060 | A, B   |                | 16              | 4.6             | 70            | 35              | 1                            | 0.58<br>14.8 | 1.17<br>29.8 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/071/060<br>9500/071/060 | A, B   |                | 32              | 9.4             | 70            | 71              | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/127/060                 | A, B   |                | 57              | 16.8            | 70            | 127             | 1                            | 1.56<br>39.7 | 1.56<br>39.7 | ----        | 0.164<br>4.2 | inch<br>mm |
| 6300/017/085<br>9500/017/085 | A, B   | 8.5            | 10.8            | 2.3             | 70            | 17              | 1                            | 0.60<br>15.1 | 0.60<br>15.1 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6300/031/085<br>9500/031/085 | A, B   |                | 20              | 4.1             | 70            | 31              | 1                            | 0.79<br>20.0 | 0.79<br>20.0 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6300/035/085<br>9500/035/085 | A, B   |                | 22              | 4.6             | 70            | 35              | 1                            | 0.58<br>14.8 | 1.17<br>29.8 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6300/071/085<br>9500/071/085 | A, B   |                | 45              | 9.4             | 70            | 71              | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6300/127/085                 | A, B   |                | 80              | 16.8            | 70            | 127             | 1                            | 1.56<br>39.7 | 1.56<br>39.7 | ----        | 0.155<br>3.9 | inch<br>mm |
| 6300/031/090<br>9500/031/090 | A, B   | 9              | 21              | 3.8             | 70            | 31              | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.183<br>4.6 | inch<br>mm |
| 6300/031/150<br>9500/031/150 | A, B   | 15             | 35              | 3.8             | 70            | 31              | 1                            | 1.17<br>29.8 | 1.17<br>29.8 | ----        | 0.183<br>4.6 | inch<br>mm |

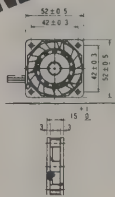
\*Note: "H" dimension on M-suffix modules is slightly larger



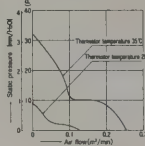
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## Thermal Control Fans

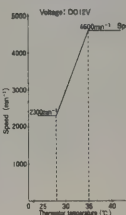
NEW



**Air flow curve**  
(according to Sanyo  
Double Chamber)



### Thermistor Detected Temperature vs Speed



Note: Available

1. Control range from low to high speed
2. Other temperature ranges

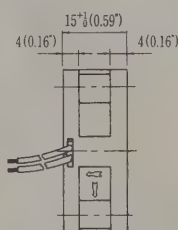
Note 1: The higher values are at a thermistor temperature of 40°C while the lower ones are at 30°C. Note 3: Noise was measured at 30 cm from the fans and converted to that at 1 m away.

| Model No.     | Rated voltage<br>V | Working voltage range<br>V | Rated current<br>A | Rated input<br>W | Rated speed<br>min <sup>-1</sup> (rpm) | Maximum air capacity<br>m³/min | Maximum static pressure<br>Pa (mm/H <sub>2</sub> O) | Noise<br>dB(A) | Weight<br>g |
|---------------|--------------------|----------------------------|--------------------|------------------|----------------------------------------|--------------------------------|-----------------------------------------------------|----------------|-------------|
| 109P051277H12 | 12                 | 10.2~13.8                  | 0.12               | 1.44             | 4,600                                  | 0.255                          | 31.9 (3.25)                                         | 27             | 55          |
|               |                    |                            | 0.08               | 0.96             | 2,300                                  | 0.13                           | 8.8 (0.9)                                           | 14             |             |
| 109P061277H12 |                    |                            | 0.14               | 1.68             | 4,100                                  | 0.4                            | 38.2 (3.9)                                          | 32             | 60          |
|               |                    |                            | 0.1                | 1.2              | 2,050                                  | 0.2                            | 9.3 (0.95)                                          | 18             |             |
| 109P061276H12 |                    |                            | 0.15               | 1.8              | 4,200                                  | 0.42                           | 31.9 (3.25)                                         | 31             | 90          |
|               |                    |                            | 0.1                | 1.2              | 2,100                                  | 0.21                           | 8.8 (0.9)                                           | 19             |             |
| 109R061214H12 |                    |                            | 0.13               | 1.56             | 3,800                                  | 0.53                           | 40.2 (4.1)                                          | 28             | 90          |
|               |                    |                            | 0.1                | 1.2              | 1,900                                  | 0.26                           | 9.8 (1.0)                                           | 15             |             |
| 109P081276H12 |                    |                            | 0.18               | 2.16             | 2,900                                  | 0.84                           | 29.4 (3.0)                                          | 31             | 100         |
|               |                    |                            | 0.1                | 1.2              | 1,450                                  | 0.42                           | 7.4 (0.75)                                          | 18             |             |
| 109R081214H12 |                    |                            | 0.14               | 1.68             | 2,900                                  | 1.03                           | 35.3 (3.6)                                          | 29             | 110         |
|               |                    |                            | 0.09               | 1.08             | 1,450                                  | 0.51                           | 8.8 (0.9)                                           | 14             |             |
| 109P091214H12 |                    |                            | 0.2                | 2.4              | 2,850                                  | 1.45                           | 45.1 (4.6)                                          | 33             | 150         |
|               |                    |                            | 0.1                | 1.2              | 1,400                                  | 0.71                           | 11.3 (1.15)                                         | 18             |             |
| 109P11214H12  |                    |                            | 0.55               | 6.6              | 2,800                                  | 2.5                            | 53.9 (5.5)                                          | 40             | 210         |
|               |                    |                            | 0.22               | 2.64             | 1,400                                  | 1.25                           | 13.7 (1.4)                                          | 25             |             |
| 109R121211H12 | 0.48               | 5.75                       | 2,600              | 2.9              | 64.7 (6.6)                             | 39                             | 260                                                 |                |             |
|               | 0.2                | 2.4                        | 1,300              | 1.4              | 16.2 (1.65)                            | 24                             |                                                     |                |             |

| Thermistor Mounting Method | 1. Lead Wire Type | 2. On PC Board Type | 3. U.S. Patent No. 4-659-290 and No. 4-722-669 |
|----------------------------|-------------------|---------------------|------------------------------------------------|
|----------------------------|-------------------|---------------------|------------------------------------------------|

## DC FANS

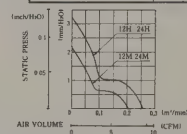
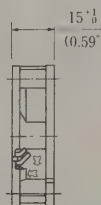
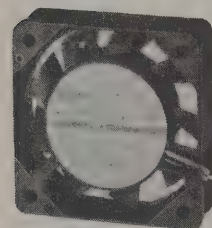
**DC Fine Ace - 40 mm**



20mm & 28mm  
Other Thickness Also Available

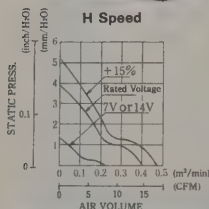
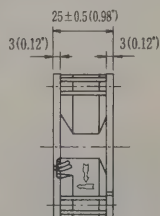
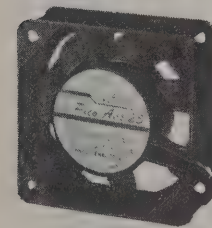
| Model No.    | Voltage<br>V | Applicable<br>V. Range<br>V | Current<br>A | Input<br>W | Speed<br>r.p.m. | Air Volume          |      | Static Pressure     |                       | Noise<br>dB(A) | Weight<br>g(oz) |
|--------------|--------------|-----------------------------|--------------|------------|-----------------|---------------------|------|---------------------|-----------------------|----------------|-----------------|
|              |              |                             |              |            |                 | m <sup>3</sup> /min | CFM  | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                |                 |
| 109P0412H702 | 12           | 10.2~13.8                   | 0.13         | 1.56       | 8,300           | 0.18                | 6.4  | 7.7                 | 0.30                  | 31             | 32              |
| 109P0412M702 |              |                             | 0.095        | 1.14       | 7,000           | 0.15                | 5.3  | 5.4                 | 0.21                  | 27             | (1.1)           |
| 109P0424H702 | 24           | 20.4~27.6                   | 0.08         | 1.92       | 8,300           | 0.18                | 6.4  | 7.7                 | 0.30                  | 31             |                 |
| 109P0412H602 |              | 7~13.8                      | 0.11         | 1.32       | 8,000           | 0.225               | 8.0  | 6.7                 | 0.26                  | 33             |                 |
| " F "        | 12           |                             | 0.09         | 1.08       | 6,500           | 0.183               | 6.5  | 4.6                 | 0.18                  | 28             | 45              |
| " M "        |              | 8~13.8                      | 0.05         | 0.6        | 5,000           | 0.136               | 4.8  | 2.7                 | 0.11                  | 24             | (1.6)           |
| 109P0424H602 | 24           | 12~27.6                     | 0.07         | 1.68       | 8,300           | 0.233               | 8.2  | 7.1                 | 0.28                  | 35             |                 |
| 109P0412H302 |              | 7~13.8                      | 0.195        | 2.34       | 8,700           | 0.32                | 11.4 | 10.5                | 0.40                  | 39             |                 |
| " F "        | 12           |                             | 0.105        | 1.26       | 6,700           | 0.244               | 8.6  | 6.0                 | 0.23                  | 32             | 50              |
| " M "        |              | 10.2~13.8                   | 0.045        | 0.54       | 4,100           | 0.15                | 5.3  | 2.2                 | 0.09                  | 22'            | (1.7)           |
| 109P0424H302 |              | 12~27.6                     | 0.095        | 2.58       | 8,700           | 0.32                | 11.4 | 10.5                | 0.40                  | 39             |                 |
| " F "        | 24           | 14~27.6                     | 0.055        | 1.32       | 6,700           | 0.244               | 8.6  | 6.0                 | 0.23                  | 32             |                 |

## DC Micro Ace - 52 mm



| Model No.    | Voltage<br>V | Applicable<br>V. Range<br>V | Current<br>A | Input<br>W | Speed<br>r.p.m. | Air Volume          |      | Static Pressure     |                       | Noise<br>dB(A) | Weight<br>g(oz) |
|--------------|--------------|-----------------------------|--------------|------------|-----------------|---------------------|------|---------------------|-----------------------|----------------|-----------------|
|              |              |                             |              |            |                 | m <sup>3</sup> /min | CFM  | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                |                 |
| 109P0512H702 | 12           | 7~13.8                      | 0.10         | 0.12       | 4,600           | 0.255               | 7.94 | 3.25                | 0.13                  | 27             | 55<br>(1.9)     |
| " M "        |              |                             | 0.07         | 0.84       | 3,700           | 0.205               | 7.24 | 2.18                | 0.09                  | 22             |                 |
| 109P0524H702 | 24           | 14~27.6                     | 0.05         | 1.20       | 4,600           | 0.255               | 7.94 | 3.25                | 0.13                  | 27             |                 |
| " M "        |              |                             | 0.04         | 0.96       | 3,700           | 0.205               | 7.24 | 2.18                | 0.09                  | 22             |                 |

## DC Pico Ace - 60 mm



15mm & 20mm  
s Also Available

| Model No.            | Voltage<br>V | Applicable<br>V. Range | Current<br>A | Input<br>W | Speed<br>r.p.m. | Air Volume          |      | Static Pressure     |                       | Noise<br>dB(A) | Weight<br>g(oz) |
|----------------------|--------------|------------------------|--------------|------------|-----------------|---------------------|------|---------------------|-----------------------|----------------|-----------------|
|                      |              |                        |              |            |                 | m <sup>3</sup> /min | CFM  | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                |                 |
| 109P0612H702         | 12           | 7~13.8                 | 0.09         | 1.08       | 4,100           | 0.4                 | 14.1 | 3.9                 | 0.15                  | 32             | 60              |
| " M "                |              | 10.2~13.8              | 0.07         | 0.84       | 3,100           | 0.3                 | 10.6 | 2.3                 | 0.09                  | 25             |                 |
| 109P0624H702         | 24           | 14~27.6                | 0.06         | 1.44       | 4,100           | 0.4                 | 14.1 | 3.9                 | 0.15                  | 32             | (2.1)           |
| " M "                |              | 20.4~27.6              | 0.04         | 0.96       | 3,100           | 0.3                 | 10.6 | 2.3                 | 0.09                  | 25             |                 |
| 109P0612H602         | 12           | 10.2~13.8              | 0.13         | 1.56       | 4,200           | 0.42                | 14.8 | 3.25                | 0.13                  | 31             | 80              |
| " M "                |              | 10.2~13.8              | 0.09         | 1.08       | 3,200           | 0.3                 | 10.6 | 1.92                | 0.08                  | 25             |                 |
| " W "                | 24           | 6~16                   | 0.13         | 1.56       | 4,200           | 0.42                | 14.8 | 3.25                | 0.13                  | 31             | (2.8)           |
| 109P0624H602         |              | 20.4~27.6              | 0.07         | 1.68       | 4,200           | 0.42                | 14.8 | 3.25                | 0.13                  | 31             |                 |
| " M "                | 24           | 20.4~27.6              | 0.05         | 1.2        | 3,200           | 0.3                 | 10.6 | 1.92                | 0.08                  | 25             | 90              |
| " W "                |              | 12~30                  | 0.07         | 1.68       | 4,200           | 0.42                | 14.8 | 3.25                | 0.13                  | 31             |                 |
| 109R0612H402 (4021)* | 12           | 6~13.8                 | 0.11         | 1.32       | 3,800           | 0.53                | 14.7 | 4.1                 | 0.16                  | 28             | (3.15)          |
| " F " ( " ) *        |              | 6~13.8                 | 0.09         | 1.08       | 3,200           | 0.44                | 15.5 | 3.0                 | 0.19                  | 24             |                 |
| " M " ( " ) *        | 24           | 7~13.8                 | 0.06         | 0.72       | 2,600           | 0.36                | 12.7 | 2.0                 | 0.08                  | 20             | 87              |
| 109R0624H402 (4021)* |              | 12~27.6                | 0.06         | 1.44       | 3,800           | 0.53                | 18.7 | 4.1                 | 0.16                  | 28             |                 |
| " F " ( " ) *        | 24           | 12~27.6                | 0.05         | 1.20       | 3,200           | 0.44                | 15.5 | 3.0                 | 0.19                  | 24             | (3.05)          |
| " M " ( " ) *        |              | 14~27.6                | 0.04         | 0.96       | 2,600           | 0.36                | 12.7 | 2.0                 | 0.08                  | 20             |                 |

Note W: Wide Range

Note\* ( ): Without rib type.

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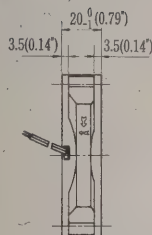
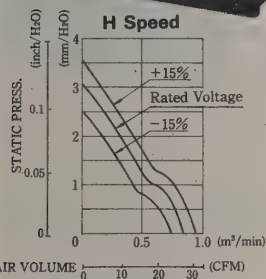
# LEADER

## SANYO DENKI CO., LTD.

### DC Petit Ace - 80 mm

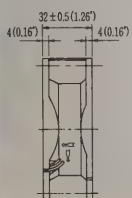
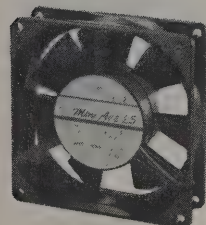


25mm & 32mm  
Thickness Also  
Available

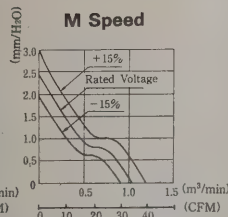
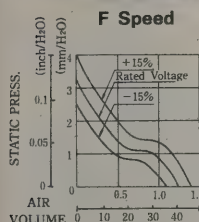


| Model No.             | Voltage V | Applicable V. Range V | Current A | Input W | Speed r.p.m. | Air Volume m <sup>3</sup> /min CFM | Static Pressure mm/H <sub>2</sub> O inch/H <sub>2</sub> O | Noise dB(A) | Weight g(oz) |
|-----------------------|-----------|-----------------------|-----------|---------|--------------|------------------------------------|-----------------------------------------------------------|-------------|--------------|
| 109P0812H602          | 12        | 10.2~13.8             | 0.21      | 2.52    | 2,900        | 0.84 29.7                          | 3.0 0.12                                                  | 31          | 96           |
| " M "                 |           |                       | 0.13      | 1.56    | 2,300        | 0.67 23.7                          | 1.9 0.07                                                  | 25          |              |
| 109P0824H602          | 24        | 20.4~27.6             | 0.12      | 2.88    | 2,900        | 0.84 29.7                          | 3.0 0.12                                                  | 31          | (3.4)        |
| " M "                 |           |                       | 0.07      | 1.68    | 2,300        | 0.67 23.7                          | 1.9 0.07                                                  | 25          |              |
| 109R0812H402 (4021) * | 12        | 6~13.8                | 0.13      | 1.56    | 2,900        | 1.03 36.4                          | 3.6 0.14                                                  | 29          | 104          |
| " F " ( " ) *         |           |                       | 0.11      | 1.32    | 2,600        | 0.92 32.5                          | 2.9 0.11                                                  | 26          |              |
| " M " ( " ) *         |           |                       | 0.09      | 1.08    | 2,350        | 0.83 29.3                          | 2.3 0.09                                                  | 23          |              |
| " L " ( " ) *         |           |                       | 0.06      | 0.72    | 1,850        | 0.65 23.0                          | 1.5 0.06                                                  | 20          |              |
| 109P0812MH4K2         | 24        | 10.2~13.8             | 0.13      | 1.56    | 2,400        | 0.83 29.3                          | 2.3 0.09                                                  | 26          | 132(4.6)     |
| " F " ( " ) *         |           |                       | 0.18      | 2.16    | 3,000        | 1.03 36.4                          | 3.5 0.13                                                  | 32          |              |
| 109R0824H402 (4021) * |           | 12~27.6               | 0.07      | 1.68    | 2,900        | 1.03 36.4                          | 3.6 0.14                                                  | 29          |              |
| " F " ( " ) *         |           |                       | 0.06      | 1.44    | 2,600        | 0.92 32.5                          | 2.9 0.11                                                  | 26          |              |
| " M " ( " ) *         |           | 12~27.6               | 0.05      | 1.20    | 2,350        | 0.83 29.3                          | 2.3 0.09                                                  | 23          |              |
| " L " ( " ) *         |           |                       | 0.04      | 0.96    | 1,850        | 0.65 23.0                          | 1.5 0.06                                                  | 20          |              |
| 109P0824MH4K2         | 24        | 20.4~27.6             | 0.07      | 1.68    | 2,400        | 0.83 29.3                          | 2.3 0.09                                                  | 26          | 132(4.6)     |
| " M " ( " ) *         |           |                       | 0.09      | 2.16    | 3,000        | 1.03 36.4                          | 3.5 0.13                                                  | 32          |              |

### DC Mini Ace - 92 mm

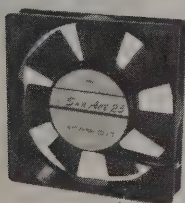


25mm  
Thickness  
Also  
Available

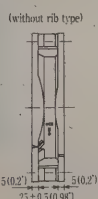
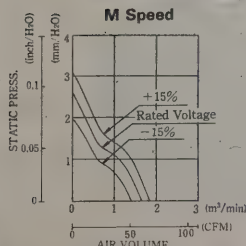


| Model No.             | Voltage V | Applicable V. Range V | Current A | Input W | Speed r.p.m. | Air Volume m <sup>3</sup> /min CFM | Static Pressure mm/H <sub>2</sub> O inch/H <sub>2</sub> O | Noise dB(A) | Weight g(oz) |
|-----------------------|-----------|-----------------------|-----------|---------|--------------|------------------------------------|-----------------------------------------------------------|-------------|--------------|
| 109P0912H402 (4021) * | 12        | 10.2~13.8             | 0.21      | 2.52    | 2,850        | 1.45 51.2                          | 4.6 0.18                                                  | 33          | 144          |
| " F " ( " ) *         |           |                       | 0.14      | 1.68    | 2,450        | 1.24 43.8                          | 3.3 0.13                                                  | 30          |              |
| " M " ( " ) *         |           | 10.2~13.8             | 0.1       | 1.2     | 2,100        | 1.04 36.7                          | 2.4 0.09                                                  | 27          | 134          |
| " L " ( " ) *         |           |                       | 0.07      | 0.84    | 1,700        | 0.8 28.2                           | 1.7 0.07                                                  | 23          |              |
| 109P0912MH4K2         | 24        | 6~16                  | 0.21      | 2.52    | 2,850        | 1.45 51.2                          | 4.6 0.18                                                  | 33          | 144          |
| " W " ( " ) *         |           |                       | 0.13      | 1.56    | 2,100        | 1.04 36.7                          | 2.4 0.09                                                  | 27          |              |
| 109P0912H402 (4021) * |           | 10.2~13.8             | 0.21      | 2.52    | 2,850        | 1.45 51.2                          | 4.6 0.18                                                  | 33          |              |
| " F " ( " ) *         |           |                       | 0.12      | 2.88    | 2,850        | 1.45 51.2                          | 4.6 0.18                                                  | 33          |              |
| " M " ( " ) *         |           | 20.4~27.6             | 0.08      | 1.92    | 2,450        | 1.24 43.8                          | 3.3 0.13                                                  | 30          |              |
| " L " ( " ) *         |           |                       | 0.06      | 1.44    | 2,100        | 1.04 36.7                          | 2.4 0.09                                                  | 27          |              |
| 109P0912H202          | 12        | 10.2~13.8             | 0.13      | 3.72    | 2,900        | 1.56 55.1                          | 5.1 0.20                                                  | 36          | 170          |
| " M " ( " ) *         |           |                       | 0.13      | 1.56    | 2,100        | 1.1 38.9                           | 2.75 0.11                                                 | 27          |              |
| 109P0924H202          |           | 20.4~27.6             | 0.14      | 3.36    | 2,900        | 1.56 55.1                          | 5.1 0.20                                                  | 36          |              |
| " M " ( " ) *         |           |                       | 0.07      | 1.68    | 2,100        | 1.1 38.9                           | 2.75 0.11                                                 | 27          |              |

### DC San Ace - 119 mm



38mm  
Thickness  
Also Available



| Model No.             | Voltage V | Applicable V. Range V | Current A | Input W | Speed r.p.m. | Air Volume m <sup>3</sup> /min CFM | Static Pressure mm/H <sub>2</sub> O inch/H <sub>2</sub> O | Noise dB(A) | Weight g(oz) |
|-----------------------|-----------|-----------------------|-----------|---------|--------------|------------------------------------|-----------------------------------------------------------|-------------|--------------|
| 109P1212H402 (4021) * | 12        | 10.2~13.8             | 0.45      | 5.4     | 2,800        | 2.5 88.3                           | 5.5 0.22                                                  | 40          | 210          |
| " M " ( " ) *         |           |                       | 0.14      | 1.68    | 1,850        | 1.66 58.6                          | 2.6 0.10                                                  | 29          |              |
| 109P1224H402 (4021) * | 24        | 20.4~27.6             | 0.24      | 5.76    | 2,800        | 2.5 88.3                           | 5.5 0.22                                                  | 40          | 200          |
| " M " ( " ) *         |           |                       | 0.09      | 2.16    | 1,850        | 1.66 58.6                          | 2.6 0.10                                                  | 29          |              |
| 109R1212H102 (1021) * | 12        | 6~13.8                | 0.52      | 6.24    | 2,600        | 2.9 102.4                          | 6.6 0.26                                                  | 39          | 260(9.1)     |
| " M " ( " ) *         |           |                       | 0.24      | 2.88    | 1,950        | 2.2 77.6                           | 3.9 0.16                                                  | 32          |              |
| 109R1212MH102         |           | 10.2~13.8             | 0.32      | 3.84    | 1,950        | 2.2 77.6                           | 3.9 0.16                                                  | 32          |              |
| " M " ( " ) *         |           |                       | 0.48      | 5.76    | 2,600        | 2.9 102.4                          | 6.6 0.26                                                  | 39          |              |
| 109R1224H102 (1021) * | 24        | 12~27.6               | 0.25      | 6.0     | 2,600        | 2.9 102.4                          | 6.6 0.26                                                  | 39          | 260(9.1)     |
| " M " ( " ) *         |           |                       | 0.12      | 2.88    | 1,950        | 2.2 77.6                           | 3.9 0.16                                                  | 32          |              |
| 109R1224MH102         |           | 20.4~27.6             | 0.20      | 4.8     | 1,950        | 2.2 77.6                           | 3.9 0.16                                                  | 32          |              |
| " M " ( " ) *         |           |                       | 0.27      | 6.48    | 2,600        | 2.9 102.4                          | 6.6 0.26                                                  | 39          |              |
| 109R1248H102 (1021) * | 48        | 40.8~55.2             | 0.15      | 7.2     | 2,600        | 2.9 102.4                          | 6.6 0.26                                                  | 39          | 260(9.1)     |
| " M " ( " ) *         |           |                       | 0.08      | 3.84    | 1,950        | 2.2 77.6                           | 3.9 0.16                                                  | 32          |              |

Note) ( ): Without rib type, MH: 2 Speed Fan, W: Wide Range

☆: Half Speed \* Low Speed

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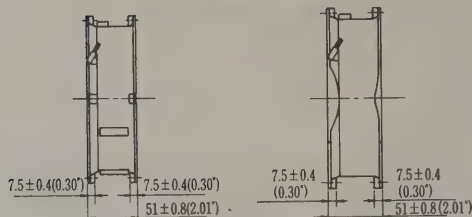
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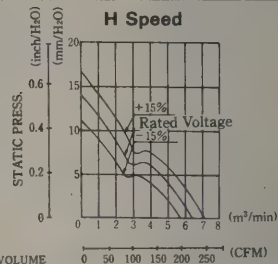
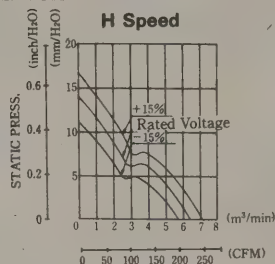
# WORLD

## The Quietest and Longest Life Fan ...

### DC Dyna Ace - 172 mm



| Model No.    | Voltage V | Applicable V. Range V | Current A | Input W | Speed r.p.m. | Air Volume          |       | Static Pressure     |                       | Noise dB(A) | Weight g(oz)  |
|--------------|-----------|-----------------------|-----------|---------|--------------|---------------------|-------|---------------------|-----------------------|-------------|---------------|
|              |           |                       |           |         |              | m <sup>3</sup> /min | CFM   | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |             |               |
| 109E1712H502 | 12        | 10.2~13.8             | 1.2       | 14.4    | 3,050        | 6.4                 | 226.0 | 14                  | 0.55                  | 47          | 780<br>(27.5) |
| " M "        |           | 10.2~13.8             | 0.48      | 5.76    | 2,000        | 4.2                 | 148.3 | 6.9                 | 0.27                  | 36          |               |
| 109E1724H502 | 24        | 20.4~27.6             | 0.58      | 13.92   | 3,050        | 6.4                 | 226.0 | 14                  | 0.55                  | 47          |               |
| " M "        |           | 20.4~27.6             | 0.2       | 4.8     | 2,000        | 4.2                 | 148.3 | 6.9                 | 0.27                  | 36          |               |
| 109E1748H502 | 48        | 40.8~55.2             | 0.28      | 13.44   | 3,050        | 6.4                 | 226.0 | 14                  | 0.55                  | 47          | 760<br>(26.8) |
| " M "        |           | 40.8~55.2             | 0.11      | 5.28    | 2,000        | 4.2                 | 148.3 | 6.9                 | 0.27                  | 36          |               |
| 109E5712H502 | 12        | 10.2~13.8             | 1.2       | 14.4    | 3,050        | 6.4                 | 226.0 | 14                  | 0.55                  | 52          |               |
| " M "        |           | 10.2~13.8             | 0.48      | 5.76    | 2,000        | 4.2                 | 148.3 | 6.9                 | 0.27                  | 41          |               |
| 109E5724H502 | 24        | 20.4~27.6             | 0.58      | 13.92   | 3,050        | 6.4                 | 226.0 | 14                  | 0.55                  | 52          | 760<br>(26.8) |
| " M "        |           | 20.4~27.6             | 0.2       | 4.8     | 2,000        | 4.2                 | 148.3 | 6.9                 | 0.27                  | 41          |               |
| 109E5748H502 | 48        | 40.8~55.2             | 0.28      | 13.44   | 3,050        | 6.4                 | 226.0 | 14                  | 0.55                  | 52          |               |
| " M "        |           | 40.8~55.2             | 0.11      | 5.28    | 2,000        | 4.2                 | 148.3 | 6.9                 | 0.27                  | 41          |               |



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### DC San Ace - Long-life 100k Hours

NEW

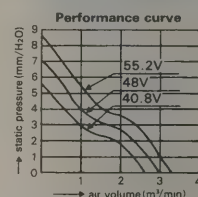
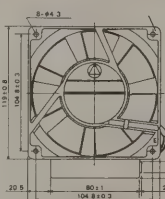
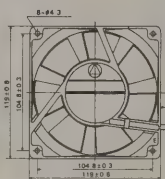
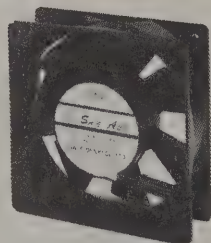
| Model No.    | Voltage V | Applicable V. Range V | Current A | Input W | Speed r.p.m. | Air Volume          |       | Static Pressure     |                       | Noise dB(A) | Weight g(oz) |
|--------------|-----------|-----------------------|-----------|---------|--------------|---------------------|-------|---------------------|-----------------------|-------------|--------------|
|              |           |                       |           |         |              | m <sup>3</sup> /min | CFM   | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |             |              |
| 109L1248H102 | 48        | 40.8~55.2             | 0.12      | 5.76    | 2850         | 3.0                 | 105.9 | 7.2                 | 0.28                  | 41          | 320          |
| 109L1248H182 |           |                       |           |         |              |                     |       |                     |                       |             | 380          |

Insulation resistance: 10M ohms min. on DC500V megger (between input leads and housing)

Dielectric strength: for 1 minute on 500VAC, 50/60 Hz (input lead between housing)

Operating amb. temp: -10 deg. C ~ +60 deg. C

Motor protection: wrong pole connection, locked rotor condition



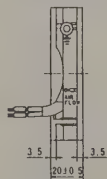
### AC FANS

#### Petit Ace - 80 mm

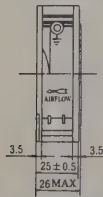
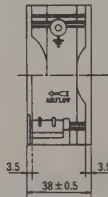


Petit Ace 25

Petit Ace 20



Petit Ace 38



| Model No. | Voltage V | Frequency Hz | Input W | Current A | Locked Rotor Current A | Speed rpm | Air Volume          |           | Static Pressure     |                       | Noise Level dB(A) |
|-----------|-----------|--------------|---------|-----------|------------------------|-----------|---------------------|-----------|---------------------|-----------------------|-------------------|
|           |           |              |         |           |                        |           | m <sup>3</sup> /min | CFM       | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                   |
| 109-210   | 100       | 50/60        | 6/5     | 0.07/0.06 | 0.07/0.06              | 2500/3000 | 0.44/0.53           | 15.5/18.7 | 2.4/3.2             | 0.09/0.13             | 23/28             |
| 109-213   | 115       |              |         | 0.06/0.05 | 0.06/0.05              |           |                     |           |                     |                       |                   |
| 109S050   | 100       |              |         | 0.12/0.1  | 0.13/0.11              |           |                     |           |                     |                       |                   |
| 109S053   | 115       | 50/60        | 9/7     | 0.1/0.08  | 0.11/0.09              | 2650/3100 | 0.63/0.76           | 22.2/26.8 | 2.8/3.9             | 0.11/0.15             | 27/30             |
| 109S051   | 200       |              |         | 0.06/0.05 | 0.06/0.05              |           |                     |           |                     |                       |                   |
| 109S054   | 230       |              |         | 0.05/0.04 | 0.05/0.04              |           |                     |           |                     |                       |                   |
| ☆109S030  | 100       |              |         | 0.12/0.1  | 0.13/0.11              |           |                     |           |                     |                       |                   |
| ☆109S033  | 115       |              |         | 0.1/0.08  | 0.11/0.09              |           |                     |           |                     |                       |                   |
| ☆109S032  | 120       | 50/60        | 9/7     | 0.1/0.08  | 0.11/0.09              | 2350/2700 | 0.55/0.63           | 19.4/22.2 | 2.2/2.9             | 0.09/0.11             | 25/27             |
| ☆109S031  | 200       |              |         | 0.06/0.05 | 0.06/0.05              |           |                     |           |                     |                       |                   |
| ☆109S037  | 220       |              |         | 0.05/0.04 | 0.05/0.04              |           |                     |           |                     |                       |                   |
| ☆109S034  | 230       |              |         | 0.05/0.04 | 0.05/0.04              |           |                     |           |                     |                       |                   |
| 109-150   | 100       |              |         | 0.13/0.11 | 0.17/0.15              |           |                     |           |                     |                       |                   |
| 109-153   | 115       | 50/60        | 9/8     | 0.11/0.1  | 0.14/0.12              | 2700/3150 | 0.9/1.05            | 31.8/37.1 | 3.2/4.5             | 0.13/0.18             | 31/35             |
| 109-151   | 200       |              |         | 0.07/0.06 | 0.09/0.08              |           |                     |           |                     |                       |                   |
| 109-154   | 230       |              |         | 0.06/0.05 | 0.08/0.07              |           |                     |           |                     |                       |                   |

☆:Half Speed \*Low Speed

SANYO DENKI / KEYMARC ELECTRONICS

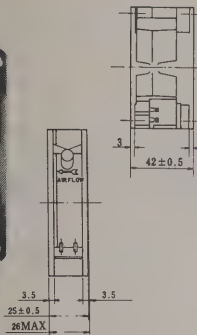
2310-205th, Suite 101, Torrance, California 90501 • (310) 212-7724 • FAX (310) 212-6545



# LEADER

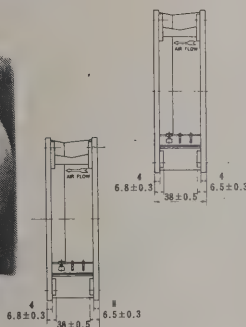
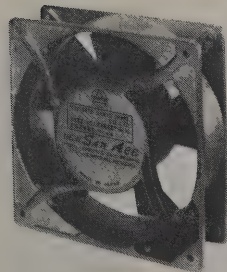
## SANYO DENKI CO., LTD.

### Mini Ace - 92mm



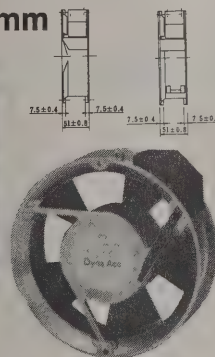
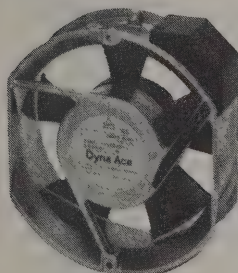
| Model No.  | Voltage V | Frequency Hz | Input W | Current A  | Locked Rotor Current A | Speed rpm | Air Volume          |           | Static Pressure     |                       | Noise Level dB(A) |
|------------|-----------|--------------|---------|------------|------------------------|-----------|---------------------|-----------|---------------------|-----------------------|-------------------|
|            |           |              |         |            |                        |           | m <sup>3</sup> /min | CFM       | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                   |
| 109S091    | 100       | 50/60        | 8/7     | 0.1/0.09   | 0.13/0.12              | 2700/3100 | 0.95/1.1            | 33.5/38.8 | 4/5                 | 0.16/0.2              | 31/34             |
| 109S093    | 115       |              |         | 0.09/0.08  | 0.11/0.1               |           |                     |           |                     |                       |                   |
| 109S092    | 200       |              |         | 0.07/0.06  | 0.08/0.08              |           |                     |           |                     |                       |                   |
| 109S094    | 230       |              | 10/9    | 0.06/0.05  | 0.07/0.07              | 2400/2800 | 0.84/0.98           | 29.7/34.6 | 3.2/4.1             | 0.13/0.16             | 28/31             |
| ☆109S095   | 100       |              | 8/7     | 0.1/0.09   | 0.11/0.1               |           |                     |           |                     |                       |                   |
| *109S096   | 100       |              | 7/6     | 0.09/0.08  | 0.09/0.08              |           |                     |           |                     |                       |                   |
| *109S193   | 115       |              |         | 0.08/0.007 | 0.08/0.07              | 1500/1700 | 0.53/0.6            | 18.7/21.2 | 1.25/1.55           | 0.05/0.6              | 21/24             |
| *109S192   | 200       |              |         | 0.06/0.05  | 0.06/0.05              |           |                     |           |                     |                       |                   |
| *109S194   | 230       |              | 8/7     | 0.05/0.04  | 0.05/0.04              |           |                     |           |                     |                       |                   |
| 109-040UL  | 100       |              | 10/9    | 0.13/0.11  | 0.16/0.14              | 2650/3100 | 0.85/1.0            | 30/35.3   | 2.5/3.6             | 0.1/0.14              | 37/41             |
| 109-043UL  | 115       |              | 10/9    | 0.11/0.1   | 0.14/0.12              |           |                     |           |                     |                       |                   |
| 109-041UL  | 200       |              | 10/9    | 0.07/0.06  | 0.08/0.07              | 1500/1500 | 0.43/0.43           | 15/2/15.2 | 0.9/0.9             | 0.04/0.04             | 21/21             |
| 109-044UL  | 230       |              | 10/9    | 0.06/0.05  | 0.07/0.06              |           |                     |           |                     |                       |                   |
| *109-047UL | 100       |              | 4/3.5   | 0.05/0.05  | 0.05/0.05              |           |                     |           |                     |                       |                   |
| *109-033UL | 115       |              |         | 0.04/0.04  | 0.04/0.04              |           |                     |           |                     |                       |                   |

### San Ace - 119mm



| Model No.  | Voltage V | Frequency Hz | Input W | Current A | Locked Rotor Current A | Speed rpm | Air Volume          |            | Static Pressure     |                       | Noise Level dB(A) |
|------------|-----------|--------------|---------|-----------|------------------------|-----------|---------------------|------------|---------------------|-----------------------|-------------------|
|            |           |              |         |           |                        |           | m <sup>3</sup> /min | CFM        | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                   |
| ☆109S029UL | 100       | 50/60        | 14/12   | 0.18/0.16 | 0.23/0.21              | 2450/2700 | 2.15/2.35           | 75.9/83    | 4.5/5               | 0.18/0.2              | 35/37             |
| ☆109S013   |           |              | 13/11   | 0.16/0.14 | 0.16/0.15              | 1800/2000 | 1.55/1.75           | 54.7/61.8  | 2.4/2.7             | 0.09/0.11             | 27/29             |
| ☆109S013UL |           |              | 7/7     | 0.1/0.09  | 0.1/0.09               | 1650/1700 | 1.45/1.5            | 51.2/53    | 1.8/1.8             | 0.07/0.07             | 25/25             |
| *109S006   |           |              |         | 0.05/0.04 | 0.05/0.04              |           |                     |            |                     |                       |                   |
| *109S006UL |           |              |         | 0.05/0.04 | 0.05/0.04              |           |                     |            |                     |                       |                   |
| *109S010   |           |              |         | 0.05/0.04 | 0.05/0.04              |           |                     |            |                     |                       |                   |
| *109S010UL |           |              | 18/16   | 0.24/0.21 | 0.32/0.28              | 2700/3100 | 2.5/2.9             | 88.3/102.4 | 5.9/7               | 0.23/0.28             | 39/42             |
| 109S075UL  |           |              |         | 0.21/0.18 | 0.27/0.24              |           |                     |            |                     |                       |                   |
| 109S074UL  |           |              |         | 0.21/0.1  | 0.16/0.14              |           |                     |            |                     |                       |                   |
| 109S078UL  |           |              |         | 0.11/0.09 | 0.14/0.13              |           |                     |            |                     |                       |                   |
| 109S072UL  |           |              |         | 0.11/0.09 | 0.14/0.13              |           |                     |            |                     |                       |                   |

### Dyna Ace - 172mm

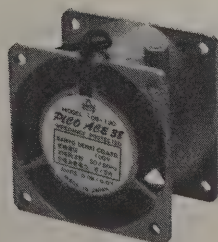


| Model No. | Voltage V | Frequency Hz | Input W | Current A | Locked Rotor Current A | Speed rpm | Air Volume          |           | Static Pressure     |                       | Noise Level dB(A) |
|-----------|-----------|--------------|---------|-----------|------------------------|-----------|---------------------|-----------|---------------------|-----------------------|-------------------|
|           |           |              |         |           |                        |           | m <sup>3</sup> /min | CFM       | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                   |
| 109S301   | 100       | 50/60        | 27/25   | 0.33/0.25 | 0.65/0.64              | 2900/3500 | 5.3/6.4             | 187.1/226 | 15/20               | 0.59/0.79             | 47/52             |
| 109S304   | 115       |              |         | 0.29/0.22 | 0.55/0.54              |           |                     |           |                     |                       |                   |
| 109S302   | 200       |              |         | 0.16/0.13 | 0.33/0.32              |           |                     |           |                     |                       |                   |
| 109S303   | 230       | 50/60        | 27/25   | 0.14/0.11 | 0.28/0.27              | 2900/3500 | 5.3/0.4             | 187.1/226 | 15/20               | 0.59/0.79             | 43/47             |
| 109-311   | 100       |              |         | 0.33/0.25 | 0.65/0.64              |           |                     |           |                     |                       |                   |
| 109-343   | 115       |              |         | 0.29/0.22 | 0.55/0.54              |           |                     |           |                     |                       |                   |
| 109-312   | 200       |              |         | 0.16/0.13 | 0.33/0.32              |           |                     |           |                     |                       |                   |
| 109-313   | 230       |              |         | 0.14/0.11 | 0.28/0.27              |           |                     |           |                     |                       |                   |

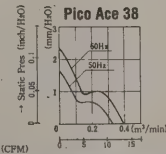
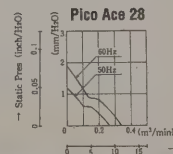
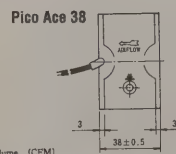
☆: Half Speed

\* Low Speed

### Pico Ace - 60mm



| Series | Model No. | Voltage V | Frequency Hz | Input W | Current A | Locked Rotor Current A | Speed rpm | Air Volume          |           | Static Pressure     |                       | Noise Level dB(A) | Weight kg |
|--------|-----------|-----------|--------------|---------|-----------|------------------------|-----------|---------------------|-----------|---------------------|-----------------------|-------------------|-----------|
|        |           |           |              |         |           |                        |           | m <sup>3</sup> /min | CFM       | mm/H <sub>2</sub> O | inch/H <sub>2</sub> O |                   |           |
| 28     | 109-180   | 100       | 50/60        | 5/4     | 0.06/0.05 | 0.07/0.06              | 2250/2700 | 0.27/0.33           | 9.5/11.7  | 1.2/1.9             | 0.05/0.07             | 21/23             | 0.13      |
|        | 109-183   | 115       |              |         | 0.06/0.05 | 0.06/0.05              |           |                     |           |                     |                       |                   |           |
| 38     | 109-130   | 100       | 50/60        | 6/5     | 0.08/0.07 | 0.08/0.07              | 2600/3150 | 0.33/0.4            | 11.7/14.1 | 1.7/2.4             | 0.07/0.09             | 24/26             | 0.18      |
|        | 109-133   | 115       |              |         | 0.07/0.06 | 0.07/0.06              |           |                     |           |                     |                       |                   |           |



SANYO DENKI / KEYMARC ELECTRONICS

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# marlow industries, inc.

## Thermoelectric Innovation Through Research

10451 VISTA PARK ROAD, DALLAS, TEXAS 75238-1645 / TEL: 214-340-4900 / FAX: 214-341-5212



## THERMOELECTRIC COOLERS

### WHAT IS A THERMOELECTRIC COOLER?

Thermoelectric coolers (TECs) are solid-state, vibration-free, noise-free heat pumps. They are modular devices and are simple to install and operate. Since they consist primarily of thermoelectric material sandwiched between ceramic plates with no moving parts, they are inherently reliable.

A single-stage thermoelectric cooler is composed of a matrix of thermoelectric couples, connected electrically in series and thermally in parallel. The thermoelectric couple consists of a p- and n-type semiconductor material.

A TEC can be fabricated with as few as one couple to as many as several hundred couples sandwiched between two ceramic plates. These plates form the top and base of the cooler and provide structural integrity as well as electrical insulation from, and thermal conduction to, the heat sink and the device being cooled.

### HOW IT WORKS

Regulating the direction and amount of current—with the use of a feedback loop and temperature controller—allows TECs to cool, heat, or stabilize temperature. Reversing the direction of the current reverses the direction of heat pumping. The figure opposite illustrates the operation of a thermoelectric couple in the cooling mode.

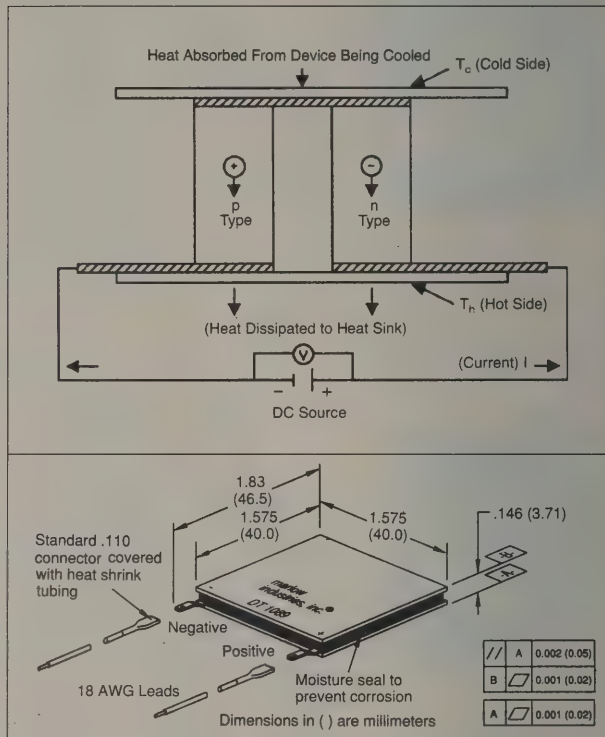
### TYPICAL APPLICATIONS

Thermoelectric coolers are ideally suited to a wide variety of applications due to their small size, wide operating temperature range, low power requirements, and high reliability. Applications can be found in military, aerospace, and commercial products, laboratory and scientific equipment, medical instruments, and test equipment.

**Electro-optic cooling** applications include stabilizing the temperature of solid-state lasers, and cooling infrared detectors and charge coupled devices (CCDs).

**Volume cooling** includes small volumes of air or liquid, and cold plates.

**Miscellaneous Electronic Components** such as high speed integrated circuits, parametric amplifiers, avalanche photo diodes, and vidicon tubes can be spot cooled using thermoelectric coolers.



### SELECTED STANDARD THERMOELECTRIC COOLERS\*

| Model Number | $\Delta T$ in Vacuum | $\Delta T$ in Dry N <sub>2</sub> | Q <sub>max</sub> (Watts) | I <sub>max</sub> (Amps) | V <sub>max</sub> (Volts) | Base Ceramic Width in. (mm) | Top Ceramic Length in. (mm) | Top Ceramic Width in. (mm) | Top Ceramic Length in. (mm) | Height in. (mm) |
|--------------|----------------------|----------------------------------|--------------------------|-------------------------|--------------------------|-----------------------------|-----------------------------|----------------------------|-----------------------------|-----------------|
| MI1010T      | 67                   | 61                               | 0.47                     | 1.00                    | 0.80                     | 0.156 (4.0)                 | 0.156 (4.0)                 | 0.156 (4.0)                | 0.156 (4.0)                 | 0.095 (2.4)     |
| MI1011T      | 67                   | 61                               | 1.00                     | 1.00                    | 2.00                     | 0.260 (6.6)                 | 0.260 (6.6)                 | 0.260 (6.6)                | 0.260 (6.6)                 | 0.095 (2.4)     |
| MI1012T      | 67                   | 61                               | 2.10                     | 1.00                    | 3.70                     | 0.346 (8.8)                 | 0.346 (8.8)                 | 0.346 (8.8)                | 0.346 (8.8)                 | 0.095 (2.4)     |
| MI1013T      | 67                   | 61                               | 4.80                     | 1.00                    | 8.50                     | 0.518 (13.2)                | 0.518 (13.2)                | 0.518 (13.2)               | 0.518 (13.2)                | 0.095 (2.4)     |
| MI1020T      | 67                   | 64                               | 0.90                     | 1.80                    | 0.80                     | 0.156 (4.0)                 | 0.156 (4.0)                 | 0.156 (4.0)                | 0.156 (4.0)                 | 0.085 (2.2)     |
| MI1021T      | 67                   | 64                               | 2.20                     | 1.80                    | 1.90                     | 0.260 (6.6)                 | 0.260 (6.6)                 | 0.260 (6.6)                | 0.260 (6.6)                 | 0.085 (2.2)     |
| MI1022T      | 67                   | 64                               | 4.00                     | 1.80                    | 3.50                     | 0.346 (8.8)                 | 0.346 (8.8)                 | 0.346 (8.8)                | 0.346 (8.8)                 | 0.085 (2.2)     |
| MI1023T      | 67                   | 64                               | 9.20                     | 1.80                    | 8.00                     | 0.518 (13.2)                | 0.518 (13.2)                | 0.518 (13.2)               | 0.518 (13.2)                | 0.085 (2.2)     |
| MI1025T      | 67                   | 64                               | 5.00                     | 1.80                    | 4.40                     | 0.346 (8.8)                 | 0.432 (11.0)                | 0.346 (8.8)                | 0.346 (8.8)                 | 0.084 (2.1)     |
| MI2021T      | 91                   | 83                               | 0.92                     | 1.40                    | 2.00                     | 0.260 (6.6)                 | 0.260 (6.6)                 | 0.156 (4.0)                | 0.156 (4.0)                 | 0.149 (3.8)     |
| MI2012T      | 86                   | 77                               | 2.40                     | 1.20                    | 5.40                     | 0.432 (11.0)                | 0.389 (9.9)                 | 0.346 (8.8)                | 0.260 (6.6)                 | 0.147 (3.7)     |
| MI3026T      | 109                  | 93                               | 0.62                     | 1.30                    | 3.40                     | 0.346 (8.8)                 | 0.346 (8.8)                 | 0.160 (4.1)                | 0.174 (4.4)                 | 0.234 (5.9)     |
| MI3040       | 109                  | 98                               | 5.60                     | 4.50                    | 7.30                     | 0.855 (21.7)                | 1.113 (28.3)                | 0.339 (8.6)                | 0.511 (13.0)                | 0.430 (10.9)    |
| MI4012T      | 114                  | —                                | 0.76                     | 1.00                    | 6.70                     | 0.520 (13.2)                | 0.678 (17.2)                | 0.160 (4.1)                | 0.314 (8.0)                 | 0.345 (8.8)     |
| MI4040       | 120                  | —                                | 2.70                     | 4.00                    | 6.80                     | 0.855 (21.7)                | 1.113 (28.2)                | 0.253 (6.4)                | 0.425 (10.8)                | 0.561 (14.3)    |
| MI6030       | 133                  | —                                | 0.58                     | 3.60                    | 6.30                     | 0.855 (21.7)                | 1.113 (28.3)                | 0.205 (5.2)                | 0.205 (5.2)                 | 0.809 (20.5)    |

Introducing Marlow Industries' new line of competitively priced DuraTEC™ thermoelectric coolers for high heat pumping applications. The DuraTEC™ line features: sealing to improve reliability in condensing environments, high efficiency thermoelectric material, connectorized lead wires for quick and reliable connections, dual Nickel diffusion barriers for improved operational life, and inventory for quick delivery.

### DuraTEC™ THERMOELECTRIC COOLERS

|        |    |    |      |      |      |            |            |            |            |              |
|--------|----|----|------|------|------|------------|------------|------------|------------|--------------|
| DT1049 | 67 | 64 | 33.3 | 3.6  | 14.8 | 1.181 (30) | 1.181 (30) | 1.181 (30) | 1.181 (30) | 0.149 (3.78) |
| DT1069 | 67 | 64 | 51.5 | 5.5  | 15.1 | 1.575 (40) | 1.575 (40) | 1.575 (40) | 1.575 (40) | 0.164 (4.17) |
| DT1089 | 67 | 64 | 66.0 | 7.5  | 14.8 | 1.575 (40) | 1.575 (40) | 1.575 (40) | 1.575 (40) | 0.146 (3.71) |
| DT1063 | 67 | 64 | 28.6 | 5.5  | 8.2  | 1.181 (30) | 1.181 (30) | 1.181 (30) | 1.181 (30) | 0.164 (4.17) |
| DT1133 | 67 | 64 | 68.0 | 13.0 | 8.2  | 1.732 (44) | 1.732 (44) | 1.732 (44) | 1.732 (44) | 0.169 (4.29) |





# marlow industries, inc.

## Thermoelectric Innovation Through Research



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### ADVANTAGES OF USING THERMOELECTRIC COOLING

- ☐ Localized Cooling
- ☐ Solid State Reliability
- ☐ Temperature Control Above or Below Ambient
- ☐ DC Powered
- ☐ No Gases or Refrigerant Required
- ☐ Small, Lightweight Package
- ☐ Operation in Any Orientation
- ☐ High Resistance to Shock and Vibration
- ☐ Operation in Zero Gravity
- ☐ No Moving Parts
- ☐ Operation in High-G Levels
- ☐ No Acoustical Noise
- ☐ Heating or Cooling—Depending on Current Direction
- ☐ No Electrical Noise
- ☐ Precision Temperature Control to less than .05°C
- ☐ Maintenance Free

### TEMPERATURE CONTROLLER/POWER SUPPLIES

MI's new SE5000 Series of three Temperature Controller/Power Supplies (TC/PS) is designed for temperature control of TECs used with laser diodes, infrared detectors, charge-coupled devices, high-gain amplifiers, and cold plates. This full-featured, linear bipolar power supply offers one of the widest precision temperature control ranges on the market—from -99.9°C to 150°C. Features include: Adjustable bipolar DC output current; programmable PID control/ramp-to-setpoint control; high, low, and deviation limit alarms; digital readout of output voltage and current; simultaneous display of temperature and setpoint; availability with four thermistor types or thermocouple; automatic and manual operating modes; 115/230 VAC at 60/50 Hz for worldwide use; bench/rack model. For applications requiring lower capacity cooling only, Marlow Industries, Inc., offers the bench-rack model SE1032 Temperature Controller/Power Supply.

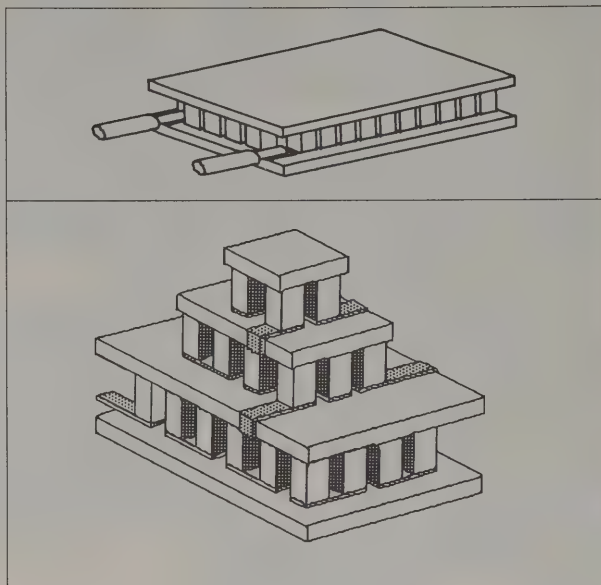
- SE5000** Output: 9 volts @ 2 amps to 12 volts @ 1 amp  
**SE5010** Output: 16 volts @ 6 amps to 21 volts @ 1 amp  
**SE5020** Output: 16 volts @ 12 amps to 21 volts @ 1 amp  
**SE1032** Output: 3.5 volts @ 2 amps to 4 volts @ .14 amps

### ORDERING INFORMATION

Our Customer Service Department will be pleased to provide our full catalog as well as product data sheets on the TECs which best meet your needs. Please direct your call to our Customer Service department at 214-340-4900, or send a FAX to 214-341-5212. Marlow Industries can also provide support through local representatives in most international locations.

### HOW TO SPECIFY THERMOELECTRIC COOLERS

The standard TECs on the previous page are a representative sample of our product line and are grouped according to the number of stages indicated by the first digit following the "MI." They are listed in increasing order according to heat pumping capacity (Qmax); the net heat load to completely suppress  $\Delta T$  at the maximum applied power (Imax @ Vmax). For example, the MI3026T is a three-stage TEC which produces 109°C  $\Delta T$  in a vacuum at 1.3 amps @ 3.4 volts. It will take .62 watts to completely suppress that  $\Delta T$  to zero. This suppression is linear, so that 10% of Qmax (0.072 watts) applied to the cold plate would suppress  $\Delta T$  10%, thereby producing 98.1°C  $\Delta T$  for that heat load condition. Because of the non-linear behavior of TECs and the number of variables involved in analyzing them, they can be designed and modeled more accurately by our experienced engineers using Marlow Industries' proprietary computer software.



### ASSEMBLIES AND RELATED PRODUCTS

#### COLD PLATES

**Liquid Cooled. ST2018.**  $\Delta T_{max} = 49^\circ\text{C}$ ; Vmax = 12.4 volts; Imax = 9.5 amps; Qmax = 70 watts; 3.5" x 4.25" (89 x 109) Cold Plate

**Fan Cooled. ST2033.**  $\Delta T_{max} = 38^\circ\text{C}$ ; Vmax = 12.5 volts; Imax = 8.5 amps; Qmax = 60 watts; 3.25" x 3.25" (83 x 83) Cold Plate

**VACUUM ENCLOSURE. ST1018.** 3.6" (91) ID; 1.5" (38) dia. Quartz window; O-Ring seal; 42 Feed-throughs

#### HEAT SINKS

**Fan Cooled. ST2032.** Fan power required: 115 VAC, 60HZ; Heat sink resistance = 0.15°C/watt

**Liquid Cooled. ST1050.** Water inlet required; Heat sink resistance = 0.05°C/watt @ 0.4 Gal/min.

For selection of TECs with more than two stages, or if more precision is required, please consult one of our applications engineers.

### ORDERING TECs

After you have chosen the TEC which meets your performance requirements, you will need to specify the complete model number. This consists of the base model number followed by the type of metallization (which varies depending on method of installation) and type of ceramic (following model number in table at left).

—01 = both sides are metallized • AC = aluminum oxide ceramics

—02 = hot side only is metallized • BC = beryllium oxide ceramics

—03 = no metallization • AB = combination of AB & BC

Options include:

- Pretinning with 96°C or 117°C solder
- Thermistor mounting (calibration available)
- Lapping to 0.001" (0.025 mm)
- Thermal screening

DuraTEC™ options are as follows:

- |                             |                                   |
|-----------------------------|-----------------------------------|
| Lead wires:                 | Ceramic surface:                  |
| —0X No lead wires           | —X3 Lapped $\pm 0.005"$ (.125 mm) |
| —1X 4" (10.2 cm) lead wires | —X4 Lapped $\pm 0.001"$ (.025 mm) |
| —2X 8" (20.3 cm) lead wires |                                   |

# EnviroCool™ Air Conditioners



## Features

- Below ambient cooling without CFCs or HCFCs
- Heat pumping capabilities in excess of 1,000 BTU/hr (312 W)
- Highly reliable; the fan is the only moving part
- Operates in any orientation
- Built-in thermostatic temperature control (programmable temperature controller optional)
- Power supply available for 115 VAC applications
- Maintenance free

## Applications

Marlow Industries' EnviroCool™ line of solid-state air conditioners are rated from 96 Watts to over 312 Watts and offer below ambient cooling in either indoor or outdoor applications. The EnviroCool™ products are environmentally safe, highly reliable and maintenance free.

In addition to our standard EnviroCool™ products, we offer special design services to OEM manufacturers for air-to-air, liquid-to-air or cold plate assemblies. If you feel a special design might be needed, please contact one of our application engineers for assistance.



**marlow industries, inc.**  
20 YEARS OF THERMOELECTRIC EXCELLENCE

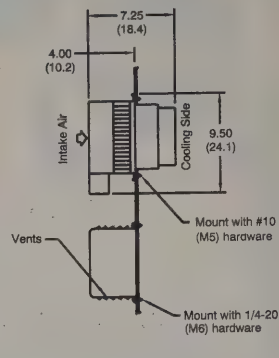
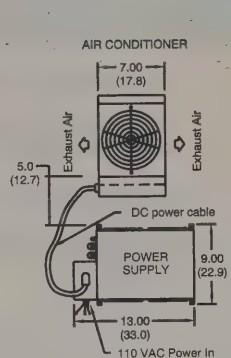
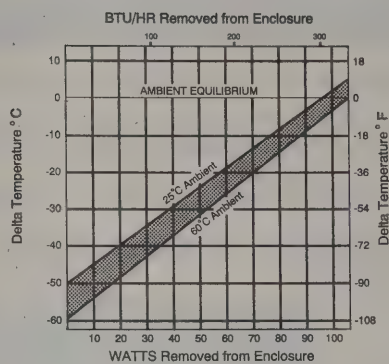




## Performance and Mechanical Characteristics

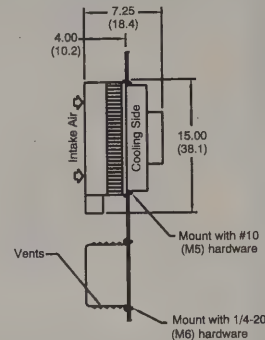
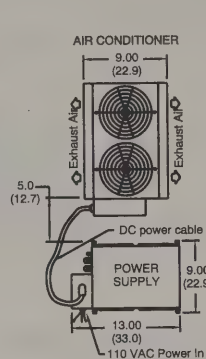
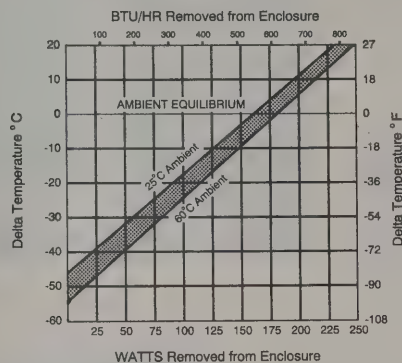
### AC-2000

- 328 BTU/hr cooling or 96 Watts min.
- Operates on 24 VDC or 115 VAC, 50 - 60Hz with optional power supply
- Weights 12 lbs
- PS-2110 weights 16 lbs



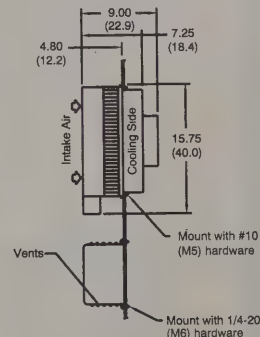
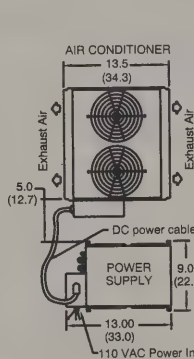
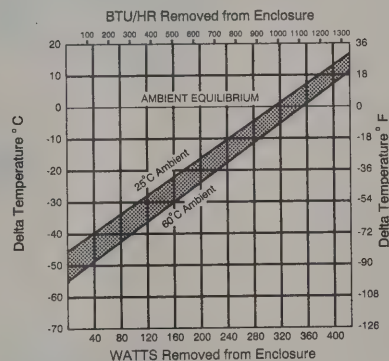
### AC-4000

- 546 BTU/hr cooling or 160 Watts min.
- Operates on 48 VDC or 115 VAC, 50 - 60Hz with optional power supply
- Weights 23 lbs
- PS-4110 weights 21 lbs

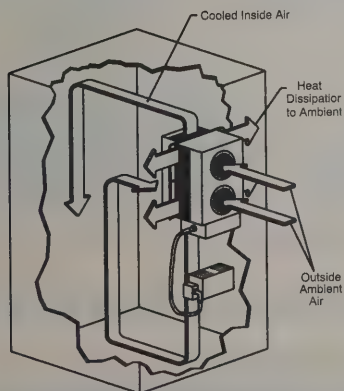


### AC-8000

- 1065 BTU/hr cooling or 312 Watts min.
- Operates on 96 VDC or 115 VAC, 50 - 60Hz with optional power supply
- Weights 37 lbs
- PS-8110 weights 25 lbs



### Typical Cooling System Configuration



Air conditioners and power supplies are available with a painted or stainless steel exterior.

#### NEMA Rating

|                          |           |
|--------------------------|-----------|
| Painted exterior         | 12        |
| Stainless Steel exterior | 12, 4, 4X |

Please contact one of our Customer Service Representatives or Application Engineers for assistance in identifying or ordering the cooling solution that best meets your requirements.


**ZERO**

# MCLEAN ENGINEERING

70H Washington Road • Princeton, NJ 08550 • Tel: 609-799-0100 • FAX: 609-799-1081

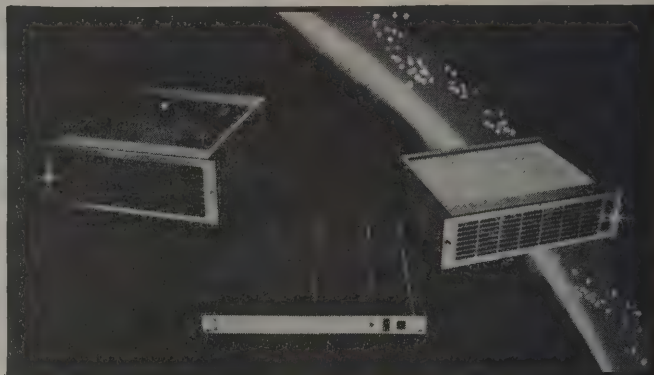
## UNLIMITED COOLING SOLUTIONS! Standard, Modified, and Custom Cooling Capabilities From the Industry's Pioneer...

### McLEAN CARD COOLERS

– *Single and Variable Speed Cooling for  
VME Multi-Bus II Card Cages*

- Cooling on Demand
- Performance Monitoring
- 150 to 1300 CFM, 0-1.4" Static Pressure

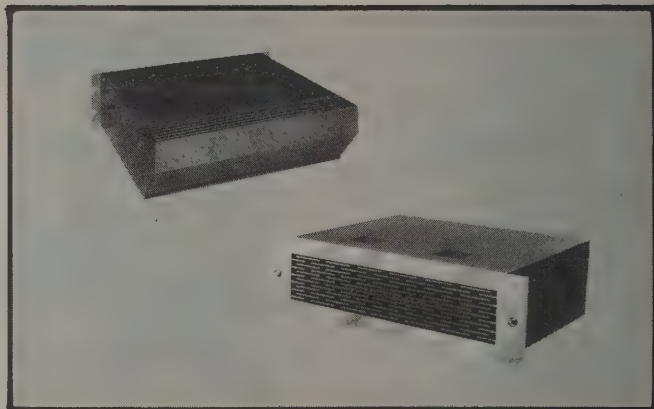
McLean's new "smart" CARD COOLERS combine maximum efficiency with maximum reliability, resulting in reduced downtime for your entire system. The CARD COOLERS' ability to sense heat levels and match motor speeds to cooling requirements means ultra quiet operation with lower power usage and less wear and tear on the system components. Available in fan tray, packaged fan and packaged blower versions, single or variable speeds.



### McLEAN PACKAGED BLOWERS

- Broad Range of Models
- Designed-In Dependability
- 60-2,500 CFM, 0.0" to 9.0" Static Pressure
- 115-230VAC, 12, 24, 48VDC

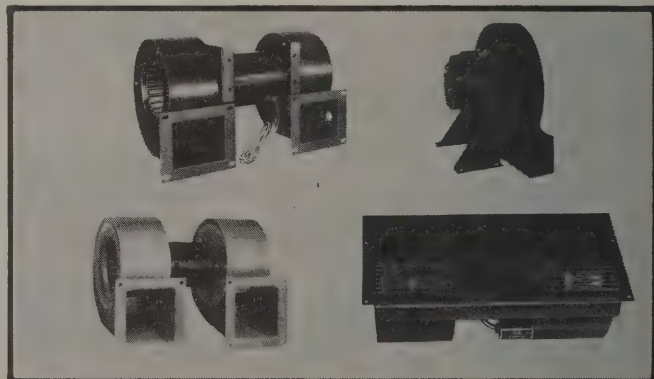
McLean was the pioneer in developing compact, high performance forced-air cooling units designed to protect heat-sensitive rack-mounted electronics. We're still the leaders, and can offer a wide range of configurations, CFMs, static pressures, shielding, and more. And, our vertically-integrated manufacturing processes mean that you can off-load much of your subassembly work to McLean for lower cost, and faster delivery of units that are ready to "plug and play".



### McLEAN CENTRIFUGAL BLOWERS

- Single, Dual, Radial
- Thousands of Configurations
- 0-2,500 CFM, 0.0" to 9.0" Static Pressure
- 115-230VAC, 12, 24, 48VDC

Applications limited only by your imagination! These McLean centrifugals are working full time worldwide cooling a full spectrum of electronic systems. Units are available with a range of wheel diameters, available with AC or DC power, and highly reliable heavy duty motors UL recognized and CSA approved. Standard, modified and custom housings, and mounting make short work of your cooling design problems.



**ZERO**

**FOR FAST RESPONSE CALL (800) 416-1116**

**Other Zero Companies Eager to Satisfy Your Needs**

McLean Midwest, Refer to Fans & Blowers Section 2600

Nielsen Hardware, Refer to Hardware & Mechanical Components Section 2500

Zero Cabinets, Refer to Cabinets & Enclosures Section 1400



# MCLEAN ENGINEERING

**ZERO**

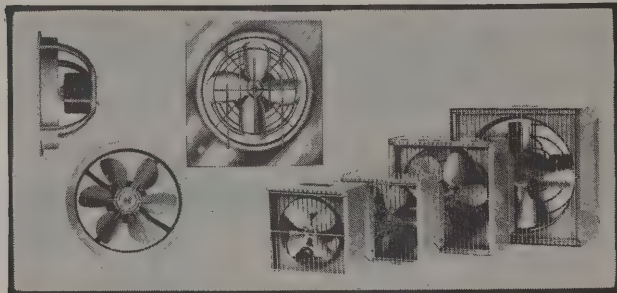
70H Washington Road • Princeton, NJ 08550 • Tel: 609-799-0100 • FAX: 609-799-1081

## UNLIMITED COOLING SOLUTIONS!

### McLEAN FANS

- Filter Box, Orifice, Panel
- Rugged, Adaptable, Economical
- 275 to 1,200 CFM, 0.0" to 1.8" Static Pressure

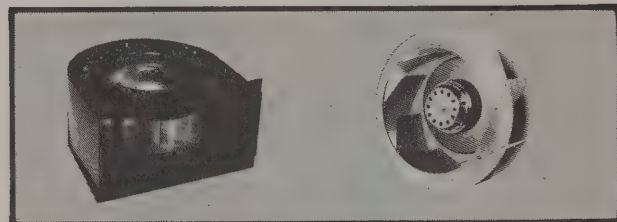
Our range of prefiltered sizes, performance and configurations were designed with flexibility in mind. Units can pressurize or evacuate any enclosure, with vertical or horizontal mounting. Narrow depth dimensions allow flush, close-wall mounting where space is limited. Units are precisely balanced for quiet, vibration-free operation.



### McLEAN MOTORIZED IMPELLERS

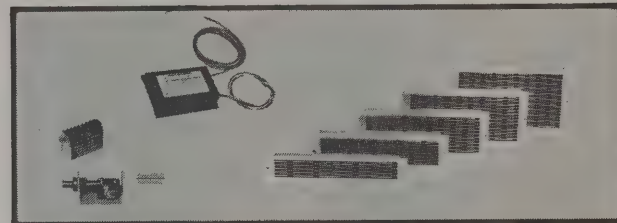
- Quiet, Compact, High Static Pressure–
- Custom Packaging
- 160-1,200 CFM
- AC & Brushless DC

External rotor motorized impellers — low profiles, wide airflow ranges, numerous wheel sizes, fast delivery. And, McLean now offers you custom tailored blower enclosures!



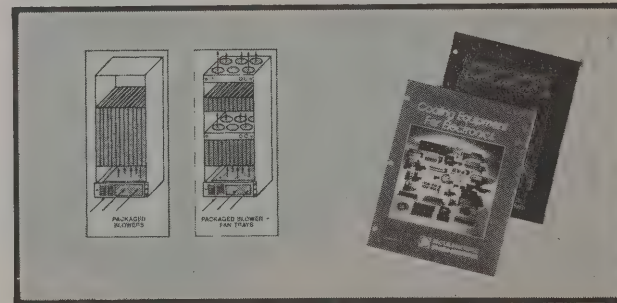
### McLEAN ACCESSORIES

McLean offers a wide range of cooling product accessories, ranging from Filter Grille Panels, Inlet or exhaust guards, airflow switches and controllers, and more. Accessories can be supplied mounted on order, or retrofitted to existing applications. Custom accessories, too.



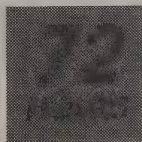
### DESIGN ASSISTANCE

McLean's design engineers have been winning the battle against electronically-generated heat for decades, and are ready and willing to apply that expertise to your cooling project. For custom and modified applications, our computer-aided design systems and testing laboratories are the industry's best. For standard applications, our print files contain thousands of proven cooling solutions ready to go to work for you right now. Call or write for our comprehensive literature!



### 72 HOUR SHIPMENT

Just three days—that's all it takes to put one of the McLean 72 hour units on the dock ready to ship to you, with overnight delivery if necessary. McLean has hundreds of units ready to manufacture from inventoried parts that can keep your supply surprises from turning into downtime.



### AND MORE...

- Over 5,000 active designs including MIL-SPEC
- Shielded Cooling
- Heat Exchangers
- McLean Motors

## FOR FAST RESPONSE CALL (800) 416-1116

**Other Zero Companies Eager to Satisfy Your Needs**

Electronic Solutions, Refer to Cabinets & Enclosures Section 1400  
 Zero East, Refer to Cabinets & Enclosures Section 1400  
 Zero Enclosures, Refer to Cabinets & Enclosures Section 1400

**ZERO**

**ZERO****MCLEAN MIDWEST**

4000 83rd Ave., N. Brooklyn Park, MN 55443 • Tel: 612-561-9400 • FAX: 612-589-0533

**COOLING for electronic control panels**

*We offer the broadest line of some of our most popular in-stock climate control products through distributors nationwide.*



McLean Midwest, the market leader in industrial cooling, carries the broadest and most extensive product range available for cooling your electronic/electrical controls.

- Closed-loop air conditioners range in capacity from 800-19,000 BTU/Hr.
- Closed-loop heat exchangers have efficiency ratings up to 93W/°F (167W/°C).
- New filter fan packages have air flow ratings from 30 CFM to 350 CFM.

McLean Midwest climate controllers pay for themselves by preventing a single shut-down, extending the life of sensitive electronic controls, and reducing the frequency of shutdowns for cleaning.

Call today to discuss your cooling needs with one of our experienced applications engineers. Make sure to request our free catalog, *Cooling for Electronic Control Panels*.

**ZERO****FOR FAST RESPONSE CALL (800) 896-COOL****Other Zero Companies Eager to Satisfy Your Needs**

McLean Engineering, Refer to Fans &amp; Blowers Section 2600

Nielsen Hardware, Refer to Hardware &amp; Mechanical Components Section 2500

Zero Cabinets, Refer to Cabinets &amp; Enclosures Section 1400

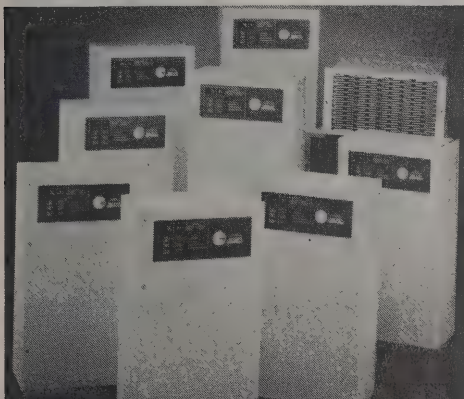


# MCLEAN MIDWEST

4000 83rd Ave., N. Brooklyn Park, MN 55443 • Tel: 612-561-9400 • FAX: 612-589-0533

## COOLING for electronic control panels

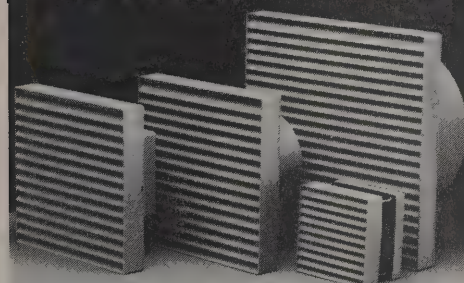
Our most popular units are available through distributors nationwide.



New **PROAIR** Air Conditioners



New **PROAIR** Heat Exchangers



New **PROAIR** Filter Fan Packages

### CLOSED-LOOP AIR CONDITIONERS

| Series        | BTU/Hr Capacity | Dimensions<br>(H" x D" x W")                                                                         |
|---------------|-----------------|------------------------------------------------------------------------------------------------------|
| Slimboy 13    | 800-1000        | 12 <sup>7</sup> / <sub>8</sub> x 6 <sup>11</sup> / <sub>16</sub> x 14 <sup>1</sup> / <sub>8</sub>    |
| Slimboy 13HC  | 1200            | 12 <sup>7</sup> / <sub>8</sub> x 6 <sup>11</sup> / <sub>16</sub> x 14 <sup>1</sup> / <sub>8</sub>    |
| Slimboy 17    | 1800            | 17 x 7 <sup>3</sup> / <sub>4</sub> x 12 <sup>1</sup> / <sub>8</sub>                                  |
| Slimboy 24    | 1400-3000       | 24 x 9 <sup>5</sup> / <sub>8</sub> x 19                                                              |
| Slimboy 24WC  | 2000-4000       | 24 x 9 <sup>3</sup> / <sub>16</sub> x 19                                                             |
| Slimboy 28    | 2000-6000       | 28 <sup>1</sup> / <sub>2</sub> x 9 <sup>5</sup> / <sub>8</sub> x 19                                  |
| ProAir CR29   | 2500-4000       | 29 <sup>1</sup> / <sub>2</sub> x 9 <sup>1</sup> / <sub>32</sub> x 15 <sup>3</sup> / <sub>4</sub>     |
| Slimboy 33NSM | 2000-4000       | 34 <sup>1</sup> / <sub>8</sub> x 9 <sup>1</sup> / <sub>4</sub> x 12 <sup>3</sup> / <sub>8</sub>      |
| Slimboy 33NRM | 2000-4000       | 34 <sup>1</sup> / <sub>4</sub> x 9 <sup>1</sup> / <sub>4</sub> x 13 <sup>3</sup> / <sub>4</sub>      |
| Slimboy 33WC  | 2000-4000       | 34 <sup>1</sup> / <sub>8</sub> x 8 <sup>3</sup> / <sub>4</sub> x 12 <sup>3</sup> / <sub>8</sub>      |
| Slimboy 36    | 4000-8000       | 36 <sup>11</sup> / <sub>16</sub> x 10 <sup>7</sup> / <sub>8</sub> x 19                               |
| Slimboy 36N   | 4000-6000       | 38 <sup>11</sup> / <sub>16</sub> x 10 <sup>1</sup> / <sub>2</sub> x 15                               |
| ProAir CR43   | 6000-8500       | 43 <sup>5</sup> / <sub>16</sub> x 10 x 15 <sup>3</sup> / <sub>4</sub>                                |
| Slimboy 47    | 4000-6000       | 47 <sup>1</sup> / <sub>4</sub> x 10 <sup>7</sup> / <sub>8</sub> x 19                                 |
| Slimboy 47N   | 7000-10,000     | 49 <sup>1</sup> / <sub>8</sub> x 10 <sup>1</sup> / <sub>2</sub> x 15                                 |
| Slimboy 47WC  | 4000-12,000     | 47 <sup>1</sup> / <sub>4</sub> x 10 x 19                                                             |
| ProAir CR52   | 10,000-12,000   | Future                                                                                               |
| Slimboy 52    | 5000-12,000     | 52 <sup>5</sup> / <sub>8</sub> x 10 <sup>3</sup> / <sub>8</sub> x 19                                 |
| Slimboy 52HC  | 14,000-19,000   | 52 <sup>1</sup> / <sub>2</sub> x 12 <sup>7</sup> / <sub>8</sub> x 23                                 |
| Hiboy 11TSM   | 2000-4000       | 10 <sup>1</sup> / <sub>4</sub> x 20 x 17                                                             |
| Hiboy 16      | 5000-9000       | 15 <sup>23</sup> / <sub>32</sub> x 25 <sup>3</sup> / <sub>16</sub> x 19                              |
| Hiboy 30TSM   | 4000-6000       | 14 x 15 x 31 <sup>3</sup> / <sub>8</sub>                                                             |
| ProAir RCR11  | 2400-4500       | 10 <sup>23</sup> / <sub>64</sub> x 21 <sup>31</sup> / <sub>32</sub> x 18 <sup>7</sup> / <sub>8</sub> |
| Loboy 11WC    | 2000-4000       | 10 <sup>15</sup> / <sub>32</sub> x 19 <sup>5</sup> / <sub>8</sub> x 19                               |
| Loboy 14      | 4000-7000       | 14 <sup>3</sup> / <sub>4</sub> x 23 <sup>5</sup> / <sub>8</sub> x 19                                 |
| Loboy 16      | 5000-10,000     | 15 <sup>23</sup> / <sub>32</sub> x 25 <sup>3</sup> / <sub>16</sub> x 19                              |

### CLOSED-LOOP HEAT EXCHANGERS

| Series             | Efficiency Rating |                 |                  |                  | Dimensions<br>(H" x D" x W")                                                                       |
|--------------------|-------------------|-----------------|------------------|------------------|----------------------------------------------------------------------------------------------------|
|                    | "Air In"<br>W°F   | "Air In"<br>W°K | "Air Out"<br>W°F | "Air Out"<br>W°K |                                                                                                    |
| ProAir XR-20-4     | 4                 | 7               | 9                | 16               | 20 x 3 x 7 <sup>1</sup> / <sub>2</sub>                                                             |
| ProAir XR-20-6     | 4                 | 7               | 9                | 16               | 20 x 3 x 7 <sup>1</sup> / <sub>2</sub>                                                             |
| ProAir XR-29-3     | 14                | 25              | 34               | 61               | 29 <sup>1</sup> / <sub>2</sub> x 3 <sup>1</sup> / <sub>8</sub> x 10                                |
| HE-11              | 4                 | 7               | 6                | 11               | 11 <sup>5</sup> / <sub>16</sub> x 5 <sup>1</sup> / <sub>4</sub> x 5 <sup>1</sup> / <sub>8</sub>    |
| HE-15              | 14                | 25              | 19               | 34               | 15 x 7 <sup>7</sup> / <sub>8</sub> x 7 <sup>1</sup> / <sub>8</sub>                                 |
| HE-24              | 28                | 49              | 54               | 97               | 24 x 9 <sup>5</sup> / <sub>8</sub> x 19                                                            |
| HE-28              | 28                | 49              | 57               | 103              | 28 <sup>1</sup> / <sub>2</sub> x 9 <sup>1</sup> / <sub>4</sub> x 19                                |
| HE-33NSM           | 26                | 47              | 61               | 109              | 34 <sup>1</sup> / <sub>8</sub> x 9 <sup>1</sup> / <sub>4</sub> x 12 <sup>3</sup> / <sub>8</sub>    |
| HE-33NRM           | 26                | 47              | 61               | 109              | 34 <sup>1</sup> / <sub>4</sub> x 9 <sup>1</sup> / <sub>2</sub> x 13 <sup>3</sup> / <sub>4</sub>    |
| HE-36              | 25                | 45              | 57               | 103              | 36 <sup>11</sup> / <sub>16</sub> x 9 <sup>9</sup> / <sub>16</sub> x 19                             |
| HE-36HC            | 34                | 62              | 93               | 167              | 36 <sup>1</sup> / <sub>16</sub> x 13 <sup>7</sup> / <sub>16</sub> x 19                             |
| HX-20SF Single Fan | 7                 | 13              | 13               | 24               | 20 <sup>3</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>16</sub> x 11 <sup>3</sup> / <sub>16</sub> |
| HX-20DF Double Fan | 7                 | 13              | 15               | 27               | 20 <sup>3</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>16</sub> x 11 <sup>3</sup> / <sub>16</sub> |
| HX-26SF Single Fan | 8                 | 14              | 16               | 29               | 26 <sup>3</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>16</sub> x 11 <sup>3</sup> / <sub>16</sub> |
| HX-26DF Double Fan | 8                 | 14              | 16               | 29               | 26 <sup>3</sup> / <sub>16</sub> x 2 <sup>1</sup> / <sub>16</sub> x 11 <sup>3</sup> / <sub>16</sub> |
| HX-38SF Single Fan | 18                | 32              | 74               | 133              | 38 <sup>1</sup> / <sub>4</sub> x 2 <sup>1</sup> / <sub>16</sub> x 20                               |
| HX-38DF Double Fan | 22                | 40              | 69               | 124              | 38 <sup>1</sup> / <sub>4</sub> x 2 <sup>1</sup> / <sub>16</sub> x 20                               |

### PROAIR™ FILTER FAN PACKAGES

| Series       | Capacity Rating<br>CFM* | Dimensions<br>(H" x D" x W") |
|--------------|-------------------------|------------------------------|
| ProAir FF-05 | 30                      | 4.88 x 3.2 x 4.88            |
| ProAir FF-09 | 64                      | 9.37 x 4.17 x 9.37           |
| ProAir FF-10 | 130                     | 10.04 x 5.59 x 10.04         |
| ProAir FF-13 | 350                     | 13.54 x 7.28 x 13.54         |

\*CFM Rating (unimpeded airflow at 60 Hz)

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Zero Enclosures, Refer to Cabinets & Enclosures Section 1400

**ZERO**

**ZERO**

**MECHATRONICS****FULL LINE DC FANS**

- 5, 12, 24, 48 VDC
- All frame sizes - 40mm x 12mm thru 120mm x 38mm
- UL / CSA / IEC 950 Certified
- Low Noise Designs
- Thermistor/speed control fans
- Locked Rotor/Tachometer Output Signals
- Large Inventory - J.I.T. Service

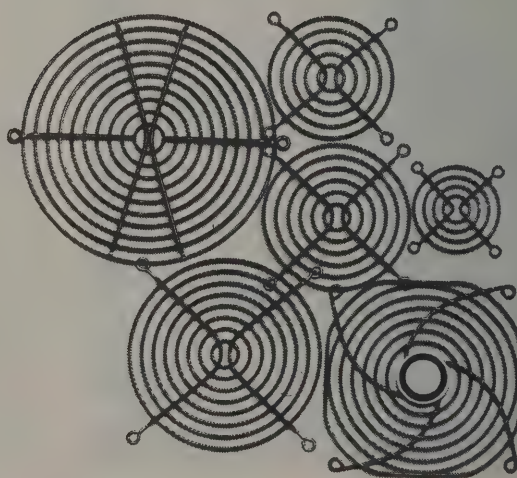
**Value Added Assembly Capability**

- UL Listed # E139199
- CSA File # LR - 98754
- Custom Wire Harness Manufacturing and Installation
- Installation of Special Connectors
- Custom Sheet Metal Bracket Manufacturing and Installation
- Build to print
- QC System Conforms To : MIL-I-45208A

**FINGER GUARDS**

| Basic Model # | Fan O.D.      | Centerline Dim.<br>of Mounting Holes |
|---------------|---------------|--------------------------------------|
| SG-14         | 1.4 in./40mm  | 1.26 in./32mm                        |
| SG-24         | 2.4 in./60mm  | 1.97 in./50mm                        |
| SG-31         | 3.1 in./80mm  | 2.8 in./71mm                         |
| SG-36         | 3.6 in./92mm  | 3.25 in./82mm                        |
| SG-47         | 4.7 in./120mm | 4.13 in./105mm                       |
| SG-59         | 5.9 in./150mm | 6.38 in./162mm                       |

Finish - nickel chrome or black upon request  
 Meets UL spacing requirements  
 Plastic guards available in most frame sizes  
**Extensive Stock, Same Day Service**

**MECHATRONICS**

2835 82nd. Ave. S.E.  
 P.O. BOX 20  
 Mercer Island, WA 98040  
 206-232-4800  
 910-444-4126 TWX#  
 206-236-5480 FAX#

# 800-453-4569



# 800-453-4569

**MECHATRONICS**


## DC BRUSHLESS FANS

| Model #   | Volts | Watts | mAMPS | Speed RPM | Noise dB(A) | CFM | Dim. mm  |
|-----------|-------|-------|-------|-----------|-------------|-----|----------|
| F4012L12C | 12    | 0.09  | 75    | 4,000     | 21          | 3.9 | 40x40x12 |
| F4012M12C | 12    | 1.14  | 95    | 5,000     | 23          | 5.0 |          |
| F4012H12C | 12    | 1.44  | 110   | 6,000     | 25          | 6.0 |          |
| F4012L24C | 24    | 1.44  | 60    | 4,000     | 21          | 3.9 |          |
| F4012M24C | 24    | 1.80  | 75    | 5,000     | 23          | 5.0 |          |
| F4012H24C | 24    | 2.16  | 90    | 6,000     | 25          | 6.0 |          |
| E4020L12C | 12    | 0.96  | 80    | 4,000     | 23          | 3.5 | 40x40x20 |
| E4020M12C | 12    | 1.20  | 100   | 5,000     | 25          | 4.3 |          |
| E4020H12C | 12    | 1.80  | 150   | 6,000     | 28          | 5.1 |          |
| E4020E12C | 12    | 2.40  | 200   | 7,000     | 32          | 5.7 |          |
| E4020L24C | 24    | 1.44  | 60    | 4,000     | 23          | 3.5 |          |
| E4020M24C | 24    | 1.80  | 75    | 5,000     | 25          | 4.3 |          |
| E4020H24C | 24    | 2.16  | 90    | 6,000     | 28          | 5.1 |          |
| E4020E24C | 24    | 2.88  | 120   | 7,000     | 32          | 5.7 |          |
| F6025S05B | 5     | 0.75  | 150   | 2,300     | 22          | 12  | 60x60x25 |
| F6025L05B | 5     | 0.95  | 190   | 2,800     | 24          | 14  |          |
| F6025M05B | 5     | 1.35  | 270   | 3,300     | 27          | 17  |          |
| F6025H05B | 5     | 2.05  | 410   | 3,800     | 31          | 20  |          |
| F6025E05B | 5     | 3.50  | 700   | 4,600     | 36          | 24  |          |
| F6025S12B | 12    | 0.90  | 75    | 2,300     | 22          | 12  |          |
| F6025L12B | 12    | 1.02  | 85    | 2,800     | 24          | 14  |          |
| F6025M12B | 12    | 1.14  | 95    | 3,300     | 27          | 17  |          |
| F6025H12B | 12    | 1.68  | 140   | 3,800     | 31          | 20  |          |
| F6025E12B | 12    | 2.76  | 230   | 4,600     | 36          | 24  |          |
| F6025S24B | 24    | 0.96  | 40    | 2,300     | 22          | 12  |          |
| F6025L24B | 24    | 1.08  | 45    | 2,800     | 24          | 14  |          |
| F6025M24B | 24    | 1.32  | 55    | 3,300     | 27          | 17  |          |
| F6025H24B | 24    | 1.92  | 80    | 3,800     | 31          | 20  |          |
| F6025E24B | 24    | 3.00  | 125   | 4,600     | 36          | 24  |          |
| F8025S05B | 5     | 0.75  | 150   | 1,500     | 20          | 25  | 80x80x25 |
| F8025L05B | 5     | 1.00  | 200   | 1,800     | 22          | 29  |          |
| F8025M05B | 5     | 1.45  | 290   | 2,100     | 26          | 34  |          |
| F8025H05B | 5     | 2.10  | 420   | 2,400     | 29          | 39  |          |
| F8025E05B | 5     | 4.00  | 800   | 2,800     | 32          | 46  |          |
| F8025S12B | 12    | 0.90  | 75    | 1,500     | 20          | 25  |          |
| F8025L12B | 12    | 1.08  | 90    | 1,800     | 22          | 29  |          |
| F8025M12B | 12    | 1.44  | 120   | 2,100     | 26          | 34  |          |
| F8025H12B | 12    | 1.74  | 145   | 2,400     | 29          | 39  |          |
| F8025E12B | 12    | 2.88  | 240   | 2,800     | 32          | 46  |          |
| F8025S24B | 24    | 1.20  | 50    | 1,500     | 20          | 25  |          |
| F8025L24B | 24    | 1.44  | 60    | 1,800     | 22          | 29  |          |
| F8025M24B | 24    | 1.92  | 80    | 2,100     | 26          | 34  |          |
| F8025H24B | 24    | 2.16  | 90    | 2,400     | 29          | 39  |          |
| F8025E24B | 24    | 3.36  | 140   | 2,800     | 32          | 46  |          |
| E9225S05B | 5     | 1.35  | 270   | 2,000     | 24          | 29  | 92x92x25 |
| E9225L05B | 5     | 2.00  | 400   | 2,400     | 27          | 35  |          |
| E9225M05B | 5     | 2.80  | 560   | 2,800     | 32          | 44  |          |

## DC BRUSHLESS FANS continued

| Model #   | Volts | Watts | mAMPS | Speed RPM | Noise dB(A) | CFM | Dim. mm    |
|-----------|-------|-------|-------|-----------|-------------|-----|------------|
| E9225S12B | 12    | 1.18  | 98    | 2,000     | 24          | 29  | 92x92x25   |
| E9225L12B | 12    | 1.80  | 150   | 2,400     | 27          | 35  |            |
| E9225M12B | 12    | 2.82  | 235   | 2,800     | 32          | 44  |            |
| E9225H12B | 12    | 4.32  | 360   | 3,200     | 36          | 51  |            |
| E9225E12B | 12    | 5.98  | 498   | 3,600     | 39          | 56  |            |
| E9225S24B | 24    | 1.44  | 60    | 2,000     | 24          | 29  |            |
| E9225L24B | 24    | 2.04  | 85    | 2,400     | 27          | 35  |            |
| E9225M24B | 24    | 3.00  | 125   | 2,800     | 32          | 44  |            |
| E9225H24B | 24    | 4.03  | 168   | 3,200     | 36          | 51  |            |
| E9225E24B | 24    | 6.12  | 255   | 3,600     | 39          | 56  |            |
| E9225M48B | 48    | 3.84  | 80    | 2,800     | 32          | 44  |            |
| E9225H48B | 48    | 5.76  | 120   | 3,200     | 36          | 51  |            |
| E9225E48B | 48    | 8.16  | 170   | 3,600     | 39          | 56  |            |
| E1225S05B | 5     | 1.10  | 220   | 1,400     | 28          | 44  | 120x120x25 |
| E1225L05B | 5     | 1.70  | 340   | 1,800     | 32          | 55  |            |
| E1225M05B | 5     | 3.00  | 600   | 2,200     | 36          | 67  |            |
| E1225S12B | 12    | 1.20  | 100   | 1,400     | 28          | 44  |            |
| E1225L12B | 12    | 1.70  | 142   | 1,800     | 32          | 55  |            |
| E1225M12B | 12    | 2.94  | 245   | 2,200     | 36          | 67  |            |
| E1225H12B | 12    | 4.62  | 385   | 2,600     | 40          | 82  |            |
| E1225E12B | 12    | 6.96  | 580   | 3,000     | 44          | 93  |            |
| E1225S24B | 24    | 2.04  | 85    | 1,400     | 28          | 44  |            |
| E1225L24B | 24    | 2.28  | 95    | 1,800     | 32          | 55  |            |
| E1225M24B | 24    | 3.84  | 160   | 2,200     | 36          | 67  |            |
| E1225H24B | 24    | 5.76  | 240   | 2,600     | 40          | 82  |            |
| E1225E24B | 24    | 8.16  | 340   | 3,000     | 44          | 93  |            |
| E1225M48B | 48    | 3.84  | 80    | 2,200     | 36          | 67  |            |
| E1225H48B | 48    | 5.76  | 120   | 2,600     | 40          | 82  |            |
| E1225E48B | 48    | 8.16  | 170   | 3,000     | 44          | 93  |            |
| F1238S05B | 5     | 2.60  | 520   | 1,800     | 34          | 82  | 120x120x38 |
| F1238L05B | 5     | 4.00  | 800   | 2,050     | 36          | 93  |            |
| F1238S12B | 12    | 2.16  | 180   | 1,800     | 34          | 82  |            |
| F1238L12B | 12    | 3.48  | 290   | 2,050     | 36          | 93  |            |
| F1238M12B | 12    | 4.32  | 360   | 2,300     | 38          | 104 |            |
| F1238H12B | 12    | 5.28  | 440   | 2,500     | 41          | 112 |            |
| F1238E12B | 12    | 8.40  | 700   | 2,800     | 43          | 125 |            |
| F1238S24B | 24    | 2.16  | 90    | 1,800     | 34          | 82  |            |
| F1238L24B | 24    | 3.48  | 145   | 2,050     | 36          | 93  |            |
| F1238M24B | 24    | 4.32  | 180   | 2,300     | 38          | 104 |            |
| F1238H24B | 24    | 5.28  | 220   | 2,500     | 41          | 112 |            |
| F1238E24B | 24    | 8.40  | 350   | 2,800     | 43          | 125 |            |
| F1238S48B | 48    | 2.88  | 60    | 1,800     | 34          | 82  |            |
| F1238L48B | 48    | 3.84  | 80    | 2,050     | 36          | 93  |            |
| F1238M48B | 48    | 5.76  | 120   | 2,300     | 38          | 104 |            |
| F1238H48B | 48    | 6.72  | 140   | 2,500     | 41          | 112 |            |

**MECHATRONICS**


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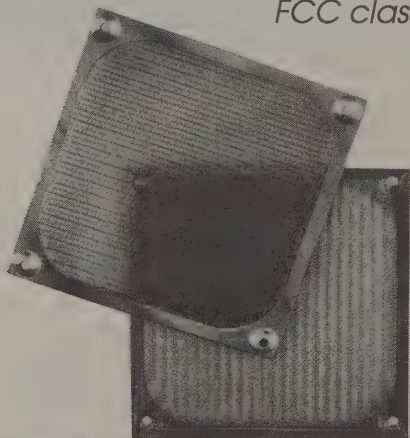
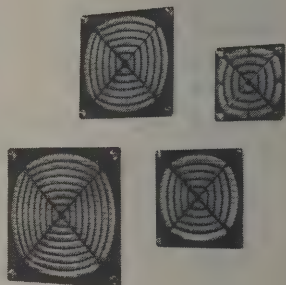


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- tape drives
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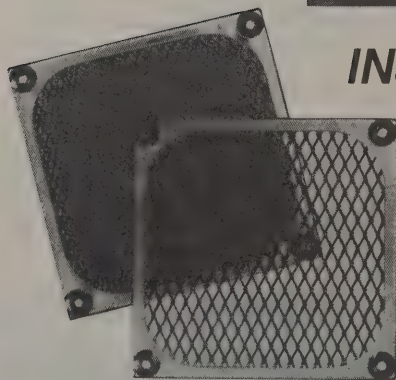


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# Thermoelectric Cooling from MELCOR ...versatile, reliable, cost-effective.



If your design criteria for temperature control include high reliability and versatility, small size, low weight and intrinsic safety, you owe it to yourself to investigate Frigichip™—the miniaturized heat pump from MELCOR.

Frigichips are solid state, thermoelectric heat pumps that utilize the Peltier effect to perform the same cooling functions as freon-based compression or absorption refrigerators...but in miniature!! Use them for space cooling of cabinet enclosures, cooling of special shapes, plates, castings or spot cooling of small individual devices. Use for precise temperature control by cycling from cooling to heating.

## Broad Spectrum of Applications

MELCOR Frigichips have been proven for three decades in a wide range of thermal management applications, including:

- Fiber optic & other electro-optic cooling applications
- Food service refrigeration & other commercial/institutional applications
- Appliances: portable 12 volt refrigerators, water & beverage coolers, etc.
- Instruments for physical, chemical, optical & electronic analysis
- Laboratory & scientific instruments, computers, cameras
- Medical & pharmaceutical equipment
- Military/aerospace applications
- And countless others

## Only Frigichip Combines All These Benefits

- Quick cooling to below ambient—economically
- Reduced space/size/weight
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- Precision temperature control capability
- Minimum, if any, electrical noise

- DC operation
- Electrical power generation from waste heat
- More than 100 standard single stage types available, from sub-miniature, low capacity to compact, high-capacity
- Multi-stage cascades to  $-95^{\circ}\text{C}$ , designed to specifications

## Wide Choice of Standard and Custom Modules

MELCOR offers you more than 100 standard Frigichip modules ranging in size from 2 x 3 mm to 62 x 62 mm and cooling capacities from 0.2 to 125 watts. The tables and graphs on the following three pages provide module specifications and a method for choosing the module that's ideal for your application. In addition, MELCOR can provide custom assemblies and multi-stage cascades, with or without heat exchangers.

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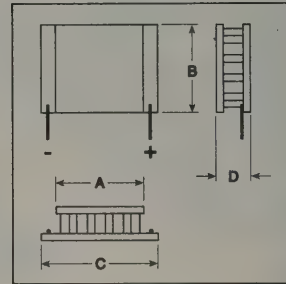
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# SOLID STATE COOLING WITH THERMOELECTRICS

## FC SERIES SPECIFICATIONS

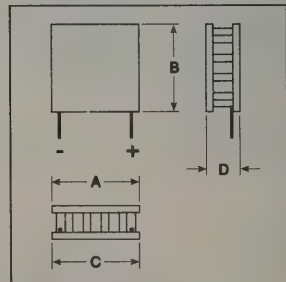
|          | Catalog Number | I <sub>MAX</sub><br>(Amps) | T <sub>H</sub> = 25°C                      |                             |                           |    | N    | Dimensions, mm |      |     |                  |
|----------|----------------|----------------------------|--------------------------------------------|-----------------------------|---------------------------|----|------|----------------|------|-----|------------------|
|          |                |                            | Q <sub>MAX</sub> <sup>(1)</sup><br>(Watts) | V <sub>MAX</sub><br>(Volts) | ΔT <sub>MAX</sub><br>(°C) |    |      | A              | B    | C   | D <sup>(2)</sup> |
| STANDARD | FC 0.45-4-05   | 0.80                       | 0.22                                       | 0.48                        | 67                        | 4  | 1.8  | 3.4            | 3.4  | 2.4 |                  |
|          | FC 0.45-8-05   | 0.80                       | 0.43                                       | 0.97                        | 67                        | 8  | 3.4  | 3.4            | 5.0  | 2.4 |                  |
|          | FC 0.45-12-05  | 0.80                       | 0.65                                       | 1.45                        | 67                        | 12 | 3.4  | 5.0            | 5.0  | 2.4 |                  |
|          | FC 0.45-18-05  | 0.80                       | 0.97                                       | 2.18                        | 67                        | 18 | 5.0  | 5.0            | 6.6  | 2.4 |                  |
|          | FC 0.45-32-05  | 0.80                       | 1.72                                       | 3.87                        | 67                        | 32 | 6.6  | 6.6            | 8.3  | 2.4 |                  |
|          | FC 0.45-66-05  | 0.80                       | 3.56                                       | 7.98                        | 67                        | 66 | 9.9  | 9.1            | 11.5 | 2.4 |                  |
|          | FC 0.6-4-06    | 1.20                       | 0.32                                       | 0.48                        | 67                        | 4  | 2.2  | 4.2            | 4.2  | 2.7 |                  |
|          | FC 0.6-8-06    | 1.20                       | 0.65                                       | 0.97                        | 67                        | 8  | 4.2  | 4.2            | 6.2  | 2.7 |                  |
|          | FC 0.6-12-06   | 1.20                       | 0.97                                       | 1.45                        | 67                        | 12 | 4.2  | 6.2            | 6.2  | 2.7 |                  |
|          | FC 0.6-18-06   | 1.20                       | 1.46                                       | 2.18                        | 67                        | 18 | 6.2  | 6.2            | 8.3  | 2.7 |                  |
|          | FC 0.6-32-06   | 1.20                       | 2.59                                       | 3.87                        | 67                        | 32 | 8.3  | 8.3            | 10.3 | 2.7 |                  |
|          | FC 0.6-66-06   | 1.20                       | 5.34                                       | 7.98                        | 67                        | 66 | 12.3 | 11.3           | 14.4 | 2.7 |                  |
|          | FC 0.6-4-05    | 1.50                       | 0.40                                       | 0.48                        | 67                        | 4  | 2.2  | 4.2            | 4.2  | 2.4 |                  |
|          | FC 0.6-8-05    | 1.50                       | 0.81                                       | 0.87                        | 67                        | 8  | 4.2  | 4.2            | 6.2  | 2.4 |                  |
|          | FC 0.6-12-05   | 1.50                       | 1.21                                       | 1.45                        | 67                        | 12 | 4.2  | 6.2            | 6.2  | 2.4 |                  |
|          | FC 0.6-18-05   | 1.50                       | 1.82                                       | 2.18                        | 67                        | 18 | 6.2  | 6.2            | 8.3  | 2.4 |                  |
|          | FC 0.6-32-05   | 1.50                       | 3.23                                       | 3.87                        | 67                        | 32 | 8.3  | 8.3            | 10.3 | 2.4 |                  |
|          | FC 0.6-66-05   | 1.50                       | 6.67                                       | 7.98                        | 67                        | 66 | 12.3 | 11.3           | 14.4 | 2.4 |                  |
|          | FC 0.65-4-04   | 2.00                       | 0.54                                       | 0.48                        | 67                        | 4  | 2.2  | 4.2            | 4.2  | 2.2 |                  |
|          | FC 0.65-8-04   | 2.00                       | 1.08                                       | 0.97                        | 67                        | 8  | 4.2  | 4.2            | 6.2  | 2.2 |                  |
|          | FC 0.65-12-04  | 2.00                       | 1.62                                       | 1.45                        | 67                        | 12 | 4.2  | 6.2            | 6.2  | 2.2 |                  |
|          | FC 0.65-18-04  | 2.00                       | 2.43                                       | 2.18                        | 67                        | 18 | 6.2  | 6.2            | 8.3  | 2.2 |                  |
|          | FC 0.65-32-04  | 2.00                       | 4.31                                       | 3.87                        | 67                        | 32 | 8.3  | 8.3            | 10.3 | 2.2 |                  |
|          | FC 0.65-66-04  | 2.00                       | 8.89                                       | 7.98                        | 67                        | 66 | 12.3 | 11.3           | 14.4 | 2.2 |                  |

**FC SERIES - STANDARD**



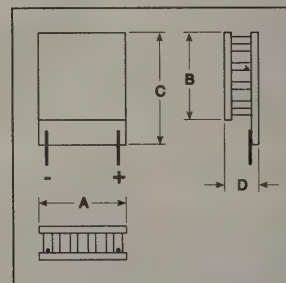
|            |                 |      |      |      |    |    |      |      |      |     |  |
|------------|-----------------|------|------|------|----|----|------|------|------|-----|--|
| OPTION ONE | FC 0.45-7-05-1  | 0.80 | 0.38 | 0.85 | 67 | 7  | 3.4  | 3.4  | 3.4  | 2.4 |  |
|            | FC 0.45-11-05-1 | 0.80 | 0.60 | 1.33 | 67 | 11 | 3.4  | 5.0  | 3.4  | 2.4 |  |
|            | FC 0.45-17-05-1 | 0.80 | 0.92 | 2.06 | 67 | 17 | 5.0  | 5.0  | 5.0  | 2.4 |  |
|            | FC 0.45-31-05-1 | 0.80 | 1.67 | 3.75 | 67 | 31 | 6.6  | 6.6  | 6.6  | 2.4 |  |
|            | FC 0.45-65-05-1 | 0.80 | 3.51 | 7.85 | 67 | 65 | 9.9  | 9.1  | 9.9  | 2.4 |  |
|            | FC 0.6-7-06-1   | 1.20 | 0.57 | 0.85 | 67 | 7  | 4.2  | 4.2  | 4.2  | 2.7 |  |
|            | FC 0.6-11-06-1  | 1.20 | 0.89 | 1.33 | 67 | 11 | 4.2  | 6.2  | 4.2  | 2.7 |  |
|            | FC 0.6-17-06-1  | 1.20 | 1.38 | 2.06 | 67 | 17 | 6.2  | 6.2  | 6.2  | 2.7 |  |
|            | FC 0.6-31-06-1  | 1.20 | 2.51 | 3.75 | 67 | 31 | 8.3  | 8.3  | 8.3  | 2.7 |  |
|            | FC 0.6-65-06-1  | 1.20 | 5.26 | 7.86 | 67 | 65 | 12.3 | 11.3 | 12.3 | 2.7 |  |
|            | FC 0.6-7-05-1   | 1.50 | 0.71 | 0.85 | 67 | 7  | 4.2  | 4.2  | 4.2  | 2.4 |  |
|            | FC 0.6-11-05-1  | 1.50 | 1.11 | 1.33 | 67 | 11 | 4.2  | 6.2  | 4.2  | 2.4 |  |
|            | FC 0.6-17-05-1  | 1.50 | 1.72 | 2.08 | 67 | 17 | 6.2  | 6.2  | 6.2  | 2.4 |  |
|            | FC 0.6-31-05-1  | 1.50 | 3.13 | 3.75 | 67 | 31 | 8.3  | 8.3  | 8.3  | 2.4 |  |
|            | FC 0.6-65-05-1  | 1.50 | 6.57 | 7.86 | 67 | 65 | 12.3 | 11.3 | 12.3 | 2.4 |  |
|            | FC 0.65-7-04-1  | 2.00 | 0.95 | 0.85 | 67 | 7  | 4.2  | 4.2  | 4.2  | 2.2 |  |
|            | FC 0.65-11-04-1 | 2.00 | 1.49 | 1.33 | 67 | 11 | 4.2  | 6.2  | 4.2  | 2.2 |  |
|            | FC 0.65-17-04-1 | 2.00 | 2.30 | 2.08 | 67 | 17 | 6.2  | 6.2  | 6.2  | 2.2 |  |
|            | FC 0.65-31-04-1 | 2.00 | 4.18 | 3.75 | 67 | 31 | 8.3  | 8.3  | 8.3  | 2.2 |  |
|            | FC 0.65-65-04-1 | 2.00 | 8.76 | 7.86 | 67 | 65 | 12.3 | 11.3 | 12.3 | 2.2 |  |

**FC SERIES - OPTION ONE**



|            |                 |      |      |      |    |    |      |      |      |     |  |
|------------|-----------------|------|------|------|----|----|------|------|------|-----|--|
| OPTION TWO | FC 0.45-4-05-2  | 0.80 | 0.22 | 0.48 | 67 | 4  | 1.8  | 3.4  | 5.1  | 2.4 |  |
|            | FC 0.45-8-05-2  | 0.80 | 0.43 | 0.97 | 67 | 8  | 3.4  | 3.4  | 5.1  | 2.4 |  |
|            | FC 0.45-12-05-2 | 0.80 | 0.65 | 1.45 | 67 | 12 | 3.4  | 5.0  | 6.7  | 2.4 |  |
|            | FC 0.45-18-05-2 | 0.80 | 0.97 | 2.18 | 67 | 18 | 5.0  | 5.0  | 6.7  | 2.4 |  |
|            | FC 0.45-32-05-2 | 0.80 | 1.72 | 3.87 | 67 | 32 | 6.6  | 6.6  | 8.3  | 2.4 |  |
|            | FC 0.45-66-05-2 | 0.80 | 3.56 | 7.98 | 67 | 66 | 9.9  | 9.1  | 10.8 | 2.4 |  |
|            | FC 0.6-4-06-2   | 1.20 | 0.32 | 0.48 | 67 | 4  | 2.2  | 4.2  | 6.3  | 2.7 |  |
|            | FC 0.6-8-06-2   | 1.20 | 0.65 | 0.97 | 67 | 8  | 4.2  | 4.2  | 6.3  | 2.7 |  |
|            | FC 0.6-12-06-2  | 1.20 | 0.97 | 1.45 | 67 | 12 | 4.2  | 6.2  | 8.3  | 2.7 |  |
|            | FC 0.6-18-06-2  | 1.20 | 1.46 | 2.18 | 67 | 18 | 6.2  | 6.2  | 8.3  | 2.7 |  |
|            | FC 0.6-32-06-2  | 1.20 | 2.59 | 3.87 | 67 | 32 | 8.3  | 8.3  | 10.4 | 2.7 |  |
|            | FC 0.6-66-06-2  | 1.20 | 5.34 | 7.98 | 67 | 66 | 12.3 | 11.3 | 13.4 | 2.7 |  |
|            | FC 0.6-4-05-2   | 1.50 | 0.40 | 0.48 | 67 | 4  | 2.2  | 4.2  | 6.3  | 2.4 |  |
|            | FC 0.6-8-05-2   | 1.50 | 0.81 | 0.87 | 67 | 8  | 4.2  | 4.2  | 6.3  | 2.4 |  |
|            | FC 0.6-12-05-2  | 1.50 | 1.21 | 1.45 | 67 | 12 | 4.2  | 6.2  | 8.3  | 2.4 |  |
|            | FC 0.6-18-05-2  | 1.50 | 1.82 | 2.18 | 67 | 18 | 6.2  | 6.2  | 8.3  | 2.4 |  |
|            | FC 0.6-32-05-2  | 1.50 | 3.23 | 3.87 | 67 | 32 | 8.3  | 8.3  | 10.4 | 2.4 |  |
|            | FC 0.6-66-05-2  | 1.50 | 6.67 | 7.98 | 67 | 66 | 12.3 | 11.3 | 13.4 | 2.4 |  |
|            | FC 0.65-4-04-2  | 2.00 | 0.54 | 0.48 | 67 | 4  | 2.2  | 4.2  | 6.3  | 2.2 |  |
|            | FC 0.65-8-04-2  | 2.00 | 1.08 | 0.97 | 67 | 8  | 4.2  | 4.2  | 6.3  | 2.2 |  |
|            | FC 0.65-12-04-2 | 2.00 | 1.62 | 1.45 | 67 | 12 | 4.2  | 6.2  | 8.3  | 2.2 |  |
|            | FC 0.65-18-04-2 | 2.00 | 2.43 | 2.18 | 67 | 18 | 6.2  | 6.2  | 8.3  | 2.2 |  |
|            | FC 0.65-32-04-2 | 2.00 | 4.31 | 3.87 | 67 | 32 | 8.3  | 8.3  | 10.4 | 2.2 |  |
|            | FC 0.65-66-04-2 | 2.00 | 8.89 | 7.98 | 67 | 66 | 12.3 | 11.3 | 13.4 | 2.2 |  |

**FC SERIES - OPTION TWO**



**Notes:**

- (1) Q<sub>MAX</sub> rated value at ΔT = 0°, I<sub>MAX</sub> and V<sub>MAX</sub>, T<sub>H</sub> = 25°C
- (2) Thickness (D) for type L only.

**Interfacing:**

Both hot and cold faces lapped flat, TYPE L. Both faces metallized and tinned, TYPE TT. Hybrid, hot face tinned, cold face lapped, TYPE TL. Hot face lapped, cold face tinned, TYPE LT.

**Wire Standards:**

| Module Type | Wire Gauge (AWG) |
|-------------|------------------|
| FC 0.45-ALL | 32               |
| FC 0.6-ALL  | 30               |
| FC 0.65-ALL | 30               |

For all FC Series modules, wire is solid, uninsulated and 50 mm (2.0 in.) long.





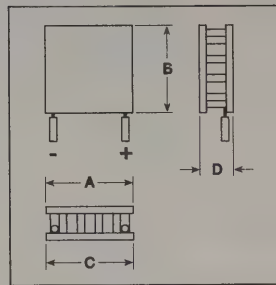
**Materials Electronic Products Corp.**  
1040 Spruce St., Trenton, NJ 08648 USA  
Telephone (609) 393-4178 FAX (609) 393-9461

# SOLID STATE COOLING WITH THERMOELECTRICS

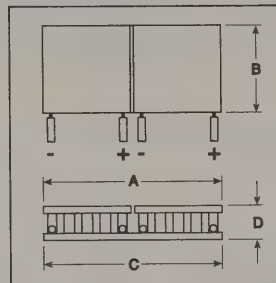
## CP SERIES SPECIFICATIONS

| Catalog Number   | I <sub>MAX</sub> (Amps) | T <sub>H</sub> = 25°C                   |                          |                        | N   | Dimensions, mm |    |    |                  |
|------------------|-------------------------|-----------------------------------------|--------------------------|------------------------|-----|----------------|----|----|------------------|
|                  |                         | Q <sub>MAX</sub> <sup>(1)</sup> (Watts) | V <sub>MAX</sub> (Volts) | ΔT <sub>MAX</sub> (°C) |     | A              | B  | C  | D <sup>(2)</sup> |
| CP 0.8-7-06L     | 2.1                     | 1.0                                     | 0.85                     | 67                     | 7   | 6              | 6  | 6  | 3.4              |
| CP 0.8-17-06L    | 2.1                     | 2.4                                     | 2.06                     | 67                     | 17  | 9              | 9  | 9  | 3.4              |
| CP 0.8-31-06L    | 2.1                     | 4.4                                     | 3.75                     | 67                     | 31  | 12             | 12 | 12 | 3.4              |
| CP 0.8-63-06L    | 2.1                     | 9.0                                     | 7.62                     | 67                     | 63  | 12             | 25 | 12 | 3.4              |
| CP 0.8-71-06L    | 2.1                     | 10.1                                    | 8.6                      | 67                     | 71  | 18             | 18 | 18 | 3.4              |
| CP 0.8-127-06L   | 2.1                     | 18.1                                    | 15.4                     | 67                     | 127 | 25             | 25 | 25 | 3.4              |
| * CP 0.8-254-06L | 2.1/4.2                 | 36.2                                    | 30.8/15.4                | 67                     | 254 | 50             | 25 | 50 | 3.4              |
| CP 0.8-127-05L   | 2.6                     | 22.4                                    | 15.4                     | 67                     | 127 | 25             | 25 | 25 | 3.1              |
| * CP 0.8-254-05L | 2.6/5.2                 | 44.8                                    | 30.8/15.4                | 67                     | 254 | 50             | 25 | 50 | 3.1              |
| CP 1.0-7-08L     | 2.5                     | 1.2                                     | 0.85                     | 67                     | 7   | 8              | 8  | 8  | 4.0              |
| CP 1.0-17-08L    | 2.5                     | 2.9                                     | 2.06                     | 67                     | 17  | 12             | 12 | 12 | 4.0              |
| CP 1.0-31-08L    | 2.5                     | 5.3                                     | 3.75                     | 67                     | 31  | 15             | 15 | 15 | 4.0              |
| CP 1.0-63-08L    | 2.5                     | 10.6                                    | 7.62                     | 67                     | 63  | 15             | 30 | 15 | 4.0              |
| CP 1.0-71-08L    | 2.5                     | 12.0                                    | 8.60                     | 67                     | 71  | 23             | 23 | 23 | 4.0              |
| CP 1.0-127-08L   | 2.5                     | 21.4                                    | 15.4                     | 67                     | 127 | 30             | 30 | 30 | 4.0              |
| * CP 1.0-254-08L | 2.5/5.0                 | 42.8                                    | 30.8/15.4                | 67                     | 254 | 60             | 30 | 60 | 4.0              |
| CP 1.0-7-06L     | 3.0                     | 1.4                                     | 0.85                     | 67                     | 7   | 8              | 8  | 8  | 3.6              |
| CP 1.0-17-06L    | 3.0                     | 3.4                                     | 2.06                     | 67                     | 17  | 12             | 12 | 12 | 3.6              |
| CP 1.0-31-06L    | 3.0                     | 6.3                                     | 3.75                     | 67                     | 31  | 15             | 15 | 15 | 3.6              |
| CP 1.0-63-06L    | 3.0                     | 12.7                                    | 7.62                     | 67                     | 63  | 15             | 30 | 15 | 3.6              |
| CP 1.0-71-06L    | 3.0                     | 14.4                                    | 8.60                     | 67                     | 71  | 23             | 23 | 23 | 3.6              |
| CP 1.0-127-06L   | 3.0                     | 25.7                                    | 15.4                     | 67                     | 127 | 30             | 30 | 30 | 3.6              |
| * CP 1.0-254-06L | 3.0/6.0                 | 51.4                                    | 30.8/15.4                | 67                     | 254 | 60             | 30 | 60 | 3.6              |
| CP 1.0-7-05L     | 3.9                     | 1.8                                     | 0.85                     | 67                     | 7   | 8              | 8  | 8  | 3.2              |
| CP 1.0-17-05L    | 3.9                     | 4.5                                     | 2.06                     | 67                     | 17  | 12             | 12 | 12 | 3.2              |
| CP 1.0-31-05L    | 3.9                     | 8.2                                     | 3.75                     | 67                     | 31  | 15             | 15 | 15 | 3.2              |
| CP 1.0-63-05L    | 3.9                     | 16.6                                    | 7.62                     | 67                     | 63  | 15             | 30 | 15 | 3.2              |
| CP 1.0-71-05L    | 3.9                     | 18.7                                    | 8.60                     | 67                     | 71  | 23             | 23 | 23 | 3.2              |
| CP 1.0-127-05L   | 3.9                     | 33.4                                    | 15.4                     | 67                     | 127 | 30             | 30 | 30 | 3.2              |
| * CP 1.0-254-05L | 3.9/7.8                 | 66.8                                    | 30.8/15.4                | 67                     | 254 | 60             | 30 | 60 | 3.2              |
| CP 1.4-3-10L     | 3.9                     | 0.8                                     | 0.36                     | 70                     | 3   | 5              | 10 | 5  | 4.7              |
| CP 1.4-7-10L     | 3.9                     | 1.8                                     | 0.85                     | 70                     | 7   | 10             | 10 | 10 | 4.7              |
| CP 1.4-11-10L    | 3.9                     | 2.9                                     | 1.33                     | 70                     | 11  | 10             | 15 | 10 | 4.7              |
| CP 1.4-17-10L    | 3.9                     | 4.5                                     | 2.06                     | 70                     | 17  | 15             | 15 | 15 | 4.7              |
| CP 1.4-31-10L    | 3.9                     | 8.2                                     | 3.75                     | 70                     | 31  | 20             | 20 | 20 | 4.7              |
| CP 1.4-35-10L    | 3.9                     | 9.2                                     | 4.24                     | 70                     | 35  | 15             | 30 | 15 | 4.7              |
| CP 1.4-71-10L    | 3.9                     | 18.7                                    | 8.60                     | 70                     | 71  | 30             | 30 | 30 | 4.7              |
| CP 1.4-127-10L   | 3.9                     | 33.4                                    | 15.4                     | 70                     | 127 | 40             | 40 | 40 | 4.7              |
| CP 1.4-3-06L     | 6.0                     | 1.2                                     | 0.36                     | 67                     | 3   | 5              | 10 | 5  | 3.8              |
| CP 1.4-7-06L     | 6.0                     | 2.8                                     | 0.85                     | 67                     | 7   | 10             | 10 | 10 | 3.8              |
| CP 1.4-11-06L    | 6.0                     | 4.4                                     | 1.33                     | 67                     | 11  | 10             | 15 | 10 | 3.8              |
| CP 1.4-17-06L    | 6.0                     | 6.9                                     | 2.06                     | 67                     | 17  | 15             | 15 | 15 | 3.8              |
| CP 1.4-31-06L    | 6.0                     | 12.5                                    | 3.75                     | 67                     | 31  | 20             | 20 | 20 | 3.8              |
| CP 1.4-35-06L    | 6.0                     | 14.2                                    | 4.24                     | 67                     | 35  | 15             | 30 | 15 | 3.8              |
| CP 1.4-71-06L    | 6.0                     | 28.7                                    | 8.60                     | 67                     | 71  | 30             | 30 | 30 | 3.8              |
| CP 1.4-127-06L   | 6.0                     | 51.4                                    | 15.4                     | 67                     | 127 | 40             | 40 | 40 | 3.8              |
| CP 1.4-3-045L    | 8.5                     | 1.6                                     | 0.36                     | 67                     | 3   | 5              | 10 | 5  | 3.3              |
| CP 1.4-7-045L    | 8.5                     | 3.8                                     | 0.85                     | 67                     | 7   | 10             | 10 | 10 | 3.3              |
| CP 1.4-11-45L    | 8.5                     | 6.0                                     | 1.33                     | 67                     | 11  | 10             | 15 | 10 | 3.3              |
| CP 1.4-17-045L   | 8.5                     | 9.2                                     | 2.06                     | 67                     | 17  | 15             | 15 | 15 | 3.3              |
| CP 1.4-31-045L   | 8.5                     | 16.8                                    | 3.75                     | 67                     | 31  | 20             | 20 | 20 | 3.3              |
| CP 1.4-35-045L   | 8.5                     | 19.0                                    | 4.24                     | 67                     | 35  | 15             | 30 | 15 | 3.3              |
| CP 1.4-71-045L   | 8.5                     | 38.5                                    | 8.60                     | 67                     | 71  | 30             | 30 | 30 | 3.3              |
| CP 1.4-127-045L  | 8.5                     | 68.8                                    | 15.4                     | 67                     | 127 | 40             | 40 | 40 | 3.3              |
| CP 2-7-10L       | 9.0                     | 4.2                                     | 0.85                     | 70                     | 7   | 15             | 15 | 15 | 5.6              |
| CP 2-15-10L      | 9.0                     | 9.1                                     | 1.82                     | 70                     | 15  | 15             | 30 | 15 | 5.6              |
| CP 2-17-10L      | 9.0                     | 10.3                                    | 2.06                     | 70                     | 17  | 22             | 22 | 22 | 5.6              |
| CP 2-31-10L      | 9.0                     | 18.8                                    | 3.75                     | 70                     | 31  | 30             | 30 | 30 | 5.6              |
| CP 2-49-10L      | 9.0                     | 29.7                                    | 5.93                     | 70                     | 49  | 36             | 36 | 36 | 5.6              |
| CP 2-71-10L      | 9.0                     | 43.1                                    | 8.60                     | 70                     | 71  | 44             | 44 | 44 | 5.6              |
| CP 2-127-10L     | 9.0                     | 77.1                                    | 15.4                     | 70                     | 127 | 62             | 62 | 62 | 5.6              |
| CP 2-7-06L       | 14.0                    | 6.6                                     | 0.85                     | 67                     | 7   | 15             | 15 | 15 | 4.6              |
| CP 2-15-06L      | 14.0                    | 14.2                                    | 1.82                     | 67                     | 15  | 15             | 30 | 15 | 4.6              |
| CP 2-17-06L      | 14.0                    | 16.0                                    | 2.06                     | 67                     | 17  | 22             | 22 | 22 | 4.6              |
| CP 2-31-06L      | 14.0                    | 29.3                                    | 3.75                     | 67                     | 31  | 30             | 30 | 30 | 4.6              |
| CP 2-49-06L      | 14.0                    | 46.2                                    | 5.93                     | 67                     | 49  | 36             | 36 | 36 | 4.6              |
| CP 2-71-06L      | 14.0                    | 67.0                                    | 8.60                     | 67                     | 71  | 44             | 44 | 44 | 4.6              |
| CP 2-127-06L     | 14.0                    | 120.0                                   | 15.4                     | 67                     | 127 | 62             | 62 | 62 | 4.6              |
| CP 2.8-32-06L    | 24.0                    | 51.8                                    | 3.87                     | 67                     | 32  | 40             | 40 | 40 | 5.0              |
| CP 5-31-10L      | 39.0                    | 81.5                                    | 3.75                     | 70                     | 31  | 55             | 55 | 55 | 5.8              |
| CP 5-31-06L      | 60.0                    | 125.0                                   | 3.75                     | 67                     | 31  | 55             | 55 | 55 | 4.9              |

## CP SERIES



## CP --254--



\*These modules have four leads and can be wired in series or parallel. The Specifications table indicates maximum values for V and I when "Wired in Series"/"Wired in Parallel."

### Notes:

- (1) Q<sub>MAX</sub> rated value at ΔT = 0°, I<sub>MAX</sub> and V<sub>MAX</sub>, T<sub>H</sub> = 25°C
- (2) Thickness (D) for Type L only.

### Interfacing:

Both hot and cold faces lapped flat, TYPE L. Both faces metallized and tinned, TYPE TT. Hybrid, hot face tinned, cold face lapped, TYPE TL. Hot face lapped, cold face tinned, TYPE LT. Two face soldering (Type TT) in sizes larger than 12 x 12 mm is not recommended. Consult MELCOR for details.

### Wire Standards:

| Module Type | Wire Gauge (AWG) | Module Type | Wire Gauge (AWG) |
|-------------|------------------|-------------|------------------|
| CP 0.8-ALL  | 26               | CP 5--10    | 14               |
| CP 1.0-ALL  | 24               | CP 5--06    | 12               |
| CP 1.4-ALL  | 18               | CP --254--  | Contact MELCOR   |
| CP 2-ALL    | 18               | Multistage  | Contact MELCOR   |
| CP 2.8-ALL  | 16               |             |                  |

For all CP Series modules, wire is stranded, 114 mm (4.5 in.) long and PVC insulated.

## MULTISTAGE (CASCADE) SPECIFICATIONS

| Cascade Model                 | I <sub>MAX</sub> (Amps) | Performance at 25°C                     |                          |                        | Dimensions, mm |             |        |
|-------------------------------|-------------------------|-----------------------------------------|--------------------------|------------------------|----------------|-------------|--------|
|                               |                         | Q <sub>MAX</sub> <sup>(1)</sup> (Watts) | V <sub>MAX</sub> (Volts) | ΔT <sub>MAX</sub> (°C) | Base Ceramic   | Top Ceramic | Height |
| 2 CP 040 080-7-2              | 2.0                     | 0.41                                    | 0.8                      | 91                     | 8 X 8          | 3.5 X 3.5   | 7.4    |
| 2 CP 040 065-31-17            | 2.1                     | 3.11                                    | 3.8                      | 81                     | 15 X 15        | 11.5 X 11.5 | 6.6    |
| 2 CP 055 065-31-17            | 4.0                     | 6.04                                    | 3.8                      | 81                     | 20 X 20        | 15 X 15     | 7.2    |
| 2 CP 085 100-31-20            | 5.9                     | 9.74                                    | 3.8                      | 77                     | 30 X 30        | 23 X 26     | 10.7   |
| 2 CP 055 065-71-31            | 4.3                     | 12.65                                   | 8.6                      | 85                     | 30 X 30        | 20 X 20     | 7.2    |
| 2 SC 040 050-127-63           | 2.8                     | 16.05                                   | 15.5                     | 83                     | 30 X 30        | 30 X 30     | 7.1    |
| 2 CP 085 065-71-31            | 10.3                    | 30.22                                   | 8.6                      | 85                     | 44 X 44        | 30 X 30     | 8.9    |
| 2 SC 055 045-127-63           | 6.0                     | 34.51                                   | 15.5                     | 83                     | 40 X 40        | 40 X 40     | 7.5    |
| 2 SC 085 065-127-70           | 9.5                     | 59.25                                   | 15.5                     | 81                     | 62 X 62        | 62 X 62     | 8.9    |
| 3 CP 040 065-31-17-7          | 1.8                     | 1.52                                    | 3.8                      | 98                     | 15 X 15        | 8 X 8       | 9.5    |
| 3 CP 040 065-127-71-31        | 1.8                     | 6.48                                    | 15.4                     | 96                     | 30 X 30        | 15 X 15     | 9.5    |
| 3 CP 055 065-71-31-17         | 3.5                     | 6.53                                    | 7.7                      | 97                     | 30 X 30        | 15 X 15     | 10.4   |
| 3 CP 055 065-127-71-31        | 3.5                     | 12.56                                   | 15.4                     | 96                     | 40 X 40        | 20 X 20     | 10.4   |
| 3 CP 085 065-71-31-17         | 8.4                     | 15.60                                   | 7.7                      | 97                     | 44 X 44        | 22 X 22     | 12.9   |
| 4 CP 040 080-64-26-11-6       | 1.4                     | 1.08                                    | 6.8                      | 110                    | 18 X 23.6      | 4 X 11      | 14.0   |
| 4 CP 040 080-31-17-7-2        | 1.5                     | 0.47                                    | 3.8                      | 114                    | 15 X 15        | 3.5 X 3.5   | 14.0   |
| 4 CP 040 065-71-31-17-7       | 1.7                     | 1.66                                    | 7.9                      | 110                    | 23 X 23        | 8 X 8       | 12.5   |
| 4 CP 055 065-69-29-11-6       | 3.4                     | 2.68                                    | 7.5                      | 112                    | 24 X 33        | 4.5 X 14.5  | 13.8   |
| 4 CP 040 080-127-71-31-17     | 1.3                     | 2.87                                    | 14.6                     | 107                    | 30 X 30        | 11.5 X 11.5 | 14.0   |
| 4 CP 055 065-127-71-31-17     | 3.1                     | 6.84                                    | 14.6                     | 107                    | 40 X 40        | 15 X 15     | 13.8   |
| 5 CP 040 065-127-71-31-17-7   | 1.6                     | 1.74                                    | 14.5                     | 118                    | 30 X 30        | 8 X 8       | 15.4   |
| 5 CP 055 065-127-71-31-17-7   | 3.0                     | 3.37                                    | 14.5                     | 118                    | 40 X 40        | 10 X 10     | 16.9   |
| 6 CP 040 065-127-71-31-17-7-2 | 1.5                     | 0.63                                    | 14.5                     | 131                    | 30 X 30        | 3.5 X 3.5   | 18.3   |
| 6 CP 055 065-127-71-31-17-7-2 | 3.0                     | 1.22                                    | 14.5                     | 131                    | 40 X 40        | 5 X 5       | 20.1   |

# How to Use TEC Selection/Performance Graphs

## TEC SELECTION (Use the Thermo section of S/P Graph)

Before beginning the TEC selection process, three application parameters must be known:  $T_H$ ,  $T_C$  and  $Q_C$ . **For this example,  $T_H = 37^\circ\text{C}$ ,  $T_C = 5^\circ\text{C}$  and  $Q_C = 30\text{ W}$ .**

1. Calculate  $\Delta T = T_H - T_C$ .  $\Delta T = 37 - 5 = 32^\circ\text{C}$
2. Choose the S/P Graph with  $T_H \leq T_H$  of the application; read  $\Delta T_{MAX}$ . (If the application's  $\Delta T \geq \Delta T_{MAX}$ , a multistage TEC is required. Contact a MELCOR application engineer for assistance.) **Select S/P Graph with  $T_H = 35^\circ\text{C}$ ;  $\Delta T_{MAX} = 70^\circ\text{C}$ .**
3. Locate  $\Delta T$  at the top or bottom of the selected graph. At  $\Delta T$ , draw a vertical line through the entire graph. **Draw vertical line at  $\Delta T = 32^\circ\text{C}$ .**
4. Locate intersection of  $\Delta T$  and  $I_{OPT}$  curve. Read  $I_{OPT}$ . **At  $\Delta T = 32^\circ\text{C}$ ,  $I_{OPT} = 0.4\text{ I}_{MAX}$ .**
5. Select an operating current ( $I_{SELECT}$ ) between  $I_{OPT}$  and  $I_{MAX}$ . When there are no special design constraints, a practical choice would be midway between  $I_{OPT}$  and  $I_{MAX}$  where  $I_{SELECT} = (I_{OPT} + I_{MAX}) / 2$ .  **$I_{SELECT} = (0.4\text{ I}_{MAX} + 1.0\text{ I}_{MAX}) / 2 = 0.7\text{ I}_{MAX}$ .**
6. At intersection of  $\Delta T$  and  $1.0\text{ I}_{MAX}$ , draw a horizontal line through the graph and determine  $Q_C/Q_{MAX}$  for  $I_{MAX}$ . **Draw horizontal line through ( $\Delta T = 32^\circ\text{C}$ ,  $1.0\text{ I}_{MAX}$ ). Line intersects vertical axis at  $Q_C/Q_{MAX} = 0.58$ .**
7. Repeat Step 6 for  $I_{OPT}$ . **Draw horizontal line through ( $\Delta T = 32^\circ\text{C}$ ,  $I_{OPT}$ ). Line intersects vertical axis at  $Q_C/Q_{MAX} = 0.23$ .**
8. Repeat Step 6 for  $I_{SELECT}$ . **Draw horizontal line through ( $\Delta T = 32^\circ\text{C}$ ,  $0.7\text{ I}_{MAX}$ ). Line intersects vertical axis at  $Q_C/Q_{MAX} = 0.46$ .**
9. Knowing  $Q_C$ , solve for  $Q_{MAX}$  corresponding to  $I_{MAX}$ ,  $I_{OPT}$  and  $I_{SELECT}$ .  $Q_{MAX} = Q_C / [Q_C/Q_{MAX}]$ . **At  $I_{MAX}$ ,  $Q_{MAX} = 30/0.58 = 51.7\text{ W}$ . At  $I_{OPT}$ ,  $Q_{MAX} = 30/0.23 = 130.4\text{ W}$ . At  $I_{SELECT}$ ,  $Q_{MAX} = 30/0.46 = 65.2\text{ W}$ .**

10. Refer to the Specification Tables and select the TEC(s) having a  $Q_{MAX}$  near the  $Q_{MAX}$  for  $I_{SELECT}$ . Any TEC with values falling between the  $I_{OPT}$  and  $I_{MAX}$  selection boundaries will suffice. The  $I_{MAX}$  boundary represents a lower TEC unit cost, highest input power design. The  $I_{OPT}$  boundary represents a higher TEC unit cost, lowest input power design. **Select the CP 1.0-254-05L, CP 1.4-127-045L or CP 2-71-06L. The  $Q_{MAX}$  value for each is close to  $65.2\text{ W}$ , and between  $51.7$  and  $130.4\text{ W}$ .**

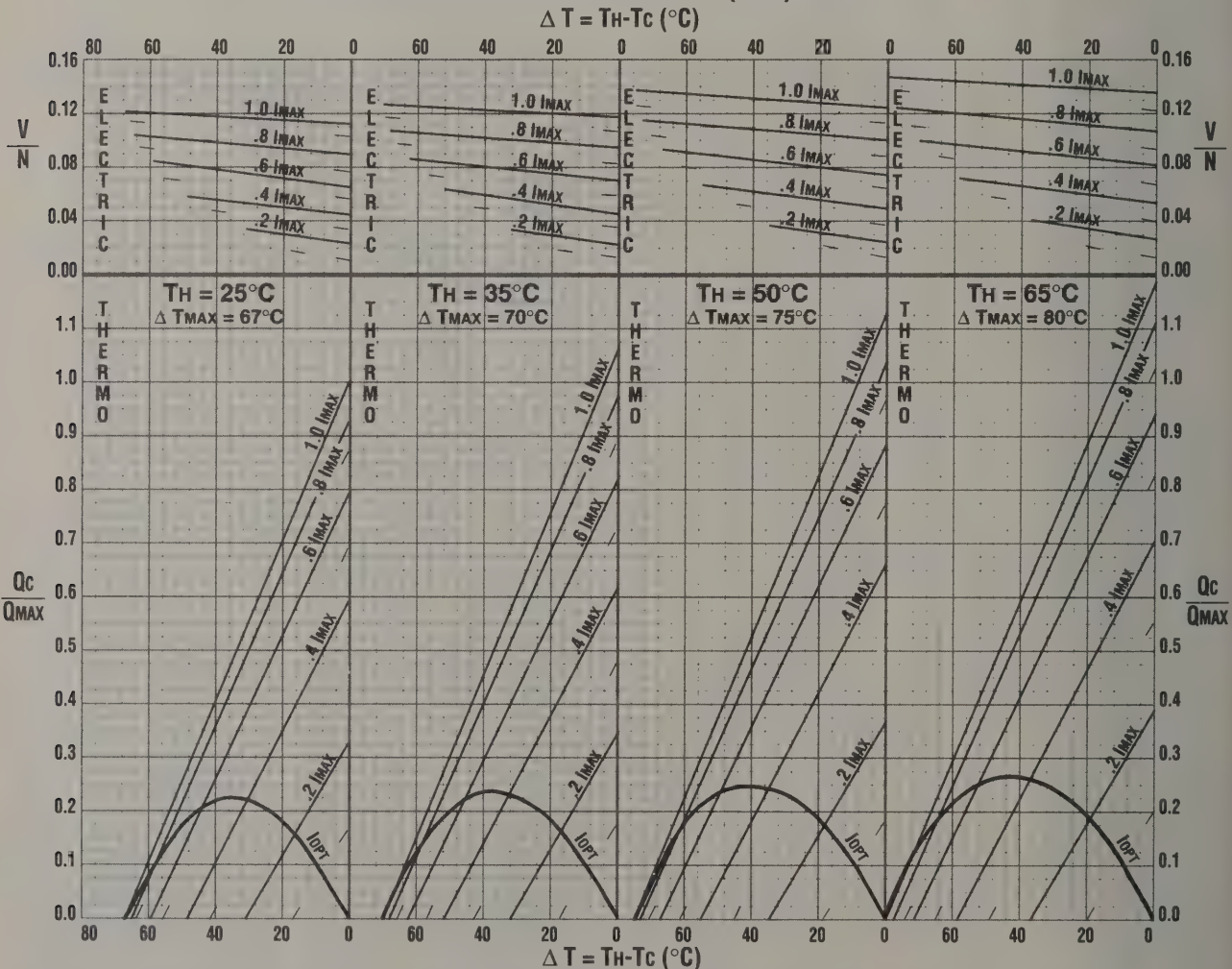
## TEC PERFORMANCE (Use the Thermo and Electric sections of S/P Graph)

To evaluate performance of a chosen single-stage TEC, convert the universal S/P Graph scale values to those of a specific TEC. (The  $\Delta T$  values stay the same.)

1. From the Specification Tables, read the values of  $Q_{MAX}$ ,  $I_{MAX}$  and  $N$  for the selected TEC. **For the CP 2-71-06L:  $Q_{MAX} = 67.0\text{ W}$ ,  $I_{MAX} = 14.0\text{ A}$  and  $N = 71$ .**
2. For both the Thermo and Electric sections of the graph, use the selected TEC's  $I_{MAX}$  to calculate current values.  **$0.2\text{ I}_{MAX} = 0.2 \times 14.0 = 2.8\text{ A}$ ;  $0.4\text{ I}_{MAX} = 0.4 \times 14.0 = 5.6\text{ A}$  . . .**
3. For the vertical axis of the Thermo section, multiple all  $Q_C/Q_{MAX}$  values by the selected TEC's  $Q_{MAX}$ .  **$0.1 \times 67 = 6.7\text{ W}$ ,  $0.2 \times 67 = 13.4\text{ W}$  . . .**
4. For the vertical axis of the Electric section, multiple all  $V/N$  values by the selected TEC's  $N$  value.  **$0.04 \times 71 = 2.84\text{ V}$ ,  $0.08 \times 71 = 5.68\text{ V}$  . . .**
5. The graph is now normalized. Use the Thermo section to examine the relationships of  $\Delta T$ ,  $I$  and  $Q_C$ . Use the Electric section to examine the relationships of  $\Delta T$ ,  $I$  and  $V$ . **The graph is now normalized for the CP 2-71-06L.**

For further details, request our Engineering Catalog where TEC Selection and Performance is explained in full and illustrated with several detailed examples.

## SELECTION/PERFORMANCE (S/P) GRAPHS



$I$  Input current [Amps]  
 $I_{OPT}$  Optimum (most efficient) input current required for a given  $\Delta T$  [Amps]  
 $I_{MAX}$  Input current resulting in greatest  $\Delta T$  ( $\Delta T_{MAX}$ ) [Amps]  
 $N$  Number of thermocouples (p- and n-type pairs)  
 $Q_C$  Amount of heat absorbed at cold face of TEC [Watts]  
 $Q_{MAX}$  Maximum amount of heat that can be absorbed at cold face (occurs at  $I = I_{MAX}$ ,  $\Delta T = 0$ ) [Watts]

$T_C$  Temperature of the TEC cold face during operation [ $^\circ\text{C}$ ]  
 $T_H$  Temperature of the TEC hot face during operation [ $^\circ\text{C}$ ]  
 $\Delta T$  Temperature difference between TEC faces,  $T_H - T_C$  [ $^\circ\text{C}$ ]  
 $\Delta T_{MAX}$  Maximum temperature difference a TEC can achieve (occurs at  $I = I_{MAX}$ ,  $Q_C = 0$ ) [ $^\circ\text{C}$ ]  
 $V$  Input Voltage [Volts]  
 $V_{MAX}$  Voltage at  $\Delta T_{MAX}$



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### TECHNICAL DATA FOR EACH SERIES

#### 40MM SG SERIES

| DELTA PART NO.                                            | DFB0412LL     | DFB0412L      | DFB0412M      |
|-----------------------------------------------------------|---------------|---------------|---------------|
| Rated Voltage (V)                                         | 12VDC         | 12VDC         | 12VDC         |
| Operating Voltage Range (V)                               | 6.0 ~ 13.8VDC | 6.0 ~ 13.8VDC | 6.0 ~ 13.8VDC |
| Rated Current (A)                                         | 0.03          | 0.04          | 0.07          |
| Rated Input Power (W)                                     | 0.36          | 0.48          | 0.84          |
| Max. Air Flow M <sup>3</sup> /min. (CFM)                  | 0.1 (3.5)     | 0.15 (5.3)    | 0.207 (7.3)   |
| Max. Air Pressure mmH <sub>2</sub> O (inH <sub>2</sub> O) | 1.15 (0.045)  | 2.4 (0.094)   | 4.2 (0.165)   |
| Rotational Speed (r.p.m.)                                 | 3300          | 4400          | 5800          |
| Acoustical Noise dB(A)                                    | 22            | 23            | 28            |
| Weight                                                    | 40g (1.41 OZ) |               |               |

All readings are typical values

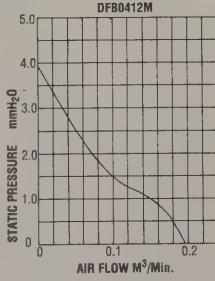
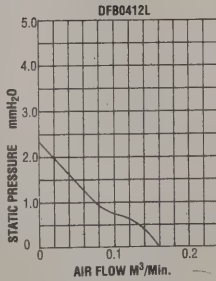
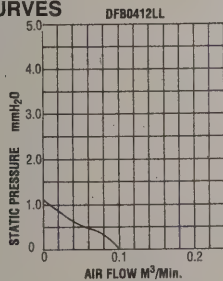
#### 60MM (THICKNESS 20MM)

| DELTA PART NO.                           | DFD0612L      | DFD0612M    | DFD0612H    | DFD0624L     | DFD0624M    | DFD0624H    |
|------------------------------------------|---------------|-------------|-------------|--------------|-------------|-------------|
| Rated Voltage (V)                        | 12VDC         |             |             | 24VDC        |             |             |
| Operating Voltage Range (V)              | 6.0 ~ 13.8VDC |             |             | 14.0-27.6VDC |             |             |
| Rated Current (A)                        | 0.06          | 0.09        | 0.11        | 0.05         | 0.08        | 0.10        |
| Rated Input Power (W)                    | 0.72          | 1.08        | 1.32        | 0.6          | 0.96        | 1.2         |
| Max. Air Flow M <sup>3</sup> /min. (CFM) | 0.35 (12.4)   | 0.41 (14.5) | 0.5 (17.7)  | 0.35 (12.4)  | 0.41 (14.5) | 0.5 (17.7)  |
| Max. Air Pressure mmHg (inHg)            | 2.25 (0.089)  | 3.06 (0.12) | 4.0 (0.157) | 2.25 (0.089) | 3.06 (0.12) | 4.0 (0.157) |
| Rotational Speed (r.p.m.)                | 3150          | 3700        | 4300        | 3150         | 3700        | 4300        |
| Acoustical Noise dB(A)                   | 23            | 26          | 30          | 23           | 26          | 30          |
| Weight                                   | 54g (1.9 OZ)  |             |             |              |             |             |

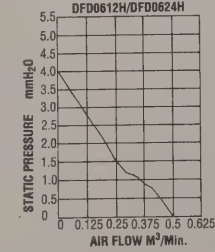
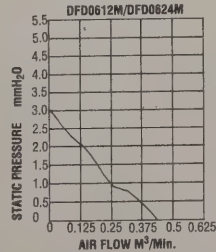
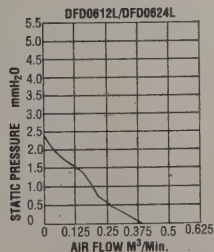
All readings are typical values

### AIRFLOW CURVES

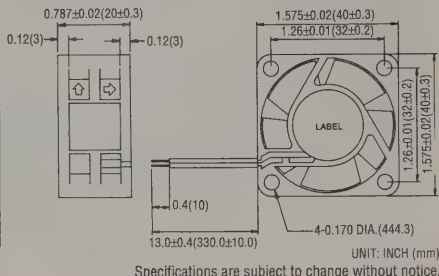
#### 40MM SERIES



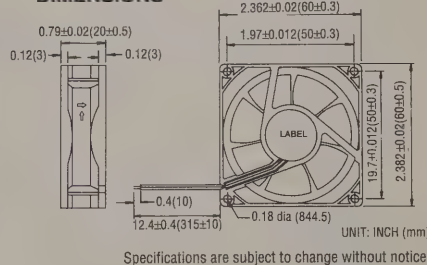
#### 60MM SERIES



### DIMENSIONS



### DIMENSIONS



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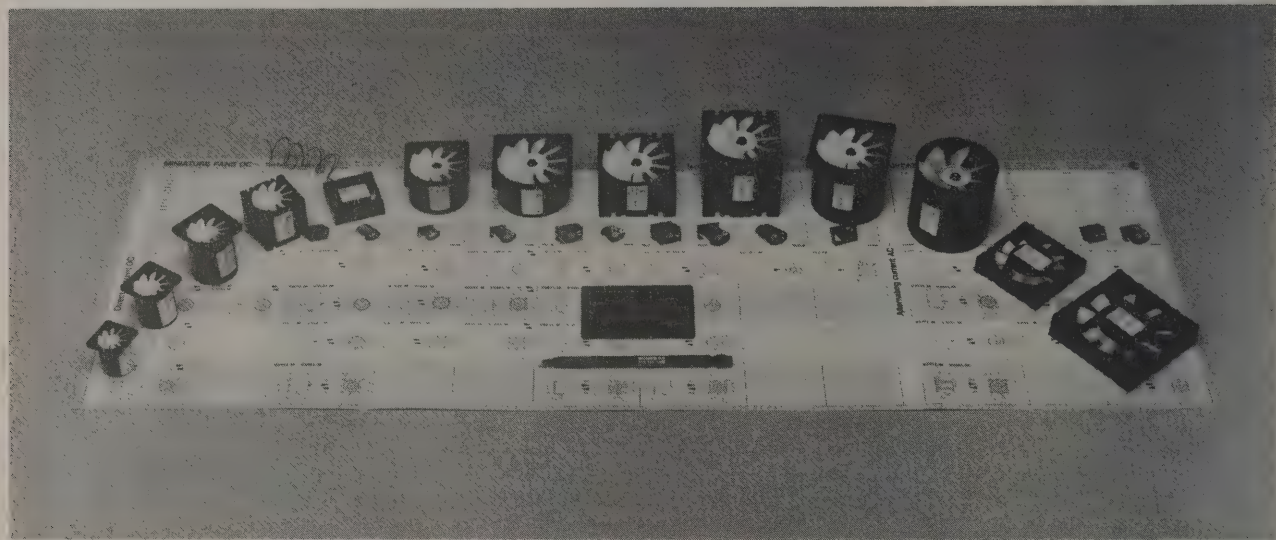

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## D.C. ULTRA-MINIATURE FANS

## D.C. ULTRA-EFFICIENT FANS

## D.C. BRUSHLESS-ULTRA SLIM FANS



### RANGE OF PERFORMANCE

Micronel's ultra miniature fans range in diameter from 0.95 inches to 3.15 inches. **Fan lengths** range from 0.47 inches to 2.36 inches. **Air delivery**, at zero back pressure, is from 1

CFM to 52 CFM. **D.C. operational voltages** range from 1.5V to 48 VDC. Power input range from 0.01 to 0.2 watts per CFM.

| D.C. FANS<br>TYPE | AIR FLOW<br>CFM | RATED<br>VOLTAGE<br>VOLTS | MAX<br>SPEED<br>RPM | MAX<br>NOISE<br>DBA | MAX<br>POWER<br>WATTS | SIZE<br>ϕ = DIA. INCHES<br>□ = INCHES SQ. |
|-------------------|-----------------|---------------------------|---------------------|---------------------|-----------------------|-------------------------------------------|
| D240              | 3.2             | 6/12                      | 14,500              | 43                  | 0.3                   | 0.95 ϕ × 1.18                             |
| F25               | 1.2             | 12                        |                     | 29                  | 0.5                   | 0.985 □ × 0.39                            |
| D300              | 5.6             | 6/12/24                   | 14,000              | 41                  | 0.84                  | 1.18 ϕ × 1.42                             |
| F41LM/MM          | 6.1             | 5/12/24                   | 5,400               | 21                  | 1.3                   | 1.61 □ × 0.47                             |
| D340              | 12.6            | 6/12/24                   | 13,000              | 45                  | 1.1                   | 1.42 ϕ × 1.42                             |
| D350              | 12.6            | 6/12/24                   | 13,000              | 52                  | 1.2                   | 1.5 □ × 1.42                              |
| D360              | 12.6            | 6/12/24                   | 13,000              | 45                  | 1.2                   | 1.42 ϕ × 1.77                             |
| D460              | 12.6            | 6/12                      | 4,200               | 28                  | 0.24                  | 1.89 ϕ × 1.42                             |
| D570              | 19.0            | 6/12                      | 3,700               | 27                  | 0.42                  | 2.44 □ × 1.42                             |
| D580              | 19.0            | 6/12                      | 3,700               | 27                  | 0.42                  | 2.36 ϕ × 1.42                             |
| D591              | 52.0            | 6/12/24                   | 10,200              | 56                  | 8.4                   | 2.44 □ × 2.36                             |
| D600              | 52.0            | 6/12/24                   | 10,200              | 56                  | 8.4                   | 2.36 ϕ × 2.36                             |
| DD65              | 50.0            | 6/12/24                   | 8,800               | 53                  | 9.2                   | 2.56 ϕ × 2.56                             |
| F62LM/MM          | 12/15           | 5/12/24                   | 4,250               | 14/22               | 1.3                   | 2.44 □ × 0.59                             |
| F70/75/80         | 14/21/28        | 5/12/24/48                | 3,600               | 23/32/42            | 4.0                   | 3.15 □ × 0.71                             |

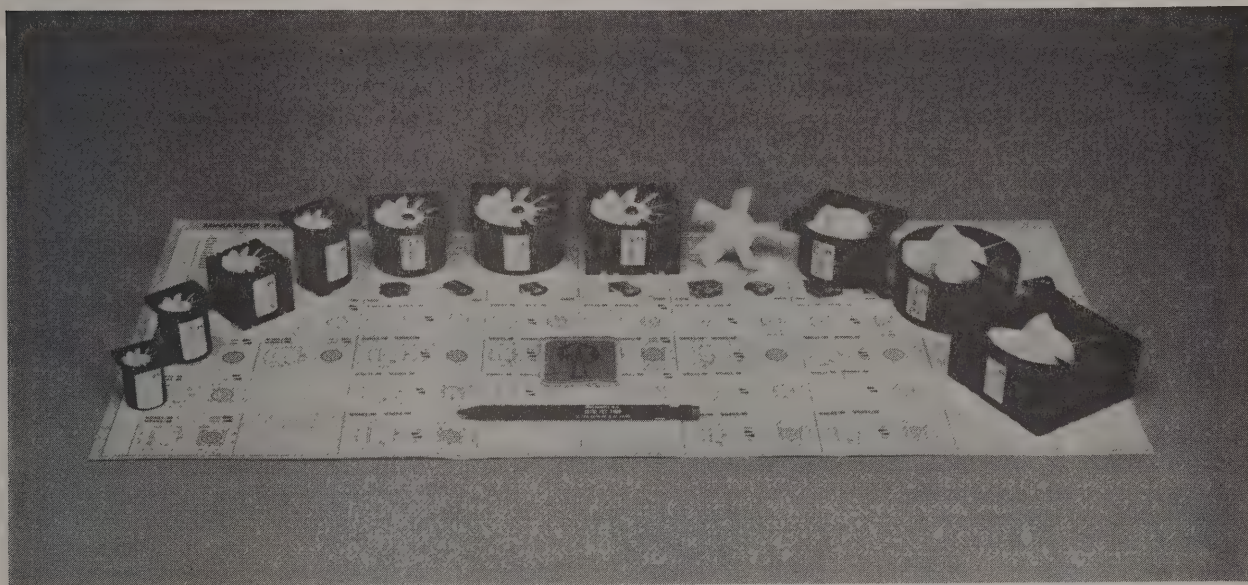




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## A.C. ULTRA-MINIATURE FANS A.C. ULTRA-EFFICIENT FANS A.C. BRUSHLESS-ULTRA SLIM FANS



### RANGE OF PERFORMANCE

Micronel's line of high efficiency two phase AC fans are U.L. and CSA approved. Size range from 1.2 inches to 3.15 inches in diameter. **Fan lengths** range from .71 to 1.5 inches. **Air delivery**, at zero back pressure, range from 2.3 CFM to 36

CFM. **AC operational voltages** of 12, 24, and 115 volts, 50/60 hertz are standard. Non-standard voltages are available on special order.

| A.C. FANS<br>TYPE | AIR FLOW<br>CFM | RATED<br>VOLTAGE<br>VOLTS | MAX<br>SPEED<br>RPM | MAX<br>NOISE<br>DBA | MAX<br>POWER<br>WATTS | SIZE<br>φ = DIA. INCHES<br>□ = SQ. INCHES |
|-------------------|-----------------|---------------------------|---------------------|---------------------|-----------------------|-------------------------------------------|
| A300              | 2.3             | 12/24/115                 | 3,600               | 14                  | 3.                    | 1.42 φ × 1.42                             |
| A460              | 5.0             | 12/24/115                 | 3,500               | 19                  | 3.4                   | 2.05 □ × 1.42                             |
| A570              | 15.0            | 12/24/115                 | 3,500               | 29                  | 3.4                   | 2.44 □ × 1.42                             |
| A580              | 15.0            | 12/24/115                 | 3,500               | 29                  | 3.4                   | 2.36 φ × 1.42                             |
| A600              | 17.0            | 12/24/115                 | 3,500               | 28                  | 7.5                   | 2.36 φ × 1.42                             |
| A60               | 17.             | 12/24/115                 | 2,800               | 16                  | 3.2                   | 2.36 φ × 1.26 +                           |
| A72CL/TL/JM       | 13.6            | 12/24/115                 | 3,000               | 26                  | 6.9                   | 2.84 φ × 1.42 +                           |
| A72AB             | 36.             | 12/24/115                 | 2,900               | 32                  | 6.9                   | 3.15 □ × 1.50                             |
| F62               | 15.             | 115                       | 3,400               | 21                  | 1.5                   | 2.44 □ × 0.59                             |
| F80               | 28.             | 12/24/115                 | 3,600               | 42                  | 4.0                   | 3.15 □ × 0.71                             |

† Frameless units.



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## ULTRA-QUIET BRUSHLESS FANS ULTRA SLIM BRUSHLESS FANS

### SERIES F 41 AIRFLOW PERFORMANCE GRAPH

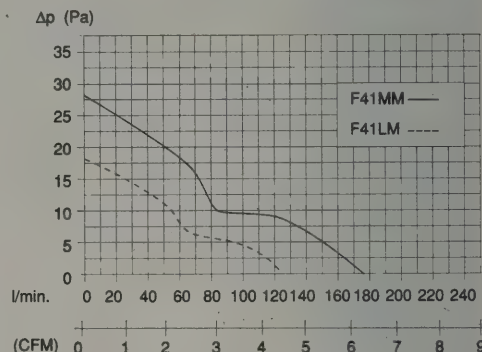
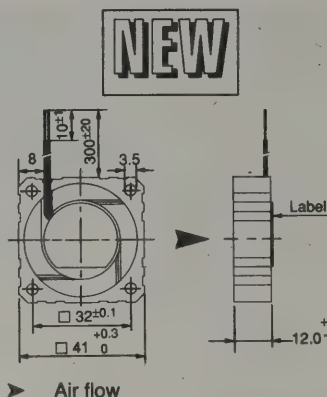
Nearly, noiseless, due to a new applied Air-FlowTechnic, which causes almost a laminar airflow. This is at minimum nominal power.

- Housing and impeller of black glass-fibre reinforced plastic
- Mounting with M3 screws or self adhesive gasket
- Mounting possible in any orientation
- Electrical connection with red and black leads AWG26 (0.13 mm<sup>2</sup>), min. 300 mm long.
- Use of UL/CSA listed material

**Dimensions: 12 x 41 x 41 mm**

**Types: F41LM (low)**

**F41MM (medium)**



### SERIES F 62 AIRFLOW PERFORMANCE GRAPH

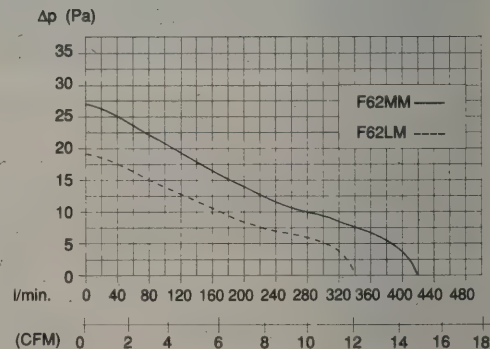
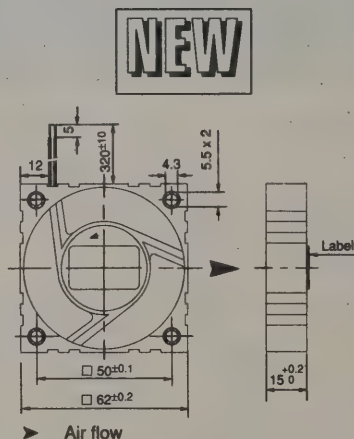
Nearly, noiseless, due to a new applied Air-FlowTechnic, which causes almost a laminar airflow. This is at minimum nominal power.

- Housing of black glass-fibre reinforced plastic
- Impeller of black glass fibre reinforced plastic
- Mounting with screws to M4 and nuts M3 or self adhesive gasket
- Mounting possible in any orientation
- Electrical connection with red and black leads AWG24 (0.21 mm<sup>2</sup>), min. 300 mm long. Flat tabs connection on request.
- Use of UL/CSA listed material

**Dimensions: 15 x 62 x 62 mm**

**Types: F62LM (low)**

**F62MM (medium)**



### SERIES F 70 / 75 / 80 AIRFLOW PERFORMANCE GRAPH

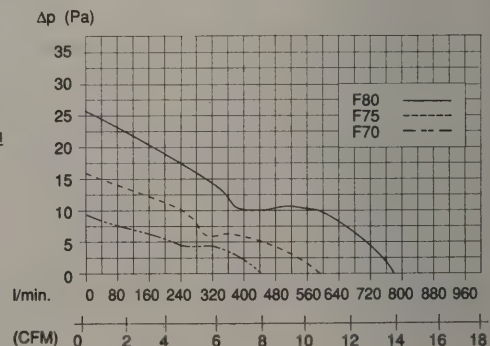
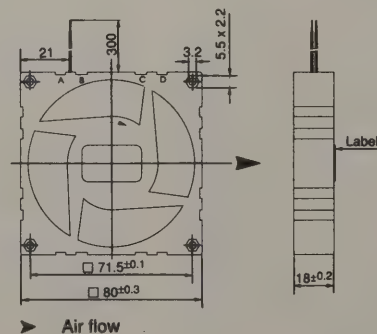
- Housing of black glass-fibre reinforced plastic
- Impeller of black glass-fibre reinforced plastic
- Mounting with M3 screws or self adhesive plastic
- Mounting possible in any orientation
- Electrical connection with red and black leads AWG24 (0.21 mm<sup>2</sup>), min. 300 mm long. Flat tabs connection on request.
- F70, F75 and F80, 12V and 24V are suitable for AC or DC operation
- Use of UL/CSA listed material

**Dimensions: 18 x 80 x 80 mm**

**Types: F70EM (low)**

**F75EM (medium)**

**F80EM (high)**






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## ULTRA-QUIET BRUSHLESS FANS ULTRA SLIM BRUSHLESS FANS

### SERIES F 41—ULTRA-SLIM

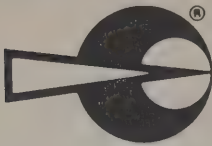
| Nominal voltage                      | U <sub>N</sub>             | 5V                                |             | 12V         |             | 24V         |             |        |
|--------------------------------------|----------------------------|-----------------------------------|-------------|-------------|-------------|-------------|-------------|--------|
| Types                                |                            | F41LM-005XK                       | F41MM-005XK | F41LM-012XK | F41MM-012XK | F41LM-024XK | F41MM-024XK |        |
| Voltage range                        | +15%/-10% U<br>+10%/-15% U | 4.5 - 5.75                        | 4.5 - 5.75  | 10.8 - 13.8 | 10.2 - 13.2 | 21.6 - 27.6 | 20.4 - 26.4 | V<br>V |
| Nominal current max.                 | I <sub>N</sub>             | 90                                | 140         | 50          | 80          | 50          | 55          | mA     |
| Nominal power max.                   | P <sub>N</sub>             | 0.45                              | 0.70        | 0.60        | 0.96        | 1.20        | 1.32        | W      |
| Stall current                        | I <sub>H</sub>             | 90                                | 140         | 50          | 80          | 50          | 55          | mA     |
| Speed typical                        | n                          | 4'200                             | 5'400       | 4'200       | 5'400       | 4'200       | 5'400       | min-1  |
| Flow rate max.                       | ṽ                          | 125                               | 175         | 125         | 175         | 125         | 175         | l/min  |
| Static pressure difference           | Δp                         | 18                                | 28          | 18          | 28          | 18          | 28          | Pa     |
| Acoustic emission level              | L <sub>pA</sub>            | 14                                | 21          | 14          | 21          | 14          | 21          | dB(A)  |
| Life expectancy acc. L <sub>10</sub> | †                          | 35000                             | 25000       | 35000       | 25000       | 35000       | 25000       | h      |
| Mean time to failure (MTTF)          | †                          | 50000                             | 40000       | 50000       | 40000       | 50000       | 40000       | h      |
| Ambient temperature range            | T                          | -20...+60                         |             |             |             |             |             | °C     |
| Weight                               | m                          | 20                                |             |             |             |             |             | g      |
| Bearings                             |                            | Ball bearings and Sleeve bearings |             |             |             |             |             |        |

### SERIES F 62—ULTRA-QUIET

| Nominal voltage                      | U <sub>N</sub>   | 5V              |             | 12V         |             | 24V         |             |        |
|--------------------------------------|------------------|-----------------|-------------|-------------|-------------|-------------|-------------|--------|
| Types                                |                  | F62LM-005GK     | F62MM-005GK | F62LM-012GK | F62MM-012GK | F62LM-024GK | F62MM-024GK |        |
| Voltage range                        | ±10% U<br>±15% U | 4.5 - 5.5       | 4.5 - 5.5   | 10.2 - 13.8 | 10.2 - 13.8 | 20.4 - 27.6 | 20.4 - 27.6 | V<br>V |
| Nominal current max.                 | I <sub>N</sub>   | 88              | 165         | 58          | 92          | 33          | 48          | mA     |
| Nominal power max.                   | P <sub>N</sub>   | 0.44            | 0.82        | 0.70        | 1.1         | 0.8         | 1.15        | W      |
| Stall current                        | I <sub>H</sub>   | 118             | 215         | 75          | 120         | 40          | 55          | mA     |
| Speed typical                        | n                | 2750            | 3400        | 2750        | 3400        | 2750        | 3400        | min-1  |
| Flow rate max.                       | ṽ                | 340             | 420         | 340         | 420         | 340         | 420         | l/min  |
| Static pressure difference           | Δp               | 19              | 27          | 19          | 27          | 19          | 27          | Pa     |
| Acoustic emission level              | L <sub>pA</sub>  | 20              | 25          | 20          | 25          | 20          | 25          | dB(A)  |
| Life expectancy acc. L <sub>10</sub> | †                | 35000           | 25000       | 35000       | 25000       | 35000       | 25000       | h      |
| Mean time to failure (MTTF)          | †                | 50000           | 40000       | 50000       | 40000       | 50000       | 40000       | h      |
| Ambient temperature range            | T                | -10...+65       |             |             |             |             |             | °C     |
| Weight                               | m                | 40              |             |             |             |             |             | g      |
| Bearings                             |                  | Sleeve bearings |             |             |             |             |             |        |

### SERIES F 70 / 75 / 80—ULTRA QUIET

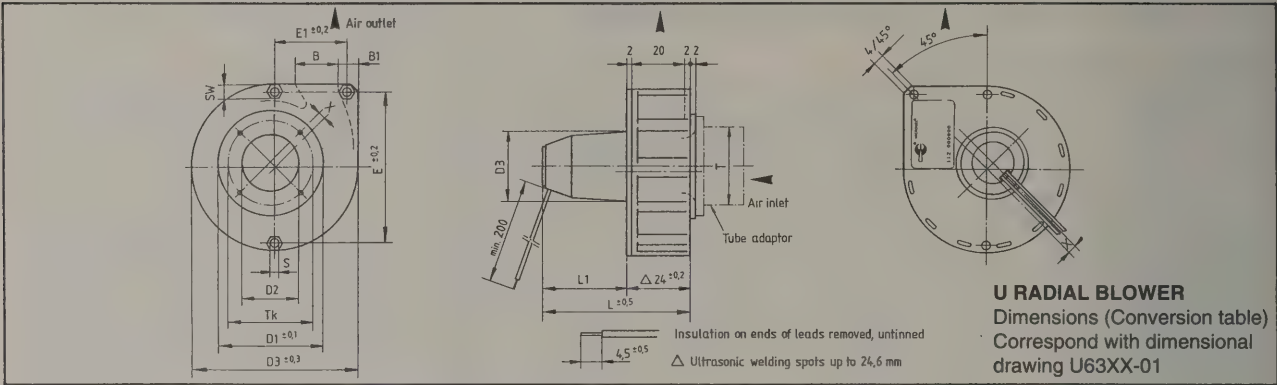
| Nominal voltage                      | U <sub>N</sub>  | 5V              |             |             | 12V               |             |             | 24V               |             |             |       |
|--------------------------------------|-----------------|-----------------|-------------|-------------|-------------------|-------------|-------------|-------------------|-------------|-------------|-------|
| Types                                |                 | F70EM-005CK     | F75EM-005CK | F80EM-005CK | F70EM-012CK       | F75EM-012CK | F80EM-012CK | F70EM-024CK       | F75EM-024CK | F80EM-024CK |       |
| Voltage range                        | ±10% U          | 4.5 - 5.5 DC    |             |             | 10.8 - 13.2 DC/AC |             |             | 21.6 - 26.4 DC/AC |             |             | V     |
| Nominal current max.                 | I <sub>N</sub>  | 260             | 275         | 590         | 130               | 130         | 290         | 60                | 60          | 160         | mA    |
| Nominal power max.                   | P <sub>N</sub>  | 1.3             | 1.37        | 2.95        | 1.56              | 1.56        | 3.5         | 1.44              | 1.44        | 3.84        | W     |
| Stall current                        | I <sub>H</sub>  | 250             | 270         | 630         | 180               | 180         | 500         | 80                | 80          | 230         | mA    |
| Speed typical                        | n               | 2000            | 2600        | 3325        | 2050              | 2600        | 3400        | 2050              | 2600        | 3500        | min-1 |
| Flow rate max.                       | ṽ               | 440             | 580         | 740         | 440               | 580         | 780         | 440               | 580         | 780         | l/min |
| Static pressure difference           | Δp              | 9               | 16          | 25          | 9.5               | 16          | 26          | 9.5               | 16          | 26          | Pa    |
| Acoustic emission level              | L <sub>pA</sub> | 23              | 32          | 38          | 23                | 32          | 40          | 23                | 32          | 41          | dB(A) |
| Life expectancy acc. L <sub>10</sub> | †               | 20000           |             |             |                   |             |             |                   |             |             | h     |
| Mean time to failure (MTTF)          | †               | 30000           |             |             |                   |             |             |                   |             |             | h     |
| Ambient temperature range            | T               | -10...+65       |             |             |                   |             |             |                   |             |             | °C    |
| Weight                               | m               | 75              |             |             |                   |             |             |                   |             |             | g     |
| Bearings                             |                 | Sleeve bearings |             |             |                   |             |             |                   |             |             |       |



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D.C. ULTRA-EFFICIENT—HIGH PRESSURE BLOWERS



|              |             |      |      |      |        |        |        |
|--------------|-------------|------|------|------|--------|--------|--------|
| MODEL<br>U51 | PARAMETER   | -1   | -2   | -3   | UNITS  | SIZE   | U-51   |
|              | VOLTAGE     | 3.0  | 6.0  | 12   | VOLTS  | D2     | 0.71   |
|              | CURRENT     | 430  | 195  | 80   | MA     | B      | 0.59   |
|              | FLOW *      | 4    | 4.5  | 5    | C.F.M. | A or D | 1.97   |
|              | PRESSURE ** | 2.5  | 2.6  | 2.8  | mbar   | D3     | 0.95   |
|              | NOISE       | 59   | 58   | 58   | dB(A)  | L      | 1.89   |
|              | WEIGHT      | 2.8  | 2.8  | 2.8  | OZ     | L1     | 0.95   |
| MODEL<br>U63 | PARAMETER   | -1   | -2   | -3   | UNITS  | SIZE   | U-63   |
|              | VOLTAGE     | 4.8  | 6.0  | 7.2  | VOLTS  | D2     | 0.866  |
|              | CURRENT     | 365  | 290  | 240  | MA     | B      | 0.787  |
|              | FLOW *      | 6.5  | 7.0  | 7.4  | C.F.M. | A or D | A 2.44 |
|              | PRESSURE ** | 3.5  | 3.8  | 4.0  | mbar   | D3     | 1.024  |
|              | NOISE       | 48   | 50   | 52   | dB(A)  | L      | 2.24   |
|              | WEIGHT      | 2.9  | 2.9  | 2.9  | OZ     | L1     | 1.3    |
| MODEL<br>U81 | PARAMETER   | -1   | -2   | -3   | UNITS  | SIZE   | U-81   |
|              | VOLTAGE     | 4.8  | 6.0  | 7.2  | VOLTS  | D2     | 1.024  |
|              | CURRENT     | 625  | 500  | 425  | MA     | B      | 0.98   |
|              | FLOW *      | 11.2 | 11.6 | 12.1 | C.F.M. | A or D | A 3.1  |
|              | PRESSURE ** | 6.5  | 6.8  | 7.2  | mbar   | D3     | 1.1    |
|              | NOISE       | 52   | 54   | 56   | dB(A)  | L      | 2.4    |
|              | WEIGHT      | 4.5  | 4.5  | 4.5  | OZ     | L1     | 1.42   |
| MODEL<br>U97 | PARAMETER   | -1   | -2   | -3   | UNITS  | SIZE   | U-97   |
|              | VOLTAGE     | 4.8  | 6.0  | 7.2  | VOLTS  | D2     | 1.18   |
|              | CURRENT     | 1400 | 1150 | 975  | MA     | B      | 1.18   |
|              | FLOW *      | 18.2 | 18.6 | 19.0 | C.F.M. | A or D | A 3.78 |
|              | PRESSURE ** | 8.5  | 8.7  | 9.0  | mbar   | D3     | 1.18   |
|              | NOISE       | 54   | 56   | 58   | dB(A)  | L      | 2.4    |
|              | WEIGHT      | 5.5  | 5.1  | 5.1  | OZ     | L1     | 1.42   |

\* - ZERO PRESSURE FLOW  
\*\* - ZERO FLOW PRESSURE

LIFE-OPERATING UP TO 8000 HOURS



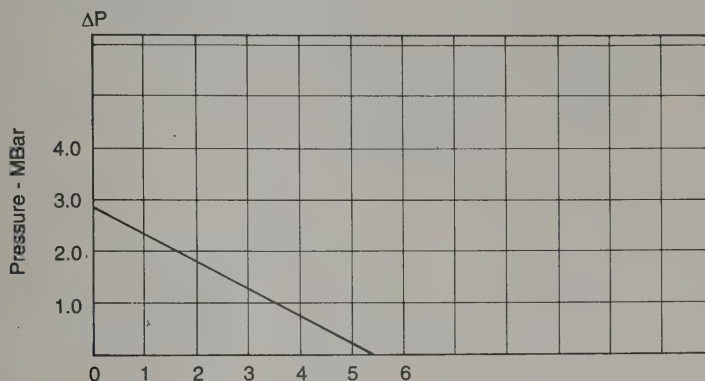


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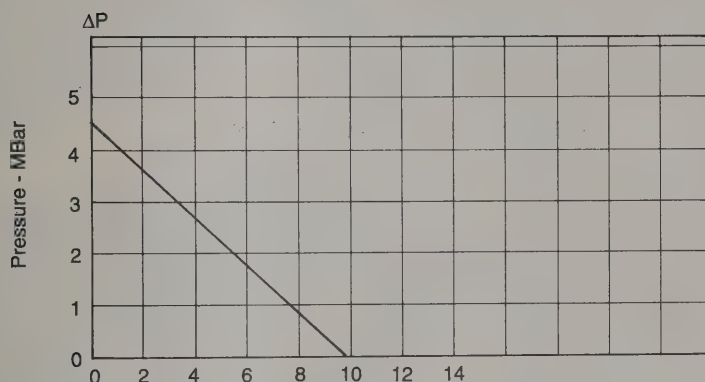
# D.C. ULTRA-EFFICIENT—HIGH PRESSURE BLOWERS

## SERIES U51



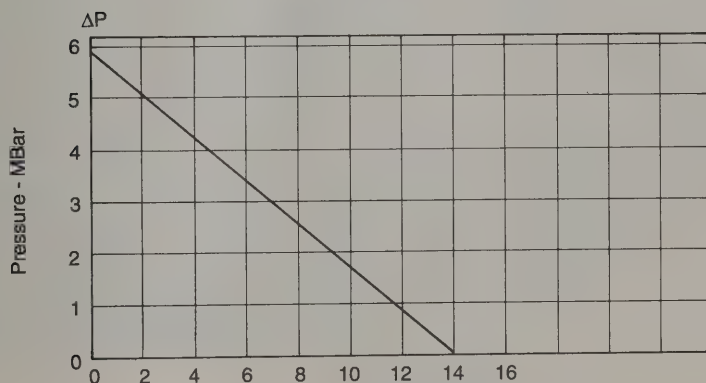
Speed - 12,000RPM

## SERIES U63



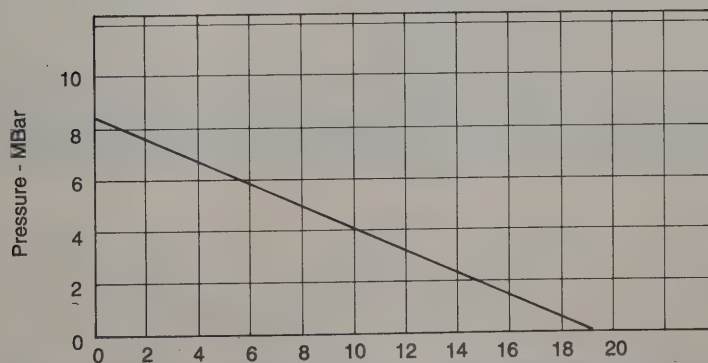
Speed - 11,500RPM

## SERIES U81



Speed - 11,180RPM

## SERIES U97



Speed - 10,500RPM


**micronel**

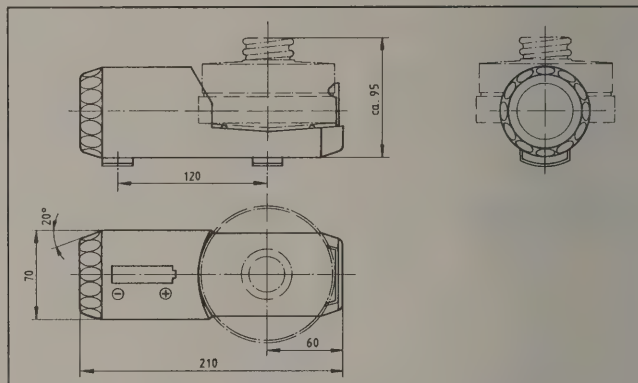
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# COMPACT – AIR – SUPPLY – UNIT (CASU)

## FFB-1000

(Positive Pressure Unit)

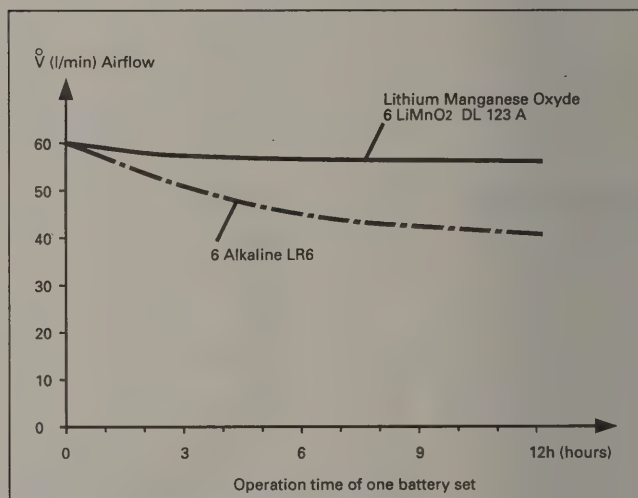
### Technical data

 Dimensions:  $\varnothing$  70 x 210 mm


With 6 Alkaline LR6 batteries and min. 40 lt/min

With 6 Lithium DL 123A batteries and min 55 lt/min

Operations time depending on battery set: 10 - 15h



Layout number

Airflow rate depending on battery set

Voltage (operation range)

Expected life time of fan

Weight without filter, with batteries

Weight with filter + 6 Alkaline LR6 batteries

No. of filter, e.g. DIN 3181 (NBC20)

Battery set LR6/UM3

Battery set LiMnO2

Y410A 4B001 ---

40 - 60 lt/min

55 lt/min

2 - 3 VDC

2.7 VDC

500 h

approx. 450 grammes

approx. 700 grammes

1 (Flodin)

 $\varnothing$  14.5 x 50.5 mm 3 x 2 serial / parallel

 $\varnothing$  17.0 x 34.0 mm 6 parallel





MICRONEL's lines of ultra-efficient, ultra-slim, ultra-quiet, and ultra-smart fans are available in both standard and custom DC/AC versions. MICRONEL's broad experience and technical expertise in development and design of high performance precision motors and fan assemblies has been utilized to develop the products shown above.

Our appreciation of the customer's system performance requirements, thermal constraints, mechanical interface, and cost factors allows MICRONEL U.S. to offer unique solutions to your problems. TRY US:  
MICRONEL U.S., 1280 LIBERTY WAY, VISTA,  
CA 92083 619-727-7400 FAX 619-727-4436



**ORDERS PLACED BY 3 P.M. ARE SHIPPED THE SAME DAY**



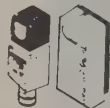
# MASTER DISTRIBUTORS

1301 Olympic Blvd., Santa Monica, Calif. 90404 • FAX (310) 392-9585

**(310) 452-1229**



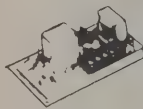
TOGGLE  
SWITCHES



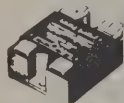
PHOTOELECTRICS



RELAYS



LIQUID LEVEL  
CONTROLS



SOLID STATE  
RELAYS



TERMINAL BLOCKS

## CABINETS

BUD

## CIRCUIT BREAKERS

Airpax  
Aromat  
Heinemann  
Potter & Brumfield

## CONNECTORS & SOCKETS

AMP  
Amphenol  
Aromat  
Curtis  
Custom Connector  
Idec  
Lumberg  
Master Electronics  
Panduit  
Potter & Brumfield  
Souriau  
Vernitron-Beau  
Welcon/Wells

## COUNTERS

Engler  
Hecon  
IVO  
Kessler-Ellis  
Master Electronics  
Omron  
Redington  
Red Lion  
Sodeco/Maxmar  
Stemco  
Veeder-Root

## DIODES

General Instr.

## FANS

Aromat  
U.S. Toyo

## FILTERS

Curtis

## RELAYS

Aleph International  
Allied Controls  
American-Zettler  
Aromat  
AT&T  
Bosch  
C.P. Clare  
Coto  
Crydom Controls  
EAC  
Elec-Trol  
Fujitsu  
Gordos  
Grayhill  
Guardian  
Hi-G  
Idec  
ITT  
Line Electric  
Magnecraft  
Master Electronics  
MEC  
Midtex  
Omron  
Potter & Brumfield  
RBM  
Schrack  
Siemens  
Sigma  
Stantel  
Struthers-Dunn  
Telemecanique  
Theta-J  
Triridge

## FUSES

Bussmann  
Littelfuse  
Underwriters Safety

## KNOBS

Cosmo/Kurz-Kasch  
Raytheon/Panel Products

## INDICATORS, LAMPS & LED

IDI  
IEE  
JKL  
Leecraft  
Lumex  
Stanley  
Sylvania

## SWITCHES

Acro  
Alco  
American Switch  
AMP  
Aromat  
Arrow Hart  
Carlingswitch  
Cherry Electric  
C&K  
EECO  
Electro-Mech  
Electronic Comp. Group  
Grayhill  
Landis & Gyr  
Linemaster  
Master Specialties  
McGill  
Microswitch  
Omron  
Oslo  
OTTO  
Saia  
Unimax

## INDUCTORS

Jefferis

## PHOTOELECTRIC

Aromat  
Dolan-Jenner  
Omron  
Photoswitch/AB  
Skan-A-Matic

## PROXIMITY

Agastat  
Electro  
Omron

## POTS & RESISTORS

Clarostat  
Ohmite

## SOLENOID

Dormeyer  
Guardian  
Line Electric

## TIMERS

ATC  
Agastat  
Amperite  
Antex  
Crouzet  
Eagle Signal  
Guardian  
Industrial Timer  
Magnecraft  
Master Electronics  
Midtex  
National Controls  
Omron  
Potter & Brumfield  
SSAC  
Struthers-Dunn  
Syracuse Electronics

## TERMINAL BLOCKS

Beau  
Buchanan  
Curtis  
Electrovert  
Kulka  
Magnum  
Marco  
RDI  
Underwriters Safety  
Vernitron-Beau  
Weidmuller

## TRANSFORMERS

Dormeyer  
Microtran  
Sola  
Stancor  
Thordarson  
Triad  
U.T.C.

## WIRE, WIRING DEVICES & HWR.

Alpha  
Belden  
Buchanan  
Electrovert  
Havey Hubbell  
Iboco  
H.H. Smith  
Modor  
Panduit  
Pomona



TEMPERATURE  
CONTROLS



TIMERS



PADDLE  
SWITCHES



TRANSFORMERS



TIMERS



COUNTERS

**NATIONWIDE**

**KULKA**

**MASTER DISTRIBUTORS**

**(510) 835-1500** 1026 6th Avenue  
Oakland, CA 94606



**Vernitron**

**BEAU PRODUCTS DIVISION**

**MASTER DISTRIBUTORS**

**(602) 267-1111** 2413 S. 21st Street  
Phoenix, AZ 85034



# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

## WHERE TO FIND THEM IN THE 93/94 EDITION OF EEM

|                                                                                 |        |                                                                                |        |
|---------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------|
| AC Power Supplies, Product Selection Guide                                      | D•2221 | Keyboards & Keypads, Product Selection Guide                                   | B•1818 |
| Batteries, Product Selection Guide                                              | D•1419 | Lamps, Lights, & Indicators, Product Selection Guide                           | B•1131 |
| Cabinets, Enclosures, Racks & Chassis, Product Selection Guide                  | C•1003 | Microwave Components, Product Selection Guide                                  | A•1719 |
| Capacitors, Product Selection Guide                                             | A•1003 | Military Qualified Products List                                               | B•1002 |
| Coils, Chokes, Inductors, Product Selection Guide                               | A•1179 | Motors, Drives, & Rotating Components, Product Selection Guide                 | B•1231 |
| Connectors, Terminals & Sockets, Product Selection Guide                        | C•1139 | Oscilloscopes, Product Selection Guide                                         | D•1402 |
| Cores, Magnets & Ferrites                                                       | A•1317 | Panel Hardware, Product Selection Guide                                        | C•1522 |
| Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide | A•1326 | Panel Meters, Analog & Digital, Product Selection Guide                        | D•1336 |
| DC-DC Converters                                                                | D•2049 | Potentiometers, Trimmers, Controls, & Rheostats, Product Selection Guide       | A•2053 |
| DC Power Supplies, Product Selection Guide                                      | D•1488 | Power Supplies, AC, Product Selection Guide                                    | D•2221 |
| Delay Lines, Product Selection Guide                                            | A•1513 | Power Supplies, DC, Product Selection Guide                                    | D•1488 |
| Discrete Semiconductors, Product Selection Guide                                | A•2130 | Protective Components (Fuses, Circuit Breakers, etc.), Product Selection Guide | B•1341 |
| Displays, Readouts, & CRTs, Product Selection Guide                             | B•1017 | Relays, Product Selection Guide                                                | B•1401 |
| Fans, Blowers, Cooling Equipment, & Heat Exchangers, Product Selection Guide    | C•1557 | Resistors, Product Selection Guide                                             | A•1859 |
| Fiber Optics, Product Selection Guide                                           | B•1200 | Solenoids, Product Selection Guide                                             | B•1626 |
| Filters, Power, Product Selection Guide                                         | A•1584 | Switches, Product Selection Guide                                              | B•1658 |
| Filters, Signal, Product Selection Guide                                        | A•1617 | Thermal Components, Product Selection Guide                                    | B•1857 |
| Instruments, Test & Measuring, Product Selection Guide                          | D•1215 | Transducers & Encoders, Product Selection Guide                                | B•1911 |
| Interconnection Systems, Product Selection Guide                                | C•1670 | Transformers, Product Selection Guide                                          | A•2229 |
|                                                                                 |        | Wire & Cable, Product Selection Guide                                          | C•1701 |

### RELATIVE QUANTITY SYMBOLS

|              |                            |
|--------------|----------------------------|
| $\neq$       | not equal to               |
| $\approx$    | approximately equal to     |
| $\propto$    | proportional to            |
| $<$          | smaller than               |
| $\leq$       | smaller than or equal to   |
| $\ll$        | much smaller than          |
| $>$          | larger than                |
| $\geq$       | larger than or equal to    |
| $\gg$        | much larger than           |
| $\equiv$     | identical to or equivalent |
| $\uparrow$   | increases                  |
| $\downarrow$ | decreases                  |

### PREFIXES FOR SI UNITS

| Multiple   | Prefix | Symbol |
|------------|--------|--------|
| $10^{12}$  | tera   | T      |
| $10^9$     | giga   | G      |
| $10^6$     | mega   | M      |
| $10^3$     | kilo   | k      |
| $10^{-3}$  | milli  | m      |
| $10^{-6}$  | micro  | $\mu$  |
| $10^{-9}$  | nano   | n      |
| $10^{-12}$ | pico   | p      |

| Quantity                    | Symbol                       | SI Unit                           | Symbol              | Derivation                      |
|-----------------------------|------------------------------|-----------------------------------|---------------------|---------------------------------|
| acceleration                | $a$                          | $\text{m s}^{-2}$                 | —                   | velocity/time                   |
| acceleration due to gravity | $g$                          | $\text{m s}^{-2}$                 | —                   | velocity/time                   |
| amount of substance         | $n$                          | mole                              | mol                 | mole fraction (n) used          |
| amplification factor        | $\mu$                        | <i>a ratio</i>                    | —                   | —                               |
| angle                       | $\theta_1, \phi_1, \alpha_1$ | —                                 | —                   | —                               |
| angle of incidence          | $i$                          | degree or radian                  | $^\circ$            | —                               |
| angle of refraction         | $r$                          | degree or radian                  | $^\circ$            | —                               |
| angle, Bragg                | $\theta$                     | number                            | —                   | —                               |
| angle, critical             | $c$                          | degree or radian                  | $^\circ$            | —                               |
| anode slope resistance      | $R_A$                        | ohm                               | $\Omega$            | $\Delta V_a / \Delta I_a$       |
| area                        | $A$                          | metres squared                    | $\text{m}^2$        | $l \times b$                    |
| atomic number               | $Z$                          | a number                          | —                   | number of protons               |
| Avogadro constant           | $L, N_A$                     | number                            | —                   | —                               |
| breadth                     | $b$                          | metre                             | m                   | fundamental unit                |
| capacitance                 | $C$                          | farad                             | F                   | charge/p.d.                     |
| charge, electric            | $Q$                          | coulomb                           | C                   | current $\times$ time           |
| charge on electron          | $e$                          | coulomb                           | C                   | $1.6 \times 10^{-19} \text{ C}$ |
| conductance                 | $G$                          | $\text{ohm}^{-1}$                 | $\Omega^{-1}$       | reciprocal of resistance        |
| current, electric           | $I$                          | ampere                            | A                   | fundamental unit                |
| decay constant              | $\lambda$                    | <i>a ratio</i>                    | —                   | —                               |
| density                     | $\rho$                       | $\text{kg m}^{-3}$                | —                   | $m/V$                           |
| distance along path         | $s$                          | metre                             | m                   | fundamental unit                |
| efficiency                  | $\eta$                       | <i>a ratio</i>                    | —                   | work output/work input          |
| electrochemical equiv.      | $z$                          | $\text{g C}^{-1}$                 | —                   | mass/charge                     |
| electromotive force         | $E$                          | volt                              | V                   | energy/charge                   |
| electron                    | $e$                          | —                                 | —                   | —                               |
| energy                      | $E$                          | joule                             | J                   | N m                             |
| energy, kinetic             | $E_k$                        | joule                             | J                   | N m. $E_k = 1/2 mv^2$           |
| energy, potential           | $E_p$                        | joule                             | J                   | N m. $E_p = mgh$                |
| Faraday constant            | $F$                          | coulomb $\text{mol}^{-1}$         | $\text{C mol}^{-1}$ | $96,500 \text{ C mol}^{-1}$     |
| field strength, electric    | $E$                          | $\text{V m}^{-1}$                 | —                   | potential gradient: p.d./dist.  |
| field-strength magnetic     | $H$                          | ampere-turns                      | —                   | current $\times$ no. of turns   |
| flux, magnetic              | $\Phi$                       | weber                             | Wb                  | e.m.f./rate of change of flux   |
| flux density                | $B$                          | tesla                             | T                   | flux/area                       |
| focal length                | $f$                          | metre                             | m                   | —                               |
| force                       | $F$                          | newton                            | N                   | $\text{kg m s}^{-2}$            |
| free energy                 | $\Delta G$                   | joule                             | J                   | —                               |
| frequency                   | $f$                          | hertz                             | Hz                  | oscillations/time               |
| gas constant                | $r$                          | joule                             | J                   | energy                          |
| half-life, radioactivity    | $t_{1/2}$                    | second                            | s                   | fundamental unit                |
| heat capacity               | $C$                          | $\text{J K}^{-1}$                 | —                   | quantity of heat/temp. rise     |
| heat of reaction            | $\Delta H$                   | joule                             | J                   | heat energy                     |
| heat capacity, specific     | $c$                          | $\text{J K}^{-1} \text{ kg}^{-1}$ | —                   | heat capacity/mass              |
| heat, quantity of           | $q$                          | joule                             | J                   | energy                          |



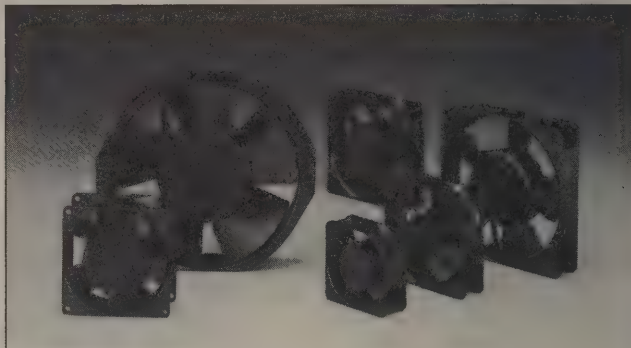
| Quantity                | Symbol             | SI Unit                 | Symbol             | Derivation                                 |
|-------------------------|--------------------|-------------------------|--------------------|--------------------------------------------|
| height                  | $h$                | metre                   | m                  | fundamental unit                           |
| image distance          | $v$                | metre                   | m                  | fundamental unit                           |
| inductance, mutual      | $M$                | henry                   | H                  | induced e.m.f./rate of change of current   |
| inductance, self        | $L$                | henry                   | H                  | —                                          |
| intensity of radiation  | $I$                | <i>a number</i>         | —                  | —                                          |
| latent heat             | $L$                | joule                   | J                  | quantity of heat                           |
| latent heat, specific   | $l$                | $\text{J kg}^{-1}$      | —                  | quantity of heat                           |
| latent heat, molar      | $L_m$              | $\text{joule mol}^{-1}$ | J                  | quantity of heat                           |
| length                  | $l$                | metre                   | m                  | fundamental unit                           |
| magnetizing force       | $H$                | ampere-turns            | —                  | —                                          |
| magnetic moment         | $m$                | Wb m                    | —                  | torque in unit magnetic field              |
| magnification, linear   | $m$                | <i>a ratio</i>          | —                  | —                                          |
| mass                    | $m$                | kilogramme              | kg                 | fundamental unit                           |
| mass number             | $A$                | <i>a number</i>         | —                  | number of neutrons + protons               |
| molar volume            | $V_m$              | $(\text{dm}^3)$         | —                  | volume of 1 mole                           |
| molar solution          | $M$                | <i>a ratio</i>          | —                  | $\text{moles/dm}^3$                        |
| moment of force         | —                  | N m                     | —                  | force $\times$ perp. distance              |
| neutron number          | $N$                | <i>a number</i>         | —                  | number of neutrons                         |
| number                  | $n$                | —                       | —                  | —                                          |
| number of molecules     | $N$                | —                       | —                  | —                                          |
| number turns on coil    | $n$                | <i>a number</i>         | —                  | —                                          |
| number order spectrum   | $p$                | <i>a number</i>         | —                  | —                                          |
| object distance         | $u$                | metre                   | m                  | fundamental unit                           |
| peak current            | $I_o$              | ampere                  | A                  | see current                                |
| peak e.m.f.             | $E_o$              | volt                    | V                  | see e.m.f.                                 |
| period                  | $T$                | second                  | s                  | fundamental unit                           |
| permeability            | $\mu$              | $\text{H m}^{-1}$       | —                  | henry/metre                                |
| permeability, vacuum    | $\mu_o$            | $\text{H m}^{-1}$       | —                  | —                                          |
| permeability, relative  | $\mu_r$            | <i>a ratio</i>          | —                  | $\mu = \frac{\mu}{\mu_o}$                  |
| permittivity            | $\epsilon$         | $\text{F m}^{-1}$       | —                  | farad/metre                                |
| permittivity, vacuum    | $\epsilon_o$       | $\text{F m}^{-1}$       | —                  | farad/metre                                |
| permittivity, relative  | $\epsilon_r$       | <i>a ratio</i>          | —                  | $\epsilon_r = \frac{\epsilon}{\epsilon_o}$ |
| potential, electric     | $V$                | volt                    | V                  | energy/charge                              |
| potential difference    | $V$                | volt                    | V                  | energy/charge                              |
| power                   | $P$                | watt                    | W                  | $\text{J s}^{-1}$                          |
| pressure                | $p$                | pascal                  | Pa                 | $\text{N m}^{-2}$ ; force/area             |
| radius                  | $r$                | metre                   | m                  | fundamental unit                           |
| reactance               | $X$                | ohm                     | $\Omega$           | $E_o/I_o$                                  |
| refractive index        | $n$                | <i>a ratio</i>          | —                  | —                                          |
| resistance              | $R$                | ohm                     | $\Omega$           | p.d./current                               |
| resistivity, electrical | $\rho$             | ohm-metre               | —                  | resistance $\times$ length                 |
| relative density        | $d$                | <i>a ratio</i>          | —                  | $\rho_{\text{sub}}/\rho_{\text{water}}$    |
| r.m.s. current          | $I_{\text{r.m.s}}$ | ampere                  | A                  | see current                                |
| r.m.s. voltage          | $V_{\text{r.m.s}}$ | volt                    | V                  | see e.m.f.                                 |
| slit separation         | $s$                | metre                   | m                  | fundamental unit                           |
| tension                 | $T$                | newton                  | N                  | see force                                  |
| temperature, Celsius    | $\theta$           | degree C                | $^{\circ}\text{C}$ | from kelvin                                |
| temp. interval          | $\theta$           | degree                  | $^{\circ}$ or K    | —                                          |
| temp. absolute          | $T$                | kelvin                  | K                  | fundamental unit                           |
| thickness               | $d$                | metre                   | m                  | fundamental unit                           |
| time                    | $t$                | second                  | s                  | fundamental unit                           |
| torque                  | $T$                | Nm                      | —                  | see moment                                 |
| turns ratio             | $T$                | <i>a ratio</i>          | —                  | $n_{\text{sec}}/n_{\text{prim}}$           |
| (unit of electricity)   | —                  | kW h                    | —                  | kilowatt $\times$ hour                     |
| velocity                | $u, v$             | $\text{ms}^{-1}$        | —                  | distance/time                              |
| velocity, angular       | $\omega$           | $\text{second}^{-1}$    | $\text{s}^{-1}$    | angle/time                                 |
| velocity, e.m.waves     | $c$                | $\text{m s}^{-1}$       | —                  | —                                          |
| velocity of sound       | $v$                | $\text{m s}^{-1}$       | —                  | —                                          |
| volume                  | $V$                | metre cubed             | $\text{m}^3$       | $l \times b \times h$                      |
| wavelength              | $\lambda$          | metre                   | m                  | fundamental unit                           |
| work                    | $w$                | joule                   | J                  | force $\times$ distance (Nm)               |
| weight                  | $W$                | newton                  | N                  | $\text{kg m s}^{-2}$ or $mg$               |

# NMB TECHNOLOGIES INC.

## BOXER™ AXIAL COOLING FANS

### FEATURES

Boxer cooling fans feature aluminum alloy or plastic frames, UL 94 V-O flammable rated impellers, Class A insulation, precision ball bearings, -40° to +70°C temperature range and a complete line of accessories. Low power and current consumption.



### BENEFITS

- Reliable Quality – All components made in-house
- More than 100 Models – All popular sizes, 10 to 220 CFM
- Low Noise, Light Weight – Ideal for power supplies, copiers, computers and medical equipment
- 50,000 hour life (min.) utilizing NMB precision ball bearings
- All units designed to meet UL, CSA, TUV and VDE requirements
- Modern Automated Factories – High volume production capabilities

### AC FANS

| Model Number<br>50/60 Hz          | Noise<br>dBA | Static<br>Pressure<br>in. H <sub>2</sub> O | CFM |
|-----------------------------------|--------------|--------------------------------------------|-----|
| 2.36 (60) × 1.18 (30) Inches (mm) |              |                                            |     |
| 2412PS-12W-B30                    | 29           | .12                                        | 10  |
| 3.15 (80) × .98 (25)              |              |                                            |     |
| 3110PS-12W-B30                    | 33           | .21                                        | 20  |
| 3.15 (80) × 1.50 (38)             |              |                                            |     |
| 3115FS-12T-B00                    | 31           | .07                                        | 18  |
| B10                               | 36           | .09                                        | 22  |
| B20                               | 40           | .13                                        | 27  |
| B30                               | 44           | .18                                        | 32  |
| 3115PS-12T-B10                    | 25           | .11                                        | 26  |
| B20                               | 31           | .15                                        | 28  |
| B30                               | 38           | .19                                        | 34  |
| 3.62 (92) × 1.02 (25.9)           |              |                                            |     |
| 3610PS-12T-B10                    | 25           | .11                                        | 22  |
| B20                               | 35           | .17                                        | 30  |
| B30                               | 38           | .25                                        | 35  |
| 4.69 (119) × 1.0 (25.4)           |              |                                            |     |
| 4710PS-12T-B20                    | 30           | .09                                        | 57  |
| B30                               | 38           | .20                                        | 77  |

#### NOTES:

- Standard voltages for AC fans are 115 or 230 VAC.
- Models are available with either terminals or lead wires.

| Model Number<br>50/60 Hz           | Noise<br>dBA | Static<br>Pressure<br>in. H <sub>2</sub> O | CFM |
|------------------------------------|--------------|--------------------------------------------|-----|
| 4.69 (119) × 1.50 (38) Inches (mm) |              |                                            |     |
| 4715FS-12T-B00                     | 40           | .08                                        | 60  |
| B10                                | 41           | .14                                        | 70  |
| B20                                | 43           | .16                                        | 80  |
| B30                                | 53           | .22                                        | 90  |
| B40                                | 55           | .29                                        | 100 |
| B50                                | 56           | .39                                        | 110 |
| 4715MS-12T-B10                     | 28           | .07                                        | 50  |
| B20                                | 30           | .10                                        | 71  |
| B30                                | 37           | .20                                        | 88  |
| B40                                | 39           | .26                                        | 95  |
| B50                                | 41           | .31                                        | 102 |
| 4.69 (119) × 1.50 (38)             |              |                                            |     |
| 4715PS-12T-B10                     | 28           | .10                                        | 65  |
| B20                                | 43           | .22                                        | 98  |
| B30                                | 46           | .32                                        | 106 |
| 6.77 (172) × 1.50 (38)             |              |                                            |     |
| 5915PC-12T-B10                     | 38           | .25                                        | 110 |
| B20                                | 50           | .50                                        | 170 |
| B30                                | 56           | .95                                        | 220 |

**NMB**  
TECHNOLOGIES INC.

For complete specifications and pricing, contact  
**NMB TECHNOLOGIES INC.**  
 9730 Independence Avenue • Chatsworth, CA 91311  
 Phone: 800.662.8321 or 818.341.3355 Fax: 818.341.8207

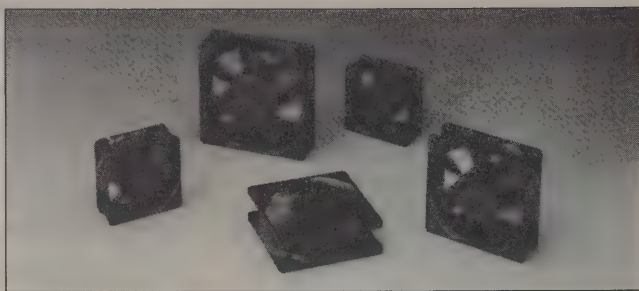


# NMB TECHNOLOGIES INC.

# LOW NOISE BOXER™ COOLING FANS

## FEATURES

Low noise DC cooling fans feature lightweight engineered plastic frames, aerodynamically designed seven-bladed impellers, brushless DC motors, precision ball bearings, -40° to +70°C temperature range, Class A insulation and a complete line of accessories.



## BENEFITS

- Frame Sizes – 1.6 to 6.8 inches
- Air Flow – 6 to 230 CFM
- Low Noise, Light Weight – Ideal for computers, copiers, word processors, facsimile machines, printers and power supplies
- All units designed to meet UL, CSA, TUV and VDE requirements
- Auto-restart and lock rotor protection feature is standard
- NMB precision ball bearings used for long life
- High volume production – competitive pricing

## DC FANS

| Model Number                     | Noise dBA | Static Pressure in. H <sub>2</sub> O | CFM   |
|----------------------------------|-----------|--------------------------------------|-------|
| 1.57 (40) × .59 (15) Inches (mm) |           |                                      |       |
| 1606ML-04W-B30                   | 28.0      | .15                                  | 6.00  |
| B40                              | 31.0      | .19                                  | 7.00  |
| B50                              | 34.0      | .25                                  | 8.10  |
| 2.36 (60) × .79 (20)             |           |                                      |       |
| 2408NL-04W-B10                   | 20.0      | .06                                  | 8.85  |
| B20                              | 22.0      | .08                                  | 10.62 |
| B30                              | 24.0      | .10                                  | 12.39 |
| B40                              | 25.5      | .12                                  | 14.16 |
| B50                              | 27.5      | .16                                  | 15.93 |
| 2.36 (60) × .98 (25)             |           |                                      |       |
| 2410ML-04W-B10                   | 23.0      | .08                                  | 13.80 |
| B20                              | 28.0      | .13                                  | 16.90 |
| B30                              | 31.0      | .16                                  | 19.10 |
| B40                              | 33.5      | .21                                  | 21.50 |
| B50                              | 35.0      | .25                                  | 23.30 |
| B60                              | 36.0      | .29                                  | 25.10 |
| 3.15 (80) × 1.00 (25.4)          |           |                                      |       |
| 3110NL-04W-B10                   | 20.0      | .06                                  | 23.00 |
| B20                              | 23.0      | .07                                  | 26.50 |
| B30                              | 25.0      | .09                                  | 30.00 |
| B40                              | 32.0      | .14                                  | 35.30 |
| B50                              | 38.0      | .19                                  | 42.40 |
| 3.62 (92) × 1.02 (25.9)          |           |                                      |       |
| 3610ML-04W-B10                   | 21.0      | .05                                  | 28.30 |
| B20                              | 26.0      | .08                                  | 35.30 |
| B30                              | 31.0      | .11                                  | 42.40 |
| B40                              | 35.5      | .15                                  | 49.40 |
| B50                              | 39.0      | .19                                  | 56.50 |

| Model Number                        | Noise dBA | Static Pressure in. H <sub>2</sub> O | CFM    |
|-------------------------------------|-----------|--------------------------------------|--------|
| 4.69 (119) × 1.0 (25.4) Inches (mm) |           |                                      |        |
| 4710NL-04W-B10                      | 25.0      | .06                                  | 50.00  |
| B20                                 | 29.0      | .08                                  | 60.00  |
| B30                                 | 34.0      | .11                                  | 70.00  |
| B40                                 | 36.0      | .14                                  | 80.00  |
| B50                                 | 39.0      | .18                                  | 90.00  |
| 4.69 (119) × 1.51 (38.4)            |           |                                      |        |
| 4715ML-04W-B10                      | 35.0      | .14                                  | 80.00  |
| B20                                 | 38.0      | .16                                  | 90.00  |
| B30                                 | 41.0      | .25                                  | 100.00 |
| B40                                 | 44.0      | .28                                  | 110.00 |
| 4.69 (119) × 1.50 (38)              |           |                                      |        |
| 4715PL-04W-B20                      | 38.0      | .20                                  | 75.00  |
| B30                                 | 42.0      | .28                                  | 95.00  |
| 6.8 (172.7) × 2.0 (50.8)            |           |                                      |        |
| 5920PL-07W-B10                      | 45.0      | .33                                  | 170.00 |
| B20                                 | 47.5      | .41                                  | 190.00 |
| B30                                 | 51.0      | .49                                  | 210.00 |
| B40                                 | 54.0      | .57                                  | 230.00 |
| 6.8 (172.7) × 2.0 (50.8)            |           |                                      |        |
| 6820PL-07W-B10                      | 42.0      | .33                                  | 170.00 |
| B20                                 | 45.0      | .41                                  | 190.00 |
| B30                                 | 49.0      | .49                                  | 210.00 |
| B40                                 | 52.0      | .57                                  | 230.00 |

### OPTIONS:

- All DC fans available at either 12 VDC (±15%) or 24 VDC (±15%). 36 and 48 volt versions available on most series.
- Most models are available with either terminals or lead wires.
- Speed Sensor, Locked Rotor Alarm, Temperature Sensor and 2-speed options available.
- SmartFan® DC version available, built-in temperature/speed controller. See SmartFan® series.

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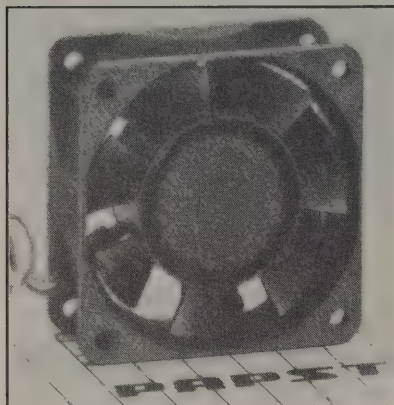
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# Fans and Blowers

# PAPST

PAPST MECHATRONIC CORPORATION

PAPST MECHATRONIC CORPORATION, Aquidneck Industrial Park, Newport, Rhode Island 02840 • Tel. (401) 849-8810 • Fax (401) 849-4640



With PAPST's new DC VARIOFAN, you can use the exact power/speed needed to achieve your specified cooling conditions. Less power/speed means you use less energy. Less power/speed means less noise. Less power/speed means less wear and tear and longer life performance.

## NOW YOU CAN SPECIFY AN INCH WITHOUT GIVING AN INCH

You can now specify a PAPST MULTIFAN with an installation depth of just one inch.

Now you can specify the world's best quality fan even in your tightest design. Because PAPST's high performance brushless DC MULTIFAN now comes with an installation depth as narrow as one inch.

**It's thinner. It's quieter. It uses less power.**

This narrowest-of-all MULTIFAN positively coasts through the toughest noise test with whisper-quiet ease. It needs very little power, operating on a super-efficient DC brushless motor that provides exceptionally soft commutation. And like all PAPST MULTIFANS, it lets you customize your application: you'll be able to control speed by varying voltage to get the absolute optimum airflow with minimum noise.

**It will even cause Purchasing to smile!**

Despite its high efficiency quality, you'll find this fan fits your budget. So specifying it means you win two ways. You'll keep component costs down. And at the same time, you won't compromise on your design's engineering integrity. Not even an inch.

PAPST's new DC VARIOFAN never makes more noise than necessary to maintain your specified cooling requirements. It succeeds where other fans fail by using a proprietary ASIC technology to vary its speed with changes in temperature.

The trouble with most fans is that they operate constantly at full speed to compensate for the "Worst Case Condition." But such conditions occur only 5% of the time or less. This means excess power (read: noise) occurs 95% of the time!

## Equipment Fans for DC Operation

| Dimensions<br>mm/in.      | Model | Fig. | Max Air Flow<br>free air<br>CFM | m3/h | Nominal Voltage | Voltage Range | Noise Sound pressure<br>free air<br>dB(A) | Sound power in opt. oper.<br>range<br>bels | Bearing System<br>○ sleeve<br>● ball | Power Input<br>W | Speed<br>rpm | Perm. Temp. Range<br>C | Service Life L10 at 40°C amb. temp.<br>Hours | Connections<br>Approvals<br>* submitted for approval<br>L leads<br>T terminals |
|---------------------------|-------|------|---------------------------------|------|-----------------|---------------|-------------------------------------------|--------------------------------------------|--------------------------------------|------------------|--------------|------------------------|----------------------------------------------|--------------------------------------------------------------------------------|
| 60x60x25<br>2.4x2.4x1.4   | 612L  | A    | 12.3                            | 21   | 12              | 6...15        | 26                                        | 4.0                                        | ●                                    | 0.7              | 3000         | -20+65                 | 55,000                                       | L UL, CSA, VDE                                                                 |
|                           | 612M  | A    | 17.6                            | 30   | 12              | 6...15        | 33                                        | 4.7                                        | ●                                    | 1.3              | 4100         | -20+65                 | 55,000                                       | L UL, CSA, VDE                                                                 |
|                           | 612   | A    | 23.3                            | 40   | 12              | 6...15        | 40                                        | 5.1                                        | ●                                    | 2.5              | 5300         | -20+65                 | 55,000                                       | L UL, CSA, VDE                                                                 |
|                           | 614   | A    | 23.3                            | 40   | 24              | 12...30       | 40                                        | 5.1                                        | ●                                    | 2.5              | 5300         | -20+65                 | 55,000                                       | L UL, CSA, VDE                                                                 |
| 80x80x25<br>3.1x3.1x1.0   | 8412L | A    | 20.6                            | 35   | 12              | 7...15        | 21                                        | 3.8                                        | ●                                    | 0.8              | 2000         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8412M | A    | 26.5                            | 45   | 12              | 7...15        | 29                                        | 4.4                                        | ●                                    | 1.4              | 2600         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8412  | A    | 32.8                            | 56   | 12              | 7...15        | 35                                        | 4.7                                        | ●                                    | 2.4              | 3150         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8414  | A    | 32.8                            | 56   | 24              | 12...28       | 35                                        | 4.7                                        | ●                                    | 2.4              | 3150         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
| 80x80x32<br>3.1x3.1x1.3   | 8312L | A    | 18.6                            | 32   | 12              | 6...15        | 24                                        | 4.0                                        | ●                                    | 1.0              | 2000         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8312M | A    | 28.2                            | 48   | 12              | 6...15        | 34                                        | 5.0                                        | ●                                    | 1.8              | 3000         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8312  | A    | 31.8                            | 54   | 12              | 6...15        | 36                                        | 5.2                                        | ●                                    | 2.2              | 3300         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8314  | A    | 31.8                            | 54   | 24              | 2...28        | 36                                        | 5.2                                        | ●                                    | 2.2              | 3300         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 8318  | A    | 31.8                            | 54   | 48              | 36...56       | 36                                        | 52                                         | ●                                    | 2.2              | 3300         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
| 80x80x38<br>3.1x3.1x1.5   | 8112G | A    | 35.4                            | 60   | 12              | 8...16        | 38                                        | 5.0                                        | ○                                    | 3.0              | 3450         | -10+72                 | 50,000                                       | L UL, VDE                                                                      |
|                           | 8112K | A    | 35.4                            | 60   | 12              | 8...16        | 39                                        | 5.1                                        | ●                                    | 3.0              | 3450         | -20+72                 | 77,500                                       | L UL, VDE                                                                      |
|                           | 8124G | A    | 35.4                            | 60   | 24              | 18...30       | 38                                        | 5.0                                        | ○                                    | 3.0              | 3450         | -10+72                 | 50,000                                       | L UL, VDE                                                                      |
|                           | 8124K | A    | 35.4                            | 60   | 24              | 18...30       | 39                                        | 5.1                                        | ●                                    | 3.0              | 3450         | -20+72                 | 77,500                                       | L UL, VDE                                                                      |
| 92x92x25<br>3.6x3.6x1.0   | 3412L | A    | 35.8                            | 61   | 12              | 7...15        | 27                                        | 4.5                                        | ●                                    | 1.4              | 2200         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 3412M | A    | 42.4                            | 72   | 12              | 7...15        | 32                                        | 4.8                                        | ●                                    | 1.7              | 2650         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 3412  | A    | 49.4                            | 84   | 12              | 7...15        | 36                                        | 5.0                                        | ●                                    | 2.4              | 3050         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 3414  | A    | 49.4                            | 84   | 24              | 2...28        | 37                                        | 5.0                                        | ●                                    | 2.6              | 3050         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
| 92x92x32<br>3.6x3.6x1.3   | 3312L | A    | 33.0                            | 56   | 12              | 6...15        | 29                                        | 4.5                                        | ●                                    | 1.4              | 2150         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 3312M | A    | 40.0                            | 68   | 12              | 6...15        | 34                                        | 4.8                                        | ●                                    | 1.7              | 2600         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 3312  | A    | 47.0                            | 80   | 12              | 6...15        | 37                                        | 5.2                                        | ●                                    | 2.4              | 3000         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 3314  | A    | 47.0                            | 80   | 24              | 12...28       | 37                                        | 5.2                                        | ●                                    | 2.4              | 3000         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
| 119x119x32<br>4.7x4.7x1.3 | 4312L | A    | 55.9                            | 95   | 12              | 6...15        | 30                                        | 4.3                                        | ●                                    | 1.2              | 1550         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 4312M | A    | 82.4                            | 140  | 12              | 6...15        | 40                                        | 5.3                                        | ●                                    | 2.6              | 2300         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |
|                           | 4312  | A    | 100.0                           | 170  | 12              | 6...15        | 45                                        | 5.8                                        | ●                                    | 5.0              | 2800         | -20+75                 | 70,000                                       | L UL, CSA, VDE                                                                 |

°= APPLIED FOR

(continued)

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# Fans and Blowers

# PAPST

PAPST MECHATRONIC CORPORATION

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## PAPST SOLID STATE BRUSHLESS DC FANS

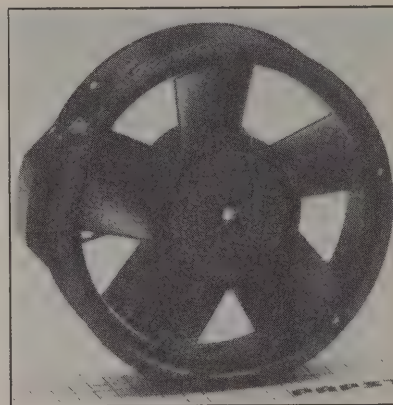
The only company offering you a full family of Solid State, Brushless DC fans in popular frame sizes, voltages & prices.

PAPST has a full line of self-contained, solid state, brushless DC fans for you to choose from. Through their design, these fans have been engineered to tackle those specialized applications which require highly reliable DC performance. Common uses include mobile radio equipment, medical electronics, ship-board computers, airborne applications, communications systems, automotive applications, marine use and telecommunications; wherever DC voltage is normally available. They are also finding wide acceptance for use in power stand-by modes to prevent memory loss in the event of AC power failure.

These fans are especially efficient and will out-perform similar sized fans at normal operating back pressure. Typically they offer greater air volume (cfm), reduced noise levels and

reduced power drain. For example, the power drain at maximum back pressure is approximately 25% of that required in conventional AC units. These fans also achieve a new low in magnetic radiation and RF noise, thereby assuring the pure signals necessary for critical airborne or shipboard use.

These fans work well at all rated voltages, and are extremely quiet. They can be adjusted for performance and noise level by altering the voltage within the voltage range for your particular application. They feature a brushless motor with all electronics mounted on a PC card within the motor frame. Drive amplifiers for the motor are controlled by a patented Hall-effect generator circuit which is coupled by small pole pieces to the motor's field magnet (Patent No. 3-873-897). Available voltages



include 5 VDC nominal, 12 VDC nominal, 24 VDC nominal and 48 VDC nominal.

These fans do not require an external voltage inverter. This means that you save valuable mounting space and weight because the only consideration in mounting is the fan itself.

### Equipment Fans for DC Operation (continued)

| Dimensions<br>mm/in. | Model  | Fig. | Max Air Flow<br>free air<br>CFM | m3/h | Nominal Voltage | Voltage Range | Noise Sound pressure<br>free air<br>dB(A) | Sound power in opt. oper.<br>range<br>bels | Bearing System<br>○ sleeve<br>● ball | Power Input<br>W | Speed<br>rpm | Perm. Temp. Range<br>C | Service Life L10 at 40°C amb. temp.<br>Hours | Connections Approvals submitted for approval<br>* L leads T terminals |
|----------------------|--------|------|---------------------------------|------|-----------------|---------------|-------------------------------------------|--------------------------------------------|--------------------------------------|------------------|--------------|------------------------|----------------------------------------------|-----------------------------------------------------------------------|
| 119x119x32           | 4392   | A    | 100.0                           | 170  | 12              | 6...15        | 45                                        | 5.8                                        | ●                                    | 5.0              | 2800         | -20-+75                | 70,000                                       | L UL, CSA, VDE                                                        |
| 2.4x2.4x1.4          | 4314   | A    | 100.0                           | 170  | 24              | 12...28       | 45                                        | 5.8                                        | ●                                    | 5.0              | 2800         | -20-+75                | 70,000                                       | L UL, CSA, VDE                                                        |
|                      | 4318   | A    | 100.0                           | 170  | 48              | 36...53       | 45                                        | 5.8                                        | ●                                    | 5.0              | 2800         | -20-+65                | 55,000                                       | L UL, CSA, VDE                                                        |
| 119x119x38           | 4212   | A    | 97.0                            | 165  | 12              | 7...14.5      | 45                                        | 5.6                                        | ●                                    | 4.3              | 3050         | -20-+75                | 70,000                                       | L UL, CSA, VDE                                                        |
| 4.7x4.7x1.5          | 4212H  | A    | 107.7                           | 183  | 12              | 7...14.5      | 49                                        | 6.0                                        | ●                                    | 5.0              | 3400         | -20-+65                | 70,000                                       | L UL, CSA, VDE                                                        |
|                      | 4214   | A    | 97.0                            | 165  | 24              | 12...28       | 45                                        | 5.6                                        | ●                                    | 4.3              | 3050         | -20-+75                | 70,000                                       | L UL, CSA, VDE                                                        |
|                      | 4214H  | A    | 107.7                           | 183  | 24              | 12...28       | 49                                        | 6.0                                        | ●                                    | 5.0              | 3400         | -20-+65                | 70,000                                       | L UL, CSA, VDE                                                        |
|                      | 4218C  | A    | 97.0                            | 165  | 48              | 36...56       | 45                                        | 5.6                                        | ●                                    | 4.2              | 3050         | -20-+75                | 70,000                                       | L UL, CSA, VDE                                                        |
|                      | 4218H  | A    | 107.7                           | 183  | 48              | 36...56       | 49                                        | 6.0                                        | ●                                    | 5.0              | 3400         | -20-+65                | 70,000                                       | L UL, CSA, VDE                                                        |
| 119x119x38           | 4112GX | A    | 94.0                            | 160  | 12              | 8...16        | 44                                        | 5.3                                        | ○                                    | 4.5              | 2800         | -20-+75                | 50,000                                       | T UL, CSA, VDE                                                        |
| 4.7x4.7x1.5          | 4112KX | A    | 106.0                           | 180  | 12              | 8...14        | 49                                        | 5.7                                        | ●                                    | 6.0              | 3200         | -20-+65                | 65,000                                       | T UL, CSA, VDE                                                        |
|                      | 4124GX | A    | 94.0                            | 160  | 24              | 18...30       | 44                                        | 5.3                                        | ○                                    | 4.5              | 2800         | -20-+75                | 50,000                                       | T UL, CSA, VDE                                                        |
|                      | 4124KX | A    | 106.0                           | 180  | 24              | 18...29       | 49                                        | 5.7                                        | ●                                    | 6.0              | 3200         | -20-+65                | 65,000                                       | T UL, CSA, VDE                                                        |
|                      | 4148XP | A    | 94.0                            | 160  | 48              | 38...56       | 44                                        | 5.3                                        | ●                                    | 4.5              | 2800         | -20-+75                | 65,000                                       | T UL, CSA, VDE                                                        |
| 135x135x38           | 5112   | A    | 147.0                           | 250  | 12              | 6...15        | 48                                        | 6.1                                        | ●                                    | 8.5              | 2900         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
| 5.3x5.3x1.5          | 5114   | A    | 147.0                           | 250  | 24              | 12...30       | 48                                        | 6.1                                        | ●                                    | 8.5              | 2900         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
|                      | 5118   | A    | 147.0                           | 250  | 48              | 24...60       | 48                                        | 6.1                                        | ●                                    | 8.5              | 2900         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
| 172x150x55           | 7112   | A    | 211.9                           | 360  | 12              | 6...15        | 55                                        | 6.5                                        | ●                                    | 12.0             | 2850         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
| 6.8x5.9x1.5          | 7114   | A    | 211.9                           | 360  | 24              | 12...30       | 55                                        | 6.5                                        | ●                                    | 12.0             | 2850         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
|                      | 7118   | A    | 211.9                           | 360  | 48              | 24...60       | 55                                        | 6.5                                        | ●                                    | 12.0             | 2850         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
| 172x150x55           | 7212   | A    | 211.9                           | 360  | 12              | 6...15        | 50                                        | 6.2                                        | ●                                    | 12.0             | 3050         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
| 6.8x5.9x1.5          | 7214   | A    | 211.9                           | 360  | 24              | 12...30       | 50                                        | 6.2                                        | ●                                    | 12.0             | 3050         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
|                      | 7218   | A    | 211.9                           | 360  | 48              | 24...60       | 50                                        | 6.2                                        | ●                                    | 12.0             | 3050         | -20-+72                | 60,000                                       | L UL*, CSA*, VDE*                                                     |
| 172mdx51             | 6212M  | A    | 206.0                           | 350  | 12              | 8...15        | 50                                        | 5.7                                        | ●                                    | 11.0             | 2850         | -20-+72                | 77,500                                       | T UL, CSA, VDE                                                        |
| 6.8mdx2.0            | 6224M  | A    | 206.0                           | 350  | 24              | 12...32       | 50                                        | 5.7                                        | ●                                    | 11.0             | 2850         | -20-+72                | 77,500                                       | T UL, CSA, VDE                                                        |
|                      | 6224   | A    | 241.3                           | 410  | 24              | 12...28       | 55                                        | 6.1                                        | ●                                    | 17.0             | 3400         | -20-+72                | 77,500                                       | T UL, CSA, VDE                                                        |
|                      | 6248M  | A    | 206.0                           | 350  | 48              | 28...60       | 50                                        | 5.7                                        | ●                                    | 10.5             | 2850         | -20-+72                | 77,500                                       | T UL, CSA, VDE                                                        |
|                      | 6248   | A    | 241.3                           | 410  | 48              | 28...56       | 55                                        | 6.1                                        | ●                                    | 16.0             | 3400         | -20-+72                | 77,500                                       | T UL, CSA, VDE                                                        |

○ = APPLIED FOR

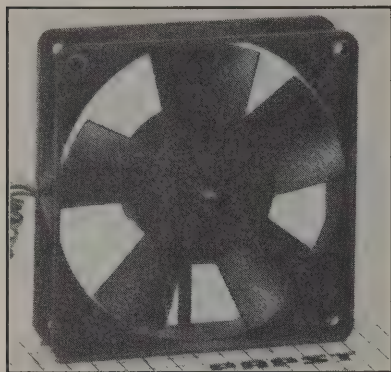
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# Fans and Blowers

# PAPST

PAPST MECHATRONIC CORPORATION

PAPST MECHATRONIC CORPORATION, Aquidneck Industrial Park, Newport, Rhode Island 02840 • Tel. (401) 849-8810 • Fax (401) 849-4640



PAPST offers a wide variety of fans for your selection. Each model combines the features of extended life with high airflow delivery at low noise levels. All PAPST fans are UL recognized and have their Yellow Card Component Recognition Number E41168. Most are CSA certified and VDE approved.

## PAPST AC FANS

Field proven, quality products you can rely upon for all of your cooling requirements.

Lightweight all-metal construction is typical of PAPST AC fans. This all-metal construction eliminates breakage and warping often found in conventional plastic fans. This all-metal feature also permits the entire fan to function as a natural heat sink, assuring cooler operation by effectively transferring heat from the rotor into the air stream via the impeller blades. Potential injurious heat is also transferred from the stator to the die-cast venturi by way of the metal struts. Life expectancy: (1) AC fans with sleeve bearings—20,000 hours at maximum permissible ambient temperatures. (2) AC fans with ball bearings—20,000 hours at 72°C or at the maximum permissible temperature if this is less than 72°C. Note: If the ambient temperature at which the fan operates is at 20°C below the above levels, the life expectancy increases by 10,000 hours.

The PAPST exclusive bearing lubrication system incorporates hand-fitted broached sintered iron sleeve bearings on most fans, with precision high-tempered ball bearing versions also available. The dual sleeve bearings are separated by a large oil felt reservoir, which provides continuous fault free circulation.

An efficient, powerful inside-out motor, housed entirely within the impeller hub to conserve axial depth, has higher torque capabilities and a lower internal heat rise than the contemporary fixed shaft designs.

The impeller shafts are computer designed and impulse welded to the precision hub and dynamically balanced to within .0001 inches in each end plane to minimize acoustical and mechanical vibrations.

## Variofans

| Dimensions  | Model   | Fig. | Max Air Flow<br>free air<br>CFM | m3/h   | Nom. Voltage | Voltage Range | Noise Sound pressure<br>free air<br>dB(A) | Sound power in opt.<br>oper. range<br>bels | Bearing System<br>○ sleeve<br>● ball | Power Input<br>W | Speed<br>rpm | Perm. Temp. Range<br>°C | Service Life L10 at 40°C amb. temp. Hours | Connections Approvals<br>*submitted for approval<br>L leads<br>T terminals |
|-------------|---------|------|---------------------------------|--------|--------------|---------------|-------------------------------------------|--------------------------------------------|--------------------------------------|------------------|--------------|-------------------------|-------------------------------------------|----------------------------------------------------------------------------|
| mm/in.      |         |      |                                 |        |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 80x80x25    | 8412GLV | A    | 10.3-20.6                       | 18-35  | 12           | 8...14        | 10-21                                     | 2.2-3.8                                    | ○                                    | 0.7-1.2          | 1K-2K        | -20+65                  | 50,000                                    | L UL*, CSA*, VDE*                                                          |
| 3.1x3.1x1.0 | 8412GMV | A    | 12.9-26.5                       | 22-45  | 12           | 8...14        | 12-29                                     | 2.8-4.4                                    | ○                                    | 0.9-1.5          | 1.3K-2.6K    | -20+65                  | 50,000                                    | L UL*, CSA*, VDE                                                           |
|             | 8412GV  | A    | 16.5-33.0                       | 28-56  | 12           | 8...14        | 15-35                                     | 3.3-4.7                                    | ○                                    | 1.0-2.2          | 1.6K-3.15K   | -20+65                  | 50,000                                    | L UL*, CSA*, VDE                                                           |
| 80x80x32    | 8312MV  | A    | 14.1-28.2                       | 24-48  | 12           | 8...14        | 18-34                                     | 3.4-5.0                                    | ●                                    | 0.8-1.7          | 1.5K-3K      | -20+65                  | 70,000                                    | L UL*, CSA*, VDE*                                                          |
| 3.1x3.1x1.3 |         |      |                                 |        |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 92x92x25    | 3412GMV | A    | 21.2-42.4                       | 36-72  | 12           | 8...14        | 16-32                                     | 3.7-4.6                                    | ○                                    | 1.1-2.3          | 1350-2650    | -10+65                  | 50,000                                    | L UL*, CSA*, VDE*                                                          |
| 3.6x3.6x1.0 |         |      |                                 |        |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 92x92x32    | 3312V   | A    | 23.5-47.0                       | 40-80  | 12           | 8...12.6      | 24-37                                     | 3.7-5.2                                    | ●                                    | 1.2-2.7          | 1.5K-3K      | -20+65                  | 70,000                                    | L UL*, CSA*, VDE*                                                          |
| 3.6x3.6x1.3 |         |      |                                 |        |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 119x119x32  | 4312MV  | A    | 41.2-82.4                       | 70-140 | 12           | 8...12.6      | 22-40                                     | 3.7-5.4                                    | ●                                    | 1.4-3.4          | 1150-2300    | -20+65                  | 70,000                                    | L UL*, CSA*, VDE*                                                          |
| 4.7x4.7x1.3 |         |      |                                 |        |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |

## Equipment Fans for AC operation on, 60/50 Hertz

| Dimensions  | Model | Fig. | Max Air Flow<br>free air<br>CFM | m3/h  | Nom. Voltage | Voltage Range | Noise Sound pressure<br>free air<br>dB(A) | Sound power in opt.<br>oper. range<br>bels | Bearing System<br>○ sleeve<br>● ball | Power Input<br>W | Speed<br>rpm | Perm. Temp. Range<br>°C | Service Life L10 at 40°C amb. temp. Hours | Connections Approvals<br>*submitted for approval<br>L leads<br>T terminals |
|-------------|-------|------|---------------------------------|-------|--------------|---------------|-------------------------------------------|--------------------------------------------|--------------------------------------|------------------|--------------|-------------------------|-------------------------------------------|----------------------------------------------------------------------------|
| mm/in.      |       |      |                                 |       |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 62md x35    | 970T  | D    | 21.2                            | 36    | 24           | +/-6%         | 29                                        | —                                          | ○                                    | 7.0              | 3350         | -10+70                  | 32,500                                    | L UL, VDE                                                                  |
| 2.4mdx1.4   |       |      |                                 |       |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 70mdx1.5    | 950   | E    | 40.0                            | 68    | 24           | +/-6%         | 35                                        | 49                                         | ○                                    | 7.0              | 3350         | -10+70                  | 32,500                                    | L UL, CSA*, VDE                                                            |
| 3.1mdx1.5   |       |      |                                 |       |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 80mdx38     | 900   | F    | 18.8-27.1                       | 32-46 | 32-42        | +/-6%         | 17-28                                     | 4.2-4.9                                    | ○                                    | 2.5-7.5          | 1800-2550    | -10+85                  | 32,000                                    | L UL, CSA*, VDE                                                            |
| 3.1mdx1.5   |       |      |                                 |       |              |               |                                           |                                            |                                      |                  |              |                         |                                           |                                                                            |
| 80x80x25    | 8908L | A    | 15.9                            | 27    | 115          | +/-6%         | 25                                        | 4.0                                        | ●                                    | 4.0              | 2000         | -30+70                  | 40,000                                    | L UL, CSA, VDE                                                             |
| 3.1x3.1x1.0 | 8908  | A    | 24.4                            | 42    | 115          | +/-6%         | 35                                        | 4.9                                        | ●                                    | 6.0              | 3000         | -30+70                  | 40,000                                    | L UL, CSA, VDE                                                             |
|             | 8958  | A    | 24.4                            | 42    | 230          | +/-6%         | 35                                        | 4.9                                        | ●                                    | 6.0              | 3000         | -30+70                  | 40,000                                    | L UL, CSA, VDE                                                             |

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## Equipment Fans for AC operation on, 60/50 Hertz (continued)

| Dimensions                | Model  | Fig. | Max Air Flow free air CFM | m3/h | Nom. Voltage | Voltage Range | Noise Sound pressure free air dB(A) | Sound power in opt. oper. range bels | Bearing System     | Power Input | Speed | Perm. Temp. Range | Service Life L10 at 40°C amb. temp. Hours | Connections Approvals submitted for approval L leads T terminals |
|---------------------------|--------|------|---------------------------|------|--------------|---------------|-------------------------------------|--------------------------------------|--------------------|-------------|-------|-------------------|-------------------------------------------|------------------------------------------------------------------|
| mm/in.                    |        |      |                           |      |              |               |                                     |                                      | ○ sleeve<br>● ball | W           | rpm   | C                 |                                           |                                                                  |
| 80x80x38<br>3.1x3.1x1.5   | 8800N  | A    | 27.7                      | 47   | 115          | +/-6%         | 28                                  | 4.3                                  | ○                  | 10.5        | 2550  | -10+70            | 35,000                                    | L UL, CSA, VDE                                                   |
|                           | 8500DP | A    | 35.9                      | 61   | 115          | +/-6%         | 34                                  | 4.8                                  | ○                  | 10.5        | 3150  | -10+70            | 35,000                                    | L UL, CSA, VDE                                                   |
|                           | 8500N  | A    | 35.9                      | 61   | 115          | +/-6%         | 34                                  | 4.8                                  | ○                  | 10.5        | 3150  | -10+70            | 35,000                                    | L UL, CSA, VDE                                                   |
|                           | 8506N  | A    | 35.9                      | 61   | 115          | +/-6%         | 35                                  | 5.0                                  | ●                  | 10.5        | 3300  | -40+90            | 40,000                                    | L UL, CSA, VDE                                                   |
|                           | 8550N  | A    | 35.9                      | 61   | 230          | +/-6%         | 34                                  | 4.8                                  | ○                  | 10.5        | 3150  | -10+70            | 35,000                                    | L UL, CSA, VDE                                                   |
|                           | 8556N  | A    | 35.9                      | 61   | 230          | +/-6%         | 35                                  | 5.0                                  | ●                  | 10.5        | 3300  | -40+90            | 40,000                                    | L UL, CSA, VDE                                                   |
| 92x92x25<br>3.6x3.6x1.0   | 3908L  | A    | 30.6                      | 52   | 115          | +/-6%         | 33                                  | 4.3                                  | ●                  | 6.0         | 2300  | -30+70            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 3908   | A    | 41.1                      | 70   | 115          | +/-6%         | 41                                  | 5.1                                  | ●                  | 9.0         | 3100  | -30+70            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 3958   | A    | 41.1                      | 70   | 230          | +/-6%         | 37                                  | 5.1                                  | ●                  | 90.0        | 3100  | -30+70            | 40,000                                    | T UL, CSA, VDE                                                   |
| 119x119x25<br>4.7x4.7x1.0 | 4908L  | A    | 58.9                      | 100  | 115          | +/-6%         | 36                                  | 4.6                                  | ●                  | 9.0         | 2100  | -30+70            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 4908   | A    | 79.5                      | 135  | 115          | +/-6%         | 44                                  | 5.4                                  | ●                  | 12.0        | 2850  | -30+70            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 4958   | A    | 79.5                      | 135  | 230          | +/-6%         | 44                                  | 5.4                                  | ●                  | 12.0        | 2850  | -30+70            | 40,000                                    | T UL, CSA, VDE                                                   |
| 119x119x38<br>4.7x4.7x1.5 | 4840N  | A    | 50.0                      | 85   | 115          | +/-6%         | 26                                  | 4.1                                  | ○                  | 10.0        | 1550  | -10+70            | 35,000                                    | T UL, CSA, VDE                                                   |
|                           | 4800N  | A    | 58.9                      | 100  | 115          | +/-6%         | 32                                  | 4.5                                  | ○                  | 9.0         | 1800  | -10+80            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 4800X  | A    | 58.9                      | 100  | 115          | +/-6%         | 32                                  | 4.5                                  | ○                  | 9.0         | 1800  | -10+80            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 4530N  | A    | 88.9                      | 151  | 115          | +/-6%         | 45                                  | 5.4                                  | ○                  | 15.0        | 2700  | -10+70            | 35,500                                    | T UL, CSA, VDE                                                   |
|                           | 4500N  | A    | 99.5                      | 169  | 115          | +/-6%         | 48                                  | 5.6                                  | ○                  | 15.0        | 3000  | -10+70            | 35,000                                    | T UL, CSA, VDE                                                   |
|                           | 4850X  | A    | 58.9                      | 100  | 230          | +/-6%         | 32                                  | 4.5                                  | ○                  | 9.0         | 1800  | -10+70            | 40,000                                    | T UL, CSA, VDE                                                   |
| 119x119x38<br>4.7x4.7x1.5 | 4600N  | A    | 105.9                     | 180  | 115          | +/-6%         | 50                                  | 5.7                                  | ○                  | 18.0        | 3100  | -10+65            | 32,500                                    | T UL, CSA, VDE                                                   |
|                           | 4600X  | A    | 105.9                     | 180  | 115          | +/-6%         | 50                                  | 5.7                                  | ○                  | 18.0        | 3100  | -10+65            | 32,500                                    | T UL, CSA, VDE                                                   |
|                           | 4600XP | A    | 105.9                     | 180  | 115          | +/-6%         | 50                                  | 5.7                                  | ○                  | 18.0        | 3100  | -10+65            | 32,500                                    | T UL, CSA, VDE                                                   |
|                           | 4606N  | A    | 105.9                     | 180  | 115          | +/-6%         | 51                                  | 5.8                                  | ●                  | 18.0        | 3100  | -40+85            | 40,500                                    | T UL, CSA, VDE                                                   |
|                           | 4606X  | A    | 105.9                     | 180  | 115          | +/-6%         | 51                                  | 5.8                                  | ●                  | 18.0        | 3100  | -40+85            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 4650N  | A    | 105.9                     | 180  | 230          | +/-6%         | 50                                  | 5.7                                  | ○                  | 18.0        | 3100  | -10+65            | 32,500                                    | T UL, CSA, VDE                                                   |
|                           | 4656N  | A    | 105.9                     | 180  | 230          | +/-6%         | 51                                  | 5.8                                  | ●                  | 18.0        | 3100  | -40+85            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 4658N  | A    | 105.9                     | 180  | 230          | +/-6%         | 51                                  | 5.8                                  | ●                  | 18.0        | 3100  | -40+85            | 40,000                                    | T UL, CSA, VDE                                                   |
| 135x135x38<br>5.3x5.3x1.5 | 5606S  | A    | 158.9                     | 270  | 115          | +/-6%         | 50                                  | 6.2                                  | ●                  | 26.0        | 3100  | -35+80            | 50,000                                    | T UL*, CSA*, VDE*                                                |
|                           | 5656S  | A    | 158.9                     | 270  | 230          | +/-6%         | 50                                  | 6.2                                  | ●                  | 26.0        | 3100  | -35+80            | 50,000                                    | T UL*, CSA*, VDE*                                                |
| 172x150x38<br>5.3x5.3x1.5 | 7606   | A    | 244.3                     | 415  | 115          | +/-6%         | 59                                  | 6.8                                  | ●                  | 29.0        | 3200  | -35+80            | 50,000                                    | T UL*, CSA*, VDE*                                                |
|                           | 7056   | A    | 244.3                     | 415  | 230          | +/-6%         | 59                                  | 6.8                                  | ●                  | 29.0        | 3200  | -35+80            | 50,000                                    | T UL*, CSA*, VDE*                                                |
| 172x172x55<br>6.8x5.9x2.2 | 7805S  | A    | 241.3                     | 410  | 115          | +/-6%         | 55                                  | 6.4                                  | ●                  | 37.0        | 3350  | -35+55            | 50,000                                    | L UL, CSA, VDE                                                   |
|                           | 7806S  | A    | 241.3                     | 410  | 115          | +/-6%         | 55                                  | 6.0                                  | ●                  | 37.0        | 3350  | -35+80            | 50,000                                    | L UL, CSA, VDE                                                   |
|                           | 7855S  | A    | 241.3                     | 410  | 230          | +/-6%         | 55                                  | 6.4                                  | ●                  | 37.0        | 3350  | -35+55            | 50,000                                    | L UL, CSA, VDE                                                   |
|                           | 7856S  | A    | 241.3                     | 410  | 230          | +/-6%         | 55                                  | 6.4                                  | ●                  | 37.0        | 3350  | -35+80            | 50,000                                    | L UL, CSA, VDE                                                   |
| 172mdx55<br>6.8mdx2.2     | 6008S  | A    | 246.6                     | 419  | 115          | +/-6%         | 54                                  | 6.2                                  | ●                  | 29.0        | 3400  | -40+80            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 6028S  | A    | 294.3                     | 500  | 115          | +/-6%         | 57                                  | 6.5                                  | ●                  | 31.0        | 3300  | -40+80            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 6058S  | A    | 246.6                     | 419  | 230          | +/-6%         | 54                                  | 6.2                                  | ●                  | 29.0        | 3400  | -40+80            | 40,000                                    | T UL, CSA, VDE                                                   |
|                           | 6078S  | A    | 294.3                     | 500  | 230          | +/-6%         | 57                                  | 6.5                                  | ●                  | 31.0        | 3300  | -40+80            | 40,000                                    | T UL, CSA, VDE                                                   |

## Flatpack Blowers for DC and AC Operation

| Dimensions                 | Model      | Fig. | Max Air Flow free air CFM | m3/h | Nom. Voltage | Voltage Range | Noise Sound pressure free air dB(A) | Sound power in opt. oper. range bels | Bearing System     | Power Input | Speed | Perm. Temp. Range | Service Life L10 at 40°C amb. temp. Hours | Connections Approvals submitted for approval L leads T terminals |
|----------------------------|------------|------|---------------------------|------|--------------|---------------|-------------------------------------|--------------------------------------|--------------------|-------------|-------|-------------------|-------------------------------------------|------------------------------------------------------------------|
| mm/in.                     |            |      |                           |      |              |               |                                     |                                      | ○ sleeve<br>● ball | W           | rpm   | C                 |                                           |                                                                  |
| 121x121x3.7<br>4.8x4.8x1.5 | RL90-18/12 | B    | 23.5                      | 40   | 12           | 9.5...14      | —                                   | 6.1                                  | ●                  | 4.5         | 2500  | -30+72            | 60,000                                    | L UL, CSA, VDE                                                   |
|                            | RL90-18/24 | B    | 23.5                      | 40   | 24           | 19...28       | —                                   | 6.1                                  | ●                  | 4.5         | 2500  | -30+72            | 60,000                                    | L UL, CSA, VDE                                                   |
|                            | RL90-18/00 | B    | 23.5                      | 40   | 115          | +/-6%         | —                                   | 6.4                                  | ○                  | 20.0        | 2600  | -10+55            | 30,000                                    | L UL, CSA, VDE                                                   |
|                            | RL90-18/50 | B    | 23.5                      | 40   | 230          | +/-6%         | —                                   | 6.4                                  | ●                  | 20.0        | 2600  | -40+55            | 30,000                                    | L UL, CSA, VDE                                                   |
| 121x121x3.7<br>4.8x4.8x1.5 | RG90-18/12 | C    | 31.8                      | 54   | 12           | 7...13.2      | —                                   | 5.8                                  | ●                  | 6.0         | 2200  | -20+70            | 45,000                                    | L UL*, CSA*, VDE*                                                |
|                            | RG90-18/24 | C    | 31.8                      | 54   | 24           | 12...28       | —                                   | 5.8                                  | ●                  | 6.0         | 2200  | -20+70            | 45,000                                    | L UL*, CSA*, VDE*                                                |
|                            | RG90-18/06 | C    | 27.6                      | 47   | 115          | +/-6%         | —                                   | 6.2                                  | ●                  | 22.0        | 1900  | -30+65            | 35,000                                    | L UL*, CSA*, VDE*                                                |
|                            | RG90-18/56 | C    | 27.6                      | 47   | 230          | +/-6%         | —                                   | 6.2                                  | ●                  | 22.0        | 1900  | -30+65            | 35,000                                    | L UL*, CSA*, VDE*                                                |

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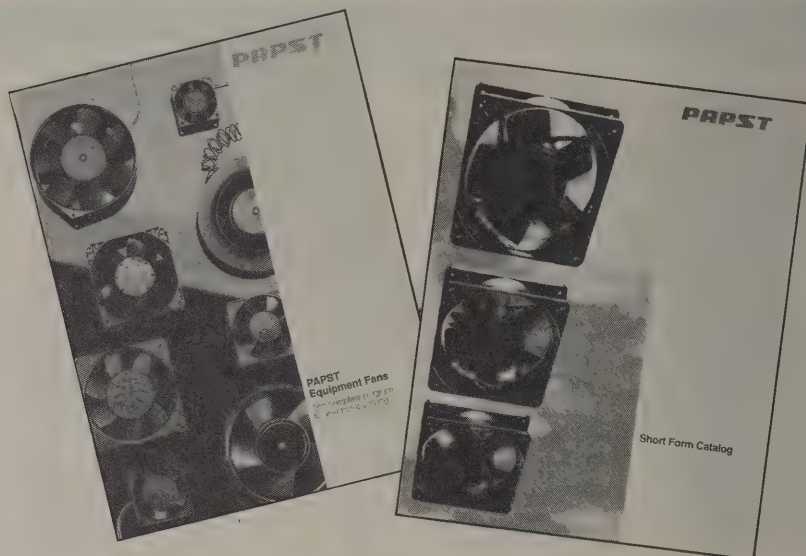
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## Flatpack Blowers for DC and AC Operation (continued)

| Dimensions                | Model        | Fig. | Max Air Flow<br>free air<br>CFM | m3/h | Nom. Voltage | Voltage Range | Noise Sound pressure<br>free air<br>dB(A) | Sound power in opt.<br>oper. range<br>bel | Bearing System<br>○ sleeve<br>● ball | Power Input<br>W | Speed<br>rpm | Perm. Temp. Range<br>C | Service Life L10 at 40°C<br>amb. temp.<br>Hours | Connections Approvals<br>* submitted for approval<br>L leads<br>T terminals |
|---------------------------|--------------|------|---------------------------------|------|--------------|---------------|-------------------------------------------|-------------------------------------------|--------------------------------------|------------------|--------------|------------------------|-------------------------------------------------|-----------------------------------------------------------------------------|
| 135x135x38<br>4.8x4.8x1.5 | RG125-19/12M | C    | 33.5                            | 57   | 12           | 7...13.2      | —                                         | 5.0                                       | ●                                    | 2.0              | 1750         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG125-19/24M | C    | 33.5                            | 57   | 24           | 12...28       | —                                         | 5.0                                       | ●                                    | 2.0              | 1750         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG125-19/12  | C    | 50.6                            | 86   | 12           | 7...13.2      | —                                         | 5.9                                       | ●                                    | 5.0              | 2550         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG125-19/24  | C    | 50.6                            | 86   | 24           | 12...28       | —                                         | 5.9                                       | ●                                    | 5.0              | 2550         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG125-19/06  | C    | 55.3                            | 94   | 115          | +/-6%         | —                                         | 6.0                                       | ●                                    | 19.0             | 2750         | -30+80                 | 40,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG125-19/56  | C    | 55.3                            | 94   | 230          | +/-6%         | —                                         | 6.0                                       | ●                                    | 19.0             | 2750         | -30+80                 | 40,000                                          | L UL*, CSA*, VDE*                                                           |
| 220x220x56<br>8.7x8.7x2.2 | RG160-28/12M | C    | 84.8                            | 144  | 12           | 7...13.2      | —                                         | 5.6                                       | ●                                    | 7.0              | 1800         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG160-28/24M | C    | 84.8                            | 144  | 24           | 12...28       | —                                         | 5.6                                       | ●                                    | 7.0              | 1800         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG160-28/12  | C    | 118.9                           | 202  | 12           | 7...13.2      | —                                         | 6.6                                       | ●                                    | 20.0             | 2750         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG160-28/24  | C    | 118.9                           | 202  | 24           | 12...28       | —                                         | 6.6                                       | ●                                    | 20.0             | 2750         | -20+70                 | 45,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG160-28/06S | C    | 131.2                           | 223  | 115          | +/-6%         | —                                         | 6.9                                       | ●                                    | 50.0             | 3050         | -30+80                 | 50,000                                          | L UL*, CSA*, VDE*                                                           |
|                           | RG160-28/56S | C    | 131.2                           | 223  | 230          | +/-6%         | —                                         | 6.9                                       | ●                                    | 50.0             | 3050         | -30+80                 | 50,000                                          | L UL*, CSA*, VDE*                                                           |

○ = APPLIED FOR

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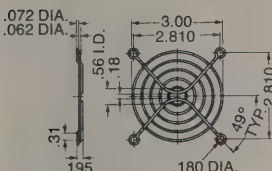
# Fans and Blowers

# PAPST

PAPST MECHATRONIC CORPORATION

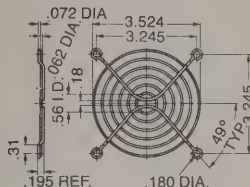
PAPST MECHATRONIC CORPORATION, Aquidneck Industrial Park, Newport, Rhode Island 02840 • Tel. (401) 849-8810 • Fax (401) 849-4640

## ACCESSORIES



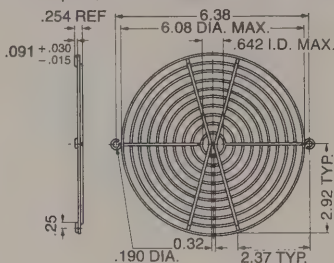
### LZ 22 N FINGER GUARD

Welded, nickel chrome-plated steel wire, .062 in. (1.6 mm) diameter. For series 8000.



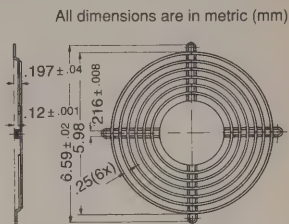
### LZ 23 FINGER GUARD

Welded, nickel chrome-plated steel wire, .062 in. (1.6 mm) diameter. For series 3000.



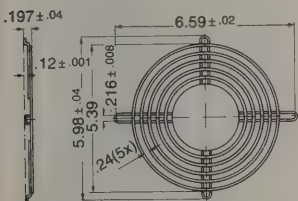
### LZ 24 FINGER GUARD

Welded, nickel-plated steel wire, 1.5 mm (.06 in.) diameter. For series 8000.



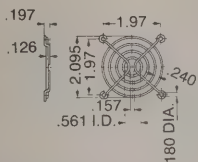
### LZ 26 FINGER GUARD

Welded, zinc-plated steel wire, .055 in. (1.4 mm) diameter. For series 6000.



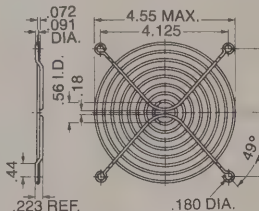
### LZ 27 FINGER GUARD

Welded, nickel-plated steel wire, .055 in. (1.4 mm) diameter. For series 7000.



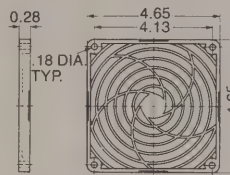
### LZ 28 FINGER GUARD

Welded, chrome-plated steel wire, 1.6 mm (.063 in.) diameter. For 800 MULTIFAN.



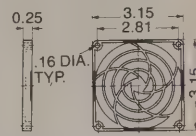
### LZ 30 FINGER GUARD

Welded, nickel chrome-plated steel wire, .072 in. (1.8 mm) diameter. For series 2500 S and 4000.



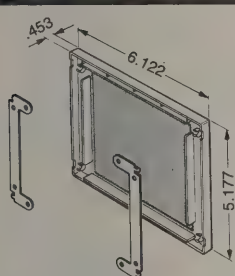
### LZ 30 P FINGER GUARD

Fiberglass reinforced plastic (PPO). For series 2500 S and 4000.



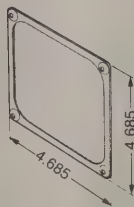
### LZ 32 P FINGER GUARD

Fiberglass reinforced plastic (PPO). For series 8000.



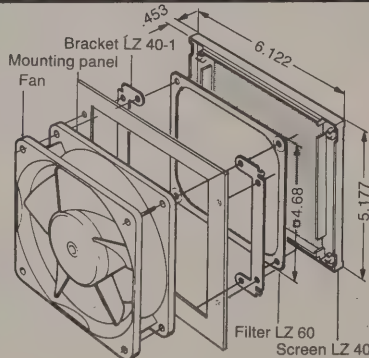
### LZ 40 N SCREEN

Frame of black fiberglass reinforced plastic (PPO), fitted with stainless steel wire mesh. LZ 40-1 included for mounting. For series 2500 S and 4000.



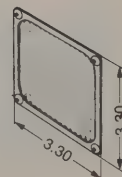
### LZ 60 FILTER

Light metal frame with crimped-on aluminum mesh. Mesh size .003 in. (0.7 mm), wire dia. .012 in. (0.3 mm). For series 2500 S and 4000.



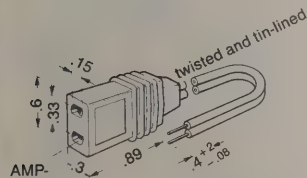
### LZ 40/60 SCREEN

For series 2500 S and 4000.



### LZ 60-8 FILTER

Light metal frame with crimped-on aluminum mesh. Mesh size .003 in. (0.7 mm), wire dia. .012 in. (0.3 mm). For series 8000.



### PLUG AND CORD SET

LZ 120: 24 in. (610 mm) long  
LZ 126: 39 in. (1000 mm) long  
LZ 130-1: 24 in. (610 mm) long, UL-approved. Connecting cable with moulded plug. PVC, black. For series 3000, 4000, 6000.



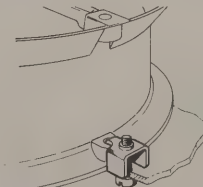
### LZ 210 SCREW CLIP

For mounting fans with self-tapping screw 6-32 UNC or 3.5 DIN 7970. Made of hardened and tempered steel, deburred; surface slightly oiled. For series 2500 S, 4000 and 7000. (Not for MULTIFAN series 4300 and 4400!)



### LZ 212 SCREW CLIP

For mounting MULTIFAN series 8300, 3300 and 4300 with self-tapping screw 3.5 DIN 7970. Spring steel, rust resistant.



### LZ 215 MOUNTING CLIP

For mounting series 6000 fans to circular panel cutouts. Zinc-plated sheet steel with M 4 screw thread.



### LZ 260 SPACER BUSHING

For fans of the MULTIFAN series 8300, 3300 and 4300. Fiberglass reinforced plastic (FBTP). For screw mounting over both fan mounting flanges.

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Fan-S Div.

Qualtek ELECTRONICS CORPORATION

## FAN ACCESSORIES

## Plastic Fan Filter Assemblies

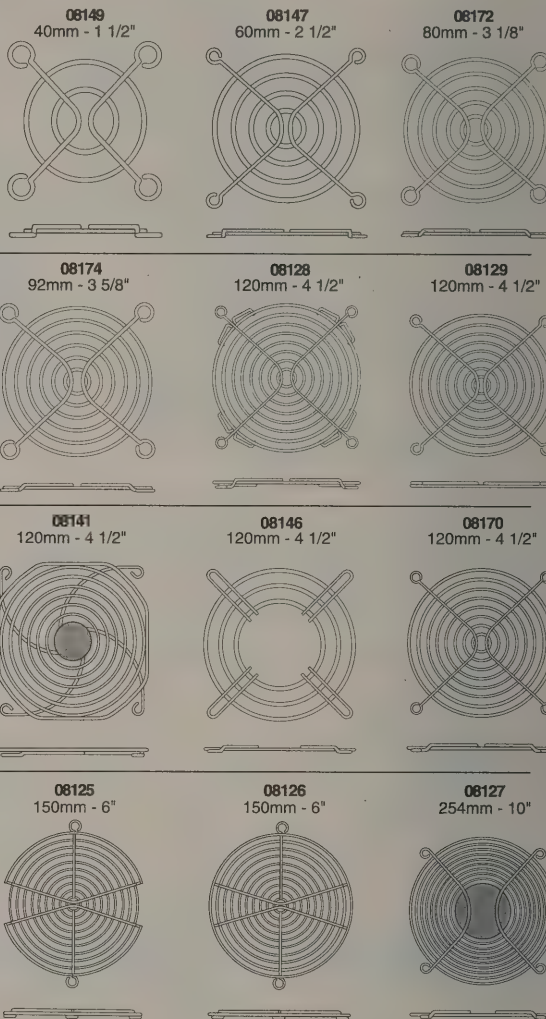
**General Description:** Fan-S offers a unique fan filter package consisting of a guard, foam filter media and media retainer, manufactured with UL listed 94-VO material for (60, 80, 92, 120mm) tubeaxial fans for the removal of dust and contaminating particles. Installation is quick and simple: four mounting screws secure the guard portion, then snap on the retainer and filter media with no extra hardware or brackets required. Guard is offered as a separate item.

| Mfr.'s<br>Type           | Description            | Size Inches |       |       |
|--------------------------|------------------------|-------------|-------|-------|
|                          |                        | H sq        | T     | M/C   |
| 60 mm - 2 1/2" FAN SIZE  |                        |             |       |       |
| 09250-F/30               | Guard, Retainer, Media | 2.36        | .25   | 1.97  |
| 09250-F/45               | Guard, Retainer, Media | 2.36        | .25   | 1.97  |
| 09250-G                  | Guard only             | 2.36        | .25   | 1.97  |
| 09250-M/30               | 30 ppi Media only      | -----       | ----- | ----- |
| 09250-M/45               | 45 ppi Media only      | -----       | ----- | ----- |
| 80 mm - 3 1/8" FAN SIZE  |                        |             |       |       |
| 09325-F/30               | Guard, Retainer, Media | 3.29        | .39   | 2.81  |
| 09325-F/45               | Guard, Retainer, Media | 3.29        | .39   | 2.81  |
| 09325-G                  | Guard only             | 3.15        | .26   | 2.81  |
| 09325-M/30               | 30 ppi Media only      | -----       | ----- | ----- |
| 09325-M/45               | 45 ppi Media only      | -----       | ----- | ----- |
| 92 mm - 3 5/8" FAN SIZE  |                        |             |       |       |
| 09362-F/30               | Guard, Retainer, Media | 3.80        | .39   | 3.25  |
| 09362-F/45               | Guard, Retainer, Media | 3.80        | .39   | 3.25  |
| 09362-G                  | Guard only             | 3.62        | .25   | 3.25  |
| 09362-M/30               | 30 ppi Media only      | -----       | ----- | ----- |
| 09362-M/45               | 45 ppi Media only      | -----       | ----- | ----- |
| 120 mm - 4 1/2" FAN SIZE |                        |             |       |       |
| 09450-F/30               | Guard, Retainer, Media | 4.87        | .42   | 4.13  |
| 09450-F/45               | Guard, Retainer, Media | 4.87        | .42   | 4.13  |
| 09450-G                  | Guard only             | 4.65        | .28   | 4.13  |
| 09450-M/30               | 30 ppi Media only      | -----       | ----- | ----- |
| 09450-M/45               | 45 ppi Media only      | -----       | ----- | ----- |



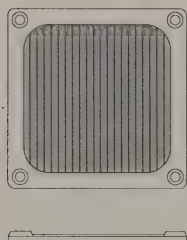
## Wire Form Fan Guards

**General Description:** The 08 series wire form fan guards are designed for use with tubeaxial fan sizes 40, 60, 80, 92, 120, 150, & 254mm. Our 1/4" maximum ring spacing designs were developed to assist our customers in complying with domestic and international safety agency requirements that are in effect today or that may develop in the future. We maintain the highest level of quality control by insuring that we use only the highest grade of materials that must pass a very stringent level of incoming inspection prior to being accepted to our manufacturing inventory.



## Aluminum Fan Filters

**General Description:** These tested and proven filters provide maximum airflow with effective filtering. Mill and irridite finishes are offered to enhance EMI/RFI shielding as well as an anodized finish for esthetic purposes. The tightly woven aluminum corrugated mesh screen is encased in a formed aluminum frame built for ruggedness and durability. The units are easily washed in a solvent or degreaser and can be mounted directly to the fan or to a panel.



H sq

| Mfr.'s Type              | Finish           | Size Inches |      |
|--------------------------|------------------|-------------|------|
| Type                     | Finish           | H sq        | M/C  |
| 80 mm - 3 1/8" FAN SIZE  |                  |             |      |
| 06325-B                  | Anodized (Black) | 3.30        | 2.81 |
| 06325-M                  | Mill (No Finish) | 3.30        | 2.81 |
| 92 mm - 3 5/8" FAN SIZE  |                  |             |      |
| 06362-B                  | Anodized (Black) | 3.62        | 3.25 |
| 06362-M                  | Mill (No Finish) | 3.62        | 3.25 |
| 120 mm - 4 1/2" FAN SIZE |                  |             |      |
| 06450-B                  | Anodized (Black) | 4.68        | 4.13 |
| 06450-M                  | Mill (No Finish) | 4.68        | 4.13 |

## Fan Power Cords

**General Description:** Fan-S offers a complete line of high quality fan power cords designed to be used with tubeaxial fans. Available in four configurations. A strain relief is incorporated for added safety. Standard cord lengths are 12", 24", 36", 40", 50", 60", and 80".

| Mfr.'s Type | Cord Length | Style                |                       |
|-------------|-------------|----------------------|-----------------------|
|             |             | 07100 Straight Style | 07145 45-Degree Style |
| 07100-12    | 12"         |                      |                       |
| 07100-24    | 24"         |                      |                       |
| 07100-36    | 36"         |                      |                       |
| 07145-12    | 12"         |                      |                       |
| 07145-24    | 24"         |                      |                       |
| 07145-36    | 36"         |                      |                       |
| 07190-12    | 12"         |                      |                       |
| 07190-24    | 24"         |                      |                       |
| 07190-36    | 36"         |                      |                       |
| 07199-12    | 12"         |                      |                       |
| 07199-24    | 24"         |                      |                       |
| 07199-36    | 36"         |                      |                       |

**Specifications:** All guards are designed to ensure low noise and safe operation. Nickel chrome plating is standard finish for all wire formed guards. All wire form guards listed above are also available in zinc or black electro deposit.

| Mfr.'s Type | For Use With Fan Size |       | Mounting Hole Centers (in) | No. Of Rings | Ring Mat'l Dia. (in) | Rib Mat'l Dia. (in) |
|-------------|-----------------------|-------|----------------------------|--------------|----------------------|---------------------|
|             | (mm)                  | (in)  |                            |              |                      |                     |
| 08149       | 40                    | 1 1/2 | 1.26                       | 2            | .063                 | .063                |
| 08147       | 60                    | 2 1/2 | 1.97                       | 4            | .063                 | .063                |
| 08172       | 80                    | 3 1/8 | 2.81                       | 5            | .063                 | .063                |
| 08174       | 92                    | 3 5/8 | 3.25                       | 6            | .063                 | .063                |
| 08128       | 120                   | 4 1/2 | 4.13                       | 8            | .071                 | .091                |
| 08129       | 120                   | 4 1/2 | 4.13                       | 8            | .071                 | .091                |
| 08141       | 120                   | 4 1/2 | 4.13                       | 7            | .063                 | .080                |
| 08146       | 120                   | 4 1/2 | 4.13                       | 3            | .063                 | .063                |
| 08170       | 120                   | 4 1/2 | 4.13                       | 8            | .071                 | .071                |
| 08125       | 150                   | 6     | 6.38                       | 10           | .071                 | .091                |
| 08126       | 150                   | 6     | 6.38                       | 10           | .071                 | .091                |
| 08127       | 254                   | 10    | 6.85                       | 9            | .091                 | .091                |

Qualtek

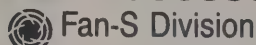
ELECTRONICS CORPORATION

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# PRODUCT PROFILE

## Fan Accessories



"FAN-S" offers a complete line of accessories for tubeaxial fans consisting of wire form fan guards, plastic fan guards, plastic fan filter assemblies, aluminum fan filters, and fan power cords with excellent quality and competitive prices. "FAN-S" accessories are designed to comply with international safety agency regulations to assure a safe and durable product. Custom designs are available upon request.

Request Product Guide Brochure #1FA

## North American Power Cords



"PPC" has available a comprehensive selection of power cords and cordsets in 2 and 3 conductor styles with various insulations, voltage ratings, colors, lengths, plugs, connectors, and shielding. "PPC" has one of the largest selections of male plugs and female connectors in the industry plus offers a full line of hospital grade power cords. Special power cord and strain relief configurations are available upon request.

Request Product Guide Brochure #1C

## International Power Cords



"PPC/EURELECTRIC" International Power Cords come in a wide range of plugs, connectors, cordage, and colors. All power cords and cordsets have been tested and approved by the major international safety agencies and each power cord is tested during final inspection. An extensive inventory is maintained to assure on-time delivery. Custom designs are available upon request.

Request Product Guide Brochure #1D

## RFI Power Line Filters



"PPC" offers a complete range of RFI power line filters designed to meet most international safety agency requirements. These filters help customers meet FCC and VDE emission standards. Our line consists of many standard configurations such as block type, filter with power line connector, and various filters with multi-function modules. Custom designs are available upon request.

Request Product Guide Brochure #1PLF

## AC Receptacles



The "PPC" line of inlets, outlets, and multi-function modules has all the major international approval marks thus assuring high safety standards. These AC receptacles help customers comply with international safety regulations. Modern production methods enable us to manufacture cost-effective and reliable components. A full range of products are maintained in inventory for quick, on-time deliveries. Custom designs are available upon request.

Request Product Guide Brochure #1A

# Qualtek ELECTRONICS CORPORATION

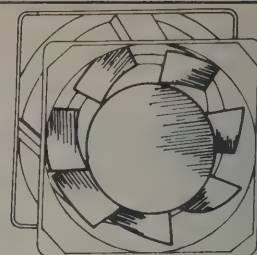
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Technical Sales Inc.

577 Main Street, Islip, New York 11751  
516-277-5454 FAX: 516-277-8375  
West Coast Sales Office: 714-283-3140

## dc brushless fans



### 25 x 25 x 10mm **NEW! MICROFAN**

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D02F12MWS | Sleeve  | 10.2-13.8       | 12            | 1.7            | 95           | 1.1       | 10000       | 0.12                               | 26.5        |

### 40 x 40 x 10mm **NEW! MINIFAN**

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D04F12MWS | Sleeve  | 10.2-13.8       | 12            | 6.3            | 60           | 0.9       | 5500        | 0.11                               | 24.3        |

### 40 x 40 x 20mm **NEW! MINIFAN**

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D04T12MWS | Sleeve  | 10.2-13.8       | 12            | 7.6            | 70           | 0.9       | 6000        | 0.145                              | 25.5        |

### 60 x 60 x 15.8mm **NEW! MINIFAN**

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D06F12MWS | Sleeve  | 10.2-13.8       | 12            | 17.8           | 160          | 1.9       | 4000        | 0.135                              | 31          |

### 60 x 60 x 25mm

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D06T12HWS | Sleeve  | 10.2-13.8       | 12            | 21.7           | 190          | 2.2       | 4500        | 0.20                               | 34          |
| D06T12LWS | Sleeve  | 10.2-13.8       | 12            | 15.9           | 90           | 1.2       | 3300        | 0.10                               | 26.7        |

### 80 x 80 x 25mm

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D08T12HWS | Sleeve  | 10.2-13.8       | 12            | 36             | 230          | 2.6       | 3000        | 0.20                               | 34          |
| D08T12LWS | Sleeve  | 10.2-13.8       | 12            | 26             | 130          | 1.6       | 2300        | 0.12                               | 25          |

### 92 x 92 x 25mm

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D09T12HWS | Sleeve  | 10.2-13.8       | 12            | 49             | 230          | 2.6       | 3200        | 0.185                              | 33.5        |
| D09T12LWS | Sleeve  | 10.2-13.8       | 12            | 41             | 130          | 1.6       | 2400        | 0.14                               | 25.8        |

### 120 x 120 x 25mm

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D12T12HWS | Sleeve  | 10.2-13.8       | 12            | 80             | 450          | 5.5       | 3000        | 0.24                               | 44          |
| D12T12LWS | Sleeve  | 10.2-13.8       | 12            | 65             | 250          | 3         | 2400        | 0.16                               | 35          |

### 120 x 120 x 38mm

| Model     | Bearing | Operating (VDC) | Nominal (VDC) | Air Flow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Static Press Inch/H <sub>2</sub> O | Noise (dBA) |
|-----------|---------|-----------------|---------------|----------------|--------------|-----------|-------------|------------------------------------|-------------|
| D12M12HWS | Sleeve  | 10.2-13.8       | 12            | 109            | 540          | 6.5       | 3000        | 0.29                               | 46          |
| D12M12LWS | Sleeve  | 10.2-13.8       | 12            | 84             | 250          | 3         | 2300        | 0.18                               | 36          |

Notes : 1. 120 x 120 x 38 is available with terminal connections instead of wire leads.

2. 120 mm, 92 mm and 80mm are available with ball bearings.

3. 24 VDC and 5 VDC fans available.

## NEW! Miniature Fan with Heat Sink

Model: M0410M-P

### FEATURES

- Suitable for 486 DX/DX2 CPU.
- Upgrade CPU Operation Speed
- Epoxy or Tape Not Required

### SPECIFICATIONS

Operating Voltage Range: 10.2-13.8

Rated Voltage: 12 VDC

Rated Current: 0.06 A

Fan Speed: 5500 RPM

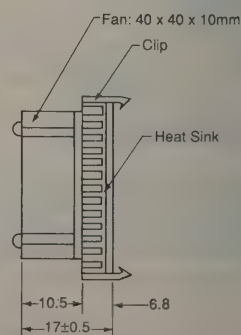
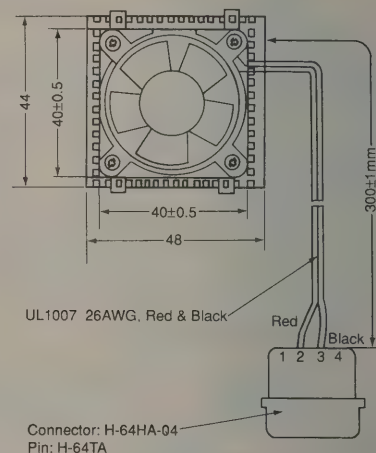
Heat Sink Material: Anodized Aluminum Alloy

Clip Material: Ultraform (POM)

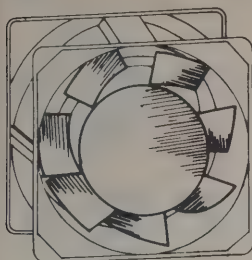
Clip Heat Distortion Temp.: 160 Deg C

Dimension: 48 x 44 x 17mm (L x W x H)

Weight: 45g







577 Main Street, Islip, New York 11751  
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West Coast Sales Office: 714-283-3140

**RODALE**  
Technical Sales Inc.

## ac axial-tube fans

### SPECIAL FEATURES FOR ALL MODELS

- ☐ Aluminum die cast frame
- ☐ Thermoplastic impeller-UL rated 94VO
- ☐ Impedance protection
- ☐ Lubricated sleeve or ball bearing construction
- ☐ 12" 24AWG or terminal
- ☐ UL Recognized
- ☐ CSA Certified
- ☐ VDE Pending
- ☐ Low speed is available on request

#### 80 x 80 x 25 mm

| Model     | Bearing        | Nominal VAC | Freq (Hz) | Airflow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Noise dBA |
|-----------|----------------|-------------|-----------|---------------|--------------|-----------|-------------|-----------|
| A08T15HWS | sleeve or ball | 115         | 50/60     | 17/21         | 120/110      | 12/11     | 2350/2800   | 29/33     |
| A08T30HWS | sleeve or ball | 220/230     | 50/60     | 17/21         | 70/70        | 14/13.5   | 2350/2800   | 29/33     |

#### 80 x 80 x 38 mm

| Model     | Bearing        | Nominal VAC | Freq (Hz) | Airflow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Noise dBA |
|-----------|----------------|-------------|-----------|---------------|--------------|-----------|-------------|-----------|
| A08M15HWS | sleeve or ball | 115         | 50/60     | 23/31         | 150/130      | 14/12     | 2300/2750   | 31/35     |
| A08M30HWS | sleeve or ball | 220/230     | 50/60     | 23/30         | 70/70        | 14/13.5   | 2300/2750   | 31/35     |

#### 92 x 92 x 25 mm

| Model     | Bearing        | Nominal VAC | Freq (Hz) | Airflow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Noise dBA |
|-----------|----------------|-------------|-----------|---------------|--------------|-----------|-------------|-----------|
| A09T15HTS | sleeve or ball | 115         | 50/60     | 29/36         | 120/110      | 13/12     | 2250/2700   | 36/39     |
| A09T30HTS | sleeve or ball | 220/230     | 50/60     | 29/36         | 70/60        | 14.5/14   | 2250/2700   | 36/39     |

#### 120 x 120 x 25 mm

| Model     | Bearing        | Nominal VAC | Freq (Hz) | Airflow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Noise dBA |
|-----------|----------------|-------------|-----------|---------------|--------------|-----------|-------------|-----------|
| A12T15HTS | sleeve or ball | 115         | 50/60     | 64/77         | 190/180      | 19/18     | 2200/2600   | 35/38     |
| A12T30HTS | sleeve or ball | 220/230     | 50/60     | 64/77         | 90/90        | 18/17     | 2100/2500   | 43/45     |

#### 120 x 120 x 38 mm

| Model     | Bearing        | Nominal VAC | Freq (Hz) | Airflow (CFM) | Current (mA) | Power (W) | Speed (RPM) | Noise dBA |
|-----------|----------------|-------------|-----------|---------------|--------------|-----------|-------------|-----------|
| A12M15XTS | sleeve or ball | 115         | 50/60     | 95/115        | 270/240      | 22/20     | 2700/3100   | 44/49     |
| A12M30XTS | sleeve or ball | 220/230     | 50/60     | 95/115        | 130/130      | 22/21     | 2700/3100   | 44/49     |
| A12M15HTS | sleeve or ball | 115         | 50/60     | 85/105        | 210/180      | 20/18     | 2550/2900   | 43/48     |
| A12M30HTS | sleeve or ball | 220/230     | 50/60     | 85/105        | 120/110      | 20/19     | 2550/2900   | 43/48     |
| A12M15MTS | sleeve or ball | 115         | 50/60     | 78/84         | 170/140      | 17/16     | 2300/2500   | 39/42     |
| A12M30MTS | sleeve or ball | 220/230     | 50/60     | 78/84         | 90/80        | 16/15     | 2300/2500   | 39/42     |
| A12M15LTS | sleeve or ball | 115         | 50/60     | 70/76         | 120/110      | 11/11     | 2000/2200   | 36/38     |
| A12M30LTS | sleeve or ball | 220/230     | 50/60     | 70/76         | 70/60        | 10/10     | 2000/2200   | 36/38     |

Notes: 1. 120mm and 92mm AC fans available with wire leads or terminals.  
2. 120 x 120 x 38mm available in skeleton model.

## Also available...fan accessories

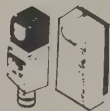
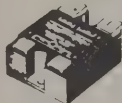
### FINGER GUARDS-

Wireformed nickel chrome plated guards to fit 40mm to 120mm sizes. All guards are designed

to ensure safe operation and comply with UL, CSA and VDE requirements.

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STOP****ORDERS PLACED BY 3 P.M. ARE SHIPPED THE SAME DAY****1  
STOP**

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RELAYS****TERMINAL BLOCKS****CABINETS**

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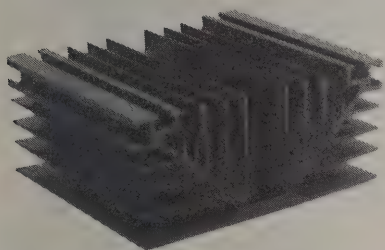


# R-THETA INC.

## The Future of Thermal Management

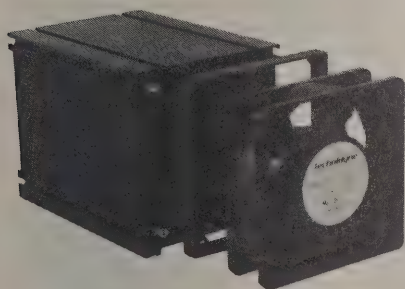
R-Theta's vertical integration ensures production to the highest professional standards based on the most sophisticated customer-driven engineering techniques.

### EXTRUDED HEATSINKS

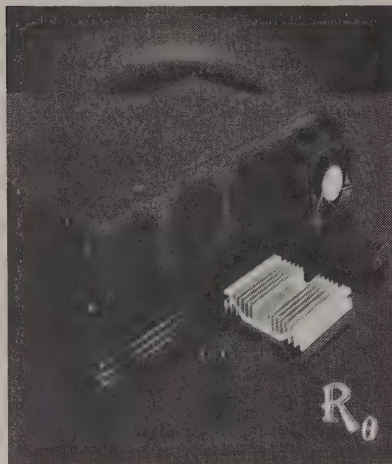


Because you require prompt delivery, R-Theta stocks a broad range of standard heatsink profiles. Employing state-of-the-art manufacturing technology, R-Theta has the capacity to handle any of your extruded heatsink requirements and to suggest cost-effective/thermally efficient solutions for the most complex of thermal management applications.

### STANDARD HEATSINKS for ISO-BASE SEMICONDUCTORS

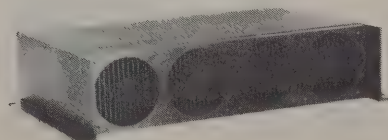


In order to maximize performance in the high density environment of high power hybrid semiconductors circuits commonly dubbed "ISO-Base", R-Theta can provide customized assemblies which permit the use of one heatsink to cool many devices.



R-Theta's latest heatsink and electronics thermal management catalog details one of North America's most innovative and comprehensive product ranges of heatsinks and related products. Unique to R-Theta, this catalog contains an in-depth guide that provides all the methodology and data needed to effectively specify the right heatsinks for every application.

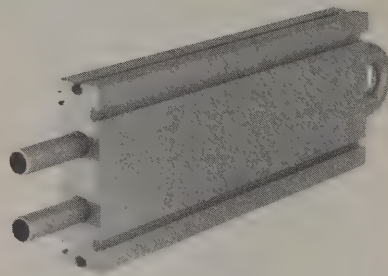
### FABFIN™



FABFIN is a registered trademark of R-Theta Inc.

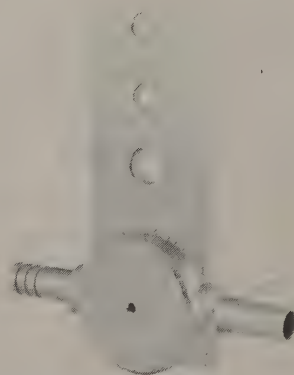
Ultra-high-efficiency fabricated heatsinks using a proprietary metal-to-metal swaging process have been developed by R-Theta. Used to remove heat from power semiconductor devices in forced convection applications, FABFIN overcomes limitations imposed on conventional heatsinks by the extrusion process. R-Theta's FABFIN achieves ratios in excess of 20:1 to dramatically increase heat removal efficiency.

### LIQUID COOLERS



R-Theta's range of liquid coolers combines both the popular 80mm and 93mm mounting centers in a single assembly. Simplified mounting in the cabinet or enclosure is possible by using either the side "T" slots or the "T" slots on the opposite side to the semiconductors mounting surface.

### HOCKEY PUK COOLERS



Highly efficient "Hockey Puk" Liquid Coolers with high conductivity copper bodies meet the most demanding thermal dissipation requirements. These liquid coolers are one hundred times more effective than the standard air-cooled heatsink.

# R-THETA INC.

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# AIR CONDITIONERS

## Temperature Control...

## Solid State Cooling For Electronic Enclosures

### • Environmentally Safe (No CFC's!)

- Designed to excel in high ambients
- New European Models 230 VAC, 50 Hz

Thermoelectric Air Conditioners are a solid state method of refrigeration, which eliminates the need for a compressor, refrigerant fluids or piping. The only moving parts are highly reliable fans used to dissipate output heat to the ambient air. These air conditioners can be applied in computers, machine tool controls, instrumentation & electronics for hostile environment protection. They offer design flexibility in a wide range of industrial and consumer applications where compactness and reliability are key.

#### Features:

- No load cooling to  $-5^{\circ}\text{F}$  ( $-20^{\circ}\text{C}$ ) at room temperature
- Lightweight, compact designs
- No compressor, no fluids, no coils
- Closed system protection from dust, chips, & moisture
- No moving parts except fans, means high reliability
- Low vibration, noise & maintenance
- Metal finishes resist corrosion
- Operates in any orientation - horizontal, vertical, etc.
- All models available from stock

#### Other Products:

- Liquid cooled air conditioners rated to 5000 BTUH
- Thermoelectric cooling modules
- Temperature controllers
- Standard DC power supplies
- Solid State Liquid Chillers

**One Year Warranty on Parts and Labor**  
**24 Hour Shipment on In-Stock Items**

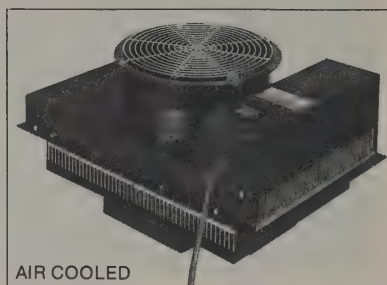
#### AHP-1801

#### AHP-1801X

(NEMA 12, 4, 4X)

1500 BTUH Cooling

Input: 115/230 VAC, 50/60 Hz  
 Temperature control included



**NEW**

AIR COOLED

\*NOTE:  
 AHP-1801  
 (NEMA 12)  
 AHP-1801X  
 (NEMA 4,4X)

#### AHP-1700

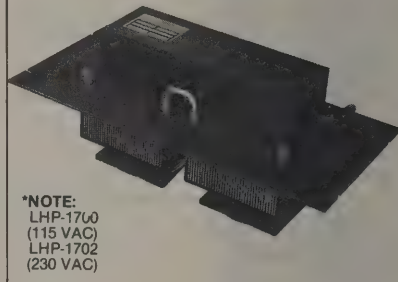
(NEMA 12)

1100 BTUH Cooling

19" Rack Mount

Input: 115 VAC

LIQUID COOLED



\*NOTE:  
 LHP-1700  
 (115 VAC)  
 LHP-1702  
 (230 VAC)

#### LHP-1700

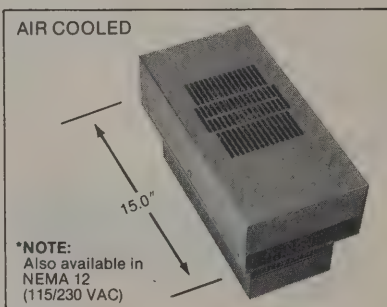
#### LHP-1702

(NEMA 12)

1500 BTUH Cooling

Adaptable to explosion proof  
 and NEMA 4, 4X Applications.  
 (Consult Factory)

AIR COOLED



\*NOTE:  
 Also available in  
 NEMA 12  
 (115/230 VAC)

#### AHP-1200X

Industrially Hardened NEMA 4X  
 Withstands corrosion, shock  
 and vibration.

600 BTUH Cooling

Input: 115 VAC

Max. Ambient  $80^{\circ}\text{C}$

Gasket and Mounting

Hardware Included

AIR COOLED



#### AHP-301

Compact

Input: 115/230 VAC

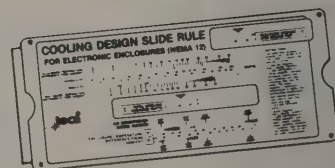
200 BTU/HR Cooling

Gasket and Mounting

Hardware Included

"Our Smallest Air Conditioner  
 Designed for AC Input"

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 Cooling Design Slide Rule**



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All Products Made in U.S.A.



# New Cooling Products...

Designed and Built for NEMA 12, 13 & 4X

**Compact,  
Reliable  
Solid State  
Air Conditioner**

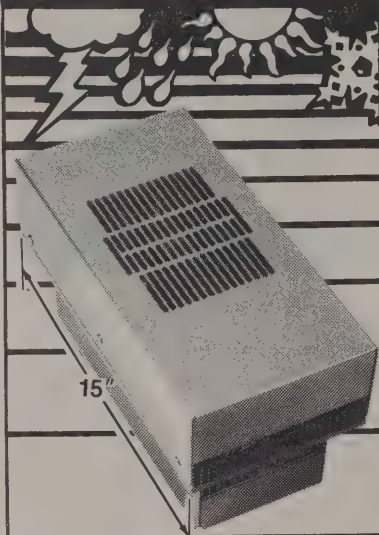


**AHP-1700**

Designed and built for effective, dependable cooling in NEMA 12 applications where size limitation is a problem. It contains no compressor, refrigerant, or piping; the highly reliable fans are its only moving parts.

- For computers, machine tools, electronics, instrumentation
- No load cooling to  $-5^{\circ}\text{C}$  at room temperature; 1100 BTU/HR
- Closed system protects from dust, metal chips, moisture
- Operates in any position—horizontal, vertical, etc.
- Low vibration and noise; minimal maintenance
- Weighs less than 50 pounds; mounts on standard 19" rack
- Requires only 110 VAC, 6 amp power

**AIR CONDITIONER  
INDUSTRIALLY  
HARDENED  
NEMA 4X**



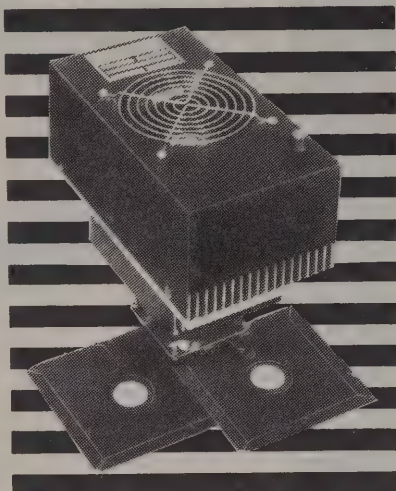
**AHP-1200X**

**SOLID STATE AIR CONDITIONER  
PROVIDES TOTAL PROTECTION  
FROM HEAT BUILD-UP IN  
ELECTRONIC ENCLOSURES**

AHP-1200X is the most rugged fractional ton air conditioner for electronic enclosure cooling. Ideal in NEMA-4X environments. Withstands high temperature and humidity, harsh factory environments, shock and vibration. Weather resistant from corrosive salt, water and ice. Entirely sealed and gasketed. Anodized aluminum cabinet is lightweight and durable. Highly reliable fans are the only moving parts. The AHP-1200X thrives in temperatures of  $-20^{\circ}\text{F}$  to  $+175^{\circ}\text{F}$ .

- Nominal heat removal 500 BTUH. (Enclosure air temperature equal to ambient)
- Requires only 115 VAC, 2.5 amp
- No fluorocarbons, compressor, or piping
- Compact—Only 15.0" x 7.4" x 8.0"
- No moving parts except fans (Military grade (MIL-901) fan on exterior side)
- Unloaded enclosure air cooling to  $60^{\circ}\text{F}$  below ambient
- Neoprene gasket included for pressurized seal

**COOLING  
PROTECTION  
FOR SMALL  
ENCLOSURES**



**AHP-301FF**

**Solid State Air Conditioner  
Dependable Cooling  
To Prevent Overheating**

Built to provide powerful, reliable cooling for computers, instrumentation and sensitive electronic systems. Electronics will stay cool and clean, free from dust, dirt and moisture. Ideal in NEMA 12 environments. Maintains efficient operating temperatures and clean air within the electronic enclosure.

- Either 115 VAC or 230 VAC, 50/60Hz Input
- Nominal heat removal 200 BTUH.
- Compact - Only 10.0"x5.63"x8.47"
- No moving parts except highly reliable fans
- Mounting hardware included
- Gasket for dust tight seal included
- Operates in any orientation — horizontal, vertical, etc.
- Cools below ambient

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**the experts in solid state cooling**

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ThermoElectric Cooling America Corporation

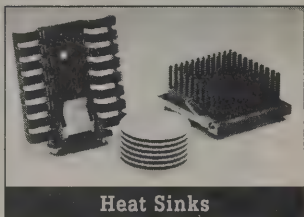
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# Thermalloy

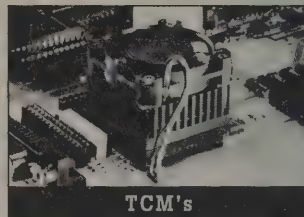
The Innovator in semiconductor accessories



**Heat Sinks**



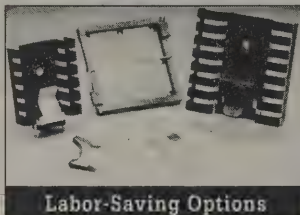
**Extrusions**



**TCM's**



**Insulators**



**Labor-Saving Options**



**Plastics/Accessories**

## HEAT SINKS

Extensive stocked selection of:

- Extruded
- Stamped
- Radial Fin

Custom design—excellent engineering support available

## EXTRUSIONS

- Over 600 extrusion shapes tooled, many normally stocked

## INSULATORS

- Aluminum Nitride
- Thermalsil™ (silicone rubber)
- Thermalfilm™ (polyimide plastic film)
- Mica
- Aluminum Oxide Ceramic
- Beryllium Oxide Ceramic
- Hard Anodized Aluminum
- Insul-Cote™ (packaged, pre-coated insulators for easy installation)

## TCM's™

(Thermalloy Cooling Modules)

- Pin fin heat sink with attached DC fan. Cools PGA's at near recirculated liquid efficiency.

## LABOR-SAVING OPTIONS

- PGA E-Z Mount™
- Thermalclips
- Solderable: Mounting tabs, alignment pads, nuts, studs, and roll pins
- Clinch nuts

## PLASTICS/ACCESSORIES

- Card guides, snap-on ejectors and pullers
- Mounting pads & Stanchion pads
- Transistor sockets
- Shoulder washers
- Bushings
- TO-3 insulating covers
- Mounting kits
- Thermal compounds

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**Thermalloy Inc.**

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FAX: 214-241-4656

**Thermalloy International Ltd.**

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Earlstrees Industrial Estate  
Corby, Northamptonshire  
NN17 2JL, England  
TEL: 0536-60041  
TLX: 341533  
FAX: 0536-61414

**Thermalloy Ltd.**

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Pui to Road T.M.T.L. 76, Tuen Mun,  
N.T. Kowloon, Hong Kong  
TEL: 852-4647312  
TLX: 49200 THMYL HX  
FAX: 852-4563047



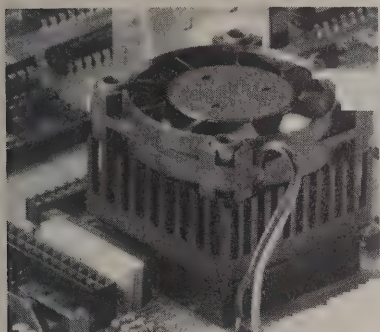
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## TCM™: THERMALLOY COOLING MODULES FOR MICROPROCESSORS

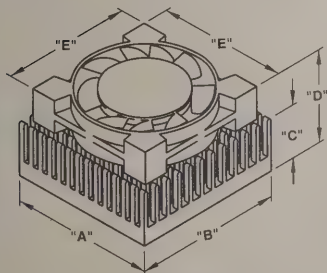
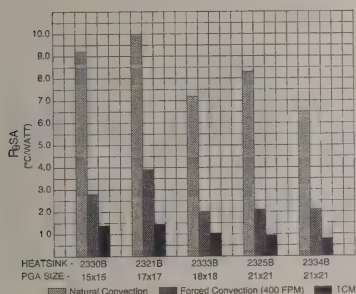


### Innovative TCM: High performance pin fin heat sink with DC fan attached

- Significant volumetric space reduction with direct impingement down airflow compared to natural convection.
- Thermal performance approaching recirculated liquid.
- High performance with relatively low cost.
- Fans available in 5 or 12 volts.
- Typical DC brushless, ball-bearing fans have life expectancies of 50,000 hours.
- TCM assembly may be used with Thermalloy's innovative PGA E-Z Mount\* or epoxy bonded to pin grid arrays. May also be special ordered with Chomerics Thermattach™ \*\* 405 thermally conductive adhesive tapes.
- May be used in conjunction with PGA sockets, such as AMP 382624-1 and -2.

\* Please request brochure #GA2-DS5-9302 or Thermalloy's full-line catalog for information on the PGA E-Z Mount™ attachment method.

\*\* "Thermattach" is a trademark of the Chomerics company.



Note: Fan placement may be asymmetrical on heat sink.

### FAN DATA

| Fan Voltage | Rated Current (A) | Air Volume cfm (m³/min) | Static Pressure In. H₂O (mm/H₂O) | Noise (dBA @ 1m) | Weight Lbs. (grams) |
|-------------|-------------------|-------------------------|----------------------------------|------------------|---------------------|
| 12 volt     | 0.09              | 4.2 (0.12)              | 0.126 (3.2)                      | 26               | 0.046 (21)          |
| 5 volt      | 0.18              | 3.5 (0.10)              | 0.091 (2.3)                      | 30               | 0.040 (18)          |

Note: The TCM thermal performance shown is for the 12 volt fan. TCM performance using the 5 volt fan is 5-10% lower as verified by test data. The fan cfm varies directly as a cube root of the input horsepower. (Test data is available from the factory.) For further information on basic TCM performance, please request EIR #91-1002.

### AVAILABLE TCM'S

| Base Model   | Nominal Dimensions |                  |                  |                  |                  | PGA Size               |
|--------------|--------------------|------------------|------------------|------------------|------------------|------------------------|
|              | A                  | B                | C                | D                | E                |                        |
| 2330B-TCM    | 1.495<br>(37.97)   | 1.500<br>(38.10) | 0.650<br>(16.51) | 1.045<br>(26.54) | 1.575<br>(40.00) | 15 x 15                |
| 2321B-TCM*   | 1.625<br>(41.28)   | 1.700<br>(43.18) | 0.350<br>(8.89)  | 0.745<br>(18.92) | 1.575<br>(40.00) | 17 x 17 and<br>18 x 18 |
| 2333B-TCM**  | 1.755<br>(44.58)   | 1.800<br>(45.72) | 0.650<br>(16.51) | 1.045<br>(26.54) | 1.575<br>(40.00) | 17 x 17 and<br>18 x 18 |
| 2325B-TCM*** | 2.015<br>(51.18)   | 2.100<br>(53.34) | 0.400<br>(10.16) | 0.795<br>(20.19) | 1.575<br>(40.00) | 21 x 21                |
| 2334B-TCM*** | 2.015<br>(51.18)   | 2.100<br>(53.34) | 0.650<br>(16.51) | 1.045<br>(26.54) | 1.575<br>(40.00) | 21 x 21                |

Patent Numbers on pin fin heat sinks: U.S. Patent Nos. 4,879,891 and 4,884,331, U.K. Patent No. 2204181

\* Cools Intel i486, i860, i960, AMD AM29000, & Motorola 68040

\*\* Cools Motorola 68040

\*\*\* Cools Intel Pentium™ Processor  
(Pentium is a trademark of Intel Corporation)

### ORDERING INFORMATION

**To Order:** Add the following suffixes to the base TCM number in the order given below;

Suffix 1: "4" (fan size 40mm x 40mm x 10mm)

Suffix 2: "2" for 12 volt fan; "5" for 5 volt fan

Suffix 3: "S" (indicates specific fan-all current TCM's use "S")

Suffix 4: "-FS" for frame and spring PGA E-Z Mount; "-SS" for shoe and spring

**Example:** 2321B-TCM42S-FS

**Notes:** For sample quantities, please contact your local Thermalloy distributor. TCM's ordered with the PGA E-Z Mount assembly are supplied with the spring permanently mounted between the heat sink and fan.



610 East Tenth Street  
Oakland, CA 94606  
FAX: (510) 452-3620

# BRILL ELECTRONICS

1220 Olympic Boulevard  
Santa Monica, CA 90404  
Tel: (310) 452-8002



**(510) 834-5888**

## ANTENNAS

Antenna Specialist  
Cablewave Hardware  
Decibel Products

## AUDIO PRODUCTS

Argos  
Atlas  
Bogen  
Quam  
Shure  
Switchcraft  
University

## BATTERIES

Duracell  
Eveready  
Kodak

## CABINETS

BUD  
Calif. Chassis

## CAPACITORS

R.G. Allen  
E.F. Johnson  
Mallory  
Sprague

## CIRCUIT BREAKERS

Heinemann  
Potter Brumfield  
Waber Electric

## CONNECTORS

AMP  
Amphenol  
Cablewave  
E.F. Johnson  
Kulka  
Manhattan  
Paladin  
Panduit  
Pomona  
Superior  
Switchcraft

## COUNTERS

Hecon  
Kessler-Ellis  
Redington  
Stemco

## FIBER OPTICS

AMP  
Amphenol  
Belden Cable  
Madison

## FILTERS

Curtis  
J.W. Miller  
Mallory  
Stancor

## FUSES

Bussmann  
Littelfuse  
U.S.D.

## HARDWARE

3-M  
Alta Boots  
AMP  
Ico Rally  
E.F. Johnson  
G.C. Electronics  
Harvey Hubbell  
Kulka Smith  
OK Tools  
Panduit  
Vector

## LAMPS & LIGHTING

Eveready  
Chicago Miniature  
IDI  
IEE  
Ledu  
Luxo  
Leecraft  
Mag-Lite  
Stanley

## OUTLET STRIPS

Waber

## POTS & CONTROLS

Bourns  
Clarostat  
Ohmite

## POWER SUPPLIES & TRANSFORMERS

Dormeyer  
Microtran  
Sola  
Stancor  
Superior  
Triad  
Tripp-lite  
UTC  
Waber

## RELAYS

Aleph International  
Allied Controls  
American Zettler  
Aromat  
C.P. Clare  
Crydom  
Coto  
Gordos  
Guardian  
ITT  
Line Electric  
Magnecraft  
Master Electronics  
Midtex  
Omron  
Potter & Brumfield  
Sigma  
Struthers-Dunn  
Theta-J

## RESISTORS & NETWORKS

R.G. Allen  
Bourns  
Clarostat  
Mallory  
Ohmite

## SEMICONDUCTORS

Semi Inc.  
Semitronics

## SWITCHES

Arrow Hart  
AMP  
C & K  
Cherry Electric  
G.C.  
McGill  
Omron  
Oslo  
Otto  
Switchcraft  
Unimax

## TERMINAL BLOCKS

AMP  
Buchanan  
Curtis  
Electrovert  
Magnum  
RDI  
Siemen  
USD  
Vernitron-Beau  
Weidmuller

## TEST EQUIPMENT

Fluke  
Simpson Electric  
Triplet

## TIMERS

Agastat  
Amperite  
Industrial Timer  
Magnecraft  
Master Electronics  
Midtex  
Omron  
Potter & Brumfield  
SSAC

## TOOLS & SOLDER

AMP  
Blazer  
Ersin  
Kester  
OK Machine & Tool  
Paladin  
Portasol  
Ungar  
Weller  
Xcelite  
Helper Winch

## TRANSFORMERS

Dormeyer  
Jeffersons  
Microtran  
Sola  
Stancor  
Thordarson  
Triad  
U.T.C.

## TUBES

Eimac  
G.E.  
National  
Raytheon  
R.C.A.  
Varian (Klystrons)

## TUBING

Alpha  
Electrovert  
Heli-Tube  
Panduit

## WIRE & CABLE

Alpha  
Belden  
Cablewave  
Carol  
Iboco  
Madison  
Manhattan  
Quabbin



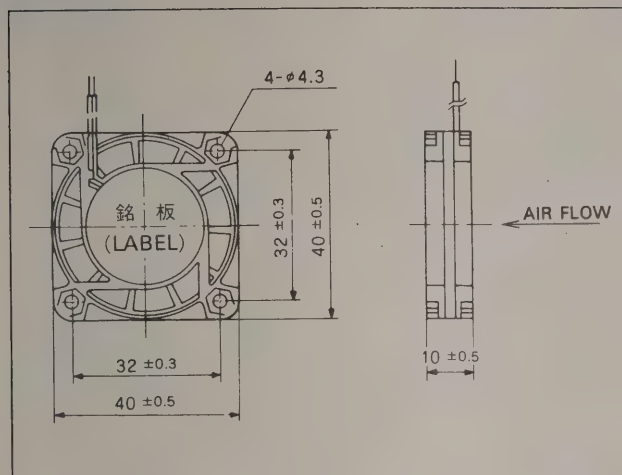
**U.S. TOYO FAN CORP.**



**BELDEN**



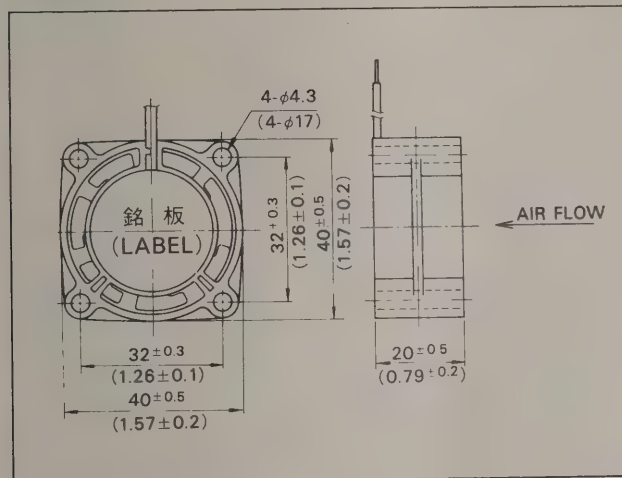
## 0410



### Specifications

| Item                                      | 0410-12                                              |                       |
|-------------------------------------------|------------------------------------------------------|-----------------------|
| Rated voltage (DC V)                      | 12                                                   |                       |
| Ambient voltage (DC V)                    | 10.2~13.8                                            |                       |
| Rated current (A)                         | 0.08                                                 |                       |
| Rated input (W)                           | 1.0                                                  |                       |
| Max. air volume (m <sup>3</sup> /min)     | 0.1                                                  |                       |
| Max. static pressure (mmH <sub>2</sub> O) | 3.0                                                  |                       |
| Noise (A) 1m (dB)                         | 30                                                   |                       |
| Operating temp. range                     | -10°C~+60°C                                          | (Room humidity)       |
| Storage temp. range                       | -40°C~+70°C                                          | (Room humidity)       |
| Life expectancy (H)                       | 30,000                                               | (Room temp.-humidity) |
| Insulation resistance                     | Over 10MΩ (between supply lead and flame) at DC 500V |                       |
| Voltage-withstand                         | AC 500V 1 minute (between supply lead and flame)     |                       |
| Bearings                                  | Ball bearing is used                                 |                       |
| Lead wire                                 | 12V ⊕Red ⊖Black                                      | UL1007 AWG26          |
|                                           | 24V ⊕Red ⊖Blue                                       |                       |
| Weight (g)                                | 20                                                   |                       |

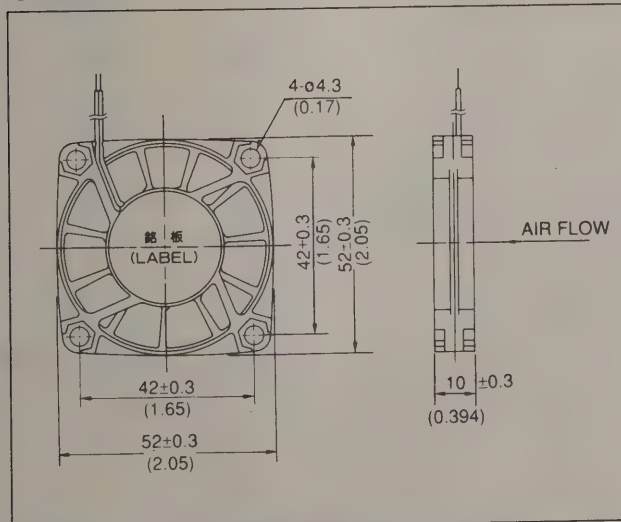
## 0420



### Specifications

| Item                                           | 0420-12                                              | 0420-24               |
|------------------------------------------------|------------------------------------------------------|-----------------------|
| Rated voltage (DC V)                           | 12                                                   | 24                    |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6             |
| Rated current (A) MAX.                         | 0.15                                                 | 0.09                  |
| Rated input (W) MAX.                           | 1.8                                                  | 2.2                   |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 0.14                                                 | 0.14                  |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 3.5                                                  | 3.5                   |
| Noise (A) 1m (dB) MAX.                         | 35                                                   | 35                    |
| Operating temp. range                          | -10°C~+60°C                                          | (Room humidity)       |
| Storage temp. range                            | -40°C~+70°C                                          | (Room humidity)       |
| Life expectancy (H)                            | 30,000                                               | (Room temp.-humidity) |
| Insulation resistance                          | Over 10MΩ (between supply lead and flame) at DC 500V |                       |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and flame)     |                       |
| Bearings                                       | Ball bearing is used                                 |                       |
| Lead wire                                      | 12V ⊕Red ⊖Black                                      | UL1007 AWG26          |
|                                                | 24V ⊕Red ⊖Blue                                       |                       |
| Weight (g)                                     | 30                                                   |                       |

## 0510



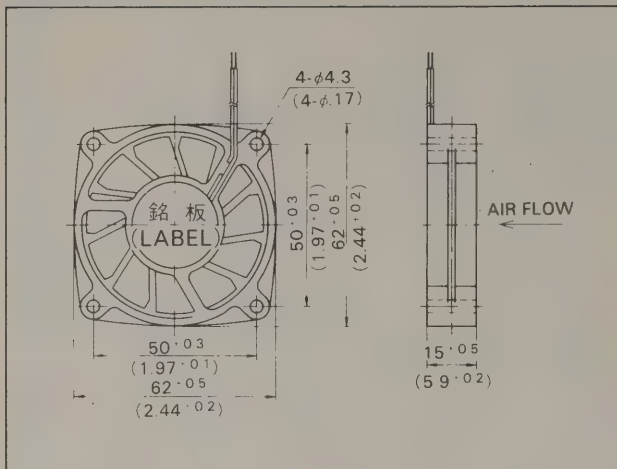
### Specifications

| Item                                                            | 0510                                                 |                         |
|-----------------------------------------------------------------|------------------------------------------------------|-------------------------|
| Rated voltage (DC V)                                            | 12                                                   |                         |
| Air volume type                                                 | M                                                    |                         |
| Rated current (A) MAX.                                          | 0.1                                                  |                         |
| Rated input (W) MAX.                                            | 1.2                                                  |                         |
| Max. air volume (m <sup>3</sup> /min) (CFM)                     | 0.22                                                 |                         |
| Max. static pressure (mmH <sub>2</sub> O) (IN.H <sub>2</sub> O) | 2.3                                                  |                         |
| Noise (A) 1m (dB) MAX.                                          | 29                                                   | 35                      |
| Operating temp. range                                           | -10°C~+60°C                                          | (Room humidity)         |
| Storage temp. range                                             | -40°C~+70°C                                          | (Room humidity)         |
| Life expectancy (H)                                             | 30,000                                               | (Room temp.-humidity)   |
| Insulation resistance                                           | Over 10MΩ (between supply lead and flame) at DC 500V |                         |
| Voltage-withstand                                               | AC 500V 1 minute (between supply lead and flame)     |                         |
| Bearings                                                        | Ball bearing is used                                 |                         |
| Lead wire                                                       | 12V Red                                              | Black UL1007&2468 AWG26 |
|                                                                 | 24V Red                                              | Blue                    |
| Weight (g)                                                      | 23                                                   |                         |



# ULTRA-THIN, HIGH FLOW DC FANS

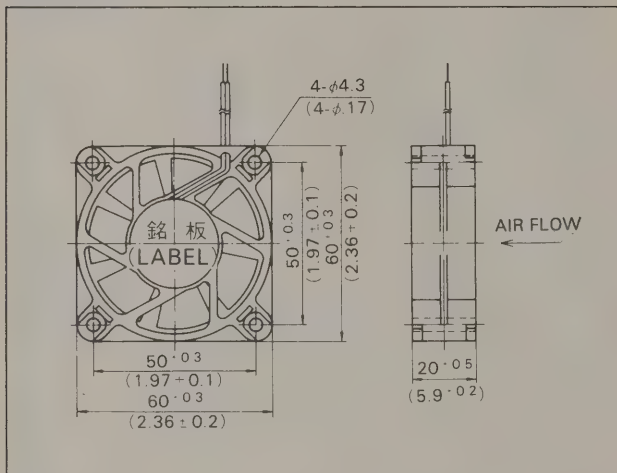
## 0615



## Specifications

| Item                                           | 0615-12                                              | 0615-24   |
|------------------------------------------------|------------------------------------------------------|-----------|
| Rated voltage (DC V)                           | 12                                                   | 24        |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6 |
| Rated current (A) MAX.                         | 0.15                                                 | 0.1       |
| Rated input (W) MAX.                           | 1.8                                                  | 2.4       |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 0.32                                                 | 0.3       |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 2.0                                                  | 1.8       |
| (A) 1m (dB) MAX.                               | 33                                                   | 33        |
| Noise (A) at 1m                                |                                                      |           |
| Operating temp. range                          | -10°C~+60°C (Room humidity)                          |           |
| Storage temp. range                            | -40°C~+70°C (Room humidity)                          |           |
| Life expectancy (H)                            | 30,000 (Room temp.-humidity)                         |           |
| Insulation resistance                          | Over 10MΩ (between supply lead and frame) at DC 500V |           |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and frame)     |           |
| Bearings                                       | Ball bearings and sleeve bearing                     |           |
| Lead wire                                      | ⊕Red ⊖Black UL1007 AWG26                             |           |
| Weight (g)                                     | 45                                                   |           |

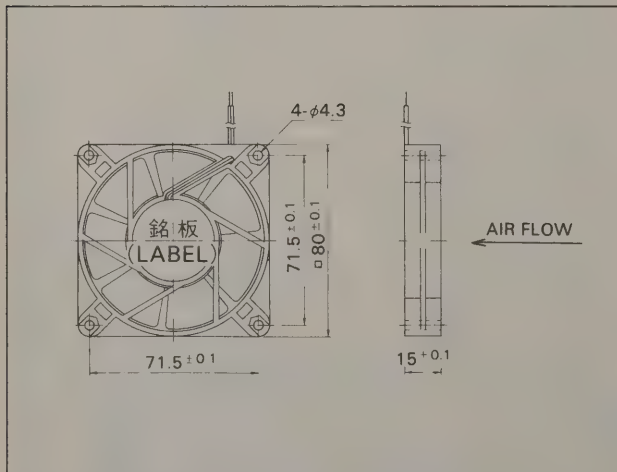
## 0620



## Specifications

| Item                                           | 0620-12                                              | 0620-24   |
|------------------------------------------------|------------------------------------------------------|-----------|
| Rated voltage (DC V)                           | 12                                                   | 24        |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6 |
| Rated current (A) MAX.                         | 0.16                                                 | 0.1       |
| Rated input (W) MAX.                           | 2.0                                                  | 2.4       |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 0.39                                                 | 0.39      |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 3.6                                                  | 3.6       |
| (A) 1m (dB) MAX.                               | 33                                                   | 33        |
| Noise (A) at 1m                                |                                                      |           |
| Operating temp. range                          | -10°C~+60°C (Room humidity)                          |           |
| Storage temp. range                            | -40°C~+70°C (Room humidity)                          |           |
| Life expectancy (H)                            | 30,000 (Room temp.-humidity)                         |           |
| Insulation resistance                          | Over 10MΩ (between supply lead and frame) at DC 500V |           |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and frame)     |           |
| Bearings                                       | Ball bearings and sleeve bearing                     |           |
| Lead wire                                      | ⊕Red ⊖Black UL1007 AWG26                             |           |
| Weight (g)                                     | 50                                                   |           |

## 0815



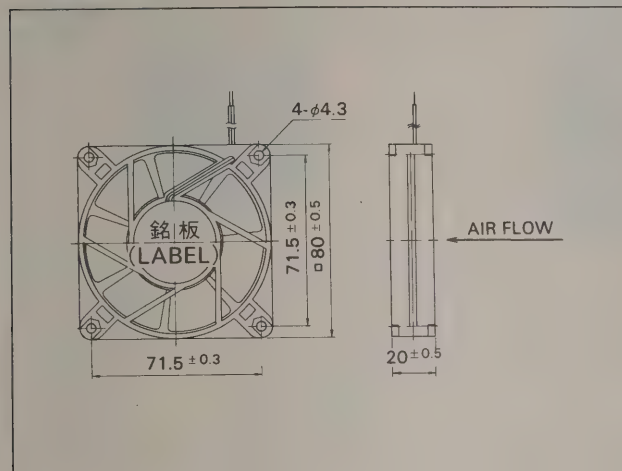
## Specifications

| Item                                           | 0815-12                                              | 0815-24   |
|------------------------------------------------|------------------------------------------------------|-----------|
| Rated voltage (DC V)                           | 12                                                   | 24        |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6 |
| Rated current (A) MAX.                         | 0.16                                                 | 0.9       |
| Rated input (W) MAX.                           | 2.0                                                  | 2.2       |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 0.6                                                  | 0.6       |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 3.0                                                  | 3.0       |
| (A) 1m (dB) MAX.                               | 28                                                   | 28        |
| Noise (A) at 1m                                |                                                      |           |
| Operating temp. range                          | -10°C~+60°C (Room humidity)                          |           |
| Storage temp. range                            | -40°C~+70°C (Room humidity)                          |           |
| Life expectancy (H)                            | 30,000 (Room temp.-humidity)                         |           |
| Insulation resistance                          | Over 10MΩ (between supply lead and frame) at DC 500V |           |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and frame)     |           |
| Bearings                                       | Ball bearings and sleeve bearing                     |           |
| Lead wire                                      | ⊕Red ⊖Black UL1007 AWG26                             |           |
| Weight (g)                                     | 75                                                   |           |

TUS Electronics Co., Ltd. / Musashino Corporation • Daini Tohchiku Bldg. 2-14-18, Shibaura, Minato-ku, Tokyo, Japan. Tel (03) 3453-3351 FAX: (03) 3453-3350  
 USA: Applied Marketing & Sales • 22612 Albares, Mission Viejo, CA 92691 Tel (714) 458-1155 FAX: (714) 458-1166



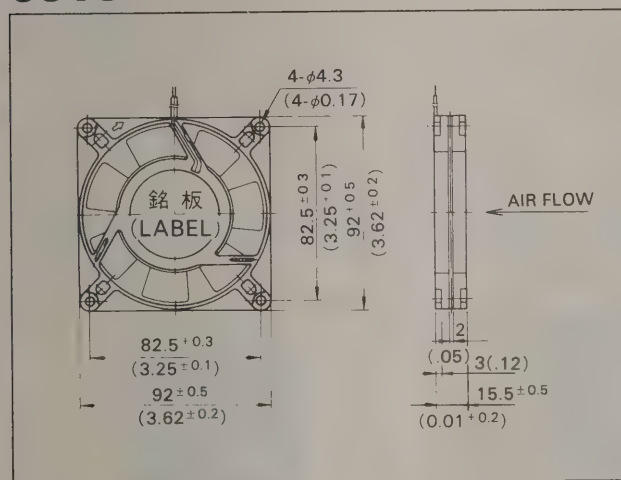
## 0820



### Specifications

| Item                                           | 0820-12                                              | 0820-24   |
|------------------------------------------------|------------------------------------------------------|-----------|
| Rated voltage (DC V)                           | 12                                                   | 24        |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6 |
| Rated current (A) MAX.                         | 0.2                                                  | 0.11      |
| Rated input (W) MAX.                           | 2.4                                                  | 2.7       |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 0.7                                                  | 0.7       |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 2.4                                                  | 2.4       |
| (A) 1m (dB) MAX.                               | 30                                                   | 30        |
| Noise (A) at 1m                                |                                                      |           |
| Operating temp. range                          | -10°C~+60°C (Room humidity)                          |           |
| Storage temp. range                            | -40°C~+70°C (Room humidity)                          |           |
| Life expectancy (H)                            | 30,000 (Room temp.-humidity)                         |           |
| Insulation resistance                          | Over 10MΩ (between supply lead and flame) at DC 500V |           |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and flame)     |           |
| Bearings                                       | Ball bearing is used                                 |           |
| Lead wire                                      | 12V ⊕Red ⊖Black UL1007 AWG26<br>24V ⊕Red ⊖Blue       |           |
| Weight (g)                                     | 85                                                   |           |

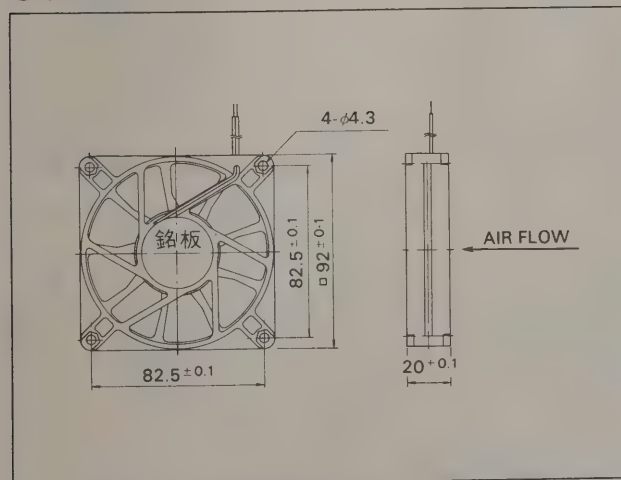
## 0915



### Specifications

| Item                                           | 0915-12                                              | 0915-24   |
|------------------------------------------------|------------------------------------------------------|-----------|
| Rated voltage (DC V)                           | 12                                                   | 24        |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6 |
| Rated current (A) MAX.                         | 0.19                                                 | 0.11      |
| Rated input (W) MAX.                           | 2.3                                                  | 2.7       |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 0.7                                                  | 0.7       |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 3.3                                                  | 3.3       |
| (A) 1m (dB) MAX.                               | 32                                                   | 32        |
| Noise (A) at 1m                                |                                                      |           |
| Operating temp. range                          | -10°C~+60°C (Room humidity)                          |           |
| Storage temp. range                            | -40°C~+70°C (Room humidity)                          |           |
| Life expectancy (H)                            | 30,000 (Room temp.-humidity)                         |           |
| Insulation resistance                          | Over 10MΩ (between supply lead and flame) at DC 500V |           |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and flame)     |           |
| Bearings                                       | Ball bearings and sleeve bearing                     |           |
| Lead wire                                      | ⊕Red ⊖Black UL1007 AWG26                             |           |
| Weight (g)                                     | 85                                                   |           |

## 0920



### Specifications

| Item                                           | 0920-12                                              | 0920-24   |
|------------------------------------------------|------------------------------------------------------|-----------|
| Rated voltage (DC V)                           | 12                                                   | 24        |
| Ambient voltage (DC V)                         | 10.2~13.8                                            | 20.4~27.6 |
| Rated current (A) MAX.                         | 0.22                                                 | 0.12      |
| Rated input (W) MAX.                           | 2.7                                                  | 2.9       |
| Max. air volume (m <sup>3</sup> /min) MIN.     | 1.0                                                  | 1.0       |
| Max. static pressure (mmH <sub>2</sub> O) MIN. | 1.9                                                  | 1.9       |
| (A) 1m (dB) MAX.                               | 28                                                   | 28        |
| Noise (A) at 1m                                |                                                      |           |
| Operating temp. range                          | -10°C~+60°C (Room humidity)                          |           |
| Storage temp. range                            | -40°C~+70°C (Room humidity)                          |           |
| Life expectancy (H)                            | 30,000 (Room temp.-humidity)                         |           |
| Insulation resistance                          | Over 10MΩ (between supply lead and flame) at DC 500V |           |
| Voltage-withstand                              | AC 500V 1 minute (between supply lead and flame)     |           |
| Bearings                                       | Ball bearings and sleeve bearing                     |           |
| Lead wire                                      | ⊕Red ⊖Black UL1007 AWG26                             |           |
| Weight (g)                                     | 95                                                   |           |

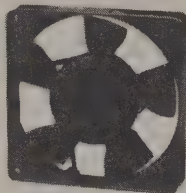


# U.S. TOYO FAN CORPORATION

4915 Walnut Grove Avenue, San Gabriel, California 91776 • Tel: (818) 287-5297 • Fax: (818) 287-7350

## USTF 120 SERIES - AC

Models USTF 12038 & USTF 12025



### Sizes:

USTF 12038 - 4.69" sq. x 1.50" thk.  
(119 mm x 38 mm)

USTF 12025 - 4.69" sq. x 1.0" thk.  
(119 mm x 25 mm)

### Airflow:

USTF 12038 - 54 to 112 CFM (4 speeds)  
USTF 12025 - 56 to 77 CFM (4 speeds)

### Acoustical Noise:

USTF 12038 - 28 to 41dB(A)  
USTF 12025 - 30 to 38dB(A)

**Voltage:** 115 or 230 VAC

**Termination:** Terminals (standard)  
Lead Wires (special)

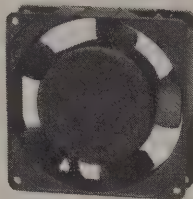
**Materials:** Frame - Aluminum  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 073720

## USTF92 SERIES - AC

Model USTF9225



**Size:** 3.62" sq. x 1.0" thk.  
(92 mm x 25 mm)

**Airflow:** 30 to 35 CFM (2 speeds)

**Acoustical Noise:** 35 to 39 dB(A)

**Voltage:** 115 or 230 VAC

**Termination:** Terminals (standard)  
Lead Wires (special)

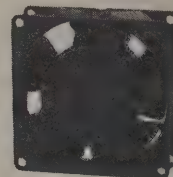
**Materials:** Frame - Aluminum  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 073720

## USTF80 SERIES - AC

Models USTF8038 & USTF8025



### Sizes:

USTF8038 - 3.15" sq. x 1.5" thk.  
(80 mm x 38 mm)

USTF8025 - 3.15" sq. x 1.0" thk.  
(80 mm x 25 mm)

### Airflow:

USTF8038 - 34 CFM  
USTF8025 - 20 CFM

### Acoustical Noise:

USTF8038 - 38 dB(A)  
USTF8025 - 33 dB(A)

**Voltage:** 115 or 230 VAC

**Termination:** Terminals (standard)  
Lead Wires (special)

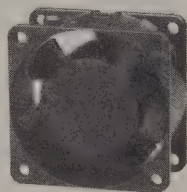
**Materials:** Frame - Aluminum  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 073720

## USTF60 SERIES - AC

Model USTF6030



**Size:** 2.36" sq. x 1.18" thk.  
(60 mm x 30 mm)

**Airflow:** 11 CFM

**Acoustical Noise:** 29 dB(A)

**Voltage:** 115 VAC (only)

**Termination:** Lead Wires (only)

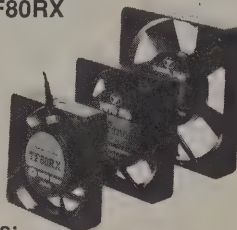
**Materials:** Frame - Aluminum  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 073720

## TF RX SERIES - AC

Models TF120RX, TF92RX & TF80RX



### Sizes:

TF120RX - 4.70" sq. x .78" thk.  
(119 mm x 20 mm)

TF92RX - 3.62" sq. x .78" thk.  
(92 mm x 20 mm)

TF80RX - 3.15" sq. x .78" thk.  
(80 mm x 20 mm)

**Airflow:** TF120RX - 64 CFM  
TF92RX - 30 CFM  
TF80RX - 18 CFM

### Acoustical Noise:

TF120RX - 43.5 dB(A)

TF92RX - 38.5 dB(A)

TF80RX - 35.5 dB(A)

**Voltage:** 115 or 230 VAC

**Termination:** Lead Wires (only)

**Materials:** Frame - Aluminum  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 073720

## TF 345 SERIES - AC

DUAL VOLTAGE

Models TF120345, TF92345 & TF80345



### Sizes:

TF120345 - 4.70" sq. x 1.50" thk.  
(119 mm x 38 mm)

TF92345 - 3.62" sq. x .98" thk.  
(92 mm x 25 mm)

TF80345 - 3.15" sq. x 1.50" thk.  
(80 mm x 38 mm)

### Airflow:

TF120345 - 81 - 109 CFM (3 speeds)  
TF92345 - 27 - 34 CFM (2 speeds)

TF80345 - 32 CFM

### Acoustical Noise:

TF120345 - 40 to 50 dB(A)

TF92345 - 36 to 41.5 dB(A)

TF80345 - 39.5 dB(A)

**Voltage:** 115 & 230 VAC dual

**Termination:** Lead Wires (4)

**Materials:** Frame - Aluminum  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 073720

### ADDED VALUE OPTIONS ON REQUEST:

Connector termination • special wire leads & harnessing • captive mounting hardware • finger guards & air filters • in addition to many other options • available on all models



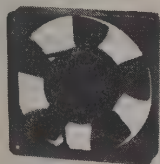


# U.S. TOYO FAN CORPORATION

4915 Walnut Grove Avenue, San Gabriel, California 91776 • Tel: (818) 287-5297 • Fax: (810) 287-7350

## USTF120 SERIES - DC

Models USTF12038 & USTF12025



### Sizes:

USTF12038 - 4.69" sq. x 1.50" thk.  
(119 mm x 38 mm)

USTF12025 - 4.69" sq. x 1.0" thk.  
(119 mm x 25 mm)

### Airflow:

USTF12038 - 85 to 108 CFM (3 speeds)  
USTF12025 - 64 to 74 CFM (3 speeds)

### Acoustical Noise:

USTF12038 - 34 to 41 dB(A)  
USTF12025 - 36 to 41 dB(A)

**Voltage:** 12 or 24 VDC

**Termination:** Lead Wires (only)

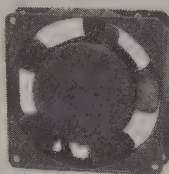
**Materials:** Frame - PBT  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 074205  
VDE 16599-2611

## USTF92 SERIES - DC

Model USTF9225



**Size:** 3.62" sq. x 1.0" thk.  
(92 mm x 25 mm)

**Airflow:** 37 to 50 CFM (2 speeds)

**Acoustical Noise:** 26 to 35 dB(A)

**Voltage:** 12 or 24 VDC

**Termination:** Lead Wires (only)

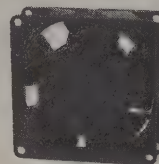
**Materials:** Frame - PBT  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 074205  
VDE 16599-2611

## USTF80 SERIES - DC

Model USTF8025



**Size:** 3.15" sq. x 1.0" thk.  
(80 mm x 25 mm)

**Airflow:** 30 to 38 CFM (2 speeds)

**Acoustical Noise:** 27 to 32 dB(A)

**Voltage:** 12 or 24 VDC

**Termination:** Lead Wires (only)

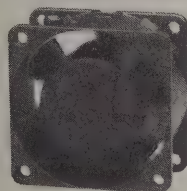
**Materials:** Frame - PBT  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 074205  
VDE 16599-2611

## USTF60 SERIES - DC

Model USTF6020



**Size:** 2.36" sq. x .79" thk.  
(60 mm x 20 mm)

**Airflow:** 15 to 18 CFM (2 speeds)

**Acoustical Noise:** 26 to 30 dB(A)

**Voltage:** 12 or 24 VDC

**Termination:** Lead Wires (only)

**Materials:** Frame - PBT  
Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 074205  
VDE 16599-2611

## USTF4020 SERIES - DC

Model USTF4020



**Size:** 1.58" sq. x .79" thk.  
(40 mm x 20 mm)

**Airflow:** 7.3 CFM

**Acoustical Noise:** 28 dB(A)

**Voltage:** 12 VDC (only)

**Termination:** Lead Wires (only)

**Materials:** Frame - PBT

Bearings - Sealed Ball

**Safety:** Impedance Protected

**Approvals:** UL No. E106227  
CSA No. 074205  
VDE 16599-2611

## USTFS4010 SERIES-DC

**Size:** 1.58" sq. x .394" thk.  
(40mm x 10mm)

**Airflow:** 5.3 to 7 CFM (2 speeds)

**Acoustical Noise:** 31 to 37 dB(A)

**Voltage:** 12 VDC (only)

**Termination:** Lead Wires (only)

**Materials:** Frame - PBT

Bearings - Sleeve

**Safety:** Impedance Protected

**Approvals:** UL & CSA pending

## TFDD41 SERIES - DC

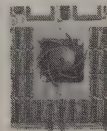
Model TFDD41RX



1.57" (40 mm) sq. x .39 (10 mm) thk.  
12 VDC - 4.6 CFM - 32 dB(A)

## TFDD50 SERIES - DC

Model TFDD50BM PCB Mountable



1.97" (50 mm) sq. x .47" (12 mm) thk.  
5, 12 & 24VDC - 4.2CFM - 27.5dB(A)

## SMF1836 SERIES - DC

Model SMF1836MA or MB



1.42" (36 mm) dia. x 1.77" (45 mm) lg.  
12 VDC - 16 CFM - 50 dB(A)

### ADDED VALUE OPTIONS ON REQUEST:

Connector termination • special wire leads & harnessing • captive mounting hardware • finger guards & air filters • in addition to many other options • available on all models

# SIL-PAD® THERMALLY CONDUCTIVE INSULATORS



The Bergquist Company established the standard for elastomeric thermally conductive insulation materials with the development of Sil-Pads over 20 years ago. *Sil-Pads were developed as a clean grease-free alternative to mica and grease.* Now, a complete family of materials are available to meet the diverse and changing requirements of today's design engineer.

Sil-Pads replace a variety of materials used for thermally conductive insulation including mica insulators. Mica and grease have been in use for over 30 years and are still commonly used as insulators. Mica and grease have good thermal and electrical properties but mica is easily cracked or broken and grease is messy to work with and contaminates assemblies.

Sil-Pads also replace ceramic insulators in high performance applications. These ceramic wafers are expensive and crack easily. Polyimide films are also used as insulators and are usually combined with wax or grease to achieve a low thermal impedance.

## CONSTRUCTION

Most Sil-Pad thermally conductive insulators are constructed with a silicone rubber binder and a woven fiberglass carrier or Kapton® substrate. The fiberglass carrier provides reinforcement and contributes to dielectric strength. Silicone rubber has a low dielectric constant, high dielectric strength, good chemical resistance and high thermal stability.

## THERMAL PROPERTIES

Discrete semiconductors under normal operating conditions, dissipate waste power which raises the junction temperature of the device. Unless sufficient heat is conducted out of the device, its electrical performance and

parameters are changed. A 10° C rise in junction temperature reduces the mean-time-to-failure of a device by a factor of two. Also, above 25° C, the semiconductors total power handling capability will be reduced by a derating factor inherent to the device.

## SUMMARY OF THERMAL PROPERTIES OF SIL-PADS®

| Interface Material | Thermal Conductivity W/m-K | Thickness (mils) | Thermal Impedance (°C-in <sup>2</sup> /w) | TO-3 w/spacer °C/w | TO-220 °C/w* |
|--------------------|----------------------------|------------------|-------------------------------------------|--------------------|--------------|
| SP400              | 0.9                        | 7                | 0.4                                       | 0.4                | 4 - 6        |
| SP600              | 1.0                        | 7                | 0.3                                       | 0.3                | 3 - 5        |
| SP1000             | 1.2                        | 9                | 0.3                                       | 0.3                | 3 - 5        |
| SP2000             | 3.5                        | 15               | 0.2                                       | 0.2                | 2 - 3        |
| Q-Pad 3            | 2.2                        | 6                | 0.1                                       | 0.1                | 1 - 3        |
| K-4                | 0.9                        | 6                | 0.3                                       | 0.4                | 3-5          |
| K-6                | 1.1                        | 6                | 0.25                                      | 0.3                | 2-4          |
| K-10               | 1.3                        | 6                | 0.2                                       | 0.2                | 1-3          |

\* Variation due to mounting method and pressure

## SIL-PAD 400®

Thermal Resistance .40 °C/watt in<sup>2</sup>  
Breakdown Voltage, 5000 Volts min.

Sil-Pad 400 is the original Sil-Pad material. Sil-Pad 400 is a composite of silicone rubber and fiberglass. It is flame retardant and specially formulated for use as a thermally conductive insulator. Primary use is to electrically isolate power sources from heat sinks. Sil-Pad 400 is non-toxic and resists damage from cleaning agents.

Sil-Pad 400 has excellent mechanical and physical characteristics. Surfaces are pliable and allow complete surface contact with excellent heat dissipation. It will not chip or fracture under high compressive stress and actually improves its thermal resistance with age. The reinforcing fiberglass gives excellent cut-through resistance. Expect immediate delivery of all standard configurations.

## SIL-PAD 1000®

Thermal Resistance .3 °C/watt in<sup>2</sup>  
Breakdown Voltage, 4500 Volts min.

Sil-Pad 1000 is a composite of silicone rubber and fiberglass. It is boron nitride filled and offers low thermal resistance. Sil-Pad 1000 is non-toxic and resists damage from cleaning agents. It is flame retardant and specially formulated for use as a thermally conductive insulator.

Sil-Pad 1000 has the same excellent mechanical and physical

characteristics of our Sil-Pad 400 material while offering a 35% reduction in thermal resistance.

## SIL-PAD 2000®

Thermal Resistance, 0.2 °C/watt in<sup>2</sup>  
Breakdown Voltage, 4000 Volts min.

Sil-Pad 2000 is Bergquist's high performance, high reliability thermally conductive insulator. Sil-Pad 2000 is designed for demanding military/aerospace and commercial applications. In these applications Sil-Pad 2000 complies with military standards.

## SIL-PAD 1750 and 1950®

Thermal Resistance (SP 1750), 0.2 °C/watt in<sup>2</sup>  
TR (SP 1950), 0.23 °C/watt in<sup>2</sup>  
SP1750 B.V. 6000 VAC min. SP1950, 4000V

Sil-Pad 1750 and Sil-Pad 1950 combine high thermal conductivity and excellent dielectric strength retention after humidity exposure. Exposure to humid environments during assembly, or over long term operating conditions, will not severely affect the ability of the material to perform.

**Call Bergquist Today for a free copy of the Sil-Pad Design Guide.**

**THE BERGQUIST COMPANY**

5300 Edina Industrial Boulevard  
Minneapolis, Minnesota, 55439  
Tel: (612) 835-2322  
Fax: (612) 835-4156  
Toll Free: 1-800-347-4572



# BERGQUIST THERMAL MANAGEMENT PRODUCTS

## Q-PAD 3®

Thermal Resistance, 1.3 °C/watt in<sup>2</sup>

Q-Pad 3 thermally conductive pad consists of graphite embedded in a polymer matrix that is elastomeric on one side, with a pressure sensitive adhesive on the opposite side. It is designed for those applications where maximum heat transfer is needed and electrical insulation is not required. Q-Pad 3 eliminates problems associated with grease such as contamination of reflow solder or cleaning operations.

## SIL-PAD K-4®

Thermal Resistance, .40 °C/watt in<sup>2</sup>  
Breakdown Voltage, 5000 Volts min.

Sil-Pad K-4 combines the thermal transfer properties of well-known Sil-Pad rubber with high dielectric, physically tough DuPont Kapton MT® film. The result is a durable insulator that withstands high voltages, requires no thermal grease to transfer heat, is available in customized shapes and sizes, and saves time and costs while increasing productivity.

## SIL-PAD K-6®

Thermal Resistance, .3 °C/Watt in<sup>2</sup>  
Breakdown Voltage, 5000 Volts min.

Sil-Pad® K-6 is a medium performance Kapton based thermally conductive insulator. Thermally conductive Kapton® MT film is coated with an aluminum oxide/boron nitride filled silicone elastomer to deliver "boron nitride" performance.

## SIL-PAD K-10®

Thermal Resistance, 0.2 °C/watt in<sup>2</sup>  
Breakdown Voltage, 5000 Volts min.

Bergquist Sil-Pad K-10 is the new high performance insulator developed in conjunction with DuPont. K-10 combines special Kapton® MT Polyimide film with boron nitride filled silicone rubber. The result is a product with good cut-through properties and excellent thermal performance. K-10 is designed to replace ceramic insulators such as Beryllium Oxide, Boron Nitride and Alumina.

## CPU PAD™

Thermal Resistance, 0.3 °C/watt in<sup>2</sup>

CPU Pad is a thermally conductive, electrically insulating, double coated tape. This tape consists of a high performance acrylic, pressure sensitive adhesive, on both sides of a Kapton film. CPU Pad is typically used to adhere a heatsink to the top of a CPU or other heat generating component on the PC board.

## IC-PAD®

Thermal Resistance, 0.2 °C/watt in<sup>2</sup>  
Breakdown Voltage, 7000 VAC, 3500V (air)

IC-Pad eliminates the problems associated with clamping power transistors

to heat sinks. The material will form a structural bond that attaches the device to the heat sink. IC-Pad is a pressure sensitive epoxy adhesive that cures to a strong bond between a device and a heat sink. The material consists of a thermally conductive epoxy impregnated glass cloth electrical insulator. IC-Pad is sandwiched between two release liners.

## POLY-PAD....FOR SILICONE SENSITIVE APPLICATIONS

Polyester based, thermally conductive insulators from Bergquist provide a complete family of materials for silicone-sensitive applications. Poly-Pads are ideally suited for applications requiring conformal coatings or applications where silicone outgassing is a concern (telecommunications and certain aerospace applications.) Poly-Pads are constructed with ceramic filled polyester resins coating either side of a fiberglass carrier or a Kapton® carrier. The Poly-Pad family offers a complete range of performance characteristics to match individual applications.

## POLY-PAD 400®

Thermal resistance, 0.4 °C/Watt in<sup>2</sup>  
Breakdown Voltage, 4500 Volts min.

Poly-Pad 400 is a fiberglass based insulator coated with an alumina-filled polyester resin. Poly-Pad 400 is economical and designed for most standard applications.

## POLY-PAD 1000®

Thermal Resistance, 0.3 °C/Watt in<sup>2</sup>  
Breakdown Voltage, 2500 Volts min.

Poly-Pad 1000 is also a fiberglass based insulator coated with a boron nitride-filled polyester resin. Poly-Pad 1000 offers superior thermal resistance for high performance applications.

## POLY-PAD K4®

Thermal Resistance, 0.4 °C/Watt in<sup>2</sup>  
Breakdown Voltage, 6000 Volts min.

Poly-Pad K4 is a composite of DuPont Kapton® film coated with an alumina-filled polyester resin. PPK4 is an economical insulator and the Kapton carrier provides excellent dielectric and physical strength.

## POLY-PAD K10®

Thermal Resistance, 0.2 °C/Watt in<sup>2</sup>  
Breakdown Voltage, 6000 Volts min.

Poly-Pad K10 is a composite of DuPont Kapton® film coated with a boron nitride-filled polyester resin. PPK10 offers superior thermal performance for your most critical applications with thermal resistance of 0.2 °C/Watt as well as excellent dielectric strength.

## ORDERING INFORMATION

See the standard configurations for common part numbers. Contact the factory for additional standard configurations.

### Ordering Procedure:

The last two digits define the part number selected.

For example: to order K-10 material; use K10-(part number)

SAMPLE PART NUMBER

K10 -02

Represents K10 mat.

Represents the part #

(see standard configurations)

## SPECIAL SHAPES:

We produce thousands of specials. Tooling charges are about \$100 to \$150 for simple parts. Increased complexity or tighter tolerances increase tooling charges.

## TOLERANCES:

.015 inches are held on width, length and hole location.

## SHEETS:

6" x 6", 6" x 12", 8" x 8", 10" x 10", or 12" x 12" sheets in stock.

## ROLLS:

All Sil-Pad materials are available in roll form. Contact the factory.

Kapton® is a registered trademark of DuPont for its polyimide film.

Sil-Pad 400, Sil-Pad 1000 and Sil-Pad 2000 are covered by Mil spec. numbers:

Mil-M-38527/8A

Mil-I-49456

Mil-M-87111

Mil-I-49466 & 49466

U.L. File Number E59150

Call Bergquist today for your free copy of the Sil-Pad Design Guide.  
TOLL FREE: 1-800-347-4572

**THE BERGQUIST COMPANY**

5300 Edina Industrial Boulevard  
Minneapolis, Minnesota, 55439  
Tel: (612) 835-2322  
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Toll Free: 1-800-347-4572

# Sil-Pad®, Poly-Pad® and Q-Pad® Technical Specifications

|                                                                        | SIL-PAD<br>400(.009)    | SIL-PAD<br>400(.007)    | SIL-PAD<br>600(.009)    | SIL-PAD<br>1000         | SIL-PAD<br>1500         | SIL-PAD<br>2000         | Sil-Pad<br>K-4          | Test<br>Method |
|------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------------|
| Color                                                                  | Gray                    | Gray                    | Green                   | Pink                    | Green                   | White                   | Gray                    | Visual         |
| Thermal Resistance, °C/watt                                            | .50                     | .45                     | 0.35                    | 0.35                    | 0.23                    | 0.2                     | .40                     | Bergquist      |
| Dielectric Constant, 1000 (Hz)                                         | 5.5                     | 5.5                     | 5.0                     | 4.5                     | 4.0                     | 4.0                     | 5.0                     | ASTM D 150     |
| Continuous Use Temp. °C                                                | -60 to +180             | -60 to +180             | -60 to +180             | -60 to +180             | -60 to +180             | -60 to +200             | -60 to +180             | -              |
| Thermal Conductivity W/m-k nominal                                     | 0.9                     | 0.9                     | 1.0                     | 1.2                     | 2.0                     | 3.5                     | 0.9                     | Bergquist      |
| Thickness Inches (mm)                                                  | .009±.001<br>(.23±.025) | .007±.001<br>(.18±.025) | .009±.001<br>(.23±.025) | .009±.001<br>(.23±.025) | .010±.001<br>(.25±.025) | .015±.001<br>(.38±.025) | .006±.001<br>(.15±.025) | ASTM D 374     |
| Volume Resistivity, Ohm Metre Typical                                  |                         |                         |                         |                         |                         |                         |                         |                |
| Normal                                                                 | 1.0 x 10 <sup>11</sup>  | 1.0 x 10 <sup>11</sup>  | 1.0 x 10 <sup>12</sup>  | 1.0 x 10 <sup>11</sup>  | 1.0 x 10 <sup>11</sup>  | 1.0 x 10 <sup>11</sup>  | 1.0 x 10 <sup>12</sup>  | ASTM D 257     |
| Moist                                                                  | 1.5 x 10 <sup>9</sup>   | 1.5 x 10 <sup>9</sup>   |                         | 1.5 x 10 <sup>9</sup>   |                         |                         |                         |                |
| Breakdown Voltage (minimum AC)                                         | 4500                    | 3500                    | 4500                    | 4500                    | 4000                    | 4000                    | 6000                    | ASTM D 149     |
| Thermal Vacuum Weight Loss Percent (TML) Max. As Manufactured          | .40                     | .40                     |                         | .22                     |                         | 0.26                    | .28                     | NASA           |
| Post Cure 24 HRS. 440°F, 225 °C                                        | .25                     | .25                     |                         |                         |                         | 0.07                    |                         | SP-R-0022A     |
| Volatile Condensable Material, Percent, Maximum (CVCM) As Manufactured | .11                     | .11                     |                         | .08                     |                         | 0.10                    | .07                     | NASA           |
| Post Cure 24 HRS. 440°F, 225 °C                                        | .07                     | .07                     |                         |                         |                         | 0.03                    |                         | SP-R-0022A     |
| Hardness, Shore A                                                      | 85                      | 85                      | 85                      | 85                      | 80                      | 80                      | 90                      | ASTM D 2240    |
| Specific Gravity                                                       | 2.0-2.1                 | 2.0-2.1                 |                         | 1.5                     |                         | 1.5                     |                         | ASTM D 792     |
| Tensile Strength, K Psi, Typical (MPa)                                 | 11<br>(75)              | 14<br>(100)             | 11<br>(75)              | 11<br>(75)              | 6<br>(40)               | 6<br>(30)               | 5<br>(35)               | ASTM D 412     |
| Breaking Strength, Lbs/Inch kN/m                                       | 100<br>18               | 100<br>18               | 100<br>18               | 100<br>18               | 65<br>11                | 65<br>11                | 30<br>5                 | ASTM D 1458    |
| Elongation Percent Nominal                                             | 4                       | 4                       | 4                       | 4                       | 4                       | 4                       | 40                      | ASTM D 412     |
| Construction                                                           | Silicone/<br>Fiberglass | Silicone/<br>Fiberglass | Silicone/<br>Fiberglass | Silicone/<br>Fiberglass | Silicone/<br>Fiberglass | Silicone/<br>Fiberglass | Silicone/<br>Kapton     |                |

|                                                                        | Sil-Pad<br>K-6          | SIL-PAD<br>K-10         | Q-PAD II                | POLY-PAD<br>400          | POLY-PAD<br>1000         | POLY-PAD<br>K-4         | POLY-PAD<br>K-10        | TEST<br>METHOD |
|------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|----------------|
| Color                                                                  | Blue/Green              | Beige                   | Black                   | Mauve                    | Yellow                   | Mauve                   | Yellow                  | Visual         |
| Thermal Resistance, °C/watt                                            | .30                     | 0.2                     | 0.1                     | 0.4                      | 0.3                      | 0.3                     | 0.2                     | Bergquist      |
| Dielectric Constant, 1000 (Hz)                                         | 4.0                     | 3.7                     | N/A                     | 5.5                      | 4.5                      | 5.0                     | 3.7                     | ASTM D 150     |
| Continuous Use Temp. °C                                                | -60 to 180              | -60 to +180             | -60 to +160             | -20 to +150              | -20 to +150              | -20 to +150             | -20 to +150             | -              |
| Thermal Conductivity W/m-k nominal                                     | 1.1                     | 1.3                     | 2.5                     | 0.9                      | 1.2                      | .9                      | 1.3                     | Bergquist      |
| Thickness Inches (mm)                                                  | .006±.001<br>(.15±.025) | .006±.001<br>(.15±.025) | .006±.001<br>(.15±.025) | .009±.001<br>(.23±.025)  | .009±.001<br>(.23±.025)  | .006±.001<br>(.15±.025) | .006±.001<br>(.15±.025) | ASTM D 374     |
| Volume Resistivity, Ohm Metre Typical                                  |                         |                         |                         |                          |                          |                         |                         |                |
| Normal                                                                 | 1.0 x 10 <sup>12</sup>  | 1.0 x 10 <sup>12</sup>  | 1.0 x 10 <sup>2</sup>   | 1.0 x 10 <sup>11</sup>   | 1.0 x 10 <sup>11</sup>   | 1.0 x 10 <sup>12</sup>  | 1.0 x 10 <sup>12</sup>  | ASTM D 257     |
| Moist                                                                  |                         |                         |                         |                          |                          |                         |                         |                |
| Breakdown Voltage (minimum AC)                                         | 6000                    | 6000                    | N/A                     | 4500                     | 2500                     | 6000                    | 6000                    | ASTM D 149     |
| Thermal Vacuum Weight Loss Percent (TML) Max. As Manufactured          |                         | .36                     | 0.59                    |                          |                          |                         |                         | NASA           |
| Post Cure 24 HRS. 440°F, 225 °C                                        |                         |                         |                         |                          |                          |                         |                         | SP-R-0022A     |
| Volatile Condensable Material, Percent, Maximum (CVCM) As Manufactured |                         | .09                     | 0.23                    |                          |                          |                         |                         | NASA           |
| Post Cure 24 HRS. 440°F, 225 °C                                        |                         |                         |                         |                          |                          |                         |                         | SP-R-0022A     |
| Hardness, Shore A                                                      | 90                      | 90                      | 90                      | 90                       | 90                       | 90                      | 90                      | ASTM D 2240    |
| Specific Gravity                                                       |                         |                         |                         | 2.0-2.1                  | 1.5                      |                         |                         | ASTM D 792     |
| Tensile Strength, K Psi, Typical (MPa)                                 | 5<br>(35)               | 5<br>(35)               | 4<br>(30)               | 11<br>(75)               | 11<br>(75)               | 5<br>(35)               | 5<br>(35)               | ASTM D 412     |
| Breaking Strength, Lbs/Inch kN/m                                       | 30<br>5                 | 30<br>5                 | 25<br>4                 | 100<br>18                | 100<br>18                | 30<br>5                 | 30<br>5                 | ASTM D 1458    |
| Elongation Percent Nominal                                             | 40                      | 40                      | 4                       | 4                        | 4                        | 40                      | 40                      | ASTM D 412     |
| Construction                                                           | Silicone/<br>Kapton     | Silicone/<br>Kapton     | Silicone/<br>Alum Foil  | Polyester/<br>Fiberglass | Polyester/<br>Fiberglass | Polyester/<br>Kapton    | Polyester/<br>Kapton    |                |

**THE BERGQUIST COMPANY**

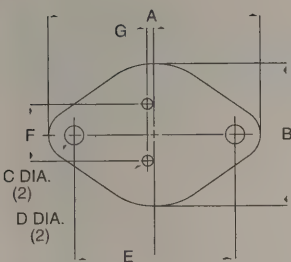
5300 Edina Industrial Blvd., Minneapolis, MN 55439 • Telephone: (612) 835-2322 • Fax: (612) 835-4156



# BERGQUIST SIL-PAD® STANDARD CONFIGURATIONS

TO-3 STYLE  
PART  
NUMBER  
SUFFIX

DIMENSIONS



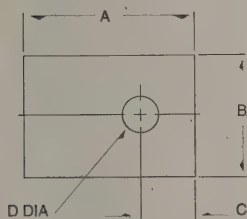
|              | "A"   | "B"   | "C"  | "D"  | "E"   | "F"  | "G"  |
|--------------|-------|-------|------|------|-------|------|------|
| -03          | 1.563 | 1.050 | .140 | .080 | 1.187 | .430 | .072 |
| -18          | 1.563 | 1.050 | .140 | .140 | 1.187 | .430 | .072 |
| -23          | 1.593 | 1.100 | .156 | .062 | 1.187 | .430 | .072 |
| -29          | 1.650 | 1.065 | .140 | .046 | 1.187 | .430 | .072 |
| -04          | 1.650 | 1.140 | .122 | .062 | 1.187 | .430 | .072 |
| -05          | 1.650 | 1.140 | .140 | .093 | 1.187 | .430 | .072 |
| -06          | 1.650 | 1.140 | .165 | .062 | 1.187 | .430 | .072 |
| -17          | 1.650 | 1.140 | .140 | .046 | 1.187 | .430 | .072 |
| -59 Leadless | 1.650 | 1.140 | .165 |      | 1.187 |      |      |
| -24          | 1.700 | 1.187 | .156 | .062 | 1.187 | .430 | .072 |
| -02          | 1.780 | 1.250 | .140 | .093 | 1.187 | .430 | .072 |
| -07          | 1.780 | 1.250 | .165 | .094 | 1.187 | .430 | .072 |
| -15          | 1.780 | 1.250 | .140 | .046 | 1.187 | .430 | .072 |
| -16          | 2.070 | 1.560 | .122 | .062 | 1.187 | .430 | .072 |

PLASTIC POWER  
PART  
NUMBER  
SUFFIX

DIMENSION

PART  
NUMBER  
SUFFIX

DIMENSIONS



|                         | "A"  | "B"  | "C"  | "D"  |              | "A"   | "B"  | "C"  | "D"  |
|-------------------------|------|------|------|------|--------------|-------|------|------|------|
| TO-126 -50              | .437 | .312 | .140 | .093 | Various -62  | .750  | .600 | .240 | .150 |
| TO-126 -60              | .437 | .312 | .140 | .122 | Various -63  | .750  | .600 | .240 | .115 |
| Various -64             | .500 | .385 | .170 | .100 | Various -56  | .855  | .562 | .218 | .125 |
| TO-220 -55              | .610 | .560 | .245 | .125 | Various -52  | .855  | .630 | .230 | .093 |
| Various -51             | .687 | .562 | .218 | .125 | TO-218 -90   | .860  | .740 | .200 | .160 |
| Various -35             | .710 | .500 | .160 | .141 | Various -68  | 1.125 | .625 | .200 | .145 |
| Various -61             | .750 | .410 | .225 | .156 | Various -70  | 1.140 | .810 | .355 | .147 |
| TO-220 (clip Mount) -43 | .750 | .500 |      |      | Various -102 | .866  | .650 | .217 | .142 |
| TO-220 -54              | .750 | .500 | .187 | .147 | Various -103 | .750  | .800 | .300 | .140 |
| TO-220 -58              | .750 | .500 | .187 | .125 | TO-3P -104   | 1.000 | .750 | .300 | .140 |

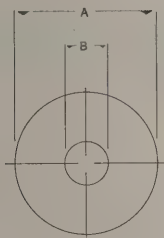
DIODE WASHER

PART  
NUMBER  
SUFFIX

DIMENSIONS

PART  
NUMBER  
SUFFIX

DIMENSIONS



|                      | "A"  | "B"  |                      | "A"   | "B"  |
|----------------------|------|------|----------------------|-------|------|
| Various -75          | .360 | .260 | Various -27          | .812  | .115 |
| Various -19          | .510 | .140 | Various -26          | .812  | .145 |
| DO-4 -20             | .510 | .200 | DO-8 -78             | .875  | .313 |
| Various -82          | .512 | .161 | Various -28          | 1.000 | .140 |
| DO-4 (oversized) -22 | .625 | .200 | DO-5 (oversized) -25 | 1.000 | .260 |
| Various -76          | .750 | .125 | Various -79          | 1.180 | .515 |
| Various -77          | .800 | .190 | Various -80          | 1.250 | .380 |
| DO-5 -21             | .800 | .260 | Various -81          | 1.500 | .200 |
|                      |      |      | Various -32          | 1.500 | .500 |

TIP PACKAGES

PART  
NUMBER  
SUFFIX

DIMENSIONS

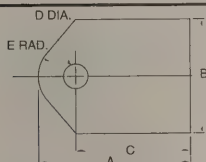
"A"

"B"

"C"

"D"

"E"



|                    |     |       |      |      |      |      |
|--------------------|-----|-------|------|------|------|------|
| TIP-36 Plastic Tip | -53 | .865  | .650 | .650 | .140 | .205 |
| Clip Mount         | -42 | .984  | .787 |      |      | .205 |
| Plastic-Clip       | -73 | .984  | .787 | .708 | .142 | .205 |
| TO-3P              | -65 | 1.260 | .787 | .984 | .142 | .205 |

SIP PACKAGE

PART  
NUMBER  
SUFFIX

DIMENSIONS

"A"

"B"

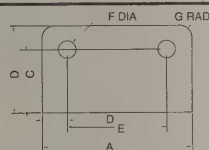
"C"

"D"

"E"

"F"

"G"



|      |       |      |      |      |      |      |      |
|------|-------|------|------|------|------|------|------|
| -105 | 1.450 | .838 | .612 | .245 | .960 | .170 | .120 |
|------|-------|------|------|------|------|------|------|

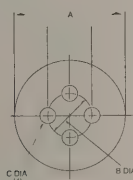
SMALL POWER  
DEVICES

PART  
NUMBER  
SUFFIX

"A"

"B"

"C"



|                |     |      |      |      |
|----------------|-----|------|------|------|
| TO-18, 3 Holes | -12 | .250 | .100 | .036 |
| TO-18, 4 Holes | -13 | .250 | .100 | .036 |
| TO-5, 3 Holes  | -09 | .360 | .200 | .040 |
| TO-5, 4 Holes  | -33 | .360 | .200 | .040 |
| TO-5, 3 Holes  | -44 | .390 | .200 | .040 |
| TO-5, 4 Holes  | -45 | .390 | .200 | .040 |

TO-66 STYLE

PART  
NUMBER  
SUFFIX

"A"

"B"

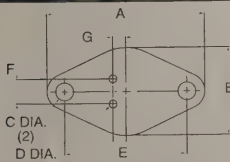
"C"

"D"

"E"

"F"

"G"



|     |       |       |      |      |      |      |      |
|-----|-------|-------|------|------|------|------|------|
| -30 | 1.250 | .700  | .140 | .062 | .960 | .200 | .100 |
| -11 | 1.312 | .762  | .140 | .062 | .960 | .200 | .100 |
| -31 | 1.375 | .825  | .140 | .062 | .960 | .200 | .100 |
| -10 | 1.440 | 1.000 | .140 | .075 | .960 | .200 | .100 |

THE  
**BERGQUIST**  
COMPANY

For All the Standard Configurations Please Contact the Factory (Toll Free 1-800-347-4572)



## MINIGLOSSARY ENCAPSULATION

### MATERIALS/HANDLING

**Catalyst:** A substance which changes the *rate* of chemical reaction. Very small quantities can cause fast change.

**Conformal coating** Sprayed or dipped. A thin conformal jacket which protects an assembly from moisture or other degrading environments.

**Curing agent:** See catalyst.

**Hardener:** See catalyst.

**Hermetic:** A permanent gas-tight seal.

**RTV:** Room Temperature Vulcanizing. Associated with silicone rubber sealants which vulcanize at room temperature.

**Thermoplastic:** Plastic materials which can be made to flow *repeatedly* with the application of heat.

**Thermosetting:** Plastics which once cured cannot be made to flow again.

**Thixotropy:** The property of a coating compound which has low viscosity when agitated, but which thickens when the agitation ceases.

**Viscosity:** Measured in units of *poise* or *centipoise*. The property of a liquid which resists internal flow. Low viscosity equates with thin and vice-versa.

### PROCESSING

**Casting:** Parts or assemblies are placed in a mold. Encapsulating material is added and cured. Part is then removed from the mold.

**Dip coating:** Part or assembly is dipped into the encapsulating material. Final thickness is determined by number of dips, viscosity, rate of withdrawal, and temperature.

**Embedding:** Wherein an encapsulant substantially fills all voids in and about an assembly.

**Impregnation:** A process of encapsulation involving evacuating all air and then allowing the encapsulating material to flow in and fill all voids.

**Molding:** Similar to casting except this process usually implies multicavity molds and costly machines.

**Potting:** Wherein the part or assembly is immersed in an encapsulating material contained in a shell which becomes a permanent outer surface after curing.

### DIELECTRIC

**Arc resistance:** An encapsulant's resistance to the formation of a conductive path or track. Measured in time.

**Breakdown voltage:** The voltage at which an encapsulant fails electrically.

**Capacitance:** The property of conductors and dielectrics which allows the storage of an electrical charge when the voltage is applied.

**Corona:** A luminous discharge of electricity due to air ionization when a cer-

tain voltage is reached. Can be internal or external. The formation of ozone can cause rapid deterioration of certain materials.

**Dielectric:** Insulator (Nonconductor.)

**Dielectric constant:** The property of a material that determines its ability to store electrostatic energy.

**Dielectric strength:** The ratio of dielectric breakdown to the thickness of insulating material.

**Dissipation factor:** The ratio of a dielectric material's energy losses.

**Flashover:** Point at which an electric discharge occurs around an edge or across a surface. Can result in a carbon track and permanent degradation.

**Insulation resistance:** (IR) An insulating material's total DC leakage.

**Surface resistivity:** The resistance of the surface of an insulating material to the flow of direct current.

**Voltage endurance:** Sometimes called corona resistance. The ability of a material to withstand the application of sustained high voltage.

**Volume resistivity:** The resistance of a material to direct current flow as a measure of volume. Expressed as ohm-centimeters.



# Chomerics® Thermal Management Materials

## Products for Every Need

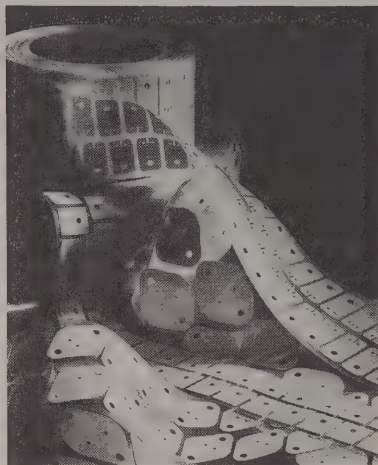
### CHO-THERM® Insulators for Power Semiconductor Devices

CHO-THERM fiberglass re-inforced silicones are effective over a wide temperature range. Glass cloth reinforcement makes them resistant to tear and cut-through.

CHO-THERM boron nitride-filled silicones provide the highest thermal and electrical performance available in one-component interface materials. They are particularly suited for aerospace and other high reliability applications.

Aluminum oxide-filled CHO-THERM 400 and 1674 silicones give exceptionally cost-effective thermal and electrical performance in commercial power supplies.

Call or fax us for a copy of our "Guide to Thermal Transfer" featuring complete technical information on Chomerics CHO-THERM thermal interface materials.



#### 1671

##### HI-REL, HIGHEST PERFORMANCE

CHO-THERM 1671 interface products have demonstrated years of high reliability and performance on programs such as the AWACS surveillance aircraft, NASA space shuttle, and Patriot missile. The elastomer meets NASA's demanding outgassing requirements. Dielectric breakdown voltage rating is 4,000 VAC.

#### T500 HIGH PERFORMANCE

One component CHO-THERM T500 insulators combine a silicone binder with a boron nitride filler to deliver thermal impedance of just .19°C-in<sup>2</sup>/Watt. Minimum breakdown voltage is 4,000 VAC. This elastomer is designed for use in temperatures ranging from -60°C to 200°C.

#### 1678

##### INTERMEDIATE PERFORMANCE

CHO-THERM 1678 elastomer possesses thermal properties approaching those of CHO-THERM 1671, at a lower price. This interface material is recommended for cost-sensitive electronics systems and applications in which excellent heat transfer is required, together with moderate electrical isolation (2,500 VAC). Typical applications include computers, automotive electronics, power supplies and a broad range of business equipment.

| Typical Properties                                                                                                          | 1671                  | T500                  | 1678                  | 1674                 | Test Method  |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|----------------------|--------------|
| Binder                                                                                                                      | Silicone              | Silicone              | Silicone              | Silicone             | —            |
| Filler                                                                                                                      | Boron Nitride         | Boron Nitride         | Boron Nitride         | Aluminum Oxide       | —            |
| Color                                                                                                                       | White                 | Green                 | Red                   | Blue                 | —            |
| Thermal Conductivity (W/m-K)                                                                                                | 2.6                   | 2.7                   | 1.6                   | 1.0                  | MIL-I-49456A |
| Thermal Impedance<br>$\frac{^{\circ}\text{C-in}^2}{\text{Watt}}$ $\left( \frac{^{\circ}\text{C-cm}^2}{\text{Watt}} \right)$ | .23<br>(1.48)         | .19<br>(1.23)         | .24<br>(1.55)         | .40<br>(2.58)        | MIL-I-49456A |
| Voltage Breakdown Rating (VAC)                                                                                              | 4000                  | 4000                  | 2500                  | 2500                 | ASTM D149    |
| Outgassing: (% TML)<br>(% CVCN)*                                                                                            | .76<br>.07            | .40<br>.10            | .55<br>.12            | .45<br>.20           | ASTM E595-77 |
| Thickness in (mm) ± .002 (.05)                                                                                              | .015 (.38) **         | .010 (.25)            | .010 (.25)            | .010 (.25)           | —            |
| Tensile Strength psi (MPa)                                                                                                  | 1000 (6.89)           | 1000 (6.89)           | 1000 (6.89)           | 1500 (10.34)         | ASTM D412    |
| Tear Strength lb/in (kN/m)                                                                                                  | 100 (17.5)            | 100 (17.5)            | 100 (17.5)            | 100 (17.5)           | ASTM D624    |
| Elongation (%)                                                                                                              | 2                     | 10                    | 10                    | 2                    | ASTM D412    |
| Hardness (Shore A)                                                                                                          | 90                    | 95                    | 90                    | 90                   | ASTM D2240   |
| Specific Gravity                                                                                                            | 1.55                  | 1.55                  | 1.60                  | 2.20                 | ASTM D792    |
| Maximum Use Temperature (°C)                                                                                                | -60 to 200            | -60 to 200            | -60 to 200            | -60 to 200           | —            |
| UL Flammability Rating                                                                                                      | 94V-0                 | 94V-0                 | 94V-0                 | 94V-0                | UL94         |
| Volume Resistivity (ohm-cm)                                                                                                 | 10 x 10 <sup>14</sup> | 10 x 10 <sup>14</sup> | 10 x 10 <sup>14</sup> | 2 x 10 <sup>14</sup> | ASTM D257    |

\* Collected volatile condensable materials (0.10% acceptable).

\*\* CHO-THERM 1671 is available in custom thicknesses.

**Note:** Pressure sensitive adhesive may increase thermal impedance by as much as 0.05°C-in<sup>2</sup>/W (.32°C-cm<sup>2</sup>/W). Contact Chomerics for further information.

**GRACE Electronic Materials**

**Chomerics, Inc.** / 77 Dragon Court / Woburn, MA 01888  
Tel: 617-935-4850 Fax: 617-933-4318

## CHO-THERM® Insulators for Power Semiconductor Devices continued

### 1674 COST-EFFECTIVE COMMERCIAL GRADE

CHO-THERM 1674 elastomer is a low-cost, aluminum oxide-filled silicone interface product designed for applications which require moderate thermal and electrical performance. It provides the same high reliability as all other products in the CHO-THERM family of fiberglass reinforced silicone elastomers.

### 400 LOW COST, ALUMINUM OXIDE-FILLED INSULATOR

CHO-THERM 400 grade fiberglass reinforced silicone insulators are standard components in many power supplies requiring moderate thermal conductivity with good physical properties and high dielectric strength.

| Typical Properties                                                                                                        | 400                                                       |                                              | Test Method  |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------|--------------|
| Thickness in (mm)                                                                                                         | .009 (.229)                                               | .007 (.178)                                  | —            |
| Thickness Tolerance in (mm)                                                                                               | + .002 (.05) - .001 (.03)                                 | + .001 (.025) - 0                            | —            |
| Binder                                                                                                                    | Silicone                                                  | Silicone                                     | —            |
| Filler                                                                                                                    | Aluminum Oxide                                            | Aluminum Oxide                               | —            |
| Color                                                                                                                     | Gray                                                      | Gray                                         | —            |
| Thermal Conductivity (W/m-K)                                                                                              | .70                                                       | .70                                          | MIL-I-49456A |
| Thermal Impedance<br>$\frac{^{\circ}\text{C-in}^2}{\text{Watt}} \left( \frac{^{\circ}\text{C-cm}^2}{\text{Watt}} \right)$ | .50 (3.23)                                                | .40 (2.58)                                   | MIL-I-49456A |
| Voltage Breakdown Rating (VAC)                                                                                            | Normal: 5000<br>Moist: 2500                               | Normal: 4000<br>Moist: 2000                  | ASTM D149    |
| Dielectric Constant @ 1000 Hz                                                                                             | 5.5                                                       | 5.5                                          | ASTM D150    |
| Tear Strength lb/in (kN/m)                                                                                                | 100 (17.5)                                                | 100 (17.5)                                   | ASTM D1458   |
| Elongation (%)                                                                                                            | 4                                                         | 4                                            | ASTM D412    |
| Hardness (Shore A)                                                                                                        | 85                                                        | 85                                           | ASTM D2240   |
| Specific Gravity                                                                                                          | 2.0                                                       | 2.0                                          | ASTM D792    |
| Maximum Use Temperature (°C)                                                                                              | -60 to 180                                                | -60 to 180                                   | —            |
| UL Flammability Rating                                                                                                    | 94V-0                                                     | 94V-0                                        | UL94         |
| Volume Resistivity (ohm-m)                                                                                                | Normal $1.0 \times 10^{13}$<br>Moist $1.5 \times 10^{10}$ | $1.0 \times 10^{13}$<br>$1.5 \times 10^{10}$ | ASTM D257    |

**Note:** Pressure sensitive adhesive may increase thermal impedance by as much as  $0.05^{\circ}\text{C-in}^2/\text{W}$  ( $.32^{\circ}\text{C-cm}^2/\text{W}$ ). Contact Chomerics for further information.

### CHO-THERM® Film Reinforced Urethane Insulator

### 1684 RELIABLE PERFORMANCE, POLYIMIDE REINFORCED

The urethane binder of CHO-THERM 1684 material allows conformal coating without the dewetting problems (e.g., migration and bubbling) common when applying a conformal coat over silicone. Its magnesium oxide filler provides good thermal conductivity and promotes longer tool life than does more abrasive aluminum oxide. Excellent dielectric strength and exceptional durability are provided by a polyimide film carrier which also gives superior resistance to tear and cut-through from burrs on heat sinks. Polyimide film prevents dielectric voltage breakdown up to 6,000 VAC.

| Typical Properties                                                                                                        | 1684                            | Test Method  |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------|
| Binder                                                                                                                    | Urethane                        | —            |
| Filler                                                                                                                    | MgO                             | —            |
| Carrier                                                                                                                   | Polyimide                       | —            |
| Color                                                                                                                     | Tan                             | —            |
| Thermal Conductivity (W/m-K)                                                                                              | .84                             | MIL-I-49456A |
| Thermal Impedance<br>$\frac{^{\circ}\text{C-in}^2}{\text{Watt}} \left( \frac{^{\circ}\text{C-cm}^2}{\text{Watt}} \right)$ | .38 (2.45)                      | MIL-I-49456A |
| Voltage Breakdown Rating (VAC)                                                                                            | 6000                            | ASTM D149    |
| Thickness in (mm)                                                                                                         | .005 (.13)<br>$\pm .001 (.025)$ | —            |
| Tensile Strength psi (MPa)                                                                                                | 3000 (20.68)                    | ASTM D412    |
| Tear Strength lb/in (kN/m)                                                                                                | 150 (26.3)                      | ASTM D624    |
| Elongation (%)                                                                                                            | 10                              | ASTM D412    |
| Hardness (Shore A)                                                                                                        | 90                              | ASTM D2240   |
| Specific Gravity                                                                                                          | 2.20                            | ASTM D792    |
| Maximum Use Temperature (°C)                                                                                              | -60 to 150                      | —            |
| UL Flammability Rating                                                                                                    | 94V-0                           | UL94         |
| Volume Resistivity (ohm-cm)                                                                                               | $1 \times 10^{14}$              | ASTM D257    |

**Note:** Pressure sensitive adhesive may increase thermal impedance by as much as  $0.05^{\circ}\text{C-in}^2/\text{W}$  ( $.32^{\circ}\text{C-cm}^2/\text{W}$ ). Contact Chomerics for further information.

### CHO-THERM® Non-Insulating Interface Material

### 1646 OUTSTANDING THERMAL PERFORMANCE

CHO-THERM 1646 pads offer the best available thermal performance, without the use of grease, in applications where electrical isolation is not required. The low thermal impedance of CHO-THERM 1646 material ( $.20^{\circ}\text{C-in}^2/\text{watt}$ ) approximates that of thermal grease.

CHO-THERM 1646 material consists of a boron nitride-filled silicone coated on one side to .002 in (.051 mm) aluminum foil. Acrylic pressure sensitive adhesive is on the other side of the foil.

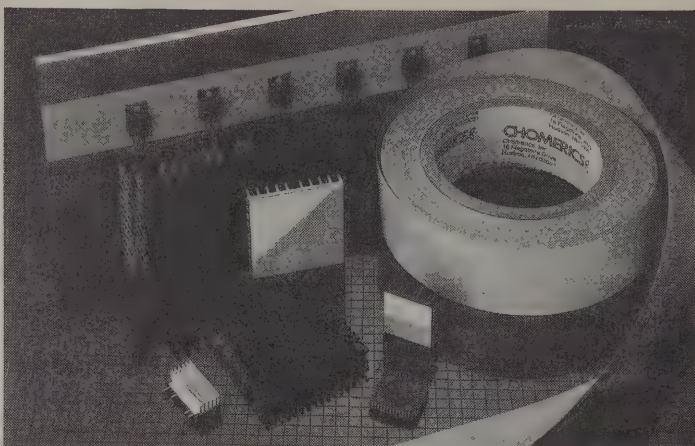


## THERMATTACH® Double-Sided Adhesive Tapes

THERMATTACH 404 and 405 tapes bond heat sinks to mounted components and attach components to vertical chassis walls. They are superior replacements for mechanical fasteners and thermal epoxies. THERMATTACH tapes offer added thermal performance with an easy peel and stick installation. Unlike epoxies, thermal tapes don't require curing time.

Both tapes are embossed with a cross-hatch pattern that provides maximum surface wetting and conformability with minimum air pockets.

Call or fax us for Technical Bulletin #72.



### 404 EXCELLENT THERMAL PERFORMANCE AND ELECTRICAL ISOLATION

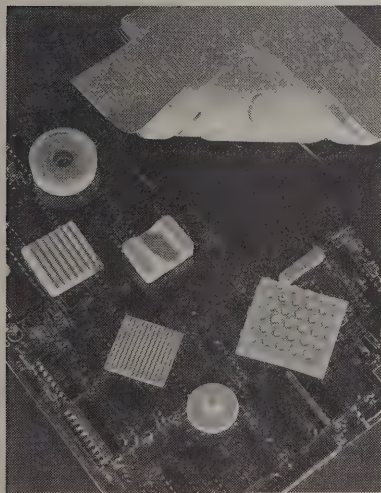
THERMATTACH 404 thermal tape consists of a high bond strength, pressure sensitive acrylic adhesive, loaded with aluminum oxide particles and coated onto .001 in (.025 mm) Kapton\* MT thermally-filled polyimide film.

\* Tradename of DuPont

### 405 SUPERIOR THERMAL PERFORMANCE WITHOUT ELECTRICAL ISOLATION

THERMATTACH 405 thermal tape consists of a high bond strength, pressure sensitive acrylic adhesive, loaded with aluminum oxide particles and coated onto a .002 in (.051 mm) aluminum carrier. The aluminum foil provides added thermal conductivity for applications where electrical isolation is not required.

## CHO-THERM® Highly Conformable Gap Fillers



These "super-soft" materials fill air gaps between hot components and heat sinks or metal chassis. Their flexible, elastic nature allows them to blanket highly uneven surfaces. Heat is conducted away from separate components or entire PCBs into metal covers, frames or spreader plates. Unlike liquid-filled plastic bags, there is no danger of puncture and resultant problems. CHO-THERM T274 and A274 can be custom molded into practically any shape. Ribbed profile forms provide added deflection characteristics.

### T274 EFFECTIVE THERMAL MANAGEMENT WITH ELECTRICAL ISOLATION

CHO-THERM T274 consists of an extremely soft silicone elastomer loaded with aluminum oxide particles laminated to a thermally conductive, reinforced material. The durable layer resists puncture and eases handling. The material is available in six standard thicknesses from .040 in (1.02 mm) to .200 in (5.1 mm) as well as custom thicknesses.

### A274 EXCEPTIONAL HEAT SPREADING CAPABILITIES

This low durometer silicone elastomer is laminated to .002 in (.051 mm) aluminum foil. The foil acts as a heat spreader to eliminate hot spots over high heat dissipating circuit board components. This extremely pliant material comes in sheets and tape form as thin as .020 in (.51 mm).

Call or fax us for Technical Bulletin #70.

GRACE Electronic Materials

Chomerics, Inc. / 77 Dragon Court / Woburn, MA 01888  
Tel: 617-935-4850 Fax: 617-933-4318

# CUT CRAFT, INC. ...ON THE CUTTING EDGE

**CUSTOM DIE CUT COMPONENTS FOR THE ELECTRONICS INDUSTRY**

**REDUCE MATERIAL COSTS • REDUCE ASSEMBLY TIME  
SOLVE DESIGN PROBLEMS**

**INSULATORS • GASKETS • SHIELDING  
DISPLAY LENSES • RUBBER FEET**



## Materials Include:

- ☐ Bergquist Sil-Pad®
- ☐ Chomerics Cho-Therm®
- ☐ DuPont Kapton®
- ☐ DuPont Nomex®
- ☐ DuPont Mylar® Polyester
- ☐ Fishpaper
- ☐ Foams-Neoprene, Vinyl, Urethane, Polyethylene, Silicone
- ☐ General Electric Lexan® (FR 700)
- ☐ General Electric Ultem®
- ☐ General Electric Valox®
- ☐ G10/FR4 Epoxy Fiberglass
- ☐ ITW Formex/Statex Polypropylene
- ☐ Lydall S-350
- ☐ Lydall Duroid D-100 FR/D-225 FR/D-800 FR
- ☐ Lydall Voltex 450
- ☐ Rigid PVC
- ☐ Windsor-Stevens FRP
- ☐ Impregnated Wire Mesh
- ☐ Rubber-Silicone, Neoprene
- ☐ 3M Pressure Sensitive Adhesives, Tapes, and Urethane Rollstock

## Options:

- ☐ Die Cut • Sheared
- ☐ Scored • Perforated • Creased
- ☐ Punched • Formed • Folded
- ☐ Printed
- ☐ Laminated—Full or Selective Coverage
- ☐ Pressure Sensitive Adhesive Coated

## RFI Shielding:

The above materials laminated with copper or aluminum foil. Wire mesh and conductive gaskets.

## EMI Shielding:

The above materials laminated with nickel foil. Wire mesh and conductive gaskets.

**PARTS MADE WITH UL® RECOGNIZED MATERIALS  
CERTIFICATE OF CONFORMANCE PROVIDED UPON REQUEST**

**INQUIRIES INVITED • 5 TO 15 DAY DELIVERY**

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# SARCON® THERMAL-CONDUCTIVE AND FLAME RETARDANT SILICONE RUBBER

## SARCON® Products are Vital Electronic Components

A unique new product range developed on the basis of our proprietary technology—SARCON is a completely novel type of silicone rubber combining high thermal conductivity and superior flame-retardancy with the inherent properties of silicone rubber such as heat resistance and electrical insulating properties.

In recent years, the fast rate at which electronics and computer technology have spread through day-to-day life, has led to the need for more powerful semiconductor devices and more compact and lightweight products. Our Fujipoly silicone rubber, developed to meet these needs, has already earned itself a high reputation among many users, praising it as a revolutionary rubber-type electrical insulant.

Its applications span a constantly growing range as thermal conductive insulators for semiconductor devices, compression jointing materials for thermistors and temperature sensors, and as a thermal conductive material for all types of heaters.

SARCON is the most outstanding product from our state-of-the-art production facilities, with micro-unit accuracy standards and a molding technology of the highest level that has taken us years to perfect. Apart from sheet, SARCON is also available in tape, tube and cap form and can be supplied with an adhesive. To let the user choose the best suited product for his purpose, application, and conditions, it comes in two grades with or without adhesive, and in four types: TR, HR, GTR, and GHR.

## Tailor-Made for a Perfect Fit with Users' Needs

### • General Type—SARCON TR

Press and extrusion molding permit the manufacture of any type of intricate shape, whether cap, sheet, tape, or tube-shaped, to precisely meet practical needs.

### • High-Heat Conductive Type—SARCON HR

Thanks to the inclusion of a special fine ceramic ingredient, this high-grade type of SARCON offers remarkably improved thermal conductivity.

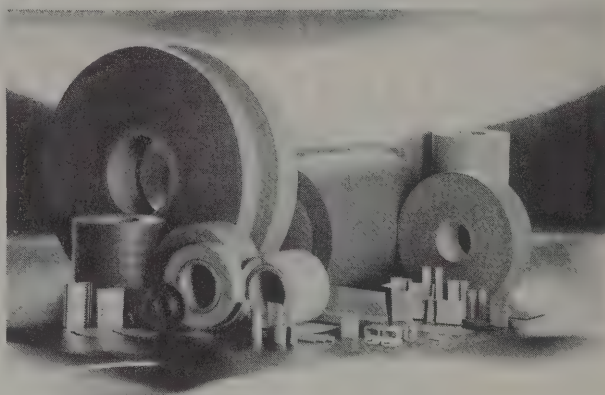
### • Reinforced type—SARCON GTR • SARCON GHR

These particular reinforced grades have a 0.05mm thick glass cloth layer laminated onto TR and HR to provide a dramatic increase in physical strength characteristics such as tensile and tear strength.

For improved ease of handling, we also offer our SARCON AD series which corresponds to the SARCON GTR and GHR but with the application of an adhesive coating.

## Wide Range of Applications

- Especially for use as electrically insulating heat-dissipating spacers in power transistors and semiconductors such as ICs and LSIs
- For use as electrically insulating heat-dissipating spacers in thermistors and posistors.
- Ideal for electronic jars, panel heaters, etc.
- For use as an electrical insulator in temperature fuses and temperature sensors, or as a high/low temperature heat transfer medium.
- Ideal for microwave ovens, panel heaters, ceramic heaters, etc.
- As a replacement for molded silicone-rubber parts in applications with a heat gradient. Ideal for insulating plates around microwave ovens and magnetrons, transformers, etc.
- Ideal for TV, video, stereo, Compact-Disc players, stabilized power supplies, computers, brushless motors, etc.



## SARCON® Offers Superior Properties with a Host of User Benefits

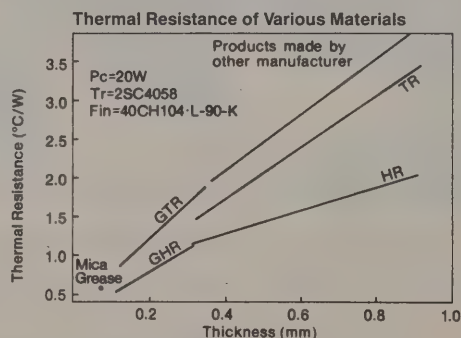
### • High Heat Conductivity

SARCON has a thermal conductivity eight times that of conventional silicone rubber, three times that of mica, and twelve times that of polyester.

| Product Description                                   | Thermal Conductivity<br>( $\times 10^{-4}$ cal/cm $\cdot$ Sec $\cdot$ °C) |
|-------------------------------------------------------|---------------------------------------------------------------------------|
| SARCON HR                                             | 41                                                                        |
| SARCON TR                                             | 29                                                                        |
| SARCON GHR                                            | 34                                                                        |
| SARCON GTR                                            | 22                                                                        |
| General silicone rubber<br>(manufactured by Fujipoly) | 3.7 ~ 5.4                                                                 |
| Mica                                                  | 14                                                                        |
| Polyester                                             | 3.4                                                                       |
| Polyethylene                                          | 6.0                                                                       |

### • Low Thermal Resistance and Stable Thermal Resistance Variation

SARCON is elastic, providing a perfect tight fit on uneven surfaces. Therefore, there is no need to use conventional gap-sealing and filling agents such as grease to bring out the superb high heat conductivity and outstandingly low thermal resistance and stable thermal resistance variation that are the hallmark of our SARCON.



### • Usable over a Wide Temperature Range (–60°C ~ 180°C)

Thanks to its superior resistance to heat and cold, SARCON is ideal for use in a wide temperature range, throughout which it maintains its outstanding electrical properties, such as the excellent electrical insulating properties characteristic of silicone. Nor does it present any significant variation in its physical properties. SARCON is distinguished by a whole range of other outstanding properties, such as excellent resistance to weather, arc, corona discharge, ozone and chemicals.

**Fujipoly® America Corporation**

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# Die cut components for pagers, cellular phones & computers

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Parts from prototype through production • Rolls or individual pieces  
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# PRECISION DIECUT COMPONENTS

# GM Nameplate

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SEATTLE  
WASHINGTON

- Insulators
- EMI-RFI-ESD Shields
- Spacers, Gaskets
- Lenses, Filters
- Zoned Adhesives
- Foam Adhesives
- Formed-Laminated

## VERTICALLY INTEGRATED MANUFACTURING

Pre-tested, ready-to-install components reduce your assembly costs.

- Custom designs with and without graphics
- Color filter windows
- Multiple hard coat finishes
- 100% functionally tested
- Installation-ready
- Many stock materials

## PROCESS-CONTROLLED PRODUCTION

- Computerized quotation, order entry and production tracking through final shipment
- CAD Engineering
- On-site Tool & Die facility - Steel rule, Class A
- Spectrophotometer color analysis and match
- Class 1000 Clean Room stations
- 100% testing for continuity, resistance, dielectric strength and as required
- Documented QA to MIL-I-45208A
- Prototype service—laser or cutter-plotter CNC fabricated thus no initial tool cost

## PRODUCT SUPPORT SYSTEM

- Trained, nationwide sales force
- Experienced design/manufacturing team
- Follow up assistance after product delivery
- One account manager tracks each job from quote through shipment, coordinating manufacture to meet your production schedule.

## ELECTRONIC DATA INTERCHANGE

- 24 hour bulletin board for graphic and drafting files
- Business documents

# ONE SOURCE TOTAL QUALITY



## CONSTRUCTIONS/OPTIONS:

- ☐ Steel Rule Diecut — Rolls, Sheets, Individual
- ☐ Class-A Hard Tool Diecut — Rolls, Sheets, Individual
- ☐ Creasing / Scoring / Perforating
- ☐ Printing / Laminating — Full or Selective
- ☐ Plated Contacts — Gold, Tin
- ☐ Soldering, Assembling, SPC Monitored

## MATERIALS:

- ☐ 3M Adhesives, Laminates, Masks
- ☐ GE Lexan, Valox
- ☐ Du Pont Kapton, Nomex, Mylar
- ☐ Over 400 Stock Materials

See Our Other Data Pages In Vol. B Section 5150

### GM NAMEPLATE CUSTOM PRODUCT IDENTIFICATION COMPONENTS

- nameplates
- roll and computer imprintable labels
- cosmetic front panels and overlays
- fabricated subassemblies
- keyboards, keypads
- complete man-machine interface graphics and assemblies

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CORPORATION

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NORRISTOWN, PA 19404  
TEL 215-272-8960  
FAX 215-270-3138

## HEAT SHRINKABLE TUBING

### PO-135

- Class B thermally stable crosslinked polyolefin tubing with a 2:1 shrink ratio.
- Designed for continuous use at 125°C.
- Extremely tough, smooth insulator.
- Excellent dielectric strength, chemical and oil resistance.
- UL VW-1 and CSA OFT 125°C; MIL-I-23053/5;
- Standard colors-black, white and clear (not VW-1).
- Produced in expanded I.D. from 3/64" to 2".
- Shrink temperature 200°C.
- Also available in commercial grade.
- Used as insulation on lead terminations, wire harnesses and components.

### LM-145

- Extremely flexible modified polyolefin tubing with a 2:1 shrink ratio.
- Excellent mechanical strength, abrasion and cut-through resistance.
- Solvent and fungus resistant.
- Low water absorption.
- High dielectric strength.
- UL VW-1 125°C; MIL-I-23053/5.
- Standard colors- black, white.
- Produced in expanded I.D. from 3/64" to 2".
- Shrink temperature 150°C, shrinks fast.
- Maximum flexibility.

### HM-140

- Semi-rigid modified polyolefin tubing with a 2:1 shrink ratio.
- Available in cut pieces (HM-140CP) for use on automatic termination machines.
- Exceptional mechanical strength and toughness - abrasion, tearing and cut-through resistant.
- Acid, alkali, hydrocarbon solvent, hydraulic fluid and fungus resistant.
- High dielectric strength.
- Flame retardant.
- UL 125°C; MIL-I-23053/6.
- Standard color-black.
- Shrink temperature 200°C.
- Excellent for strain relief applications.

### AL-PO

- Dual wall adhesive lined polyolefin tubing with a 2:1 shrink ratio.
- Excellent resistance to abrasion, fuel, oil, solvents, acids and alkalis.
- Inner wall melts and flows sealing components inside.
- Standard color-black.
- Produced in expanded I.D. from 1/8" to 1".
- Shrink temperature 120°C.
- MIL-I-23053/4, class 2.

### HT-105

- Class A flexible vinyl tubing with a 2:1 shrink ratio.
- Designed for continuous use at 105°C.
- Outstanding dielectric properties, abrasion and cut-through resistance, oil and chemical resistance.
- UL VW-1 and CSA OFT 105°C; MIL-I-23053/2.
- Standard colors-black, white and clear.
- Produced in expanded I.D. from 3/64" to 2".
- Shrink temperature 150°C.
- Also available in heavy wall and commercial grade.
- Covers and insulates cables, components and terminals.

### HA-150

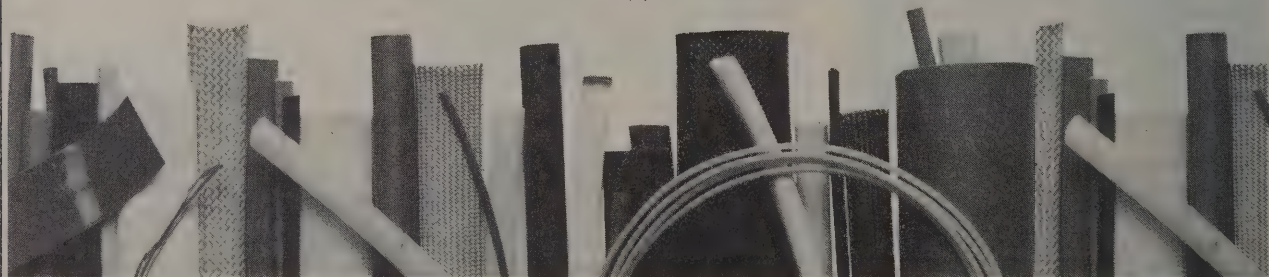
- Clear, semi-rigid polyvinylidene fluoride tubing with a 2:1 shrink ratio.
- Extremely tough, excellent abrasion and cut-through resistance.
- Chemical and solvent resistant.
- High dielectric strength.
- Wide temperature operating range -55°C to +175°C.
- Flame retardant.
- UL VW-1 150°C; MIL-I-23053/9.
- Standard color-clear.
- Produced in expanded I.D. from 3/64" to 1".
- Shrink temperature 200°C.
- Good protection for delicate components.

### TE-250

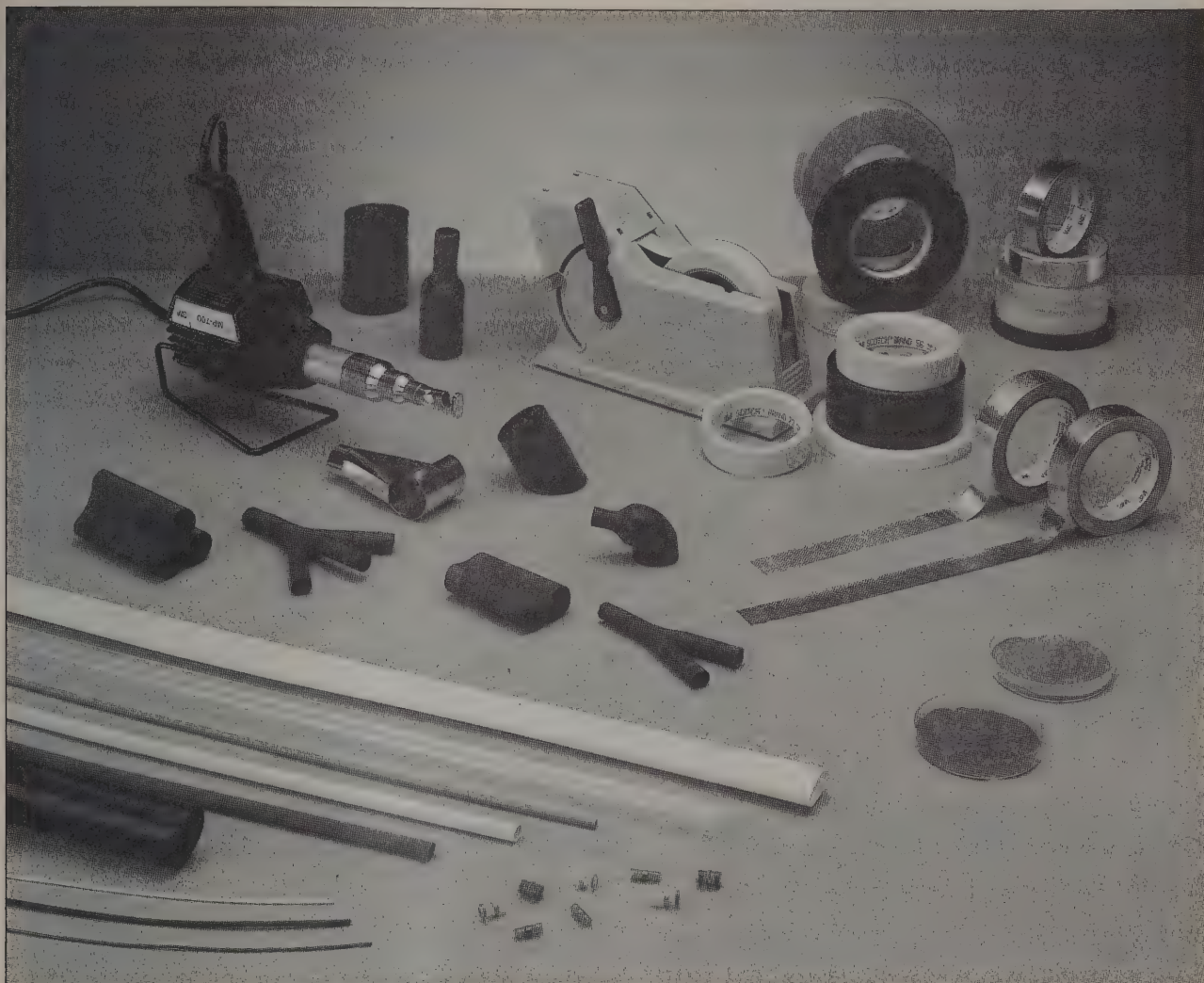
- Polytetrafluoroethylene (P.T.F.E.) shrink tubing with up to a 2:1 shrink ratio.
- Designed for continuous use up to 250°C.
- Used in extreme electrical, thermal and chemical environments.
- Available in thin, standard and extra thin walls.
- MIL-I-23053D/12.
- Standard color-natural.
- Produced in expanded I.D. from .055 to .500".
- Shrink temperature 350°C.

### TUFFSHRINK<sup>2</sup>™

- Heavy wall polyolefin tubing with a 3:1 shrink ratio.
- Internally applied adhesive sealant provides corrosion resistance, strain relief and waterproofing.
- UL 486 B/D, CSA, MIL-I-23053/15.
- Shrink temperature 200°C.
- Produced in expanded I.D. of .400", .750", 1.10", 1.50", 2.0" and 3.0".
- Standard color-black.
- Used in protection of electrical splices above grade, under ground or under water.
- Outstanding abrasion resistance.
- Available in commercial or flame retardant versions with or without adhesive liners.







For solutions to your electrical insulation problems, call 1-800-322-7711.  
(or FAX 1-800-828-9329)

3M Electrical Specialties Division offers a full range of products that ensure the highest levels of insulation in electrical component manufacturing. These products include electrical

insulating tapes, foil shielding tapes, tape dispensers, powder resins, heat-shrink tubing, molded shapes, shield terminators and processing equipment.

**Innovation working for you™**

**3M Electrical Specialties Division**

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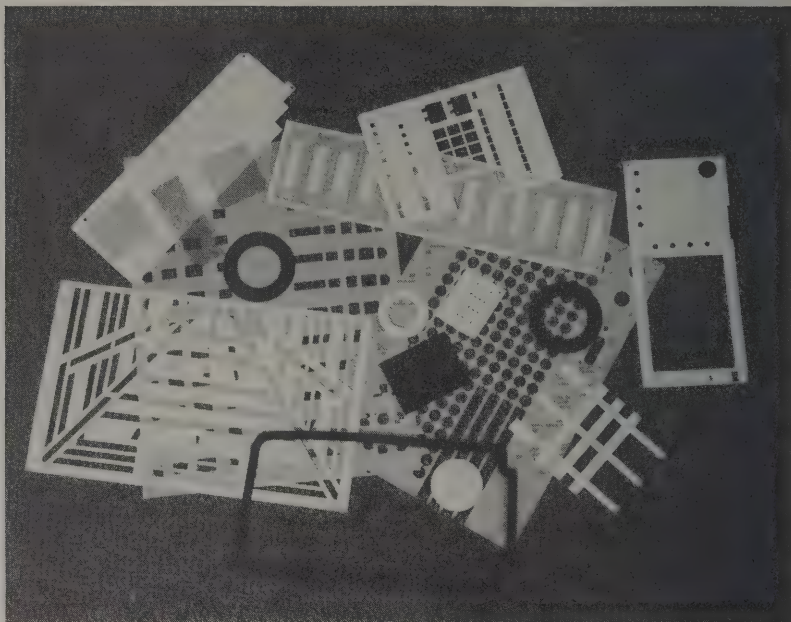
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## Precision That's A Cut Above

*From Blueprint to  
Finished product,  
THRUST is your  
TOTAL source for  
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### SERVICES

- Die Cutting
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### APPLICATIONS

- Insulators
- Membrane Spacers
- EMI/RFI Shielding
- Faceplates
- Nameplates
- Decals
- Gaskets
- Paint Masks
- Discs

### MATERIALS

- |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• <b>Plastics</b></li> <li>• Polycarbonate</li> <li>• Polyester</li> <li>• Polyethylene</li> <li>• Polystyrene</li> <li>• Vinyl</li> <li>• Mylar®</li> <li>• Lexan®</li> <li>• Valox®</li> <li>• Nomex®</li> <li>• Ultem®</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Fibre</b></li> <li>• Fishpaper</li> <li>• Chipboard</li> <li>• Mica</li> <li>• Vulcanized</li> <li>• <b>Foil</b></li> <li>• Aluminum</li> <li>• Copper</li> <li>• <b>Rubber</b></li> <li>• Neoprene</li> <li>• Urethane</li> <li>• Closed Cell</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Adhesives</b></li> <li>• Tapes</li> <li>• Foams</li> <li>• Rubber</li> <li>• Acrylic</li> <li>• Pressure Sensitive</li> <li>• Single Sided</li> <li>• Double Sided</li> <li>• Custom Laminates</li> </ul> |
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For manufacturers' sales offices, see yellow pages

EEM 1993



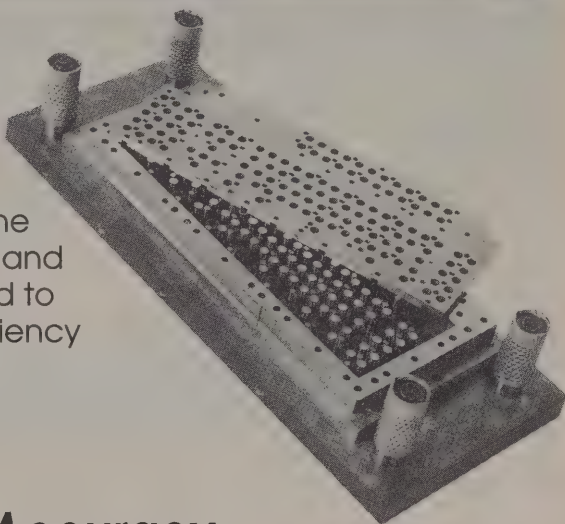
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*Committed To Excellence Through Dedication To Quality*

## Outstanding Performance

Today's high tech products and components require sophisticated die cut parts to match. Thrust Industries is recognized as a leading producer of high quality die cut materials for the electronics, automotive, telecommunications, and appliance industries. At Thrust, we're dedicated to helping our customers achieve maximum efficiency and productivity by offering a wide range of customized materials and services.

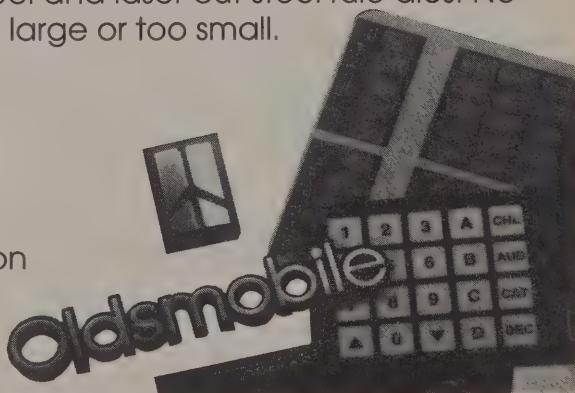


## Superior Accuracy

Our quality standards are among the highest in the industry. Using statistical process control to ensure accuracy, we consistently achieve minimum tolerances on critical dimensions. Each part is produced according to your exact specifications. In addition, we offer both matched metal hard tool and laser cut steel rule dies. No request is too large or too small.

## Exceptional Delivery

Performance and accuracy count only if you receive your parts on time. You can depend on Thrust Industries for prompt turn-around and delivery. After prototype approval, orders are typically shipped in 10 working days or less.



*Precision That's A Cut Above*

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Authorized Converter  
Laminating Adhesives

**3M**

## BACKPANELS

| Manufacturer             | Starting EEM Page No. | Model/Series | Plug-in | Interface Computer/ Peripheral | Spacing in Inches | Power BUS | Pattern                     |
|--------------------------|-----------------------|--------------|---------|--------------------------------|-------------------|-----------|-----------------------------|
| Atlee                    | C-1671                |              |         |                                |                   | √         |                             |
| EMS                      | C-1672                |              |         |                                |                   |           |                             |
| Product Technology, Inc. | C-1673                |              |         | √                              |                   |           | DIN/Eurocard, VME, Multibus |
| Vector Electronics Co.   | C-1674                |              |         | √                              |                   |           | STD, Multibus, Mac, IBM     |

## BOARDS, PLUG-IN

| Manufacturer           | Starting EEM Page No. | Extender | Interface | Memory | Processor | Prototype |
|------------------------|-----------------------|----------|-----------|--------|-----------|-----------|
| EMS                    | C-1672                | √        | √         |        |           |           |
| Vector Electronics Co. | C-1674                | √        |           |        |           | √         |

## PROGRAMMING BOARDS/SYSTEMS/SWITCHING MATRICES

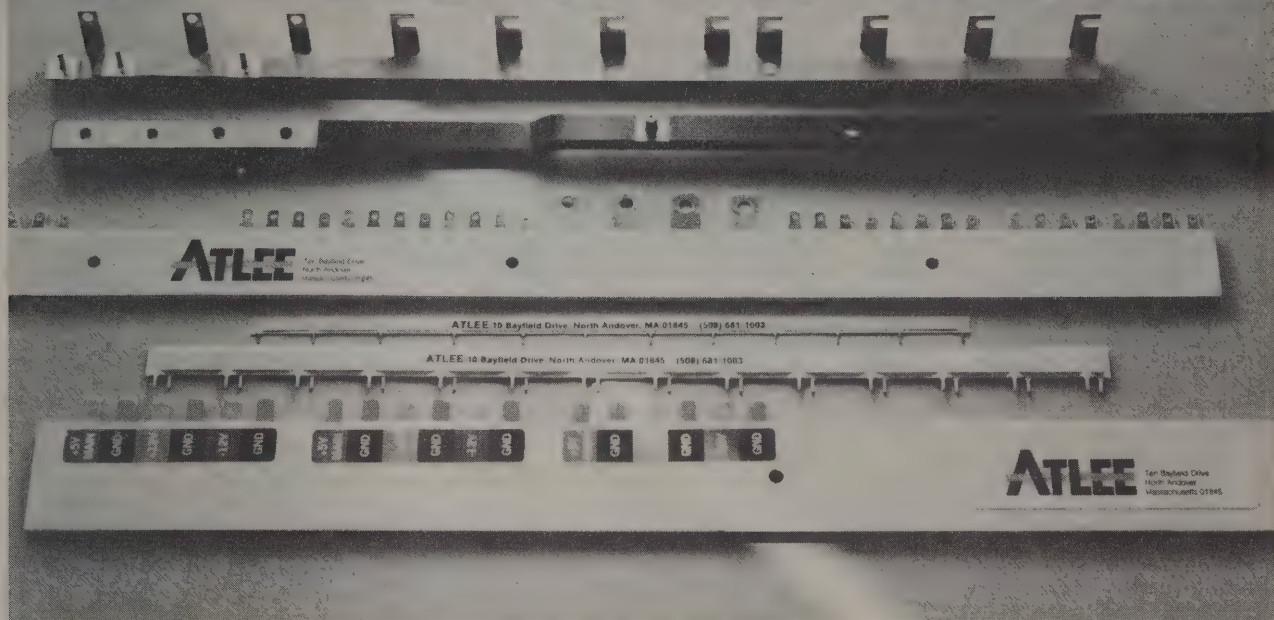
| Manufacturer       | Starting EEM Page No. | Model/Series | Type of Connections | No. of Connections | Fixed | Contact Spacing |
|--------------------|-----------------------|--------------|---------------------|--------------------|-------|-----------------|
| Product Technology | C-1673                | Custom       |                     |                    |       |                 |

## BUS BARS & SYSTEMS

| Manufacturer | Starting EEM Page No. |
|--------------|-----------------------|
| Atlee        | C-1671                |



# ATLEE BUS BARS



**ATLEE** is a full line manufacturer of busbars serving the following industries:

- Aerospace
- Telecommunications
- Transportation
- Business Systems
- Medical
- Computers
- Defense

We have available design and engineering services as well as a prototype department. We also pride ourselves in taking your "initial" design and providing quick turnaround and low-cost prototypes to aid in "your" engineering.

## ATLEE'S TYPES OF BUSBARS INCLUDE:

- Laminated Busbars
- Machined Busbars
- Powder Coated Busbars
- Epoxy Coated Busbars
- Printed Circuit Board Busbars
- Shields
- Printed Circuit Board Stiffeners

## TO SPECIFY A CUSTOM BUS BAR

When calling the factory or sending even a sketch, be sure to include the following information:

- 1) Applications
- 2) Space available
- 3) Number, location and type of terminations
- 4) Current requirements
- 5) Voltage drop requirements
- 6) Type of mounting Dielectric strength
- 7) Type of mounting
- 8) Environmental requirements
- 9) Type finish on conductors

## ATLEE BUSBARS OFFER YOU:

- **Lowered production costs**, because assembly is simple and fast.
- **Reduced volume** which permits higher density packaging than possible with wire harnesses.
- **Reduced noise** with ideally distributed capacitance and isolation of conductors.
- **High current-carrying capacity.**
- **Low impedance and inductance.**

## CONTACT ATLEE IF YOU REQUIRE:

- **Experience**
- **Quality**
- **"Testing, Proving or Building" of your design**
- **Manufacture of prototypes to High Volume production**
- **"Quick" prototype delivery**
- **On-Time Delivery**

# ATLEE

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**EMS****AUTOMATED WIRING AND PACKAGING SYSTEMS****WIRE WRAPPING AND STITCH WIRING SERVICES**

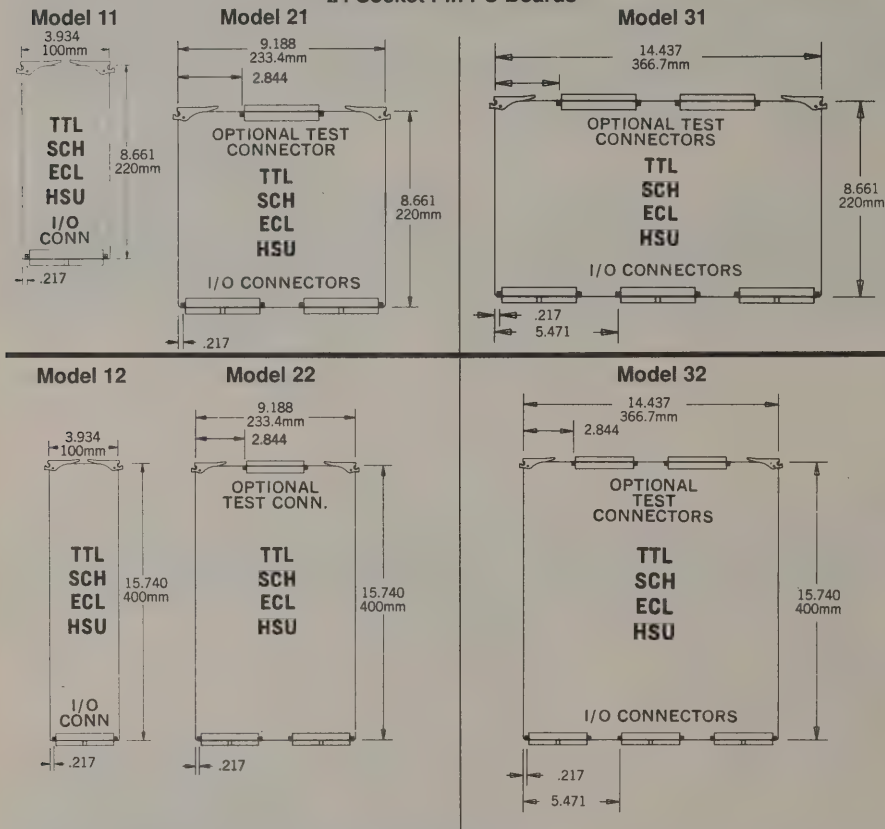
Wire wrapping is 100% inspected to MIL-STD-1130 and EIA STD RS-280-A. Zero wiring error guarantee on tested panels. Stitch wiring is an excellent discrete wiring system for use with high speed circuits and low-profile applications. Bonds are tested to U.S. Navy Specification WS14783.

**Two Pin Technologies****Stitch-Wire**

MIL-approved wiring technique providing optimum performance for ECL and fast Schottky devices. Fast, easy and low cost changeability with the highest reliability of diffusion bonding.

**Wire-Wrap**

Tin or gold plated 1 to 3 level wrap pins. Suitable for TTL and some Schottky applications.

**24 Socket Pin PC Boards****24 Extender Cards**

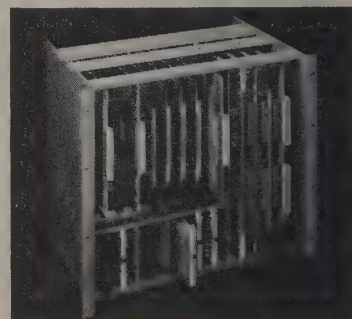
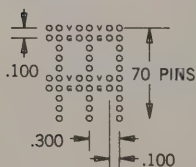
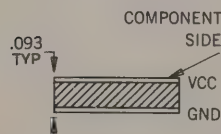
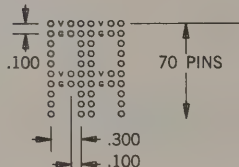
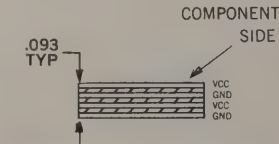
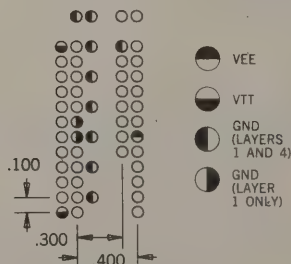
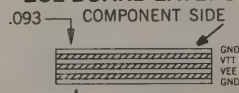
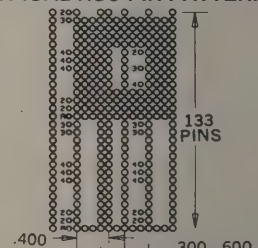
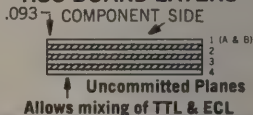
Ruggedly framed and supported extender card with 96 pin Reverse DIN connectors, 5-layers, 96 patched test points for each board size and logic option.

**12 Backplanes**

For .800" or 1.200" card centers. 96 pin Reverse DIN connectors, press-fit V&G wrap-pins. Massive power and ground planes. Wire wrap interconnections. TTL, Schottky, ECL and High-Speed Universal.

**16 Card Racks**

6 free standing and 6 Retma mount vertical racks for each size board .800" and 1.200" card spacing. 2 horizontal (free standing or Retma mount) racks for Model 32 boards, and mixer racks for different board sizes.

**TTL 2-Layer Board Typical TTL Pin Pattern****TTL BOARD LAYERS****Schottky 4-Layer Board Typical Schottky Pin Pattern****SCHOTTKY BOARD LAYERS****ECL 4-Layer Board Typical ECL Pin Pattern****ECL BOARD LAYERS****High-Speed Universal HSU 4-Layer Board TYPICAL HSU PIN PATTERN****HSU BOARD LAYERS****EMS**

14251 CHAMBERS RD., TUSTIN, CA 92680 • (714) 669-9473 • FAX (714) 838-2967  
5 DIVISION ST., WARWICK, RI 02818 • 1-800-932-8030

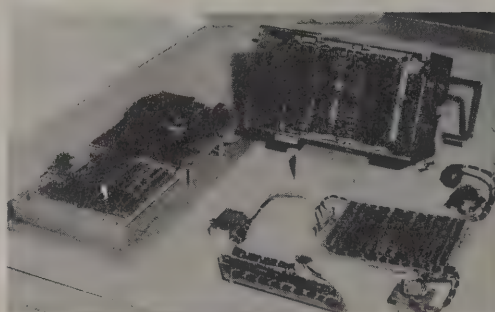
**SANDBERG**  
ELECTRONICS, INC.




**PRODUCT TECHNOLOGY INC.**
**"SERVICE IS OUR SPECIALTY"**

2811-B McGAW AVE., IRVINE, CA 92714 • PHONE: (714) 474-8998 • FAX: (714) 474-1340

## ASSEMBLY SERVICES



## QUALIFICATIONS

|               |                             |
|---------------|-----------------------------|
| MIL-I-45208   | QUALITY                     |
| MIL-S-45743   | SOLDER                      |
| WS 6536       | SOLDER                      |
| MIL-STD-1130B | WIRE WRAPPING               |
| DOD-HDBK-263  | ELECTROSTATIC DISCH. CONTR. |
| MIL-STD-454   | ELECTRONIC ASSEMBLY         |
| MIL-STD-2000  | ELECTRONIC ASSEMBLY         |

## "SERVICE IS OUR SPECIALTY"

Product Technology supplies the highest quality products consistent with our customers' workmanship standards and cost requirements.

## SERVICES AVAILABLE

- "BUILD-TO-PRINT" ASSEMBLY
- PACKAGING & COMPLETE PRODUCT ASSEMBLY
- HARNESS & CABLE PREPARATION
- DISCRETE WIRING
- FULL TURN-KEY SERVICE
- OFF-SHORE ASSEMBLY & WIRING
- REPAIR & UPGRADE EXISTING EQUIPMENT
- ENGINEERING & TESTING
- HIGH & LOW VOLUME PRODUCTION RUNS
- PROTOTYPE DEVELOPMENT

Product Technology would welcome the opportunity to conduct you on a tour of our facilities to demonstrate that our equipment, controls and capabilities are second to none.

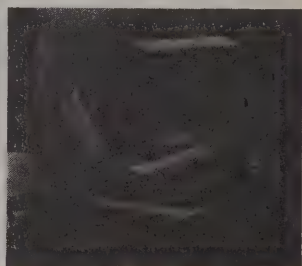
## TESTING SERVICES

Low and high voltage testing.  
Bare board and in-circuit fixtures.



## ENGINEERING SERVICES

PC board design (CAD), digitizing, photoplotting, data conversion, design analysis and documentation packages. PC boards, cables, harnesses and complete electronic systems.



## DISCRETE WIRING SERVICES

Automatic and semiautomatic wire wrapping — point-to-point, XY and special routing.

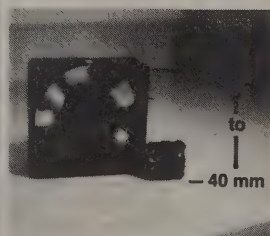
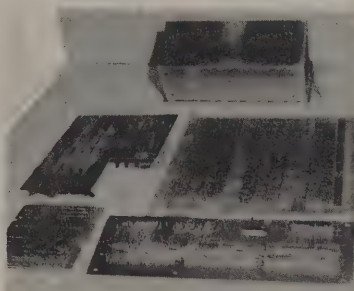


## Automated Wiring Machines

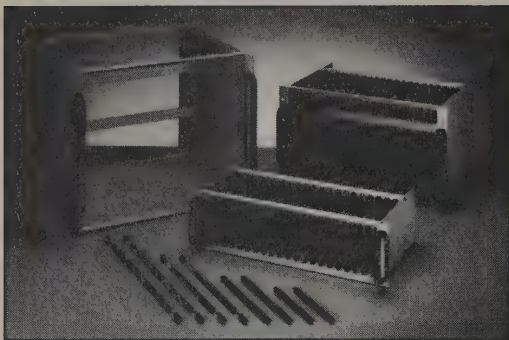


## ELECTRONIC PACKAGING PRODUCTS

Logic cards, backplanes, wire wrapped extender cards, racks — DIN/EUROCARD, VME, Multibus, custom PC boards, hardware and wire (cut and stripped).



# Vector-Pak®

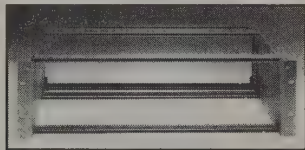


## Vector-Pak® Euro Card Cages - VME - MBI

- All side panels deeper than 160MM include mounting holes for positioning front extrusions at 60MM increments
- Brushed aluminum finish
- Subrack assemblies and kits can be configured to custom specifications - call factory for information
- DIN connectors, dress panels, cage handles, and decorative enclosures available separately ( please consult factory)
- For assembled versions, substitute (A) for the (K) below

| MFR No.      | W X H X D           | Card Size H X W | Max. Slots |
|--------------|---------------------|-----------------|------------|
| CCK160-3U    | 19 x 5.21 x 9.27    | 3U x 160mm      | 21         |
| CCK160-6U    | 19 x 10.46 x 9.27   | 6U x 160mm      | 21         |
| CCK160-6UQ-6 | 4.36 x 10.46 x 9.27 | 6U x 160mm      | 5          |
| CCK160-6UH   | 8.36 x 10.46 x 9.27 | 6U x 160mm      | 10         |
| CCK220-3U    | 19 x 5.21 x 11.63   | 3U x 220mm      | 21         |
| CCK220-6U    | 19 x 10.46 x 11.63  | 6U x 220mm      | 21         |
| CCK220-9U    | 19 x 15.71 x 11.63  | 9U x 220mm      | 21         |
| CCK280-6U    | 19 x 10.46 x 14.0   | 6U x 280mm      | 21         |
| CCK280-9U    | 19 x 15.71 x 14.0   | 9U x 280mm      | 21         |
| CCK340-6U    | 19 x 10.46 x 16.36  | 6U x 340mm      | 21         |
| CCK340-9U    | 19 x 15.71 x 16.36  | 9U x 340mm      | 21         |
| CCK400-6U    | 19 x 10.46 x 18.72  | 6U x 400mm      | 21         |
| CCK400-9U    | 19 x 15.71 x 18.72  | 9U x 400mm      | 21         |

## Vector-Pak® Retma (EIA) Card Cages



| MFR No.        | W X H X D (in.)     | Card Size H X W (in.) | Max. Slots |
|----------------|---------------------|-----------------------|------------|
| CCK12S/90*     | 19 x 5.25 x 9.00    | 4.5 x 3.0-5.0         | 21         |
| CCA13S/90      | 19 x 5.25 x 9.00    | 4.5 x 5.5-7.0         | 21         |
| CCK13S/90*     | 19 x 5.25 x 9.00    | 4.5 x 5.5-7.0*        | 21         |
| CCM13S/90      | 19 x 5.25 x 9.00    | 4.5 x 5.5-7.0         | 16         |
| CCK13S-H/90*   | 10.25 x 5.25 x 9.00 | 4.5 x 5.5-7.0         | 11         |
| CCK13S-HT/90*  | 8.12 x 5.25 x 8.12  | 4.5 x 5.5-7.0         | 10         |
| CCA13M/90**    | 19 x 15.25 x 9.00   | 4.5 x 5.5-7.0         | 21         |
| CCK13S-16/90*  | 19 x 5.25 x 9.00    | 4.5 x 5.5-7.0         | 21         |
| CCK14F/90*     | 19 x 5.25 x 12.00   | 4.5 x 8.6-10.1        | 21         |
| CCA14S/90      | 19 x 5.25 x 12.00   | 4.5 x 8.6 x 10.1      | 21         |
| CCK15F/90      | 19 x 7.00 x 12.00   | 6.25 x 8.6-10.1       | 21         |
| CCA17S/90      | 19 x 8.75 x 12.00   | 8.00 x 8.6-10.1       | 21         |
| CCK17F/90*     | 19 x 8.75 x 12.00   | 8.00 x 8.6-10.1       | 21         |
| CCK18F/90*     | 19 x 10.50 x 15.75  | 9.75 x 11.0-13.5      | 21         |
| CCK100S/90*    | 19 x 12.25 x 9.00   | 10.0 x 4.0-8.5        | 21         |
| CMA13-16/90*** | 19 x 5.25 x 9.00    | 4.5 x 7.0             | 10         |
| CMA13-20/90**  | 19 x 5.25 x 9.00    | 4.5 x 7.0             | 8          |
| CMA14-16/90**  | 19 x 5.25 x 12.00   | 4.5 x 10              | 16         |
| CMA14-20/90**  | 19 x 5.25 x 12.00   | 4.5 x 10              | 8          |

\* Kit, all others are assembled.

\*\*Zinc riveted card guides. All others are snap-in noryl.

\*\*\* Accepts Extended Front Panel (EFP) Modules.

## Handles For Subracks - HA19 & HA12

Black anodized aluminum handles, add to the appearance and function of card cages or subracks. Mounting hardware included. For 3U, 6U or 9U versions. HA12: Used for Retma versions



## Handle Kit For Modules HA11/2

Aluminum handle with unique, finger-hugging design adds function and style to Extended Front Panel (EFP) module subracks on CMA series cages. Mounting hardware included.

## Front Panels: 4HP & 6HP

Aluminum panels in 3U, 6U, and 9U sizes. Used to cover empty card slots or house PC board LEDs and switches.

## Side Hinged - HP52

Easy to assemble kit includes the hinged panel with latch, striker plate, and 2 filler panels. Also includes mounting hardware and instructions.

## Bottom Hinged - HFP52, HFP69, HFP87

Designed for "drop down" assembly. Includes lanyard, mounting hardware and instructions.

## Side Filler Panels

### FP52, FP87

Side filler panels are 3" wide, slotted to fit sidewall mounting flanges. Can be cut to size as needed. 0.080" aluminum, brushed anodized finish.

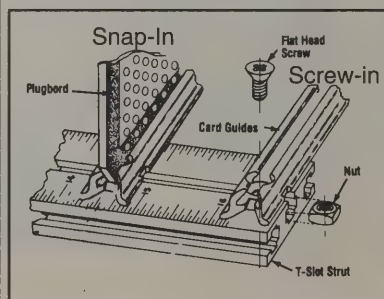
## Top/Bottom Panels

### CAC1, CAC2

Panels (packages of 2) are designed to provide protective cover and still allow subrack to be mounted into equipment rack or cabinet. Aluminum construction, mounting screws and instructions included.

| Use With Rack Size |       |       | Front Panels Hinged |               | Cover Panels Top & Bottom Part # | Blank Panel Part # | Side Filler Panels Part # | Handles Part # |
|--------------------|-------|-------|---------------------|---------------|----------------------------------|--------------------|---------------------------|----------------|
| Height             | Width | Depth | Side Part #         | Bottom Part # |                                  |                    |                           |                |
| 5.25               | 19.00 | 9.00  |                     |               |                                  |                    |                           |                |
| 5.25               | 19.00 | 9.00  | HP52-1              | HFP52-1       | CAC1                             | FP52-19            | FP52-2                    | HA12           |
| 5.25               | 19.00 | 12.00 | HP52-1              | HFP52-1       | CAC2                             | FP52-19            | FP52-2                    | HA12           |
| 5.25               | 19.00 | 15.75 | HP52-1              | HFP52-1       |                                  | FP52-19            | FP52-2                    | HA12           |
| 7.00               | 19.00 | 9.00  |                     | HFP69-1       | CAC1                             | FP69-19            |                           | HA13           |
| 7.00               | 19.00 | 12.00 |                     | HFP69-1       | CAC2                             |                    |                           | HA13           |
| 7.00               | 19.00 | 15.75 |                     | HFP69-1       |                                  |                    |                           | HA13           |
| 8.75               | 19.00 | 9.00  |                     | HFP87-1       | CAC1                             | FP87-19            | FP87-2                    | HA12           |
| 8.75               | 19.00 | 12.00 |                     | HFP87-1       | CAC2                             | FP87-19            | FP87-2                    | HA12           |
| 8.75               | 19.00 | 15.75 |                     | HFP87-1       |                                  | FP87-19            | FP87-2                    | HA12           |

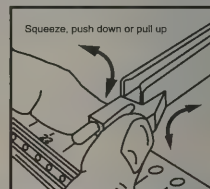
## Card Guides For Subracks



Snap-in or screw-in models available.

Note: Guides are packaged 12 pieces per pack

High quality card guides with tapered slots for easy insertion. Screw-mounted models provide variable positioning along entire length of strut. Snap-in nylon models provide easy installation and removal - without tools - and can be positioned at 0.25" increments when used with Vector-Pak® T-struts.



Press-fit models avail.

| Part No. | Type           | Length | Centers | Card Length | Application                                                                          |
|----------|----------------|--------|---------|-------------|--------------------------------------------------------------------------------------|
| CG2-45P  | Plastic, screw | 2.89"  | 2.25"   | 4.50"       | Subrack series 12, 13, 14, 17, 18 & 100 & Vector P series sidewalls                  |
| CG2-45S  | Nylon, snap-in | 3.17"  | 2.25"   | 4.50"       |                                                                                      |
| CG2-50P  | Plastic, screw | 4.39"  | 3.75"   | 5.00"       |                                                                                      |
| CG2-65M  | Metal, screw   | 5.42"  | 4.50"   | 6.50"       |                                                                                      |
| CG2-65P  | Plastic, screw | 5.42"  | 4.50"   | 6.50"       |                                                                                      |
| CG2-65S  | Nylon, snap-in | 5.42"  | 4.50"   | 6.60"       | Subrack series 14, 15, 17, 18 & 100 & Vector P series sidewalls ending in 119 or 156 |
| CG2-80M  | Metal, screw   | 6.64"  | 6.00"   | 8.00"       |                                                                                      |
| CG2-80P  | Plastic, screw | 6.64"  | 6.00"   | 8.00"       |                                                                                      |
| CG2-80S  | Nylon, snap-in | 6.93"  | 6.00"   | 8.00"       |                                                                                      |
| CG2-95P  | Plastic, screw | 8.14"  | 7.50"   | 9.50"       |                                                                                      |
| CG2-95S  | Nylon, snap-in | 8.43"  | 7.50"   | 9.50"       |                                                                                      |

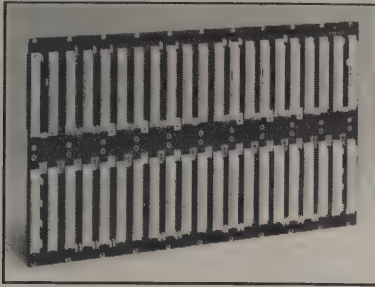


12460 Gladstone Ave., Sylmar, CA 91342 Phone (818) 365-9661 Fax (818) 365-5718  
Toll-Free (800) 423-5659



# Vector-Pak®

# Backplanes

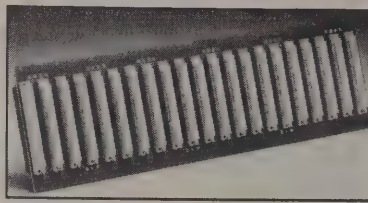


**Monolithic 6U VME J1/J2 Backplanes**  
**Eight-Layer Construction**

- On-board termination
- Auto Bus Grant connectors available
- Hot swap versions available
- Two-slot to 21-slot models available
- Large current carrying capacity through power bugs and bus bars

|                |          |
|----------------|----------|
| <b>Layer 1</b> | - Power  |
| <b>Layer 2</b> | - Ground |
| <b>Layer 3</b> | - Signal |
| <b>Layer 4</b> | - Ground |
| <b>Layer 5</b> | - Signal |
| <b>Layer 6</b> | - Ground |
| <b>Layer 7</b> | - Signal |
| <b>Layer 8</b> | - Ground |

| Part #     | SL | L       | H       |
|------------|----|---------|---------|
| VMEBP5P00  | 5  | 3.944"  | 10.317" |
| VMEBP7P00  | 7  | 5.544"  | 10.317" |
| VMEBP12P00 | 12 | 9.544"  | 10.317" |
| VMEBP21P00 | 21 | 16.744" | 10.317" |

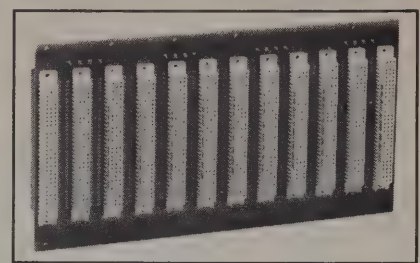


**J1 VME Backplanes - 3U, 6-layer Construction, on or off board termination**

- 96-pin female connectors
- Massive copper clad power and ground planes on opposite board sides
- Extensive labeling on board surface identifies user assignable pins, IACK and IACK OUT

|                |              |
|----------------|--------------|
| <b>Layer 1</b> | - Comp       |
| <b>Layer 2</b> | - Power      |
| <b>Layer 3</b> | - Ground     |
| <b>Layer 4</b> | - Power      |
| <b>Layer 5</b> | - Gnd/+5 SBY |
| <b>Layer 6</b> | - Solder     |

| Part #    | SL | L      | H     |
|-----------|----|--------|-------|
| VMEBP21J1 | 21 | 16.74" | 5.12" |
| VMEBP20J1 | 20 | 15.94" | 5.12" |
| VMEBP14J1 | 14 | 11.14" | 5.12" |
| VMEBP12J1 | 12 | 9.54"  | 5.12" |
| VMEBP10J1 | 10 | 7.94"  | 5.12" |
| VMEBP9J1  | 9  | 7.14"  | 5.12" |
| VMEBP8J1  | 8  | 6.34"  | 5.12" |
| VMEBP7J1  | 7  | 5.54"  | 5.12" |
| VMEBP6J1  | 6  | 4.74"  | 5.12" |
| VMEBP5J1  | 5  | 3.94"  | 5.12" |
| VMEBP2J1  | 2  | 1.33"  | 5.12" |

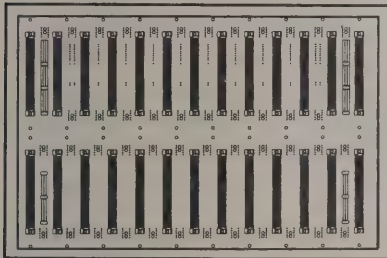


**J2 VME Backplane - 3U, on or off board termination models available**

- Perpendicular and parallel passive terminators avail.
- VSB modules, 4-slot & 8-slot models available
- VMX modules, 4-slot & 6-slot models available
- Custom wrapping service available

|                |              |
|----------------|--------------|
| <b>Layer 1</b> | - Comp       |
| <b>Layer 2</b> | - Power      |
| <b>Layer 3</b> | - Ground     |
| <b>Layer 4</b> | - Power      |
| <b>Layer 5</b> | - Gnd/+5 SBY |
| <b>Layer 6</b> | - Solder     |

| Part #    | SL | L      | H     |
|-----------|----|--------|-------|
| VMEBP21J2 | 21 | 16.74" | 5.12" |
| VMEBP20J2 | 20 | 15.94" | 5.12" |
| VMEBP14J2 | 14 | 11.14" | 5.12" |
| VMEBP12J2 | 12 | 9.54"  | 5.12" |
| VMEBP10J2 | 10 | 7.94"  | 5.12" |
| VMEBP9J2  | 9  | 7.14"  | 5.12" |
| VMEBP8J2  | 8  | 6.34"  | 5.12" |
| VMEBP7J2  | 7  | 5.54"  | 5.12" |
| VMEBP6J2  | 6  | 4.74"  | 5.12" |
| VMEBP5J2  | 5  | 3.94"  | 5.12" |
| VMEBP2J2  | 2  | 1.55"  | 5.12" |

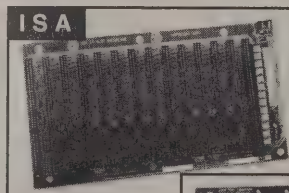


**VXI Backplanes**

- Available in "C" and "D" sizes
- 12-layer
- Stripline construction
- 8 continuous voltage and ground planes
- Separate TTL and ECL layers
- 5 and 13 slots available
- Auto Bus Grant connectors available
- Inboard mounted passive termination

|                 |                  |
|-----------------|------------------|
| <b>Layer 1</b>  | - Ground         |
| <b>Layer 2</b>  | - TTL Signal     |
| <b>Layer 3</b>  | - +5V, -12V/-24V |
| <b>Layer 4</b>  | - GND +12V/+24V  |
| <b>Layer 5</b>  | - -5.2V          |
| <b>Layer 6</b>  | - TTL Signal     |
| <b>Layer 7</b>  | - +5V            |
| <b>Layer 8</b>  | - GND            |
| <b>Layer 9</b>  | - ECL Sig.       |
| <b>Layer 10</b> | - -2V            |
| <b>Layer 11</b> | - ECL Sig.       |
| <b>Layer 12</b> | - GND            |

| Model #  | Type | No Of Slots |
|----------|------|-------------|
| VXIBP05C | VXI  | 5 -"C" size |
| VXIBP05D | VXI  | 5 -"D" size |
| VXIBP13C | VXI  | 13-"C" size |
| VXIBP13D | VXI  | 13-"D" size |



**PC Bus Backplanes**

**EISA**

**Both Models:**

- Assembled & tested
- SIP termination sockets provided
- Multilayer: ISA - 4 EISA - 8
- PC/AT power connectors - PC/AT standard

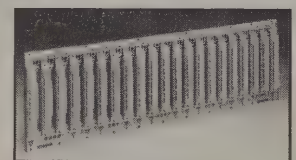
**ISA:**

- 16-bit connectors all positions

**EISA:**

- 2 Bus Master slots
- PCXI and TMC compliant

| Model #   | Type | No Of Slots |
|-----------|------|-------------|
| 4617-6-8  | ISA  | 8           |
| 4617-6-12 | ISA  | 12          |
| 4617-6-14 | ISA  | 14          |
| 4619-6-14 | EISA | 14          |



**General Purpose, Uncommitted Backplanes - 3U and 6U versions**

|                |           |
|----------------|-----------|
| <b>Layer 1</b> | - Ground  |
| <b>Layer 2</b> | - Aux Pwr |
| <b>Layer 3</b> | - Power   |
| <b>Layer 4</b> | - Ground  |

- 96-pin wire wrap connectors, .8" or 1.2" spacing
- Custom configurable in power, ground, and signal
- Up to 4 voltages
- Accessories available for most applications E.G.: bus bars, shrouds, jumpers, special wiring

| Part #     | No. of Slots             |
|------------|--------------------------|
| UM21A3U-21 | 2 slots through 21 slots |
| UM21A6U-21 | 2 slots through 21 slots |
| UM13B3U-13 | 2 slots through 13 slots |
| UM13B6U-13 | 2 slots through 13 slots |

**Call The Factory, Or Your Local Vector Representative For Further Information**



12460 Gladstone Ave., Sylmar, CA 91342 Phone (818) 365-9661 Fax (818) 365-5718  
Toll-Free (800) 423-5659

For a complete listing of all Vector products request Vector Catalog E112

# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

## WHERE TO FIND THEM IN THE 93/94 EDITION OF EEM

|                                                                                 |        |                                                                                |        |
|---------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------|
| AC Power Supplies, Product Selection Guide                                      | D•2221 | Keyboards & Keypads, Product Selection Guide                                   | B•1818 |
| Batteries, Product Selection Guide                                              | D•1419 | Lamps, Lights, & Indicators, Product Selection Guide                           | B•1131 |
| Cabinets, Enclosures, Racks & Chassis, Product Selection Guide                  | C•1003 | Microwave Components, Product Selection Guide                                  | A•1719 |
| Capacitors, Product Selection Guide                                             | A•1003 | Military Qualified Products List                                               | B•1002 |
| Coils, Chokes, Inductors, Product Selection Guide                               | A•1179 | Motors, Drives, & Rotating Components, Product Selection Guide                 | B•1231 |
| Connectors, Terminals & Sockets, Product Selection Guide                        | C•1139 | Oscilloscopes, Product Selection Guide                                         | D•1402 |
| Cores, Magnets & Ferrites                                                       | A•1317 | Panel Hardware, Product Selection Guide                                        | C•1522 |
| Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide | A•1326 | Panel Meters, Analog & Digital, Product Selection Guide                        | D•1336 |
| DC-DC Converters                                                                | D•2049 | Potentiometers, Trimmers, Controls, & Rheostats, Product Selection Guide       | A•2053 |
| DC Power Supplies, Product Selection Guide                                      | D•1488 | Power Supplies, AC, Product Selection Guide                                    | D•2221 |
| Delay Lines, Product Selection Guide                                            | A•1513 | Power Supplies, DC, Product Selection Guide                                    | D•1488 |
| Discrete Semiconductors, Product Selection Guide                                | A•2130 | Protective Components (Fuses, Circuit Breakers, etc.), Product Selection Guide | B•1341 |
| Displays, Readouts, & CRTs, Product Selection Guide                             | B•1017 | Relays, Product Selection Guide                                                | B•1401 |
| Fans, Blowers, Cooling Equipment, & Heat Exchangers, Product Selection Guide    | C•1557 | Resistors, Product Selection Guide                                             | A•1859 |
| Fiber Optics, Product Selection Guide                                           | B•1200 | Solenoids, Product Selection Guide                                             | B•1626 |
| Filters, Power, Product Selection Guide                                         | A•1584 | Switches, Product Selection Guide                                              | B•1658 |
| Filters, Signal, Product Selection Guide                                        | A•1617 | Thermal Components, Product Selection Guide                                    | B•1857 |
| Instruments, Test & Measuring, Product Selection Guide                          | D•1215 | Transducers & Encoders, Product Selection Guide                                | B•1911 |
| Interconnection Systems, Product Selection Guide                                | C•1670 | Transformers, Product Selection Guide                                          | A•2229 |
|                                                                                 |        | Wire & Cable, Product Selection Guide                                          | C•1701 |



# DATAK

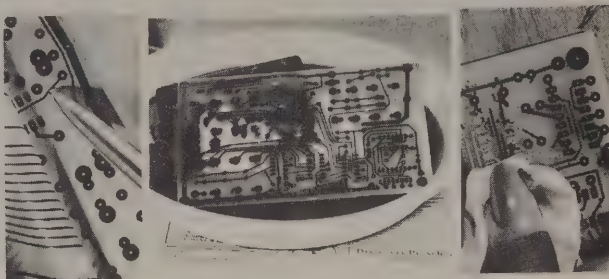
## Printed Circuit & Other Marking Products

2240 15th Street, Rockford, IL 61104 Phone: 815-229-7773 Fax: 815-229-7785

### DIRECT ETCH™ RESIST PRODUCTS

These products let you design and etch one-of-a-kind circuit boards by rubbing down resist transfer patterns and traces RIGHT ON A BLANK COPPER BOARD. Transfers resist all popular etchants.

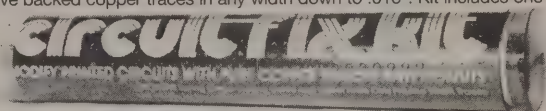
|       |                                                                                                                     |         |
|-------|---------------------------------------------------------------------------------------------------------------------|---------|
| ER-1  | Direct Etch Circuit Kit. Has boards, patterns, tapes, etchant .....                                                 | \$11.95 |
| ER-2  | Refill 8 sheets 1X resist patterns, tapes .....                                                                     | 8.50    |
| ER-13 | Refill 4 sizes of donuts, 4 sheets .....                                                                            | 4.25    |
| ER-14 | Refill continuous DIP patterns, 4 sheets .....                                                                      | 4.25    |
| DE973 | 69 sheets 1X resist patterns. Conventional & SMD patterns, .014" to .125" lines, 14 different sizes of donuts ..... | 34.95   |
| ER-15 | Resist Ink Pen. Draw or touch up resist patterns on your board .....                                                | 1.95    |
| ER-3  | Refill 1/4 lb dry Ferric Chloride. Makes 1 pint .....                                                               | 3.50    |
| ER-11 | 2 One side copper PC boards, 5"x6", 3"x4.5" .....                                                                   | 4.95    |
| ER-12 | Air Bubble Etch Pump with hose, air distributor speeds etch .....                                                   | 10.15   |
| ER-18 | TINNIT™ Electroless Bright Tin Plate, makes 1 pint .....                                                            | 4.95    |
| ER181 | TINNIT Large size makes 0.5 gallon .....                                                                            | 18.00   |



### ADHESIVE COPPER FOIL & PADS FOR PC REPAIR, MODIFICATION

The **Circuit-Fix™ circuit repair kit** has a patented clamp-cutter that lets you cut adhesive backed copper traces in any width down to .016". Kit includes one sheet of plain foil and one sheet of die cut copper donuts.

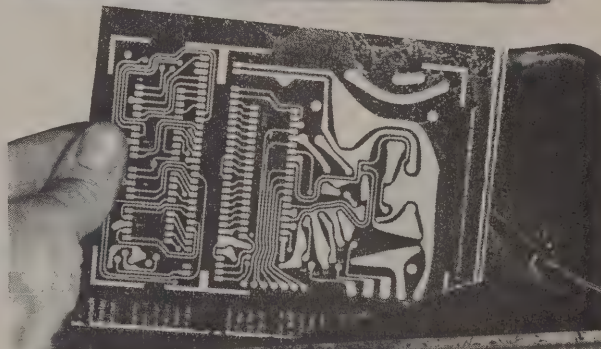
|      |                                                               |         |
|------|---------------------------------------------------------------|---------|
| CF-1 | Complete Circuit-Fix repair kit .....                         | \$22.95 |
| CF-2 | Refill adhesive-backed copper foil donuts, 308 assorted ..... | 4.25    |
| CF-3 | Refill adhesive-backed copper foil 2 sheets, 3.25"x10" .....  | 4.25    |



### PHOTO ETCH™ RESIST PRODUCTS

These kits use a patented photo process that lets you copy 1X circuit patterns from a magazine, dot matrix or laser printer or your own 1X hand-done artwork. All necessary materials except exposure bulbs are included in the ER-4 kit. Makes circuits up to 5"x6". Use ER-9 film, ER-10 print frame for circuit boards to 8.5"x11".

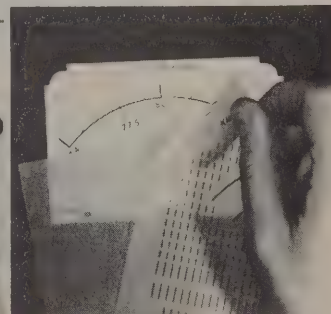
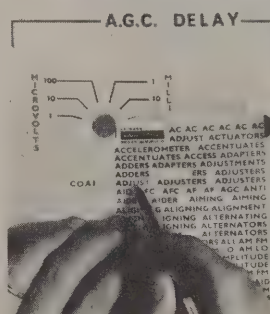
|       |                                                                      |         |
|-------|----------------------------------------------------------------------|---------|
| ER-4  | PHOTO ETCH Complete Kit less bulbs .....                             | \$40.00 |
| ER-19 | Bulb Set. Contains 3200°K and long wave UV incandescent bulbs .....  | 16.45   |
| ER-5  | Refill Pos-Neg™ Film, 6 sheets 5"x6" .....                           | 7.90    |
| ER-9  | Pos-Neg film, 2 sheets 8"x11" .....                                  | 7.90    |
| ER-6  | Developer, Fixer for Pos-Neg film. Makes 1 pint each .....           | 4.75    |
| ER-71 | Liquid Photo Resist, Negative Acting 4 ounce pump spray bottle ..... | 8.00    |
| ER-8  | Photo Resist Developer, 1 pint can .....                             | 4.95    |
| ER-10 | 9"x12" Print Frame, yellow filter, instructions .....                | 14.95   |
| ER-16 | Instruction Manual. Included with ER-4, ER-10 .....                  | 2.25    |
| ER-17 | Yellow Filter. Included with ER-4, ER-10 .....                       | 3.00    |



### DRY TRANSFER PRODUCTS FOR MARKING PANELS, CIRCUIT BOARDS

These sets are an industry standard. Letters and numbers are widely used in production for marking terminals and circuit boards. Preset titles make prototype control panels look professional. Also good for marking components, circuit boards, meter dials. Available in .105" and .125" heights. Black or white. Use DATAKOAT™ brush-on or spray coat to protect transferred letters.

|       |                                                                                   |         |
|-------|-----------------------------------------------------------------------------------|---------|
| 948   | Black (949 White). .105" Preset Electronic Titles, 24 pages .....                 | \$13.50 |
| 950   | Black (951 White). .105" Refill Letters, 12 pages .....                           | 8.75    |
| 952   | Black (953 White). .105" Refill Numbers, 12 pages .....                           | 8.75    |
| 954   | Black (955 White). .105" Refill Light Face Letters, 12 pages .....                | 8.75    |
| 956   | Black (957 White). .105" Refill Light Face Numbers, 12 pages .....                | 8.75    |
| 9581  | Black (9591 White). .125" Preset Electronic Titles, 24 pages .....                | 13.50   |
| 9601  | Black (9611 White). .125" Refill Letters, 12 pages .....                          | 8.75    |
| 9621  | Black (9631 White). .125" Refill Numbers, 12 pages .....                          | 8.75    |
| 9661  | Black (9671 White). .125" Alphanumeric Component Designations .....               | 13.50   |
| 968   | Meter Dial, Switch Patterns, Letters, Numbers, 12 sheets, black, white, red ..... | 13.50   |
| 04176 | DATAKOAT Brush-on Coating Kit, 1 oz coating, 1 oz thinner .....                   | 3.75    |
| 04177 | DATAKOAT Clear Spray, 12 oz aerosol .....                                         | 6.45    |
| 04178 | DATAKOAT Matte Spray, 12 oz aerosol .....                                         | 6.45    |



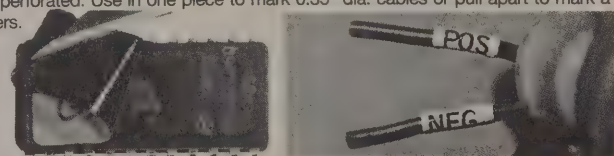
### EPROM LABELS, DIP & SMD PIN MARKERS, WIRE MARKERS

**UV opaque PROM labels** use a patented adhesive system that sticks firmly, yet can be removed without leaving a residue. The flexible vinyl body fits neatly on a 24 pin wide DIP package. The write-on surface accepts typewriter ribbon, including lift-off correctable, laser printing, ball point or felt tip pen and pencil.

Forget counting pin numbers! **DIP markers are ideal for design work** and troubleshooting. These labels are numbered for both component and circuit sides. They cover 14 pin to 64 pin DIP's. SMD's are handled with a .050" spaced universal label strip.

**Wire markers are ultra thin**, stick beautifully to vinyl insulated wire. Each marker is perforated. Use in one piece to mark 0.35" dia. cables or pull apart to mark a terminal and both ends of a #18 or smaller wire. See our full catalog for write-on markers.

|        |                                                                         |        |
|--------|-------------------------------------------------------------------------|--------|
| EP-1   | Labels, 1.1"x.46", 147 labels .....                                     | \$4.00 |
| 974    | DIP and SMD Terminal Marker Set, 389 assorted marker labels .....       | 8.95   |
| F1S22  | Consecutive wire markers, 48 sets of 1 to 22, .....                     | 8.95   |
| F1S104 | Consecutive wire markers, 24 sets of 1 to 22, 6 sets of 23 to 104 ..... | 8.95   |
| FALPHA | Alphabet wire markers, 48 sets of A to Z .....                          | 8.95   |

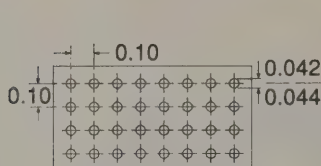


**WRITE FOR A FULL CATALOG**

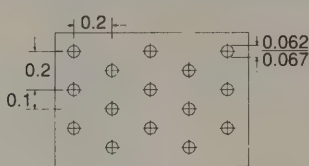


# Prototyping Boards

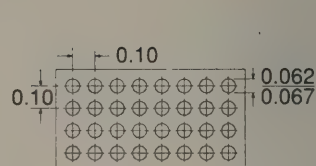
## VECTORBORD® PUNCHBOARDS



Pattern P



Pattern G



Pattern H

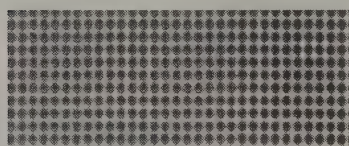
Precision drilled or prepunched, Vectorbord® Prototyping Boards are convenient economical design tools and alternatives to custom designs. Available in several hole patterns, many are copper clad. Sockets and pins, terminals, tools, and accessories are available separately to facilitate construction of your prototype boards.

| Mfr. No.    | Pattern | W x L (In.) | Thickness (In.) | Hole (In.) | Material                    |
|-------------|---------|-------------|-----------------|------------|-----------------------------|
| 54P44XXXP   | P       | 4.5 x 6.5   | 0.062           | 0.042      | FR2 Phenolic                |
| 54P44       | P       | 4.5 x 6.5   | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 54P44WE     | P       | 4.5 x 6.5   | 0.062           | 0.042      | FR4 Epoxy Glass             |
| 54P44WE     | P       | 4.5 x 8.5   | 0.062           | 0.042      | FR4 Epoxy Glass             |
| 55H85WE     | H       | 8.5 x 8.5   | 0.062           | 0.062      | FR4 Epoxy Glass             |
| 169P44      | P       | 4.5 x 17.0  | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 169P44XXXP  | P       | 4.5 x 17.0  | 0.062           | 0.042      | FR2 Phenolic                |
| 169P44WE    | P       | 4.5 x 17.0  | 0.062           | 0.042      | FR4 Epoxy Glass             |
| 169P59-047  | P       | 6.0 x 17.0  | 0.047           | 0.042      | FR4 Epoxy Glass             |
| 169P59-032  | P       | 6.0 x 17.0  | 0.031           | 0.042      | FR4 Epoxy Glass             |
| 169P59XXXP  | P       | 6.0 x 17.0  | 0.062           | 0.042      | FR2 Phenolic                |
| 169P79      | P       | 8.0 x 17.0  | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 169P84      | P       | 8.5 x 17.0  | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 169P84WE    | P       | 8.5 x 17.0  | 0.062           | 0.042      | FR4 Epoxy Glass             |
| 169P99      | P       | 10.0 x 17.0 | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 349P84      | P       | 8.5 x 35.0  | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 55G24WE     | G       | 4.8 x 17.0  | 0.062           | 0.062      | CEM-1 Epoxy Glass Composite |
| 55G42WE     | G       | 8.5 x 17.0  | 0.062           | 0.062      | CEM-1 Epoxy Glass Composite |
| 55H48WE     | H       | 4.8 x 8.5   | 0.062           | 0.062      | FR4 Epoxy Glass             |
| 170H48WE    | H       | 4.8 x 17.0  | 0.062           | 0.062      | FR4 Epoxy Glass             |
| 170H85WE    | H       | 8.5 x 17.0  | 0.062           | 0.062      | FR4 Epoxy Glass             |
| 169P44C1*   | P       | 4.5 x 17.0  | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 169P44WEC1* | P       | 4.5 x 17.0  | 0.062           | 0.042      | FR4 Epoxy Glass             |
| 169P84C1*   | P       | 8.5 x 17.0  | 0.062           | 0.042      | CEM-1 Epoxy Glass Composite |
| 169P84WEC1* | P       | 8.5 x 17.0  | 0.062           | 0.042      | FR4 Epoxy Glass             |
| 169P44C2†   | P       | 10.0 x 17.0 | 0.062           | 0.042      | Epoxy Glass Composite       |

\*Copper clad, one side. †Copper clad, two sides.

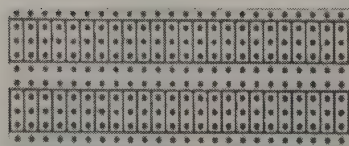
## CIRCBORD® PRINTED CIRCUIT PROTOTYPING BOARDS

### GROUND PLANE



106P180-4

### 3-HOLE SOLDER PAD



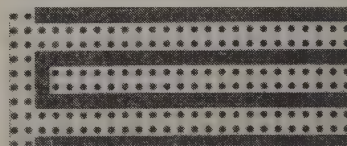
8001

### PAD-PER-HOLE



8003

### BUS PATTERNS (INTERLEAVED BUS)



8002

Circbord® prototyping boards with printed circuitry cover a wide range of design requirements. All boards have provisions for I/O connectors. Several circuit patterns are available. All bus and pad surfaces are solder coated for user convenience. Holes are 0.042" diameter, hole patterns are based on 0.1" grids.

| Mfr. No.  | W x L (In.)  | Thickness (In.) | Hole (In.) | 16-Pin | Material | Circuit Pattern                         |
|-----------|--------------|-----------------|------------|--------|----------|-----------------------------------------|
| 8001      | 4.5 x 6.50   | 0.062           | 0.042      | 20     | A        | 3-Hole solder pad                       |
| 8007-1    | 4.5 x 6.50   | 0.062           | 0.042      | 60     | A        | Pad-per-hole/ground plane               |
| 8004      | 4.5 x 6.50   | 0.062           | 0.042      | 50     | A        | Ground plane 1 side                     |
| 8003      | 4.5 x 6.50   | 0.062           | 0.042      | 60     | A        | Pad-per-hole 1 side                     |
| 8002      | 4.5 x 6.50   | 0.062           | 0.042      | 36     | A        | Interleaved buses 1 side                |
| 3677-6    | 4.5 x 8.08   | 0.062           | 0.042      | 21     | A        | 3-Hole solder pad                       |
| 45P80-1   | 4.5 x 8.08   | 0.062           | 0.042      | 103    | A        | Pad-per-hole 2 sides                    |
| 8006      | 5.0 x 13.25  | 0.062           | 0.042      | 154    | A        | Pad-per-hole, 2 sides PTH               |
| 8010      | 4.0 x 12.86  | 0.062           | 0.042      | 124    | B        | Pad-per-hole, 2 sides, PTH              |
| 8012      | 9.2 x 11.00  | 0.062           | 0.042      | 283    | B        | Pad-per-hole, 2 sides PTH               |
| 106P106-1 | 10.6 x 10.60 | 0.062           | 0.042      | 275    | A        | Pad-per-hole 2 sides                    |
| 106P180-4 | 10.6 x 18.0  | 0.062           | 0.042      |        | B        | Ground plane 2 sides, Pad-per-hole, PTH |

Material: A=CEM-1 Epoxy Glass Composite, B=FR4 Epoxy Glass, PTH=Plated-thru-hole.



12460 Gladstone Ave., Sylmar, CA 91342 Phone (818) 365-9661 Fax (818) 365-5718  
Toll-Free (800) 423-5659

For a complete listing of all Vector products request Vector Catalog E112



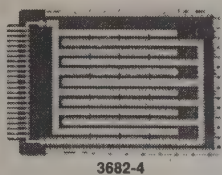
# VECTOR

ELECTRONIC COMPANY

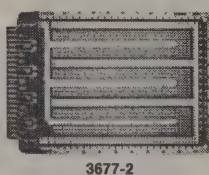
## Prototyping Boards and Plugboards™



3662



3682-4



3677-2



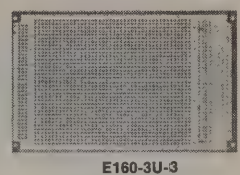
4617-3



4617-5



4618-7



E160-3U-3

### VME PROTOTYPING BOARDS (DIN 41612)

| Part No.  | W × H (In.)   | Hole Dia. | 16-Pin DIP Capacity | Material        | Card Cage**  | Terminals  | Socket | Pattern              |
|-----------|---------------|-----------|---------------------|-----------------|--------------|------------|--------|----------------------|
| E160-3U-1 | 6.3 × 3.94    | 0.042     | 35                  | FR4 Epoxy Glass | CCK160-3U-12 | T125, T126 | R32    | Pad-Per-Hole, PTH    |
| E160-3U-2 | 6.3 × 3.94    | 0.042     | 35                  | FR4 Epoxy Glass | CCK160-3U-12 | T125, T126 | R32    | Buses Only           |
| E160-3U-3 | 6.3 × 3.94    | 0.055     | 45                  | FR4 Epoxy Glass | CCK160-3U-12 | —          | R52    | Voltage/Ground Plane |
| E160-6U-1 | 6.3 × 9.19    | 0.042     | 100                 | FR4 Epoxy Glass | CCK160-6U-12 | T125, T126 | R32    | Pad-Per-Hole, PTH    |
| E160-6U-2 | 6.3 × 9.19    | 0.042     | 100                 | FR4 Epoxy Glass | CCK160-6U-12 | T125, T126 | R32    | Buses Only           |
| E160-6U-3 | 6.3 × 9.19    | 0.055     | 105                 | FR4 Epoxy Glass | CCK160-6U-12 | —          | R52    | Voltage/Ground Plane |
| E220-6U-1 | 8.66 × 9.19   | 0.042     | 140                 | FR4 Epoxy Glass | CCK220-6U-12 | T125, T126 | R32    | Pad-Per-Hole, PTH    |
| E220-6U-2 | 8.66 × 9.19   | 0.042     | 140                 | FR4 Epoxy Glass | CCK220-6U-12 | T125, T126 | R32    | Buses Only           |
| E220-6U-3 | 8.66 × 9.19   | 0.055     | 168                 | FR4 Epoxy Glass | CCK220-6U-12 | —          | R52    | Voltage/Ground Plane |
| E280-9U-1 | 11.02 × 14.44 | 0.042     | 270                 | FR4 Epoxy Glass | CCK280-9U-12 | T125, T126 | R32    | Pad-Per-Hole, PTH    |
| E280-9U-2 | 11.02 × 14.44 | 0.042     | 270                 | FR4 Epoxy Glass | CCK280-9U-12 | T125, T126 | R32    | Buses Only           |
| E280-9U-3 | 11.02 × 14.44 | 0.055     | 348                 | FR4 Epoxy Glass | CCK280-9U-12 | —          | R52    | Voltage/Ground Plane |
| E400-9U-1 | 15.75 × 14.44 | 0.055     | 578                 | FR4 Epoxy Glass | CCK400-9U-12 | —          | R52    | Pad-Per-Hole, PTH    |
| E400-6U-1 | 15.75 × 9.19  | 0.055     | 574                 | FR4 Epoxy Glass | CCK400-6U-12 | —          | R52    | Pad-Per-Hole, PTH    |

\*Use extender UEB220-3U. Other versions are available. \*\*CCK=Kit, CCA is assembled version. PTH=Plated-Thru-Hole. 96-Pin DIN connector is RE96MWR.

### GENERAL PURPOSE PLUGBOARDS™

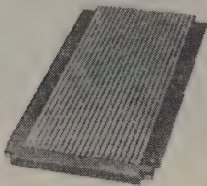
| Part No. | W × H (In.) | Spacing (In.) | Con-tacts | 16-Pin DIP Capacity | Material              | Solder Connector | Wire-Wrap Connector | Extender | Pattern                      |
|----------|-------------|---------------|-----------|---------------------|-----------------------|------------------|---------------------|----------|------------------------------|
| 3662-5   | 4.5 × 4.5   | .156          | 44        | 40                  | Epoxy Glass Composite | R644             | R644-3              | 3690     | Contacts Only                |
| 4112-5   | 4.5 × 4.5   | .156          | 44        | 8                   | Epoxy Glass Composite | R644             | R644-3              | 3690     | 3-Hole Solder Pad            |
| 4112     | 9.6 × 4.5   | .156          | 44        | 40                  | Epoxy Glass Composite | R644             | R644-3              | 3690-6   | 3-Hole Solder Pad            |
| 3662-2   | 9.6 × 4.5   | .156          | 44        | 90                  | Epoxy Glass Composite | R644             | R644-3              | 3690-6   | Contacts Only                |
| 3677     | 9.6 × 4.5   | .156          | 44        | 21                  | Epoxy Glass           | R644             | R644-3              | 3690-6   | 3-Hole Solder Pad            |
| 3682     | 9.6 × 4.5   | .156          | 44        | 48                  | Epoxy Glass           | R644             | R644-3              | 3690-6   | Interleaved Buses            |
| 3682-4   | 6.5 × 4.5   | .156          | 44        | 24                  | Epoxy Glass Composite | R644             | R644-3              | 3690     | Interleaved Bus/Ground Plane |
| 3682     | 6.5 × 4.5   | .156          | 44        | 50                  | Epoxy Glass Composite | R644             | R644-3              | 3690     | Contacts Only                |
| 3662-9   | 6.5 × 4.5   | .156          | 44        | 45                  | FR4 Epoxy Glass       | R644             | R644-3              | 3690     | Pad-Per-Hole                 |
| 3662A6   | 6.5 × 4.5   | .156          | 44        | 50                  | Epoxy Glass Composite | R644             | R644-3              | 3690     | Ground Plane                 |
| 3677-2   | 6.5 × 4.5   | .156          | 44        | 12                  | Epoxy Glass Composite | R644             | R644-3              | 3690     | 3-Hole Solder Pad            |
| 4112-4   | 6.5 × 4.5   | .156          | 44        | 25                  | Epoxy Glass           | R644             | R644-3              | 3690     | 3-Hole Solder Pad            |
| 3682-2   | 6.5 × 4.5   | .156          | 44        | 24                  | Epoxy Glass Composite | R644             | R644-3              | 3690     | Interleaved Buses, Zig-Zag   |
| 4066-4   | 6.5 × 4.5   | .100          | 72        | 34                  | Epoxy Glass Composite | R636-2           | R636-1              | 3690-4   | Grnd Plane/Interleaved Buses |
| 3719-6   | 6.5 × 4.5   | .100          | 72        | 40                  | FR4 Epoxy Glass       | R636-2           | R636-1              | 3690-4   | Pad-Per-Hole, PTH            |
| 3719-1   | 6.5 × 4.5   | .100          | 72        | 50                  | Epoxy Glass Composite | R636-2           | R636-1              | 3690-4   | Contacts Only                |
| 3719-4   | 9.6 × 4.5   | .100          | 72        | 90                  | Epoxy Glass Composite | R636-2           | R636-1              | 3690-2   | Contacts Only                |
| 4493     | 6.5 × 4.5   | .100          | 72        | 50                  | Epoxy Glass Composite | R636-2           | R636-1              | 3690-4   | Voltage/Ground Planes        |
| 4493-1   | 9.6 × 4.5   | .100          | 72        | 63                  | Epoxy Glass Composite | R636-2           | R636-1              | 3690-2   | Voltage/Ground Planes        |

### BUS SPECIFIC PLUGBOARDS™

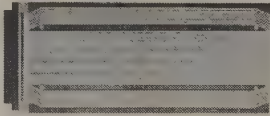
| Part No. | W × H (In.)  | Hole Dia. | DIP Capacity | Material                  | Bus             | Circuit Pattern      | Solder Connector | Wire-Wrap Connector | Card Cage  |
|----------|--------------|-----------|--------------|---------------------------|-----------------|----------------------|------------------|---------------------|------------|
| 4610-1   | 6.50 × 4.50  | 0.042     | 59           | Epoxy Glass Composite     | STD             | Contacts Only        | R656-1           | R656                | Series 13  |
| 4610     | 6.50 × 4.50  | 0.042     | 20           | Epoxy Glass Composite     | STD             | 3-Hole Sldr Pad      | R656-1           | R656                | Series 13  |
| 4610-2   | 6.50 × 4.50  | 0.042     | 35           | Epoxy Glass Composite     | STD             | Interleaved Bus      | R656-1           | R656                | Series 13  |
| 4610-3   | 6.50 × 4.50  | 0.042     | 52           | Epoxy Glass               | STD             | Pad-Per-Hole, PTH    | R656-1           | R656                | Series 13  |
| 8801-6   | 5.30 × 10.00 | 0.042     | 110          | Epoxy Glass               | S100            | Pad-Per-Hole, PTH    | R681-3           | R681-2              | CCK100S/90 |
| 8801-1   | 5.30 × 10.00 | 0.042     | 110          | Epoxy Glass Composite     | S100            | Contacts Only        | R681-3           | R681-2              | CCK100S/90 |
| 8804     | 5.30 × 10.00 | 0.042     | 52           | Epoxy Glass Composite     | S100            | Voltage/Grnd Buses   | R681-3           | R681-2              | CCK100S/90 |
| 4618-7   | 3.47 × 11.50 | 0.042     | 79           | FR4 Epoxy Glass           | PS/2 50, 60, 80 | Pads & Planes, PTH   | —                | —                   | —          |
| 4618-5   | 3.47 × 11.50 | 0.055     | 79           | FR4 Epoxy Glass           | PS/2 50, 60, 80 | Vectorbord plus      | —                | —                   | —          |
| 4618C5LF | 3.47 × 11.50 | 0.055     | 79           | FR4 Epoxy Glass           | PS/2 50, 60, 80 | Vectorbord plus      | —                | —                   | —          |
| 5085-5   | 4.00 × 12.86 | 0.055     | 115          | Epoxy Glass, 2 oz. Copper | Macintosh II    | Vectorbord plus      | —                | —                   | —          |
| 5085C5LF | 4.00 × 12.86 | 0.055     | 115          | Epoxy Glass, 2 oz. Copper | Macintosh II    | Vectorbord plus      | —                | —                   | —          |
| 5085-7   | 4.00 × 12.86 | 0.042     | 86           | Epoxy Glass, Copper LAM   | Macintosh II    | Pads & Planes, PTH   | —                | —                   | —          |
| 5085-4   | 4.00 × 12.86 | 0.055     | 115          | Glass Epoxy               | Macintosh II    | Voltage/Ground       | —                | —                   | —          |
| 4613-2   | 4.10 × 13.23 | 0.042     | 55           | Epoxy Glass ½ oz. Copper  | IBM PC, XT      | Voltage/Ground, PTH  | —                | —                   | —          |
| 4613-1   | 4.10 × 13.23 | 0.042     | 84           | Epoxy Glass 2 oz. Copper  | IBM PC, XT      | Peripheral Buses     | —                | —                   | —          |
| 4613     | 4.10 × 13.23 | 0.042     | 44           | Epoxy Glass ½ oz. Copper  | IBM PC, XT      | 3-Hole Sldr Pad, PTH | —                | —                   | —          |
| 4613-3   | 4.10 × 13.23 | 0.042     | 91           | Epoxy Glass, 2 oz. Copper | IBM PC, XT      | Pad-Per-Hole, PTH    | —                | —                   | —          |
| 4613-5   | 4.10 × 13.23 | 0.025     | 120          | FR4 G10 Epoxy             | IBM PC, XT      | Vectorbord plus      | —                | —                   | —          |
| 4617-3   | 4.50 × 13.25 | 0.042     | 96           | Epoxy Glass, 2 oz. Copper | IBM AT          | Pad-Per-Hole, PTH    | —                | —                   | CCA4600    |
| 4617     | 4.50 × 13.25 | 0.042     | 39           | Epoxy Glass               | IBM AT          | 3-Hole Sldr Pad, PTH | —                | —                   | CCA4600    |
| 4617-1   | 4.50 × 13.25 | 0.042     | 108          | Epoxy Glass, 2 oz. Copper | IBM AT          | Peripheral Buses     | —                | —                   | CCA4600    |
| 4617-4   | 4.50 × 13.25 | 0.055     | 130          | Epoxy Glass, 2 oz. Copper | IBM AT          | Voltage/Ground       | —                | —                   | CCA4600    |
| 4617-5   | 4.50 × 13.25 | 0.055     | 140          | Epoxy Glass, 2 oz. Copper | IBM AT          | Vectorbord plus      | —                | —                   | CCA4600    |
| 4617C5LF | 4.50 × 13.25 | 0.055     | 140          | Epoxy Glass, 2 oz. Copper | IBM AT          | Vectorbord plus      | —                | —                   | CCA4600    |
| 4619-3   | 4.50 × 13.25 | 0.042     | 70           | Multilayer                | EISA            | Pad-Per-Hole, PTH    | —                | —                   | CCA4600    |
| 4619C5LF | 4.50 × 13.25 | 0.042     | 100          | Multilayer                | EISA            | PGA, DIP, PTH        | —                | —                   | CCA4600    |
| 4619-5   | 4.50 × 13.25 | 0.042     | 100          | Multilayer                | EISA            | PGA, DIP, PTH        | —                | —                   | CCA4600    |
| 4607     | 5.20 × 7.70  | 0.042     | 85           | Epoxy Glass Composite     | DEC             | Contacts Only        | —                | —                   | —          |
| 4608     | 6.75 × 12.00 | 0.042     | 54           | Epoxy Glass Composite     | Multibus        | 3-Hole Sldr Pd       | R683-1           | —                   | Series 18  |
| 4608     | 6.75 × 12.00 | 0.042     | 54           | Epoxy Glass Composite     | Multibus        | 3-Hole Sldr Pd       | R683-1           | —                   | Series 18  |

PTH=Plated-Thru-Hole. C5LF=Fully loaded with socket pins and decoupling capacitors.

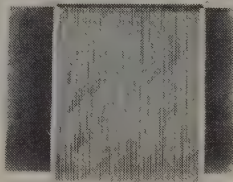
**GENERAL PURPOSE AND BUS SPECIFIC EXTENDER CARDS**



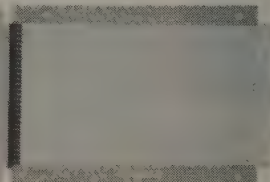
**3690/3690-6**  
General Purpose



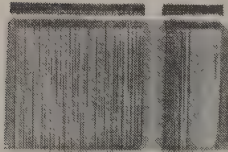
**3690-2/3690-4**  
General Purpose



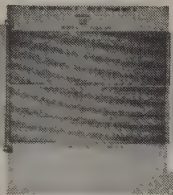
**3690-12 S-100**



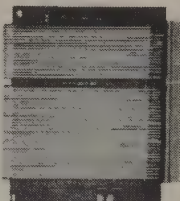
**3690-16 STD**



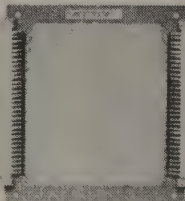
**3690-18 Multibus**



**3690-31**  
PS/2 Model 80



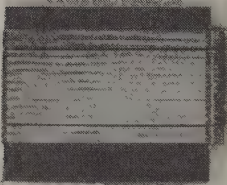
**3690-26 AT**



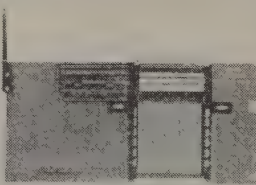
**3690-27 Mac SE**



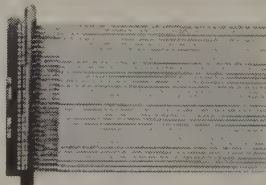
**3690-32 EISA**



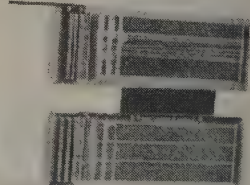
**3690-30 PS/2 Model 50/60**



**3690-28 Mac II**



**3690-22 PC**



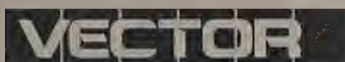
**VMEEJ1 & J2 w/BR6U Bracket**

General purpose and bus specific extenders for in-system testing of functioning circuits. Constructed of FR4 epoxy glass or epoxy glass composite with nickel/gold plated edge contacts and gold plated socket contacts. Connectors install and attach to 2 oz. etched circuit line on the board. Connector tabs on most models are designed to accept test clips or probes.

| Mfr.<br>No. | Contacts                                 |                | H x W<br>(In.) | Material              | Bus           |
|-------------|------------------------------------------|----------------|----------------|-----------------------|---------------|
|             | No.                                      | Spacing        |                |                       |               |
| 3690        | 44                                       | 0.100          | 6.500 x 4.500  | Epoxy Glass Composite | Gen'l Purpose |
| 3690-2      | 72                                       | 0.100          | 11.000 x 4.500 | Epoxy Glass Composite | Gen'l Purpose |
| 3690-4      | 72                                       | 0.100          | 7.500 x 4.500  | Epoxy Glass Composite | Gen'l Purpose |
| 3690-6      | 44                                       | 0.156          | 11.000 x 4.500 | Epoxy Glass Composite | Gen'l Purpose |
| 3690-12     | 100                                      | 0.125          | 7.500 x 10.000 | Epoxy Glass Composite | S100          |
| 3690-16     | 56                                       | 0.125          | 6.500 x 4.5000 | Epoxy Glass Composite | STD           |
| 3690-18     | 30/60<br>43/86                           | 0.100<br>0.156 | 7.650 x 12.000 | Epoxy Glass           | Multibus I    |
| 3690-20     | 86                                       | 0.156          | 9.000 x 9.750  | Epoxy Glass           | Motorola      |
| 3690-22     | 62                                       | 0.100          | 5.700 x 3.180  | Epoxy Glass           | IBM PC, XT    |
| 3690-26     | 18/36<br>31/62                           | 0.100<br>0.100 | 5.600 x 6.700  | Epoxy Glass           | IBM AT        |
| 3690-26-1*  | 18/36<br>31/62                           | 0.100<br>0.100 | 5.600 x 6.700  | Multilayer            | IBM AT        |
| 3690-27     | 96                                       | DIN            | 4.500 x 4.500  | Epoxy Glass           | Mac II        |
| 3690-28*    | 96                                       | DIN            | 6.300 x 12.860 | Multilayer            | Mac II        |
| 3690-30     | 96                                       | DIN            | 7.475 x 6.100  | Multilayer            | PS/2 50, 60   |
| 3690-31     | 96                                       | DIN            | 7.475 x 7.650  | Multilayer            | PS/2 80       |
| 3690-32*    | 188                                      | 0.050          | 5.600 x 6.700  | Multilayer            | EISA          |
| VMEEJ1      | 96                                       | DIN            | 3.940 x 12.200 | Multilayer            | VME           |
| VMEEJ2      | 96                                       | DIN            | 3.940 x 12.200 | Multilayer            | VME           |
| UEB220-3U   | 96                                       | DIN            | 3.940 x 12.200 | FR4 Epoxy Glass       | Uncommitted   |
| EB220-3U    | 0                                        | DIN            | 3.940 x 12.200 | FR4 Epoxy Glass       | Uncommitted   |
| VMEE-6UX160 | 192                                      | DIN            | 6.300 x 9.190  | Multilayer            | VMEEJ1 & J2   |
| VMEE-M      | 192                                      | DIN            | 11.82 x 12.200 | Multilayer            | VME           |
| BR6U        | Bracket for connecting J1 & J2 Extenders |                |                |                       |               |

\*Power lines are filtered with bypass capacitors.





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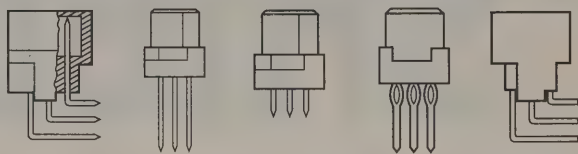
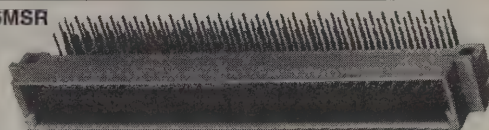
# Printed Circuit Board Accessories

## 96-Pin DIN Connectors

For solder or Wire Wrap applications, designed in accordance with DIN Specification 41612. Superior two-piece design features gold/nickel plated copper alloy contacts and glass-filled polycarbonate or polyester sulphone insulating material. Mounting hole centers 3.54".

| Part No.    | Contact Length | Type                     | Style No. |
|-------------|----------------|--------------------------|-----------|
| RE96MSD     | 0.157          | Solder Tail              | 1         |
| RE96FSD     | 0.157          | Solder Tail              | 3         |
| RE96FSP     | 0.208          | Pressfit Solder Tail     | 4         |
| RE96FSR     | 0.087          | Solder Tail, Right Angle | 1         |
| RE96FW      | 0.54           | Wire Wrap                | 2         |
| RE96FWP     | 0.366          | Pressfit Wire Wrap       | 4         |
| RE96MSR-062 | 0.087          | Solder Tail, Right Angle | 1         |
| RE96MSR-125 | 0.174          | Solder Tail, Right Angle | 1         |
| RE96MWR     | 0.445          | Wire Wrap, Right Angle   | 5         |

RE96MSR



Style 1    Style 2    Style 3    Style 4    Style 5

## Wire Wrap & Solder Tail Edge Card Connectors

Designed for low insertion force, minimum wear on circuit board edge contacts. Edge Card Connectors are supplied with between-contact polarizing keys. Part No. R644 supplied with in-contact polarizing keys.

### Solder Type

Insulator Material: Phenolic, UL-94V-0 or Glass filled Diallylphthalate UL-94V 1 or Ryton R10.

### Wire Wrap Type

Insulator Material: Phenolic, UL-94V-0 or Glass filled Diallylphthalate UL-94V-1 or Polyester (VALOX) UL-94V-0.

Contact Material: Phosphor bronze QQ-B-750 or Beryllium copper. .000010" gold over .000050" nickel.

Test Voltage: 650 VAC.

Rated Current: 3 AMPS.

Contact Res. Drop: 30 MV Max. @ rated current.

Insulation Resistance: 5000 Megohms, nom. @ 500 VDC

R644



| Part No. | No. Of Contacts | Termination Type | Row Spacing | Mounting Ears |
|----------|-----------------|------------------|-------------|---------------|
| R636-1   | 72              | Wire Wrap        | .200        | Center        |
| R636-2   | 72              | Solder Tail      | .200        | Flush         |
| R656-1   | 56              | Solder Tail      | .200        | Flush         |
| R680-2   | 80              | Solder Tail      | .200        | Center        |
| R644     | 44              | Solder Tail      | .200        | Flush         |
| R644-3   | 44              | Wire Wrap        | .200        | Center        |

## T42 - Push-In Terminals

for .042" diameter holes

- Wiring terminals for mounting leads or wires horizontally or vertically (through board hole)
- Connectors require no staking for most applications
- Horizontal slot holds up to seven wires, depending upon thickness of wire



Part No. T28 For .062"

diameter holes also features:

- Vertical slot holes .025" diameter leads or .22 gauge wires
- .0018" diameter tab holes can be used to hold additional wires
- Material: Phos. bronze, tin plating

Package quantities of 100 or 1000 Consult factory for applicable hand tools

## T46 - Press-In Terminals

for .042" diameter holes

- Single and double-tailed (accessible from both sides)
- Wire Wrap terminals
- .0025 square posts
- Provides secure contact without soldering or staking
- Rectangular base with stepped shank presses into plain or plated-thru holes and is retained without etching or soldering

Package quantities of 100 or 1000

Use P158 or P133B insertion

tools, sold separately



## T44, T68, Terminals

for .042" diameter holes

- Wire Wrap tail with two-pronged receptacle for wires or leads
- .0025 square posts
- Rectangular terminal with stepped shank presses securely into plated or unplated holes, requires no staking or soldering
- Bifurcated end holds soldered leads securely
- For 3 level wire-wraps



## T49 Klipwrap Terminal

for .042" diameter holes

- Wire wrap tail (.0025" square) with 3-pronged clip for up to 22 gauge wires
- Up to 3 Wires may be pressfit, crimped, or soldered into clip
- Tail for 3 level wire-wraps

Package quantities of 100 or 1000

Use P158 or A13, A13-1, P156

insertion tools, sold separately

## K32 - J Pin Terminal

for .042" diameter holes

- Wire Wrap pin (.0025" sq.) fits and connects two adjacent holes (.042"D) on a .1" grid
- Short leg can be bent to secure pin
- Shorting pin allows wire wrap connection to wiring side pads or circuits

Package quantities of 100 or 1000

Use P158 insertion tool, sold separately



## R32 - Socket Pins

for .042" diameter holes

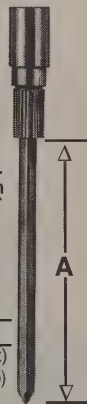
- Low profile Wire Wrap socket pins
- Pressfit mounting
- 4-finger contacts, tapered sockets for easy insertion

| Part # | Qty  | Dim A | Male Pin Depth |
|--------|------|-------|----------------|
| R32C   | 100  | .5    | .13            |
| R32M   | 1000 | .5    | .13            |

## Socket Pins

for .0055" diameter holes

| Part # | Dim A | Male Pin Depth                   |
|--------|-------|----------------------------------|
| R30    | .286  | .15 (Low Profile, Pressfit)      |
| R31    | .703  | .17 (Low Profile, Wire Wrap)     |
| R50    | .560  | .17 (2-level Wire Wrap)          |
| R51    | .560  | .17 (6-finger contacts)          |
| R52    | .700  | .17 (3-level, 4-finger contacts) |
| R53    | .700  | .17 (3-level, 6-finger contacts) |



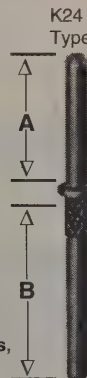
## Inbord Pins - K24

- Press-in pins provide excellent solder points (tin or gold PL.)
- Phos bronze material

| Part # | Hole Size | Dimensions A | Dimensions B |
|--------|-----------|--------------|--------------|
| K24*   | .042      | .255         | .375         |
| K26    | .042      | .160         | .195         |
| K30    | .042      | .225         | .305         |
| K31    | .042      | .160         | .195         |
| K36    | .025      | .283         | .400         |

\*Use in G-10 epoxy glass board only (.062" thick typical)

(Package quantities of 100 or 1000 Use P158 or P133A insertion tools, sold separately)



For a complete listing of all Vector products request Vector Catalog E112

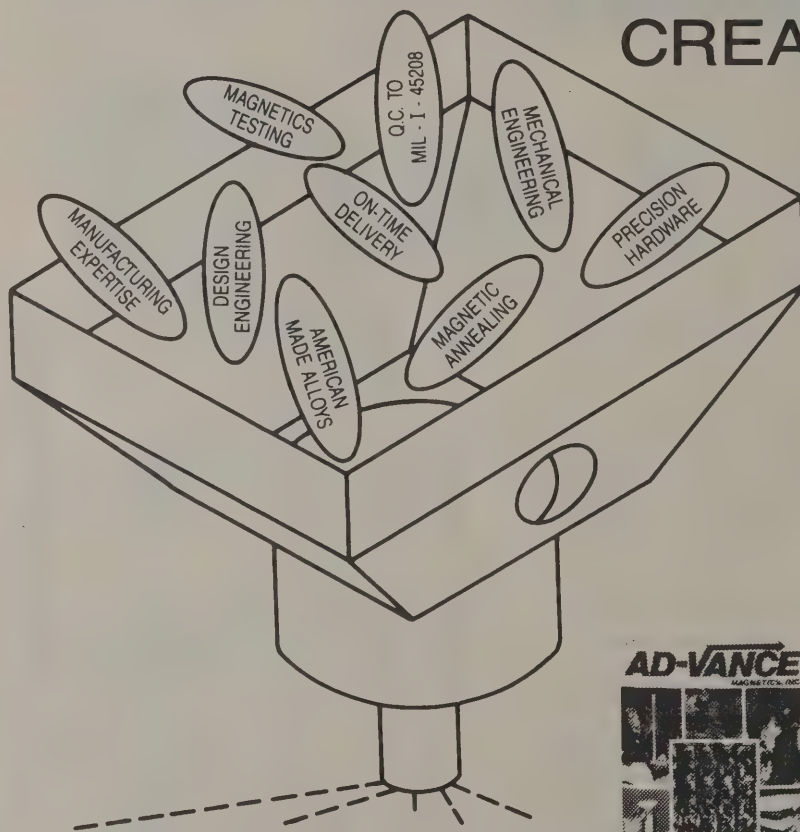


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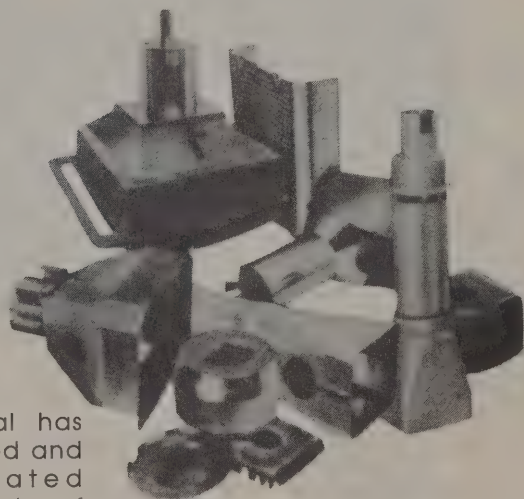
jacketed incubator used in biomagnetic research. It

is constructed of two layers of .062" thick Amumetal

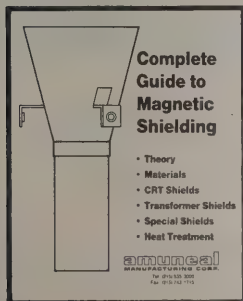
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## MINIGLOSSARY ENCAPSULATION

### MATERIALS/HANDLING

**Catalyst:** A substance which changes the *rate* of chemical reaction. Very small quantities can cause fast change.

**Conformal coating** Sprayed or dipped. A thin conformal jacket which protects an assembly from moisture or other degrading environments.

**Curing agent:** See catalyst.

**Hardener:** See catalyst.

**Hermetic:** A permanent gas-tight seal.

**RTV:** Room Temperature Vulcanizing. Associated with silicone rubber sealants which vulcanize at room temperature.

**Thermoplastic:** Plastic materials which can be made to flow *repeatedly* with the application of heat.

**Thermosetting:** Plastics which once cured cannot be made to flow again.

**Thixotropy:** The property of a coating compound which has low viscosity when agitated, but which thickens when the agitation ceases.

**Viscosity:** Measured in units of *poise* or *centipoise*. The property of a liquid which resists internal flow. Low viscosity equates with thin and vice-versa.

### PROCESSING

**Casting:** Parts or assemblies are placed in a mold. Encapsulating material is added and cured. Part is then removed from the mold.

**Dip coating:** Part or assembly is dipped into the encapsulating material. Final thickness is determined by number of dips, viscosity, rate of withdrawal, and temperature.

**Embedding:** Wherein an encapsulant substantially fills all voids in and about an assembly.

**Impregnation:** A process of encapsulation involving evacuating all air and then allowing the encapsulating material to flow in and fill all voids.

**Molding:** Similar to casting except this process usually implies multicavity molds and costly machines.

**Potting:** Wherein the part or assembly is immersed in an encapsulating material contained in a shell which becomes a permanent outer surface after curing.

### DIELECTRIC

**Arc resistance:** An encapsulant's resistance to the formation of a conductive path or track. Measured in time.

**Breakdown voltage:** The voltage at which an encapsulant fails electrically.

**Capacitance:** The property of conductors and dielectrics which allows the storage of an electrical charge when the voltage is applied.

**Corona:** A luminous discharge of electricity due to air ionization when a cer-

tain voltage is reached. Can be internal or external. The formation of ozone can cause rapid deterioration of certain materials.

**Dielectric:** Insulator (Nonconductor.)

**Dielectric constant:** The property of a material that determines its ability to store electrostatic energy.

**Dielectric strength:** The ratio of dielectric breakdown to the thickness of insulating material.

**Dissipation factor:** The ratio of a dielectric material's energy losses.

**Flashover:** Point at which an electric discharge occurs around an edge or across a surface. Can result in a carbon track and permanent degradation.

**Insulation resistance:** (IR) An insulating material's total DC leakage.

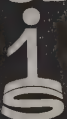
**Surface resistivity:** The resistance of the surface of an insulating material to the flow of direct current.

**Voltage endurance:** Sometimes called corona resistance. The ability of a material to withstand the application of sustained high voltage.

**Volume resistivity:** The resistance of a material to direct current flow as a measure of volume. Expressed as ohm-centimeters.



# A Complete Selection of EMI Shielding Gaskets...

from  **Instrument Specialties.**

## Shielding

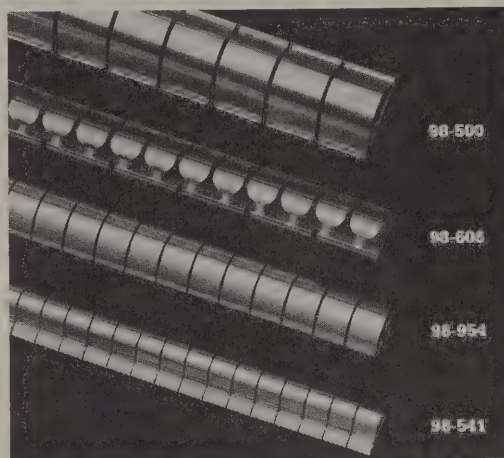
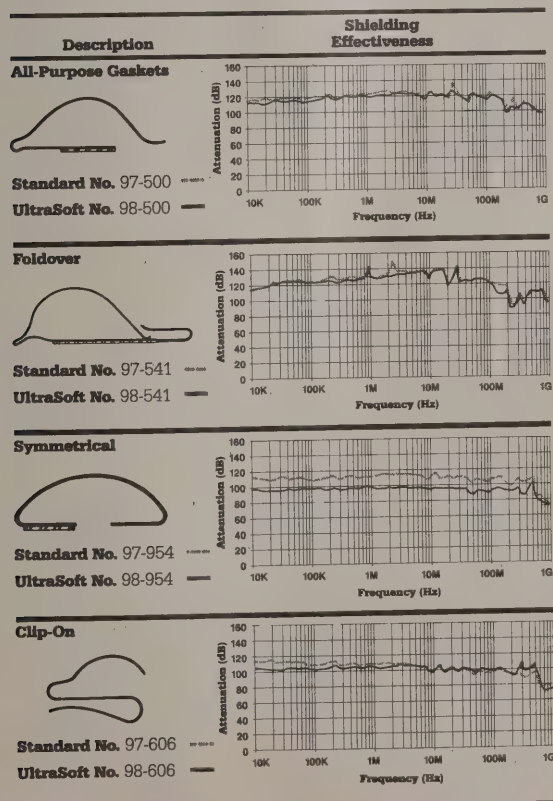
*UltraSoft™* fingers

### New low force shielding gaskets in a full range of standard configurations.

New UltraSoft™ fingers from Instrument Specialties offer the communications, computer, and electronics system designer concerned with lighter construction materials and FCC EMI compliance, greater flexibility and versatility than ever before. UltraSoft fingers permit wider use of lighter, thinner construction materials, to help cut costs and/or enhance system performance.

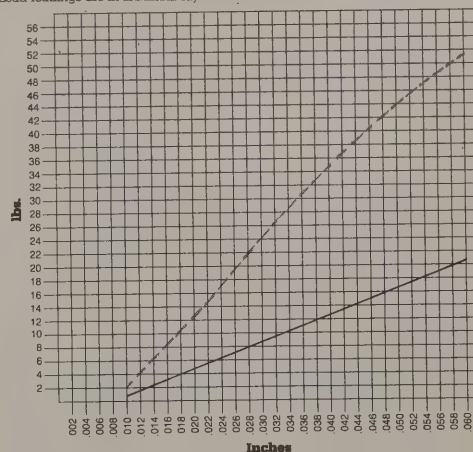
- Lowest compression forces in the industry
  - Increased cycle life
  - Shielding effectiveness comparable to standard shielding line
  - Wide selection of sizes and configurations.
- Low force version available for virtually every standard shielding product.

Following are several examples comparing Instrument Specialties' UltraSoft fingers to the Standard Shielding line.



### Compression Force Comparison

(Load readings are in lbs/linear ft.)



Compression force data on all other UltraSoft Series are available upon request.

For further information, or for product samples, please contact your Instrument Specialties representative.



### Instrument Specialties

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## Shielding

## Ultra-Flex™ ElectroNit™

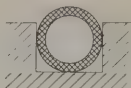
New Ultra-Flex™ ElectroNit™ combines the optimum mechanical properties of beryllium copper with shielding effectiveness as much as 20 dB higher than conventional materials. It offers superb resiliency for consistent, point-to-point contact requiring the lowest compression forces among all other shielding materials and configurations. A wide range of platings, sizes, configurations, and excellent flexibility create optimum design latitude.

### This Series Offers:

- Compression force 80% less than conventional knitted wire shielding with elastomer core
- 100% recovery of original height at up to 75% deflection preserving original shielding effectiveness values
- Optimum attenuating properties of beryllium copper, one of shielding's most effective materials
- Up to 75% lighter than conventional wire knit materials
- High cycle life for high traffic applications
- No moisture absorption

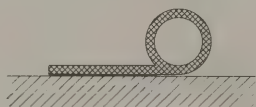
### How to Order

Ultra-Flex is supplied on spools by the foot in 50 to 500-foot units.



#### Groove Mounting

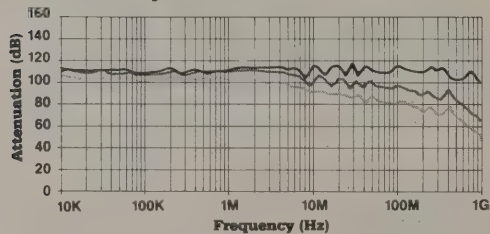
In groove mounting, gasket should have sufficient clearance to achieve optimum contact when compressed to desired tolerance.



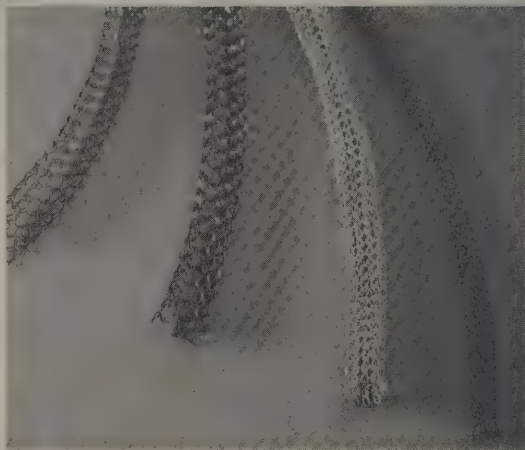
#### Adhesive Mounting

Adhesive strip is applied only beneath the fin area, allowing the conductive knitted mesh direct contact with the host material.

### Transfer Impedance Test—Part No. 8101-0106-40



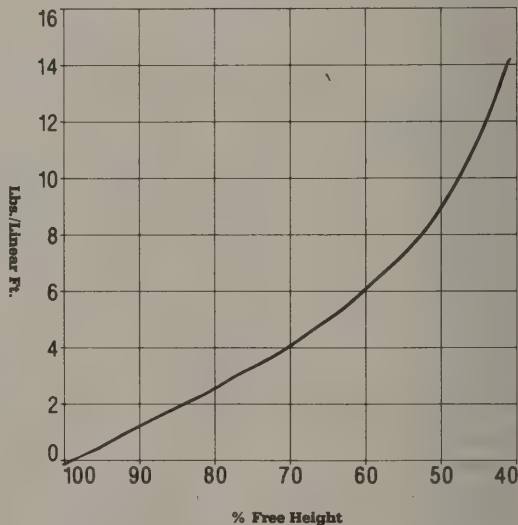
- Compressed at 75%
- Compressed at 50%
- Compressed at 20%



Hollow core UltraFlex is available in round, round with single fin, and double round configurations.

### Compression Performance

Part No. 8101-0106-40



For further information or for product samples, please contact your Instrument Specialties representative.

Ultra-Flex and ElectroNit are trademarks of Instrument Specialties Co., Inc.



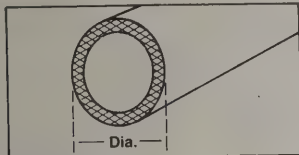


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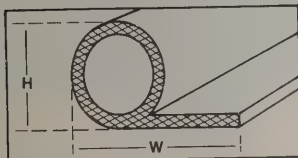
## Shielding

Ultra-Flex™ ElectroNit™



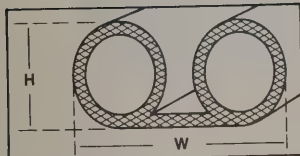
Size vs. Tolerance

| Size Range                 | Tolerance |                     |
|----------------------------|-----------|---------------------|
|                            | Diameter  |                     |
| To .12 (3.05)              |           | + .02-0 (+ .51-0)   |
| .13 - .38 (3.30 - 9.65)    |           | + .03-0 (+ .76-0)   |
| .39 - .50 (9.91 - 12.70)   |           | + .046-0 (+ 1.17-0) |
| .51 - 1.00 (12.95 - 25.40) |           | + .062-0 (+ 1.56-0) |



Size vs. Tolerance

| Size Range                 | Tolerance           |                         |
|----------------------------|---------------------|-------------------------|
|                            | Dim H               | Dim W                   |
| To .18 (4.57)              | + .02-0 (+ .51-0)   | NA                      |
| .19 - .38 (4.83 - 9.65)    | + .03-0 (+ .76-0)   | + .06-.03 (+ 1.52-.76)  |
| .39 - .50 (9.91 - 12.70)   | + .046-0 (+ 1.17-0) | ± .06 (± 1.52)          |
| .51 - 1.00 (12.95 - 25.40) | + .062-0 (+ 1.56-0) | + .09-.06 (+ 2.29-1.52) |



Size vs. Tolerance

| Size Range                 | Tolerance           |                         |
|----------------------------|---------------------|-------------------------|
|                            | Dim H               | Dim W                   |
| To .18 (4.57)              | + .02-0 (+ .51-0)   | NA                      |
| .19 - .38 (4.83 - 9.65)    | + .03-0 (+ .76-0)   | + .06-.03 (+ 1.52-.76)  |
| .39 - .50 (9.91 - 12.70)   | + .046-0 (+ 1.17-0) | ± .06 (± 1.52)          |
| .51 - 1.00 (12.95 - 25.40) | + .062-0 (+ 1.56-0) | + .09-.06 (+ 2.29-1.52) |

For Size vs. Tolerance charts, dimensions measured under 4 oz. load (11.34 Gms.) with .750 dia. (19.05 mm) anvil.

### Hollow Core Round

| Diameter     | Beryllium Copper Part Number |
|--------------|------------------------------|
| .062 (1.57)  | 8101-0101-40                 |
| .093 (2.36)  | 8101-0102-40                 |
| .125 (3.18)  | 8101-0103-40                 |
| .156 (3.96)  | 8101-0104-40                 |
| .187 (4.75)  | 8101-0105-40                 |
| .250 (6.35)  | 8101-0106-40                 |
| .312 (7.92)  | 8101-0107-40                 |
| .375 (9.53)  | 8101-0108-40                 |
| .500 (12.70) | 8101-0109-40                 |

For other platings, replace the suffix "40" as follows:  
41—Tin plate; 47—Nickel plate; 48—Cadmium plate.

### Hollow Core Round with Single Fin

| Height       | Width         | Beryllium Copper Part Number |
|--------------|---------------|------------------------------|
| .062 (1.57)  | .375 (9.53)   | 8103-0101-40                 |
| .062 (1.57)  | .500 (12.70)  | 8103-0102-40                 |
| .093 (2.36)  | .500 (12.70)  | 8103-0103-40                 |
| .125 (3.18)  | .375 (9.53)   | 8103-0104-40                 |
| .125 (3.18)  | .625 (15.88)  | 8103-0105-40                 |
| .125 (3.18)  | .750 (19.05)  | 8103-0106-40                 |
| .156 (3.96)  | .500 (12.70)  | 8103-0107-40                 |
| .187 (4.75)  | .625 (15.88)  | 8103-0108-40                 |
| .250 (6.35)  | .500 (12.70)  | 8103-0109-40                 |
| .250 (6.35)  | .750 (19.05)  | 8103-0110-40                 |
| .250 (6.35)  | 1.000 (25.40) | 8103-0111-40                 |
| .312 (7.92)  | .625 (15.88)  | 8103-0112-40                 |
| .312 (7.92)  | .875 (22.23)  | 8103-0113-40                 |
| .375 (9.53)  | 1.000 (25.40) | 8103-0114-40                 |
| .437 (11.10) | 1.000 (25.40) | 8103-0115-40                 |
| .500 (12.70) | 1.000 (25.40) | 8103-0116-40                 |

For other platings, replace the suffix "40" as follows: 41—Tin plate; 47—Nickel plate; 48—Cadmium plate.

### Hollow Core Double Round

| Height      | Width         | Beryllium Copper Part Number |
|-------------|---------------|------------------------------|
| .062 (1.57) | .500 (12.70)  | 8104-0101-40                 |
| .125 (3.18) | .500 (12.70)  | 8104-0102-40                 |
| .125 (3.18) | .750 (19.05)  | 8104-0103-40                 |
| .125 (3.18) | 1.000 (25.40) | 8104-0104-40                 |
| .187 (4.75) | .625 (15.88)  | 8104-0105-40                 |
| .187 (4.75) | 1.000 (25.40) | 8104-0106-40                 |
| .250 (6.35) | .750 (19.05)  | 8104-0107-40                 |
| .250 (6.35) | 1.000 (25.40) | 8104-0108-40                 |
| .375 (9.53) | 1.000 (25.40) | 8104-0109-40                 |

For other platings, replace the suffix "40" as follows: 41—Tin plate; 47—Nickel plate; 48—Cadmium plate.

Metric units are indicated in parentheses.

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## Shielding

## Clip-On Gaskets

97-604  
97-605

97-606  
97-607

97-610  
97-614

97-611

97-612

97-613

97-619  
97-620

97-621

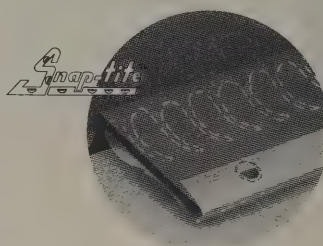
97-622

97-628  
97-629  
97-630

This Series from Instrument Specialties is designed for use where high temperature or other design considerations preclude the use of adhesive-mounted gasketing. Yet it provides the same shielding characteristics and effectiveness as our Sticky Fingers® mounted series. Clip-on gaskets offer shielding effectiveness > 100 dB at 100 MHz plane wave. All are available in standard 16" (406 mm) lengths, and in your choice of finishes.

### Snap-tite™, with "D" lance

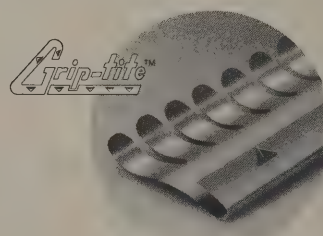
This configuration has been designed specifically to provide outstanding holding power. "D" lances snap into drilled or punched holes in the mounting surface to create a strong omnidirectional grip with excellent conductivity.



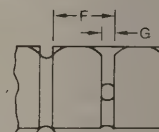
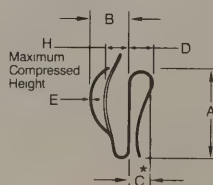
### Grip-tite™, with "T" lance

Ideal for use with softer materials, such as aluminum or plated plastic, sharp "T" lances bite into the mounting surface and preserve electrical conductivity.

Parts may be supplied with holes for cleaning and plating purposes. These holes will not affect the overall performance of the product.



### Clip-On Series 97-604/605, 606/607



\*Variations in the clip-on area are available. Consult Customer Service.

Snap-tite and Grip-tite are trademarks of Instrument Specialties Co., Inc.





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## Shielding

## Clip-On Gaskets

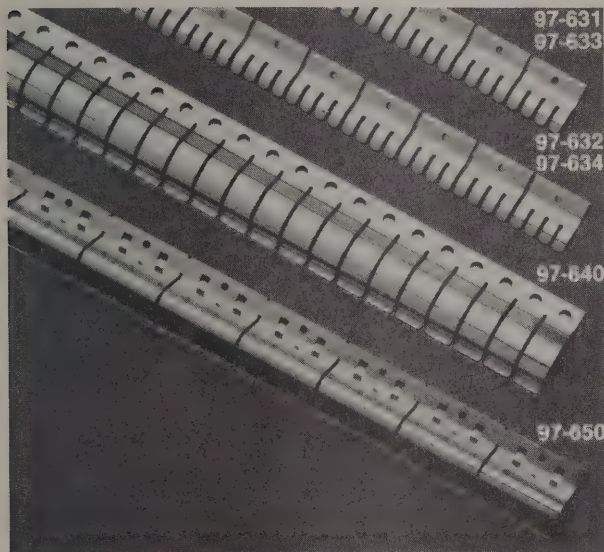
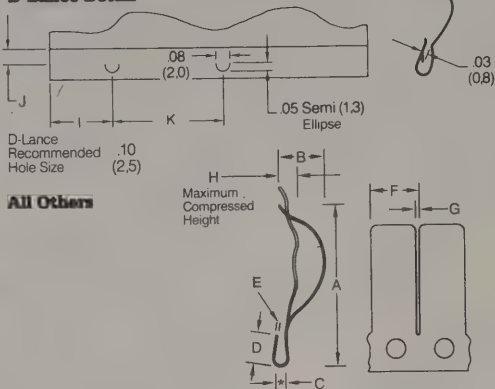


**Figure 1.**  
**D-Lance Detail**



\*Variations in the clip-on area are available. Consult Customer Service.

### Clip-On Series

| Series | A              | B             | C            | D            | E              | F              | G              | H            | Approx. Length | No Lance |    |    |    |                 |                |                  | Slot | Sol. |
|--------|----------------|---------------|--------------|--------------|----------------|----------------|----------------|--------------|----------------|----------|----|----|----|-----------------|----------------|------------------|------|------|
|        |                |               |              |              |                |                |                |              |                | NL       | SQ | GT | ST | I               | J              | K                |      |      |
| 97-604 | .38<br>(9,7)   | .28<br>(6,7)  | .07<br>(1,8) | .08<br>(2,0) | .005<br>(0,13) | .250<br>(6,35) | .040<br>(1,02) | .06<br>(1,5) | 16.0<br>(406)  |          |    | X  |    | .230<br>(5,80)  | .096<br>(2,44) | .500<br>(12,7)   | X    | X    |
| 97-605 | .38<br>(9,7)   | .20<br>(5,1)  | .07<br>(1,8) | .08<br>(2,0) | .005<br>(0,13) | .250<br>(6,35) | .040<br>(1,02) | .06<br>(1,5) | 16.0<br>(406)  |          |    | X  |    | .230<br>(5,80)  | .096<br>(2,44) | .500<br>(12,7)   | X    | X    |
| 97-606 | .38<br>(9,7)   | .20<br>(5,1)  | .07<br>(1,8) | .08<br>(2,0) | .005<br>(0,13) | .250<br>(6,35) | .040<br>(1,02) | .06<br>(1,5) | 16.0<br>(406)  |          |    |    | X  | .25<br>(6,4)    | .14<br>(3,6)   | .500<br>(12,7)   | X    | X    |
| 97-607 | .38<br>(9,7)   | .28<br>(6,7)  | .07<br>(1,8) | .08<br>(2,0) | .005<br>(0,13) | .250<br>(6,35) | .040<br>(1,02) | .06<br>(1,5) | 16.0<br>(406)  |          |    |    | X  | .25<br>(6,4)    | .14<br>(3,6)   | .500<br>(12,7)   | X    | X    |
| 97-610 | .30<br>(7,6)   | .10<br>(2,5)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .06<br>(1,5) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-611 | .30<br>(7,6)   | .10<br>(2,5)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .182<br>(4,62) | .047<br>(1,19) | .06<br>(1,5) | 16.0<br>(406)  |          |    | X  |    | .364<br>(9,25)  | .032<br>(0,80) | .728<br>(18,49)  | X    | X    |
| 97-612 | .44<br>(11,2)  | .20<br>(5,1)  | .07<br>(1,8) | .19<br>(4,8) | .003<br>(0,08) | .187<br>(4,75) | .047<br>(1,19) | .02<br>(0,5) | 16.0<br>(406)  | †        | X  |    |    | .093<br>(2,37)  | .056<br>(1,42) | .750<br>(19,05)  | X    | X    |
| 97-613 | .30<br>(7,6)   | .10<br>(2,5)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .182<br>(4,62) | .047<br>(1,19) | .06<br>(1,5) | 16.0<br>(406)  |          |    |    | X  | .36<br>(9,1)    | .05<br>(1,3)   | .728<br>(18,49)  | X    | X    |
| 97-614 | .30<br>(7,6)   | .10<br>(2,5)  | .05<br>(1,3) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .06<br>(1,5) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-619 | .44<br>(11,2)  | .08<br>(2,0)  | .05<br>(1,3) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-620 | .44<br>(11,2)  | .08<br>(2,0)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-621 | .44<br>(11,2)  | .12<br>(3,0)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .193<br>(4,90) | .046<br>(1,17) | .06<br>(1,5) | 16.0<br>(406)  |          |    | X  |    | .652<br>(16,56) | .050<br>(1,27) | 1.351<br>(34,32) | X    | X    |
| 97-622 | .44<br>(11,2)  | .12<br>(3,0)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .193<br>(4,90) | .046<br>(1,17) | .06<br>(1,5) | 16.0<br>(406)  |          |    |    | X  | .29<br>(7,4)    | .08<br>(2,0)   | .725<br>(18,42)  | X    | X    |
| 97-628 | .60<br>(15,2)  | .21<br>(5,3)  | .05<br>(1,3) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-629 | .60<br>(15,2)  | .21<br>(5,3)  | .05<br>(1,3) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-630 | .60<br>(15,2)  | .21<br>(5,3)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .187<br>(4,75) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-631 | .60<br>(15,2)  | .21<br>(5,3)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .182<br>(4,62) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  |          |    | X  |    | .364<br>(9,25)  | .032<br>(0,80) | .728<br>(18,49)  | X    | X    |
| 97-632 | .60<br>(15,2)  | .21<br>(5,3)  | .07<br>(1,8) | .19<br>(4,8) | .005<br>(0,13) | .182<br>(4,62) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  |          |    |    | X  | .36<br>(9,1)    | .08<br>(2,0)   | .728<br>(18,49)  | X    | X    |
| 97-633 | .60<br>(15,2)  | .21<br>(5,3)  | .05<br>(1,3) | .19<br>(4,8) | .005<br>(0,13) | .182<br>(4,62) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  |          |    | X  |    | .364<br>(9,25)  | .032<br>(0,80) | .728<br>(18,49)  | X    | X    |
| 97-634 | .60<br>(15,2)  | .21<br>(5,3)  | .05<br>(1,3) | .19<br>(4,8) | .005<br>(0,13) | .182<br>(4,62) | .047<br>(1,19) | .07<br>(1,8) | 16.0<br>(406)  |          |    |    | X  | .36<br>(9,1)    | .08<br>(2,0)   | .728<br>(18,49)  | X    | X    |
| 97-640 | 1.09<br>(27,7) | .26<br>(6,6)  | .07<br>(1,8) | .28<br>(7,1) | .005<br>(0,13) | .375<br>(9,53) | .040<br>(1,02) | .05<br>(1,3) | 16.0<br>(406)  | X        |    | †  | †  |                 |                |                  |      | X    |
| 97-650 | .98<br>(24,9)  | .40<br>(10,2) | .20<br>(5,1) | .30<br>(7,6) | .004<br>(0,10) | 1.00<br>(25,4) | .030<br>(0,76) | .05<br>(1,3) | 16.0<br>(406)  | †        | X  |    |    | .192<br>(4,88)  | .120<br>(3,05) | .486<br>(12,34)  | X    | X    |

Metric units are indicated in parentheses.

†Optional



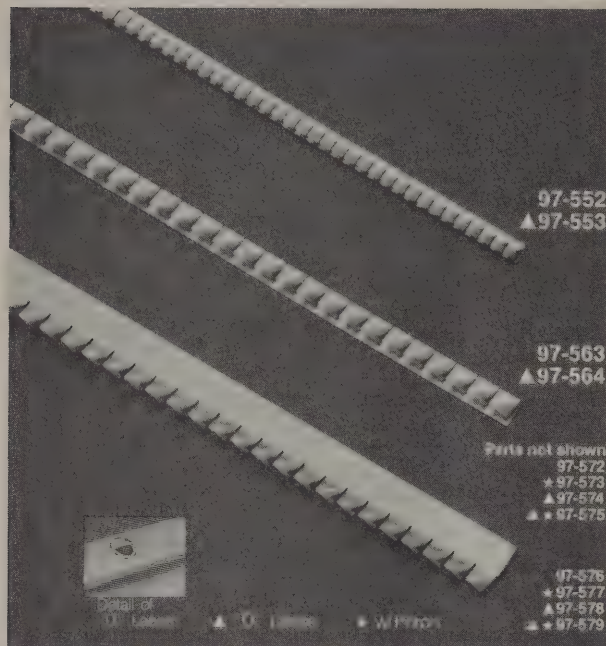
# Instrument Specialties

**Headquarters**—Delaware Water Gap, PA 18327-0136 TEL: 717-424-8510 FAX: 717-424-6213

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## Shielding



## Clip-On Twist Series

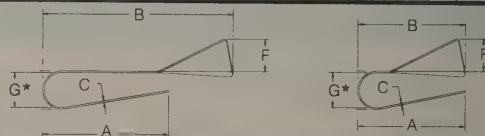
Ideal for general shielding applications where mounting space is at a premium, Clip-On Twist Series strips combine the performance advantages of scientific twist design with the strength of clip-on mounting.

Clip-On Twist Series gaskets are offered in four different widths, each available in either equal leg or offset leg configurations. In addition, each configuration is available with Poron rubber environmental gaskets for dust and moisture resistance, as well as with "D" lances that snap into .10" (2.5 mm) diameter holes to provide added mounted strength.

This Series offers shielding effectiveness > 115 dB at 100 MHz plane wave, and is provided in standard 16" (406 mm) lengths. All are available in your choice of finishes.

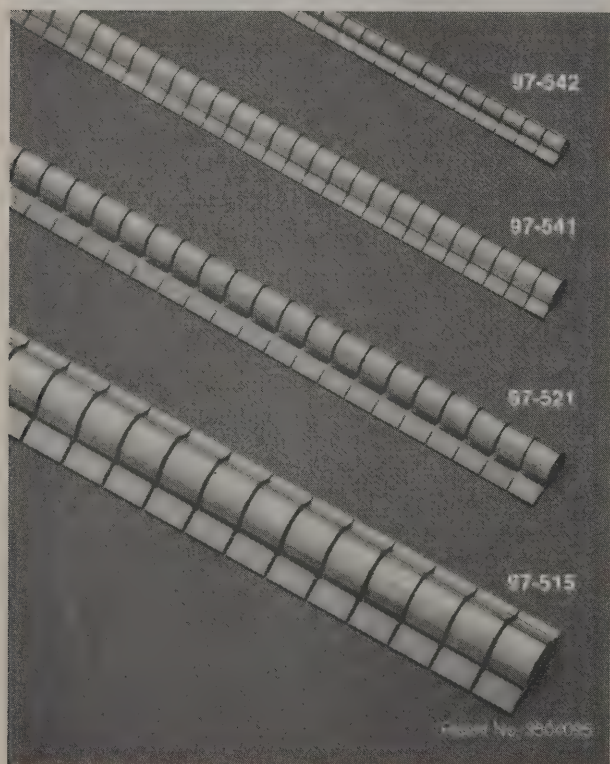
### Twist Series

| Series | A              | B              | C              | F              | G              | Pitch          | Slot           | Approx. Length |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 97-552 | .150<br>(3,80) | .150<br>(3,80) | .003<br>(0,08) | .030<br>(0,76) | .070<br>(1,78) | .095<br>(2,41) | .015<br>(0,38) | 16.0<br>(406)  |
| 97-563 | .210<br>(5,33) | .210<br>(5,33) | .003<br>(0,08) | .070<br>(1,78) | .070<br>(1,78) | .165<br>(4,19) | .015<br>(0,38) | 16.0<br>(406)  |
| 97-572 | .175<br>(4,45) | .275<br>(6,99) | .003<br>(0,08) | .075<br>(1,91) | .070<br>(1,78) | .095<br>(2,41) | .015<br>(0,38) | 16.0<br>(406)  |
| 97-576 | .250<br>(6,35) | .378<br>(9,60) | .003<br>(0,08) | .075<br>(1,91) | .070<br>(1,78) | .165<br>(4,19) | .015<br>(0,38) | 16.0<br>(406)  |



\*Variations in the clip-on area are available. Consult Customer Service.

## Shielding



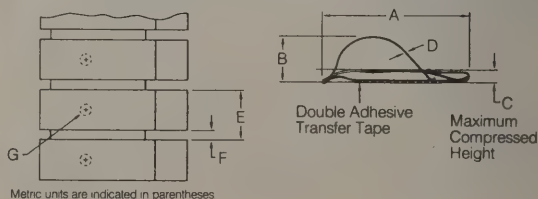
## Foldover Series

This version of Sticky Fingers® beryllium copper shielding gaskets features a special U-shaped end that permits the finger of the strip to slide when enclosure doors are closed. It also retains the strip's fingers when enclosure doors are open, thus preventing accidental damage to the strip's fingers. Shielding effectiveness is > 115 dB at 100 MHz plane wave.

Four models provide you a choice of widths to suit your application. They are available in standard 16" (406 mm) lengths, except 97-515 which is furnished in 24" (610 mm) lengths. Also, all styles are available in continuous 25-ft (7,6 m) coils, and in your choice of all finishes except tin lead and satin tin.

### Foldover Series

| Series | A Ref.        | B Ref.       | C            | D              | E              | F              | G Dia.       | Approx. Length in. (mm) | Approx. Coil ft (m) |
|--------|---------------|--------------|--------------|----------------|----------------|----------------|--------------|-------------------------|---------------------|
| 97-542 | .25<br>(6,4)  | .08<br>(2,0) | .04<br>(1,0) | .003<br>(0,08) | .188<br>(4,78) | .018<br>(0,46) | .06<br>(1,5) | 16.0<br>(406)           | 25<br>(7,6)         |
| 97-541 | .38<br>(9,7)  | .12<br>(3,1) | .05<br>(1,3) | .003<br>(0,08) | .188<br>(4,78) | .018<br>(0,46) | .06<br>(1,5) | 16.0<br>(406)           | 25<br>(7,6)         |
| 97-521 | .51<br>(13,0) | .14<br>(3,6) | .06<br>(1,5) | .003<br>(0,08) | .250<br>(6,35) | .022<br>(0,56) | .06<br>(1,5) | 16.0<br>(406)           | 25<br>(7,6)         |
| 97-515 | .76<br>(19,3) | .23<br>(5,8) | .06<br>(1,5) | .004<br>(0,10) | .375<br>(9,53) | .032<br>(0,81) | .08<br>(2,0) | 24.0<br>(610)           | 25<br>(7,6)         |



Metric units are indicated in parentheses

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# Instrument Specialties

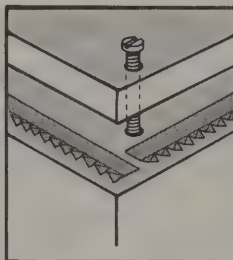
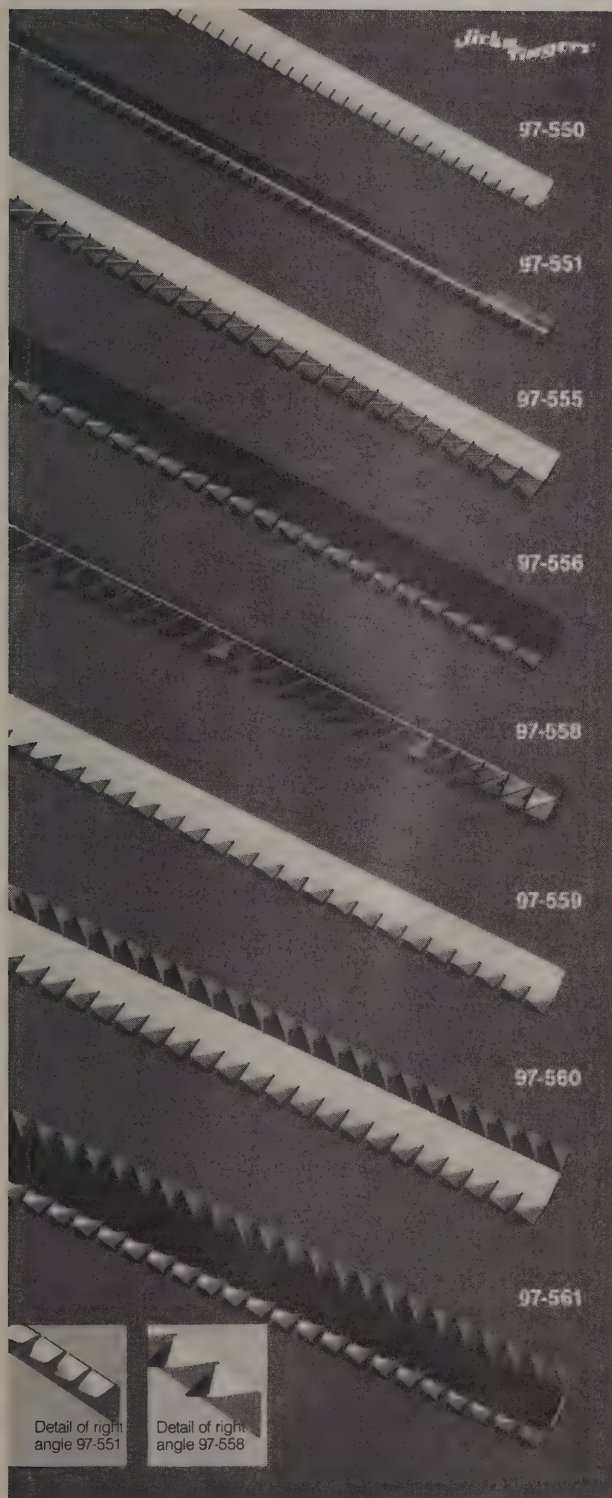
**Headquarters**—Delaware Water Gap, PA 18327-0136 TEL: 717-424-8510 FAX: 717-424-6213

**Western Division**—Placentia, CA TEL: 714-579-7100 FAX: 714-579-7105

**European Division**—Barchon, Belgium TEL: +32-41-877170 FAX: +32-41-877175

## Shielding

## Twist Series



Self-adhesive beryllium copper contact strips with scientific twist design offer narrow electronic gaskets for general shielding applications.

Four different widths are available to suit your specific application for single edge contact strips. Also available are two 90 degree versions (Series 97-551 and 97-558) to provide alternate mounting capability. Series 97-555, 97-558, and 97-559 provide shielding effectiveness > 100 dB at 100 MHz plane wave, ideal for all types of panel or electronic enclosures. Series 97-550, 97-551, and 97-560 provide shielding effectiveness > 115 dB at 100 MHz plane wave. Series 97-560 strips are especially suitable for cabinets with panel-divider bars. Their unique double-edge design permits panels to be removed easily and replaced without damage to the installed strip.

All Twist Series strips are furnished in 24" (610 mm) lengths. Strips except 97-551 and 97-558 are also available in standard 25-ft (7.6 m) coils. Right angle product configurations are not available in coils. All are available in your choice of finishes.

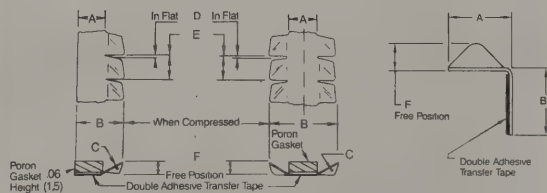
### Poron environmental rubber gasket

Series 97-556 and 97-561 are versions of 97-555 and 97-560, respectively, incorporating a Poron rubber gasket to act as an environmental shield, offering a high degree of protection against dust and moisture. All are available in your choice of finishes.

**Parts may be supplied with holes for cleaning and plating purposes. These holes will not affect the overall performance of the product.**

### Twist Series

| Series | A            | B             | C              | D<br>Slot      | E<br>Pitch     | F            | Approx.<br>Length<br>in.(mm) | Approx.<br>Coil<br>ft (M) | Gasket |
|--------|--------------|---------------|----------------|----------------|----------------|--------------|------------------------------|---------------------------|--------|
| 97-550 | .14<br>(3,6) | .23<br>(5,8)  | .003<br>(0,08) | .015<br>(0,38) | .095<br>(2,41) | .03<br>(0,8) | 24.0<br>(610)                | 25<br>(7,6)               | NO     |
| 97-551 | .08<br>(2,0) | .16<br>(4,1)  | .003<br>(0,08) | .015<br>(0,38) | .095<br>(2,41) | .03<br>(0,8) | 24.0<br>(610)                | ---                       | NO     |
| 97-555 | .18<br>(4,6) | .34<br>(8,6)  | .003<br>(0,08) | .015<br>(0,38) | .165<br>(4,19) | .07<br>(1,8) | 24.0<br>(610)                | 25<br>(7,6)               | NO     |
| 97-556 | .18<br>(4,6) | .34<br>(8,6)  | .003<br>(0,08) | .015<br>(0,38) | .165<br>(4,19) | .07<br>(1,8) | 24.0<br>(610)                | 25<br>(7,6)               | YES    |
| 97-558 | .11<br>(2,8) | .20<br>(5,1)  | .003<br>(0,08) | .015<br>(0,38) | .165<br>(4,19) | .07<br>(1,8) | 24.0<br>(610)                | ---                       | NO     |
| 97-559 | .18<br>(4,6) | .30<br>(7,6)  | .003<br>(0,08) | .015<br>(0,38) | .165<br>(4,19) | .07<br>(1,8) | 24.0<br>(610)                | 25<br>(7,6)               | NO     |
| 97-560 | .19<br>(4,8) | .50<br>(12,7) | .003<br>(0,08) | .015<br>(0,38) | .165<br>(4,19) | .07<br>(1,8) | 24.0<br>(610)                | 25<br>(7,6)               | NO     |
| 97-561 | .19<br>(4,8) | .50<br>(12,7) | .003<br>(0,08) | .015<br>(0,38) | .165<br>(4,19) | .07<br>(1,8) | 24.0<br>(610)                | 25<br>(7,6)               | YES    |



97-551/558

Metric units are indicated in parentheses

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# Instrument Specialties Co., Inc.

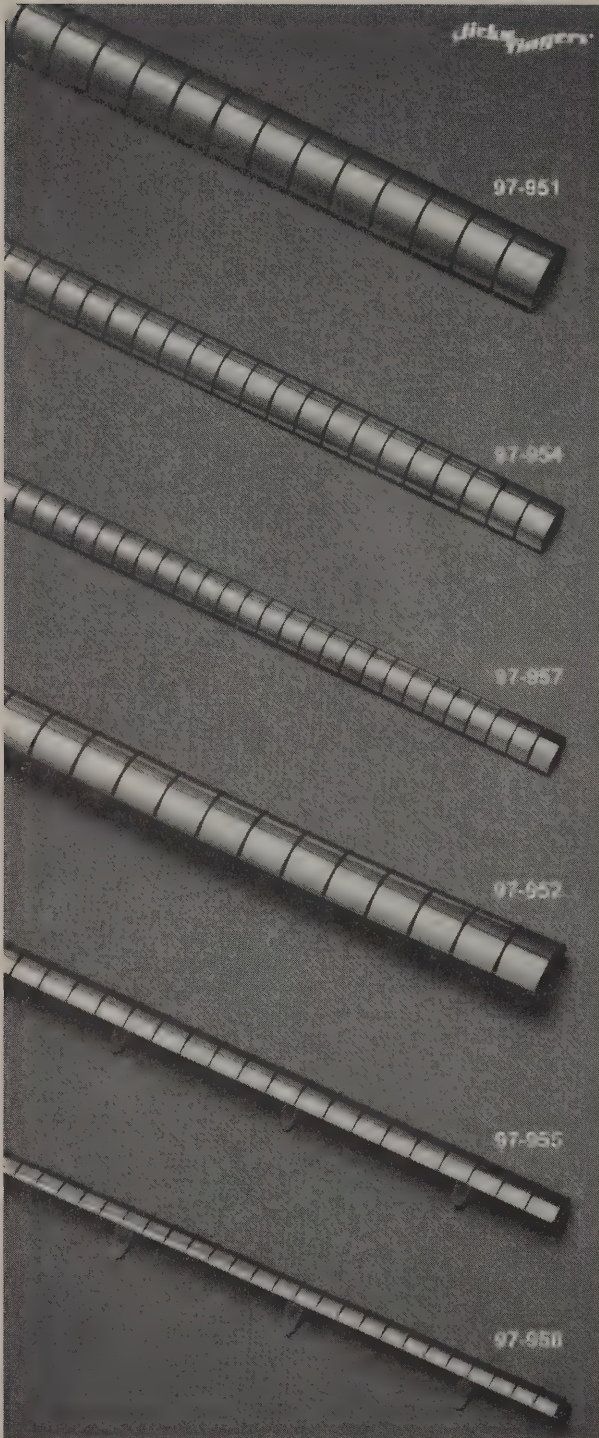
**Headquarters**—Delaware Water Gap, PA 18327-0136 TEL: 717-424-8510 FAX: 717-424-6213

**Western Division**—Placentia, CA TEL: 714-579-7100 FAX: 714-579-7105

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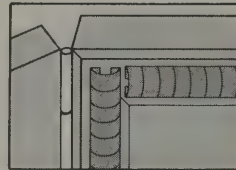
## Shielding

## Symmetrical Slotted Shielding (S<sup>3</sup>)



Strips with Sticky Fingers and rivet mounts exhibit typical attenuation >100 dB at 100 MHz.

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### With Sticky Fingers®

Series 97-951/954/957 are low-compression, adhesive-mounted beryllium copper shielding strips. Designed as a continuous band, the strip is slotted to permit spring contact throughout its length. A wide radius profile creates the greatest contact for maximum conductivity with minimum compression requirements. As with all Sticky Fingers® shielding strips, a self-adhesive tape makes mounting easy and secure. All are available in your choice of finishes.

### With bi-directional rivet mount\*

Series 97-952/955/958 are as described above, but with the addition of an integral pierced track to provide plastic push rivet mounting in a .125" (3.2 mm) diameter hole.

Designed especially for slide applications, this configuration allows total symmetrical compression action with bi-directional engagement. It is recommended for high-temperature and/or extremely high side-load situations, such as PC board connections and electronic drawers. All are available in your choice of finishes.

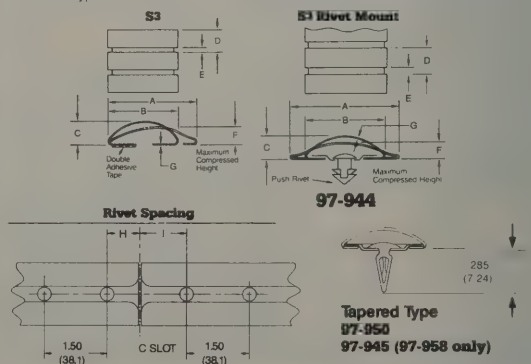
#### S3 Series Sticky Fingers®

| Series | A             | B             | C Min.       | D              | E              | F            | G              | Approx. Length |
|--------|---------------|---------------|--------------|----------------|----------------|--------------|----------------|----------------|
| 97-951 | .76<br>(19,3) | .62<br>(15,8) | .22<br>(5,6) | .375<br>(9,53) | .030<br>(0,76) | .10<br>(2,5) | .004<br>(0,10) | 15,0<br>(381)  |
| 97-954 | .51<br>(13,0) | .45<br>(11,4) | .14<br>(3,6) | .250<br>(6,35) | .022<br>(0,56) | .08<br>(2,0) | .003<br>(0,08) | 15,0<br>(381)  |
| 97-957 | .38<br>(9,6)  | .35<br>(8,9)  | .11<br>(2,8) | .187<br>(4,75) | .018<br>(0,46) | .07<br>(1,8) | .003<br>(0,08) | 15,0<br>(381)  |

#### S3 Series Rivet Mount

| Series | A             | B             | C Min.       | D              | E              | F            | G              | Approx. Length | H             | I             | Number of Rivets |
|--------|---------------|---------------|--------------|----------------|----------------|--------------|----------------|----------------|---------------|---------------|------------------|
| 97-952 | .76<br>(19,3) | .62<br>(15,8) | .22<br>(5,6) | .375<br>(9,53) | .030<br>(0,76) | .10<br>(2,5) | .004<br>(0,10) | 15,0<br>(381)  | .56<br>(14,2) | .94<br>(23,9) | 10               |
| 97-955 | .51<br>(13,0) | .45<br>(11,4) | .14<br>(3,6) | .250<br>(6,35) | .022<br>(0,56) | .08<br>(2,0) | .003<br>(0,08) | 15,0<br>(381)  | .63<br>(16,0) | .88<br>(22,4) | 10               |
| 97-958 | .38<br>(9,6)  | .35<br>(8,9)  | .11<br>(2,8) | .187<br>(4,75) | .018<br>(0,46) | .07<br>(1,8) | .003<br>(0,08) | 15,0<br>(381)  | .66<br>(16,8) | .84<br>(21,3) | 10               |

\*Two rivet types are available. Consult Customer Service for further information.



Metric units are indicated in parentheses





# MINIGLOSSARY

## BASIC

## EBCDIC CODE

| Bit Positions 4, 5, 6, 7 |   |     | Second Hexadecimal Digit |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    | Digit Punches           |  |  |  |
|--------------------------|---|-----|--------------------------|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-------------------------|--|--|--|
|                          |   |     | 00                       |     |     |     | 01 |    |    |    | 10 |    |    |    | 11 |    |    |    | Bit Positions 0, 1      |  |  |  |
|                          |   |     | 00                       | 01  | 10  | 11  | 00 | 01 | 10 | 11 | 00 | 01 | 10 | 11 | 00 | 01 | 10 | 11 | Bit Positions 2, 3      |  |  |  |
|                          |   |     | 0                        | 1   | 2   | 3   | 4  | 5  | 6  | 7  | 8  | 9  | A  | B  | C  | D  | E  | F  | First Hexadecimal Digit |  |  |  |
|                          |   |     | 12                       |     |     |     | 12 | 12 |    | 12 | 12 | 12 |    | 12 | 12 |    |    |    |                         |  |  |  |
|                          |   |     |                          | 11  |     |     |    | 11 | 11 | 11 |    | 11 | 11 | 11 |    | 11 |    |    |                         |  |  |  |
|                          |   |     |                          |     | 0   |     | 0  |    | 0  | 0  | 0  |    | 0  | 0  |    |    | 0  |    | Zone Punches            |  |  |  |
|                          |   |     | 9                        | 9   | 9   | 9   | 9  | 9  | 9  | 9  |    |    |    |    |    |    |    |    | Digit Punches           |  |  |  |
|                          |   |     | ①                        | ②   | ③   | ④   | ⑤  | ⑥  | ⑦  | ⑧  |    |    |    |    | ⑨  | ⑩  | ⑪  | ⑫  |                         |  |  |  |
| 0000                     | 0 | 8-1 | NUL                      | DLE | DS  |     | SP | &  | -  |    |    |    |    |    |    |    |    | 0  | 8-1                     |  |  |  |
| 0001                     | 1 | 1   | SOH                      | DC1 | SOS |     |    |    | ⑬  |    | a  | j  |    |    | A  | J  | ⑭  | 1  | 1                       |  |  |  |
| 0010                     | 2 | 2   | STX                      | DC2 | FS  | SYN |    |    |    |    | b  | k  | s  |    | B  | K  | S  | 2  | 2                       |  |  |  |
| 0011                     | 3 | 3   | ETX                      | TM  |     |     |    |    |    |    | c  | J  | t  |    | C  | L  | T  | 3  | 3                       |  |  |  |
| 0100                     | 4 | 4   | PF                       | RES | BYP | PN  |    |    |    |    | d  | m  | u  |    | D  | M  | U  | 4  | 4                       |  |  |  |
| 0101                     | 5 | 5   | HT                       | NL  | LF  | RS  |    |    |    |    | e  | n  | v  |    | E  | N  | V  | 5  | 5                       |  |  |  |
| 0110                     | 6 | 6   | LC                       | BS  | ETB | UC  |    |    |    |    | f  | o  | w  |    | F  | O  | W  | 6  | 6                       |  |  |  |
| 0111                     | 7 | 7   | DEL                      | IL  | ESC | EOT |    |    |    |    | g  | p  | x  |    | G  | P  | X  | 7  | 7                       |  |  |  |
| 1000                     | 8 | 8   |                          | CAN |     |     |    |    |    |    | h  | q  | y  |    | H  | Q  | Y  | 8  | 8                       |  |  |  |
| 1001                     | 9 | 8-1 |                          | EM  |     |     |    |    |    |    | ;  | r  | z  |    | I  | R  | Z  | 9  | 9                       |  |  |  |
| 1010                     | A | 8-2 | SMM                      | CC  | SM  |     | ¢  | !  | ⑮  | :  |    |    |    |    |    |    |    |    | 8-2                     |  |  |  |
| 1011                     | B | 8-3 | VT                       | CU1 | CU2 | CU3 | .  | \$ | ,  | #  |    |    |    |    |    |    |    |    | 8-3                     |  |  |  |
| 1100                     | C | 8-4 | FF                       | IFS |     | DC4 | <  | *  | %  | @  |    |    |    |    |    |    |    |    | 8-4                     |  |  |  |
| 1101                     | D | 8-5 | CR                       | IGS | ENQ | NAK | {  | }  | —  | '  |    |    |    |    |    |    |    |    | 8-5                     |  |  |  |
| 1110                     | E | 8-6 | SO                       | IRS | ACK |     | +  | ;  | >  | =  |    |    |    |    |    |    |    |    | 8-6                     |  |  |  |
| 1111                     | F | 8-7 | SI                       | IUS | BEL | SUB | I  | ┐  | ?  | ”  |    |    |    |    |    |    |    |    | 8-7                     |  |  |  |
|                          |   |     | 12                       |     |     |     | 12 |    |    |    | 12 | 12 |    | 12 | 12 | 12 |    | 12 |                         |  |  |  |
|                          |   |     |                          | 11  |     |     |    | 11 |    |    |    | 11 | 11 | 11 |    | 11 | 11 | 11 | Zone Punches            |  |  |  |
|                          |   |     |                          |     | 0   |     |    |    | 0  |    | 0  |    | 0  | 0  | 0  |    | 0  | 0  |                         |  |  |  |
|                          |   |     | 9                        | 9   | 9   | 9   |    |    |    |    |    |    |    |    | 9  | 9  | 9  | 9  |                         |  |  |  |

### Card Hole Patterns

|   |               |   |            |   |       |   |          |
|---|---------------|---|------------|---|-------|---|----------|
| ① | 12-0-9-8-1    | ⑤ | No-Punches | ⑨ | 12-0  | ⑬ | 0-1      |
| ② | 12-11-9-8-1   | ⑥ | 12         | ⑩ | 11-0  | ⑭ | 11-0-9-1 |
| ③ | 11-0-9-8-1    | ⑦ | 11         | ⑪ | 0-8-2 | ⑮ | 12-11    |
| ④ | 12-11-0-9-8-1 | ⑧ | 12-11-0    | ⑫ | 0     |   |          |

### Control Character Representations

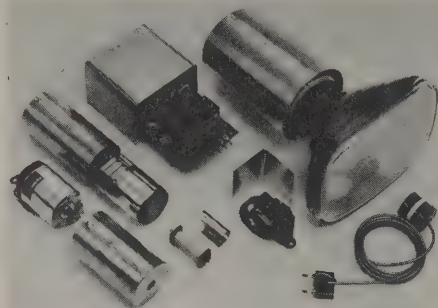
|     |                  |     |                              |     |                         |
|-----|------------------|-----|------------------------------|-----|-------------------------|
| ACK | Acknowledge      | EOT | End of Transmission          | PF  | Punch Off               |
| BEL | Bell             | ESC | Escape                       | PN  | Punch On                |
| BS  | Backspace        | ETB | End of Transmission Block    | RES | Restore                 |
| BYP | Bypass           | ETX | End of Text                  | RS  | Reader Stop             |
| CAN | Cancel           | FF  | Form Feed                    | SI  | Shift In                |
| CC  | Cursor Control   | FS  | Field Separator              | SM  | Set Mode                |
| CR  | Carriage Return  | HT  | Horizontal Tab               | SMM | Start of Manual Message |
| CU1 | Customer Use 1   | IFS | Interchange File Separator   | SO  | Shift Out               |
| CU2 | Customer Use 2   | IGS | Interchange Group Separator  | SOH | Start of Heading        |
| CU3 | Customer Use 3   | IL  | Idle                         | SOS | Start of Significance   |
| DC1 | Device Control 1 | IRS | Interchange Record Separator | SP  | Space                   |
| DC2 | Device Control 2 | IUS | Interchange Unit Separator   | STX | Start of Text           |
| DC4 | Device Control 4 | LC  | Lower Case                   | SUB | Substitute              |
| DEL | Delete           | LF  | Line Feed                    | SYN | Synchronous Idle        |
| DLE | Data Link Escape | NAK | Negative Acknowledge         | TM  | Tape Mark               |
| DS  | Digit Select     | NL  | New Line                     | UC  | Upper Case              |
| EM  | End of Medium    | NUL | Null                         | VT  | Vertical Tab            |
| ENQ | Enquiry          |     |                              |     |                         |

### Special Graphic Characters

|    |                       |
|----|-----------------------|
| ¢  | Cent Sign             |
| .  | Period, Decimal Point |
| <  | Less-than Sign        |
| (  | Left Parenthesis      |
| +  | Plus Sign             |
|    | Logical OR            |
| &  | Amperand              |
| !  | Exclamation Point     |
| \$ | Dollar Sign           |
| *  | Asterisk              |
| )  | Right Parenthesis     |
| ;  | Semicolon             |
| ~  | Logical NOT           |
| -  | Minus Sign, Hyphen    |
| /  | Slash                 |
| ,  | Comma                 |
| %  | Percent               |
| _  | Underscore            |
| >  | Greater-than Sign     |
| ?  | Question Mark         |
| :  | Colon                 |
| #  | Number Sign           |
| @  | At Sign               |
| '  | Prime, Apostrophe     |
| =  | Equal Sign            |
| "  | Quotation Mark        |

# Magnetic Shielding Products

The items below are only examples of our capabilities. Please contact us for further information.

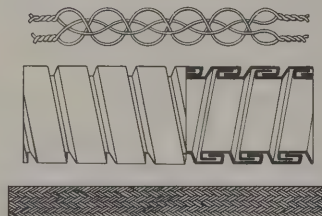


## Lab Kits & Probes

Lab Kit contains assorted CO-NETIC and NETIC shielding alloys, double-faced pressure sensitive tape for shield construction and 20 millivots/gauss A.C. magnetic pickup probe, LK-120 ..... \$129.00  
 AC Probe only, 20 mV/gauss, axial, EP-101A ..... \$49.50  
 AC Probe, 60 mV/gauss, axial or transverse, EP-102A or T ... \$79.50  
 AC/DC probe, HP-103 B ..... \$195.00  
 Request Lab Kit catalog LK-2, Probe catalogs EP-4, HP-2

## Component Shields

Full time engineering staff available for consultation on shielding problems. Magnetic Shield Corporation is also the preferred source for custom shields to your specifications. Extensive standard and special tooling provide fast shipment. Call for design assistance or send print for prompt quotation.

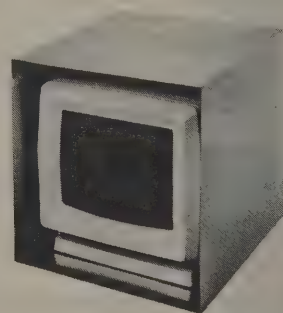


## Cable, Conduit & Sleeving

Our patented, Inter-8 Weave configuration of four #24 AWG wires provides superior attenuation over twisted pair. Insulation choice is PVC or ETFE. Available unshielded or with braided CO-NETIC for magnetic shielding. SPIRA-SHIELD Flexible Conduit stocked in 3/8" I.D., CO-NETIC Braided Sleeving stocked in 1/4" & 1/2" I.D., CO-NETIC wire stocked in #36 AWG. Request catalog WC-2

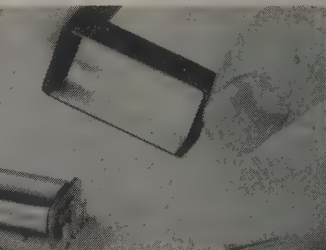
## Monitor Enclosures

CO-NETIC magnetic shield enclosures protect CRT monitors from magnetic fields (DC to 100 kHz) that cause shimmy or jitter of the display. Image distortions are often caused by high current industrial or electric power equipment, particularly in color and high resolution monitors. Engineering provided by specification guide CM-2.



## Photomultiplier Shields

CO-NETIC magnetic shields improve the amplification characteristics of photomultiplier tubes by providing significant attenuation of magnetic fields. Effective shielding is ensured over a wide range of field intensities. When grounded, the shields provide protection against electrostatic interference. Catalog lists all current photomultiplier tubes and recommended shields. Custom shields available. Request catalog PM-5





# CO-NETIC® & NETIC® Magnetic Shielding Alloys

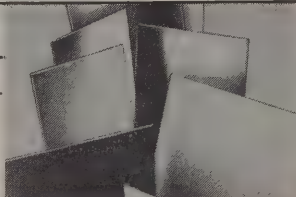
A complete stock of CO-NETIC (high permeability) and NETIC (high saturation) shielding alloys is available in sheet and foil form. Our engineering department will gladly assist you in the development of shield designs to meet your prototype or production requirements. Request catalog MG-5, material and fabrication guide for additional data and MIL specs.



**MAGNETIC SHIELD CORP.**

Perfection Mica Company  
750 North Thomas Drive  
Bensenville, Illinois 60106 U.S.A.  
FAX: 708-766-2813  
Telephone: 708-766-7800

**Sheet Stock:** standard 30" × 120" Shipped immediately from stock.

| STD. THK.<br>(inch)                                  | CO-NETIC AA ALLOY<br>STRESS ANNEALED                                                                                                                          | CO-NETIC AA ALLOY<br>PERFECTION ANNEALED                                                                                                                                                                                                       | NETIC S3-6<br>ALLOY                                                                |                                                                                    |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| .014<br>.020<br>.025<br>.030<br>.040<br>.050<br>.062 | High permeability characteristics. Stress annealed for ease of fabrication. Must be final annealed for maximum attenuation performance. Also stocked in .100" | High permeability characteristics. Perfection Annealed material has been fully annealed for optimum magnetic shielding properties. No further annealing after fabrication is necessary if severe forming is avoided. 30" × 59" maximum length. | High saturation capability.<br><br>.040" not stocked.<br><br>Also stocked in .095" |  |

**Foil Stock:** standard coils 50 and 100 linear ft.

| STD. THK.<br>(Inch)                                  | CO-NETIC<br>PERFECTION<br>ANNEALED<br>WIDTH (Inch) | NETIC<br>PERFECTION<br>ANNEALED<br>WIDTH (Inch) |                                                                                                                                                                                                                                                                                                              |                                                                                     |
|------------------------------------------------------|----------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| .002<br>.004<br>.004<br>.006<br>.006<br>.010<br>.010 | 4<br>4<br>15<br>4<br>15<br>4<br>15                 | —<br>4<br>15<br>—<br>—<br>—<br>—                | Standard foils shipped immediately from stock. All sizes available with double-faced pressure sensitive tape and release coated liner. Foils can be slit to a minimum width of 1/4". Backed and slit foils shipped one week after receipt of order. All foil is Perfection Annealed for maximum attenuation. |  |

## Physical & Magnetic Data:

|                                                                     | CO-NETIC AA<br>PERFECTION<br>ANNEALED | CO-NETIC AA<br>STRESS<br>ANNEALED | NETIC S3-6 |                                             | CO-NETIC AA<br>PERFECTION<br>ANNEALED | CO-NETIC AA<br>STRESS<br>ANNEALED | NETIC S3-6 |
|---------------------------------------------------------------------|---------------------------------------|-----------------------------------|------------|---------------------------------------------|---------------------------------------|-----------------------------------|------------|
| Specific Gravity                                                    | 8.74                                  | 8.74                              | 7.86       | Electrical Resistivity<br>ohms/cir mil foot | 330                                   | 330                               | 64         |
| Coefficient of<br>expansion per<br>°C × 10 <sup>-6</sup>            | 12.6                                  | 12.6                              | 13.7       | Microhm centimeters                         | 55                                    | 55                                | 11         |
| Tensile strength<br>PSI × 10 <sup>3</sup>                           | 64                                    | 85                                | 42         | Saturation<br>Induction (Gauss)             | 8000                                  | 8000*                             | 21,400     |
| Yield strength<br>PSI × 10 <sup>3</sup>                             | 18.5                                  | 33                                | 27         | Initial<br>Permeability                     | 30,000                                | 30,000*                           | 200        |
| Hardness, Rockwell B                                                | 50 Ref.                               | 70 Ref.                           | 50 Ref.    | Permeability at<br>200 gauss                | 135,000                               | 135,000*                          | 500        |
| Elongation in<br>2 inches, percent                                  | 27                                    | 32                                | 38         | Maximum<br>Permeability                     | 450,000                               | 450,000*                          | 4000       |
| Melting point (°F)                                                  | 2650                                  | 2650                              | 2790       | Induction at μ max.                         | 3000                                  | 3000*                             | 8000       |
| Thermal conductivity<br>(cal/sec/cm <sup>2</sup> /cm/°C)<br>at 20°C | .138                                  | .138                              | .118       | Coercive force<br>H <sub>c</sub> , oersteds | .015                                  | .015*                             | 1.0        |
| Curie Temp. (°F)                                                    | 850                                   | 850                               | 1420       |                                             |                                       |                                   |            |

\* Magnetic Properties after Hydrogen Anneal.

# Do you need magnetic shielding as good as M $\mu$ Shield®?

## Only if you need optimum attenuation.

Unless your design calls for magnetic shielding that meets the most stringent specs, you may not need to consider M $\mu$ Shield materials.

But, if you need custom shielding with maximum attenuation or tubing with totally uniform permeability, you do need M $\mu$ Shield. And you can get M $\mu$ Shield materials only from M $\mu$ Shield, a company with more than 35 years of experience.

The M $\mu$ Shield Company can satisfy the most demanding applications — aerospace, nuclear and electronic — with a wide variety of custom shields, materials, and services.

## M $\mu$ Shield cathode ray tube shields.

Assure high resolution. For use in special military applications. Also suitable for commercial, industrial, and laboratory applications.

## M $\mu$ Shield photomultiplier tube shields.

Ideal for electro-optical devices of all kinds, CAT- and PET-scan machines, and TV cameras.

## M $\mu$ Shield custom electronic components shields.

For use in computer-related technology such as disk drives, printed circuits, and PC terminals.

## M $\mu$ Shield special application shields.

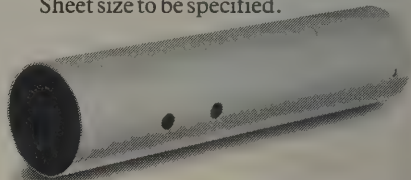
Nuclear Magnetic Resonance Imaging. Electron microscopes. X-ray spectrography. Wide area shielding in laboratories and sensitive areas.

## Coils, sheets and tubing in stock

- High saturation shielding. Permeability ranges from 200 to 50,000. Saturation point between 18,000 and 20,000 gauss.
- Medium permeability shielding. Permeability from 12,500 to 150,000. Saturation point approximately 15,000 gauss.
- High permeability shielding. Permeability from 80,000 (at B-40) to 350,000. Saturation point approximately 7,500 gauss.
- Dimensions:  
Coils — .004", .006", .010" thickness; 8" and 15" widths. Minimum order \$100.

Sheets — Cold rolled annealed, .015" to .060" thickness. Full sheet 30" × 10'. Minimum order 30" × 36'.

Hot rolled, .090" to .265" thickness. Sheet size to be specified.



**M $\mu$ Shield is the only supplier** of this seamless magnetic shield tubing. The unique manufacturing process eliminates the non-uniformity of permeability inherent in welded tubing.

Tubing — .10" to 2.00 ID. Wall thicknesses .010" to .060". Lengths to 20'.

## Heat treating service.

Gives magnetic materials optimum permeability with low shock-sensitivity. Permeability and uniformity of M $\mu$ Shield-fabricated parts are guaranteed.

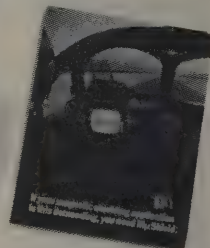
## Special consultation services.

We'll do more than just give you a quote. We'll do everything from on-site input meetings to prototyping, testing, and manufacturing. When your designs require optimum shielding, send us your specs and we'll be happy to review your application.

Now when you need magnetic shielding as good as M $\mu$ Shield, you don't need to worry.

Call or write The M $\mu$ Shield Company, 5 Springfield Road, P.O. Box 439, Goffstown, NH 03045. Phone 603/666-4433.

**Fax 800/666-4013.**



Ask for our new catalog.

# M $\mu$ Shield®

Magnetic Shielding



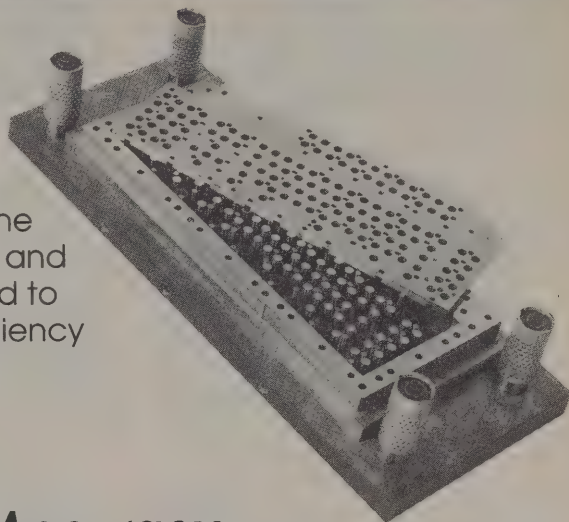
# THRUST INDUSTRIES

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*Committed To Excellence Through Dedication To Quality*

## Outstanding Performance

Today's high tech products and components require sophisticated die cut parts to match. Thrust Industries is recognized as a leading producer of high quality die cut materials for the electronics, automotive, telecommunications, and appliance industries. At Thrust, we're dedicated to helping our customers achieve maximum efficiency and productivity by offering a wide range of customized materials and services.



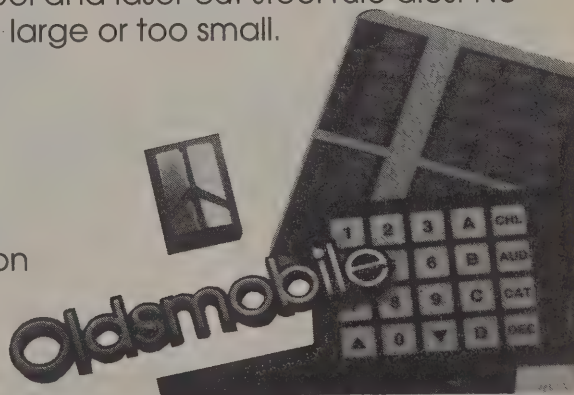
## Superior Accuracy

Our quality standards are among the highest in the industry. Using statistical process control to ensure accuracy, we consistently achieve minimum tolerances on critical dimensions. Each part is produced according to your exact specifications. In addition, we offer both matched metal hard tool and laser cut steel rule dies. No request is too large or too small.



## Exceptional Delivery

Performance and accuracy count only if you receive your parts on time. You can depend on Thrust Industries for prompt turn-around and delivery. After prototype approval, orders are typically shipped in 10 working days or less.



*Precision That's A Cut Above*

# THRUST INDUSTRIES

Authorized Converter  
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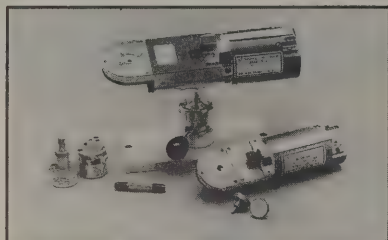
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# Assembly And Service Tools For Wiring Systems.

**DMC** DANIELS  
MANUFACTURING  
CORPORATION



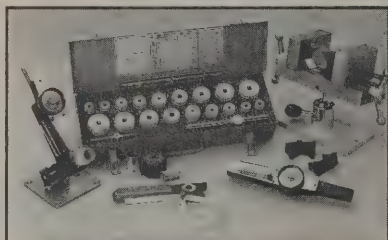
**PNEUMATIC  
CRIMPING TOOLS**



**INDENT  
CRIMPING TOOLS**



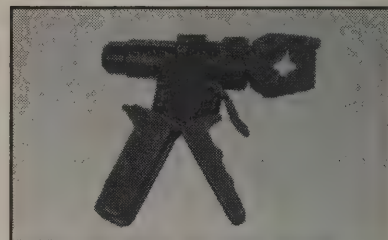
**INSTALLING AND REMOVAL  
TOOLS (MIL-1-81969)**



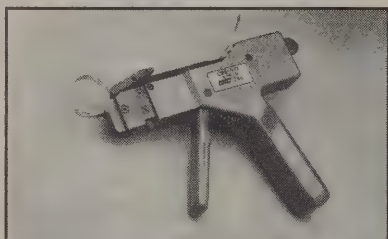
**BACKSHELL ACCESSORY  
TOOLS (BETA™ LINE)**



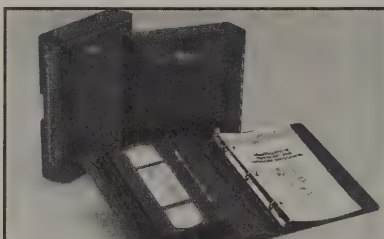
**OPEN FRAME  
CRIMPING TOOLS**



**HYDRAULIC CRIMPING  
TOOLS (HYDRAC™ LINE)**



**BAND APPLICATION TOOLS  
FOR EMI/RFI SHIELDING**



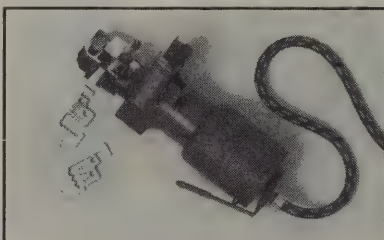
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**HAND HELD TENSILE  
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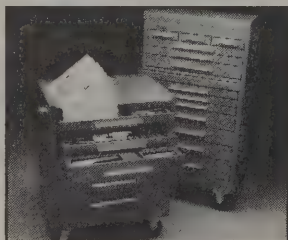
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## DMC TOOL KITS

DMC is the world leader in connector assembly tools and complete tool kit systems to support aircraft, weapon systems, transport vehicles, communications and other electronic equipment.



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## ABBREVIATIONS FOR WIRE & CABLE PRODUCT SELECTION GUIDE

### CODE/EQUALS

AP Aluminized Polyester  
BC Bare Copper  
BCB Bare Copper Braid  
BCCS Bare Copper Coated Steel  
BTC Braided Tinned Copper  
DRN Drain Wire  
EPR Synthetic Rubber  
ETFE Tefzel  
FLR Filler  
FO Fiber Optic

### CODE/EQUALS

FPE Foamed Polyethylene  
FRSR Fire Resistant Silicone Rubber  
GLS Glass  
HYFO Hybrid Fiber Optic  
IRPVC Irradiated PVC  
KYN Kynar  
MYL Mylar (DuPont™)  
NEO Neoprene  
NPC Nickel Plated Copper

### CODE/EQUALS

NYL Nylon  
PCA Polychloroalkene  
PE Polyethylene  
POP Polypropylene  
PVC Polyvinylchloride  
REEL Cord on Reel  
RTCL Retractable Cord  
RUB Rubber  
SBR Synthetic Rubber

### CODE/EQUALS

SHLD Shielded  
SPC Silver Plated Copper  
TC Tinned Copper  
TEF Teflon  
TFG Teflon/Fiberglass  
TPR Thermo Plastic Rubber  
XLP Cross Linked Polyethylene  
\*\* Specs Not Shown On Page  
- Not Applicable

## MULTICONDUCTOR CABLE

| Manufacturer                           | Starting EEM Page No. | Number of Conductors (range) | Conductor (AWG range) | Insulation (type)                         |                                  |
|----------------------------------------|-----------------------|------------------------------|-----------------------|-------------------------------------------|----------------------------------|
|                                        |                       |                              |                       | Primary                                   | Secondary                        |
| ABL Electronic Supply Inc.             | C•1706                | 2-102                        | 38-10                 | PVC, PE, TEF, IRPVC, RUB                  | GLS, NED, NYL, PE, PVC, TEF, TFG |
| Brim Electronics                       | C•1712                | 2-202                        | 20-28                 | PVC, PE, TFE, PP                          | NYL, PE, PU, PVC, FEP            |
| Caton Connector Corp.                  | C•1725                | 2+                           | 22-8                  | PVC                                       |                                  |
| Consolidated Electronic Wire and Cable | C•1726                | 2-60                         | 30-6                  | PVC, PE, POLYPRO, TEF                     | PVC, PE, PU, NEO, TEF            |
| Daburn Electronics and Cable           | C•1740                | 2-60                         | 28-16                 | PVC, TFE                                  | PVC, TFE, FEP                    |
| Globtek                                | C•1748                | 2-7                          | 28-9                  |                                           |                                  |
| GSI Corp.                              | C•1749                | 2-200                        | 40-12                 | Any                                       | Any                              |
| ISL Products International Ltd.        | C•1753                | 2-9                          | 28                    | POP                                       | PVC                              |
| JH America                             | C•1754                | Any                          | Any                   | Any                                       | Any                              |
| Manhattan Electric Cable Corp.         | C•1763                | 50                           | 28-16                 | PVC                                       | PVC                              |
| National Wire and Cable Corp.          | C•1768                | 2-120                        | 28-12                 | PVC                                       | PVC Jacket                       |
| Omega Engineering                      | C•1792                | 1-72                         | 36-8                  | Polyvinyl, TEF, fiberglass, mylar,        | woven ceramic, kapton            |
| Phoenix Wire                           | C•1802                | 2-6                          | 24-50                 | PTFE                                      |                                  |
| RDI Electronics                        | C•1803                | 2-25                         | 14-32                 | PVC                                       | PVC, PU                          |
| Shogyo International Corp.             | C•1808                | 1-25                         | 16-28                 |                                           |                                  |
| Virginia Plastics                      | C•1814                | 2-10                         | 26                    | Polyolefin, polyester                     | Vinyl RUB, PVC jacket            |
| Weico Wire and Cable                   | C•1818                | 1-200                        | 30-4                  | PVC, SR-PVC, PE, TEF, POP, RUB, KYN, ETFE | PVC, TEF, NEO, PEO, KYN          |

## DATA CABLES

| Manufacturer                           | Starting EEM Page No. | Number of Conductors | Conductor (AWG range) | Shielding Material (type)             | Insulation (type)        |                       |
|----------------------------------------|-----------------------|----------------------|-----------------------|---------------------------------------|--------------------------|-----------------------|
|                                        |                       |                      |                       |                                       | Primary                  | Jacket                |
| ABL Electronic Supply Inc.             | C•1706                | 1-20                 | 38-12                 | BCB, BCCS, BTS, AP w/Drain Wire       | PVC, SRPVC, FPE, PE, TEF | PE, PVC, TEF          |
| Brim Electronics                       | C•1712                | 2-202                | 20-26                 | Braided, Spiral, Aluminum, Mylar Foil | PVC, PE, TFE, PP         | NYL, PE, PV, PVC, FEP |
| Consolidated Electronic Wire and Cable | C•1726                | 1-50                 | 28-16                 | Foil, Braid, Tape                     | PVC, PE, FPE, POP        | PVC, PE, TEF          |
| Daburn Electronics and Cable           | C•1740                | 2-60                 | 28-16                 | Copper, Aluminum Mylar Foil           | PVC, TFE                 | PVC, TFE, FEP         |
| Globtek                                | C•1748                | 1-24                 | 0.5-0.65              |                                       |                          |                       |
| GSI Corp.                              | C•1749                | 2-200                | 40-12                 | Any                                   | Any                      |                       |
| JH America                             | C•1754                | Any                  | Any                   | Any                                   | Any                      | Any                   |
| Manhattan Electric Cable Corp.         | C•1763                | 50                   | 28-16                 | Foil or braid                         | PVC                      | PVC                   |
| National Wire and Cable Corp.          | C•1768                | 2-100                | 24                    | Aluminum foil and copper braid        | PE                       | PVC                   |
| RDI Electronics                        | C•1803                | 1-50                 | 24-28                 | Braided, Foil, MYL                    | PVC                      | PVC PU                |
| Rodate Technical Sales                 | C•1804                | 100 pair             | 24-16                 | Aluminum                              | Vinyl plastic            | PVC                   |
| Virginia Plastics                      | C•1814                | 4-10                 | 26                    |                                       | Polyolefin, polyester    | Vinyl RUB, PVC        |
| Weico Wire and Cable                   | C•1818                | 1-200                | 28-12                 | SPC, BTC, Aluminum foil               | SR-PVC, PE, TEF, POP     | PVC, PE, TEF          |

## ACCESSORIES, HARDWARE, SERVICES

| Manufacturer                           | Starting EEM Page No. | Clamps | Clips | Cable Ties | Tubing | Grommets | Other                                     | Material                                             | Approvals                                                                 | Services                                                                                                                                                            |
|----------------------------------------|-----------------------|--------|-------|------------|--------|----------|-------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ABL Electronic Supply Inc.             | C•1706                | ✓      | ✓     | ✓          | ✓      | ✓        | Tubing-Heat shrink                        | PVC, TEF Polyolefin                                  | UL, CSA                                                                   | Engrave cut to length.                                                                                                                                              |
| Bergquist                              | C•1710                |        |       |            |        |          | Power inlets                              | PVC                                                  | UL, CSA, VDE, OVE, DEMKO, NEMKO, SAA, MITI                                | Terminating, stripping, all cord modification.                                                                                                                      |
| Brim Electronics                       | C•1712                | ✓      | ✓     | ✓          | ✓      | ✓        |                                           |                                                      |                                                                           | Cutting, cutting & stripping, hot stamping crimping, assemblies, tinning                                                                                            |
| Catamount                              | C•1722                | ✓      | ✓     | ✓          | ✓      | ✓        | Screws, nuts, washers, wire positioning   |                                                      |                                                                           |                                                                                                                                                                     |
| Consolidated Electronic Wire and Cable | C•1726                |        |       |            | ✓      |          |                                           |                                                      |                                                                           |                                                                                                                                                                     |
| Daburn Electronics and Cable           | C•1740                |        | ✓     | ✓          | ✓      |          | Standoffs, Feedthru, Lacing cord and tape | PVC, Spiral wrap porcelain, NYL, Dacron              |                                                                           |                                                                                                                                                                     |
| DEK Inc.                               | C•1747                | ✓      | ✓     | ✓          |        | ✓        | Non-metallic surface raceway              | NYL, POP, Flame retardant POP, Polycarbonate         | UL listed materials, UL listed raceway                                    |                                                                                                                                                                     |
| Globtek                                | C•1748                | ✓      | ✓     | ✓          | ✓      | ✓        | Strain reliefs                            | PVC                                                  | UL, CSA                                                                   | Design of wire harness                                                                                                                                              |
| GSI Corp.                              | C•1749                |        |       | ✓          | ✓      |          | Solder sleeves                            | TEF                                                  | QPL                                                                       | Soldering, wire marking, braiding.                                                                                                                                  |
| ISL Products International             | C•1753                |        |       |            | ✓      |          |                                           |                                                      |                                                                           |                                                                                                                                                                     |
| JH America                             | C•1754                | ✓      | ✓     | ✓          | ✓      | ✓        |                                           |                                                      | UL, CSA approved connectors, wire, maker and cable assemblies manufacture | Design or manufacture of all kinds of cable assemblies for data communication, computer environment vertical integrated from connector, cable, to final assemblies. |
| M.M. Newman Corp.                      | C•1791                | ✓      |       | ✓          | ✓      |          | Spirally cut cable wrap                   | NYL, TEF PE                                          | MIL Specs, AMS Specs, UL Recognized                                       |                                                                                                                                                                     |
| Omega Engineering                      | C•1792                | ✓      | ✓     |            | ✓      | ✓        | Connectors, adapters                      | Plastic ceramic, thermocouple alloys NPC, RTD alloys |                                                                           |                                                                                                                                                                     |
| Panel Components                       | C•1793                |        |       |            |        |          |                                           |                                                      | UL/CSA assembly house                                                     | In-house, made-to-order cable assembly services for international power connectors                                                                                  |
| Rodale Technical Sales                 | C•1804                |        | ✓     | ✓          |        | ✓        | Strain reliefs                            | PVC                                                  | UL, CSA, International                                                    |                                                                                                                                                                     |
| Weico Wire and Cable                   | C•1818                |        |       |            | ✓      |          | Sleeving                                  | NEO, PVC, Polyolefin, KYN, TEF, Polyester            | MIL, UL                                                                   | Cutting, stripping, tinning, twisting                                                                                                                               |



## HOOKUP WIRE

| Manufacturer                           | Starting EEM Page No. | Conductor (type)                                                                        | Conductor (AWG range) | Insulation (type)                                                           |                                       |
|----------------------------------------|-----------------------|-----------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------|---------------------------------------|
|                                        |                       |                                                                                         |                       | Primary                                                                     | Secondary                             |
| ABL Electronic Supply Inc.             | C•1706                | Solid, Stranded, Bonded, BC, NPC, SPC, TC                                               | 38-4/0                | PVC, IRPVC, TEF, KYN, NEO, RUB, XLP                                         | GLS, NEU, NYL, PE, PVC, RUB, TEF, TFG |
| Brim Electronics                       | C•1712                | BC, NPC, SPC, TC                                                                        | 00-38                 | PE, Rulan, Silicone, PVC, KYN, TFE, KAPTON, TPE,                            | NYL, braids                           |
| Daburn Electronics and Cable           | C•1740                | Copper, Nickel                                                                          | 36-2                  | PVC, TFE, IRPVC, GLS, Silicone rubber                                       | NYL, Silica                           |
| Consolidated Electronic Wire and Cable | C•1726                | BC, TC, SPC                                                                             | 30-6                  | PVC, KYN, IR PVC, TEF                                                       | PVC, NYL, TEF                         |
| Globtek                                | C•1748                | SVT, SJT, HAR,                                                                          | 8-24                  | PVC, RUB SPT, SJ, HPN                                                       | PVC                                   |
| ISL Products International             | C•1753                | BC                                                                                      | 16-30                 | PVC                                                                         | PVC                                   |
| JH America                             | C•1754                | Any                                                                                     | Any                   | Any                                                                         | Any                                   |
| Judd Wire Inc.                         | C•1756                | TC                                                                                      | 32-2                  | XLPVC                                                                       |                                       |
| Manhattan Electric Cable Corp.         | C•1763                | Copper                                                                                  | 30-8                  | PVC                                                                         | TEF                                   |
| MWS Wire Industries                    | C•1764                | Copper, Aluminum Magnet wire: ribbon, square, to 20 conductors, twisted, plated, alloys | 14, 16-52,            | One-to-four coats,                                                          | "bondable overcoats" & Solderable     |
| National Wire and Cable Corp.          | C•1768                | Military, UL and CSA TC                                                                 | 32-6                  | PVC                                                                         | NYL                                   |
| Omega Engineering                      | C•1792                | Thermocouple alloys RTD, thermister, heater                                             | 36-8                  | Metal-clad/ceramic polyvinyl, TEF, fiberglass                               | Mylar, woven ceramic kapton           |
| Phoenix Wire                           | C•1802                | SPC                                                                                     | 24-50                 | PTFE                                                                        |                                       |
| RDI Electronics                        | C•1803                | Copper, silver                                                                          | 14-32                 | PP, PU, PVC                                                                 | PU, PVC                               |
| Rodale Technical Sales                 | C•1804                | 1007, 1015, 1061, 1195, 1208, 1176, 1185, 2405, 2590, 2547                              | 9-30                  | Vinyl plastic                                                               | PVC                                   |
| Rowe Industries                        | C•1807                | Copper - TPC & SPC                                                                      | 24-1                  | Silicone                                                                    | Silicone                              |
| Weico Wire and Cable                   | C•1818                | Solid, Stranded, Bonded, BC, TC, SPC                                                    | 32-4/0                | PVC, IR PVC, TEF KYN, IRR Polyolefin, FEP, Polyalkene, Tefzel, NYL Fluoride | NYL, Polyvinylidene, Fluoride         |

## SINGLE CONDUCTOR COAXIAL

| Manufacturer                           | Starting EEM Page No. | Impedance (ohms)             | Conductor (AWG range) | Shielding Material (type)    | Insulation (type)     |                   |
|----------------------------------------|-----------------------|------------------------------|-----------------------|------------------------------|-----------------------|-------------------|
|                                        |                       |                              |                       |                              | Primary               | Jacket            |
| ABL Electronic Supply Inc.             | C•1706                | 12-200                       | 11-30                 | Foil and Braid-Copper Braid  | PE, TEF, FPE          | PVC, TFG, TEF     |
| Brim Electronics                       | C•1712                | 50, 75, 95, 52, 53.5, 93, 78 | 13-30                 | Braided, Aluminum Mylar Foil | PE, PVC, TFE, FEP     | PVC, TFE, FEP     |
| Consolidated Electronic Wire and Cable | C•1726                | 50-125                       | 30-8                  | BTC, BCB, SPC Braid          | PE, PFE, TFE, FOAMIFE | PVC, PE, TFG, TFE |
| Daburn Electronics and Cable           | C•1740                | 52-80                        | 26-16                 | SPC Braid                    | TFE                   | TFE, FEP          |
| Globtek                                | C•1748                |                              | 40-6                  | Aluminum                     |                       |                   |
| JH America                             | C•1754                | Any                          | Any                   | Any                          | Any                   | Any               |
| Manhattan Electric Cable Corp.         | C•1763                | 50-75-93                     | 30-11                 | Copper Braid                 | PE                    | PVC               |
| RDI Electronics                        | C•1803                | 75Ω                          | 24                    | Braid, foil, drain           | PE                    | PVC               |
| Rodale Technical Sales                 | C•1804                |                              | 1-16-30               | Aluminum                     | Vinyl plastic         | PVC               |
| Switch Craft                           | C•1810                |                              | 25-22                 | Aluminum                     | Vinyl Plastic         | PVC               |
| Weico Wire and Cable                   | C•1818                | 12-200                       | 30-11                 | BC, TC, SPC,                 | PE, TEF Aluminum foil | PE, PVC, TEF      |

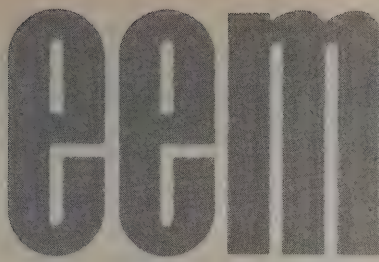
## CABLE ASSEMBLIES

| Manufacturer                           | Starting EEM Page No. | Subminiature "D" Assemblies |         |         |         |         | GPIO | Ethernet Transc. | Trunk | Parallel Interface | DIN Keyboard |        |        | Modular Keyboard |          |
|----------------------------------------|-----------------------|-----------------------------|---------|---------|---------|---------|------|------------------|-------|--------------------|--------------|--------|--------|------------------|----------|
|                                        |                       | 9 Pos.                      | 15 Pos. | 25 Pos. | 37 Pos. | 50 Pos. |      |                  |       |                    | 3 Pos.       | 5 Pos. | 8 Pos. | Straight         | Retract. |
| ABL Electronic Supply Inc.             | C•1706                | ✓                           | ✓       | ✓       | ✓       | ✓       | ✓    | ✓                | ✓     |                    |              |        |        |                  |          |
| Brim Electronics                       | C•1712                |                             |         |         |         |         |      |                  |       |                    |              |        |        | ✓                | ✓        |
| Consolidated Electronic Wire and Cable | C•1726                | ✓                           | ✓       | ✓       | ✓       | ✓       | ✓    |                  |       | ✓                  | ✓            | ✓      | ✓      | ✓                |          |
| Daburn Electronics and Cable           | C•1740                |                             |         |         |         |         |      |                  |       |                    |              |        |        | ✓                | ✓        |
| Globtek                                | C•1748                | ✓                           | ✓       | ✓       | ✓       |         |      |                  |       | ✓                  | ✓            | ✓      | ✓      | ✓                | ✓        |
| JH America                             | C•1754                | ✓                           | ✓       | ✓       | ✓       | ✓       | ✓    | ✓                | ✓     | ✓                  | ✓            | ✓      | ✓      | ✓                | ✓        |
| Kycon Cable and Connectors             | C•1757                | ✓                           | ✓       | ✓       | ✓       |         |      |                  |       | ✓                  | ✓            | ✓      | ✓      | ✓                | ✓        |
| LZR Electronics                        | C•1758                | ✓                           | ✓       | ✓       | ✓       | ✓       | ✓    | ✓                | ✓     | ✓                  | ✓            | ✓      | ✓      | ✓                | ✓        |
| Omega Engineering                      | C•1792                | ✓                           |         | ✓       |         |         |      |                  |       |                    |              |        |        |                  |          |
| RDI Electronics                        | C•1803                | ✓                           | ✓       | ✓       | ✓       | ✓       |      |                  |       | ✓                  | ✓            | ✓      | ✓      | ✓                | ✓        |
| Rodale Technical Sales                 | C•1804                | ✓                           | ✓       | ✓       |         |         |      |                  |       |                    | ✓            | ✓      | ✓      | ✓                | ✓        |
| Shogyo International                   | C•1808                | ✓                           | ✓       | ✓       |         |         |      |                  |       |                    | ✓            | ✓      | ✓      | ✓                | ✓        |
| Switchcraft                            | C•1810                | ✓                           |         |         |         |         |      |                  | ✓     |                    |              |        |        |                  |          |
| Technical Devices                      | C•1813                | ✓                           | ✓       | ✓       | ✓       | ✓       | ✓    | ✓                |       | ✓                  | ✓            | ✓      | ✓      | ✓                | ✓        |

## POWER CORDS

| Manufacturer                           | Starting EEM Page No. | 3 Conductor |            | Detachable 3 Conductor |            | 2 Conductor |            | Jumper | Retractable | Hospital | Extension |
|----------------------------------------|-----------------------|-------------|------------|------------------------|------------|-------------|------------|--------|-------------|----------|-----------|
|                                        |                       | Shielded    | Unshielded | Shielded               | Unshielded | Shielded    | Unshielded |        |             |          |           |
| ABL Electronic Supply Inc.             | C•1706                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          | ✓      | ✓           | ✓        | ✓         |
| Bergquist                              | C•1710                | ✓           | ✓          | ✓                      | ✓          |             | ✓          | ✓      |             | ✓        |           |
| Brim Electronics                       | C•1712                |             | ✓          |                        |            |             | ✓          |        | ✓           |          | ✓         |
| Consolidated Electronic Wire and Cable | C•1726                | ✓           | ✓          | ✓                      | ✓          |             | ✓          |        | ✓           | ✓        | ✓         |
| Daburn Electronics and Cable           | C•1740                | ✓           | ✓          |                        |            | ✓           | ✓          | ✓      | ✓           |          |           |
| Globtek                                | C•1748                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          | ✓      | ✓           | ✓        | ✓         |
| GSI Corp.                              | C•1749                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          | ✓      | ✓           | ✓        | ✓         |
| Manhattan Electric Cable Corp.         | C•1763                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          |        |             |          |           |
| Omega Engineering Inc.                 | C•1792                |             | ✓          |                        |            |             | ✓          |        |             |          |           |
| Panel Components                       | C•1793                |             | ✓          |                        | ✓          |             | ✓          | ✓      |             | ✓        |           |
| RDI Electronics                        | C•1803                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          |        | ✓           |          | ✓         |
| Rodale Technical Sales                 | C•1804                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          | ✓      | ✓           | ✓        | ✓         |
| Shogyo International                   | C•1808                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          |        |             |          |           |
| Technical Devices                      | C•1813                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          | ✓      | ✓           | ✓        | ✓         |
| Weico Wire and Cable                   | C•1818                | ✓           | ✓          | ✓                      | ✓          | ✓           | ✓          | ✓      | ✓           | ✓        | ✓         |





# WIRE GAUGES— DIAMETER, AREA AND COPPER WEIGHT

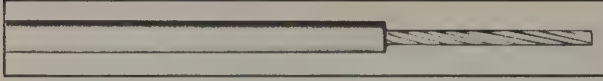
| Size,<br>AWG | Diameter at<br>20°C (68°F) |        | Area at 20°C (68°F) |         |          | Weight at 20°C (68°F),<br>bare copper wire |         |         |
|--------------|----------------------------|--------|---------------------|---------|----------|--------------------------------------------|---------|---------|
|              | mils                       | mm     | mils                | c mils  | mm       | lb/1,000 ft.                               | lb/mile | kg/km   |
| 4/0          | 460.0                      | 11.68  | 166,200             | 211,600 | 107.2    | 640.5                                      | 3,382   | 953.2   |
| 3/0          | 409.6                      | 10.40  | 131,800             | 167,800 | 85.01    | 507.8                                      | 2,681   | 755.7   |
| 2/0          | 364.8                      | 9.266  | 104,500             | 133,100 | 67.43    | 402.8                                      | 2,127   | 599.5   |
| 1/0          | 324.9                      | 8.252  | 82,891              | 105,600 | 53.49    | 319.5                                      | 1,687   | 477.6   |
| 1            | 289.3                      | 7.348  | 85,730              | 83,690  | 42.41    | 253.3                                      | 1,338   | 337.0   |
| 2            | 257.6                      | 6.543  | 52,120              | 66,360  | 33.62    | 200.9                                      | 1,061   | 298.9   |
| 3            | 229.4                      | 5.827  | 41,330              | 52,620  | 26.67    | 159.3                                      | 841.1   | 237.1   |
| 4            | 204.3                      | 5.189  | 32,780              | 41,740  | 21.15    | 126.3                                      | 667.1   | 188.0   |
| 5            | 181.9                      | 4.620  | 25,990              | 33,090  | 16.77    | 100.2                                      | 528.8   | 149.0   |
| 6            | 162.0                      | 4.115  | 20,610              | 26,240  | 13.30    | 79.44                                      | 419.4   | 118.2   |
| 7            | 144.3                      | 3.665  | 16,350              | 20,820  | 10.55    | 63.03                                      | 332.8   | 93.80   |
| 8            | 128.5                      | 3.264  | 12,970              | 16,510  | 8.367    | 49.98                                      | 263.9   | 74.38   |
| 9            | 114.4                      | 2.906  | 10,280              | 13,090  | 6.631    | 39.61                                      | 209.2   | 58.95   |
| 10           | 101.9                      | 2.588  | 8,155               | 10,380  | 5.261    | 31.43                                      | 166.0   | 46.77   |
| 11           | 90.7                       | 2.304  | 6,460               | 8,230   | 4.17     | 24.90                                      | 131     | 37.1    |
| 12           | 80                         | 2.05   | 5,130               | 6,530   | 3.310    | 19.8                                       | 104     | 29.4    |
| 13           | 72.0                       | 1.83   | 4,070               | 5,180   | 2.63     | 15.7                                       | 82.9    | 23.4    |
| 14           | 64.1                       | 1.63   | 3,230               | 4,110   | 2.08     | 12.4                                       | 65.7    | 18.5    |
| 15           | 57.1                       | 1.45   | 2,560               | 3,260   | 1.650    | 9.87                                       | 52.1    | 14.7    |
| 16           | 50.8                       | 1.29   | 2,030               | 2,580   | 1.31     | 7.81                                       | 41.2    | 11.6    |
| 17           | 45.3                       | 1.150  | 1,610               | 2,050   | 1.040    | 6.21                                       | 32.8    | 9.24    |
| 18           | 40.3                       | 1.02   | 1,280               | 1,620   | 0.823    | 4.92                                       | 26.0    | 7.32    |
| 19           | 35.9                       | 0.912  | 1,010               | 1,290   | 0.653    | 3.90                                       | 20.6    | 5.81    |
| 20           | 32.0                       | 0.813  | 804.0               | 1,020   | 0.519    | 3.10                                       | 16.4    | 4.61    |
| 21           | 28.5                       | 0.724  | 638.0               | 812.0   | 0.412    | 2.46                                       | 13.0    | 3.66    |
| 22           | 25.3                       | 0.643  | 503.0               | 640.0   | 0.324    | 1.94                                       | 10.2    | 2.88    |
| 23           | 22.6                       | 0.574  | 401.0               | 511.0   | 0.259    | 1.55                                       | 8.16    | 2.30    |
| 24           | 20.1                       | 0.511  | 317.0               | 404.0   | 0.205    | 1.22                                       | 6.46    | 1.82    |
| 25           | 17.9                       | 0.455  | 252.0               | 320.0   | 0.162    | 0.970                                      | 5.12    | 1.44    |
| 26           | 15.9                       | 0.404  | 199.0               | 253.0   | 0.128    | 0.765                                      | 4.04    | 1.14    |
| 27           | 14.2                       | 0.361  | 158.0               | 202.0   | 0.102    | 0.610                                      | 3.22    | 0.908   |
| 28           | 12.6                       | 0.320  | 125                 | 159.0   | 0.0804   | 0.481                                      | 2.54    | 0.715   |
| 29           | 11.3                       | 0.287  | 100.0               | 128.0   | 0.0647   | 0.387                                      | 2.04    | 0.575   |
| 30           | 10.0                       | 0.254  | 78.50               | 100.0   | 0.0507   | 0.303                                      | 1.60    | 0.450   |
| 31           | 8.9                        | 0.226  | 62.20               | 79.2    | 0.0401   | 0.240                                      | 1.27    | 0.357   |
| 32           | 8.0                        | 0.203  | 50.30               | 64.0    | 0.0324   | 0.194                                      | 1.02    | 0.288   |
| 33           | 7.1                        | 0.180  | 39.60               | 50.40   | 0.0255   | 0.153                                      | 0.806   | 0.227   |
| 34           | 6.3                        | 0.160  | 31.20               | 39.7    | 0.0201   | 0.120                                      | 0.634   | 0.179   |
| 35           | 5.6                        | 0.142  | 24.60               | 31.4    | 0.0159   | 0.0940                                     | 0.501   | 0.141   |
| 36           | 5.0                        | 0.127  | 19.60               | 25.00   | 0.0127   | 0.0757                                     | 0.400   | 0.113   |
| 37           | 4.50                       | 0.114  | 15.90               | 20.20   | 0.0103   | 0.0613                                     | 0.324   | 0.0912  |
| 38           | 4.0                        | 0.102  | 12.60               | 16.0    | 0.00811  | 0.0484                                     | 0.256   | 0.0721  |
| 39           | 3.5                        | 0.0889 | 9.62                | 12.2    | 0.00621  | 0.0371                                     | 0.196   | 0.0552  |
| 40           | 3.1                        | 0.0787 | 7.55                | 9.61    | 0.00487  | 0.0291                                     | 0.154   | 0.0433  |
| 41           | 2.8                        | 0.0711 | 6.16                | 7.84    | 0.00397  | 0.0237                                     | 0.125   | 0.0353  |
| 42           | 2.5                        | 0.0635 | 4.91                | 6.25    | 0.00317  | 0.0189                                     | 0.0999  | 0.0282  |
| 43           | 2.2                        | 0.0559 | 3.80                | 4.84    | 0.00245  | 0.0147                                     | 0.0774  | 0.0218  |
| 44           | 2.0                        | 0.0508 | 3.14                | 4.00    | 0.00203  | 0.0121                                     | 0.0639  | 0.0180  |
| 45           | 1.8                        | 0.0457 | 2.54                | 3.24    | 0.00164  | 0.00981                                    | 0.0519  | 0.0146  |
| 46           | 1.6                        | 0.0406 | 2.01                | 2.56    | 0.00130  | 0.00775                                    | 0.0409  | 0.0115  |
| 47           | 1.4                        | 0.0356 | 1.54                | 1.96    | 0.000993 | 0.00593                                    | 0.0313  | 0.00883 |
| 48           | 1.2                        | 0.0305 | 1.13                | 1.44    | 0.000730 | 0.00436                                    | 0.0230  | 0.00649 |
| 49           | 1.1                        | 0.0279 | 0.950               | 1.21    | 0.000613 | 0.00366                                    | 0.0193  | 0.00545 |
| 50           | 1.0                        | 0.0254 | 0.785               | 1.00    | 0.000507 | 0.00303                                    | 0.0160  | 0.00450 |

# ABLE RATED™

**Electronic Cable Hook Up Wire, Power Cords, Shrink and Flex Tubing, Cable Ties, Flat Ribbon Cable, Custom Assemblies, and Connectors, Coaxial Hi Temperature and Data Cable.**

## MULTI-SPEC WIRE

**PVC Insulation—Light Wall  
SPECIFICATIONS**

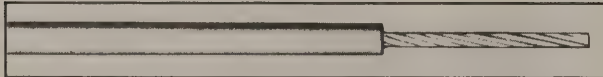


- **Conductor:** Solid, stranded or bonded tinned copper
- **Insulation:** Polyvinylchloride (PVC)
- **Insulation Thickness:** .010"
- **Stranding:** Smooth bunch
- **Colors:** White, black, red, green, yellow, light blue, brown, orange, gray, violet, pink, tan and dark blue
- **Stripes:** Any color over colors listed above (Maximum 3 stripes per wire)
- Wire printed with UL and CSA information

**ABLE RATED MULTI-SPEC HOOK-UP WIRE  
meets or exceeds the electrical  
characteristics of the following:**

|                    |      |       |
|--------------------|------|-------|
| UL Style 1061      | 300V | 80°C  |
| CSA Type SRPVC, T2 | 300V | 80°C  |
| MIL-W-76 Type LW   | 300V | 80°C  |
| M 16878/1 Type B   | 600V | 105°C |

**PVC Insulation—Medium Wall  
SPECIFICATIONS**



- **Conductor:** Solid, stranded or bonded tinned copper
- **Insulation:** Polyvinylchloride (PVC)
- **Insulation Thickness:** .016"
- **Stranding:** Smooth bunch
- **Colors:** White, black, red, green, yellow, light blue, brown, orange, gray, violet, pink, tan and dark blue
- **Stripes:** Any color over colors listed above (Maximum 3 stripes per wire)
- Wire printed with UL and CSA identification

**ABLE RATED MULTI-SPEC HOOK-UP WIRE  
meets or exceeds the electrical  
characteristics of the following:**

|                   |       |       |
|-------------------|-------|-------|
| UL Style 1007     | 300V  | 80°C  |
| UL Style 1569     | 300V  | 105°C |
| CSA Type TR64, T1 | 300V  | 90°C  |
| MIL-W-76 Type MW  | 1000V | 80°C  |
| M 16878/2 Type C  | 1000V | 105°C |

## DIMENSIONS

| Size<br>AWG | Cond.<br>Strand. | Nom.<br>O.D. | Part<br>No. | Price<br>Per M |
|-------------|------------------|--------------|-------------|----------------|
| 32*         | 7x40             | .028"        | 11132       | 24.00          |
| 30          | 7x38             | .032"        | 11130       | 21.60          |
| 30          | Solid            | .031"        | 11330       | 24.00          |
| 28          | 7x36             | .037"        | 11128       | 19.20          |
| 28          | Solid            | .036"        | 11328       | 19.00          |
| 26          | 7x34             | .038"        | 11126       | 19.04          |
| 26          | Solid            | .036"        | 11326       | 17.00          |
| 24          | 19x36            | .044"        | 11024       | 25.76          |
| 24          | 7x32             | .044"        | 11124       | 20.16          |
| 24          | 7x32†            | .044"        | 11224       | 26.40          |
| 24          | Solid            | .042"        | 11324       | 18.00          |
| 22          | 19x34            | .051"        | 11022       | 26.88          |
| 22          | 7x30             | .051"        | 11122       | 22.40          |
| 22          | 7x30†            | .051"        | 11222       | 26.88          |
| 22          | Solid            | .049"        | 11322       | 20.16          |
| 20          | 19x32            | .058"        | 11020       | 31.36          |
| 20          | 7x28             | .058"        | 11120       | 24.64          |
| 20          | 7x28†            | .058"        | 11220       | 31.20          |
| 20          | Solid            | .055"        | 11320       | 22.40          |
| 18          | 19x30            | .068"        | 11018       | 35.84          |
| 18          | 7x26             | .068"        | 11118       | 31.36          |
| 18          | 7x26†            | .068"        | 11218       | 43.20          |
| 18          | Solid            | .066"        | 11318       | 30.00          |
| 16          | 19x29            | .077"        | 11016       | 40.32          |
| 14*         | 19x27            | .091"        | 11014       | 58.24          |

\*Not UL or CSA

†Bonded Conductor

## DIMENSIONS

| Size<br>AWG | Cond.<br>Strand. | Nom.<br>O.D. | Part<br>No. | Price<br>Per M |
|-------------|------------------|--------------|-------------|----------------|
| 30          | 7x38             | .045"        | 11430       | 21.60          |
| 28          | 7x36             | .048"        | 11428       | 19.20          |
| 26          | 7x34             | .052"        | 11426       | 19.04          |
| 26          | Solid            | .050"        | 11626       | 17.00          |
| 24          | 7x32             | .057"        | 11424       | 20.16          |
| 24          | 7x32*            | .058"        | 11524       | 26.40          |
| 24          | Solid            | .055"        | 11624       | 18.00          |
| 22          | 7x30             | .063"        | 11422       | 22.40          |
| 22          | 7x30*            | .064"        | 11522       | 26.88          |
| 22          | Solid            | .061"        | 11622       | 20.16          |
| 20          | 10x30            | .069"        | 11420       | 29.12          |
| 20          | 10x30*           | .070"        | 11520       | 31.00          |
| 20          | Solid            | .067"        | 11620       | 22.40          |
| 18          | 16x30            | .081"        | 11418       | 33.60          |
| 18          | 16x30*           | .082"        | 11518       | 43.20          |
| 18          | Solid            | .078"        | 11618       | 30.00          |
| 16          | 26x30†           | .093"        | 11416       | 40.32          |
| 16          | Solid            | .091"        | 11616       | 39.10          |
| 14          | 41x30            | .107"        | 11414       | 58.24          |
| 12          | 65x30            | .128"        | 11412       | 102.00         |
| 10          | 105x30           | .150"        | 11410       | 147.60         |

\*Tinned Overcoat

†Bare Overcoat

Prices are for solid colors.

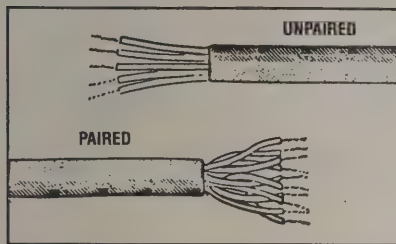
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**ABLE ELECTRONIC SUPPLIES** 11 SOUTH BROAD STREET, PEEKSKILL, NY 10566 • 1-800-431-2103 • 914-736-1010 FAX 914-736-1899



# ABLE RATED™

## 22 AWG UNSHIELDED PAIRED AND UNPAIRED CABLE



**APPLICATIONS:** Multi-purpose unshielded, PVC insulated, paired and unpaired cable for use in various electrical and electronic equipment, control circuits, computers, and other data transmission and signal applications.

UL Conductor Style 1061 VW-1 300V 80°C  
UL Cable Style 2464 VW-1 300V 80°C  
CSA Conductor Type SR-PVC 300V 80°C  
CSA Cable Type AWM 300V 80°C

**Conductor:** 22 AWG, 7×30 stranding, tinned copper  
**Insulation:** .010" Color coded PVC except \*\* .015  
**Construction:** Conductors Cabled or paired with fillers as required  
**Jacket:** Gray PVC

| ABLE Part No. | No. of Cond. | Jkt. Thk. | Nom. O.D. | Color Code Chart | Wt. per M | PRICES PER C FEET |
|---------------|--------------|-----------|-----------|------------------|-----------|-------------------|
|               |              |           |           |                  |           | 100 250           |

### UNPAIRED CABLE

|        |    |      |      |   |     |        |        |
|--------|----|------|------|---|-----|--------|--------|
| 14020  | 2  | .032 | .164 | 1 | 12  | 9.08   | 7.90   |
| 14031  | 3  | .031 | .170 | * | 13  | 12.30  | 10.72  |
| 14032  | 3  | .032 | .169 | 1 | 15  | 12.30  | 10.72  |
| 14041  | 4  | .032 | .194 | 1 | 19  | 15.06  | 13.10  |
| 14051  | 5  | .032 | .199 | 1 | 22  | 17.77  | 15.45  |
| 14061  | 6  | .032 | .209 | 1 | 25  | 21.74  | 18.90  |
| 14071  | 7  | .032 | .214 | 1 | 28  | 25.25  | 21.09  |
| 14081  | 8  | .032 | .224 | 1 | 34  | 29.38  | 25.55  |
| 14091  | 9  | .032 | .245 | 1 | 37  | 31.00  | 28.18  |
| 14101  | 10 | .032 | .259 | 1 | 41  | 35.65  | 31.00  |
| 14121  | 12 | .032 | .270 | 1 | 48  | 47.10  | 40.95  |
| 14151  | 15 | .032 | .304 | 1 | 61  | 66.75  | 58.05  |
| 141512 | 15 | .040 | .330 | 2 | 71  | 66.75  | 58.05  |
| 14181  | 18 | .032 | .320 | 2 | 79  | 79.97  | 69.54  |
| 14201  | 20 | .032 | .324 | 1 | 81  | 64.36  | 55.96  |
| 14251  | 25 | .032 | .350 | 2 | 93  | 64.36  | 55.96  |
| 142512 | 25 | .040 | .370 | 2 | 105 | 111.19 | 96.69  |
| 14301  | 30 | .032 | .379 | 1 | 121 | 135.31 | 117.66 |
| 143012 | 30 | .040 | .400 | 2 | 140 | 135.30 | 117.66 |
| 14351  | 35 | .032 | .409 | 1 | 148 | 148.12 | 128.80 |
| 14371  | 37 | .036 | .425 | 1 | 150 | 154.56 | 134.40 |
| 14491  | 40 | .032 | .439 | 1 | 151 | 183.21 | 159.24 |
| 144012 | 40 | .049 | .455 | 2 | 180 | 183.21 | 159.24 |
| 14501  | 50 | .035 | .500 | 1 | 190 | 227.33 | 197.68 |
| 145012 | 50 | .049 | .500 | 2 | 225 | 227.33 | 197.68 |
| 14601  | 60 | .035 | .539 | 1 | 230 | 269.69 | 234.51 |
| 146012 | 60 | .035 | .535 | 2 | 235 | 269.69 | 234.51 |

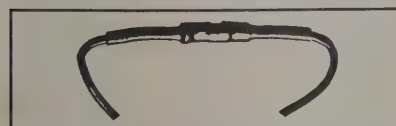
\* Black, red, and green

### PAIRED CABLE

|       |     |      |      |   |     |        |        |
|-------|-----|------|------|---|-----|--------|--------|
| 14013 | 1** | .032 | .188 | 3 | 14  | 11.17  | 12.84  |
| 14023 | 2** | .032 | .250 | 3 | 28  | 11.17  | 12.84  |
| 14033 | 3** | .032 | .280 | 3 | 40  | 15.70  | 18.06  |
| 14043 | 4** | .032 | .298 | 3 | 48  | 26.16  | 30.09  |
| 14063 | 6   | .032 | .320 | 3 | 60  | 39.05  | 44.90  |
| 14093 | 9   | .032 | .375 | 3 | 90  | 61.18  | 70.35  |
| 14123 | 12  | .032 | .405 | 3 | 115 | 91.99  | 80.00  |
| 14153 | 15  | .037 | .440 | 3 | 140 | 112.05 | 97.44  |
| 14193 | 19  | .037 | .480 | 3 | 160 | 141.24 | 122.82 |
| 14233 | 23  | .042 | .540 | 3 | 200 | 177.65 | 154.50 |
| 14273 | 27  | .042 | .570 | 3 | 220 | 218.54 | 190.00 |
| 14314 | 31  | .050 | .635 | 3 | 270 | 251.50 | 218.69 |
| 14413 | 41  | .060 | .730 | 3 | 357 | 329.26 | 286.31 |
| 14513 | 51  | .060 | .780 | 3 | 425 | 413.78 | 359.81 |

## COLOR CODE CHART UPON REQUEST

## ABLE TYPE SA221 HEAT SHRINKABLE FLEXIBLE POLYOLEFIN



**DESCRIPTION:** ABLE TYPE SA221 is flexible, cross-linked polyolefin heat shrinkable tubing available on spools or in cut lengths that will recover to half its original length when heated to temperatures of 250°F (121°C). During the shrinking operation the tubing will encapsulate any device inside of it and assume the contour of that device. Continuous operating range -55°C to +135°C. SA221 conforms to MIL-I-23053/5 Type 1 (all colors and Type 2 clear). Type 1 recognized by UL and CSA and meet SAE Aerospace Material Specification AMS 3636. Type 2 meets SAE AMS 3637.

2:1 shrink at 250°F (121°C)  
600V 125°C VW-1  
UL recognized  
CSA certified

MIL-I-23053/5  
Type 1 and 2  
Class I and II  
AMS 3636 and 3637

### \*PART NUMBER PREFIX:

Change SA to SL: 4-foot lengths  
Change SA to PL: 4-foot UL & CSA  
Change SA to SR: spools  
Change SA to PR: spools UL & CSA

### STANDARD COLORS: Black, clear

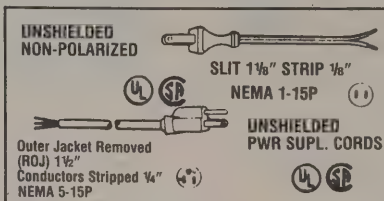
**AVAILABLE COLORS:** White, red, blue, yellow

**TYPE 1:** (flame retarded) all colors, UL and CSA

**TYPE 2:** (flammable) clear only, not UL or CSA

**MARKING:** Printed with recognized UL and CSA markings

## POWER SUPPLY CORDS



| Part No.<br>Color Code | AWG & Type | Feet<br>Meters | Length<br>Std.<br>Carton | Each | Unit Prices<br>25 300 1000 |
|------------------------|------------|----------------|--------------------------|------|----------------------------|
|------------------------|------------|----------------|--------------------------|------|----------------------------|

### UNSHIELDED NON-POLARIZED POWER SUPPLY CORDS—2 CONDUCTOR

|              |            |        |     |      |      |    |     |
|--------------|------------|--------|-----|------|------|----|-----|
| 2050-006-BL  | 18/2 SPT-1 | 6/1 8  | 125 | 2.60 | 1.11 | 93 | .81 |
| 2050-008-BL* | 18/2 SPT-1 | 8/2 4  | 100 | 1.41 | 1.15 | 95 | .84 |
| 2050-010-BL* | 18/2 SPT-1 | 10/3 1 | 100 | 1.50 | 1.18 | 98 | .87 |
| 2343-007-BL  | 18/2 SPT-2 | 7/2 1  | 200 | 1.43 | 1.16 | 97 | .86 |

### UNSHIELDED POWER SUPPLY CORDS—3 CONDUCTOR

|               |          |        |     |      |      |      |      |
|---------------|----------|--------|-----|------|------|------|------|
| 2103-076-QX   | 18/3 SVT | 6/1 8  | 125 | 2.60 | 2.16 | 1.80 | 1.57 |
| 2112-006-GY** | 18/3 SVT | 6/1 8  | 100 | 2.60 | 2.16 | 1.80 | 1.57 |
| 2112-008-GY** | 18/3 SVT | 8/2 4  | 100 | 2.93 | 2.44 | 2.04 | 1.77 |
| 2112-008-BX   | 18/3 SVT | 8/2 4  | 100 | 2.93 | 2.44 | 2.04 | 1.77 |
| 2112-010-GY** | 18/3 SVT | 8/2 4  | 100 | 2.93 | 2.44 | 2.04 | 1.77 |
| 1318-006-GY   | 18/3 SJT | 6/1 8  | 100 | 2.75 | 2.29 | 2.91 | 1.66 |
| 1318-006-GX   | 18/3 SJT | 6/1 8  | 100 | 2.84 | 2.37 | 1.97 | 1.72 |
| 1318-006-BL   | 18/3 SJT | 6/1 8  | 100 | 2.25 | 2.29 | 1.91 | 1.66 |
| 1318-006-BX   | 18/3 SJT | 6/1 8  | 100 | 2.84 | 2.37 | 1.97 | 1.72 |
| 1318-008-GY   | 18/3 SJT | 8/2 4  | 75  | 3.20 | 2.66 | 2.32 | 1.99 |
| 1318-008-GX   | 18/3 SJT | 8/2 4  | 75  | 3.29 | 2.74 | 2.28 | 1.99 |
| 1318-008-BL   | 18/3 SJT | 8/2 4  | 75  | 3.20 | 2.66 | 2.22 | 1.93 |
| 1318-008-BX   | 18/3 SJT | 8/2 4  | 75  | 3.29 | 2.74 | 2.28 | 1.99 |
| 1318-010-BL   | 18/3 SJT | 10/3 1 | 75  | 3.73 | 3.11 | 2.59 | 2.25 |
| 1318-010-BX   | 18/3 SJT | 10/3 1 | 75  | 4.39 | 3.66 | 3.05 | 2.65 |

\*\* Jacket Ribbed (Not a PEC Product)

### UNSHIELDED POWER SUPPLY CORDS—3 CONDUCTOR

|                |           |          |     |      |      |      |      |
|----------------|-----------|----------|-----|------|------|------|------|
| 1316-006-BL    | 16/3 SJT  | 6/1 8    | 75  | 3.38 | 2.81 | 2.34 | 2.04 |
| 1616-006-BX    | 16/3 SJT  | 6/1 8    | 75  | 3.55 | 2.95 | 2.46 | 2.14 |
| 1316-008-BL    | 16/3 SJT  | 8/2 4    | 50  | 3.79 | 3.15 | 2.62 | 2.28 |
| 1616-008-BX    | 16/3 SJT  | 8/2 4    | 50  | 3.94 | 3.29 | 2.74 | 2.38 |
| 1316-010-BL    | 16/3 SJT  | 10/3 1   | 75  | 4.23 | 3.53 | 2.96 | 2.56 |
| 1616-010-BX    | 16/3 SJT  | 10/3 1   | 75  | 4.39 | 3.66 | 3.05 | 2.65 |
| 1314-006-BL    | 14/3 SJT  | 6/1 8    | 50  | 5.98 | 4.93 | 4.11 | 3.58 |
| 1614-006-BX*   | 14/3 SJT  | 6/7 2 0  | 50  | 5.98 | 4.93 | 4.11 | 3.58 |
| 1314-008-BL    | 14/3 SJT  | 8/2 4    | 50  | 6.61 | 5.51 | 4.59 | 3.99 |
| 1614-008-BX*   | 14/3 SJT  | 8/2 4    | 50  | 6.61 | 5.51 | 4.59 | 3.99 |
| 1318-011M-GX-T | 18/3 SJTO | 3/3 1 0  | 100 | 2.65 | 2.03 | 1.81 | 1.63 |
| 1318-021M-GX-T | 18/3 SJTO | 6/4 2 0  | 100 | 3.28 | 2.48 | 2.23 | 2.00 |
| 1318-25M-GX-T  | 18/3 SJTO | 6/3 2 5  | 100 | 3.85 | 2.92 | 2.64 | 2.38 |
| 1318-031M-GX-T | 18/3 SJTO | 10/3 3 1 | 75  | 4.49 | 3.38 | 3.12 | 2.81 |

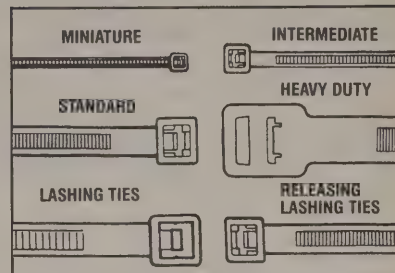
\* Not a PEC Product T Tinned

### UNSHIELDED CABLE SPECIFICATIONS

| AWG/<br>No. Cond. | Wire<br>Type | Stranding | Nom. O.D. (Inches) | Power Ratings<br>Watts Amps Volts |
|-------------------|--------------|-----------|--------------------|-----------------------------------|
| 18/2              | SPT-1        | 41×34     | 106/203            | 1250 10 125                       |
| 18/2              | SPT-2        | 41×34     | 136/265            | 1250 10 125                       |
| 18/3              | SVT          | 41×34     | 253                | 1250 10 125                       |
| 18/3              | SJT          | 16×30     | 328                | 1250 10 125                       |
| 16/3              | SJT          | 26×30     | 333                | 1625 13 125                       |
| 14/3              | SJT          | 41×30     | 375                | 1875 15 125                       |

| NORTH AMERICAN |         | INTERNATIONAL |         |
|----------------|---------|---------------|---------|
| Black          | Live    | Brown         | Blue    |
| White          | Neutral | Blue          | Grn/Yel |
| Green          | Ground  |               |         |
| Color Code     | Jacket  | Conductors    |         |
| GY             | Gray    | NA            |         |
| GX             | Gray    | CEE           |         |
| BL             | Black   | NA            |         |
| BX             | Black   | CEE           |         |

## TYABLE CABLE TIES



| ABLE Part No. | Min. Str. | Max. Bdl. Dis. | Approx. Length (in.) | MIL SPEC 3367 | Prices per C (hundred pack) |
|---------------|-----------|----------------|----------------------|---------------|-----------------------------|
|               |           |                |                      |               | 100 500                     |

### MINIATURE

|       |    |       |      |        |      |      |
|-------|----|-------|------|--------|------|------|
| C-T25 | 18 | 3/4   | 3.75 | N/A    | 2.00 | 1.60 |
| C-T35 | 18 | 15/16 | 4.00 | 4      | 2.42 | 1.94 |
| C-T36 | 18 | 1-1/2 | 5.88 | NOTE 1 | 3.39 | 2.72 |
| C-T37 | 18 | 2     | 7.63 | NOTE 1 | 4.10 | 3.28 |

### INTERMEDIATE

|       |    |       |       |        |      |      |
|-------|----|-------|-------|--------|------|------|
| C-T4  | 30 | 1     | 5.00  | N/A    | 3.41 | 2.73 |
| C-T5  | 40 | 1-1/4 | 6.00  | 5      | 3.90 | 3.12 |
| C-T40 | 40 | 2-1/8 | 8.50  | NOTE 2 | 4.40 | 3.52 |
| C-T51 | 40 | 3     | 11.50 | NOTE 2 | 9.80 | 7.85 |

### STANDARD

|        |    |       |       |   |       |       |
|--------|----|-------|-------|---|-------|-------|
| C-T6   | 50 | 1-3/4 | 7.00  | 1 | 4.84  | 3.88  |
| C-T110 | 50 | 3     | 11.00 | 7 | 11.55 | 9.24  |
| C-T140 | 50 | 4     | 14.00 | 2 | 12.54 | 10.03 |

### HEAVY DUTY

|         |     |   |       |        |       |       |
|---------|-----|---|-------|--------|-------|-------|
| C-TH80  | 120 | 2 | 7.88  | N/A    | 15.60 | 14.10 |
| C-TH140 | 120 | 4 | 14.72 | 3      | 22.00 | 19.94 |
| C-TH170 | 120 | 5 | 17.58 | NOTE 3 | 35.20 | 32.00 |
| C-TH210 | 120 | 6 | 21.47 | NOTE 3 | 43.00 | 39.00 |
| C-TH280 | 120 | 8 | 28.91 | 6      | 49.60 | 45.00 |
| C-TH320 | 120 | 9 | 32.00 | NOTE 4 | 61.60 | 56.00 |

### EXTRA HEAVY DUTY

|          |     |    |       |     |        |       |
|----------|-----|----|-------|-----|--------|-------|
| C-THX240 | 175 | 7  | 24.00 | N/A | 59.00  | 40.00 |
| C-THX340 | 175 | 10 | 34.00 | N/A | 74.00  | 52.00 |
| C-THX480 | 175 | 15 | 48.00 | N/A | 120.00 | 90.00 |

### LASHING TIES

|          |     |    |       |     |        |        |
|----------|-----|----|-------|-----|--------|--------|
| C-THL509 | 250 | 2  | 9.00  | N/A | 40.00  | 33.40  |
| C-THL520 | 250 | 5  | 20.00 | N/A | 20.00  | 58.80  |
| C-THL522 | 250 | 6  | 22.00 | N/A | 90.00  | 65.20  |
| C-THL529 | 250 | 8  | 29.00 | N/A | 120.00 | 88.20  |
| C-THL535 | 250 | 10 | 35.00 | N/A | 130.00 | 104.00 |
| C-THL541 | 250 | 12 | 41.00 | N/A | 150.00 | 115.40 |

### RELEASING LASHING TIES

|          |     |    |       |     |        |        |
|----------|-----|----|-------|-----|--------|--------|
| C-THR509 | 250 | 2  | 9.00  | N/A | 48.00  | 40.08  |
| C-THR520 | 250 | 5  | 20.00 | N/A | 84.00  | 70.56  |
| C-THR522 | 250 | 6  | 22.00 | N/A | 108.00 | 78.24  |
| C-THR529 | 250 | 8  | 29.00 | N/A | 144.00 | 107.04 |
| C-THR535 | 250 | 10 | 35.00 | N/A | 156.00 | 124.80 |
| C-THR541 | 250 | 12 | 41.00 | N/A | 180.00 | 138.48 |

**STANDARD COLORS:** Natural, Black available at additional 15%

**OTHER COLORS:** Please call for quote

**NOTE 1:** Meets MS3367/4 except accommodates a larger bundle diameter

**NOTE 2:** Meets MS3367/5 except accommodates a larger bundle diameter

**NOTE 3:** Meets MS3367/3 except accommodates a larger bundle diameter

# ABLE RATED™

Electronic Cable, Hook Up Wire, Power Cords, Shrink and Flex Tubing, Cable Ties, Flat Ribbon Cable, Custom Assemblies, and Connectors, Coaxial, High Temperature and Data Cable.

## EX-FLEX MICRO MINIATURE INSULATED LEAD WIRE



### APPLICATIONS

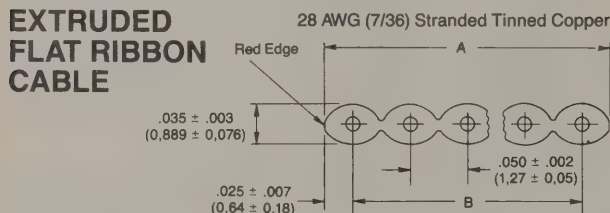
An instrument lead where ultra-flexibility is required in a micro-miniature size, for use in guidance control systems, gyroscopes, data processing equipment, biomedical instruments, or wherever continuous flexing is encountered.

### FEATURES

**Conductor:** Soft bare annealed copper  
**Insulation:** Special soft PVC compound formulated for superior flexibility, dielectric durability, and reliability  
**Temp Rating:** 90°C  
**UL:** On request

| ABLE Part No. | AWG | Strand | Nom. Thk. | Max. Volt. | PRICES PER C FEET |       |
|---------------|-----|--------|-----------|------------|-------------------|-------|
|               |     |        |           |            | 100               | 1000  |
| 16136         | 36  | 7x44   | .005      | 200V       | 22.00             | 11.00 |
| 16134         | 34  | 10x44  | .010      | 600V       | 18.00             | 9.00  |
| 16132         | 32  | 18x44  | .010      | 600V       | 8.00              | 4.00  |
| 16130         | 30  | 28x44  | .010      | 600V       | 12.00             | 6.00  |
| 16129         | 29  | 51x46  | .010      | 600V       | 14.00             | 7.00  |
| 16128         | 28  | 41x44  | .010      | 600V       | 16.00             | 8.00  |
| 16127         | 27  | 48x44  | .010      | 600V       | 18.00             | 9.00  |
| 16126         | 26  | 66x44  | .010      | 600V       | 12.00             | 6.00  |
| 16124         | 24  | 105x44 | .015      | 600V       | 18.00             | 9.00  |
| 16122         | 22  | 168x44 | .015      | 600V       | 26.00             | 13.00 |
| 16120         | 20  | 259x44 | .015      | 600V       | 36.00             | 18.00 |
| 16118         | 18  | 413x44 | .015      | 600V       | 44.00             | 22.00 |

COLORS: White, black, red, green, yellow, blue, brown, orange, gray, and violet.



### FEATURES

Dimensions and characteristics subject to change without notice.

- Fast, mass termination to all standard 50 mil (IDC) connectors
- Up to 64 conductors, precisely spaced for controlled electrical characteristics
- Highly flexible
- Double contour allows termination from either side of cable, easy conductor separation for circuit routing
- UL listed Style 2651

### ELECTRICAL CHARACTERISTICS

**Voltage rating:** 300V  
**Temperature rating:** 105°C  
**Impedance:** 105 Ohms nominal  
**Capacitance:** 15 pF/ft (49.2 pF/m) nom.  
**Insulation resistance:** 10<sup>10</sup> Ohms/10 ft (3m) min.  
**UL style number:** Cable Style 2651

**PACKAGING**—100' lengths—also available in 300' lengths

### DIMENSIONAL DATA

| ABLE Part No. | No. of Cond. | Width A      |         | Span B       |                |
|---------------|--------------|--------------|---------|--------------|----------------|
|               |              | inches       | mm      | inches       | mm             |
| 17709         | 9            | .450 ± .010  | (11.43) | .400 ± .007  | (10.16 ± 0.18) |
| 17710         | 10           | .500 ± .010  | (12.70) | .450 ± .007  | (11.43 ± 0.18) |
| 17714         | 14           | .700 ± .010  | (17.78) | .650 ± .007  | (16.51 ± 0.18) |
| 17715         | 15           | .750 ± .010  | (19.05) | .700 ± .007  | (17.78 ± 0.18) |
| 17716         | 16           | .800 ± .010  | (20.32) | .750 ± .009  | (19.05 ± 0.23) |
| 17720         | 20           | 1.000 ± .015 | (25.40) | .950 ± .009  | (24.13 ± 0.23) |
| 17724         | 24           | 1.200 ± .015 | (30.48) | 1.150 ± .009 | (29.21 ± 0.23) |
| 17725         | 25           | 1.250 ± .015 | (31.75) | 1.200 ± .009 | (30.48 ± 0.23) |
| 17726         | 26           | 1.300 ± .015 | (33.02) | 1.250 ± .009 | (31.75 ± 0.23) |
| 17734         | 34           | 1.700 ± .015 | (43.18) | 1.650 ± .009 | (41.91 ± 0.23) |
| 17737         | 37           | 1.850 ± .015 | (47.00) | 1.800 ± .009 | (45.72 ± 0.23) |
| 17740         | 40           | 2.000 ± .015 | (50.80) | 1.950 ± .011 | (49.53 ± 0.28) |
| 17750         | 50           | 2.500 ± .015 | (63.50) | 2.450 ± .011 | (62.23 ± 0.28) |
| 17760         | 60           | 3.000 ± .015 | (76.20) | 2.950 ± .011 | (74.93 ± 0.28) |
| 17764         | 64           | 3.200 ± .015 | (81.28) | 3.150 ± .011 | (80.01 ± 0.28) |

Call, Write or Fax for Our Full Line Discount Catalogue Which includes Specs, Prices and Cross Reference

**ABLE ELECTRONIC SUPPLIES** 11 SOUTH BROAD STREET, PEEKSKILL, NY 10566 • 1-800-431-2103 • 914-736-1010 FAX 914-736-1899

## MULTI-PURPOSE SINGLE CONDUCTOR SHIELDED WIRE

For use in control systems, power supplies, and other interconnecting circuits.



### ABLE RATED MULTI-SPEC HOOK-UP WIRE

Meets or exceeds the electrical characteristics of the following:

|                              |       |       |
|------------------------------|-------|-------|
| UL Conductor Style 1569 VW-1 | 300V  | 105°C |
| UL Cable Style 1108*         | 300V  | 90°C  |
| CSA Type TR64                | 300V  | 90°C  |
| MIL-W-76 Type MW             | 1000V | 80°C  |
| MIL-W-16878/2 Type C         | 1000V | 105°C |

### FEATURES

**Conductor:** Stranded tinned copper  
**Insulation:** .016" thick, black PVC\*\*  
**Shield:** 85% coverage 36 AWG tinned copper braid  
**Jacket:** .016" thick PVC

| ABLE Part No. | AWG | Strand | Nom. O.D. | PRICES PER C FEET PER M FEET |        |
|---------------|-----|--------|-----------|------------------------------|--------|
|               |     |        |           | 100                          | 1000   |
| 11412SJ       | 12* | 65x30  | .185      | 46.53                        | 258.50 |
| 11414SJ       | 14* | 41x30  | .164      | 46.00                        | 230.00 |
| 11416SJ       | 16  | 26x30  | .150      | 34.00                        | 170.00 |
| 11418SJ       | 18  | 16x30  | .138      | 28.00                        | 140.00 |
| 11420SJ       | 20  | 10x30  | .126      | 24.00                        | 120.00 |
| 11422SJ       | 22  | 7x30   | .120      | 22.00                        | 110.00 |
| 11424SJ       | 24  | 7x32   | .115      | 20.00                        | 100.00 |

\* Not approved for UL style 1108 \*\* Other colors available

**Standard Insulation Color:** Black\*\* White  
**Standard Jacket Colors:** White, black, red, green, yellow, blue, brown, orange, gray, violet.

## SHIELDING AND BONDING FLAT COPPER BRAID

### APPLICATIONS

Very flexible multi-strand tinned copper braid for use as ground strap or for shielding applications. Braid is supplied flat or available in a tubular configuration.

### TINNED COPPER FLAT BRAID



| ABLE Part No. | Approx AWG Equiv. | Width and Thickness | Approx CAM x 1000 | AWG & No. of Wire | Approx AMP Rating | Lbs. per M | PRICE PER C |        |
|---------------|-------------------|---------------------|-------------------|-------------------|-------------------|------------|-------------|--------|
|               |                   |                     |                   |                   |                   |            | 100         | 500    |
| 95000         | 3/0               | 2.00x.12            | 154.40            | 30/1463           | 310               | 500        | 550.00      | 450.00 |
| 95005         | 2/0               | 1.75x.08            | 125.40            | 30/1248           | 280               | 420        | 462.00      | 378.00 |
| 95010         | 3                 | 1.50x.06            | 53.064            | 30/528            | 150               | 180        | 198.00      | 162.00 |
| 95015         | 5                 | 1.38x.05            | 33.700            | 30/336            | 100               | 118        | 130.00      | 106.00 |
| 95020         | 7                 | 1.00x.04            | 20.800            | 36/816            | 85                | 75         | 94.00       | 77.00  |
| 95025         | 7                 | 0.75x.04            | 20.800            | 36/816            | 85                | 75         | 94.00       | 77.00  |
| 95030         | 10                | 0.63x.03            | 9.600             | 36/384            | 53                | 39         | 44.00       | 36.00  |
| 95035         | 10                | 0.50x.03            | 9.600             | 36/384            | 53                | 39         | 44.00       | 36.00  |
| 95040         | 12                | 0.38x.03            | 7.200             | 36/288            | 46                | 28         | 33.00       | 27.00  |
| 95045         | 14                | 0.25x.03            | 4.200             | 36/168            | 32                | 18         | 22.00       | 18.00  |
| 95050         | 15                | 0.18x.02            | 3.000             | 36/120            | 25                | 13         | 17.00       | 14.00  |
| 95055         | 18                | 0.12x.02            | 1.800             | 36/72             | 16                | 9          | 14.00       | 11.00  |
| 95060         | 19                | 0.09x.02            | 1.200             | 36/48             | 11                | 7          | 12.00       | 9.00   |
| 95065         | 22                | 0.05x.02            | .600              | 36/24             | 7                 | 5          | 10.00       | 7.50   |
| 95070         | 24                | 0.03x.02            | .450              | 36/16             | 6                 | 4          | 9.00        | 6.50   |

\* To be used as a guide only (bare copper in free air at 30°C)



# ABLE RATED™

**Electronic Cable Hook Up Wire, Power Cords, Shrink and Flex Tubing, Cable Ties, Flat Ribbon Cable, Custom Assemblies, and Connectors, Coaxial Hi Temperature and Data Cable.**

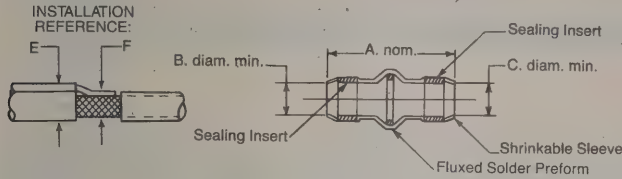
## SPECIAL TERMINATION SLEEVES

Designed for terminating wire & cable with tin coated or silver plated shields with either high temperature (125°C Series SSH) or low temperature insulations (105°C Series SSL).

Solder preforms with heat shrink irradiated polyvinylidene flouride tubing conforming to MIL-1-23053/8. Using prefluxed SN63RMA Per QQ-S-571 and thermoplastic melttable sealing inserts. Designed to be terminated with infrared heating tools.

### OPERATING TEMPERATURE

SSH SERIES (BLUE TINT) -55°C TO 15°C  
SSL SERIES (CLEAR) -55°C TO 105°C



| Part Number | Dimension As Supplied (Inches) |          |          | Installation Reference (Inches) |          | Cross Reference Nas P/N |
|-------------|--------------------------------|----------|----------|---------------------------------|----------|-------------------------|
|             | A (Nom.)                       | B (Min.) | C (Min.) | E (Max.)                        | F (Min.) |                         |
| SSH-I-1     | .590                           | .075     | .095     | .095                            | .035     | 1746-1                  |
| SSH-I-2     | .590                           | .110     | .125     | .125                            | .055     | 1746-2                  |
| SSH-I-3     | .590                           | .180     | .200     | .200                            | .100     | 1746-3                  |
| SSH-I-4     | .590                           | .235     | .250     | .250                            | .125     | 1746-9                  |
| SSH-I-5     | .590                           | .280     | .300     | .300                            | .160     | 1746-4                  |
| SSH-C-1     | .625                           | .075     | .095     | .095                            | .035     | 1745-1                  |
| SSH-C-2     | .625                           | .110     | .125     | .125                            | .055     | 1745-2                  |
| SSH-C-3     | .625                           | .180     | .200     | .200                            | .100     | 1745-3                  |
| SSH-C-4     | .750                           | .235     | .250     | .250                            | .125     | 1745-17                 |
| SSH-C-5     | .750                           | .280     | .300     | .300                            | .160     | 1745-4                  |
| SSL-C-1     | .625                           | .075     | .095     | .095                            | .035     | 1745-13                 |
| SSL-C-2     | .625                           | .110     | .125     | .125                            | .055     | 1745-14                 |
| SSL-C-3     | .625                           | .180     | .200     | .200                            | .100     | 1745-15                 |
| SSL-C-4     | .750                           | .235     | .250     | .250                            | .125     | 1745-23                 |
| SSL-C-5     | .750                           | .280     | .300     | .300                            | .160     | 1745-16                 |

## NON INSULATED EXTRA FLEXIBLE GROUND CABLE

Rope Lay Bare Copper Cable Where Flexibility and Extended Flexi-Life are Primary Consideration.



### LENGTHS AVAILABLE

| In | MM    |
|----|-------|
| 3  | 76,2  |
| 6  | 152,4 |
| 6  | 228,6 |
| 12 | 304,8 |
| 15 | 381,0 |
| 18 | 457,2 |
| 24 | 609,6 |
| 30 | 762,0 |
| 36 | 914,4 |

| Able Part No | AWG | Circular Mil Area | No Of Wires/Awg | Approx.* Ampacity | Nom IN | Dia MM |
|--------------|-----|-------------------|-----------------|-------------------|--------|--------|
| GS-14-100*   | 1/0 | 105,350           | 4214/36         | 214               | .475   | 12.06  |
| GS-14-002*   | 2   | 66,150            | 2646/36         | 160               | .377   | 9.58   |
| GS-14-004*   | 4   | 41,650            | 1666/36         | 114               | .299   | 7.59   |
| GS-14-006*   | 6   | 26,250            | 1050/36         | 80                | .210   | 5.33   |
| GS-14-008*   | 8   | 16,625            | 665/36          | 62                | .167   | 4.24   |
| GS-14-010*   | 10  | 10,325            | 413/36          | 46                | .131   | 3.32   |
| GS-14-12*    | 12  | 6,475             | 259/36          | 31                | .104   | 2.64   |
| GS-14-014*   | 14  | 4200              | 168/36          | 25                | .084   | 2.13   |
| GS-14-016*   | 16  | 2625              | 105/36          | 17                | .067   | 1.70   |
| GS-14-018*   | 18  | 1575              | 63/36           | 13                | .052   | 1.32   |
| GS-14-020*   | 20  | 1050              | 42/36           | 9                 | .042   | 1.07   |

**TINNED COPPER AVAILABLE, OTHER SIZES AND LENGTHS TO ORDER**

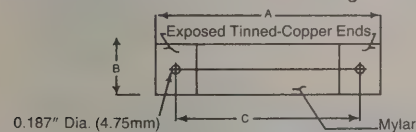
\*\* To be used as a guide only. Values for cable in free air at ambient temp of 30°C

\* Add Length

## INSULATED GROUND STRAP

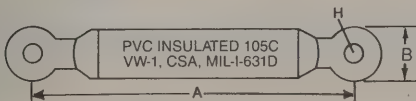
(UL APPROVED) PASSES ALL REQUIREMENTS OF UL SPEC 94VO

Flexible Ground Straps, Double insulated laminates of Copper (inside) and Mylar® outside. The Ends Tinned and Pre punched for a No. 10 Screw for ease of termination. These Straps provide a low impedance ground path at R.F. reducing EMI problems caused by wire grounds. These ground straps are recommended wherever board to chassis or chassis to cabinet grounding is required.



| Part No. | Nominal Dimensions, Inches (mm) |             |             |
|----------|---------------------------------|-------------|-------------|
|          | A                               | B           | C           |
| GS-11-3  | 3.0( 76.2)                      | 0.500(12.7) | 2.5( 63.5)  |
| GS-11-6  | 6.0(152.4)                      | 0.500(12.7) | 5.5(139.7)  |
| GS-11-9  | 9.0(228.6)                      | 0.500(12.7) | 8.5(215.9)  |
| GS-11-12 | 12.0(304.8)                     | 0.500(12.7) | 11.5(292.1) |
| GS-11-15 | 15.0(381.0)                     | 0.500(12.7) | 14.5(368.3) |
| GS-11-18 | 18.0(457.2)                     | 0.500(12.7) | 17.5(444.5) |
| GS-12-3  | 3.0( 76.2)                      | 1.000(25.4) | 2.5( 63.5)  |
| GS-12-6  | 6.0(152.4)                      | 1.000(25.4) | 255( 63.5)  |
| GS-12-9  | 9.0(228.6)                      | 1.000(25.4) | 8.5(215.9)  |
| GS-12-12 | 12.0(304.8)                     | 1.000(25.4) | 11.5(292.1) |
| GS-12-15 | 15.0(381.0)                     | 1.000(25.4) | 14.5(368.3) |
| GS-12-18 | 18.0(457.2)                     | 1.000(25.4) | 17.5(444.5) |

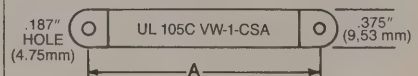
## FLAT EXTRA FLEXIBLE INSULATED GROUND STRAPS



| Part No.   | AWG | Circular MIL Area | No of Wires/AWG | Approx* Ampacity | B (mm) in    | A (mm) in  | H (mm) in   |
|------------|-----|-------------------|-----------------|------------------|--------------|------------|-------------|
| GS-15-1009 | 1/0 | 105,600           | 1056/36         | 215              | 1.25 (31,75) | 9 (228,6)  | .375 (9,53) |
| GS-15-1012 | 1/0 | 105,600           | 1056/36         | 215              | 1.25 (31,75) | 12 (304,8) | .375 (9,53) |
| GS-15-1018 | 1/0 | 105,600           | 1056/36         | 215              | 1.25 (31,75) | 18 (457,2) | .375 (9,53) |
| GS-15-1024 | 1/0 | 105,600           | 1056/36         | 215              | 1.25 (31,75) | 24 (609,6) | .375 (9,53) |
| GS-15-0109 | 1   | 76,800            | 768/30          | 170              | 1.00 (25,40) | 9 (228,6)  | .375 (9,53) |
| GS-15-0112 | 1   | 76,800            | 768/30          | 170              | 1.00 (25,40) | 12 (304,8) | .375 (9,53) |
| GS-15-0118 | 1   | 76,800            | 768/30          | 170              | 1.00 (25,40) | 18 (457,2) | .375 (9,53) |
| GS-15-0124 | 1   | 76,800            | 768/30          | 170              | 1.00 (25,40) | 24 (609,6) | .375 (9,53) |
| GS-15-0209 | 2   | 64,800            | 648/30          | 160              | 0.93 (23,62) | 9 (228,6)  | .312 (7,92) |
| GS-15-0212 | 2   | 64,800            | 648/30          | 160              | 0.93 (23,62) | 12 (304,8) | .312 (7,92) |
| GS-15-0218 | 2   | 64,800            | 648/30          | 160              | 0.93 (23,62) | 18 (457,2) | .312 (7,92) |
| GS-15-0224 | 2   | 64,800            | 648/30          | 160              | 0.93 (23,62) | 24 (609,6) | .312 (7,92) |
| GS-15-0409 | 4   | 43,200            | 432/30          | 110              | 0.72 (18,29) | 9 (228,6)  | .312 (7,92) |
| GS-15-0412 | 4   | 43,200            | 432/30          | 110              | 0.72 (18,29) | 12 (304,8) | .312 (7,92) |
| GS-15-0418 | 4   | 43,200            | 432/30          | 110              | 0.72 (18,29) | 18 (457,2) | .312 (7,92) |
| GS-15-0424 | 4   | 43,200            | 432/30          | 110              | 0.72 (18,29) | 24 (609,6) | .312 (7,92) |

## INSULATED GROUND STRAP

Flat insulated ground strap to efficiently provide static grounds, supplied as a .009" (.228 mm) Tinplate steel insulated with a black PVC jacket .023" (.584 mm) thick UL AWM style 1878-CSA TI



| ABLE PART NO | A In | mm    |
|--------------|------|-------|
| GS-13-3      | 3    | 76,2  |
| GS-13-6      | 6    | 152,4 |
| GS-13-9      | 9    | 228,6 |
| GS-13-12     | 12   | 304,8 |
| GS-13-18     | 18   | 457,2 |

**ABLE ELECTRONIC SUPPLIES**

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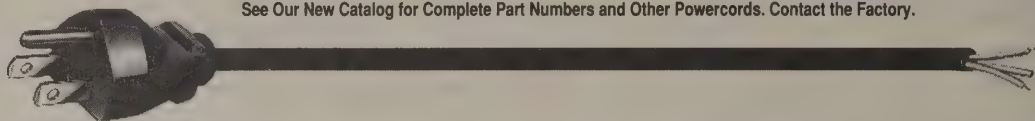
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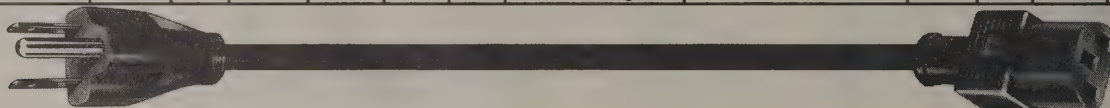
**UL, CSA**



Nondetachable with NEMA 5-15P Grounding Plug Aluminum Foil Shielded (Power Supply Cords, 3 Conductor, PVC Jacket)

Outer Jacket Removed 2"  
Conductors Stripped 5/8"

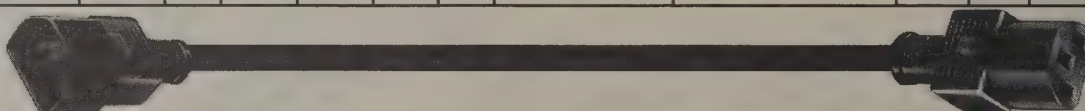
| Cord Length       |       | Conductor |      | Nominal O.D. |      | Power Rating |                       | Cord Type / Temp.            |       | Plug No. |      | Color | Jacket |
|-------------------|-------|-----------|------|--------------|------|--------------|-----------------------|------------------------------|-------|----------|------|-------|--------|
| Part No.          | ft.   | m         | AWG. | Strand       | inch | mm           |                       |                              |       | Male     | Fem. | Code  | Color  |
| IPC-64001A        | 6'7"  | 2         | 18   | 41 x 34      | .260 | 6.6          | 1250 Watts 10A @ 125V | SVT/Alum. Foil Shield / 60°C | LP-31 | —        | —    | NA    | Black  |
| IPC-64012A        | 6'7"  | 2         | 18   | 41 x 34      | .330 | 8.4          | 1250 watts 10A @ 125V | SJT/Alum. Foil Shield / 60°C | LP-31 | —        | —    | NA    | Black  |
| <b>Unshielded</b> |       |           |      |              |      |              |                       |                              |       |          |      |       |        |
| IPC-65001A        | 6'7"  | 2         | 18   | 41x34        | .250 | 6.4          | 1250 Watts 10A @ 125V | SVT / 60°C                   | LP-30 | —        | —    | NA    | Black  |
| IPC-65019A        | 6'7"  | 2         | 18   | 41x34        | .320 | 8.2          | 1250 Watts 10A @ 125V | SJT / 60°C                   | LP-30 | —        | —    | NA    | Black  |
| IPC-65029A        | 6'7"  | 2         | 16   | 67x34        | .345 | 8.8          | 1625 Watts 13A @ 125V | SJT / 60°C                   | LP-31 | —        | —    | NA    | Black  |
| IPC-65032A        | 9'10" | 3         | 14   | 41x30        | .380 | 9.7          | 1875 Watts 15A @ 125V | SJT / 60°C                   | LP-31 | —        | —    | NA    | Black  |



**UL, CSA**

Detachable with Nema 5-15P Grounding Plug & IEC Female Connector, Aluminum foil Shield (Power Supply Cords, 3 Conductor, PVC Jacket)

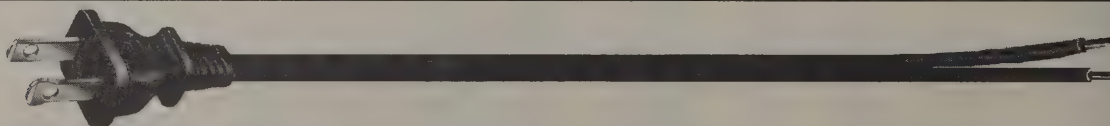
|               |      |      |    |       |      |     |                       |                              |       |       |    |       |
|---------------|------|------|----|-------|------|-----|-----------------------|------------------------------|-------|-------|----|-------|
| IPC-64007A    | 6'7" | 2    | 18 | 41x34 | .260 | 6.6 | 1250 Watts 10A @ 125V | SVT/Alum. Foil Shield / 60°C | LP-31 | LS-13 | NA | Black |
| IPC-64009A    | 6'7" | 2    | 18 | 41x34 | .330 | 8.4 | 1250 Watts 10A @ 125V | SJT/Alum. Foil Shield / 60°C | LP-31 | LS-13 | NA | Black |
| Unshielded    |      |      |    |       |      |     |                       |                              |       |       |    |       |
| IPC-65010A-00 | 6'   | 1.83 | 18 | 41x34 | .250 | 6.4 | 1250 Watts 10A @ 125V | SVT / 60°C                   | LP-30 | LS-13 | NA | Black |
| IPC-65008A    | 6'7" | 2    | 18 | 41x34 | .320 | 8.2 | 1250 Watts 10A @ 125V | SJT / 60°C                   | LP-31 | LS-13 | NA | Black |
| IPC-65027A    | 6'7" | 2    | 16 | 65x34 | .345 | 8.8 | 1625 Watts 13A @ 125V | SJT / 60°C                   | LP-31 | LS-13 | NA | Black |



**UL, CSA**

Electronic Jumper Cord with IEC Male and Female, Aluminum Foil Shielded (Power Supply Cords, 3 Conductor, PVC Jacket)

|            |      |     |    |       |      |     |                       |                              |       |       |    |       |
|------------|------|-----|----|-------|------|-----|-----------------------|------------------------------|-------|-------|----|-------|
| IPC-64011A | 3'3" | 1   | 18 | 41x34 | .260 | 6.6 | 1250 Watts 10A @ 125V | SVT/Alum. Foil Shield / 60°C | LS-14 | LS-13 | NA | Black |
| IPC-64018A | 3'3" | 1   | 18 | 41x34 | .330 | 8.4 | 1250 Watts 10A @ 125V | SJT/Alum. Foil Shield / 60°C | LS-14 | LS-13 | NA | Black |
| Unshielded |      |     |    |       |      |     |                       |                              |       |       |    |       |
| IPC-65036A | 1'8" | .50 | 18 | 41x34 | .320 | 8.2 | 1250 Watts 10A @ 125V | SJT / 60°C                   | LS-14 | LS-13 | NA | Black |
| IPC-65011A | 3'3" | 1   | 18 | 41x34 | .320 | 8.2 | 1250 Watts 10A @ 125V | SJT / 60°C                   | LS-14 | LS-13 | NA | Black |



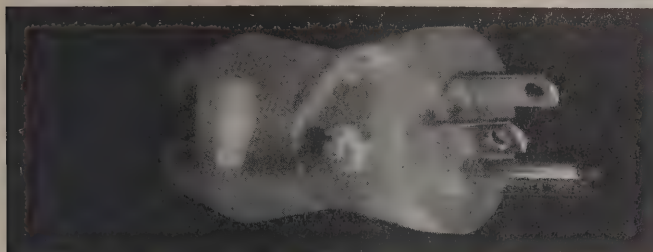
**UL, CSA**

SPT Nondetachable with NEMA 1-15P, Unshielded (Power Supply Cords, 2 Conductor, PVC Jacket)

Conductors Split 1 1/2", stripped 5/8"

|            |    |      |    |       |             |            |                     |              |                 |   |   |    |       |
|------------|----|------|----|-------|-------------|------------|---------------------|--------------|-----------------|---|---|----|-------|
| IPC-65012A | 6' | 1.83 | 18 | 41x34 | .110 x .215 | 2.8 x 5.5  | 1250 Watts 10A-125V | SPT-1 / 60°C | LP-5W Polarized | — | — | NA | Black |
| IPC-65059A | 6' | 1.83 | 18 | 41x34 | .135 x .270 | 3.45 x 6.9 | 1250 Watts 10A-125V | SPT-2 / 60°C | LP-5W Polarized | — | — | NA | Black |
| IPC-65061A | 6' | 1.83 | 16 | 65x34 | .145 x .290 | 3.7 x 7.4  | 1625 Watts 13A-125V | SPT-2 / 60°C | LP-5W Polarized | — | — | NA | Black |





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### Bergquist Stocks Powercords for Your Domestic and Worldwide Applications



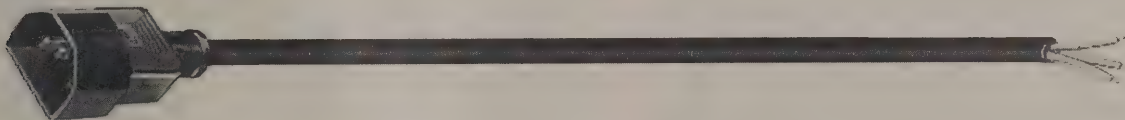
**Nondetachable , 3 Conductor with Straight Dual Earthing Plug, Unshielded** (Standard European Power Supply Cords, Jacket removed 30mm, conductors stripped 7mm)

| Part No.   | Cord Length |   | Conductor       | Nominal O.D. |     | Power Rating | Cord Type / Temp. | Plug No. |      | Color Code | Jacket Color |
|------------|-------------|---|-----------------|--------------|-----|--------------|-------------------|----------|------|------------|--------------|
|            | Ft          | M | mm <sup>2</sup> | Inch         | mm  |              |                   | Male     | Fem. |            |              |
| IPC-66013A | 6'7"        | 2 | 1.00            | .295         | 7.5 | 10A @ 250V   | HO5VVF3 / 70°C    | LP-34A   | —    | CEE        | Black        |



**Nondetachable , 3 Conductor with IEC Straight Female, Unshielded** (Standard European Power Supply Cords, PVC Jacketed) Jacket removed 30mm, conductors stripped 7mm

|            |      |   |      |      |     |            |                |    |       |     |       |
|------------|------|---|------|------|-----|------------|----------------|----|-------|-----|-------|
| IPC-66043A | 6'7" | 2 | 1.00 | .295 | 7.5 | 10A @ 250V | HO5VVF3 / 70°C | -- | LS-13 | CEE | Black |
|------------|------|---|------|------|-----|------------|----------------|----|-------|-----|-------|



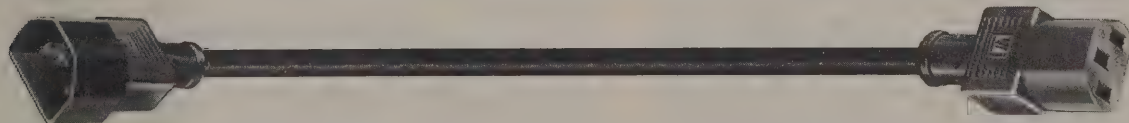
**Nondetachable, 3 Conductor with IEC Male Plug, Unshielded** (Standard European Power Supply Cords, PVC Jacketed) Jacket removed 30mm, conductors stripped 7mm

|            |      |     |      |      |     |            |                |       |    |     |       |
|------------|------|-----|------|------|-----|------------|----------------|-------|----|-----|-------|
| IPC-66049A | 1'8" | .50 | 1.00 | .295 | 7.5 | 10A @ 250V | HO5VVF3 / 70°C | LS-14 | -- | CEE | Black |
| IPC-66050A | 3'3" | 1   | 1.00 | .295 | 7.5 | 10A @ 250V | HO5VVF3 / 70°C | LS-14 | -- | CEE | Black |
| IPC-66051A | 6'7" | 2   | 1.00 | .295 | 7.5 | 10A @ 250V | HO5VVF3 / 70°C | LS-14 | -- | CEE | Black |



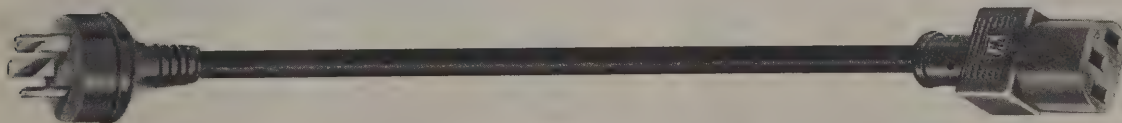
**Detachable, 3 Conductor with Straight Dual Earthing Plug & IEC Straight Female** (Standard European Power Supply Cords, PVC Jacketed)

|            |      |   |      |      |     |            |                |        |       |     |       |
|------------|------|---|------|------|-----|------------|----------------|--------|-------|-----|-------|
| IPC-66021A | 6'7" | 2 | 1.00 | .295 | 7.5 | 10A @ 250V | HO5VVF3 / 70°C | LP-34A | LS-13 | CEE | Black |
|------------|------|---|------|------|-----|------------|----------------|--------|-------|-----|-------|



**Jumper Cord, 3 Conductor with IEC Male Plug and IEC Female Connector** (Standard European Power Supply Cords, PVC Jacketed)

|            |      |    |      |  |  |            |                |       |       |     |       |
|------------|------|----|------|--|--|------------|----------------|-------|-------|-----|-------|
| IPC-66037A | 1'8" | .5 | 1.00 |  |  | 10A @ 250V | HO5VVF3 / 70°C | LS-14 | LS-13 | CEE | Black |
| IPC-66038A | 3'3" | 1  | 1.00 |  |  | 10A @ 250V | HO5VVF3 / 70°C | LS-14 | LS-13 | CEE | Black |



**Detachable with Male Grounding Plug and IEC Straight Female Connector** (Power Supply Cords, 3 Conductor, PVC Jacket for use in Australia)

|            |      |   |     |      |     |              |                            |       |       |     |       |
|------------|------|---|-----|------|-----|--------------|----------------------------|-------|-------|-----|-------|
| IPC-66078A | 6'7" | 2 | .75 | .248 | 6.3 | 7.5A @ 250V  | Light Duty LFC3R / 70°C    | LP-23 | LS-13 | CEE | Black |
| IPC-66011A | 6'7" | 2 | .75 | .280 | 7.2 | 7.5A @ 250 V | Ordinary Duty GFC3R / 70°C | LP-23 | LS-13 | CEE | Black |

The Bergquist Company, 5300 Edina Industrial Blvd. Minneapolis, 55439 • Tel: (612) 835-2322, Fax: (612) 835-4156



# BRIM WIRE — CABLE — TUBING — HARDWARE

ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

## BRIM CHV CORONA RESISTANT HIGH VOLTAGE TEFLON\* CABLE

BRIM CHV eliminates the need for bulky, thick insulation, as used with silicone rubber high voltage cables, and provides high temperature resistance not available with polyethylene insulated high voltage cables, plus the added benefit of retarding and deterring corona discharges. Even under severe stress, including mechanical strain, moisture, corona or chemical, or high temperature conditions, there is no cracking of the insulation. Cable construction meets and exceeds MIL-W-16878D.

**OPERATING VOLTAGE:** Voltage capabilities are based on the thickness of the jacket.

**OPERATING TEMPERATURE:** -90°C to +250°C

**DESCRIPTION:** Silver plated copper conductor, per QQ-W-343, special corona retarding insulation, TFE tape wrap insulation, & a color coded jacket overall.

**STD. COLORS:** Red, White, Black, Green, Blue, Yellow, Orange, Brown, Purple, Gray. Stripped colors are also available.

**STD. P-U:** 250', 500', 1000'.

DuPont



| Brim No.  | AWG | Strand. | Volt Rating |       | Nom. O.D. |
|-----------|-----|---------|-------------|-------|-----------|
|           |     |         | DC          | AC    |           |
| CHV26-2   | 26  | 7/34    | 10000       | 2500  | .074"     |
| CHV26-2.5 | 26  | 7/34    | 12500       | 3800  | .084"     |
| CHV26-3   | 26  | 7/34    | 15000       | 4500  | .094"     |
| CHV26-3.5 | 26  | 7/34    | 17500       | 5400  | .104"     |
| CHV26-4   | 26  | 7/34    | 20000       | 6000  | .114"     |
| CHV26-5   | 26  | 7/34    | 25000       | 7500  | .134"     |
| CHV26-6.5 | 26  | 7/34    | 32500       | 10000 | .164"     |
| CHV26-8   | 26  | 7/34    | 40000       | 12000 | .194"     |
| CHV24-2   | 24  | 19/36   | 10000       | 2500  | .080"     |
| CHV24-2.5 | 24  | 19/36   | 12500       | 3800  | .090"     |
| CHV24-3   | 24  | 19/36   | 15000       | 4500  | .100"     |
| CHV24-3.5 | 24  | 19/36   | 17500       | 5400  | .110"     |
| CHV24-4   | 24  | 19/36   | 20000       | 6000  | .120"     |
| CHV24-5   | 24  | 19/36   | 25000       | 7500  | .140"     |
| CHV24-6.5 | 24  | 19/36   | 32500       | 10000 | .170"     |
| CHV24-8   | 24  | 19/36   | 40000       | 12000 | .200"     |
| CHV24-10  | 24  | 19/36   | 50000       | 15000 | .240"     |
| CHV22-2   | 22  | 19/34   | 10000       | 2500  | .086"     |
| CHV22-2.5 | 22  | 19/34   | 12500       | 3800  | .096"     |
| CHV22-3   | 22  | 19/34   | 15000       | 4500  | .106"     |
| CHV22-3.5 | 22  | 19/34   | 17500       | 5400  | .116"     |
| CHV22-4   | 22  | 19/34   | 20000       | 6000  | .126"     |
| CHV22-5   | 22  | 19/34   | 25000       | 7500  | .146"     |
| CHV22-6.5 | 22  | 19/34   | 32500       | 10000 | .176"     |
| CHV22-8   | 22  | 19/34   | 40000       | 12000 | .206"     |
| CHV22-10  | 22  | 19/34   | 50000       | 15000 | .246"     |
| CHV20-2   | 20  | 19/32   | 10000       | 2500  | .094"     |
| CHV20-2.5 | 20  | 19/32   | 12500       | 3800  | .104"     |
| CHV20-3   | 20  | 19/32   | 15000       | 4500  | .114"     |
| CHV20-3.5 | 20  | 19/32   | 17500       | 5400  | .124"     |
| CHV20-4   | 20  | 19/32   | 20000       | 6000  | .134"     |
| CHV20-5   | 20  | 19/32   | 25000       | 7500  | .154"     |
| CHV20-6.5 | 20  | 19/32   | 32500       | 10000 | .184"     |
| CHV20-8   | 20  | 19/32   | 40000       | 12000 | .214"     |
| CHV20-10  | 20  | 19/32   | 50000       | 15000 | .254"     |
| CHV18-2   | 18  | 19/30   | 10000       | 2500  | .103"     |
| CHV18-2.5 | 18  | 19/30   | 12500       | 3800  | .113"     |

| Brim No.  | AWG | Strand. | Volt Rating |       | Nom. O.D. |
|-----------|-----|---------|-------------|-------|-----------|
|           |     |         | DC          | AC    |           |
| CHV18-3   | 18  | 19/30   | 15000       | 4500  | .123"     |
| CHV18-3.5 | 18  | 19/30   | 17500       | 5400  | .133"     |
| CHV18-4   | 18  | 19/30   | 20000       | 6000  | .143"     |
| CHV18-5   | 18  | 19/30   | 25000       | 7500  | .163"     |
| CHV18-6.5 | 18  | 19/30   | 32500       | 10000 | .193"     |
| CHV18-8   | 18  | 19/30   | 40000       | 12000 | .223"     |
| CHV18-10  | 18  | 19/30   | 50000       | 15000 | .263"     |
| CHV16-2   | 16  | 19/29   | 10000       | 2500  | .112"     |
| CHV16-2.5 | 16  | 19/29   | 12500       | 3800  | .122"     |
| CHV16-3   | 16  | 19/29   | 15000       | 4500  | .132"     |
| CHV16-3.5 | 16  | 19/29   | 17500       | 5400  | .142"     |
| CHV16-4   | 16  | 19/29   | 20000       | 6000  | .152"     |
| CHV16-5   | 16  | 19/29   | 25000       | 7500  | .172"     |
| CHV16-6.5 | 16  | 19/29   | 32500       | 10000 | .202"     |
| CHV16-8   | 16  | 19/29   | 40000       | 12000 | .232"     |
| CHV16-10  | 16  | 19/29   | 50000       | 15000 | .272"     |
| CHV14-2   | 14  | 19/27   | 10000       | 2500  | .127"     |
| CHV14-2.5 | 14  | 19/27   | 12500       | 3800  | .137"     |
| CHV14-3   | 14  | 19/27   | 15000       | 4500  | .147"     |
| CHV14-3.5 | 14  | 19/27   | 17500       | 5400  | .157"     |
| CHV14-4   | 14  | 19/27   | 20000       | 6000  | .167"     |
| CHV14-5   | 14  | 19/27   | 25000       | 7500  | .187"     |
| CHV14-6.5 | 14  | 19/27   | 32500       | 10000 | .217"     |
| CHV14-8   | 14  | 19/27   | 40000       | 12000 | .247"     |
| CHV14-10  | 14  | 19/27   | 50000       | 15000 | .287"     |
| CHV12-2   | 12  | 19/25   | 10000       | 2500  | .147"     |
| CHV12-2.5 | 12  | 19/25   | 12500       | 3800  | .157"     |
| CHV12-3   | 12  | 19/25   | 15000       | 4500  | .167"     |
| CHV12-3.5 | 12  | 19/25   | 17500       | 5400  | .177"     |
| CHV12-4   | 12  | 19/25   | 20000       | 6000  | .187"     |
| CHV12-5   | 12  | 19/25   | 25000       | 7500  | .207"     |
| CHV12-6.5 | 12  | 19/25   | 32500       | 10000 | .237"     |
| CHV12-8   | 12  | 19/25   | 40000       | 12000 | .267"     |
| CHV12-10  | 12  | 19/25   | 50000       | 15000 | .307"     |
| CHV10-2   | 10  | 37/26   | 10000       | 2500  | .169"     |
| CHV10-2.5 | 10  | 37/26   | 12500       | 3800  | .179"     |
| CHV10-3   | 10  | 37/26   | 15000       | 4500  | .189"     |
| CHV10-3.5 | 10  | 37/26   | 17500       | 5400  | .199"     |

CONSTRUCTION VARIATIONS AVAILABLE TO ORDER.

## BRIM HIGH TEMPERATURE LEAD WIRE

These small diameter high temperature lead wires allow unique constructions. The basic wire conforms to MIL-W-3861-stranded nickel plated copper; when shielded, nickel plated copper shielding is per MIL-N-46026A. Rated for 100 Volts RMS.\*

**Type 1: 800°F High Temperature Rating** — Suitable for aircraft, or missile lead wire, heaters, furnaces, ovens and kilns for operations between 500°F to 800°F. Cond. insulation: Fiberglass braid, impregnated with a silicone varnish, over a stranded nickel plated conductor.

**Type 2: 1500°F High Temperature Rating** — Suitable as a radiation resistant aircraft, or missile lead wire, furnaces, ovens and kilns for operations between 800°F to 1500°F. Cond. insulation: Inorganic braid over a stranded nickel plated copper conductor.

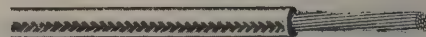
**Type 3: 2000°F High Temperature Rating** — Suitable as a radiation resistant aircraft or missile lead wire for operations between 1500°F to 2000°F. Cond. Insulation: special formulated ceramic braid over a stranded nickel plated copper conductor, and a nickel plated braided shield overall.

\* For dry locations.

600 V RMS is available to order.

CONSTRUCTION VARIATIONS ARE AVAILABLE TO ORDER

### UNSHIELDED



| Brim No. |         | AWG | Strand. | Nom. O.D. | Std. P-U    |
|----------|---------|-----|---------|-----------|-------------|
| Type 1   | Type 2  |     |         |           |             |
| 2101/22  | 2102/22 | 22  | 19/34   | .070"     | 500', 1000' |
| 2101/20  | 2102/20 | 20  | 19/32   | .075"     | 500', 1000' |
| 2101/18  | 2102/18 | 18  | 19/30   | .085"     | 500', 1000' |

### SHIELDED



| Brim No. Type 3 | AWG | Strand. | Nom. O.D. | Std. P-U    |
|-----------------|-----|---------|-----------|-------------|
| 2103/22         | 22  | 19/34   | .108"     | 500', 1000' |
| 2103/20         | 20  | 19/32   | .112"     | 500', 1000' |
| 2103/18         | 18  | 19/30   | .122"     | 500', 1000' |

BRIM ELECTRONICS, INC., DEPT. EM, P.O. BOX 336E, FAIR LAWN, NJ 07410 (201) 796-2886 FAX 201-778-2792

WRITE FOR FREE CATALOG



# BRIM

## WIRE — CABLE — TUBING — HARDWARE

### ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

TFE & FEP TEFLON SHIELDED CABLES • BRIMCROM • BRIMFLYX • STAINLESS STEEL TUBULAR BRAID  
TEFLON IMPREGNATED BRAID OVER SHIELD PER MIL-W-16878 • SHIELDED RETRACTILE CORD



**DESCRIPTION:** One to five twisted conductors of Type E extruded TFE\* insulation (.010" wall), over a stranded silver plated copper conductor. If shielded, braided silver plated shield with a min. coverage of 90% over the conductor(s). When jacketed, either a fused double reversed TFE tape wrap jacket, a Teflon\* impregnated fiberglass braided jacket, or an extruded FEP jacket. Cables are fungus, solvent, flame, acid, alkali, and oil resistant. Rated for 600 Volts. Stranding: 26 AWG — 7 strands, 24 AWG to 16 AWG — 19 strands. Color code: 1-White, 2-Black, 3-Red, 4-Green, 5-Yellow. Jacket color: White. OPER. TEMP.: TFE —65°C to +250°C. FEP: —65°C to +200°C.

| Brim No. | No. Cond. | AWG | Nom. O.D. | Brim No. | No. Cond. | AWG | Nom. O.D. |
|----------|-----------|-----|-----------|----------|-----------|-----|-----------|
| 1751     | 1         | 26  | .067"     | 1754/2   | 2         | 20  | .157"     |
| 1751/2   | 2         | 26  | .115"     | 1754/3   | 3         | 20  | .167"     |
| 1752     | 1         | 24  | .084"     | 1754/4   | 4         | 20  | .182"     |
| 1752/2   | 2         | 24  | .126"     | 1754/5   | 5         | 20  | .200"     |
| 1752/3   | 3         | 24  | .133"     | 1755     | 1         | 18  | .110"     |
| 1752/4   | 4         | 24  | .150"     | 1755/2   | 2         | 18  | .175"     |
| 1752/5   | 5         | 24  | .161"     | 1755/3   | 3         | 18  | .187"     |
| 1753     | 1         | 22  | .086"     | 1755/4   | 4         | 18  | .205"     |
| 1753/2   | 2         | 22  | .138"     | 1755/5   | 5         | 18  | .225"     |
| 1753/3   | 3         | 22  | .146"     | 1756     | 1         | 16  | .118"     |
| 1753/4   | 4         | 22  | .159"     | 1756/2   | 2         | 16  | .188"     |
| 1753/5   | 5         | 22  | .177"     | 1756/3   | 3         | 16  | .205"     |
| 1754     | 1         | 20  | .098"     | 1756/4   | 4         | 16  | .225"     |

STD. P-U: 250', 500', 1000'

### TEFLON TAPE WRAP JACKET OVER SHIELD



| Brim No. | No. Cond. | AWG | Nom. O.D. | Brim No. | No. Cond. | AWG | Nom. O.D. |
|----------|-----------|-----|-----------|----------|-----------|-----|-----------|
| 1761     | 1         | 26  | .076"     | 1764/2   | 2         | 20  | .158"     |
| 1761/2   | 2         | 26  | .119"     | 1764/3   | 3         | 20  | .170"     |
| 1762     | 1         | 24  | .087"     | 1764/4   | 4         | 20  | .182"     |
| 1762/2   | 2         | 24  | .131"     | 1764/5   | 5         | 20  | .198"     |
| 1762/3   | 3         | 24  | .138"     | 1765     | 1         | 18  | .113"     |
| 1762/4   | 4         | 24  | .155"     | 1765/2   | 2         | 18  | .183"     |
| 1762/5   | 5         | 24  | .165"     | 1765/3   | 3         | 18  | .196"     |
| 1763     | 1         | 22  | .094"     | 1765/4   | 4         | 18  | .215"     |
| 1763/2   | 2         | 22  | .145"     | 1765/5   | 5         | 18  | .230"     |
| 1763/3   | 3         | 22  | .153"     | 1766     | 1         | 16  | .120"     |
| 1763/4   | 4         | 22  | .166"     | 1766/2   | 2         | 16  | .201"     |
| 1763/5   | 5         | 22  | .183"     | 1766/3   | 3         | 16  | .213"     |
| 1764     | 1         | 20  | .100"     | 1766/4   | 4         | 16  | .230"     |

STD. P-U: 250', 500', 1000'

### BRIMCROM™

#### MICROMINIATURE TEFLON\* HOOK-UP WIRE

Conductors are silver plated copper dip coated with TFE Teflon\* insulation. Rated for 300 Volts, —90°C to +250°C. BRIMCROM is highly flexible, chemically inert, weather resistant, nonflammable. Suitable wherever high temperatures and lack of space are absolutely critical, such as aircraft, missiles, medical, and microminiaturized electronic components, and system designs.

STD. P-U: 1000'

| Brim No. | AWG | Strand. | Nom. Wall | Nom. O.D. |
|----------|-----|---------|-----------|-----------|
| 1729/30  | 30  | 7/38    | .0035"    | .0188"    |
| 1729/32  | 32  | 7/40    | .0030"    | .0153"    |
| 1729/34  | 34  | 7/42    | .0027"    | .0129"    |
| 1729/36  | 36  | 7/44    | .0020"    | .0101"    |
| 1729/38  | 38  | 7/46    | .0019"    | .0086"    |

STD. COLORS: WHITE, RED, BLACK, GREEN.

OTHER COLORS AVAILABLE TO ORDER. OTHER CONSTRUCTION AVAILABLE TO ORDER.

TWO AND THREE CONDUCTOR LAMINATED RIBBON CABLES USING BRIMCROM CONDUCTORS ARE AVAILABLE TO ORDER.

### BRIMFLYX™ ULTRA-FLEXIBLE WIRE



**DESCRIPTION:** Soft bare copper conductor, insulated with a special flexible PVC formulation to minimize kinking & allow for ultra-low bending torque.

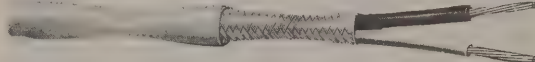
Designed for use where wires encounter continuous flexing, such as in data processing equipment, mercury thermostats, magnetic drums, and rotating servo platforms.

OPER. TEMP.: —40°C to +80°C. STD. P-U: 1000 FT.

STD. COLORS: WHITE, BLACK, RED, GREEN. OTHER COLORS ARE AVAILABLE TO ORDER.

UL 1095 & UL 1568 AVAILABLE TO ORDER.

### FEP TEFLON CABLES — SHIELDED — 600 VOLTS



| Brim No. | No. Cond. | AWG | Strand. | Nom. O.D. | Std. P-U    |
|----------|-----------|-----|---------|-----------|-------------|
| 1791     | 1         | 24  | 19/36   | .087"     | 500', 1000' |
| 1791/2   | 2         | 24  | 19/36   | .130"     | 500', 1000' |
| 1791/3   | 3         | 24  | 19/36   | .136"     | 500', 1000' |
| 1791/4   | 4         | 24  | 19/36   | .153"     | 500', 1000' |
| 1792     | 1         | 22  | 19/34   | .092"     | 500', 1000' |
| 1792/2   | 2         | 22  | 19/34   | .148"     | 500', 1000' |
| 1792/3   | 3         | 22  | 19/34   | .155"     | 500', 1000' |
| 1792/4   | 4         | 22  | 19/34   | .168"     | 500', 1000' |
| 1793     | 1         | 20  | 19/32   | .100"     | 500', 1000' |
| 1793/2   | 2         | 20  | 19/32   | .163"     | 500', 1000' |
| 1793/3   | 3         | 20  | 19/32   | .172"     | 500', 1000' |
| 1793/4   | 4         | 20  | 19/32   | .193"     | 500', 1000' |
| 1794     | 1         | 18  | 19/30   | .110"     | 500', 1000' |
| 1794/2   | 2         | 18  | 19/30   | .182"     | 500', 1000' |
| 1794/3   | 3         | 18  | 19/30   | .200"     | 500', 1000' |
| 1794/4   | 4         | 18  | 19/30   | .217"     | 500', 1000' |
| 1795     | 1         | 16  | 19/29   | .118"     | 500', 1000' |
| 1795/2   | 2         | 16  | 19/29   | .203"     | 500', 1000' |
| 1795/3   | 3         | 16  | 19/29   | .215"     | 500', 1000' |
| 1795/4   | 4         | 16  | 19/29   | .233"     | 500', 1000' |

OTHER COLOR CODES, JACKET COLORS OR CABLE CONSTRUCTIONS ARE AVAILABLE TO ORDER.

\* DuPont

### BRIM OVERALL SHIELDED RETRACTILE COMMUNICATION CORDS — UL APPROVED

RETRACTED LENGTHS: 1, 2, 3, 4 FT.  
EXTENDED LENGTHS: 5, 10, 15, 20 FT.

**DESCRIPTION:** 1 to 7 color coded conductors of 23 AWG 21/36 TC, spiral wrapped TC shield over the conductors, Black "BRYON" jacket overall. UL approved for 1 AMP & 300V max.

OPER. TEMP.: —20°C to +80°C.  
STD. PKG.: 6



| BRIM CAT. No. |         |         |         | No. Cond. | Nom. Coil O.D. | Nom. Cord O.D. |
|---------------|---------|---------|---------|-----------|----------------|----------------|
| 4 ft.         | 3 ft.   | 2 ft.   | 1 ft.   |           |                |                |
| 135-4         | 135-3   | 135-2   | 135-1   | 1         | 5/8"           | .175"          |
| 135/2-4       | 135/2-3 | 135/2-2 | 135/2-1 | 2         | 1 1/16"        | .220"          |
| 135/3-4       | 135/3-3 | 135/3-2 | 135/3-1 | 3         | 3/4"           | .230"          |
| 135/4-4       | 135/4-3 | 135/4-2 | 135/4-1 | 4         | 7/8"           | .260"          |
| 135/5-4       | 135/5-3 | 135/5-2 | 135/5-1 | 5         | 1"             | .285"          |
| 135/6-4       | 135/6-3 | 135/6-2 | 135/6-1 | 6         | 1 1/8"         | .310"          |
| 135/7-4       | —       | 135/7-2 | 135/7-1 | 7         | 1 1/4"         | .340"          |

| Brimflyx No. | AWG | Strand. | Nom. Wall | Max. Volt. | Nom. O.D. |
|--------------|-----|---------|-----------|------------|-----------|
| 1250/38      | 38  | 7/46    | .005"     | 200        | .015"     |
| 1250/36      | 36  | 7/44    | .005"     | 200        | .016"     |
| 1250/34      | 34  | 10/44   | .005"     | 200        | .018"     |
| 1250/32      | 32  | 18/44   | .007"     | 300        | .023"     |
| 1250/30      | 30  | 28/44   | .010"     | 600        | .031"     |
| 1250/29      | 29  | 51/46   | .010"     | 600        | .032"     |
| 1250/28      | 28  | 41/44   | .010"     | 600        | .035"     |
| 1250/27      | 27  | 48/44   | .010"     | 600        | .037"     |
| 1250/26      | 26  | 66/44   | .010"     | 600        | .042"     |
| 1250/24      | 24  | 105/44  | .010"     | 600        | .049"     |
| 1251/24      | 24  | 105/44  | .015"     | 1000       | .059"     |
| 1250/22      | 22  | 168/44  | .010"     | 600        | .054"     |
| 1251/22      | 22  | 168/44  | .015"     | 1000       | .064"     |
| 1250/20      | 20  | 259/44  | .010"     | 600        | .061"     |
| 1250/18      | 18  | 413/44  | .010"     | 600        | .072"     |
| 1250/16      | 16  | 665/44  | .010"     | 600        | .087"     |



# BRIM ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

## UL & CSA POWER RETRACTABLE CORDS

RETRACTED LENGTHS: 1 ft., 2 ft., 3 ft., 4 ft. EXTENDED LENGTHS: 6 ft., 11 ft., 22 ft. BRIM retractable cords are long lasting, and useful where cords must change their length or position. Our cords will extend to approximately six times their retracted length, and will return to their original shape and length, when they are released. Retractable cords eliminate tangles, twists, knots. OPER. TEMP.: -20°C to +60°C. COND. COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow, 8-Red/Black. VOLTAGE RATING: SVO SJO SVT & SJT—300V; SO & ST—600V.

### NEOPRENE

| BRIM CAT. NO. |          |          |          | Retracted Lengths |    | No. Cond. | Size | Strand. | UL/CSA Type | Amps  | Nom. Coil O.D. | Nom. Cord O.D. |
|---------------|----------|----------|----------|-------------------|----|-----------|------|---------|-------------|-------|----------------|----------------|
| 4 Ft.         | 3 Ft.    | 2 Ft.    | 1 Ft.    |                   |    |           |      |         |             |       |                |                |
| 151-4         | 151-3    | 151-2    | 151-1    | 2                 | 18 | 41/34     | SV0  | 7       | 7           | 1"    | .255"          |                |
| 151/3-4       | 151/3-3  | 151/3-2  | 151/3-1  | 3                 | 18 | 41/34     | SV0  | 7       | 1"          | .275" |                |                |
| 152-4         | 152-3    | 152-2    | 152-1    | 2                 | 18 | 41/34     | SJO  | 7       | 1 1/8"      | .315" |                |                |
| 152/3-4       | 152/3-3  | 152/3-2  | 152/3-1  | 3                 | 18 | 41/34     | SJO  | 7       | 1 1/8"      | .345" |                |                |
| 152/4-4       | 152/4-3  | 152/4-2  | 152/4-1  | 4                 | 18 | 41/34     | SJO  | 5.6     | 1 1/8"      | .380" |                |                |
| 152/5-4       | —        | 152/5-2  | —        | 5                 | 18 | 41/34     | SJO† | 5.6     | 1 1/8"      | .440" |                |                |
| 152/7-4       | —        | 152/7-2  | —        | 7                 | 18 | 41/34     | SJO† | 5       | 1 1/8"      | .500" |                |                |
| 152/8-4       | —        | 152/8-2  | —        | 8                 | 18 | 41/34     | SJO† | 7       | 2 1/8"      | .575" |                |                |
| 156/3-4       | 156/3-3  | 156/3-2  | 156/3-1  | 3                 | 18 | 41/34     | SO   | 7       | 1 1/8"      | .405" |                |                |
| 156/4-4       | 156/4-3  | 156/4-2  | 156/4-1  | 4                 | 18 | 41/34     | SO   | 5.6     | 1 1/8"      | .435" |                |                |
| 156/10-4      | 156/10-3 | 156/10-2 | 156/10-1 | 10                | 18 | 41/34     | SO   | 6       | 2 1/8"      | .650" |                |                |
| 153-4         | 153-3    | 153-2    | 153-1    | 2                 | 16 | 65/34     | SJO  | 10      | 1 1/8"      | .355" |                |                |
| 153/3-4       | 153/3-3  | 153/3-2  | 153/3-1  | 3                 | 16 | 65/34     | SJO  | 10      | 1 1/8"      | .385" |                |                |
| 153/4-4       | 153/4-3  | 153/4-2  | 153/4-1  | 4                 | 16 | 65/34     | SJO  | 8       | 1 1/8"      | .445" |                |                |
| 157/3-4       | 157/3-3  | 157/3-2  | 157/3-1  | 3                 | 16 | 65/34     | SO   | 10      | 1 1/8"      | .470" |                |                |
| 157/4-4       | 157/4-3  | 157/4-2  | —        | 4                 | 16 | 65/34     | SO   | 8       | 1 1/8"      | .500" |                |                |
| 157/5-4       | 157/5-3  | 157/5-2  | 157/5-1  | 5                 | 16 | 65/34     | SO   | 5.6     | 2 1/8"      | .550" |                |                |
| 157/6-4       | —        | 157/6-2  | —        | 6                 | 16 | 65/34     | SO   | 8       | 2"          | .545" |                |                |
| 157/7-4       | —        | 157/7-2  | —        | 7                 | 16 | 65/34     | SO†  | 8       | 2 1/8"      | .600" |                |                |
| 157/8-4       | —        | —        | —        | 8                 | 16 | 65/34     | SO   | 8       | 2 1/8"      | .630" |                |                |
| 154-4         | 154-3    | 154-2    | 154-1    | 2                 | 14 | 41/30     | SO   | 15      | 2 1/8"      | .535" |                |                |
| 154/3-4       | 154/3-3  | 154/3-2  | 154/3-1  | 3                 | 14 | 41/30     | SO   | 15      | 2 1/8"      | .560" |                |                |
| 154/4-4       | 154/4-3  | 154/4-2  | 154/4-1  | 4                 | 14 | 41/30     | SO   | 12      | 2 1/8"      | .605" |                |                |
| 154/7-4       | 154/7-3  | 154/7-2  | 154/7-1  | 7                 | 14 | 41/30     | SO   | 10      | 2 1/8"      | .720" |                |                |
| 155-4         | —        | 155-2    | —        | 2                 | 12 | 65/30     | SO   | 20      | 2 1/8"      | .600" |                |                |
| 155/3-4       | 155/3-3  | 155/3-2  | 155/3-1  | 3                 | 12 | 65/30     | SO   | 20      | 2 1/8"      | .635" |                |                |
| 155/4-4       | 155/4-3  | 155/4-2  | 155/4-1  | 4                 | 12 | 65/30     | SO   | 16      | 2 1/8"      | .675" |                |                |
| 155/7-4       | —        | 155/7-2  | —        | 7                 | 12 | 65/30     | SO   | 16      | 2 1/8"      | .775" |                |                |
| 158/4-4       | —        | —        | —        | 4                 | 10 | 104/30    | SO   | 20      | 2 1/8"      | .745" |                |                |

### PLASTIC

| BRIM CAT. NO. |         |         |         | Retracted Lengths |    | No. Cond. | Size | Strand. | UL/CSA Type | Amps  | Nom. Coil O.D. | Nom. Cord O.D. |
|---------------|---------|---------|---------|-------------------|----|-----------|------|---------|-------------|-------|----------------|----------------|
| 4 Ft.         | 3 Ft.   | 2 Ft.   | 1 Ft.   |                   |    |           |      |         |             |       |                |                |
| 165-4         | 165-3   | 165-2   | 165-1   | 2                 | 18 | 41/34     | SVT* | 7       | 7           | 1"    | .250"          |                |
| 165/3-4       | 165/3-3 | 165/3-2 | 165/3-1 | 3                 | 18 | 41/34     | SVT* | 7       | 1"          | .260" |                |                |
| 166-4         | 166-3   | 166-2   | 166-1   | 2                 | 18 | 41/34     | SJT* | 7       | 1"          | .290" |                |                |
| 166/3-4       | 166/3-3 | 166/3-2 | 166/3-1 | 3                 | 18 | 41/34     | SJT* | 7       | 1 1/8"      | .325" |                |                |
| 166/4-4       | 166/4-3 | 166/4-2 | 166/4-1 | 4                 | 18 | 41/34     | SJT* | 5.6     | 1 1/8"      | .350" |                |                |
| 168-4         | 168-3   | 168-2   | 168-1   | 2                 | 18 | 41/34     | ST*  | 7       | 1 1/8"      | .350" |                |                |
| 168/3-4       | 168/3-3 | 168/3-2 | 168/3-1 | 3                 | 18 | 41/34     | ST*  | 6       | 1 1/8"      | .375" |                |                |
| 168/4-4       | 168/4-3 | 168/4-2 | 168/4-1 | 4                 | 18 | 41/34     | ST*  | 5.6     | 1 1/8"      | .400" |                |                |
| 167-4         | 167-3   | 167-2   | 167-1   | 2                 | 16 | 65/34     | SJT* | 10      | 1 1/8"      | .310" |                |                |
| 167/3-4       | 167/3-3 | 167/3-2 | 167/3-1 | 3                 | 16 | 65/34     | SJT* | 10      | 1 1/8"      | .350" |                |                |
| 167/4-4       | 167/4-3 | 167/4-2 | 167/4-1 | 4                 | 16 | 65/34     | SJT* | 8       | 1 1/8"      | .410" |                |                |
| 169-4         | 169-3   | 169-2   | 169-1   | 2                 | 16 | 65/34     | ST*  | 10      | 1 1/8"      | .375" |                |                |
| 169/3-4       | 169/3-3 | 169/3-2 | 169/3-1 | 3                 | 16 | 65/34     | ST*  | 10      | 1 1/8"      | .390" |                |                |
| 169/4-4       | 169/4-3 | 169/4-2 | 169/4-1 | 4                 | 16 | 65/34     | ST*  | 8       | 1 1/8"      | .430" |                |                |

STD. PKG.: 6 When UL Type show, cord is also CSA Approved. \*UL only  
Other Constructions available to order. † Non-UL †† Non-CSA

## RETRACTILE COMMUNICATION CORDS

### UL APPROVED RETRACTED LENGTHS: 1, 2, 3, 4 ft.

EXTENDED LENGTHS: 6, 11, 16, and 22 ft. OPER. TEMP.: -20°C to +80°C

DESCRIPTION: Cords are composed of multicond. 23 AWG 21/36 tinned soft copper for a longer flex life. Cords are jacketed in either TPR, or special vinyl "Byron" formulation, for a long service life. These cords are suitable for communication equipment, such as ham operations, head sets, radio equipment, telephone car carriers, etc. 300V working, 1 AMP carrying capacity. Nom. cond. resistance .022 ohms per linear foot, .185 ohms per retracted foot. † Stocked in Byron only. STD. PKG.: 6

| BRIM CAT. NO. |          |          |          | Retracted Lengths |        | No. Cond. | Nom. Coil O.D. | Nom. Cord O.D. |
|---------------|----------|----------|----------|-------------------|--------|-----------|----------------|----------------|
| 4 Ft.         | 3 Ft.†   | 2 Ft.†   | 1 Ft.    |                   |        |           |                |                |
| 132-4         | 132-3    | 132-2    | 132-1    | 2                 | 5/8"   | 190"      |                |                |
| 132/3-4       | 132/3-3  | 132/3-2  | 132/3-1  | 3                 | 3/4"   | 200"      |                |                |
| 132/4-4       | 132/4-3  | 132/4-2  | 132/4-1  | 4                 | 3/4"   | 220"      |                |                |
| 132/5-4       | 132/5-3  | 132/5-2  | 132/5-1  | 5                 | 7/8"   | 240"      |                |                |
| 132/6-4       | 132/6-3  | 132/6-2  | 132/6-1  | 6                 | 7/8"   | 260"      |                |                |
| 132/7-4       | 132/7-3  | 132/7-2  | 132/7-1  | 7                 | 1"     | 275"      |                |                |
| 132/8-4       | 132/8-3  | 132/8-2  | 132/8-1  | 8                 | 1 1/8" | 305"      |                |                |
| 132/10-4      | 132/10-3 | 132/10-2 | 132/10-1 | 10                | 1 3/8" | 335"      |                |                |
| 132/12-4      | 132/12-3 | 132/12-2 | 132/12-1 | 12                | 1 1/4" | 355"      |                |                |
| 132/15-4      | 132/15-3 | 132/15-2 | 132/15-1 | 15                | 1 1/4" | 365"      |                |                |

COND. COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-Yellow, 8-Brown, 9-Wh/Bk., 10-Red/Bk., 11-Green/Bk., 12-Orange/Bk., 13-Blue/Bk., 14-Yel./Bk., 15-Red/Wh.

## SHIELDED RETRACTILE COMMUNICATION CORDS

RETRACTED LENGTHS: 1, 2 and 4 ft.  
EXTENDED LENGTHS: 6, 11 and 22 ft.

DESCRIPTION: Single and multi-cond. spiral shielded communication cables, jacketed in TPR or "Byron" plastic. Shielded conductors are individually shielded. Shield can be pigtailed for soldering. Safe and reliable as a mike cord.

OPER. TEMP.: -20°C to +80°C.

| BRIM CAT. NO. |        |        | Retracted Lengths |           | No. Cond. | Size | Strand. | Nom. Coil O.D. | Nom. Cord O.D. | Volt. Rating | Capacitance MMF/FT. |       |
|---------------|--------|--------|-------------------|-----------|-----------|------|---------|----------------|----------------|--------------|---------------------|-------|
| 4 Ft.         | 2 Ft.† | 1 Ft.† |                   |           |           |      |         |                |                |              | Linear              | Ret'd |
| 146-4T        | —      | —      | 1                 | 23        | 21/36     | 1½"  | .160"   | 300            | 56             | 440          |                     |       |
| 143-4         | 143-2  | 143-1  | 3                 | 23(S)     | 21/36     | 7/8" | .250"†† | 300            | 56             | 450          |                     |       |
| 144-4T        | —      | —      | 2                 | 2-23(S)*  | 21/36     | 7/8" | .250"   | 300            | 56             | 450          |                     |       |
| 145-4T        | —      | —      | 4                 | 2-23(S)*  | 21/36     | 1½"  | .280"   | 300            | 56             | 450          |                     |       |
| 147-4         | 147-2  | 147-1  | 2                 | 23(S)**   | 21/36     | 7/8" | .250"   | 300            | 56             | 450          |                     |       |
| 148-4         | 148-2  | 148-1  | 4                 | 2-23(S)** | 21/36     | 1½"  | .290"   | 300            | 56             | 450          |                     |       |

\*Individual conductors are shielded and jacketed. †Stocked in Byron only.

\*\*Individually shielded only. ††The nom. coil and cord. O.D.'s for TPR cables are slightly smaller.

STD. PKG.: 6

BRIM ELECTRONICS, INC., DEPT. EM, P.O. BOX 336E, FAIR LAWN, NJ 07410 (201) 796-2886 FAX 201-778-2792

WRITE FOR FREE CATALOG



## UL APPROVED RETRACTILE POWER CORD SETS

RETRACTED: 18". EXTENDS TO APPX.: 9 ft.

300V

SVT and SJO Plastic, SVO and SJC Neoprene jacketed cord sets with a molded plug on one end, other end, jacket stripped and cond. exposed for easy termination. For mobile office equipment and tools  
OPER. TEMP.: -20°C to +60°C

STD. PKG.: 6

| Brim No. | No. Cond. | AWG | Strand. | UL Ty. | Coil O.D. | Cord O.D. |
|----------|-----------|-----|---------|--------|-----------|-----------|
| 120/3    | 3         | 18  | 41/34   | SVO    | 1"        | .275"     |
| 121/3    | 3         | 18  | 41/34   | SJO    | 1 1/8"    | .345"     |
| 122/3    | 3         | 16  | 65/34   | SJO    | 1 7/8"    | .385"     |
| 123/3    | 3         | 18  | 41/34   | SVT    | 7/8"      | .260"     |
| 124/3    | 3         | 18  | 41/34   | SJT    | 1 3/8"    | .330"     |

## BRIM MINIATURE COMMUNICATION CORDS-UL

RETRACTED: 1, 2 & 4 ft. EXTENDED: 5, 10 & 20 ft. Miniature in size. Suitable for compact equipment. All cond. 28 AWG 19/40 T.C. 1/2 AMP rating. Black "Byron" jacket overall.† OPER. TEMP.: -20°C to +60°C.

100V

| BRIM CAT. NO. |           |          | Retracted Lengths |    | No. Cond. | AWG  | Cond. Strand | Nom. Coil O.D. | Nom. Cord O.D. |
|---------------|-----------|----------|-------------------|----|-----------|------|--------------|----------------|----------------|
| 4 ft. +       | 2 ft.     | 1 ft. +  |                   |    |           |      |              |                |                |
| 118-4†        | 118-2†    | 118-1†   | 2                 | 28 | 19/40     | 1/2" | .150"        |                |                |
| 118/3-4†      | 118/3-2†  | 118/3-1† | 3                 | 28 | 19/40     | 1/2" | .160"        |                |                |
| 119-4†        | 119-2†    | 119-1†   | 4                 | 28 | 19/40     | 1/2" | .170"        |                |                |
| 124-4†        | 125-2†    | 125-1†   | 5                 | 28 | 19/40     | 3/4" | .180"        |                |                |
| 125/6-4†      | 125/6-2†  | 125/6-1† | 6                 | 28 | 19/40     | 3/4" | .190"        |                |                |
| 125/7-4†      | 125/7-2†  | 125/7-1† | 7                 | 28 | 19/40     | 3/4" | .200"        |                |                |
| 126-4†        | 126-2†    | 126-1†   | 8                 | 28 | 19/40     | 3/4" | .220"        |                |                |
| —             | 127-2     | —        | 9                 | 28 | 19/40     | 3/4" | .230"        |                |                |
| —             | 127/10-2* | —        | 10                | 28 | 19/40     | 3/4" | .240"        |                |                |
| —             | 127/11-2  | —        | 11                | 28 | 19/40     | 3/4" | .250"        |                |                |
| —             | 127/12-2  | —        | 12                | 28 | 19/40     | 7/8" | .260"        |                |                |
| —             | 127/13-2  | —        | 13                | 28 | 19/40     | 7/8" | .270"        |                |                |
| —             | 127/15-2  | —        | 15                | 28 | 19/40     | 1"   | .280"        |                |                |
| —             | 127/17-2  | —        | 17                | 28 | 19/40     | 1"   | .290"        |                |                |

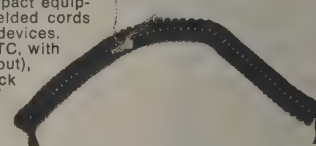
\*STD. PKG.: 12 † Also available in TPE insulation; cable O.D. slightly larger.  
‡ PVC Constructions are UL approved. STD. PKG.: 6

## BRIM MINIATURE SHIELDED COMMUNICATION CORDS

1 FT. RETRACTED FOR 5 FT., EXTENDED

Miniature in size. Suitable for compact equipment, such as FCC required shielded cords for computers or other interfaced devices. All conductors are 28 AWG 19/40 TC, with an aluminum mylar foil shield (foil out), a spiral TC shield, & then a Black Byron VW-1 vinyl jacket overall. 18" & 2" straight ends, cut blunt. Long lasting.

OPER. TEMP.: -20°C to +60°C



| Brim No. | Cord Length | No. of Cond. | AWG | Cond. Strand | Coil O.D. | Cord O.D. |
|----------|-------------|--------------|-----|--------------|-----------|-----------|
| 170/2-1* | 1 Ft.       | 2            | 28  | 19/40        | 1 9/16"   | .170"     |
| 170/4-1* | 1 Ft.       | 4            | 28  | 19/40        | 2 1/8"    | .185"     |
| 170/5-1* | 1 Ft.       | 5            | 28  | 19/40        | 2 3/8"    | .200"     |
| 170/6-1  | 1 Ft.       | 5            | 28  | 19/40        | 3"        | .210"     |
| 170/7-1* | 1 Ft.       | 7            | 28  | 19/40        | 2 5/8"    | .220"     |
| 170/8-1  | 1 Ft.       | 8            | 28  | 19/40        | 1 5/8"    | .230"     |
| 170/9-1  | 1 Ft.       | 9            | 28  | 19/40        | 7/8"      | .240"     |
| 170/10-1 | 1 Ft.       | 10           | 28  | 19/40        | 7/8"      | .250"     |





# BRIM

## WIRE — CABLE — TUBING — HARDWARE

### ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

## BRIM MINIATURE CABLES • COMMERCIAL RG59/U CABLE

### BRIM COMMERCIAL RG 59/U CO-AX



DESCRIPTION: A type RG 59/U construction, composed of 22(1) bare Copperweld, .055" wall of cellular Polyethylene dielectric, 4x28 AWG drain wires over an Aluminum Polypropylene tape shield, for 100% coverage, and a Black\* PVC jacket overall. MAX. OPER. VOLTAGE: 500V RMS. Dielectric Strength: 1000V RMS. OPER. TEMP.: 80°C STD. P-U: 1000'

#### ATTENUATION RATINGS FOR BC-59/U.

|                 |                   |
|-----------------|-------------------|
| 83 MHz<br>CH. 6 | 211 MHz<br>CH. 13 |
| 2.3/100 ft.     | 4.0/100 ft.       |

| BRIM No. | AWG   | % of Shield | Nom. Imp. | Nom. Vel. of Prop. | Nom. Cap. Pf/ft. | Wall Thick. | Jck. Thick. | Nom. O.D. |
|----------|-------|-------------|-----------|--------------------|------------------|-------------|-------------|-----------|
| BC-59/U  | 22(1) | 100%        | 75 Ohms   | 81%                | 17               | .058"       | .042"       | .242"     |

### HI-FI STEREO CABLE



DESCRIPTION: Stranded tinned copper conductors, special soft PVC insulation, twisted, shielded or unshielded. Designed for low hum & noise pickup. Very flexible. OPER. VOLTAGE: 200V OPER. TEMP.: -40°C to +80°C.

| BRIM No.   | Cond. | AWG | Strand. | Nom. Wall | Nom. O.D. |
|------------|-------|-----|---------|-----------|-----------|
| UNSHIELDED |       |     |         |           |           |
| 1542       | 2     | 32  | 7/40    | .010"     | .047"     |
| 1543       | 3     | 32  | 7/40    | .010"     | .053"     |
| 1544       | 4     | 32  | 7/40    | .010"     | .061"     |
| SHIELDED   |       |     |         |           |           |
| 1545       | 1     | 32  | 7/40    | .010"     | .040"     |
| 1546       | 2     | 32  | 7/40    | .010"     | .067"     |
| 1547       | 3     | 32  | 7/40    | .010"     | .073"     |
| 1548       | 4     | 32  | 7/40    | .010"     | .081"     |
| 1551*      | 2     | 32  | 7/40    | .010"     | .080"     |

STD. P-U: 500', 1000' \* Individually shielded.  
COLOR CODE: 1-White, 2-Red, 3-Black, 4-Green.

### MINIATURE UNSHIELDED HI-FI & STEREO CABLE



DESCRIPTION: 2 to 4 conductors of MIL-W-16878D Type B, twisted, no jacket. OPERATING VOLTAGE: 600V. OPERATING TEMPERATURE: -55°C to +105°C.

| BRIM No. | AWG | Cond. | Strand. | Wall  | Nom. O.D. |
|----------|-----|-------|---------|-------|-----------|
| 1605/2   | 30  | 2     | 7/38    | .010" | .058"     |
| 1605/3   | 30  | 3     | 7/38    | .010" | .064"     |
| 1605/4   | 30  | 4     | 7/38    | .010" | .072"     |

STD. P-U: 500', 1000'. COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green.

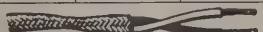
### MINIATURE CABLES — SHIELDED, UNSHIELDED, JACKETED, UNJACKETED 105°C—600V.

DESCRIPTION: 2 to 4 conductors of MIL-W-16878D Type B, twisted, shielded or unshielded, jacketed or unjacketed.

| BRIM No. | AWG | No. Cond. | Strand | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----|-----------|--------|-----------|-----------|-----------|
|----------|-----|-----------|--------|-----------|-----------|-----------|

#### UNSHIELDED, CLEAR PVC JACKET

| BRIM No. | AWG | No. Cond. | Strand | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----|-----------|--------|-----------|-----------|-----------|
| 1610/2   | 28  | 2         | 7/36   | .010"     | .010"     | .090"     |
| 1610/3   | 28  | 3         | 7/36   | .010"     | .010"     | .096"     |
| 1610/4   | 28  | 4         | 7/36   | .010"     | .010"     | .105"     |



#### SHIELDED, UNJACKETED

| BRIM No. | AWG | No. Cond. | Strand | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----|-----------|--------|-----------|-----------|-----------|
| 1615/2   | 28  | 2         | 7/36   | .010"     | —         | .093"     |
| 1615/3   | 28  | 3         | 7/36   | .010"     | —         | .099"     |
| 1615/4   | 28  | 4         | 7/36   | .010"     | —         | .108"     |



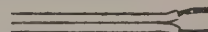
#### SHIELDED, CLEAR PVC JACKET

| BRIM No. | AWG | No. Cond. | Strand | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----|-----------|--------|-----------|-----------|-----------|
| 1618/2   | 28  | 2         | 7/36   | .010"     | .010"     | .113"     |
| 1618/3   | 28  | 3         | 7/36   | .010"     | .010"     | .119"     |
| 1618/4   | 28  | 4         | 7/36   | .010"     | .010"     | .128"     |

COLOR CODE: 1-Black, 2-White, 3-Red, 4-Green.

STD. P-U: 500', 1000'

### MINIATURE ZIP CORD

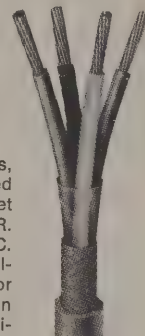


DESCRIPTION: 2 conductors of 28 AWG stranded tinned copper, insulated with 80°C PVC, extruded into a parallel or miniature zip cord. Polarity identification.

| BRIM No. | AWG | Strand. | Cond. | Nom. O.D.    | STD. P-U |
|----------|-----|---------|-------|--------------|----------|
| 1528     | 28  | 7/36    | 2     | .040 x .082" | 1000'    |
| 1529     | 29  | 16/40   | 2     | .040 x .082" | 1000'    |

STD. COLORS: White, Black.

### MINIATURE SHIELDED CONTROL AND INSTRUMENTATION CABLES — 600V 105°C MIL-W-16878D TYPE B

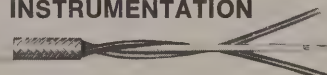


DESCRIPTION: Stranded tinned copper conductors, .010" wall PVC, cabled, mylar binder, braided tinned copper shield, 90% min. coverage, gray PVC jacket overall. All material pass UL VW-1 test. OPER. VOLT.: 600 Volts. OPER. TEMP.: -55°C to +105°C. PVC is resistant to acid, fungus, oils, moisture, solvents, flame. Used as an interconnecting cable for electronic equipment, control and instrumentation cable telemetry and remote control cable for sensitive recording instruments. STD. P-U: 500', 1000'.

| Brim No. | Conductor |      |         | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|------|---------|-----------|-----------|-----------|
|          | No.       | AWG  | Strand. |           |           |           |
| 1202/2   | 2         | B-28 | 7/36    | .010"     | .010"     | .115"     |
| 1202/3   | 3         | B-28 | 7/36    | .010"     | .012"     | .125"     |
| 1202/4   | 4         | B-28 | 7/36    | .010"     | .012"     | .132"     |
| 1202/6   | 6         | B-28 | 7/36    | .010"     | .015"     | .160"     |
| 1202/8   | 8         | B-28 | 7/36    | .010"     | .015"     | .175"     |
| 1202/10  | 10        | B-28 | 7/36    | .010"     | .018"     | .200"     |
| 1202/12  | 12        | B-28 | 7/36    | .010"     | .018"     | .215"     |
| 1202/15  | 15        | B-28 | 7/36    | .010"     | .020"     | .230"     |
| 1202/20  | 20        | B-28 | 7/36    | .010"     | .022"     | .245"     |
| 1202/25  | 25        | B-28 | 7/36    | .010"     | .025"     | .270"     |
| 1202/30  | 30        | B-28 | 7/36    | .010"     | .028"     | .301"     |

COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green, 5-Orange, 6-Lt. Blue, 7-Wh/Black, 8-Red/Black, 9-Green/Blk, 10-Orange/Blk, 11-Blue/Blk, 12-Black/Wh, 13-Red/Wh, 14-Green/Wh, 15-Blue/Wh, 16-Black/Red, 17-White/Red, 18-Orange/Red, 19-Blue/Red, 20-Red/Green, 21-Org./Green, 22-Blk/Wh/Red, 23-Wh/Blk/Red, 24-Red/Blk/Wh, 25-Grn/Blk/Wh, 26-Org/Blk/Wh, 27-Blu/Blk/Wh, 28-Blk/Red/Grn, 29-Wh/Red/Grn, 30-Red/Blk/Grn.

### BRIM MINIFLYX™ SUBMINIATURE ULTRA-FLEXIBLE INSTRUMENTATION CABLES



DESCRIPTION: Ultra-flexible stranded bare copper conductors, .005" wall of soft flexible PVC, braided shield, White .010" soft flexible PVC jacket overall. Suitable as an instrumentation cable where Ultra-flexibility & subminiaturization are essential, in low voltage applications. For example: bio-medical instruments, missiles, computer, miniature relays, disc drives, servo systems, recorders. OPERATING TEMPERATURE: -40°C to +90°C. OPERATING VOLTAGE: 200 Volts.

| BRIM No. | No. Cond. | AWG | Strand. | Nom. Wall | Nom. Jck. | Nom. O.D. | Std. P-U |
|----------|-----------|-----|---------|-----------|-----------|-----------|----------|
| 1210/2   | 2         | 30  | 40/46   | .005"     | .010"     | .073"     | 1000'    |
| 1210/3   | 3         | 30  | 40/46   | .005"     | .010"     | .076"     | 1000'    |
| 1210/4   | 4         | 30  | 40/46   | .005"     | .010"     | .082"     | 1000'    |
| 1210/5   | 5         | 30  | 40/46   | .005"     | .010"     | .088"     | 1000'    |
| 1211/2   | 2         | 32  | 65/50   | .005"     | .010"     | .069"     | 1000'    |
| 1211/3   | 3         | 32  | 65/50   | .005"     | .010"     | .072"     | 1000'    |
| 1211/4   | 4         | 32  | 65/50   | .005"     | .010"     | .077"     | 1000'    |
| 1211/5   | 5         | 32  | 65/50   | .005"     | .010"     | .083"     | 1000'    |
| 1212/2   | 2         | 34  | 40/50   | .005"     | .010"     | .065"     | 1000'    |
| 1212/3   | 3         | 34  | 40/50   | .005"     | .010"     | .068"     | 1000'    |
| 1212/4   | 4         | 34  | 40/50   | .005"     | .010"     | .072"     | 1000'    |
| 1212/5   | 5         | 34  | 40/50   | .005"     | .010"     | .078"     | 1000'    |
| 1213/2   | 2         | 36  | 25/50   | .005"     | .010"     | .061"     | 1000'    |
| 1213/3   | 3         | 36  | 25/50   | .005"     | .010"     | .063"     | 1000'    |
| 1213/4   | 4         | 36  | 25/50   | .005"     | .010"     | .068"     | 1000'    |
| 1213/5   | 5         | 36  | 25/50   | .005"     | .010"     | .072"     | 1000'    |
| 1214/2   | 2         | 38  | 16/50   | .005"     | .010"     | .057"     | 1000'    |
| 1214/3   | 3         | 38  | 16/50   | .005"     | .010"     | .059"     | 1000'    |
| 1214/4   | 4         | 38  | 16/50   | .005"     | .010"     | .063"     | 1000'    |
| 1214/5   | 5         | 38  | 16/50   | .005"     | .010"     | .067"     | 1000'    |

COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green, 5-Yellow.



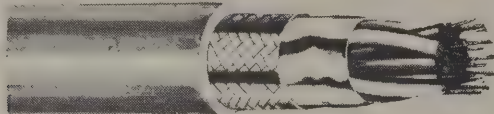
# BRIM

## WIRE — CABLE — TUBING — HARDWARE

ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

### BRAIDED TC SHIELDED CONTROL — INSTRUMENTATION — MICROPHONE CABLES

#### UL SHIELDED COMPUTER AND CONTROL CABLES



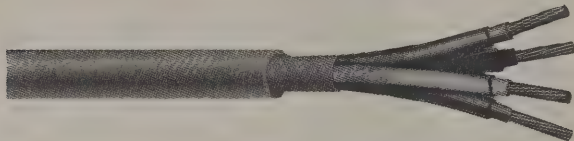
DESCRIPTION: Each conductor UL Type 1061, 24 AWG 7/32 T.C., UL VW-1. Conductors are paired, cabled, mylar wrap, braided tinned copper shield, chrome PVC jacket overall. Color coded. Shielding coverage a minimum of 85%. Cable meets UL Styles 2343 & 2344. Suitable as a control cable, computer cable, shielded audio cable. OPERATING VOLTAGE: 300V UL. OPERATING TEMPERATURE: -40°C to +80°C. STD. P-U: 500', 1000'.

| Brim No. | No. of Pairs | AWG | Strand. | Nom. Wall | Nom. Jack. | Nom. O.D. |
|----------|--------------|-----|---------|-----------|------------|-----------|
| 1886/5   | 5            | 24  | 7/32    | .009"     | .062"      | .355"     |
| 1886/7   | 7            | 24  | 7/32    | .009"     | .062"      | .375"     |
| 1886/12  | 12           | 24  | 7/32    | .009"     | .062"      | .460"     |
| 1886/15  | 15           | 24  | 7/32    | .009"     | .062"      | .510"     |
| 1886/19  | 19           | 24  | 7/32    | .009"     | .062"      | .530"     |
| 1886/27  | 27           | 24  | 7/32    | .009"     | .062"      | .620"     |
| 1886/37  | 37           | 24  | 7/32    | .009"     | .062"      | .690"     |
| 1886/48  | 48           | 24  | 7/32    | .009"     | .062"      | .775"     |
| 1886/60  | 60           | 24  | 7/32    | .009"     | .062"      | .845"     |

See color code for paired cables.

OTHER CONSTRUCTIONS AVAILABLE TO ORDER.

#### MIL-W-16878D TYPE BN SHIELDED CABLES



DESCRIPTION: One to four conductors, stranded tinned copper, Tyne BN insulation — .010" wall PVC, clear nylon jacket — conductors are cabled, braided tinned copper shield, white PVC jacket overall. Cable components meet UL VW-1 vertical flame test requirements, and is resistant to oils, acids, solvents, alkalis, moisture, fungus. OPERATING VOLTAGE: 600V. OPERATING TEMPERATURE: -55°C to +105°C. STD. P-U: 500', 1000'.

| Brim No. | No. Cond. | AWG-Strand. | PVC Wall | Nylon Jack. | Nom. Jack. | Nom. O.D. |
|----------|-----------|-------------|----------|-------------|------------|-----------|
| 1450     | 1         | 26-7/34     | .010"    | .003"       | .010"      | .087"     |
| 1450/2   | 2         | 26-7/34     | .010"    | .003"       | .014"      | .138"     |
| 1450/3   | 3         | 26-7/34     | .010"    | .003"       | .014"      | .142"     |
| 1450/4   | 4         | 26-7/34     | .010"    | .003"       | .016"      | .162"     |
| 1451     | 1         | 24-19/36    | .010"    | .003"       | .010"      | .092"     |
| 1451/2   | 2         | 24-19/36    | .010"    | .003"       | .016"      | .155"     |
| 1451/3   | 3         | 24-19/36    | .010"    | .003"       | .016"      | .162"     |
| 1451/4   | 4         | 24-19/36    | .010"    | .003"       | .017"      | .172"     |
| 1452     | 1         | 22-19/34    | .010"    | .003"       | .010"      | .100"     |
| 1452/2   | 2         | 22-19/34    | .010"    | .003"       | .016"      | .170"     |
| 1452/3   | 3         | 22-19/34    | .010"    | .003"       | .016"      | .180"     |
| 1452/4   | 4         | 22-19/34    | .010"    | .003"       | .019"      | .194"     |
| 1453     | 1         | 20-19/32    | .010"    | .003"       | .010"      | .108"     |
| 1453/2   | 2         | 20-19/32    | .010"    | .003"       | .019"      | .190"     |
| 1453/3   | 3         | 20-19/32    | .010"    | .003"       | .019"      | .200"     |
| 1453/4   | 4         | 20-19/32    | .010"    | .003"       | .021"      | .216"     |
| 1454     | 1         | 18-19/30    | .010"    | .003"       | .012"      | .122"     |
| 1454/2   | 2         | 18-19/30    | .010"    | .003"       | .021"      | .210"     |
| 1454/3   | 3         | 18-19/30    | .010"    | .003"       | .021"      | .225"     |
| 1454/4   | 4         | 18-19/30    | .010"    | .003"       | .023"      | .250"     |
| 1455     | 1         | 16-19/29    | .010"    | .003"       | .016"      | .137"     |
| 1455/2   | 2         | 16-19/29    | .010"    | .003"       | .023"      | .236"     |
| 1455/3   | 3         | 16-19/29    | .010"    | .003"       | .023"      | .242"     |
| 1455/4   | 4         | 16-19/29    | .010"    | .003"       | .025"      | .267"     |
| 1456     | 1         | 14-19/27    | .010"    | .004"       | .020"      | .150"     |
| 1456/2   | 2         | 14-19/27    | .010"    | .004"       | .027"      | .266"     |

COLOR CODE: 1-White, 2-Black, 3-Red, 4-Green.

#### SHIELDED MICROPHONE CABLE



DESCRIPTION: 2 Cond. stranded tinned copper .016" wall polyethylene, fillers, mylar wrap, tinned copper shield, .030" Hi-gloss Black PVC jacket overall. OPER. VOLT.: 1000V.

COLOR CODE: 1-Black, 2-Red.

OPERATING TEMPERATURE: -20°C to +80°C. Nom. Cap./ft. between one cond. remaining cond. connected to shield: 1884/24—38MMF, 1884/22—31MMF

| BRIM No. | No. Cond. | AWG-Strand | Shield | Nom. Wall | Nom. O.D. |
|----------|-----------|------------|--------|-----------|-----------|
| 1884/24  | 2         | 24-10/34   | Spiral | .016"     | .190"     |
| 1884/22  | 2         | 22-16/34   | Braid  | .025"     | .240"     |

#### MICROPHONE — REMOTE-CONTROL CABLE



DESCRIPTION: Each conductor stranded TC .014" wall polyethylene, cabled with fillers, mylar wrap, braided TC shield, chrome PVC jacket overall. OPER. VOLT.: 1000V.

OPERATING TEMPERATURE: -20°C to +80°C.

| BRIM No. | No. Cond. | AWG | Strand | Nom. Wall | Nom. Jack. | Nom. O.D. |
|----------|-----------|-----|--------|-----------|------------|-----------|
| 1883/2   | 2         | 20  | 26/34  | .014"     | .030"      | .245"     |
| 1883/3   | 3         | 20  | 26/34  | .014"     | .035"      | .250"     |
| 1883/4   | 4         | 20  | 26/34  | .014"     | .035"      | .260"     |
| 1883/5   | 5         | 20  | 26/34  | .014"     | .035"      | .275"     |
| 1883/6   | 6         | 20  | 26/34  | .014"     | .035"      | .295"     |
| 1883/8   | 8         | 20  | 26/34  | .014"     | .035"      | .325"     |
| 1883/10  | 10        | 20  | 26/34  | .014"     | .035"      | .370"     |
| 1883/12  | 12        | 20  | 26/34  | .014"     | .035"      | .380"     |
| 1883/15  | 15        | 20  | 26/34  | .014"     | .035"      | .405"     |
| 1883/20  | 20        | 20  | 26/34  | .014"     | .035"      | .445"     |

STD. P-U: 500', 1000'

#### HEAVY DUTY SHIELDED CONTROL CABLES MIL-W-16878D TYPE C-18 1000V



DESCRIPTION: MIL-W-16878D Ty C-18, 19/30 TC conductors, twisted, mylar wrap braided tinned copper shield — 90% minimum coverage — chrome PVC jacket overall. Color coded. Cable resistant to acids, oils, moisture, solvents, alkalis, fungus. Cable meets UL VW-1 vertical flame test requirements. OPERATING VOLTAGE: 1000V. OPERATING TEMPERATURE: -55°C to +105°C. Suitable as an interconnecting cable for electronic equipment, instrumentation, control, telemetry data, and remote control of sensitive recording instruments.

STD. P-U: 500', 1000'.

| Brim No. | No. Cond. | AWG  | Strand. | Nom. Wall | Nom. Jack. | Nom. O.D. |
|----------|-----------|------|---------|-----------|------------|-----------|
| 3019/5   | 5         | C-18 | 19/30   | .016"     | .025"      | .302"     |
| 3019/10  | 10        | C-18 | 19/30   | .016"     | .035"      | .407"     |
| 3019/15  | 15        | C-18 | 19/30   | .016"     | .040"      | .472"     |
| 3019/20  | 20        | C-18 | 19/30   | .016"     | .045"      | .555"     |
| 3019/30  | 30        | C-18 | 19/30   | .016"     | .055"      | .651"     |

OTHER CONSTRUCTIONS AVAILABLE TO ORDER.

COLOR CODE FOR 3019 SERIES: 1-Black, 2-White, 3-Red, 4-Green, 5-Orange, 6-Blue, 7-White/Black, 8-Red/Black, 9-Green/Black, 10-Orange/Black, 11-Blue/Black, 12-Black/White, 13-Red/White, 14-Green/White, 15-Blue/White, 16-Black/Red, 17-White/Red, 18-Orange/Red, 19-Blue/Red, 20-Red/Green, 21-Orange/Green, 22-Black/White/Red, 23-White/Black/Red, 24-Red/Black/White, 25-Green/Black/White, 26-Orange/Black/White, 27-Blue/Black/White, 28-Black/Red/Green, 29-White/Red/Green, 30-Red/Black/Green.



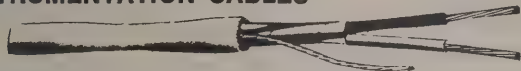


# BRIM

WIRE — CABLE — TUBING — HARDWARE  
ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

## ALUMINUM MYLAR FOIL SHIELDED CABLES

### ALUMINUM MYLAR FOIL SHIELDED CABLE — INSTRUMENTATION CABLES



DESCRIPTION: Stranded TC conductors, polyethylene insulation, conductors twisted, an aluminum mylar foil shield, foil out, TC drain wire, gray PVC jacket overall. Color coded. Suitable as a light weight shielded instrumentation cable. Shield provides 100% coverage, and drain wire provides quick and easy grounding. OPERATING VOLTAGE: 400V. OPERATING TEMPERATURE: -20°C to +60°C. COLOR CODE 1-Black, 2-Red, 3-White, 4-Green.

| BRIM No. | No. Cond. | AWG | Strand | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-----|--------|-----------|-----------|-----------|
| 1639     | 2         | 24  | 7/32   | .015"     | .020"     | .155"     |
| 1639/3   | 3         | 24  | 7/32   | .015"     | .020"     | .172"     |
| 1639/4   | 4         | 24  | 7/32   | .015"     | .020"     | .195"     |
| 1640     | 2         | 22  | 7/30   | .015"     | .020"     | .165"     |
| 1640/3   | 3         | 22  | 7/30   | .015"     | .020"     | .182"     |
| 1640/4   | 4         | 22  | 7/30   | .015"     | .020"     | .205"     |
| 1641     | 2         | 20  | 10/30  | .015"     | .020"     | .184"     |
| 1641/3   | 3         | 20  | 10/30  | .015"     | .020"     | .202"     |
| 1641/4   | 4         | 20  | 10/30  | .015"     | .020"     | .221"     |
| 1642     | 2         | 18  | 16/30  | .017"     | .020"     | .215"     |
| 1642/3   | 3         | 18  | 16/30  | .017"     | .020"     | .233"     |
| 1642/4   | 4         | 18  | 16/30  | .017"     | .020"     | .258"     |
| 1643     | 2         | 16  | 26/30  | .017"     | .020"     | .250"     |
| 1643/3   | 3         | 16  | 26/30  | .017"     | .020"     | .273"     |
| 1644     | 2         | 14  | 41/30  | .017"     | .025"     | .295"     |
| 1644/3   | 3         | 14  | 41/30  | .017"     | .025"     | .315"     |

STD. P-U: 500', 1000'

### ALUMINUM MYLAR FOIL SHIELDED CABLES — MINIATURE CABLE



DESCRIPTION: 2 conductors 22 AWG SOLID or STRANDED TC, .008" wall of polypropylene, aluminum mylar foil shield, foil out, TC drain wire, chrome PVC jacket overall. Suitable for miniature instrumentation. OPERATING VOLTAGE: 200V. OPERATING TEMPERATURE: -40°C to +105°C. COLOR CODE: 1-Red, 2-Black, 3-White, 4-Green.

| BRIM No. | No. Cond. | AWG | Strand | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-----|--------|-----------|-----------|-----------|
| 1636     | 2         | 22  | 1      | .008"     | .018"     | .117"     |
| 1637     | 2         | 22  | 7/30   | .008"     | .020"     | .134"     |
| 1637/2*  | 4         | 22  | 7/30   | .008"     | .020"     | .165"     |

STD. P-U: 500', 1000'

\* Common drain wire, and common axis.

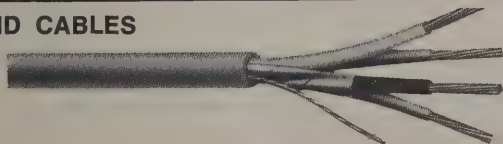
### MULTIPLE PAIRED COMMUNICATION CABLES

DESCRIPTION: 22 AWG SOLID TC conductors, .008" wall polypropylene, or .010" wall PVC, color coded, conductors are twisted into pairs, the pairs are cabled, an aluminum mylar foil shield over all pairs, foil out, a stranded TC drain wire, chrome PVC jacket overall. Suitable for communication telephone and sound systems, control and instrumentation cable. OPERATING VOLTAGE: 200V. OPERATING TEMPERATURE: -40°C to +105°C.

| BRIM NO. | NO. PAIRS | AWG  | INSULA.   | NOM. WALL | NOM. JCK. | NOM. O.D. |
|----------|-----------|------|-----------|-----------|-----------|-----------|
| 1633/38  | 38        | 22-1 | Polyprop. | .008"     | .045"     | .575"     |
| 1633/51  | 51        | 22-1 | PVC       | .010"     | .050"     | .686"     |

STD. P-U: 500', 1000' SEE FIGURE 1

### SOUND CABLES



DESCRIPTION: Four conductors, stranded TC, .009" wall polypropylene, two conductors inside an aluminum mylar foil shield, foil out, a stranded TC drain wire and two conductors outside of shield, chrome PVC jacket overall. Polypropylene insulation is used because of its mechanical toughness and excellent high frequency properties. OPERATING VOLTAGE: 300V. OPERATING TEMPERATURE: -40°C to +105°C. COLOR CODE: Shielded: 1-Black, 2-Red. Unshielded: 3-Green, 4-White.

| BRIM No. | No. Cond. | AWG/Strand. | No. Shid. | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-------------|-----------|-----------|-----------|-----------|
| 1620/4   | 4         | 20-7/28     | 2         | .009"     | .020"     | .185"     |
| 1622/4   | 4         | 22-7/30     | 2         | .009"     | .020"     | .167"     |
| 1624/4   | 4         | 24-7/32     | 2         | .009"     | .020"     | .150"     |

STD. P-U: 500', 1000'.

### ALUMINUM MYLAR FOIL SHIELDED CABLES



FIGURE 1

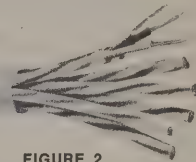


FIGURE 2

### INDIVIDUALLY SHIELDED PAIRS — 22 and 18 AWG — POLYETHYLENE

DESCRIPTION: 22 AWG 7/30 TC or 18 AWG 16/30 TC, wall of polyethylene insulated conductors, conductors are twisted into pairs, an aluminum mylar foil shield with a stranded TC drain wire over each pair, the shielded pairs are cabled, chrome PVC jacket overall. Color coded. Nom. Cap. between conductors: 25PF/Ft. Nom. Cap. between one conductor and remaining conductor connected to shield: 45PF/Ft. Suitable for audio, R.F. data and pulse applications requiring superior circuit isolation. OPERATING VOLTAGE: 300V. OPERATING TEMPERATURE: -20°C to +60°C.

#### 22 AWG 7/30

| BRIM No. | No. Pairs | No. Cond. | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-----------|-----------|-----------|-----------|
| 1630/3   | 3         | 6         | .010"     | .025"     | .255"     |
| 1630/6   | 6         | 12        | .010"     | .030"     | .345"     |
| 1630/9   | 9         | 18        | .010"     | .035"     | .410"     |
| 1630/11  | 11        | 22        | .010"     | .040"     | .460"     |
| 1630/15  | 15        | 30        | .010"     | .045"     | .535"     |
| 1630/19  | 19        | 38        | .010"     | .050"     | .575"     |
| 1630/27  | 27        | 54        | .010"     | .055"     | .690"     |

#### 18 AWG 16/30

| BRIM No. | No. Pairs | No. Cond. | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-----------|-----------|-----------|-----------|
| 1632/3   | 3         | 6         | .016"     | .035"     | .375"     |
| 1632/6   | 6         | 12        | .016"     | .045"     | .555"     |
| 1632/9   | 9         | 18        | .016"     | .055"     | .620"     |
| 1632/11  | 11        | 22        | .016"     | .060"     | .745"     |
| 1632/15  | 15        | 30        | .016"     | .065"     | .820"     |
| 1632/19  | 19        | 38        | .016"     | .075"     | .870"     |
| 1632/27  | 27        | 54        | .016"     | .085"     | .995"     |

STD. P-U: 500', 1000'. CONSTRUCTION VARIATIONS TO ORDER. SEE FIGURE 2

### INDIVIDUALLY SHIELDED PAIRS — 22 AWG STRANDED — POLYPROPYLENE

DESCRIPTION: 22 AWG 7/30 TC conductors, .010" wall polypropylene, conductors are twisted into pairs, pairs are cabled, an aluminum mylar foil shield with a stranded TC drain wire over each twisted pair, chrome PVC jacket overall. Jacket passes UL VW-1 vertical flame test. For audio, pulse, data, and RF applications requiring superior circuit isolation. Polypropylene is used for its mechanical toughness and high frequency properties. OPER. VOLT.: 300V. OPER. TEMP.: -55°C to +105°C. STD. P-U: 500', 1000'.

| BRIM No. | No. Pairs | No. Cond. | Strand. | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-----------|---------|-----------|-----------|-----------|
| 1638/3   | 3         | 6         | 7/30    | .010"     | .025"     | .255"     |
| 1638/6   | 6         | 12        | 7/30    | .010"     | .030"     | .345"     |
| 1638/9   | 9         | 18        | 7/30    | .010"     | .035"     | .410"     |
| 1638/11  | 11        | 22        | 7/30    | .010"     | .040"     | .460"     |
| 1638/15  | 15        | 30        | 7/30    | .010"     | .045"     | .535"     |
| 1638/19  | 19        | 38        | 7/30    | .010"     | .050"     | .575"     |
| 1638/27  | 27        | 54        | 7/30    | .010"     | .055"     | .690"     |

SEE FIGURE 2

### INDIVIDUALLY SHIELDED PAIRS — 22 AWG SOLID

DESCRIPTION: 22 AWG SOLID T.C. conductors, .013" wall PVC, conductors are twisted into pairs, an aluminum mylar foil shield with a TC drain wire over each pair, the pairs are cabled, chrome PVC jacket overall. Color coded. Suitable for audio, pulse, R.F., data applications requiring superior circuit isolation. OPER. VOLT.: 300V. OPERATING TEMPERATURE: -20°C to +60°C.

SEE FIGURE 2

| BRIM No. | No. Pairs | No. Cond. | AWG/Strand. | Nom. Wall | Nom. Jck. | Nom. O.D. |
|----------|-----------|-----------|-------------|-----------|-----------|-----------|
| 1635/3   | 3         | 6         | 22-1        | .013"     | .035"     | .275"     |
| 1635/6   | 6         | 12        | 22-1        | .013"     | .037"     | .395"     |
| 1635/9   | 9         | 18        | 22-1        | .013"     | .040"     | .440"     |
| 1635/11  | 11        | 22        | 22-1        | .013"     | .040"     | .485"     |
| 1635/15  | 15        | 30        | 22-1        | .013"     | .045"     | .540"     |
| 1635/19  | 19        | 38        | 22-1        | .013"     | .055"     | .660"     |
| 1635/27  | 27        | 54        | 22-1        | .013"     | .070"     | .800"     |

STD. P-U: 500', 1000'. CONSTRUCTION VARIATIONS TO ORDER.



**WIRE — CABLE — TUBING — HARDWARE**  
**ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886**

## CONTROLLED IMPEDANCE CABLE — ELECTRONIC LACING CORDS & TAPES

### BRIM BRIBBON™ 100 OHM CONTROLLED IMPEDANCE CABLE — UL 2651

DESCRIPTION: Flexible .010" UL VW-1 PVC insulation over 28 AWG 7/36 TC conductors, laid parallel. All conductors are colored Gray, with one edge Red for polarity identification. MEETS UL 2651.

BRIBBON™ cables are designed for fast, mass termination to all standard .050" IDC connectors. Double contour allows reverse plane terminations. Easy conductor separation for circuit routing, and uniform breakouts for harness production.

BRIBBON™ cables replace bulky round twisted paired cables, providing easy routing & greater space utilization within confined chassis. Precise spacing for controlled electrical characteristics — controlled crosstalk thru precisely controlled impedance and capacitance.

| BRIM No. | No. Cond. | AWG (Str.) | Cond. to Cond. Spacing | Nom. Wall | Nom. O.D.    | Dim. B |
|----------|-----------|------------|------------------------|-----------|--------------|--------|
| 2828/9   | 9         | 28 (7/36)  | .050"                  | .010"     | .035"x .450" | .400"  |
| 2828/10  | 10        | 28 (7/36)  | .050"                  | .010"     | .035"x .500" | .450"  |
| 2828/14  | 14        | 28 (7/36)  | .050"                  | .010"     | .035"x .700" | .650"  |
| 2828/15  | 15        | 28 (7/36)  | .050"                  | .010"     | .035"x .750" | .700"  |
| 2828/16  | 16        | 28 (7/36)  | .050"                  | .010"     | .035"x .800" | .750"  |
| 2828/20  | 20        | 28 (7/36)  | .050"                  | .010"     | .035"x1.000" | .950"  |
| 2828/24  | 24        | 28 (7/36)  | .050"                  | .010"     | .035"x1.200" | 1.150" |
| 2828/25  | 25        | 28 (7/36)  | .050"                  | .010"     | .035"x1.250" | 1.200" |

STD. P-U: 100 ft.

### NYLON FLAT BRAIDED LACING TAPE MIL-T-43435 TYPE I FINISH B

Nylon flat braid, treated with a microcrystalline fungicidal wax finish. Stays flat, flexible, and creates a wider contact to distribute stress. Won't slip when tied. Resistant to fungus, flame, abrasion, and acids.

| BRIM No. | Color | Size | Nom. Width | Nom. Thick. | Tensile Strength | Std. P-U  |
|----------|-------|------|------------|-------------|------------------|-----------|
| 800      | White | 1    | .200"      | .016"       | 135              | 250 yards |
| 800B     | Black | 1    | .200"      | .016"       | 135              | 250 yards |
| 801      | White | 2    | .110"      | .015"       | 80               | 250 yards |
| 801B     | Black | 2    | .110"      | .015"       | 80               | 250 yards |
| 802      | White | 3    | .085"      | .014"       | 50               | 500 yards |
| 802B     | Black | 3    | .085"      | .014"       | 50               | 500 yards |
| 803      | White | 4    | .060"      | .012"       | 25               | 500 yards |
| 803B     | Black | 4    | .060"      | .012"       | 25               | 500 yards |
| 804      | White | 5    | .050"      | .010"       | 15               | 500 yards |
| 804B     | Black | 5    | .050"      | .010"       | 15               | 500 yards |

### TEFLON FLAT BRAIDED LACING TAPE MIL-T-43435 TYPE III FINISH A

OPERATING TEMPERATURE: -100°F to +450°F. Highly resistant to fluids, fuels and chemicals. Won't outgas under critical vacuum conditions.

| BRIM No. | Color | Size | Nom. Width | Nom. Thick. | Tensile Strength | Std. P-U  |
|----------|-------|------|------------|-------------|------------------|-----------|
| 808      | Brown | 2    | .120"      | .011"       | 30#              | 250 yards |
| 809      | Brown | 4    | .065"      | .011"       | 15#              | 500 yards |

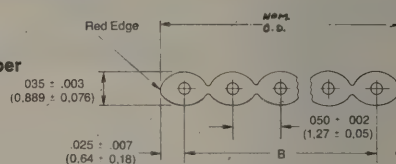
Hazardous vapors above 400°F (204°C).

### ROUND TWISTED NYLON LACING TAPE MIL-T-713D TYPE P

Round twisted nylon, treated with a microcrystalline fungicidal wax to resist mildew, fungus, and help in tying. OPERATING TEMPERATURE: -67°F to +250°F. P-U: 1 # tubes.

| BRIM No. | Color | Class | Tensile Strength | Nom. O.D. | Yds./Tube |
|----------|-------|-------|------------------|-----------|-----------|
| 810      | White | 1     | 70#              | .039"     | 550       |
| 810B     | Black | 1     | 70#              | .039"     | 550       |
| 811      | White | 2     | 48#              | .029"     | 750       |
| 811B     | Black | 2     | 48#              | .029"     | 750       |
| 812      | White | 3     | 32#              | .025"     | 1100      |
| 812B     | Black | 3     | 32#              | .025"     | 1100      |
| 813      | White | —     | 20#              | .020"     | 2400      |
| 813B     | Black | —     | 20#              | .020"     | 2400      |

### CONDUCTORS: 28 AWG (7/36) Stranded Tinned Copper



Dimensions and characteristics subject to change without notice.

OPER. TEMP.: 105°C — OPER. VOLTAGE: 300V — OPER. CURRENT: 1 AMP nom. — OPER. IMPEDANCE: 105 Ohms nom. — OPER. CAPACITANCE: 15 pf/ft. nom. — OPER. PROPAGATION DELAY: 1.4 ns/ft. nom. INSULATION RESISTANCE: >1,000 mΩ/ft. — CONDUCTOR RESISTANCE: 67.5 Ohms/Mft.

| BRIM No. | No. Cond. | AWG (Str.) | Cond. to Cond. Spacing | Nom. Wall | Nom. O.D.    | Dim. B |
|----------|-----------|------------|------------------------|-----------|--------------|--------|
| 2828/26  | 26        | 28 (7/36)  | .050"                  | .010"     | .035"x1.300" | 1.250" |
| 2828/34  | 34        | 28 (7/36)  | .050"                  | .010"     | .035"x1.700" | 1.650" |
| 2828/37  | 37        | 28 (7/36)  | .050"                  | .010"     | .035"x1.850" | 1.800" |
| 2828/40  | 40        | 28 (7/36)  | .050"                  | .010"     | .035"x2.000" | 1.950" |
| 2828/50  | 50        | 28 (7/36)  | .050"                  | .010"     | .035"x2.500" | 2.450" |
| 2828/60  | 60        | 28 (7/36)  | .050"                  | .010"     | .035"x3.000" | 2.950" |
| 2828/64  | 64        | 28 (7/36)  | .050"                  | .010"     | .035"x3.200" | 3.150" |

\* Measured Ground-Signal-Ground-Signal, etc., with all grounds common.

### DACRON FLAT BRAIDED LACING TAPE MIL-T-43435 TYPE II FINISH B

Dacron flat braid, treated with a microcrystalline fungicidal wax finish to help prevent slipping when tying knots, resists fungus and mildew. Won't cut or damage items being held together. Stays flat. Superior to nylon in resistance to acids, and elongation.

| BRIM No. | Color | Size | Nom. Width | Nom. Thick. | Tensile Strength | Std. P-U  |
|----------|-------|------|------------|-------------|------------------|-----------|
| 819      | White | 2    | .110"      | .015"       | 80#              | 250 yards |
| 819B     | Black | 2    | .110"      | .015"       | 80#              | 250 yards |
| 820      | White | 3    | .085"      | .014"       | 50#              | 500 yards |
| 821      | White | 4    | .060"      | .012"       | 25#              | 500 yards |
| 822      | White | 5    | .050"      | .010"       | 15#              | 500 yards |
| 822B     | Black | 5    | .050"      | .010"       | 15#              | 500 yards |

### TEFLON FIBERGLASS FLAT BRAIDED LACING TAPE — MIL-T-43435 TYPE IV

OPERATING TEMPERATURE: -103°F to +800°F FINISH D. Teflon impregnated fiberglass braided flat, gives high temperature performance, and strength. Stays flat. Teflon finish adds strength and abrasion protection. Will not cut or damage item tied.

| BRIM No. | Color | Size | Nom. Width | Nom. Thick. | Tensile Strength | Yds./Tube |
|----------|-------|------|------------|-------------|------------------|-----------|
| 805      | White | 1    | .225"      | .016"       | 200#             | 250       |
| 806      | White | 2    | .110"      | .016"       | 100#             | 250       |
| 807      | White | 3    | .085"      | .016"       | 75#              | 500       |

TYPE V NOMEX AVAILABLE TO ORDER.

### ROUND TWISTED LINEN LACING CORD MIL-T-713 TYPE N

Mfg. from pure flax and treated with a microcrystalline fungicidal wax finish to resist fungus, mildew, and aid in tying. MIL-T-713E TyN. OTHER SIZES AND FINISHES ARE AVAILABLE TO ORDER. P-U: 1# tubes.

| BRIM No. | Natural | Black | Class | Ply | Nom. O.D. | Tensile Strength | Yds./Tube |
|----------|---------|-------|-------|-----|-----------|------------------|-----------|
| 814      | 814B    | —     | 4     | 4   | .036"     | 22#              | 850       |
| 815      | 815B    | 3     | 6     | 6   | .044"     | 32#              | 600       |
| 816      | 816B    | 2     | 8     | 8   | .051"     | 48#              | 450       |
| 817      | 817B    | —     | 9     | 9   | .054"     | 56#              | 400       |
| 818      | 818B    | 1     | 12    | 12  | .063"     | 70#              | 300       |




**BRIM**
**WIRE — CABLE — TUBING — HARDWARE**  
**ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886**

## FLAT BRAIDED TINNED COPPER SHIELDING — TUBULAR BRAID PER QQ-B-575A

### FLAT BRAIDED TINNED COPPER

TINNED COPPER FLAT shielded braid, woven then rolled flat. Conductors are annealed for flexibility. Used as grounding cable, bonding strap for aircrafts, marine equipment, vehicles, etc., to eliminate ignition interference. Easily slides over wire and cables. Also used as a high current conductor at low voltages.



| BRIM No.  | Construction | Flat-ened I.D. | Flat-ened O.D. | Appx. AWG Equiv. | Nom. CMA | Current Carrying Cap.* Amps | Std. P-U    | BRIM No.   | Construction | Flat-ened I.D. | Flat-ened O.D. | Appx. AWG Equiv. | Nom. CMA | Current Carrying Cap.* Amps | Std. P-U   |
|-----------|--------------|----------------|----------------|------------------|----------|-----------------------------|-------------|------------|--------------|----------------|----------------|------------------|----------|-----------------------------|------------|
| 1110-1/32 | 12x 2 of #36 | 1/32"          | 3/64"          | #22              | 600      | 7                           | 100', 1000' | 1110-3/4   | 48x11 of #36 | 3/4"           | 1 1/8"         | # 9              | 13200    | 62                          | 100', 500' |
| 1110-3/64 | 12x 2 of #36 | 3/64"          | 1/16"          | #22              | 600      | 7                           | 100', 1000' | 1110-25/32 | 48x19 of #36 | 25/32"         | 2 1/2"         | # 7              | 22800    | 88                          | 100', 250' |
| 1110-1/16 | 16x 3 of #36 | 1/16"          | 3/64"          | #19              | 1200     | 11                          | 100', 1000' | 1110-1     | 48x19 of #36 | 1"             | 1 1/8"         | # 7              | 22800    | 88                          | 100', 250' |
| 1110-3/32 | 16x 3 of #36 | 3/32"          | 1/8"           | #17              | 1800     | 11                          | 100', 1000' | 1110-1-3/8 | 48x19 of #36 | 1 3/8"         | 1 7/8"         | # 7              | 22800    | 88                          | 50', 100'  |
| 1110-1/8  | 24x 5 of #36 | 1/8"           | 5/32"          | #15              | 3000     | 25                          | 100', 1000' | 1110-1-1/2 | 48x19 of #36 | 1 1/2"         | 1 3/4"         | # 7              | 22800    | 88                          | 50', 100'  |
| 1110-3/16 | 24x 5 of #36 | 3/16"          | 7/32"          | #15              | 3000     | 25                          | 100', 1000' | 1110-1-3/4 | 48x27 of #30 | 1 3/4"         | 1 7/8"         | #00              | 129600   | 230                         | 50', 100'  |
| 1110-1/4  | 24x 7 of #36 | 1/4"           | 9/32"          | #14              | 4200     | 32                          | 100', 1000' | 1110-2     | 48x32 of #30 | 2"             | 2 1/4"         | #000             | 153600   | 270                         | 50', 100'  |
| 1110-3/8  | 48x 4 of #36 | 3/8"           | 1 1/32"        | #13              | 4800     | 35                          | 100', 500'  | 1110-2-1/4 | 48x35 of #30 | 2 1/4"         | 2 1/2"         | #000             | 168000   | 300                         | 50', 100'  |
| 1110-1/2  | 48x 7 of #36 | 1/2"           | 1 1/32"        | #11              | 8400     | 50                          | 100', 500'  | 1110-2-1/2 | 48x45 of #30 | 2 1/2"         | 2 3/4"         | #0000            | 216000   | 320                         | 50', 100'  |
| 1110-5/8  | 48x 8 of #36 | 5/8"           | 2 1/32"        | #10              | 9600     | 53                          | 100', 500'  | 1110-3     | 48x64 of #30 | 3"             | 3 1/4"         | 300MCM           | 307200   | 430                         | 50', 100'  |

\* Values are based on copper in free air at 65°F — intended as a guide only.

### TUBULAR BRAID PER QQ-B-575A

TINNED COPPER TUBULAR shielded braid mfg. round per MIL Spec. QQ-B-575A. Shielding coverage of 95% or more. Used in military or critical commercial applications where maximum shielding coverage is required against electrostatic interference. Also useful as grounding wire/cable, bonds, leads, flexible connectors, and protection against mechanical abrasion and stresses for wires/cables. Each wire is soft drawn tinned copper.



| BRIM No.   | Nom. I.D. Round | No. of Wires | Const. | Indiv. Wire AWG | Appx. AWG Equiv. | Nom. CMA | Current Carrying Cap.* Amps | Std. P-U    | BRIM No.   | Nom. I.D. Round | No. of Wires | Const. | Indiv. Wire AWG | Appx. AWG Equiv. | Nom. CMA | Current Carrying Cap.* Amps | Std. P-U   |
|------------|-----------------|--------------|--------|-----------------|------------------|----------|-----------------------------|-------------|------------|-----------------|--------------|--------|-----------------|------------------|----------|-----------------------------|------------|
| 1100-1/32  | 1/32"           | 24           | 24-1   | 36              | #22              | 600      | 7                           | 100', 1000' | 1100-1/2   | 1/2"            | 528          | 48-11  | 36              | # 9              | 13200    | 62                          | 100', 500' |
| 1100-1/16  | 1/16"           | 48           | 24-2   | 36              | #19              | 1200     | 11                          | 100', 1000' | 1100-9/16  | 9/16"           | 528          | 48-11  | 36              | # 9              | 13200    | 62                          | 100', 250' |
| 1100-5/64  | 5/64"           | 72           | 24-3   | 36              | #17              | 1800     | 16                          | 100', 1000' | 1101-9/16  | 9/16"           | 480          | 48-10  | 30              | # 3              | 48000    | 145                         | 100', 250' |
| 1100-7/64  | 7/64"           | 96           | 24-4   | 36              | #16              | 2400     | 19                          | 100', 1000' | 1101-21/32 | 21/32"          | 768          | 48-16  | 30              | # 1              | 77180    | 190                         | 100', 250' |
| 1100-1/8   | 1/8"            | 120          | 24-5   | 36              | #15              | 3000     | 25                          | 100', 1000' | 1100-11/16 | 11/16"          | 720          | 48-15  | 36              | # 8              | 18000    | 70                          | 100', 250' |
| 1100-5/32  | 5/32"           | 240          | 24-10  | 36              | #12              | 6000     | 40                          | 100', 1000' | 1100-25/32 | 25/32"          | 864          | 48-18  | 36              | # 7              | 21600    | 88                          | 100', 250' |
| 1100-11/64 | 11/64"          | 168          | 24-7   | 36              | #14              | 4200     | 32                          | 100', 1000' | 1100-13/16 | 13/16"          | 864          | 48-18  | 36              | # 7              | 21600    | 88                          | 100', 250' |
| 1100-3/16  | 3/16"           | 192          | 24-8   | 36              | #13              | 4800     | 33                          | 100', 1000' | 1101-7/8   | 7/8"            | 336          | 48-7   | 30              | # 5              | 33600    | 100                         | 50', 100'  |
| 1100-13/64 | 13/64"          | 312          | 24-13  | 36              | #11              | 7800     | 46                          | 100', 1000' | 1101-1     | 1"              | 384          | 48-8   | 30              | # 4              | 38400    | 120                         | 50', 100'  |
| 1100-1/4   | 1/4"            | 384          | 24-16  | 36              | #10              | 9600     | 53                          | 100', 1000' | 1101-1-1/8 | 1 1/8"          | 432          | 48-9   | 30              | # 4              | 43200    | 130                         | 50', 100'  |
| 1101-9/32  | 9/32"           | 120          | 24-5   | 30              | # 9              | 12000    | 60                          | 100', 500'  | 1101-1-1/4 | 1 1/4"          | 480          | 48-10  | 30              | # 3              | 48000    | 145                         | 50', 100'  |
| 1100-3/8   | 3/8"            | 384          | 48-8   | 36              | #10              | 9600     | 53                          | 100', 500'  | 1101-1-3/8 | 1 3/8"          | 528          | 48-11  | 30              | # 3              | 52800    | 150                         | 50', 100'  |
| 1101-7/16  | 7/16"           | 240          | 24-10  | 30              | # 6              | 24000    | 90                          | 100', 500'  | 1101-1-1/2 | 1 1/2"          | 576          | 48-12  | 30              | # 3              | 57600    | 165                         | 50', 100'  |

Larger sizes, and construction variations available to order. All of the above available in bare copper or silver plated copper.

\* Values based on copper in free air at 65°F. OVAL & FLAT BRAID PER QQ-B-575 IS AVAILABLE TO ORDER.

### STAINLESS STEEL TUBULAR

Shielded braid mfg. with type 304 soft drawn Stainless Steel. Used where higher temperatures and/or greater mechanical strength is needed. STD. P-U 100 feet



| BRIM No.  | Nom. I.D. When Rounded | Total No. of Wires | Construction | AWG of Indiv. Wires | AWG Equiv. | Nom. CMA | BRIM       | Nom. I.D. When Rounded | Total No. of Wires | Construction | AWG of Indiv. Wires | AWG Equiv. | Nom. CMA |
|-----------|------------------------|--------------------|--------------|---------------------|------------|----------|------------|------------------------|--------------------|--------------|---------------------|------------|----------|
| 1150-1/32 | 1/32"                  | 48                 | 16-3         | #36                 | #19        | 1200     | 1150-3/8   | 3/8"                   | 336                | 48-7         | #36                 | #11        | 8400     |
| 1150-1/16 | 1/16"                  | 48                 | 24-2         | #36                 | #19        | 1200     | 1150-7/16  | 7/16"                  | 384                | 48-8         | #36                 | #10        | 9600     |
| 1150-5/64 | 5/64"                  | 72                 | 24-3         | #36                 | #17        | 1800     | 1150-1/2   | 1/2"                   | 432                | 48-9         | #36                 | #10        | 10800    |
| 1150-7/64 | 7/64"                  | 96                 | 24-4         | #36                 | #16        | 2400     | 1150-5/8   | 5/8"                   | 528                | 48-11        | #36                 | # 9        | 13200    |
| 1150-1/8  | 1/8"                   | 120                | 24-5         | #36                 | #15        | 3000     | 1150-3/4   | 3/4"                   | 720                | 48-15        | #36                 | # 8        | 18000    |
| 1150-3/16 | 3/16"                  | 192                | 24-8         | #36                 | #13        | 4800     | 1150-1     | 1"                     | 336                | 48-7         | #30                 | # 5        | 33600    |
| 1150-7/32 | 7/32"                  | 240                | 24-10        | #36                 | #12        | 6000     | 1150-1-1/2 | 1-1/2"                 | 480                | 48-10        | #30                 | # 3        | 48000    |
| 1150-1/4  | 1/4"                   | 312                | 24-13        | #36                 | #11        | 7800     |            |                        |                    |              |                     |            |          |

OTHER CONSTRUCTIONS AVAILABLE TO ORDER.

OVAL BRAID — PER QQ-B-575 AVAILABLE TO ORDER.

BRIM ELECTRONICS, INC., DEPT. EM, P.O. BOX 336E, FAIR LAWN, NJ 07410 (201) 796-2886 FAX 201-778-2792

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C-1719



# BRIM

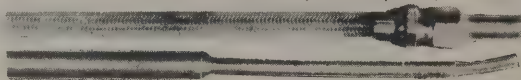
## WIRE — CABLE — TUBING — HARDWARE

### ELECTRONICS, INC. FAIR LAWN, N.J. 201-796-2886

## HEAT SHRINKABLE TUBINGS: BRIFLON™ TEFLON — SILICONE RUBBER TUBING

### SH200, SH250, SH254 & SHTF

tubings have excellent resistance to weathering, chemicals (oils, fuels, solvents, acids, alkalis, fluids), & fungus, are non-corrosive, low water absorption (.01%), will not burn nor support combustion, have hi dielectric strength (850V/MIL dry), low dielectric constant, & a very low coefficient of friction. Hi mechanical strength yet flexible. (Low temp. flexibility -67°C). Their excellent electrical characteristics remain stable throughout their electrical range. Longitudinal change with full shrinkage: FEP -15%; TFE -20%. Color: Natural (FEP-transparent; TFE-translucent).



### SH200 (FEP) MIL-I-23053/11

SH200: an extruded modified FEP (Fluorinated-Ethylene-Propylene) Teflon\* tubing, with a continuous Oper. Temp. of +205°C (400°F). SH200 completely shrinks at 350°F (partial shrinkage possible at 200°F). Shrinkage ratio — 1.3:1. It melts at 525-563°F so it can be used to encapsulate. Now many sensitive components, parts, devices, etc. can be protected with Teflon\*. Fills void between the hi temp. of TFE, and low temp. of PVC and polyolefin tubings.

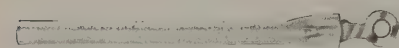
| Briflon No. | Min. Exp. I.D. | Max. Rec. Dimen.** I.D. | Max. Rec. Dimen.** Wall | ±Wall Toler. |
|-------------|----------------|-------------------------|-------------------------|--------------|
| SH200-24    | .031"          | .027"                   | .008"                   | .002"        |
| SH200-22    | .036"          | .032"                   | .008"                   | .002"        |
| SH200-20    | .045"          | .039"                   | .008"                   | .002"        |
| SH200-18    | .060"          | .049"                   | .008"                   | .002"        |
| SH200-16    | .075"          | .061"                   | .009"                   | .002"        |
| SH200-14    | .092"          | .072"                   | .009"                   | .002"        |
| SH200-12    | .115"          | .089"                   | .009"                   | .002"        |
| SH200-10    | .141"          | .114"                   | .010"                   | .003"        |
| SH200-9     | .158"          | .124"                   | .010"                   | .003"        |
| SH200-8     | .180"          | .143"                   | .010"                   | .003"        |
| SH200-7     | .197"          | .158"                   | .011"                   | .004"        |
| SH200-6     | .225"          | .180"                   | .011"                   | .004"        |
| SH200-5     | .248"          | .198"                   | .011"                   | .004"        |
| SH200-4     | .290"          | .226"                   | .011"                   | .004"        |
| SH200-3     | .310"          | .249"                   | .011"                   | .004"        |
| SH200-2     | .365"          | .280"                   | .012"                   | .004"        |
| SH200-1     | .400"          | .311"                   | .012"                   | .004"        |
| SH200-3/8"  | .440"          | .349"                   | .012"                   | .004"        |
| SH200-1/2"  | .500"          | .383"                   | .015"                   | .004"        |
| SH200-3/16" | .580"          | .448"                   | .020"                   | .004"        |
| SH200-1/8"  | .666"          | .510"                   | .020"                   | .004"        |
| SH200-1/16" | .830"          | .637"                   | .025"                   | .004"        |
| SH200-3/32" | 1.000"         | .764"                   | .030"                   | .004"        |
| SH200-1/4"  | 1.170"         | .883"                   | .035"                   | .004"        |
| SH200-3/8"  | 1.330"         | 1.020"                  | .035"                   | .004"        |
| SH200-1/2"  | 1.660"         | 1.270"                  | .035"                   | .004"        |
| SH200-3/4"  | 2.000"         | 1.520"                  | .035"                   | .004"        |

STD. P-U: 100', 4 foot minimum lengths. \* DuPont.

\*\*All dimensions are based on full recovery.

OTHER SIZES IN TFE AND FEP. AND COLOR ARE AVAILABLE TO ORDER. ETCHING FOR BONDING IS AVAILABLE TO ORDER.

### BRIFLON SH206 HIGH SHRINK RATIO — 1.6:1 FEP TUBING



BRIFLON SH206 tubings are extruded modified FEP (Fluorinated-Ethylene-Propylene) Teflon\*, with an operating temperature up to 205°C (400°F). It can completely shrink at 350°F, with partial shrinkage as low as 200°F. Suitable for those applications where 1.6:1 shrink capabilities are required (standard 1.3:1 shrinkage is insufficient). Sensitive components, parts, devices, etc. can be protected with Teflon\*.

Meets MIL-I-23053/11 Cl.2. Std. Color: Natural (Transparent).

| Briflon No.  | Min. Exp. I.D. | Max. Rec. I.D. | Nom. Rec. Wall | +/- Tolerance | Std. P-U |
|--------------|----------------|----------------|----------------|---------------|----------|
| SH206-3/8"   | .093"          | .056"          | .008"          | .003"         | 100'     |
| SH206-1/4"   | .125"          | .075"          | .010"          | .003"         | 100'     |
| SH206-3/16"  | .188"          | .115"          | .010"          | .003"         | 100'     |
| SH206-1/8"   | .250"          | .150"          | .010"          | .003"         | 100'     |
| SH206-3/32"  | .375"          | .225"          | .012"          | .003"         | 100'     |
| SH206-1/16"  | .500"          | .300"          | .015"          | .004"         | 100'     |
| SH206-3/64"  | .750"          | .450"          | .020"          | .004"         | 100'     |
| SH206-1"     | 1.000"         | .600"          | .025"          | .005"         | 50'      |
| SH206-1 1/8" | 1.500"         | .900"          | .030"          | .005"         | 50'      |
| SH206-2"     | 2.000"         | 1.200"         | .030"          | .005"         | 50'      |

1 Ft. Min. Lengths. All dimensions are based on full recovery.

\*DuPont

### SH250 (TFE) MIL-I-23053/12

SH250: an extruded modified TFE (PolyTetra-FluoroEthylene) Teflon\* tubing, with a continuous Operating Temperature of +250°C (550°F). SH250 will shrink when heated to 621°F. Shrinkage ratio — 2:1. Used wherever hi-temperature protection required. Applications: Protective covers in corrosive environments, protection for electronic components, cable jacketing, covers on immersion heaters, heat exchangers, light duty bearing surfaces, roll covers.

| Briflon No. | Class | Min. Exp. I.D. | Max. Rec. Dimen.** I.D. | Max. Rec. Dimen.** Wall | ±Wall Toler. |
|-------------|-------|----------------|-------------------------|-------------------------|--------------|
| SH250-30    | 3     | .034"          | .015"                   | .009"                   | .002"        |
| SH250-28    | 3     | .038"          | .018"                   | .009"                   | .002"        |
| SH250-26    | 3     | .046"          | .022"                   | .010"                   | .002"        |
| SH250-24    | 3     | .050"          | .027"                   | .010"                   | .002"        |
| SH250-22    | 3     | .055"          | .032"                   | .012"                   | .003"        |
| SH250-20    | 3     | .060"          | .039"                   | .012"                   | .003"        |
| SH250-19    | 3     | .065"          | .043"                   | .012"                   | .003"        |
| SH250-18    | 3     | .076"          | .049"                   | .012"                   | .003"        |
| SH250-17    | 3     | .085"          | .054"                   | .012"                   | .003"        |
| SH250-16    | 3     | .093"          | .061"                   | .012"                   | .003"        |
| SH250-15    | 3     | .110"          | .067"                   | .012"                   | .003"        |
| SH250-14    | 3     | .120"          | .072"                   | .012"                   | .003"        |
| SH250-13    | 3     | .140"          | .080"                   | .012"                   | .003"        |
| SH250-12    | 3     | .150"          | .089"                   | .012"                   | .003"        |
| SH250-11    | 3     | .170"          | .101"                   | .012"                   | .003"        |
| SH250-10    | 3     | .191"          | .112"                   | .012"                   | .003"        |
| SH250-9     | 3     | .205"          | .124"                   | .015"                   | .004"        |
| SH250-8     | 3     | .240"          | .141"                   | .015"                   | .004"        |
| SH250-7     | 3     | .270"          | .158"                   | .015"                   | .004"        |
| SH250-6     | 3     | .302"          | .178"                   | .015"                   | .004"        |
| SH250-5     | 3     | .320"          | .198"                   | .015"                   | .004"        |
| SH250-4     | 3     | .370"          | .224"                   | .015"                   | .004"        |
| SH250-3     | 3     | .390"          | .249"                   | .015"                   | .004"        |
| SH250-2     | 3     | .430"          | .278"                   | .015"                   | .004"        |
| SH250-1     | 3     | .450"          | .311"                   | .015"                   | .004"        |
| SH250-0     | 3     | .470"          | .347"                   | .015"                   | .004"        |
| SH250-3/8"  | 2     | .560"          | .399"                   | .025"                   | .006"        |
| SH250-1/4"  | 2     | .750"          | .524"                   | .025"                   | .006"        |
| SH250-3/16" | 2     | .930"          | .655"                   | .030"                   | .006"        |
| SH250-1/8"  | 2     | 1.125"         | .786"                   | .035"                   | .008"        |
| SH250-1"    | 2     | 1.500"         | 1.036"                  | .035"                   | .008"        |

STD. P-U 100', Sizes 26-14: 3 foot minimum lengths. 13-1" 1 foot minimum length. Sizes 30 to 0 are per class 3. Sizes 3/8" to 1" are per class 2.

### SHTF SHRINKABLE TFE/FEP

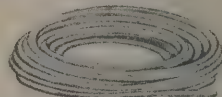
SHTF is made with a combination of TFE and FEP Teflons\*. The inner wall is made of FEP and the outer wall of TFE. When the tubing is heated, the TFE begins to shrink down tightly over the FEP. The FEP inner wall melts and flows-squeezes-into and around the item covered, creating a solid or near solid encapsulation. The fit is so tight that it is safe against most environmental hazards, involving pull or vibrations. It can be used as a strain relief, or moisture-proof covering for wires, connectors, terminals, splices, electronic devices, etc. SHTF is non-flammable, non-corrosive, and offers all of the other outstanding electrical, chemical, and mechanical properties of Teflon\*. Color: Natural (Transparent). OPERATING TEMPERATURE: -85°F to +450°F.

| Briflon No. | Min. Exp. I.D. | Max. Rec. Dimen.** I.D. | Max. Rec. Dimen.** Wall | Std. P-U+ |
|-------------|----------------|-------------------------|-------------------------|-----------|
| SHTF-1      | .065"          | .000***                 | .015"                   | 100'      |
| SHTF-2      | .115"          | .045"                   | .015"                   | 100'      |
| SHTF-3      | .130"          | .060"                   | .015"                   | 100'      |
| SHTF-4      | .180"          | .065"                   | .015"                   | 100'      |
| SHTF-5      | .190"          | .070"                   | .015"                   | 100'      |
| SHTF-6      | .240"          | .150"                   | .020"                   | 100'      |
| SHTF-7      | .350"          | .210"                   | .025"                   | 100'      |
| SHTF-8      | .480"          | .315"                   | .032"                   | 100'      |
| SHTF-9      | .700"          | .440"                   | .055"                   | 100'      |
| SHTF-10     | 1.000"         | .700"                   | .045"                   | 100'      |

\*\* Fully closes off. + In random lengths of 1 foot to 3 feet. \*DuPont

OTHER SIZES AND COLORS AVAILABLE TO ORDER.

### BRIMFLEX BSR SILICONE RUBBER TUBING—ZZ-R-765 200°C



BRIMFLEX BSR Silicone Rubber tubing is an extremely elastic and stable high temperature and low temperature tubing. Besides being extremely flexible, it has excellent mechanical strength (tear resistance, tensile strength, elongation, and weather resistance), and outstanding dielectric strength, and corona resistance. BSR meets MIL-R-5847 and Fed. Spec. ZZ-R-765, Class 2b, STD. COLOR: WHITE. OPERATING VOLTAGE: 28 AWG-3/8" — 300V, 3/4"-1" — 600V.

| Briflex No. | Size  | Nom. I.D. | Nom. Wall | Std. P.U. |
|-------------|-------|-----------|-----------|-----------|
| BSR-28      | 28    | .015"     | .016"     | 1000'     |
| BSR-26      | 26    | .018"     | .016"     | 1000'     |
| BSR-24      | 24    | .022"     | .016"     | 1000'     |
| BSR-22      | 22    | .027"     | .016"     | 1000'     |
| BSR-20      | 20    | .034"     | .016"     | 1000'     |
| BSR-19      | 19    | .038"     | .016"     | 1000'     |
| BSR-18      | 18    | .042"     | .016"     | 1000'     |
| BSR-17      | 17    | .047"     | .018"     | 1000'     |
| BSR-16      | 16    | .053"     | .018"     | 1000'     |
| BSR-15      | 15    | .059"     | .016"     | 500'      |
| BSR-14      | 14    | .066"     | .016"     | 500'      |
| BSR-13      | 13    | .076"     | .016"     | 500'      |
| BSR-12      | 12    | .085"     | .016"     | 500'      |
| BSR-11      | 11    | .095"     | .016"     | 500'      |
| BSR-10      | 10    | .106"     | .016"     | 500'      |
| BSR-9       | 9     | .118"     | .020"     | 500'      |
| BSR-8       | 8     | .133"     | .020"     | 500'      |
| BSR-7       | 7     | .148"     | .020"     | 500'      |
| BSR-6       | 6     | .166"     | .020"     | 500'      |
| BSR-5       | 5     | .186"     | .020"     | 250'      |
| BSR-4       | 4     | .208"     | .020"     | 250'      |
| BSR-3       | 3     | .233"     | .020"     | 250'      |
| BSR-2       | 2     | .262"     | .020"     | 250'      |
| BSR-1       | 1     | .294"     | .020"     | 250'      |
| BSR-0       | 0     | .329"     | .025"     | 250'      |
| BSR-3/8"    | 3/8"  | .382"     | .025"     | 250'      |
| BSR-1/4"    | 1/4"  | .448"     | .025"     | 250'      |
| BSR-1/2"    | 1/2"  | .508"     | .025"     | 100'      |
| BSR-3/16"   | 3/16" | .636"     | .030"     | 100'      |
| BSR-1/8"    | 1/8"  | .760"     | .080"     | 100'      |
| BSR-3/32"   | 3/32" | .895"     | .070"     | 100'      |
| BSR-1"      | 1"    | 1.010"    | .080"     | 100'      |

### SH254 4:1 SHRINKABLE TFE

SH254 tubing can recover to approximately 1/4 of its expanded size when heated to its "gel" point (521°F-625°F). Because of its exceptional shrinkage capability, its recommended that the outside diameter of the object to be shrunk down upon should not be more than 50% of the expanded I.D. of the size of the tubing used. Many constructions conform to AMS 3584 and MIL-I-23053/12 class 5. SH254 is non-flammable, non-corrosive, and offers all of the other outstanding electrical, chemical, and mechanical properties of Teflon\*.

\* DuPont

| Briflon No. | Max. Exp. I.D. | Max. Rec. Dimen.** I.D. | Max. Rec. Dimen.** Wall | ±Wall Toler. |
|-------------|----------------|-------------------------|-------------------------|--------------|
| SH254-3/8"  | .078"          | .025"                   | .009"                   | .002"        |
| SH254-1/4"  | .125"          | .037"                   | .010"                   | .002"        |
| SH254-3/16" | .187"          | .050"                   | .012"                   | .003"        |
| SH254-1/8"  | .250"          | .063"                   | .012"                   | .003"        |
| SH254-3/32" | .312"          | .079"                   | .012"                   | .003"        |
| SH254-1/16" | .375"          | .096"                   | .012"                   | .003"        |
| SH254-3/64" | .438"          | .112"                   | .012"                   | .003"        |
| SH254-1/32" | .500"          | .144"                   | .015"                   | .004"        |
| SH254-3/64" | .562"          | .155"                   | .015"                   | .004"        |
| SH254-1/64" | .625"          | .178"                   | .015"                   | .004"        |
| SH254-1/8"  | .687"          | .198"                   | .015"                   | .004"        |
| SH254-3/16" | .750"          | .224"                   | .015"                   | .004"        |
| SH254-1/4"  | .875"          | .244"                   | .015"                   | .004"        |
| SH254-3/8"  | 1.000"         | .278"                   | .015"                   | .004"        |
| SH254-1/2"  | 1.250"         | .347"                   | .015"                   | .004"        |

STD. P-U: 100', in 4 foot lengths. Std. Color: Natural (Clear)

\* Per MIL-I-23053/12 Class 5

E-TFE TEFEZEL\* SPAGHETTI TUBING IS AVAILABLE TO ORDER. \*\*O.D. of closest equivalent wire. \*DuPont SHRINKABLE TUBINGS per MIL-I-23053/7 & 8 ARE AVAILABLE.



# BRIM

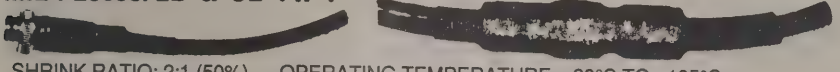
## WIRE — CABLE — TUBING — HARDWARE

### BRIMFLEX™ SHRINKABLE TUBINGS — SPIRAL WRAP TUBINGS

### BRIFLEX™ SHRINKABLE PVC TUBINGS: MIL-I-23053/2B & HEAVY WALL PVC TUBING

### SHRINKABLE IRRADIATED POLYOLEFIN: MIL-I-23053/5 — SPIRAL WRAP TUBING

**BRIMFLEX™ POLYVINYLCHLORIDE SHRINKABLE TUBING — MIL-I-23053/2B & UL VW-1**



SHRINK RATIO: 2:1 (50%) — OPERATING TEMPERATURE: -20°C TO +105°C  
BRIMFLEX™ SH105 is a flexible all purpose shrinkable PVC tubing that shrinks 50% of its expanded size when exposed to temperatures below 200°F (within one minute). SH105 meets MIL-I-23053/2B, Class 21, and conforms to MIL-I-631D, Grade C. Longitudinal shrinkage: approximately 20%. SH105 is self-extinguishing, resistant to fungus, most oils, and chemicals, sunlight, moisture, and is non-corrosive. SH105 is suitable for insulating wires, cables, and electronic components, that vary in shapes, and dimensions. Produces a smooth snug flexible fit, in most applications — even around sharp bends. Dielectric Strength: 700V/MIL min., ASTM-D922. Tensile Strength: 2000PSI min. Suggested Storage Temperature: under 70°F for up to 10 months. UL Approved SH105 is available to order.

STD. COLORS: Black, Clear, Red, White. Other colors and †Class 1 is available to order.

| Brimflex No. | Min. Exp. I.D. | Recovered Dimen.* |       | ±Wall Toler. | AWG**   | Rec. M.M. | Std. P-U          |
|--------------|----------------|-------------------|-------|--------------|---------|-----------|-------------------|
|              |                | I.D. Max.         | Wall  |              |         |           |                   |
| SH105-3/4"   | .046"          | .023"             | .020" | .003"        | 24-22   | 0.59      | — 100'            |
| SH105-1/2"   | .063"          | .031"             | .020" | .003"        | 22-20   | 0.80      | 100', 500', 1000' |
| SH105-3/8"   | .093"          | .046"             | .025" | .003"        | 18-16   | 1.19      | 100', 500', 1000' |
| SH105-1/4"   | .125"          | .063"             | .025" | .003"        | 14      | 1.59      | 100', 500', 1000' |
| SH105-3/16"  | .187"          | .093"             | .025" | .003"        | 12-10   | 2.39      | 100', 500', 1000' |
| SH105-1/8"   | .250"          | .125"             | .025" | .005"        | 8       | 3.18      | 100', 500', 1000' |
| SH105-3/32"  | .312"          | .156"             | .028" | .005"        | 7       | 3.97      | 100', 500', 1000' |
| SH105-1/16"  | .375"          | .187"             | .028" | .005"        | 5       | 4.77      | 100', 500', 1000' |
| SH105-1/32"  | .500"          | .250"             | .028" | .005"        | 2       | 6.35      | 100', 250', 500'  |
| SH105-3/64"  | .750"          | .375"             | .033" | .005"        | 00      | 9.52      | 100', 250', 500'  |
| SH105-1"     | 1.000"         | .500"             | .038" | .005"        | 0000    | 12.70     | 100', 250', 500'  |
| SH105-1 1/2" | 1.500"         | .750"             | .043" | .005"        | 450MCM  | 19.05     | 25', 50', 100'    |
| SH105-2"     | 2.000"         | 1.000"            | .048" | .006"        | 750MCM  | 25.40     | 25', 50', 100'    |
| SH105-3"     | 3.000"         | 1.500"            | .068" | .007"        | 1750MCM | 38.10     | — 50', 100'       |
| SH105-4"     | 4.000"         | 2.000"            | .073" | .008"        | 2750MCM | 50.80     | — 50', 100'       |

\* If full recovery allowed. \*\* O.D. of closest equivalent wire.

### SHRINKABLE IRRADIATED POLYOLEFIN TUBING — ALL PURPOSE — MIL-I-23053/5



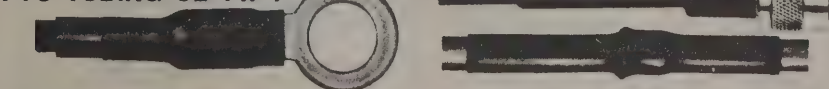
Flexible, yet greater electrical, chemical, and abrasion resistance, and greater mechanical strength than that of shrinkable PVC tubing. It not only insulates, it can also encapsulate, giving a watertight fit. Won't crack or peel. Its non-corrosive, has excellent resistance to soldering irons, oils, solvents, acids, alkalis, fuels, hydraulic fluids, fungus. Shrink Ratio-2:1 (50%). Shrinks when exposed to 250°F. Longitudinal shrinkage: 5%. Dielectric Strength: 1300V/MIL. Colored tubing is self-extinguishing; clear tubing is slow burning. Uses: Strain relief, jacketing material, component insulation. OPERATING TEMPERATURE: -55°C to +135°C. Meets MIL-I-23053/5, Class 1, 2. MIL-I-7444B, AMS 3636B, AMS 3637A, ASTM D876, ASTM D150, ASTM D257, ASTM D2671, ASTM D792.

| Brimflex No. | Min. Exp. I.D. | Recovered Dimen.* |       | ±Wall Toler. | AWG**   | Rec. M.M. | Std. P-U          |
|--------------|----------------|-------------------|-------|--------------|---------|-----------|-------------------|
|              |                | I.D. Max.         | Wall  |              |         |           |                   |
| SH135-3/4"   | .046"          | .023"             | .016" | .003"        | 24-22   | 0.59      | 100', 500', 1000' |
| SH135-1/2"   | .063"          | .031"             | .016" | .003"        | 22-20   | 0.80      | 100', 500', 1000' |
| SH135-3/8"   | .093"          | .046"             | .020" | .003"        | 18-16   | 1.19      | 100', 500', 1000' |
| SH135-1/4"   | .125"          | .063"             | .020" | .003"        | 14      | 1.59      | 100', 500', 1000' |
| SH135-3/16"  | .187"          | .093"             | .020" | .003"        | 12-10   | 2.39      | 100', 500', 1000' |
| SH135-1/8"   | .250"          | .125"             | .025" | .003"        | 8       | 3.18      | 100', 500', 1000' |
| SH135-3/32"  | .312"          | .156"             | .025" | .003"        | 5       | 4.77      | 50', 100', 200'   |
| SH135-1/16"  | .500"          | .250"             | .025" | .003"        | 2       | 6.35      | 50', 100', 200'   |
| SH135-3/64"  | .750"          | .375"             | .030" | .005"        | 00      | 9.52      | 25', 50', 100'    |
| SH135-1"     | 1.000"         | .500"             | .035" | .006"        | 0000    | 12.70     | 25', 50', 100'    |
| SH135-1 1/2" | 1.500"         | .750"             | .040" | .006"        | 450MCM  | 19.05     | 25', 50', 100'    |
| SH135-2"     | 2.000"         | 1.000"            | .045" | .007"        | 750MCM  | 25.40     | 25', 50', 100'    |
| SH135-3"     | 3.000"         | 1.500"            | .050" | .008"        | 1750MCM | 38.10     | 25', 50', 100'    |
| SH135-4"     | 4.000"         | 2.000"            | .055" | .009"        | 2750MCM | 50.80     | 25', 50', 100'    |

STD. COLORS: Black, Clear, Red, White. Other colors are available to order.

\* If full recovery allowed. \*\* O.D. of closest equivalent wire.

### BRIMFLEX™ SHRINKABLE HEAVY WALL PVC TUBING UL VW-1



| Brimflex No. | Min. Exp. I.D. | Recovered Dimen.* |       | ±Wall Toler. | AWG** | Rec. M.M. | Std. P-U |
|--------------|----------------|-------------------|-------|--------------|-------|-----------|----------|
|              |                | I.D. Max.         | Wall  |              |       |           |          |
| SH110-3/4"   | .125"          | .063"             | .032" | 0.05"        | 14    | 1.59      | 1000'    |
| SH110-1/2"   | .187"          | .093"             | .032" | 0.05"        | 12-10 | 2.39      | 1000'    |
| SH110-1/4"   | .250"          | .125"             | .032" | 0.05"        | 8     | 3.18      | 1000'    |
| SH110-3/8"   | .312"          | .156"             | .032" | 0.05"        | 6     | 3.97      | 500'     |
| SH110-1/8"   | .375"          | .187"             | .032" | 0.05"        | 4     | 4.77      | 500'     |
| SH110-1/16"  | .500"          | .250"             | .032" | 0.05"        | 2     | 6.35      | 500'     |

\* If full recovery allowed. \*\* O.D. of closest equivalent wire.

SEMI-RIGID POLYOLEFIN SHRINKABLE TUBING IS AVAILABLE TO ORDER.  
CUT AND PRINTED WIRE MARKERS ARE AVAILABLE TO ORDER.

### SPIRAL WRAP TUBINGS FOR HARNESSING



Easily twists on and off. Can be repeatedly flexed without cracking or breaking. Expandable. Holds wire, and cable bundles securely, and allows leadoffs or additions at any point. Bends around sharp corners, and protection against sharp edges. Available in 4 types of insulations: Polyethylene, Rulan (a flame retardant type of polyethylene), Nylon, Teflon. All are resistant to organic solvents, alkalis, and acids (nylon satisfactory except for strong acids). OSHA and UL approved for harnessing cables.

| Brimflex No.                                  | Covers Max. Wire Group | Nom. O.D. | Nom. Wall |
|-----------------------------------------------|------------------------|-----------|-----------|
| <b>POLYETHYLENE (CLEAR)*</b> —105°F to +215°F |                        |           |           |
| PSW-1/8"                                      | 1/4" to 1/2"           | 1/8"      | .032"     |
| PSW-1/4"                                      | 3/8" to 2"             | 1/4"      | .045"     |
| PSW-3/8"                                      | 1/2" to 3"             | 3/8"      | .052"     |
| PSW-1/2"                                      | 3/4" to 4"             | 1/2"      | .062"     |
| PSW-3/4"                                      | 1" to 5"               | 3/4"      | .065"     |
| PSW-1"                                        | 1" to 7"               | 1"        | .095"     |

| <b>RULAN (WHITE)**</b> —8°F to +200°F |              |      |       |
|---------------------------------------|--------------|------|-------|
| RSW-1/8"                              | 1/4" to 1/2" | 1/8" | .032" |
| RSW-1/4"                              | 3/8" to 2"   | 1/4" | .045" |
| RSW-3/8"                              | 1/2" to 3"   | 3/8" | .052" |
| RSW-1/2"                              | 3/4" to 4"   | 1/2" | .062" |
| RSW-3/4"                              | 1" to 5"     | 3/4" | .065" |
| RSW-1"                                | 1" to 7"     | 1"   | .095" |

| <b>NYLON (NATURAL)***</b> —121°F to +300°F |              |      |       |
|--------------------------------------------|--------------|------|-------|
| NSW-1/8"                                   | 1/4" to 1/2" | 1/8" | .015" |
| NSW-1/4"                                   | 3/8" to 2"   | 1/4" | .025" |
| NSW-3/8"                                   | 1/2" to 3"   | 3/8" | .032" |
| NSW-1/2"                                   | 3/4" to 4"   | 1/2" | .032" |
| NSW-3/4"                                   | 1" to 5"     | 3/4" | .032" |
| NSW-1"                                     | 1" to 7"     | 1"   | .032" |

| <b>TEFLON (NATURAL)****</b> —275°F to +500°F |              |      |       |
|----------------------------------------------|--------------|------|-------|
| TSW-1/8"                                     | 1/4" to 1/2" | 1/8" | .030" |
| TSW-1/4"                                     | 3/8" to 2"   | 1/4" | .033" |
| TSW-3/8"                                     | 1/2" to 3"   | 3/8" | .033" |
| TSW-1/2"                                     | 3/4" to 4"   | 1/2" | .030" |
| TSW-3/4"                                     | 1" to 5"     | 3/4" | .032" |
| TSW-1"                                       | 1" to 7"     | 1"   | .040" |

STD. P-U 1/8" to 1/4" — 100', 1000'; 3/8" to 1/2" — 100', 500'; 3/4" and 1" — 100'

\* MIL-E-16400, MIL-P-3803, MIL-I-631D, MIL-E-5400F, Fed. Spec. L-P-390, ASTM D1248-65T.

\*\* UL-70, ASTM D635, MIL-E-5400F

\*\*\* MIL-P-20693A, MIL-P-17091B, L-P-4100, MIL-T-47287

\*\*\*\* MIL-I-22129C, AMS3653C, AMS3655, MIL-T-47287

**BLACK NYLON AND POLYETHYLENE SPIRAL WRAP FOR ULTRAVIOLET RAY PROTECTION IS AVAILABLE TO ORDER.**

**LOW & HI TEMP. PVC TUBING PER MIL-I-7444 & MIL-I-631 STOCKED.**

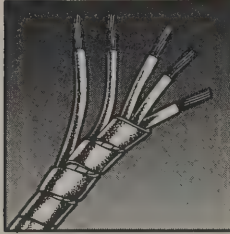
**SHRINK RATIO: 2:1 (50%) — OPERATING TEMPERATURE: -20°C to +105°C**

SH110 meets or exceeds the performance requirements of MIL-I-23053/2B, Class 2 but for its dimensions — its heavier wall. SH110 is a Heavy Wall Shrinkable PVC tubing, yet it's flexible, and will shrink at temperatures below 200°F (within one minute). Provides outstanding dielectric and mechanical protection without damage to enclosed or adjacent components, even around sharp bends. Longitudinal shrinkage: approximately 20%. SH110 is self-extinguishing, resistant to fungus, moisture, sunlight, and most oils, and chemicals. Dielectric Strength: 600V/MIL min., ASTM-D922. Suitable as a heavy duty all-purpose shrinkable tubing that is less expensive, almost as flexible, and has a higher temperature ability than that of Shrinkable Neoprene tubing. Suggested Storage Temperature: Under 70°F for up to 10 months.

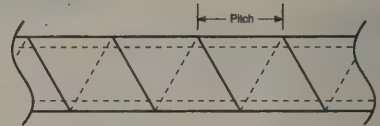


# FORWARD CUT SPIRAL WRAP

158 Governor Drive  
Orange, MA 01364-0720  
508-544-8255



- For Protection of Bundles from .063" to 7"
- Install Gapped for Greater Flexibility or Butted for Maximum Abrasion Resistance, Insulation and Rigidity.
- Available in 4 Materials Including Polyethylenes and Nylon.
- a.k.a.: Right-Hand Cut, Clockwise Cut
- Use Cutting Tool SR-100
- Contact Factory for Availability of Quantities in Custom Colors



| Item Number    | Material                           | Outside Diameter |        | Pitch |        | Nominal Wall Thickness |       | Min./Max. Bundle Range |                 | UL Flammability |
|----------------|------------------------------------|------------------|--------|-------|--------|------------------------|-------|------------------------|-----------------|-----------------|
|                |                                    | Inch             | (mm)   | Inch  | (mm)   | Inch                   | (mm)  | Inch                   | (mm)            |                 |
| SRPE-125F-9-C  | Natural Polyethylene               | .125             | (3.2)  | .210  | (5.3)  | .035                   | (.9)  | .063                   | (1.6) to .500   | Not Rated       |
| SRPE-187F-9-C  |                                    | .187             | (4.8)  | .240  | (6.1)  | .040                   | (1.0) | .125                   | (3.2) to 1.500  |                 |
| SRPE-250F-9-C  |                                    | .250             | (6.4)  | .375  | (9.5)  | .045                   | (1.1) | .188                   | (4.8) to 2.000  |                 |
| SRPE-375F-9-C  |                                    | .375             | (9.5)  | .438  | (11.1) | .052                   | (1.3) | .313                   | (7.9) to 3.000  |                 |
| SRPE-500F-9-C  |                                    | .500             | (12.7) | .563  | (14.3) |                        |       | .375                   | (9.5) to 4.000  |                 |
| SRPE-625F-9-C  |                                    | .625             | (15.9) | .625  | (15.9) | .062                   | (1.6) | .625                   | (15.9) to 4.500 |                 |
| SRPE-750F-9-C  |                                    | .750             | (19.1) | .750  | (19.1) | .065                   | (1.7) | .750                   | (19.1) to 5.000 |                 |
| SRPE-1000F-9-C | UV Black Polyethylene              | 1.000            | (25.4) | 1.110 | (28.2) | .070                   | (1.8) | 1.000                  | (25.4) to 7.000 |                 |
| SRPE-125F-0-C  |                                    | .125             | (3.2)  | .210  | (5.3)  | .035                   | (.9)  | .063                   | (1.6) to .500   |                 |
| SRPE-187F-0-C  |                                    | .187             | (4.8)  | .240  | (6.1)  | .040                   | (1.0) | .125                   | (3.2) to 1.500  |                 |
| SRPE-250F-0-C  |                                    | .250             | (6.4)  | .375  | (9.5)  | .045                   | (1.1) | .188                   | (4.8) to 2.000  |                 |
| SRPE-375F-0-C  |                                    | .375             | (9.5)  | .438  | (11.1) | .052                   | (1.3) | .313                   | (7.9) to 3.000  |                 |
| SRPE-500F-0-C  |                                    | .500             | (12.7) | .563  | (14.3) |                        |       | .375                   | (9.5) to 4.000  |                 |
| SRPE-625F-0-C  |                                    | .625             | (15.9) | .625  | (15.9) | .062                   | (1.6) | .625                   | (15.9) to 4.500 |                 |
| SRPE-750F-0-C  | White Flame Retardant Polyethylene | .750             | (19.1) | .750  | (19.1) | .065                   | (1.7) | .750                   | (19.1) to 5.000 |                 |
| SRPE-1000F-0-C |                                    | 1.000            | (25.4) | 1.110 | (28.2) | .070                   | (1.8) | 1.000                  | (25.4) to 7.000 |                 |
| SRFR-125F-WH-C |                                    | .125             | (3.2)  | .210  | (5.3)  | .035                   | (.9)  | .063                   | (1.6) to .500   |                 |
| SRFR-187F-WH-C |                                    | .187             | (4.8)  | .240  | (6.1)  | .040                   | (1.0) | .125                   | (3.2) to 1.500  |                 |
| SRFR-250F-WH-C |                                    | .250             | (6.4)  | .375  | (9.5)  | .045                   | (1.1) | .188                   | (4.8) to 2.000  |                 |
| SRFR-375F-WH-C |                                    | .375             | (9.5)  | .438  | (11.1) | .052                   | (1.3) | .313                   | (7.9) to 3.000  |                 |
| SRFR-500F-WH-C |                                    | .500             | (12.7) | .563  | (14.3) | .062                   | (1.6) | .375                   | (9.5) to 4.000  |                 |
| SRNY-250F-9-C  | Natural Nylon                      | .250             | (6.4)  | .375  | (9.5)  | .025                   | (.6)  | .187                   | (4.8) to 2.000  |                 |
| SRNY-375F-9-C  |                                    | .375             | (9.5)  | .438  | (11.1) |                        |       | .312                   | (7.9) to 3.000  |                 |
| SRNY-500F-9-C  |                                    | .500             | (12.7) | .563  | (14.3) | .035                   | (.9)  | .375                   | (9.5) to 4.000  |                 |
| Tolerance ±    |                                    | .030             | (.762) |       | .010   | (.254)                 |       |                        |                 |                 |

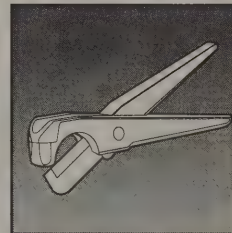
• Available in 100 foot rolls

**Use our SR-100 Cutting Tool for all your Plastic Pipe and PVC Conduit needs to 1 1/4" I.D.**

## Features:

- High-carbon, Teflon®-coated replaceable steel blade
- Contoured handle resists tube crushing
- Produces no "sawdust", no need to deburr
- Lightweight, low-profile and no exposed blade when stored

Teflon® is a trademark of the DuPont Corporation



| Item Number | Description       |
|-------------|-------------------|
| SR-100      | Cutting Tool      |
| SR-R        | Replacement Blade |



**CATAMOUNT**  
MANUFACTURING INCORPORATED

FAX 508-544-8351  
**800-222-5969**





# CATAMOUNT CABLE TIES

158 Governor Drive  
Orange, MA 01364-0720  
508-544-8255

| Stock Number           |            | Bundle Diameter<br>Range-<br>Inch (mm) | Length<br>Inch (mm) | Width<br>Inch (mm) | Minimum Loop<br>Tensile Strength<br>Lbs. (Kg.) | Military<br>Standards |
|------------------------|------------|----------------------------------------|---------------------|--------------------|------------------------------------------------|-----------------------|
| Natural                | UV Black   |                                        |                     |                    |                                                |                       |
| Miniature/Intermediate |            |                                        |                     |                    |                                                |                       |
| L-4-18-9               | L-4-18-0   | ⅛ - ⅞ (2-16)                           | 4.0 (102)           | 0.100 (3)          | 18 (8.2)                                       | MS-3367               |
| L-8-18-9               | L-8-18-0   | ⅛ - 2 (2-51)                           | 8.0 (202)           |                    |                                                | N/A                   |
| L-5-30-9               | L-5-30-0   | ⅛ - 1¼ (2-32)                          | 5.6 (145)           | 0.130 (3)          | 30 (13.6)                                      | MS-3367-5             |
| L-8-40-9               | L-8-40-0   | ⅛ - 2 (2-51)                           | 8.5 (215)           |                    |                                                | 40 (18.2)             |
| Standard               |            |                                        |                     |                    |                                                |                       |
| L-5-50-9               | L-5-50-0   | ⅛ - 1 (2-25)                           | 5.5 (140)           | 0.187 (5)          | 50 (22.7)                                      | N/A                   |
| L-7-50-9               | L-7-50-0   | ⅛ - 1½ (2-44)                          | 7.5 (193)           |                    |                                                | MS-3367-1             |
| L-11-50-9              | L-11-50-0  | ⅛ - 3 (2-76)                           | 11.1 (282)          |                    |                                                | MS-3367-7             |
| L-14-50-9              | L-14-50-0  | ⅛ - 4 (2-102)                          | 14.1 (358)          |                    |                                                | MS-3367-2             |
| Heavy Duty             |            |                                        |                     |                    |                                                |                       |
| L-8-120-9              | L-8-120-0  | ⅜ - 2 (5-51)                           | 8.0 (202)           | 0.300 (8)          | 120 (54.4)                                     | N/A                   |
| L-14-120-9             | L-14-120-0 | ⅜ - 4 (5-102)                          | 14.25 (363)         |                    |                                                | MS-3367-3             |
| L-32-120-9             | L-32-120-0 | ⅜ - 9 (5-230)                          | 32.0 (816)          |                    |                                                | MS-3367-6             |
| Extra Heavy Duty       |            |                                        |                     |                    |                                                |                       |
| L-24-175-9             | L-24-175-0 | ⅜ - 7.2 (5-184)                        | 24.0 (612)          | 0.345 (9)          | 175 (79.3)                                     |                       |
| L-34-175-9             | L-34-175-0 | ⅜ - 10 (5-255)                         | 34.0 (867)          |                    |                                                |                       |
| L-41-175-8             | L-41-175-0 | ⅜ - 12 (5-305)                         | 41.0 (1032)         |                    |                                                |                       |
| L-48-175-8             | L-48-175-0 | ⅜ - 15 (5-375)                         | 48.0 (1216)         |                    |                                                |                       |

## Mounting Holes

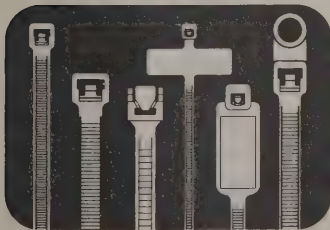
| Stock Number |              | Bundle Diameter<br>Range | Overall Length | Width | Minimum Loop Tensile Lbs. | Mounting Head Screw Size |
|--------------|--------------|--------------------------|----------------|-------|---------------------------|--------------------------|
| Natural      | Black        |                          |                |       |                           |                          |
| L-5-30MH-9   | L-5-30MH-0   | 1/16 - 1 1/4             | 6.0            | 0.140 | 30                        | No. 8                    |
| L-7-50MH-9   | L-7-50MH-0   | 1/16 - 1 3/4             | 7.5            | 0.185 | 50                        | No. 10                   |
| L-11-50MH-9  | L-11-50MH-0  | 1/16 - 3                 | 11.1           | 0.187 |                           |                          |
| L-14-50MH-9  | L-14-50MH-0  | 1/16 - 4                 | 14.5           | 0.300 | 120                       | 1/4 inch                 |
| L-14-120MH-9 | L-14-120MH-0 | 3/16 - 4                 | 14.85          |       |                           |                          |

## Identification Ties

| Stock Number | Style | Bundle Diameter Range | Overall Length | Width | Minimum Loop Tensile Lb. | Marker Dimension |
|--------------|-------|-----------------------|----------------|-------|--------------------------|------------------|
| L-4-18ID-9   | A     | 1/16 - 3/8            | 4.0            | .101  | 18                       | .312 X .973      |
| L-7-50ID-9   | B     | 1/16 - 1 1/4          | 7.875          | .183  | 50                       | 1.081 X .522     |

## Releaseable Ties

| Stock Number |            | Bundle Diameter Range | Overall Length | Width | Minimum Loop Tensile Lbs. |
|--------------|------------|-----------------------|----------------|-------|---------------------------|
| Natural      | Black      |                       |                |       |                           |
| L-5-50R-9    | L-5-50R-0  | 3/16 - 1 1/4          | 5.5            | .210  | 50                        |
| L-8-50R-9    | L-8-50R-0  | 3/16 - 2              | 8.0            |       |                           |
| L-10-50R-9   | L-10-50R-0 | 3/16 - 2 1/2          | 10.5           |       |                           |



RECOGNIZED

FSCM 65664

Cable Ties are manufactured in our facility in Orange, Massachusetts. State-of-the-art robotic and raw material handling equipment assures product and material integrity throughout the manufacturing process. Overall quality is achieved through statistical analysis and quality driven operator objectives.

Catamount has attained MIL-SPEC I-45208 quality ratings from a number of equipment manufacturers. Where applicable, our products are Mil-Spec Approved, QPL Listed and UL Recognized or Listed. Plant tours are encouraged and may be arranged through your Catamount Distributor.

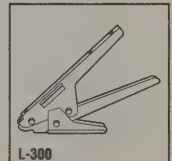


**CATAMOUNT**  
MANUFACTURING INCORPORATED

## INSTALLATION TOOLS

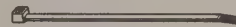


Light Duty 18-50 lb Ties

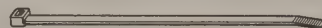


Heavy Duty 120-175 lb Ties

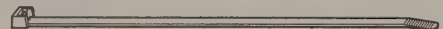
- Nylon
- UV Nylon
- Heat Stabilized Nylon
- Colors
- Fluorescents
- 100 Packs
- Bulk



Miniature



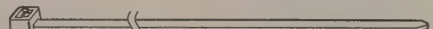
Intermediate



Standard



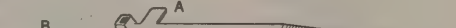
Heavy Duty



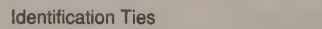
Extra Heavy Duty



Mounting Holes



Identification Ties



Releaseable Ties

FAX 508-544-8351  
**800-222-5969**



610 East Tenth Street  
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FAX: (510) 452-3620

# BRILL

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Siemen  
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Weidmuller

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Triplet

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Industrial Timer  
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G.E.  
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R.C.A.  
Varian (Klystrons)

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### WIRE & CABLE

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Cablewave  
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ALPHA WIRE  
CORPORATION



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# CATON

Caton Connector Corporation

## THE CC SERIES HIGH VOLTAGE WIRE

The High Voltage Wire Series consists of the CC Series silicone rubber wire designed by Caton Connector Corporation and the BIW Series manufactured by Draka Intercable - BIW Cable Systems Division.

Our Silicone rubber wire offers high reliability for high voltage requirements. The electrical properties meet or exceed even the best organic insulation materials. Our high voltage wires resistance to extreme temperature changes, ozone, corona, radiation, moisture, deformation, weathering and chemicals is well documented. It is strong and resilient at temperatures where organic rubbers fail. All wire is stocked in spool lengths for quick delivery. Minimum orders apply. For bulk quantities, custom marking or proprietary wire designs, please call our sales department at 1-617-585-4315



### GENERAL SPECIFICATIONS AND CAPABILITIES

Our High Voltage Series Wire has been designed under strict quality control conditions.

#### ELECTRICAL:

Operating Voltage: 10 - 100 KVDC; 5 - 30KVAC  
Current Range: 2.5 - 66 Amps

#### ENVIRONMENTAL:

Operating Temperature: -55° to +125°C

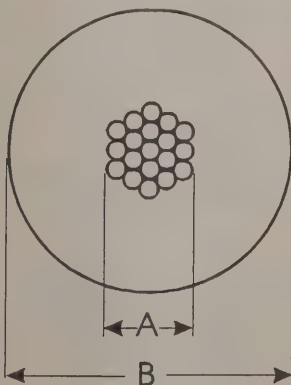
#### MATERIAL

Dielectric: Silicone; Color, White  
Conductor: Silver Plated Copper

### The CC-CATON Series Standard High Voltage Silicone Wire

- All items are stocked in minimum quantity lengths, on spools for quick delivery.
- Bulk lengths are available.

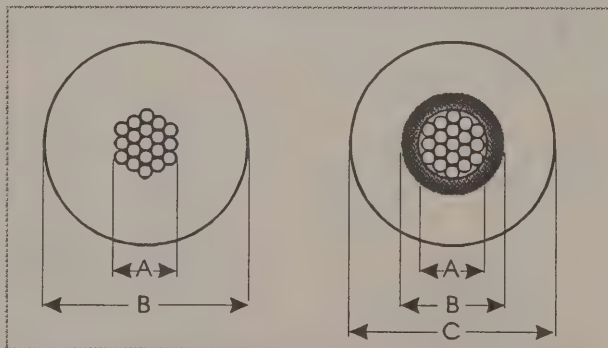
| CONTINUOUS<br>WORKING<br>VOLTAGE | PART<br>NUMBER | WIRE SIZE |           | DIMENSIONS<br>in INCHES |       |
|----------------------------------|----------------|-----------|-----------|-------------------------|-------|
|                                  |                | AWG       | STRANDING | A                       | B     |
| 15                               | CC20100        | 20        | 19/32     | .040                    | 0.100 |
| 25                               | CC25166        | 16        | 41/32     | .060                    | 0.166 |
| 25                               | CC30140        | 18        | 19/30     | .051                    | 0.140 |
| 30                               | CC30180        | 16        | 19/29     | .058                    | 0.180 |
| 45                               | CC40280        | 16        | 41/32     | .060                    | 0.280 |
| 45                               | CC45295        | 16        | 19/29     | .058                    | 0.295 |



### The CC-BIW Series Standard High Voltage Silicone Wire

- Caton is an authorized stocking distributor for DRAKA INTERCABLE - BIW Cable Systems.
- All items are stocked in minimum quantity lengths, on spools for quick delivery.
- Bulk lengths are available.

| CONTINUOUS<br>WORKING<br>VOLTAGE | PART<br>NUMBER | WIRE SIZE |           | DIMENSIONS<br>IN INCHES |       |
|----------------------------------|----------------|-----------|-----------|-------------------------|-------|
|                                  |                | AWG       | STRANDING | A                       | B     |
| 10                               | 5636-L-G20     | 20        | 19/32     | 0.040                   | 0.100 |
| 20                               | 5637-L-G18     | 18        | 19/30     | 0.051                   | 0.140 |



| CONTINUOUS<br>WORKING<br>VOLTAGE | PART<br>NUMBER | WIRE SIZE |           | DIMENSIONS IN<br>INCHES/ |       |       |
|----------------------------------|----------------|-----------|-----------|--------------------------|-------|-------|
|                                  |                | AWG       | STRANDING | A                        | B     | C     |
| 10                               | 5639-LG22      | 22        | 19/34     | 0.032                    | 0.067 | 0.180 |
| 15                               | 2841-L-G18     | 18        | 19/30     | 0.051                    | 0.086 | 0.236 |
| 18                               | 2841-L-G14     | 14        | 19/27     | 0.071                    | 0.100 | 0.300 |
| 20                               | 5640-L-G12     | 12        | 19/25     | 0.092                    | 0.134 | 0.360 |
| 30                               | 5641-L-G8      | 8         | 133/29    | 0.150                    | 0.240 | 0.650 |



# COMMUNICATION/INSTRUMENTATION CABLE

## MULTI-CONDUCTOR

### UNSHIELDED CABLES

#### Product Construction

##### Conductor:

- 22 thru 12 AWG annealed stranded tinned copper per ASTM B-33

##### Insulation:

- Color coded plastic (PVC) per UL style as indicated

##### Jacket:

- Chrome gray PVC
- Temperature: -20°C to 80°C (UL)
- CL2 rated: -20°C to +75°C

#### Applications

- Public address systems
- Intercom systems
- Remote control circuits
- Satellite actuator controls

#### Special Features

- Tinned conductors provide excellent corrosion resistance
- Also greatly improves soldering connections
- Ease of termination handling due to extra-flexible stranding

#### Industry Approvals

- UL STYLES as indicated
- CL2 RATED as indicated
- CSA-SR PVC Type T2
- OSHA acceptable

#### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels

#### • QUICK-FEED™

Product available in Consolidated's Quick-Feed™ labor saving cardboard cable dispensing box. 500' or 1000' boxes.



Passes UL VW-1  
Flame Test  
Underwriters Laboratories Inc.

**OSHA** Acceptable  
Occupational Safety and Health  
Administration

**Recognized Component**  
Underwriters Laboratories Inc.



22 Gauge



18 Gauge

### PVC Jacketed Multi-Conductor Cable (UL) CL2

| CAT. NO.                                                                                                        | COND. SIZE/STRAND | NO. OF COND. | INSUL. THICK." | JACKET THICK." | O/A DIA." | WORKING VOLTAGE | COLOR CODE† | UL LISTING |
|-----------------------------------------------------------------------------------------------------------------|-------------------|--------------|----------------|----------------|-----------|-----------------|-------------|------------|
| <b>22 gauge</b>                                                                                                 |                   |              |                |                |           |                 |             |            |
| • 5400-CL                                                                                                       | 22(7x30)TC        | 2            | .010           | .025           | .150      | 150             | 1           | CL2        |
| • 5401-CL                                                                                                       | 22(7x30)TC        | 3            | .010           | .025           | .160      | 300             | 1           | CL2        |
| • 5406-CL                                                                                                       | 22(7x30)TC        | 4            | .010           | .025           | .170      | 300             | 1           | CL2        |
| • 5411-CL                                                                                                       | 22(7x30)TC        | 5            | .010           | .025           | .185      | 300             | 1           | CL2        |
| • 5416-CL                                                                                                       | 22(7x30)TC        | 6            | .010           | .025           | .190      | 300             | 1           | CL2        |
| • 5421-CL                                                                                                       | 22(7x30)TC        | 7            | .010           | .025           | .200      | 300             | 1           | CL2        |
| • 5426-CL                                                                                                       | 22(7x30)TC        | 8            | .010           | .025           | .220      | 300             | 1           | CL2        |
| • 5431-CL                                                                                                       | 22(7x30)TC        | 9            | .010           | .025           | .235      | 300             | 1           | CL2        |
| • 5432-CL                                                                                                       | 22(7x30)TC        | 10           | .010           | .025           | .255      | 300             | 1           | CL2        |
| • 5434-CL                                                                                                       | 22(7x30)TC        | 12           | .010           | .025           | .260      | 300             | 1           | CL2        |
| • 5438-CL                                                                                                       | 22(7x30)TC        | 15           | .010           | .035           | .290      | 300             | 2           | CL2/CSA    |
| • 5440-CL                                                                                                       | 22(7x30)TC        | 20           | .010           | .035           | .315      | 300             | 2           | CL2/CSA    |
| • 5442-CL                                                                                                       | 22(7x30)TC        | 25           | .010           | .035           | .360      | 300             | 2           | CL2/CSA    |
| • 5446-CL                                                                                                       | 22(7x30)TC        | 30           | .010           | .035           | .390      | 300             | 2           | CL2/CSA    |
| • 5448-CL                                                                                                       | 22(7x30)TC        | 40           | .010           | .035           | .430      | 300             | 2           | CL2/CSA    |
| • 5450-CL                                                                                                       | 22(7x30)TC        | 50           | .010           | .035           | .490      | 300             | 2           | CL2/CSA    |
| • 5460-CL                                                                                                       | 22(7x30)TC        | 60           | .010           | .035           | .520      | 300             | 2           | CL2/CSA    |
| <b>20 gauge</b>                                                                                                 |                   |              |                |                |           |                 |             |            |
| • 5580-CL                                                                                                       | 20(10x30)TC       | 2            | .015           | .025           | .190      | 300             | 2           | CL2        |
| • 5641-CL                                                                                                       | 20(10x30)TC       | 3            | .015           | .025           | .200      | 300             | 1           | CL2        |
| • 5642-CL                                                                                                       | 20(10x30)TC       | 4            | .015           | .025           | .220      | 300             | 1           | CL2        |
| • 5643-CL                                                                                                       | 20(10x30)TC       | 5            | .015           | .025           | .240      | 300             | 1           | CL2        |
| • 5644-CL                                                                                                       | 20(10x30)TC       | 7            | .015           | .025           | .260      | 300             | 1           | CL2        |
| • 5645-CL                                                                                                       | 20(10x30)TC       | 9            | .015           | .035           | .310      | 300             | 1           | CL2        |
| • 5646-CL                                                                                                       | 20(10x30)TC       | 12           | .015           | .035           | .331      | 300             | 1           | CL2        |
| • 5647-CL                                                                                                       | 20(10x30)TC       | 12           | .015           | .035           | .380      | 300             | 2           | CL2        |
| <b>18 gauge-  STYLE 2464</b> |                   |              |                |                |           |                 |             |            |
| • 5581-CL                                                                                                       | 18(16x30)TC       | 2            | .015           | .025           | .210      | 300             | 1           | CL2        |
| • 5468                                                                                                          | 18(16x30)TC       | 3            | .018           | .030           | .240      | 300             | 1           | CL2        |
| • 5470                                                                                                          | 18(16x30)TC       | 4            | .018           | .032           | .265      | 300             | 1           | CL2        |
| • 5471                                                                                                          | 18(16x30)TC       | 5            | .018           | .037           | .295      | 300             | 1           | CL2        |
| • 5472                                                                                                          | 18(16x30)TC       | 7            | .018           | .037           | .324      | 300             | 1           | 2464       |
| • 5473                                                                                                          | 18(16x30)TC       | 9            | .018           | .037           | .379      | 300             | 1           | 2464       |
| • 5474                                                                                                          | 18(16x30)TC       | 12           | .018           | .040           | .412      | 300             | 2           | 2464       |
| • 5475                                                                                                          | 18(16x30)TC       | 15           | .018           | .045           | .465      | 300             | 2           | 2464       |
| • 5476                                                                                                          | 18(16x30)TC       | 19           | .018           | .045           | .505      | 300             | 2           | 2464       |
| • 5477                                                                                                          | 18(16x30)TC       | 25           | .018           | .060           | .600      | 300             | 2           | 2464       |
| <b>16 gauge-  STYLE 2463</b> |                   |              |                |                |           |                 |             |            |
| • 5582-CL                                                                                                       | 16(26x30)TC       | 2            | .015           | .025           | .245      | 300             | 1           | CL2        |
| • 5466                                                                                                          | 16(26x30)TC       | 3            | .030           | .045           | .360      | 600             | 2           | 2463       |
| • 5480                                                                                                          | 16(26x30)TC       | 4            | .030           | .045           | .375      | 600             | 2           | 2463       |
| • 5488                                                                                                          | 16(26x30)TC       | 5            | .030           | .045           | .405      | 600             | 2           | 2463       |
| • 5481                                                                                                          | 16(26x30)TC       | 7            | .030           | .045           | .455      | 600             | 2           | 2463       |
| • 5489                                                                                                          | 16(26x30)TC       | 9            | .030           | .045           | .510      | 600             | 2           | 2463       |
| • 5482                                                                                                          | 16(26x30)TC       | 12           | .030           | .060           | .600      | 600             | 2           | 2463       |
| • 5483                                                                                                          | 16(26x30)TC       | 15           | .030           | .060           | .650      | 600             | 2           | 2463       |
| • 5484                                                                                                          | 16(26x30)TC       | 19           | .030           | .065           | .715      | 600             | 2           | 2463       |
| • 5490                                                                                                          | 16(26x30)TC       | 25           | .030           | .065           | .820      | 600             | 2           | 2463       |
| <b>14 gauge-  STYLE 2463</b> |                   |              |                |                |           |                 |             |            |
| • 5583-CL                                                                                                       | 16(26x30)TC       | 2            | .020           | .035           | .310      | 400             | 2           | CL2        |
| • 5464                                                                                                          | 16(26x30)TC       | 3            | .030           | .045           | .395      | 600             | 2           | 2463       |
| • 5485                                                                                                          | 16(26x30)TC       | 4            | .045           | .045           | .495      | 600             | 2           | 2463       |
| • 5491                                                                                                          | 16(26x30)TC       | 5            | .045           | .060           | .560      | 600             | 2           | 2463       |
| • 5486                                                                                                          | 16(26x30)TC       | 7            | .045           | .060           | .630      | 600             | 2           | 2463       |
| • 5492                                                                                                          | 16(26x30)TC       | 9            | .045           | .065           | .750      | 600             | 2           | 2463       |
| • 5487                                                                                                          | 16(26x30)TC       | 12           | .045           | .065           | .770      | 600             | 2           | 2463       |
| • 5493                                                                                                          | 16(26x30)TC       | 15           | .045           | .080           | .900      | 600             | 2           | 2463       |



# FIRE PROTECTIVE/ALARM AND SECURITY CABLE



## PVC Jacketed Multi-Conductor Unshielded Cable (UL) CL2 NEC Article 725

| CAT. NO.                    | COND. SIZE/STRAND | NO. OF COND. | INSUL. THICK." | JACKET THICK." | NOM. O.D." | COLOR CODE |
|-----------------------------|-------------------|--------------|----------------|----------------|------------|------------|
| <b>22 gauge bare copper</b> |                   |              |                |                |            |            |
| • 6400-CL                   | 22(7x30)BC        | 2            | .010           | .020           | .115       | 1          |
| • 6401-CL                   | 22(7x30)BC        | 3            | .010           | .020           | .125       | 1          |
| • 6402-CL                   | 22(7x30)BC        | 4            | .010           | .020           | .135       | 1          |
| • 6403-CL                   | 22(7x30)BC        | 6            | .010           | .020           | .165       | 1          |
| • 6404-CL                   | 22(7x30)BC        | 8            | .010           | .020           | .180       | 1          |
| • 6405-CL                   | 22(7x30)BC        | 10           | .010           | .025           | .210       | 1          |
| • 6406-CL                   | 22(7x30)BC        | 12           | .010           | .025           | .220       | 1          |
| • 6407-CL                   | 22(7x30)BC        | 15           | .010           | .025           | .245       | 2          |
| <b>20 gauge bare copper</b> |                   |              |                |                |            |            |
| • 6410-CL                   | 20(10x30)BC       | 2            | .010           | .025           | .135       | 1          |
| • 6411-CL                   | 20(10x30)BC       | 3            | .010           | .025           | .140       | 1          |
| • 6412-CL                   | 20(10x30)BC       | 4            | .010           | .025           | .160       | 1          |
| • 6413-CL                   | 20(10x30)BC       | 8            | .010           | .025           | .205       | 1          |
| • 6414-CL                   | 20(10x30)BC       | 10           | .010           | .025           | .245       | 1          |
| • 6415-CL                   | 20(10x30)BC       | 12           | .010           | .030           | .250       | 1          |
| • 6416-CL                   | 20(10x30)BC       | 15           | .010           | .030           | .280       | 2          |
| <b>18 gauge bare copper</b> |                   |              |                |                |            |            |
| • 6420-CL                   | 18(16x30)BC       | 2            | .010           | .025           | .160       | 1          |
| • 6421-CL                   | 18(16x30)BC       | 3            | .010           | .032           | .165       | 1          |
| • 6422-CL                   | 18(16x30)BC       | 4            | .010           | .032           | .180       | 1          |
| • 6423-CL                   | 18(16x30)BC       | 5            | .010           | .032           | .210       | 1          |
| • 6424-CL                   | 18(16x30)BC       | 6            | .010           | .032           | .230       | 1          |
| • 6425-CL                   | 18(16x30)BC       | 8            | .010           | .035           | .250       | 1          |
| • 6426-CL                   | 18(16x30)BC       | 10           | .010           | .035           | .290       | 2          |
| • 6427-CL                   | 18(16x30)BC       | 12           | .010           | .035           | .300       | 2          |
| • 6428-CL                   | 18(16x30)BC       | 15           | .010           | .035           | .335       | 2          |
| <b>16 gauge bare copper</b> |                   |              |                |                |            |            |
| • 6430-CL                   | 16(26x30)BC       | 2            | .010           | .025           | .180       | 1          |
| • 6431-CL                   | 16(26x30)BC       | 3            | .010           | .035           | .190       | 1          |
| • 6432-CL                   | 16(26x30)BC       | 4            | .010           | .035           | .210       | 1          |
| <b>14 gauge bare copper</b> |                   |              |                |                |            |            |
| • 6440-CL                   | 14(19x27)BC       | 2            | .015           | .032           | .230       | 1          |
| • 6441-CL                   | 14(19x27)BC       | 3            | .015           | .035           | .245       | 1          |
| • 6442-CL                   | 14(19x27)BC       | 4            | .015           | .035           | .270       | 1          |
| <b>12 gauge bare copper</b> |                   |              |                |                |            |            |
| • 6450-CL                   | 12(19x25)BC       | 2            | .015           | .035           | .275       | 1          |
| • 6451-CL                   | 12(19x25)BC       | 3            | .015           | .035           | .295       | 1          |

## UNSHIELDED CABLES

### Product Construction

#### Conductor:

- 22 thru 12 AWG annealed stranded bare copper per ASTM B-33

#### Insulation:

- Color coded plastic (PVC) per UL style as indicated

#### Jacket:

- Chrome gray PVC
- Temperature: -20°C to 80°C (UL)

### Applications

- Alarm/security installations
- Remote control circuits

### Special Features

- Ease of termination handling due to extra-flexible stranding

### Industry Approvals

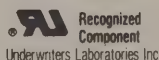
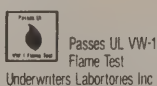
- NEC article 725-38(B)
- UL CL2
- OSHA acceptable

### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels

### • QUICK-FEED™

Product available in Consolidated's Quick-Feed™ labor saving cardboard cable dispensing box. 500' or 1000' boxes.



11044 KING STREET, DEPT: EEM, FRANKLIN PARK, IL 60131  
PHONE: 708/455-8830 • WATS LINE: 800/621-4278 • FAX 708/455-8837





# COMPUTER CABLE

## SHIELDED COMPUTER CABLES

### Product Construction

#### Conductor:

- 24 thru 22 AWG annealed tinned copper per ASTM B-33

#### Insulation:

- Color coded semi rigid PVC per UL 1061

#### Shield:

- 100% coverage mylar\*/aluminum foil, foil facing out
- Stranded tinned copper drain wire

#### Jacket:

- Chrome gray PVC
- Temperature: -20°C to +80°C
- Voltage: 300 volts

### Applications

- Computers
- Data transmission
- EIA RS-232
- Control circuits

### Special Features

- Flexible light weight construction
- Excellent abrasion resistance outer jacket

### Industry Approvals

- (UL) CL2
- CSA-SR PVC Type T2
- UL 2464
- NEC article 725-38 (b)
- Passes UL VW-1
- OSHA acceptable

### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels

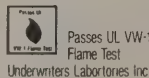


### Multi Conductor Foil Shield, (UL) CL2 Style 2464 CSA Type T2

| CAT. NO.        | COND. SIZE/STRAND | NO. OF COND. | INSUL. THICK." | JACKET THICK." | NOM. O.D. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|-----------------|-------------------|--------------|----------------|----------------|-----------|-------------|--------------|------------|
| <b>24 gauge</b> |                   |              |                |                |           |             |              |            |
| 5710-CL         | 24 (7 x 32) TC    | 2            | .010           | .035           | .168      | 1           | 30           | CL2/2464   |
| 5711-CL         | 24 (7 x 32) TC    | 3            | .010           | .035           | .172      | 1           | 30           | CL2/2464   |
| 5801-CL         | 24 (7 x 32) TC    | 4            | .010           | .035           | .180      | 1           | 30           | CL2/2464   |
| 5713-CL         | 24 (7 x 32) TC    | 5            | .010           | .035           | .190      | 1           | 30           | CL2/2464   |
| 5714-CL         | 24 (7 x 32) TC    | 6            | .010           | .035           | .205      | 1           | 30           | CL2/2464   |
| 5715-CL         | 24 (7 x 32) TC    | 7            | .010           | .035           | .208      | 1           | 30           | CL2/2464   |
| 5716-CL         | 24 (7 x 32) TC    | 8            | .010           | .035           | .220      | 1           | 30           | CL2/2464   |
| 5717-CL         | 24 (7 x 32) TC    | 9            | .010           | .035           | .240      | 1           | 30           | CL2/2464   |
| 5718-CL         | 24 (7 x 32) TC    | 10           | .010           | .035           | .250      | 1           | 30           | CL2/2464   |
| 5719-CL         | 24 (7 x 32) TC    | 15           | .010           | .035           | .280      | 2           | 30           | CL2/2464   |
| 5720/18-CL      | 24 (7 x 32) TC    | 18           | .010           | .035           | .290      | 2           | 30           | CL2/2464   |
| 5720-CL         | 24 (7 x 32) TC    | 20           | .010           | .035           | .310      | 2           | 30           | CL2/2464   |
| 5725-CL         | 24 (7 x 32) TC    | 25           | .010           | .040           | .370      | 2           | 30           | CL2/2464   |
| 5730-CL         | 24 (7 x 32) TC    | 30           | .010           | .040           | .390      | 2           | 30           | CL2/2464   |
| 5740-CL         | 24 (7 x 32) TC    | 40           | .010           | .040           | .440      | 2           | 30           | CL2/2464   |
| 5750-CL         | 24 (7 x 32) TC    | 50           | .010           | .040           | .490      | 2           | 30           | CL2/2464   |
| <b>22 gauge</b> |                   |              |                |                |           |             |              |            |
| 5722-CL         | 22 (7 x 30) TC    | 2            | .010           | .035           | .170      | 1           | 35           | CL2/2464   |
| 5723-CL         | 22 (7 x 30) TC    | 3            | .010           | .035           | .185      | 1           | 35           | CL2/2464   |
| 5724-CL         | 22 (7 x 30) TC    | 4            | .010           | .035           | .200      | 1           | 35           | CL2/2464   |
| 5731-CL         | 22 (7 x 30) TC    | 5            | .010           | .035           | .210      | 1           | 35           | CL2/2464   |
| 5726-CL         | 22 (7 x 30) TC    | 6            | .010           | .035           | .230      | 1           | 35           | CL2/2464   |
| 5727-CL         | 22 (7 x 30) TC    | 7            | .010           | .035           | .240      | 1           | 35           | CL2/2464   |
| 5728-CL         | 22 (7 x 30) TC    | 8            | .010           | .035           | .245      | 1           | 35           | CL2/2464   |
| 5729-CL         | 22 (7 x 30) TC    | 9            | .010           | .035           | .258      | 1           | 35           | CL2/2464   |
| 5732-CL         | 22 (7 x 30) TC    | 10           | .010           | .035           | .275      | 1           | 35           | CL2/2464   |
| 5735-CL         | 22 (7 x 30) TC    | 15           | .010           | .035           | .305      | 2           | 35           | CL2/2464   |
| 5736-CL         | 22 (7 x 30) TC    | 20           | .010           | .035           | .345      | 2           | 35           | CL2/2464   |
| 5737-CL         | 22 (7 x 30) TC    | 25           | .010           | .040           | .400      | 2           | 35           | CL2/2464   |
| 5738-CL         | 22 (7 x 30) TC    | 30           | .010           | .040           | .420      | 2           | 35           | CL2/2464   |
| 5739-CL         | 22 (7 x 30) TC    | 40           | .010           | .040           | .465      | 2           | 35           | CL2/2464   |
| 5741-CL         | 22 (7 x 30) TC    | 50           | .010           | .040           | .505      | 2           | 35           | CL2/2464   |

\*\*Capacitance between conductors.

\*Mylar—trademark E.I. DuPont.



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## COMPUTER CABLE



**Multi Conductor PVC Foil & Braid  
(UL) CL2  Style 2464 CSA Type T2 <sup>(A)</sup>**

| CAT.<br>NO.     | COND.<br>SIZE/STRAND | NO. OF<br>COND. | INSUL.<br>THICK." | JACKET<br>THICK." | NOM.<br>DIA. | COLOR<br>CODE† | CAP**<br>pF/FT. | UL<br>LISTING |
|-----------------|----------------------|-----------------|-------------------|-------------------|--------------|----------------|-----------------|---------------|
| <b>24 gauge</b> |                      |                 |                   |                   |              |                |                 |               |
| 5850-CL         | 24 (7 × 32) TC       | 2               | .010              | .035              | .180         | 1              | 30              | CL2/2464      |
| 5851-CL         | 24 (7 × 32) TC       | 3               | .010              | .035              | .190         | 1              | 30              | CL2/2464      |
| 5852-CL         | 24 (7 × 32) TC       | 4               | .010              | .035              | .200         | 1              | 30              | CL2/2464      |
| 5862-CL         | 24 (7 × 32) TC       | 5               | .010              | .035              | .210         | 1              | 30              | CL2/2464      |
| 5853-CL         | 24 (7 × 32) TC       | 6               | .010              | .035              | .225         | 1              | 30              | CL2/2464      |
| 5863-CL         | 24 (7 × 32) TC       | 7               | .010              | .035              | .230         | 1              | 30              | CL2/2464      |
| 5854-CL         | 24 (7 × 32) TC       | 8               | .010              | .035              | .240         | 1              | 30              | CL2/2464      |
| 5864-CL         | 24 (7 × 32) TC       | 9               | .010              | .035              | .255         | 1              | 30              | CL2/2464      |
| 5855-CL         | 24 (7 × 32) TC       | 10              | .010              | .035              | .270         | 1              | 30              | CL2/2464      |
| 5856-CL         | 24 (7 × 32) TC       | 15              | .010              | .035              | .300         | 2              | 30              | CL2/2464      |
| 5857-CL         | 24 (7 × 32) TC       | 20              | .010              | .035              | .320         | 2              | 30              | CL2/2464      |
| 5858-CL         | 24 (7 × 32) TC       | 25              | .010              | .035              | .360         | 2              | 30              | CL2/2464      |
| 5859-CL         | 24 (7 × 32) TC       | 30              | .010              | .035              | .375         | 2              | 30              | CL2/2464      |
| 5865-CL         | 24 (7 × 32) TC       | 37              | .010              | .035              | .400         | 2              | 30              | CL2/2464      |
| 5860-CL         | 24 (7 × 32) TC       | 40              | .010              | .035              | .425         | 2              | 30              | CL2/2464      |
| 5861-CL         | 24 (7 × 32) TC       | 50              | .010              | .035              | .465         | 2              | 30              | CL2/2464      |
| <b>22 gauge</b> |                      |                 |                   |                   |              |                |                 |               |
| 5870-CL         | 22 (7 × 30) TC       | 2               | .010              | .035              | .190         | 1              | 35              | CL2/2464      |
| 5871-CL         | 22 (7 × 30) TC       | 3               | .010              | .035              | .202         | 1              | 35              | CL2/2464      |
| 5872-CL         | 22 (7 × 30) TC       | 4               | .010              | .035              | .215         | 1              | 35              | CL2/2464      |
| 5882-CL         | 22 (7 × 30) TC       | 5               | .010              | .035              | .230         | 1              | 35              | CL2/2464      |
| 5873-CL         | 22 (7 × 30) TC       | 6               | .010              | .035              | .245         | 1              | 35              | CL2/2464      |
| 5883-CL         | 22 (7 × 30) TC       | 7               | .010              | .035              | .250         | 1              | 35              | CL2/2464      |
| 5874-CL         | 22 (7 × 30) TC       | 8               | .010              | .035              | .260         | 1              | 35              | CL2/2464      |
| 5884-CL         | 22 (7 × 30) TC       | 9               | .010              | .035              | .280         | 1              | 35              | CL2/2464      |
| 5875-CL         | 22 (7 × 30) TC       | 10              | .010              | .035              | .300         | 1              | 35              | CL2/2464      |
| 5876-CL         | 22 (7 × 30) TC       | 15              | .010              | .035              | .335         | 2              | 35              | CL2/2464      |
| 5877-CL         | 22 (7 × 30) TC       | 20              | .010              | .035              | .375         | 2              | 35              | CL2/2464      |
| 5878-CL         | 22 (7 × 30) TC       | 25              | .010              | .035              | .400         | 2              | 35              | CL2/2464      |
| 5879-CL         | 22 (7 × 30) TC       | 30              | .010              | .035              | .425         | 2              | 35              | CL2/2464      |
| 5885-CL         | 22 (7 × 30) TC       | 37              | .010              | .035              | .450         | 2              | 35              | CL2/2464      |
| 5880-CL         | 22 (7 × 30) TC       | 40              | .010              | .035              | .465         | 2              | 35              | CL2/2464      |
| 5881-CL         | 22 (7 × 30) TC       | 50              | .010              | .035              | .535         | 2              | 35              | CL2/2464      |

\*\* Capacitance between conductors.

\* Mylar—trademark E.I. DuPont.



Listed  
Subject  
13



Certified  
Canadian  
Standard Association



Passes UL VW-1  
Flame Test  
Underwriters Laboratories Inc.



Acceptable  
Occupational Safety and Health  
Administration



Recognized  
Component  
Underwriters Laboratories Inc.

## SHIELDED COMPUTER CABLES

### Product Construction

#### Conductor:

- 24 thru 22 AWG annealed tinned copper per ASTM B-33

#### Insulation:

- Color coded semi rigid PVC per UL 1061

#### Shield:

- 100% coverage mylar\* / aluminum foil shield, foil facing out, plus 70% coverage tinned copper braid shield

#### Jacket:

- Chrome gray PVC
- Temperature: -20°C to +80°C
- Voltage: 300 volts

### Applications

- Computers
- Data transmission
- EIA RS-232 applications
- Control circuits

### Special Features

- Meets FCC docket 20780
- Excellent shielding where noise rejection is critical
- Flexible construction

### Industry Approvals

- (UL) CL2
- CSA-SR PVC Type T2
- UL 2464
- NEC article 725-38 (b)
- Passes UL VW-1
- OSHA acceptable

### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels



## COMPUTER CABLE



### SHIELDED COMPUTER CABLES

#### Product Construction

##### Conductor:

- 24 thru 22 AWG annealed tinned copper per ASTM B-33

##### Insulation:

- (5710/5791) (5901/5937) Color coded semi rigid pvc insulation UL 1061
- (5300/5338) Color coded poly "low-cap" insulation

##### Shield:

- 100% coverage mylar\*/aluminum foil, 25% overlap, facing out
- stranded tinned copper drain wire

##### Jacket:

- Chrome gray pvc
- Temperature: -20°C to +80°C
- Voltage: 300 volts

#### Applications

- Computers
- Data transmission
- Low capacitance computer application
- Control circuits
- EIA RS-232

#### Special Features

- Meets FCC docket 20780
- Flexible construction
- Excellent shielding where noise rejection is critical

#### Industry Approvals

- (UL) CL2
- UL 2464
- UL 2448
- CSA-SR PVC Type T2
- OSHA acceptable

#### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels

### Multi Pair Foil Shield (UL) CL2 Style 2464 CSA Type T2 <sup>(A)</sup>

| CAT. NO.        | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK. " | JACKET THICK. " | NOM. DIA. " | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|-----------------|-------------------|--------------|-----------------|-----------------|-------------|-------------|--------------|------------|
| <b>24 gauge</b> |                   |              |                 |                 |             |             |              |            |
| 5710-CL         | 24 (7 x 32)TC     | 1            | .010            | .035            | .156        | 3           | 30           | CL2/2464   |
| 5772-CL         | 24 (7 x 32)TC     | 2            | .010            | .035            | .222        | 3           | 30           | CL2/2464   |
| 5773-CL         | 24 (7 x 32)TC     | 3            | .010            | .035            | .232        | 3           | 30           | CL2/2464   |
| 5774-CL         | 24 (7 x 32)TC     | 4            | .010            | .035            | .265        | 3           | 30           | CL2/2464   |
| 5775-CL         | 24 (7 x 32)TC     | 5            | .010            | .035            | .295        | 3           | 30           | CL2/2464   |
| 5776-CL         | 24 (7 x 32)TC     | 6            | .010            | .035            | .295        | 3           | 30           | CL2/2464   |
| 5777-CL         | 24 (7 x 32)TC     | 7            | .010            | .035            | .300        | 3           | 30           | CL2/2464   |
| 5778-CL         | 24 (7 x 32)TC     | 8            | .010            | .035            | .330        | 3           | 30           | CL2/2464   |
| 5779-CL         | 24 (7 x 32)TC     | 9            | .010            | .035            | .340        | 3           | 30           | CL2/2464   |
| 5780-CL         | 24 (7 x 32)TC     | 10           | .010            | .040            | .380        | 3           | 30           | CL2/2464   |
| 5785-CL         | 24 (7 x 32)TC     | 15           | .010            | .040            | .425        | 3           | 30           | CL2/2464   |
| 5789-CL         | 24 (7 x 32)TC     | 19           | .010            | .040            | .450        | 3           | 30           | CL2/2464   |
| 5790-CL         | 24 (7 x 32)TC     | 25           | .010            | .045            | .515        | 3           | 30           | CL2/2464   |
| 5791-CL         | 24 (7 x 32)TC     | 50           | .010            | .050            | .700        | 3           | 30           | CL2/2464   |
| <b>22 gauge</b> |                   |              |                 |                 |             |             |              |            |
| 5912-CL         | 22 (solid)TC      | 2            | .013            | .032            | .224        | 3           | 35           | CL2/2464   |
| 5914-CL         | 22 (solid)TC      | 4            | .013            | .032            | .265        | 3           | 35           | CL2/2464   |
| 5916-CL         | 22 (solid)TC      | 6            | .013            | .035            | .321        | 3           | 35           | CL2/2464   |
| 5919-CL         | 22 (solid)TC      | 9            | .013            | .037            | .373        | 3           | 35           | CL2/2464   |
| 5925-CL         | 22 (solid)TC      | 15           | .013            | .040            | .437        | 3           | 35           | CL2/2464   |
| 5929-CL         | 22 (solid)TC      | 19           | .013            | .040            | .475        | 3           | 35           | CL2/2464   |
| 5937-CL         | 22 (solid)TC      | 27           | .013            | .045            | .571        | 3           | 35           | CL2/2464   |
| 5901-CL         | 22 (solid)TC      | 38           | .008            | .045            | .600        | 3           | 35           | CL2/2464   |
| 5902-CL         | 22 (solid)TC      | 51           | .008            | .050            | .700        | 3           | 35           | CL2/2464   |

### Multi Pair "Low-Cap" Foil Shielded (UL) CL2 Style 2448 <sup>(A)</sup>

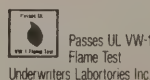
| CAT. NO.        | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK. " | JACKET THICK. " | NOM. O.D. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|-----------------|-------------------|--------------|-----------------|-----------------|-----------|-------------|--------------|------------|
| <b>24 gauge</b> |                   |              |                 |                 |           |             |              |            |
| 5300-CL         | 24 (7 x 32)TC     | 2            | .015            | .035            | .280      | 9           | 12.5         | CL2/2448   |
| 5301-CL         | 24 (7 x 32)TC     | 3            | .015            | .035            | .290      | 9           | 12.5         | CL2/2448   |
| 5302-CL         | 24 (7 x 32)TC     | 4            | .015            | .035            | .315      | 9           | 12.5         | CL2/2448   |
| 5298-CL         | 24 (7 x 32)TC     | 4 1/2        | .015            | .035            | .320      | 9           | 12.5         | CL2/2448   |
| 5304-CL         | 24 (7 x 32)TC     | 6            | .015            | .035            | .360      | 9           | 12.5         | CL2/2448   |
| 5299-CL         | 24 (7 x 32)TC     | 7 1/2        | .015            | .035            | .385      | 9           | 12.5         | CL2/2448   |
| 5305-CL         | 24 (7 x 32)TC     | 9            | .015            | .035            | .410      | 9           | 12.5         | CL2/2448   |
| 5307-CL         | 24 (7 x 32)TC     | 12 1/2       | .015            | .035            | .455      | 9           | 12.5         | CL2/2448   |
| 5308-CL         | 24 (7 x 32)TC     | 15           | .015            | .035            | .485      | 9           | 12.5         | CL2/2448   |

### Multi Pair "Mid-Cap" Foil Shield (UL) CL2 Style 2448 <sup>(A)</sup>

| CAT. NO.        | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK. " | JACKET THICK. " | NOM. O.D. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|-----------------|-------------------|--------------|-----------------|-----------------|-----------|-------------|--------------|------------|
| <b>24 gauge</b> |                   |              |                 |                 |           |             |              |            |
| 5310-CL         | 24 (7 x 32)TC     | 2            | .010            | .035            | .270      | 9           | 15.5         | CL2/2448   |
| 5312-CL         | 24 (7 x 32)TC     | 3            | .010            | .035            | .280      | 9           | 15.5         | CL2/2448   |
| 5313-CL         | 24 (7 x 32)TC     | 4            | .010            | .035            | .305      | 9           | 15.5         | CL2/2448   |
| 5314-CL         | 24 (7 x 32)TC     | 6            | .010            | .035            | .350      | 9           | 15.5         | CL2/2448   |
| 5316-CL         | 24 (7 x 32)TC     | 9            | .010            | .035            | .400      | 9           | 15.5         | CL2/2448   |
| 5317-CL         | 24 (7 x 32)TC     | 12 1/2       | .010            | .035            | .450      | 9           | 15.5         | CL2/2448   |
| 5318-CL         | 24 (7 x 32)TC     | 15           | .010            | .035            | .470      | 9           | 15.5         | CL2/2448   |

\*\*Capacitance between pairs

\*Mylar—trademark of E.I. DuPont.



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## COMPUTER CABLE

Multi Pair Foil & Braid (UL) CL2  Style 2464 CSA Type T2 (A)

| CAT. NO.        | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK." | JACKET THICK." | NOM. O.D. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|-----------------|-------------------|--------------|----------------|----------------|-----------|-------------|--------------|------------|
| <b>24 gauge</b> |                   |              |                |                |           |             |              |            |
| 5940-CL         | 24 (7 × 32)TC     | 1            | .010           | .032           | .180      | 3           | 35           | CL2/2464   |
| 5941-CL         | 24 (7 × 32)TC     | 2            | .010           | .032           | .250      | 3           | 35           | CL2/2464   |
| 5942-CL         | 24 (7 × 32)TC     | 3            | .010           | .032           | .265      | 3           | 30           | CL2/2464   |
| 5943-CL         | 24 (7 × 32)TC     | 4            | .010           | .035           | .290      | 3           | 30           | CL2/2464   |
| 5944-CL         | 24 (7 × 32)TC     | 5            | .010           | .035           | .295      | 3           | 30           | CL2/2464   |
| 5945-CL         | 24 (7 × 32)TC     | 6            | .010           | .035           | .311      | 3           | 30           | CL2/2464   |
| 5952-CL         | 24 (7 × 32)TC     | 7            | .010           | .035           | .320      | 3           | 30           | CL2/2464   |
| 5953-CL         | 24 (7 × 32)TC     | 8            | .010           | .035           | .335      | 3           | 30           | CL2/2464   |
| 5946-CL         | 24 (7 × 32)TC     | 9            | .010           | .035           | .370      | 3           | 30           | CL2/2464   |
| 5954-CL         | 24 (7 × 32)TC     | 10           | .010           | .035           | .375      | 3           | 30           | CL2/2464   |
| 5947-CL         | 24 (7 × 32)TC     | 11           | .010           | .035           | .385      | 3           | 30           | CL2/2464   |
| 5955-CL         | 24 (7 × 32)TC     | 12 1/2       | .010           | .035           | .395      | 3           | 30           | CL2/2464   |
| 5948-CL         | 24 (7 × 32)TC     | 15           | .010           | .035           | .435      | 3           | 30           | CL2/2464   |
| 5956-CL         | 24 (7 × 32)TC     | 18           | .010           | .035           | .470      | 3           | 30           | CL2/2464   |
| 5949-CL         | 24 (7 × 32)TC     | 19           | .010           | .035           | .482      | 3           | 30           | CL2/2464   |
| 5957-CL         | 24 (7 × 32)TC     | 25           | .010           | .040           | .540      | 3           | 30           | CL2/2464   |
| 5950-CL         | 24 (7 × 32)TC     | 27           | .010           | .040           | .570      | 3           | 30           | CL2/2464   |
| 5951-CL         | 24 (7 × 32)TC     | 51           | .010           | .040           | .725      | 3           | 30           | CL2/2464   |
| <b>22 gauge</b> |                   |              |                |                |           |             |              |            |
| 5960-CL         | 22 (7 × 30)TC     | 1            | .010           | .032           | .195      | 3           | 40           | CL2/2464   |
| 5961-CL         | 22 (7 × 30)TC     | 2            | .010           | .032           | .265      | 3           | 40           | CL2/2464   |
| 5962-CL         | 22 (7 × 30)TC     | 3            | .010           | .032           | .290      | 3           | 35           | CL2/2464   |
| 5963-CL         | 22 (7 × 30)TC     | 4            | .010           | .032           | .318      | 3           | 35           | CL2/2464   |
| 5964-CL         | 22 (7 × 30)TC     | 5            | .010           | .032           | .322      | 3           | 35           | CL2/2464   |
| 5965-CL         | 22 (7 × 30)TC     | 6            | .010           | .032           | .345      | 3           | 35           | CL2/2464   |
| 5972-CL         | 22 (7 × 30)TC     | 7            | .010           | .032           | .365      | 3           | 35           | CL2/2464   |
| 5973-CL         | 22 (7 × 30)TC     | 8            | .010           | .032           | .384      | 3           | 35           | CL2/2464   |
| 5966-CL         | 22 (7 × 30)TC     | 9            | .010           | .032           | .408      | 3           | 35           | CL2/2464   |
| 5974-CL         | 22 (7 × 30)TC     | 10           | .010           | .032           | .420      | 3           | 35           | CL2/2464   |
| 5967-CL         | 22 (7 × 30)TC     | 11           | .010           | .032           | .430      | 3           | 35           | CL2/2464   |
| 5975-CL         | 22 (7 × 30)TC     | 12 1/2       | .010           | .032           | .445      | 3           | 35           | CL2/2464   |
| 5968-CL         | 22 (7 × 30)TC     | 15           | .010           | .032           | .492      | 3           | 35           | CL2/2464   |
| 5976-CL         | 22 (7 × 30)TC     | 18           | .010           | .032           | .525      | 3           | 35           | CL2/2464   |
| 5969-CL         | 22 (7 × 30)TC     | 19           | .010           | .035           | .535      | 3           | 35           | CL2/2464   |
| 5977-CL         | 22 (7 × 30)TC     | 25           | .010           | .040           | .610      | 3           | 35           | CL2/2464   |
| 5970-CL         | 22 (7 × 30)TC     | 27           | .010           | .040           | .645      | 3           | 35           | CL2/2464   |
| 5971-CL         | 22 (7 × 30)TC     | 51           | .010           | .040           | .865      | 3           | 35           | CL2/2464   |

\*\*Capacitance between pairs

\*Mylar—trademark of E.I. DuPont.

Passes UL VW-1  
Flame Test  
Underwriters Laboratories Inc.OSHA Approved  
Occupational Safety and Health  
Administration

## SHIELDED COMPUTER CABLES

## Product Construction

## Conductor:

- 24 thru 22 AWG annealed tinned copper per ASTM B-33

## Insulation:

- Color coded semi rigid PVC insulation UL 1061

## Shield:

- 100% coverage mylar\* / aluminum foil, foil facing out plus over all 70% coverage tinned copper braid

## Jacket:

- Chrome gray PVC
- Temperature: -20°C to +80°C
- Voltage: 300 volts

## Applications

- Computers
- Data transmission
- Control circuits
- EIA RS-232

## Special Features

- Meets FCC docket 20780
- Excellent shielding where noise rejection is critical
- Flexible construction

## Industry Approvals

- (UL) CL2
- UL 2464
- CSA-SR PVC Type T2
- NEC article 725
- Passes UL VW-1
- OSHA acceptable

## Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels

11044 KING STREET, DEPT. EEM, FRANKLIN PARK, IL 60131

PHONE: 708/455-8830 • WATS LINE: 800/621-4278 • FAX 708/455-8837



## COMPUTER CABLE

### SHIELDED COMPUTER CABLES

#### Product Construction

##### Conductor:

- 28 thru 24 AWG annealed tinned copper per ASTM B-33

##### Insulation:

- Color coded poly "low-cap" insulation

##### Shield:

- (5370/5395) (5755/5766)  
100% coverage mylar\*/aluminum foil, foil facing, out with stranded tinned copper drain plus 65% coverage tinned copper braid
- (5980/5993)  
100% coverage mylar\*/aluminum foil, foil facing out with stranded tinned copper drain plus 90% coverage tin copper braid

##### Jacket:

- Chrome gray pvc
- Temperature: -20°C to +80°C
- Voltage: 30 volts

#### Applications

- High speed computers
- Low capacitance requirements
- Data transmission
- RS-422 CAD/CAM
- RS-485 application

#### Special Features

- Flexible light weight construction
- Low loss high speed computer cable

#### Industry Approvals

- (UL) CL2
- UL 2919
- Passes UL VW-1
- NEC article 725
- OSHA acceptable

#### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels



### Multi Pair "Low-Cap" Foil & Braid (UL) CL2 Style 2919

| CAT. NO.                                             | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK." | JACKET THICK." | NOM. DIA. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|------------------------------------------------------|-------------------|--------------|----------------|----------------|-----------|-------------|--------------|------------|
| <b>28 gauge foil &amp; 65% coverage braid shield</b> |                   |              |                |                |           |             |              |            |
| 5370-CL                                              | 28 (7 × 36)TC     | 2            | .015           | .032           | .255      | 9           | 11           | CL2/2919   |
| 5373-CL                                              | 28 (7 × 36)TC     | 3            | .015           | .032           | .265      | 9           | 11           | CL2/2919   |
| 5374-CL                                              | 28 (7 × 36)TC     | 4            | .015           | .032           | .285      | 9           | 11           | CL2/2919   |
| 5376-CL                                              | 28 (7 × 36)TC     | 5            | .015           | .032           | .295      | 9           | 11           | CL2/2919   |
| 5377-CL                                              | 28 (7 × 36)TC     | 6            | .015           | .032           | .325      | 9           | 11           | CL2/2919   |
| 5378-CL                                              | 28 (7 × 36)TC     | 7            | .015           | .032           | .328      | 9           | 11           | CL2/2919   |
| 5390-CL                                              | 28 (7 × 36)TC     | 8            | .015           | .032           | .345      | 9           | 11           | CL2/2919   |
| 5391-CL                                              | 28 (7 × 36)TC     | 10           | .015           | .035           | .395      | 9           | 11           | CL2/2919   |
| 5392-CL                                              | 28 (7 × 36)TC     | 12 1/2       | .015           | .035           | .405      | 9           | 11           | CL2/2919   |
| 5393-CL                                              | 28 (7 × 36)TC     | 15           | .015           | .040           | .455      | 9           | 11           | CL2/2919   |
| 5394-CL                                              | 28 (7 × 36)TC     | 18           | .015           | .040           | .480      | 9           | 11           | CL2/2919   |
| 5395-CL                                              | 28 (7 × 36)TC     | 25           | .015           | .040           | .555      | 9           | 11           | CL2/2919   |

| CAT. NO.                                             | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK." | JACKET THICK." | NOM. DIA. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|------------------------------------------------------|-------------------|--------------|----------------|----------------|-----------|-------------|--------------|------------|
| <b>24 gauge foil &amp; 65% coverage braid shield</b> |                   |              |                |                |           |             |              |            |
| 5355-CL                                              | 24 (7 × 32)TC     | 2            | .015           | .035           | .270      | 9           | 12.5         | CL2/2919   |
| 5356-CL                                              | 24 (7 × 32)TC     | 3            | .015           | .035           | .280      | 9           | 12.5         | CL2/2919   |
| 5357-CL                                              | 24 (7 × 32)TC     | 4            | .015           | .035           | .305      | 9           | 12.5         | CL2/2919   |
| 5358-CL                                              | 24 (7 × 32)TC     | 5            | .015           | .035           | .330      | 9           | 12.5         | CL2/2919   |
| 5359-CL                                              | 24 (7 × 32)TC     | 6            | .015           | .035           | .355      | 9           | 12.5         | CL2/2919   |
| 5360-CL                                              | 24 (7 × 32)TC     | 7            | .015           | .035           | .365      | 9           | 12.5         | CL2/2919   |
| 5361-CL                                              | 24 (7 × 32)TC     | 8            | .015           | .035           | .395      | 9           | 12.5         | CL2/2919   |
| 5362-CL                                              | 24 (7 × 32)TC     | 10           | .015           | .035           | .445      | 9           | 12.5         | CL2/2919   |
| 5363-CL                                              | 24 (7 × 32)TC     | 12 1/2       | .015           | .035           | .460      | 9           | 12.5         | CL2/2919   |
| 5364-CL                                              | 24 (7 × 32)TC     | 15           | .015           | .035           | .520      | 9           | 12.5         | CL2/2919   |
| 5365-CL                                              | 24 (7 × 32)TC     | 18           | .015           | .040           | .650      | 10          | 12.5         | CL2/2919   |
| 5366-CL                                              | 24 (7 × 32)TC     | 25           | .015           | .040           | .630      | 10          | 12.5         | CL2/2919   |

| CAT. NO.                                                     | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK." | JACKET THICK." | NOM. DIA. | COLOR CODE† | CAP** pF/FT. | UL LISTING |
|--------------------------------------------------------------|-------------------|--------------|----------------|----------------|-----------|-------------|--------------|------------|
| <b>24 gauge foil &amp; 90% coverage braid shield 15.5 pf</b> |                   |              |                |                |           |             |              |            |
| 5980-CL                                                      | 24 (7 × 32)TC     | 2            | .010           | .035           | .250      | 9           | 15.5         | CL2/2919   |
| 5981-CL                                                      | 24 (7 × 32)TC     | 3            | .010           | .035           | .260      | 9           | 15.5         | CL2/2919   |
| 5982-CL                                                      | 24 (7 × 32)TC     | 4            | .010           | .035           | .270      | 9           | 15.5         | CL2/2919   |
| 5983-CL                                                      | 24 (7 × 32)TC     | 5            | .010           | .035           | .290      | 9           | 15.5         | CL2/2919   |
| 5984-CL                                                      | 24 (7 × 32)TC     | 7            | .010           | .035           | .310      | 9           | 15.5         | CL2/2919   |
| 5985-CL                                                      | 24 (7 × 32)TC     | 9            | .010           | .035           | .350      | 9           | 15.5         | CL2/2919   |
| 5986-CL                                                      | 24 (7 × 32)TC     | 10           | .010           | .035           | .365      | 9           | 15.5         | CL2/2919   |
| 5987-CL                                                      | 24 (7 × 32)TC     | 12           | .010           | .035           | .385      | 9           | 15.5         | CL2/2919   |
| 5988-CL                                                      | 24 (7 × 32)TC     | 18           | .010           | .040           | .465      | 9           | 15.5         | CL2/2919   |
| 5989-CL                                                      | 24 (7 × 32)TC     | 25           | .010           | .040           | .560      | 9           | 15.5         | CL2/2919   |
| <b>24 gauge foil &amp; 90% coverage braid shield 12.5 pf</b> |                   |              |                |                |           |             |              |            |
| 5990-CL                                                      | 24 (7 × 32)TC     | 1            | .015           | .035           | .240      | 2           | 12.5         | CL2/2919   |
| 5991-CL                                                      | 24 (7 × 32)TC     | 2            | .015           | .035           | .290      | 9           | 12.5         | CL2/2919   |
| 5992-CL                                                      | 24 (7 × 32)TC     | 3            | .015           | .035           | .320      | 9           | 12.5         | CL2/2919   |
| 5993-CL                                                      | 24 (7 × 32)TC     | 4            | .015           | .035           | .340      | 9           | 12.5         | CL2/2919   |

\*\* Capacitance between pairs

\*Mylar—trademark of E.I. DuPont.



Passes UL VW-1  
Flame Test  
Underwriters Laboratories Inc.

**OSHA** Acceptable  
Occupational Safety and Health  
Administration

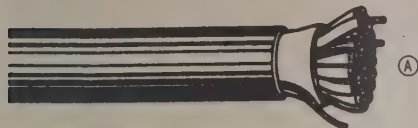
**Recognized Component**  
Underwriters Laboratories Inc.



11044 KING STREET, DEPT. EEM, FRANKLIN PARK, IL 60131  
PHONE: 708/455-8830 • WATS LINE: 800/621-4278 • FAX 708/455-8837



# POWER LIMITED CONTROL AND SIGNAL CIRCUIT CABLE



## Power Limited Tray Cable, Type PLTC Multi-Pair, Overall Shield <sup>(A)</sup>

| CAT. NO.        | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK." | JACKET THICK." | NOM. O.D." | COLOR CODE | UL LISTING |
|-----------------|-------------------|--------------|----------------|----------------|------------|------------|------------|
| <b>22 gauge</b> |                   |              |                |                |            |            |            |
| 5040            | 22 (7×30)TC       | 2            | .010           | .035           | .280       | Red/Black  | PLTC       |
| 5041            | 22 (7×30)TC       | 3            | .010           | .035           | .290       | Red/Black  | PLTC       |
| 5042            | 22 (7×30)TC       | 4            | .010           | .035           | .335       | Red/Black  | PLTC       |
| 5043            | 22 (7×30)TC       | 6            | .010           | .045           | .400       | Red/Black  | PLTC       |
| 5044            | 22 (7×30)TC       | 9            | .010           | .045           | .465       | Red/Black  | PLTC       |
| 5045            | 22 (7×30)TC       | 11           | .010           | .045           | .515       | Red/Black  | PLTC       |
| 5046            | 22 (7×30)TC       | 15           | .010           | .045           | .575       | Red/Black  | PLTC       |
| 5047            | 22 (7×30)TC       | 19           | .010           | .050           | .605       | Red/Black  | PLTC       |
| 5048            | 22 (7×30)TC       | 27           | .010           | .050           | .750       | Red/Black  | PLTC       |
| 5049            | 22 (7×30)TC       | 51           | .010           | .050           | .920       | Red/Black  | PLTC       |
| <b>20 gauge</b> |                   |              |                |                |            |            |            |
| 5084            | 20 (7×28)TC       | 4            | .010           | .055           | .405       | Red/Black  | PLTC       |
| 5085            | 20 (7×28)TC       | 8            | .010           | .055           | .480       | Red/Black  | PLTC       |
| 5086            | 20 (7×28)TC       | 12           | .010           | .055           | .570       | Red/Black  | PLTC       |
| 5087            | 20 (7×28)TC       | 16           | .010           | .055           | .650       | Red/Black  | PLTC       |
| 5088            | 20 (7×28)TC       | 24           | .010           | .055           | .800       | Red/Black  | PLTC       |
| 5089            | 20 (7×28)TC       | 36           | .010           | .066           | .940       | Red/Black  | PLTC       |
| 5095            | 20 (7×28)TC       | 50           | .010           | .066           | 1.080      | Red/Black  | PLTC       |
| <b>18 gauge</b> |                   |              |                |                |            |            |            |
| 5050            | 18 (16×30)TC      | 2            | .010           | .043           | .360       | Red/Black  | PLTC       |
| 5051            | 18 (16×30)TC      | 3            | .010           | .053           | .400       | Red/Black  | PLTC       |
| 5052            | 18 (16×30)TC      | 4            | .010           | .053           | .435       | Red/Black  | PLTC       |
| 5053            | 18 (16×30)TC      | 6            | .010           | .053           | .500       | Red/Black  | PLTC       |
| 5054            | 18 (16×30)TC      | 9            | .010           | .053           | .585       | Red/Black  | PLTC       |
| 5055            | 18 (16×30)TC      | 11           | .010           | .063           | .665       | Red/Black  | PLTC       |
| 5056            | 18 (16×30)TC      | 15           | .010           | .063           | .740       | Red/Black  | PLTC       |

## Power Limited Tray Cable, Type PLTC Multi-Pair, Individually Shielded Pairs <sup>(B)</sup>

| CAT. NO.        | COND. SIZE/STRAND | NO. OF PAIRS | INSUL. THICK." | JACKET THICK." | NOM. O.D." | COLOR CODE | UL LISTING |
|-----------------|-------------------|--------------|----------------|----------------|------------|------------|------------|
| <b>22 gauge</b> |                   |              |                |                |            |            |            |
| 5060            | 22 (7×30)TC       | 2            | .010           | .035           | .290       | Red/Black  | PLTC       |
| 5061            | 22 (7×30)TC       | 3            | .010           | .035           | .300       | Red/Black  | PLTC       |
| 5062            | 22 (7×30)TC       | 4            | .010           | .043           | .330       | Red/Black  | PLTC       |
| 5063            | 22 (7×30)TC       | 6            | .010           | .053           | .400       | Red/Black  | PLTC       |
| 5064            | 22 (7×30)TC       | 9            | .010           | .053           | .460       | Red/Black  | PLTC       |
| 5065            | 22 (7×30)TC       | 11           | .010           | .053           | .495       | Red/Black  | PLTC       |
| 5066            | 22 (7×30)TC       | 15           | .010           | .053           | .545       | Red/Black  | PLTC       |
| 5067            | 22 (7×30)TC       | 19           | .010           | .063           | .630       | Red/Black  | PLTC       |
| 5068            | 22 (7×30)TC       | 27           | .010           | .063           | .705       | Red/Black  | PLTC       |
| 5069            | 22 (7×30)TC       | 51           | .010           | .063           | .920       | Red/Black  | PLTC       |
| <b>18 gauge</b> |                   |              |                |                |            |            |            |
| 5070            | 18 (16×30)TC      | 2            | .010           | .043           | .316       | Red/Black  | PLTC       |
| 5071            | 18 (16×30)TC      | 3            | .010           | .053           | .421       | Red/Black  | PLTC       |
| 5072            | 18 (16×30)TC      | 4            | .010           | .053           | .456       | Red/Black  | PLTC       |
| 5073            | 18 (16×30)TC      | 6            | .010           | .053           | .526       | Red/Black  | PLTC       |
| 5074            | 18 (16×30)TC      | 9            | .010           | .063           | .660       | Red/Black  | PLTC       |
| 5075            | 18 (16×30)TC      | 11           | .010           | .063           | .686       | Red/Black  | PLTC       |
| 5076            | 18 (16×30)TC      | 15           | .010           | .063           | .766       | Red/Black  | PLTC       |

†Color code chart on pages 80 and 81.

\*Mylar—trademark E.I. DuPont.

## PLTC CABLES

### Product Construction

#### Conductor:

- 22 thru 18 AWG annealed stranded tinned copper per ASTM B-33

#### Insulation:

- Color coded red/black pairs, PVC insulation number marked for easy identification at one inch intervals

#### Shield:

##### (Overall Shield)

- Mylar\*/aluminum foil shield, 100% coverage, foil facing out with stranded tinned copper drain (Individual Shielded Pairs)
- Mylar\*/aluminum foil shield, 100% coverage, foil facing in with stranded tinned copper drain wire each pair

#### Jacket:

- Chrome gray PVC
- Temperature: -20°C to +105°C
- Voltage: 300 volts

### Applications

- Power limited circuits
- Industrial control systems
- Tray cable applications
- Audio intercom
- Security systems

### Special Features

- UL tray cable rated
- Excellent weather and sunlight resistant jacket
- Highly abrasive
- High temperature characteristics

### Industry Approvals

- NEC article 725-38(B) class 2 and 3 power limited circuits
- Meets IEEE 70,000 BTU vertical flame test
- PLTC
- Meets UL 70,000 BTU vertical flame test UL subject 13

### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels



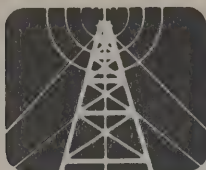
Passes UL VW-1  
Flame Test  
Underwriters Laboratories Inc.

OSHA Acceptable  
Occupational Safety and Health  
Administration



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**Consolidated**  
electronic wire & cable



# COAXIAL/BROADCAST CABLE



## Coaxial Cable — Polyethylene Dielectric MIL-C-17 (A)

| CAT. NO. | RG/U | UL STYLE | JKT. O.D. | JKT. TYPE | SHIELDS OUTER | INSUL. DIELECTRIC & TYPE | CENTER COND. | V.P. % | CAP pF/FT. | MAX. OPER. VOLTS RMS | IMP. OHMS |
|----------|------|----------|-----------|-----------|---------------|--------------------------|--------------|--------|------------|----------------------|-----------|
| 4433     | 6A   |          | .332      | 111A      | C             | C .185P                  | 21CW         | 65.9   | 20         | 2,700                | 75        |
| 4415     | 8    | 1354     | .405      | 1         | C             | C .285P                  | 7/21C        | 65.9   | 29.5       | 4,000                | 52        |
| 4435     | 8A   | 1354     | .405      | 11A       | C             | C .285P                  | 7/21C        | 65.9   | 29.5       | 4,000                | 52        |
| 4419     | 11   |          | .405      | 1         | C             | C .285P                  | 7/26TC       | 65.9   | 20.5       | 4,000                | 75        |
| 4440     | 11A  |          | .405      | 11A       | C             | C .285P                  | 7/26TC       | 65.9   | 20.5       | 4,000                | 75        |
| 4475     | 22B  |          | .420      | 11A       | TC            | TC .285P                 | Two 7/0152C  | 65.9   | 16         | 1,000                | 95        |
| 4447     | 55   |          | .206      | 111A      | TC            | TC .206P                 | 20C          | 65.9   | 28.5       | 1,900                | 53.5      |
| 4448     | 55A  |          | .216      | 11A       | S             | S .116P                  | .035S        | 65.9   | 29.5       | 1,900                | 50        |
| 4484     | 55B  |          | .206      | 111A      | TC            | TC .116P                 | 20S          | 65.9   | 28.5       | 1,900                | 53.5      |
| 4405     | 58   | 1354     | .195      | 1         | TC            | TC .116P                 | 20C          | 65.9   | 28.5       | 1,900                | 53.5      |
| 4449     | 58A  | 1354     | .195      | 1         | TC            | TC .116P                 | 19/0071TC    | 65.9   | 29.5       | 1,900                | 52        |
| 4450     | 58C  | 1354     | .195      | 11A       | TC            | TC .116P                 | 19.0071TC    | 65.9   | 29.5       | 1,900                | 50        |
| ★ 4401   | 59   | 1354     | .242      | 1         | C             | C .146P                  | 22CW         | 65.9   | 21         | 2,300                | 73        |
| 4470     | 59B  | 1354     | .242      | 11A       | C             | C .146P                  | .0253CW      | 65.9   | 20.5       | 2,300                | 75        |
| ★ 4456   | 62A  | 1478     | .242      | 11A       | C             | C .146ASP                | 22CW         | 84     | 13.5       | 750                  | 93        |
| 4472     | 62B  | 1354     | .242      | 11A       | C             | C .146ASP                | 7/32CW       | 84     | 13.5       | 750                  | 93        |
| 4454     | 63   |          | .405      | 1         | C             | C .285ASP                | 22CW         | 84     | 10         | 1,000                | 125       |
| 4455     | 63B  |          | .405      | 11A       | C             | C .285ASP                | 22CW         | 84     | 10         | 1,000                | 125       |
| 4485     | 71B  |          | .250      | 111A      | TC            | TC .146ASP               | 22CW         | 84     | 13.5       | 750                  | 95        |
| 4487     | 79B  |          | .475      | 11A       | C             | C .285P                  | 22CW         | 84     | 10         | 1,000                | 125       |
| 4465     | 108A |          | .235      | 11A       | TC            | TC .235P                 | Two 7/28TC   | 65.9   | 23.5       | 1,000                | 78        |
| 4457     | 122  | 1354     | .160      | 11A       | TC            | TC .096P                 | 27/36TC      | 65.9   | 29.5       | 1,900                | 50        |
| 4459     | 174  | 1354     | .105      | 1         | TC            | TC .060P                 | 7/0063CW     | 65.9   | 30         | 1,500                | 50        |
| 4473     | 174A | 1354     | .105      | 11A       | C             | C .060P                  | 7/0063CW     | 65.9   | 30         | 1,500                | 50        |
| 4489     | 213  |          | .405      | 11A       | C             | C .285P                  | 7 x .0296C   | 65.9   | 29.5       | 5,000                | 50        |
| 4490     | 214  | 1354     | .425      | 11A       | S             | S .285P                  | 7 x .0296S   | 65.9   | 29.5       | 5,000                | 50        |
| 4491     | 216  |          | .425      | 11A       | C             | C .285P                  | 7 x 26TC     | 65.9   | 20.5       | 4,000                | 75        |
| 4492     | 216  |          | .545      | 11A       | C             | C .370P                  | .106C        | 65.9   | 29.5       | 7,000                | 50        |
| 4493     | 218  |          | .870      | 11A       | C             | C .680P                  | .195C        | 65.9   | 29.5       | 11,000               | 50        |
| 4496     | 223  | 1354     | .216      | 11A       | S             | S .116P                  | .035S        | 65.9   | 29.5       | 1,900                | 50        |

★ 4401 available in (UL) CL2 construction  
 ★ 4456 available in (UL) CL2 construction

### KEY TO ABBREVIATIONS:

C—Bare Copper  
 S—Silver Copper  
 P—Polyethylene  
 CW—Copperweld  
 TC—Tinned Copper  
 ASP—Air Spaced Polyethylene

| MILITARY DESIGNATION | JACKET TYPE                     | TEMPERATURE LIMITS                                                    |
|----------------------|---------------------------------|-----------------------------------------------------------------------|
| TYPE I               | Black Polyvinylchloride         | -40°C to +80°C                                                        |
| TYPE II              | Grey Polyvinylchloride          | -25°C to +80°C                                                        |
| TYPE IIa             | Black or Grey Polyvinylchloride | Under 1/4" O.D.<br>-55°C to +90°C<br>Over 1/4" O.D.<br>-40°C to +90°C |
| TYPE IIa             | Black Polyethylene              | -55°C to +80°C                                                        |



**OSHA** Acceptable  
 Occupational Safety and Health  
 Administration



**UL** Recognized  
 Component  
 Underwriters Laboratories Inc.

## COAXIAL CABLES

### Product Construction

#### Conductor:

- Bare copper
- Tinned copper
- Silver plated copper
- Copperweld

#### Dielectric:

- Polyethylene
- Air spaced polyethylene

#### Shield:

- Bare copper braid
- Tinned copper braid
- Silver plated copper braid

#### Jacket:

- Polyvinylchloride (PVC)
- Low-temperature non-contaminating PVC
- Polyethylene (P)

### Applications

- Data transmission
- RF communication
- Video
- Broadcast
- Computer

### Industry Approvals

- (UL) CL2
- UL 1354
- UL 1478
- MIL-C-17
- OSHA acceptable

### Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels



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## COAXIAL/BROADCAST CABLE



## COAXIAL CABLES

## Product Construction

## Conductor:

- Bare copper
- Tinned copper
- Silver plated copperweld

## Insulation:

- Solid polyethylene (P)
- Foam polyethylene (FP)
- Solid TFE Teflon† (F-1)

## Shield:

- Bare copper braid
- Tinned copper braid
- Silver plated copper braid

## Jacket:

- Polyvinylchloride +80°C
- Teflon† braid +200°C
- TFE Teflon† tape +260°C
- FEP Teflon† jacket +200°C

## Applications

- Data transmission
- RF communication
- Video
- High temperature
- Broadcast

## Industry Approvals

- UL 1354
- OSHA acceptable

## Packaging

- 1000 ft. spools
- 500 ft. spools
- Also available on bulk reels

Miniature Coaxial Cable — Polyethylene Dielectric MIL-C-17 <sup>(A)</sup>

| CAT. NO. | RG/U NO. | UL STYLE | JKT. O.D." | JKT. TYPE | SHIELDS | INSUL. DIELEC-TRIC & TYPE | CENTER COND. | V.P. % | NOM. CAP.** pF/FT. | MAX. OPER. VOLTS RMS | IMP. OHMS |
|----------|----------|----------|------------|-----------|---------|---------------------------|--------------|--------|--------------------|----------------------|-----------|
| 4407     | Mini 8   |          | .242       | 1         | BC      | .154FP                    | 19×29        | 78.0   | 28                 | 2,500                | 50        |
| 4459     | 174      | 1354     | .105       | 1         | TC      | .060P                     | 7/34         | 65.9   | 30                 | 1,500                | 50        |
| 4473     | 174A     | 1354     | .105       | 11A       | TC      | .060P                     | 7/34         | 65.9   | 30                 | 1,500                | 50        |
| 4466     | —        | 1354     | .150       | 1         | TC      | .100P                     | 7/35         | 66.0   | 20.5               | 2,500                | 75        |

Coaxial Cable — Teflon† Dielectric MIL-C-17 <sup>(A)</sup>

| CAT. NO. | RG/U NO. | CENTER CONDUCTOR                 | DIELEC-TRIC TYPE | DIELEC-TRIC O.D." | SHIELDS                         | JKT. TYPE | JKT. O.D." | NOM. CAP.** pF/FT. | MAX. OPER. VOLTS RMS | NOM. IMP. OHMS |
|----------|----------|----------------------------------|------------------|-------------------|---------------------------------|-----------|------------|--------------------|----------------------|----------------|
| 4717     | 142      | .0359 Silver Cov. Copper Steel   | F-1              | .116              | Silver Coated Copper Dbl. Braid | V         | .206       | 28.5               | 1,900                | 50             |
| 4718     | 142A     | .039 Silver Cov. Copper Steel    | F-1              | .116              | Silver Coated Copper Dbl. Braid | V         | .206       | 28.5               | 1,900                | 50             |
| 4719     | 142B     | .039 Silver Cov. Copper Steel    | F-1              | .116              | Silver Coated Copper Dbl. Braid | V         | .195       | 28.5               | 1,900                | 50             |
| 4727     | 178      | 71.0039 Silver Cov. Copper Steel | F-1              | .036              | Silver Coated Copper Dbl. Braid | V         | .079       | 27.9               | 1,000                | 50             |
| 4728     | 178A     | 71.004 Silver Cov. Copper Steel  | F-1              | .034              | Silver Coated Copper Dbl. Braid | V         | .075       | 27.9               | 1,000                | 50             |
| 4729     | 178B     | 71.004 Silver Cov. Copper Steel  | F-1              | .034              | Silver Coated Copper Dbl. Braid | V         | .075       | —                  | 1,000                | 50             |
| 4761     | 179      | 71.004 Silver Cov. Copper Steel  | F-1              | .063              | Silver Coated Copper Dbl. Braid | V         | .100       | —                  | 1,200                | 75             |
| 4730     | 179A     | 71.004 Silver Cov. Copper Steel  | F-1              | .063              | Silver Coated Copper Dbl. Braid | V         | .105       | 20.0               | 1,200                | 75             |
| 4731     | 179B     | 71.004 Silver Cov. Copper Steel  | F-1              | .063              | Silver Coated Copper Dbl. Braid | V         | .105       | —                  | 1,200                | 75             |
| 4735     | 187      | 71.004 Silver Cov. Copper Steel  | F-1              | .060              | Silver Coated Copper Dbl. Braid | V         | .110       | —                  | 1,200                | 75             |
| 4736     | 187A     | 71.004 Silver Cov. Copper Steel  | F-1              | .060              | Silver Coated Copper Dbl. Braid | V         | .110       | —                  | 1,200                | 75             |
| 4737     | 188      | 71.0067 Silver Cov. Copper Steel | F-1              | .060              | Silver Coated Copper Dbl. Braid | V         | .110       | —                  | 1,200                | 50             |
| 4738     | 188A     | 71.0067 Silver Cov. Copper Steel | F-1              | .060              | Silver Coated Copper Dbl. Braid | V         | .110       | —                  | 1,200                | 50             |
| 4757     | 303      | 71.0039 Silver Cov. Copper Steel | F-1              | .060              | Silver Coated Copper Dbl. Braid | V         | .170       | 28.5               | 1,900                | 50             |
| 4759     | 316      | 71.0067 Silver Cov. Copper Steel | F-1              | .060              | Silver Coated Copper Dbl. Braid | V         | .102       | —                  | 1,200                | 50             |

†Teflon—trademark E.I. DuPont.

**KEY TO ABBREVIATIONS:** F-1—Solid Teflon, F-2—Taped Teflon, V—High Temperature Lacquer Impregnated Fiberglass Braid with Teflon Between Shield and Jacket, FEP—Fluorinated Ethylene Propylene Copolymer, 200°C Teflon, TFE—Tetrafluoride Ethylene Propylene Copolymer, 250°C Teflon, I—Type I PVC Jacket, 11A—Type 11A Low Temperature PVC Jacket, BC—Bare Copper, TC—Tin copper

**OSHA** Acceptable  
Occupational Safety and Health  
Administration

**UL** Recognized  
Component  
Underwriters Laboratories Inc



# NORTH AMERICAN POWER SUPPLY CORDS

| CAT. NO. | WIRE TYPE | RATING Temp/Voltage | AWG SIZE & STRANDING | COLOR CODE | LENGTH Ft/Mtrs. | NOMINAL O.D. Inches | STD. PKG. | JKT COLOR |
|----------|-----------|---------------------|----------------------|------------|-----------------|---------------------|-----------|-----------|
|----------|-----------|---------------------|----------------------|------------|-----------------|---------------------|-----------|-----------|

## 3 CONDUCTOR POWER SUPPLY CORDS

|       |     |               |             |     |        |      |     |       |
|-------|-----|---------------|-------------|-----|--------|------|-----|-------|
| A7141 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 6'1.8  | .307 | 100 | Black |
| A7139 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 6'1.8  | .307 | 100 | Gray  |
| A7142 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 8'2.4  | .307 | 100 | Black |
| A7140 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 8'2.4  | .307 | 100 | Gray  |
| A7151 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 10'3.1 | .307 | 100 | Black |
| A7152 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 6'1.8  | .334 | 100 | Black |
| A7153 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 8'2.4  | .334 | 100 | Black |
| A7154 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 10'3.1 | .334 | 100 | Black |
| A7155 | SJT | 60°C/10A-125V | 14/3(41x30) | NAS | 6'1.8  | .375 | 100 | Black |

## 3 CONDUCTOR ELECTRONIC POWER SUPPLY CORDS

|       |     |               |             |     |         |      |     |       |
|-------|-----|---------------|-------------|-----|---------|------|-----|-------|
| A7149 | SVT | 60°C/10A-125V | 18/3(41x34) | CEE | 6'4"1.9 | .255 | 100 | Black |
| A7202 | SVT | 60°C/10A-125V | 18/3(41x34) | CEE | 6'4"1.9 | .255 | 100 | Gray  |
| A7203 | SVT | 60°C/10A-125V | 18/3(41x34) | CEE | 8'2.4   | .255 | 100 | Black |
| A7150 | SVT | 60°C/10A-125V | 18/3(41x34) | CEE | 8'2.4   | .255 | 100 | Gray  |
| A7130 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 6'6"2.0 | .307 | 100 | Black |
| A7204 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 6'6"2.0 | .307 | 100 | Gray  |
| A7131 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 9'8"3.0 | .307 | 100 | Black |
| A7132 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 6'6"2.0 | .334 | 100 | Black |
| A7133 | SJT | 60°C/10A-125V | 16/3(26x30) | CEE | 9'8"3.0 | .334 | 100 | Black |

## 3 CONDUCTOR DETACHABLE POWER SUPPLY CORDS

|       |     |               |             |     |         |      |     |       |
|-------|-----|---------------|-------------|-----|---------|------|-----|-------|
| A7117 | SVT | 60°C/10A-125V | 18/3(41x34) | CEE | 7'6"2.2 | .255 | 100 | Black |
| A7110 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 8'2"2.5 | .307 | 100 | Black |
| A7114 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 7'6"2.2 | .307 | 100 | Black |
| A7112 | SJT | 60°C/10A-125V | 18/3(26x30) | CEE | 7'6"2.2 | .334 | 100 | Black |
| A7118 | SJT | 60°C/10A-125V | 18/3(26x30) | CEE | 9'8"3.0 | .334 | 100 | Black |
| A7128 | SJT | 60°C/10A-125V | 14/3(41x30) | CEE | 6'6"2.0 | .375 | 100 | Black |
| A7124 | SVT | 60°C/10A-125V | 18/3(41x34) | CEE | 6'6"2.0 | .255 | 100 | Black |
| A7125 | SJT | 60°C/10A-125V | 18/3(16x30) | CEE | 6'6"2.0 | .307 | 100 | Black |
| A7126 | SJT | 60°C/10A-125V | 16/3(26x30) | CEE | 6'6"2.0 | .334 | 100 | Black |

## 3 CONDUCTOR HOSPITAL GRADE POWER SUPPLY CORDS

|         |     |               |             |     |         |      |    |      |
|---------|-----|---------------|-------------|-----|---------|------|----|------|
| A7210   | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 10'3.1  | .307 | 75 | Gray |
| † A7211 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 10'3.1  | .307 | 75 | Gray |
| A7212   | SJT | 60°C/10A-125V | 16/3(26x30) | NAS | 12'3.75 | .334 | 25 | Gray |

† CLEAR PLUG ON CATALOG A7211

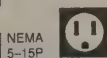
|       |     |               |             |     |        |      |    |      |
|-------|-----|---------------|-------------|-----|--------|------|----|------|
| A7213 | SJT | 60°C/10A-125V | 18/3(16x30) | NAS | 10'3.1 | .307 | 75 | Gray |
|-------|-----|---------------|-------------|-----|--------|------|----|------|

## 2 CONDUCTOR POWER SUPPLY CORDS

|       |     |               |             |     |         |      |     |       |
|-------|-----|---------------|-------------|-----|---------|------|-----|-------|
| A7220 | SVT | 60°C/10A-125V | 18/2(41x34) | NAS | 6'3"1.9 | .248 | 100 | Black |
| A7221 | SVT | 60°C/10A-125V | 18/2(41x34) | NAS | 6'3"1.9 | .248 | 100 | Gray  |
| A7222 | SJT | 60°C/10A-125V | 18/2(16x30) | NAS | 6'3"1.9 | .307 | 150 | Black |
| A7223 | SVT | 60°C/10A-125V | 18/2(41x34) | NAS | 6'3"1.9 | .248 | 100 | Black |
| A7224 | SVT | 60°C/10A-125V | 18/2(41x34) | NAS | 6'3"1.9 | .248 | 100 | Gray  |
| A7225 | SJT | 60°C/10A-125V | 18/2(16x30) | NAS | 6'3"1.9 | .307 | 150 | Black |

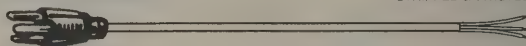
| CAT. NO. | WIRE TYPE | RATING Temp/Voltage | AWG SIZE & STRANDING | COLOR CODE | LENGTH Ft/Mtrs. | NOMINAL O.D. Inches | STD. PKG. |
|----------|-----------|---------------------|----------------------|------------|-----------------|---------------------|-----------|
| A7160    | SPT-1     | 60°C/10A-125V       | 18/2(41x34)          | BLK        | 6'1.8           | .108/.210           | 350       |
| A7202    | SPT-1     | 60°C/10A-125V       | 18/2(41x34)          | BLK        | 7'2.1           | .108/.210           | 300       |
| A7161    | SPT-1     | 60°C/10A-125V       | 18/2(41x34)          | BLK        | 8'2.4           | .108/.210           | 250       |
| A7203    | SPT-1     | 60°C/10A-125V       | 18/2(41x34)          | BRN        | 6'1.8           | .108/.210           | 350       |
| A7204    | SPT-1     | 60°C/10A-125V       | 18/2(41x34)          | BRN        | 7'2.1           | .108/.210           | 250       |
| A7205    | SPT-1     | 60°C/10A-125V       | 18/2(41x34)          | BRN        | 8'2.4           | .108/.210           | 250       |
| A7200    | SPT-2     | 60°C/10A-125V       | 18/2(41x34)          | BLK        | 6'1.8           | .139/.271           | 250       |
| A7206    | SPT-2     | 60°C/10A-125V       | 18/2(41x34)          | BLK        | 7'2.1           | .139/.271           | 200       |
| A7201    | SPT-2     | 60°C/10A-125V       | 18/2(41x34)          | BLK        | 8'2.4           | .139/.271           | 200       |
| A7207    | SPT-2     | 60°C/10A-125V       | 18/2(41x34)          | BRN        | 6'1.8           | .139/.271           | 250       |
| A7208    | SPT-2     | 60°C/10A-125V       | 18/2(41x34)          | BRN        | 7'2.1           | .139/.271           | 200       |
| A7209    | SPT-2     | 60°C/10A-125V       | 18/2(41x34)          | BRN        | 8'2.4           | .139/.271           | 200       |

### Type SJT

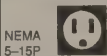


MOLDED PVC GROUNDING PLUG

REMOVE OUTER JACKET 2" STRIPPED & TWISTED 5/8"

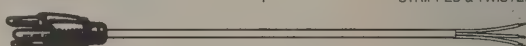


### Unshielded

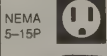


MOLDED PVC GROUNDING PLUG

REMOVE OUTER JACKET 2" STRIPPED & TWISTED 5/8"



### Unshielded

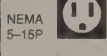


MOLDED PVC GROUNDING PLUG

MOLDED PVC RECEPTACLE IEC320 C13

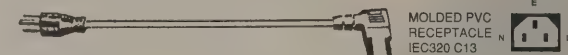


### Unshielded



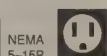
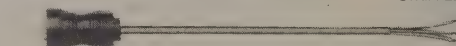
MOLDED PVC GROUNDING PLUG

MOLDED PVC RECEPTACLE IEC320 C13



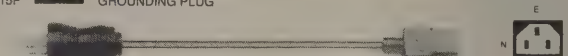
MOLDED PVC HOSPITAL GRADE GROUNDING PLUG

REMOVE OUTER JACKET 2" STRIPPED & TWISTED 5/8"

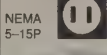


MOLDED PVC HOSPITAL GRADE GROUNDING PLUG

IEC320 C13 MOLDED PVC RECEPTACLE

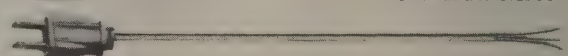


### Type SVT / Type SJT

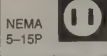


MOLDED PVC PLUG NON-POLARIZED

REMOVE OUTER JACKET 2" STRIPPED & TWISTED 5/8"

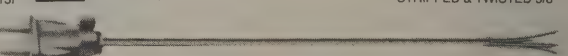


### Type SVT / Type SJT

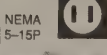


MOLDED PVC PLUG NON-POLARIZED WITH CORD GRIP

REMOVE OUTER JACKET 2" STRIPPED & TWISTED 5/8"



### Type SPT



MOLDED PVC POLARIZED PLUG

CONDUCTOR SPLIT 1-1/4" STRIPPED & TWISTED 2/5"



### COLOR CODE CHART North America (NAS)\*

COLOR FUNCTION  
White N-Neutral  
Black L-Live  
Green or Green/Yellow E-Earth or Ground

European (CEE)\*  
COLOR FUNCTION  
Light Blue N-Neutral  
Brown L-Live  
Green/Yellow E-Earth or Ground

UL and CSA labeling service. All cords are labeled by tag, letter on file, or bulk pack carton labeling.



Certified Canadian Standard Association

OSHA

Acceptable Occupational Safety and Health Administration



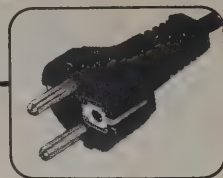
Recognized Component Underwriters Laboratories Inc.

**Consolidated**  
electronic wire & cable

11044 KING STREET, DEPT: EEM, FRANKLIN PARK, IL 60131  
PHONE: 708/455-8830 • WATS LINE: 800/621-4278 • FAX 708/455-8837



## INTERNATIONAL POWER CORDS



## CONTINENTAL EUROPEAN POWER CORD



CEE (7) VII  
16 A-250 V



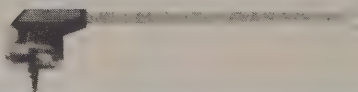
R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7308       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

## CONTINENTAL EUROPEAN RIGHT ANGLE POWER CORD



CEE (7) VII  
16 A-250 V



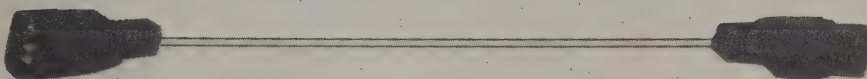
R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7318       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

## CONTINENTAL EUROPEAN UNIVERSAL JUMPER CORD



IEC 320-2-2/E  
10 A-250 V



EN 60320/C 13  
10 A-250 V

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION                       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-----------------------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7316       | 8'2"/2.5                | SJT 3x18 AWG<br>HO5VVF3G, 1.0 MM2 | 8.00MM          | 56x0.15 MM   | 10A-250V | 2.9 MM            | Black           |

## BRITISH POWER CORD



BS 1363/A  
13 A-250 V



R.O.J. 30 MM  
STRIP ENDS 6 MM

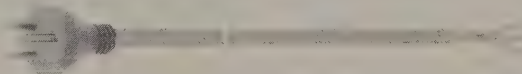
| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| * A7309     | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

\* CATALOG A7309 COMES WITH REPLACEABLE 13 AMP FUSE, 10AMP FUSE ALSO AVAILABLE

## AUSTRALIAN POWER CORD



AS 3112  
10 A-250 V



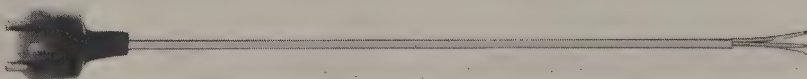
R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7310       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

## DANISH POWER CORD



DEMKO Bulletin Nr. 16/87  
10 A-250 V



R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7311       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

(1) UNIVERSAL JUMPER CORD CONSTRUCTION OF HAR AND UL/CSA PORTABLE CORDAGE. USES A SHROUDED, HARD-SHELL IEC 320 MALE PLUG ON ONE END WITH A STANDARD IEC 320-C13 FEMALE RECEPTACLE.

\* SPECIAL CONSTRUCTIONS ARE AVAILABLE ON REQUEST  
CONTACT FACTORY FOR MINIMUM ORDER REQUIREMENT

|       |              |       |             |           |               |                                   |                |
|-------|--------------|-------|-------------|-----------|---------------|-----------------------------------|----------------|
| VDE   | West Germany | NEMKO | Norway      | ASA       | Australia     | BSI                               | United Kingdom |
| CEBEC | Belgium      | OVE   | Austria     | KEMA/KEUR | Netherlands   | Instituto Italiano<br>del Marchio | Italy          |
| DEMKO | Denmark      | SEMKO | Sweden      | UL        | United States |                                   |                |
| FIMKO | Finland      | SEV   | Switzerland |           |               |                                   |                |

**COLOR CODE CHART**  
European (CEE)\*  
COLOR  
Light Blue  
Brown  
Green/Yellow  
FUNCTION  
N-Neutral  
L-Live  
E-Earth or Ground

11044 KING STREET, DEPT: EEM, FRANKLIN PARK, IL 60131  
PHONE: 708/455-8830 • WATS LINE: 800/621-4278 • FAX 708/455-8837

**Consolidated**  
electronic wire & cable

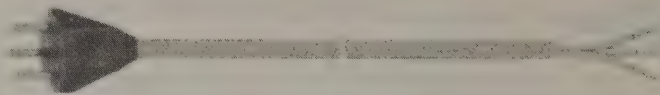


## INTERNATIONAL POWER CORDS

### SWISS POWER CORD



1011-S24507  
10 A-250 V



R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7312       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

### ITALIAN POWER CORD



CEI 23-16  
16 A-250 V



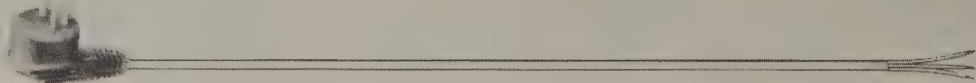
R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7313       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

### ISRAEL POWER CORD



SI 32/1971  
16 A-250 V



R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7314       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

### SOUTH AFRICAN POWER CORD



SABS 164/1990  
16 A-250 V



R.O.J. 30 MM  
STRIP ENDS 6 MM

| CATALOG NO. | CORD LENGTH<br>Ft/Mtrs. | DESCRIPTION       | NOMINAL<br>O.D. | CONSTRUCTION | RATING   | CONDUCTOR<br>O.D. | JACKET<br>COLOR |
|-------------|-------------------------|-------------------|-----------------|--------------|----------|-------------------|-----------------|
| A7315       | 8'2"/2.5                | HO5VVF3G, 1.0 MM2 | 7.00MM          | 31x0.2 MM    | 10A-250V | 2.5 MM            | Black           |

\* SPECIAL CONSTRUCTIONS ARE AVAILABLE ON REQUEST  
CONTACT FACTORY FOR MINIMUM ORDER REQUIREMENT



VDE West Germany



NEMKO Norway



ASA Australia



BSI United Kingdom



CEBEC Belgium



OVE Austria



KEMA/KEUR Netherlands



Instituto Italiano del Marchio Italy



DEMKO Denmark



SEMKO Sweden



UL United States



FIMKO Finland



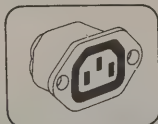
SEV Switzerland

#### COLOR CODE CHART

European (CEE)\*

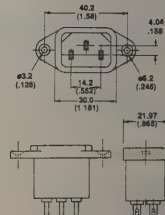
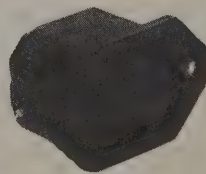
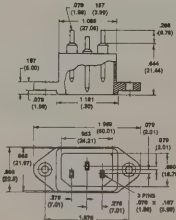
COLOR  
Light Blue  
Brown  
Green/Yellow

FUNCTION  
N-Neutral  
L-Live  
E-Earth or Ground



## ACCESSORIES

### A C RECEPTACLE MODULES Both approved by UL/CSA and VDE



■ CATALOG NO. AC-RM7400

MATES WITH IEC 320-C13 FEMALE BUSINESS  
MACHINE RECEPTACLE  
15AMP-125V/6AMP-250V

■ CATALOG NO. AC-RM7410

MATES WITH IEC 320-C14 SHROUDED  
MALE CONNECTOR  
15AMP-125V/6AMP-250V



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## RETRACTILE CORDS

RETRACTILE PVC JACKETED ELECTRONIC CORDS  
UNSHIELDED

| CATALOG NO. | RETRACTED LENGTH/FT | EXTENDED LENGTH/FT | COND. AWG | STRAND ING | WORKING VOLTAGE | CABLE O.D. | COIL O.D. |
|-------------|---------------------|--------------------|-----------|------------|-----------------|------------|-----------|
| 2857        | 2 FT                | 10 FT              | 2/23      | 21x36      | 300             | .210       | 5/8"      |
| 2858        | 2 FT                | 10 FT              | 3/23      | 21x36      | 300             | .220       | 3/4"      |
| 2859        | 2 FT                | 10 FT              | 4/23      | 21x36      | 300             | .250       | 7/8"      |
| 2860        | 2 FT                | 10 FT              | 5/23      | 21x36      | 300             | .275       | 1"        |
| 2865        | 2 FT                | 10 FT              | 6/23      | 21x36      | 300             | .300       | 1 1/8"    |
| 2866        | 2 FT                | 10 FT              | 7/23      | 21x36      | 300             | .310       | 1 3/16"   |
| 2867        | 2 FT                | 10 FT              | 8/23      | 21x36      | 300             | .340       | 1 1/4"    |
| 2868        | 2 FT                | 10 FT              | 10/23     | 21x36      | 300             | .380       | 1 3/8"    |
| 2869        | 2 FT                | 10 FT              | 12/23     | 21x36      | 300             | .390       | 1 1/2"    |
| 2876        | 2 FT                | 10 FT              | 15/23     | 21x36      | 300             | .400       | 1 5/8"    |

CONDUCTOR COLOR CODING: (1) BLACK, (2) WHITE, (3) RED, (4) GREEN, (5) ORANGE, (6) BLUE, (7) YELLOW, (8) BROWN, (9) WHITE/BLACK, (10) RED/BLACK, (12) GREEN/BLACK, (12) ORANGE/BLACK, (13) BLUE/BLACK, (14) YELLOW/BLACK, (15) RED/WHITE

JACKET COLOR: BLACK-PRIMARY INSULATION PVC

1 FOOT RETRACTED LENGTH-12 INCH STRAIGHT TANGENT

2 FOOT RETRACTED LENGTH- 6 INCH STRAIGHT TANGENT

RETRACTILE POLYPROPYLENE INSULATED FOIL SHIELDED  
PVC JACKETED MINIATURE CORDS

| CATALOG NO. | RETRACTED LENGTH/FT | EXTENDED LENGTH/FT | COND. AWG | STRAND ING | WORKING VOLTAGE | CABLE O.D. | COIL O.D. |
|-------------|---------------------|--------------------|-----------|------------|-----------------|------------|-----------|
| 2880        | 1 FT                | 5 FT               | 2/28      | 19x40      | 300             | .145       | 1/2"      |
| 2881        | 1 FT                | 5 FT               | 3/28      | 19x40      | 300             | .155       | 1/2"      |
| 2882        | 1 FT                | 5 FT               | 4/28      | 19x40      | 300             | .165       | 9/16"     |
| 2883        | 1 FT                | 5 FT               | 5/28      | 19x40      | 300             | .175       | 9/16"     |
| 2884        | 1 FT                | 5 FT               | 6/28      | 19x40      | 300             | .185       | 5/8"      |
| 2885        | 1 FT                | 5 FT               | 7/28      | 19x40      | 300             | .190       | 5/8"      |
| 2886        | 1 FT                | 5 FT               | 8/28      | 19x40      | 300             | .235       | 7/8"      |
| 2887        | 2 FT                | 10 FT              | 2/28      | 19x40      | 300             | .145       | 1/2"      |
| 2888        | 2 FT                | 10 FT              | 3/28      | 19x40      | 300             | .155       | 1/2"      |
| 2889        | 2 FT                | 10 FT              | 4/28      | 19x40      | 300             | .165       | 9/16"     |
| 2890        | 2 FT                | 10 FT              | 5/28      | 19x40      | 300             | .175       | 9/16"     |
| 2891        | 2 FT                | 10 FT              | 6/28      | 19x40      | 300             | .185       | 5/8"      |
| 2892        | 2 FT                | 10 FT              | 7/28      | 19x40      | 300             | .190       | 5/8"      |
| 2893        | 2 FT                | 10 FT              | 8/28      | 19x40      | 300             | .235       | 7/8"      |
| 2894        | 2 FT                | 15 FT              | 2/28      | 19x40      | 300             | .145       | 1/2"      |
| 2895        | 2 FT                | 15 FT              | 3/28      | 19x40      | 300             | .155       | 1/2"      |
| 2896        | 2 FT                | 15 FT              | 4/28      | 19x40      | 300             | .165       | 9/16"     |
| 2897        | 2 FT                | 15 FT              | 5/28      | 19x40      | 300             | .175       | 9/16"     |
| 2898        | 2 FT                | 15 FT              | 6/28      | 19x40      | 300             | .185       | 5/8"      |
| 2899        | 2 FT                | 15 FT              | 7/28      | 19x40      | 300             | .190       | 5/8"      |
| 2900        | 2 FT                | 15 FT              | 8/28      | 19x40      | 300             | .235       | 7/8"      |

CONDUCTOR COLOR CODING: (1) BLACK, (2) WHITE, (3) RED, (4) GREEN, (5) ORANGE, (6) BLUE, (7) YELLOW (8) BROWN,

JACKET COLOR: BLACK-PRIMARY INSULATION PVC

\*(S) OVERALL HEAT LAMINATED MYLAR ALUMINUM FOIL PLUS TINNED COPPER DRAINWIRE

1 FOOT RETRACTED LENGTH-12 INCH STRAIGHT TANGENT ENDS

2 FOOT RETRACTED LENGTH- 6 INCH STRAIGHT TANGENT ENDS

3 FOOT RETRACTED LENGTH- 6 INCH STRAIGHT TANGENT ENDS

11044 KING STREET, DEPT: EEM, FRANKLIN PARK, IL 60131  
PHONE: 708/455-8830 • WATS LINE: 800/621-4278 • FAX 708/455-8837

**Consolidated**  
electronic wire & cable

# SHRINKABLE/NON-SHRINKABLE TUBING SLEEVING & TAPE

**DABURN**

Daburn tubing is stocked in a wide variety of materials to meet almost any combination of physical and environmental conditions. Below is a tabulation of these products with comparative characteristics to guide selection.

## SHRINKABLE TUBING • STRETCH-N-SEAL™ TAPE

| Material                                     | DABURN Series | Expanded I.D. Range    | Max. Op. Temp. | Shrink Temp. | Shrink Ratio  | Min. Flex Temp. | Volts/MIL | Notes                                             |
|----------------------------------------------|---------------|------------------------|----------------|--------------|---------------|-----------------|-----------|---------------------------------------------------|
| PVC                                          | SH265         | $\frac{3}{64}$ - 4"    | 105°C          | 95°C         | 2:1           | -10°C           | 700       | Also heavy wall SH267 Series                      |
| Irradiated Polyolefin Shrink-Melt            | SM270         | $\frac{1}{8}$ - 1"     | 110°C          | 110°C        | 3:1           | -55°C           | 500       | Inner liner for encapsulation, large shrink ratio |
| Neoprene                                     | SH162         | $\frac{1}{8}$ - 4"     | 120°C          | 120°C        | 2:1           | -70°C           | 300       |                                                   |
| Rubber Tape <b>NEW</b>                       | ST250†        | —                      | 130°C          | —†           | Stretches 2:1 | -40°C           | 1000      | No heat required Stretch-N-Seal™                  |
| Irradiated Polyolefin                        | SH275         | $\frac{3}{64}$ - 4"    | 135°C          | 120°C        | 2:1           | -55°C           | 500       | Also semi-rigid SH290 Series                      |
| Irradiated Polyolefin 3:1                    | SH321         | $\frac{1}{16}$ - 4"    | 135°C          | 90°C         | 3:1           | -55°C           | 500       |                                                   |
| Irradiated Polyolefin 4:1                    | SH277         | 1" - 4"                | 135°C          | 110°C        | 4:1           | -55°C           | 500       |                                                   |
| Kynar                                        | SH350         | $\frac{3}{64}$ - 1"    | 175°C          | 175°C        | 2:1           | -55°C           | 1000      |                                                   |
| Silicone Rubber Coated Fiberglass <b>NEW</b> | D221†         | .157<br>1.250"         | 200°C          | —†           | Stretches 2:1 | -70°C           |           | No heat required† 8KV rated normal or stretched   |
| FEP Teflon                                   | SH400         | .031-1.3"              | 200°C          | 250°C        | 1.3:1         | -67°C           | 2100      |                                                   |
| TFE/FEP Teflon Shrink-Melt                   | SM450         | $\frac{1}{32}$ - 1"    | 232°C          | 327°C        | 1.4:1         | -67°C           | 500       | Inner Wall Melts for encapsulation                |
| TFE Teflon                                   | SH621         | .034-1.5"              | 288°C          | 327°C        | 1.5:1         | -67°C           | 900       | Also Ultra-TW SH620 Series                        |
| TFE-Teflon 4:1                               | SH421         | $\frac{5}{64}$ - 1.25" | 288°C          | 327°C        | 4:1           | -67°C           | 500       |                                                   |

† Stretches and recovers without heat

## NON-SHRINK SLEEVING

| Material                          | DABURN Series | I.D. Range | Max. Op. Temp. | Min. Flex Temp. | Dry Volts/MIL  | Dielectric Constant | Standard Colors*                                                                                      |
|-----------------------------------|---------------|------------|----------------|-----------------|----------------|---------------------|-------------------------------------------------------------------------------------------------------|
| PVC-Low Temp                      | D74           | .022-2.5"  | 80°C           | -55°C           | 500 Min.       | 4.5                 | Clear                                                                                                 |
| PVC                               | D105          | .022-2.5"  | 105°C          | -10°C           | 1000 Avg.      | 6.0                 | #1 Thru 2 1/2" Clear, Black<br>#2 True #7 Clear, Black, White<br>#8 True #24 Clear, Black, White, Red |
| Vinyl Coated Fiberglass           | D130          | .022-1"    | 130°C          | -20°C           | 4000 Min.      | 7.0                 | Black, Yellow                                                                                         |
| Silicone Rubber Coated Fiberglass | D200          | .024-1"    | 200°C          | -70°C           | 8000 Avg.      | 3.7                 | White                                                                                                 |
| Teflon—Std. Wall                  | DTT550        | .022-1.5"  | 250°C          | -90°C           | 1400 Min.      | 2.2                 | Natural                                                                                               |
| Teflon—Thin-Wall                  | DTT500        | .012-1"    | 250°C          | -90°C           | 1400 Min.      | 2.2                 | Natural plus all MIL colors                                                                           |
| Teflon—Ultra-TW                   | DUT           | .002-.325" | 250°C          | -90°C           | 1400 Min.      | 2.2                 | Natural                                                                                               |
| Fiberglass                        | D1200         | .022-1"    | 648°C          | N.M.            | Space Variable | N.M.                | Natural                                                                                               |

\*Other colors available to order

All tubing is manufactured in accordance with applicable MIL, UL, and ASTM specifications. For complete technical and ordering information, please send for the current DABURN master catalog.

DABURN ELECTRONICS & CABLE CORP. • 225 PEGASUS AVE. • NORTHVALE, N.J., 07647 • 201-768-5400 • FAX 201-768-9642



**DABURN****SPECIALTY • HOOK-UP • BARE COPPER WIRE**

Daburn single conductor wire described below and on the page opposite is a representative selection from the complete line. Daburn stocks single conductor (including shielded and unshielded) MIL-W-76, glass braid, silicone rubber, aircraft, tefzel, kynar, microphone and coaxial (MIL & commercial). Also magnet, bare copper, copperweld, and bronze wire.

**600 VOLT U/L APPROVED**

-105°C (CSA 600V — 90°C)

**STYLE 1015, CSA TR-32, AWM, VW-1**

Resistant to acids, alkalis, oil, flame, fungus and moisture. Temperature Rating: -10°C to +105°C.



**DESCRIPTION:** One conductor stranded annealed copper tinned, plastic insulation.

**COLORS:** Black, Red, Green, Yellow, Blue, White, Orange, Gray, Purple.

**STANDARD PUT-UP:** 100 Ft., 500 Ft., 1000 Ft.

\* Meets MIL-W-76 Type HW.

Daburn stock includes UL hook-up styles: 1007, 1011, and 1061. Many other UL styles available to special order.

| DABURN No. | Size | Strand | Nom. Ins. Wall | Nom. O.D. |
|------------|------|--------|----------------|-----------|
| 2630*      | 22   | 7/30   | .032"          | .095"     |
| 2631*      | 20   | 10/30  | .032"          | .102"     |
| 2632*      | 18   | 16/30  | .032"          | .112"     |
| 2633*      | 16   | 26/30  | .032"          | .126"     |
| 2633/14    | 14   | 41/30  | .032"          | .142"     |
| 2633/12    | 12   | 65/30  | .032"          | .158"     |
| 2633/10    | 10   | 105/30 | .032"          | .180"     |

**PLASTIC KINKLESS TEST LEAD WIRE**

Soft formulation vinyl maximum flexibility.

Temperature stability from -60°C to

+105°C. Exceed requirements for MIL-I-

3930A Type JP (PVC). Suitable for test leads,

etc. Resistant to gasoline and oil. Excellent

abrasion resistance.

**DESCRIPTION:** One conductor tinned cop-

per stranded, special formulation vinyl in-

sulation — smooth surface.

**OPERATING TEMPERATURE:** -80°C to +105°C, 5000V rating.

**COLORS:** Black, Red, Yellow, Green, White, Blue.

| DABURN No. | Size | Strand | Ins.  | Nom. O.D. |
|------------|------|--------|-------|-----------|
| 2722/22    | 22   | 26/36  | .032" | .100"     |
| 2722/20    | 20   | 26/34  | .032" | .104"     |
| 2722/18    | 18   | 65/36  | .032" | .112"     |
| 2722/16    | 16   | 65/34  | .032" | .129"     |

**STANDARD PUT-UP:** 100 Ft., 500 Ft., 1000 Ft.

We also stock rubber test lead wire—black & red, #20, #18.

**DAFLEX ULTRA FLEXIBLE SUB-MINIATURE WIRE****U/L STYLE 1568, 1692**

Daflex ultra flexible sub-miniature hook-up wire is designed for continuous flexing applications, such as data processing, mercury thermostats, magnetic memory drums and rotation servo platforms. It offers superior limpness and flexing characteristics.

**DESCRIPTION:** Stranded soft bare copper conductor, insulated with a special formulation of flexible PVC to minimize kinking and fatigue.

**OPERATING TEMPERATURE:** -40°C to +80°C. U/L 1568 voltage rating: 30V.

| DABURN Cat. No. | AWG | Strand | Nom. Wall | Max. Volt | Nom. O.D. |
|-----------------|-----|--------|-----------|-----------|-----------|
| 2671/36         | 36  | 7/44†  | .005"     | 150       | .016"     |
| 2671/32         | 32  | 18/44  | .007"     | 300       | .023"     |
| 2671/30         | 30  | 28/44  | .010"     | 600       | .031"     |
| 2671/29         | 29  | 51/46  | .008"     | 300       | .032"     |
| 2671/28*        | 28  | 41/44  | .010"     | 600       | .035"     |
| 2671/27*        | 27  | 48/44  | .010"     | 600       | .037"     |
| 2671/26*        | 26  | 66/44  | .010"     | 600       | .042"     |
| 2671/24*        | 24  | 105/44 | .010"     | 600       | .045"     |
| 2671/22*        | 22  | 168/44 | .010"     | 600       | .052"     |
| 2671/20*        | 20  | 266/44 | .010"     | 600       | .061"     |
| 2671/18*        | 18  | 420/44 | .010"     | 600       | .072"     |

\* To U/L Style 1568, (150V) † Silver Plated Copper.

**STANDARD PUT-UP:** 1000 Ft.

**STOCK COLORS:** Black, White, Red, Green. Additional colors to order.

**IRRADIATED PVC HOOK-UP WIRE****U/L STYLE 1429 • CSA AWM XLPVC • UL STYLE 1430****C/A REW XLPVC • MIL-W-16878D TYPE B & TYPE C • VW-1**

Daburn's irradiated PVC Hook-Up wire is made from extruded polyvinyl chloride insulation which has been exposed to controlled radiation. This exposure causes the insulation to become far superior to ordinary PVC in temperature, abrasion and cut-through resistance. It can withstand direct contact with a soldering iron and it will not shrink back, melt or deform. Ideal for hi-density wiring.

One conductor, solid or stranded tinned copper, with irradiated PVC insulation (XLPVC.)

**TEMPERATURE RATING:** -55°C to +105°C (UL 1429 - 80°C, UL 1430 - 105°C.)

**VOLTAGE RATING:** 600V (UL 1429 - 150V). 1000V (UL 1430 - 300V.)

**TYPE B — UL STYLE 1429, 150V, 80°C — CSA AWM XLPVC — .010 WALL**

| DABURN CAT. NO | AWG | STRAND | NOM. O.D. |
|----------------|-----|--------|-----------|
| 2200/26        | 26  | 7/34   | .040"     |
| 2200/24        | 24  | 7/32   | .045"     |
| 2201/24        | 24  | 19/36  | .046"     |
| 2200/24S*      | 24  | SOLID  | .041"     |
| 2200/22        | 22  | 7/30   | .051"     |
| 2201/22        | 22  | 19/34  | .052"     |
| 2200/22S*      | 22  | SOLID  | .046"     |
| 2200/20        | 20  | 7/28   | .060"     |
| 2201/20        | 20  | 19/32  | .059"     |
| 2200/20S*      | 20  | SOLID  | .054"     |
| 2200/18        | 18  | 7/26   | .070"     |
| 2201/18        | 18  | 19/30  | .070"     |
| 2200/16        | 16  | 19/29  | .078"     |

**TYPE C — UL STYLE 1430, 300V, 105°C — REW XLPVC — .016 WALL**

| DABURN CAT. NO | AWG | STRAND | NOM. O.D. |
|----------------|-----|--------|-----------|
| 2215/24        | 24  | 7/32   | .056"     |
| 2215/22        | 22  | 7/30   | .062"     |
| 2215/20        | 20  | 7/28   | .070"     |
| 2215/18        | 18  | 7/26   | .082"     |
| 2215/16        | 16  | 19/29  | .093"     |

**STANDARD COLORS:** White, Black, Red, Green, Yellow, Blue, Brown, Orange, Gray, Violet.

**STANDARD PUT-UPS:** 100', 1000'.

\* Not MIL Spec approved. Additional colors, sizes and constructions to order.

**HIGH TEMPERATURE LEAD WIRE**

High temperature aircraft and missile test lead wire for operation between 500° and 2000°F. In three types—2497, 800°F max.; 2498, 1500°F max.; and 2499, 2000°F max. For dry environments only.

2497 and 2498 nickel-coated copper with silicone varnish impregnated braided glass fiber. Unshielded. Available in multiconductor and shielded construction.

| 800° F          | 1500° F         |      |           |           |
|-----------------|-----------------|------|-----------|-----------|
| DABURN Cat. No. | DABURN Cat. No. | Size | Strand    | Nom. O.D. |
| 2497/18         | 2498/18         | 18   | 19/.010"  | .085"     |
| 2497/20         | 2498/20         | 20   | 19/.008"  | .075"     |
| 2497/22         | 2498/22         | 22   | 19/.0063" | .070"     |

2499 Series nickel-coated copper, braided vitreous silica insulation, braided nickel-coated copper shield. Multiconductor construction available.

| 2000° F         |      |           |                      |                  |
|-----------------|------|-----------|----------------------|------------------|
| DABURN Cat. No. | Size | Strand    | Nom. Insul Thickness | Braid Ni. Shield |
| 2499/18         | 18   | 19/.010"  | .025"                | 16-5-36          |
| 2499/20         | 20   | 19/.008"  | .025"                | 24-3-36          |
| 2499/22         | 22   | 19/.0063" | .027"                | 24-3-36          |

**STANDARD PUT-UP:** 500 Ft., 1000 Ft.

**TINNED COPPER WIRE**

Pure Electrolytic, Copper, annealed, tinned for quick soldering—Solid Soft Drawn QQ-W-343 Type S, ASTM-B-33 Specifications.

| DABURN No. | Size AWG | Area Circ. Mils | O.D.  |
|------------|----------|-----------------|-------|
| 2360/4     | 4        | 41,704          | .204" |
| 2360/6     | 6        | 26,250          | .162" |
| 2360/8     | 8        | 16,510          | .129" |
| 2360/10    | 10       | 10,380          | .103" |
| 2360/12    | 12       | 6,530           | .082" |
| 2360/14    | 14       | 4,107           | .065" |
| 2360/16    | 16       | 2,583           | .051" |

**STANDARD PUT-UP:** 100 Ft., 1000 Ft. See Magnet Wire Section For Additional Sizes

**BUS BAR WIRE (Hard Drawn)**

For hooking up all types of transmitters, especially ultra short wave equipment. All bus wire is made of hard drawn copper, tinned, straightened, and cut in 2 ft. lengths.

QQ-W-343 Type S, ASTM-B-33, ASTM-B-246-51 Specifications

| DABURN No. | Nom. Circ. Mil Area | Size | Nom. O.D. |
|------------|---------------------|------|-----------|
| 2362/10    | 10,380              | 10   | .103"     |
| 2362/12    | 6,530               | 12   | .082"     |
| 2362/14    | 4,107               | 14   | .065"     |
| 2362/16    | 2,583               | 16   | .051"     |
| 2362/18    | 1,642               | 18   | .040"     |
| 2362/20    | 1,022               | 20   | .033"     |
| 2362/22    | 624                 | 22   | .025"     |

**STANDARD PUT-UP:** 100 Per Package in two foot lengths.



# HOOK-UP WIRE • BRAID

**DABURN**

The Daburn wire listed below is manufactured to meet MIL-W-16878 specifications as indicated. Wire to MIL-W-76 is also in stock in all voltage ratings, both shielded and unshielded. PVC hook-up with nylon jacket is also available from stock.

## MIL-W-16878/1 600V TYPE B

| AWG | DABURN Cat. No. | Conductor Strand | Nom. O.D. |
|-----|-----------------|------------------|-----------|
| 32  | 2500/32         | 7/40             | .028"     |
| 30  | 2500/30         | 7/38             | .030"     |
| 28  | 2500/28         | 7/36             | .033"     |
| 26  | 2500/26         | 7/34             | .037"     |
| 24  | 2500/24         | 7/32             | .043"     |
| 24  | 2501/24         | 19/36            | .043"     |
| 22  | 2500/22         | 7/30             | .048"     |
| 22  | 2501/22         | 19/34            | .048"     |
| 20  | 2500/20         | 7/28             | .057"     |
| 20  | 2501/20         | 19/32            | .057"     |
| 18  | 2500/18         | 7/26             | .067"     |
| 18  | 2501/18         | 19/30            | .067"     |
| 16  | 2500/16         | 19/29            | .077"     |
| 14  | 2500/14         | 19/27            | .091"     |

## MIL-W-16878/2 1000V TYPE C

| AWG | DABURN Cat. No. | Conductor Strand | Nom. O.D. |
|-----|-----------------|------------------|-----------|
| 24  | 2515/24         | 7/32             | .058"     |
| 22  | 2515/22         | 7/30             | .064"     |
| 20  | 2515/20         | 7/28             | .072"     |
| 18  | 2515/18         | 7/26             | .082"     |
| 16  | 2515/16         | 19/29            | .091"     |
| 14  | 2515/14         | 19/27            | .105"     |
| 12  | 2515/12         | 19/25            | .135"     |

Temperature rating: -55 to 105°C.

10 colors in stock plus a variety of tracers. Specify.

Nylon jacketed versions for greater physical and chemical protection: type 2510-600V, type 2520-1000V, type 2525N-3000V

Shielded versions to meet MIL-W-16878 and MIL-W-76 with braided tinned copper shields and PVC outer jacket are in stock.

## MIL-W-16878/3 3000V TYPE D

| AWG | DABURN Cat. No. | Conductor Strand | Nom. O.D. |
|-----|-----------------|------------------|-----------|
| 24  | 2525/24         | 7/32             | .084"     |
| 22  | 2525/22         | 7/30             | .089"     |
| 20  | 2525/20         | 7/28             | .087"     |
| 18  | 2525/18         | 7/26             | .107"     |
| 16  | 2525/16         | 26/30            | .116"     |
| 14  | 2525/14         | 41/30            | .136"     |
| 12  | 2525/12         | 86/30            | .169"     |
| 10  | 2525/10         | 105/30           | .194"     |
| 8   | 2525/8          | 133/29           | .247"     |
| 6   | 2525/6          | 133/27           | .291"     |
| 4   | 2525/4          | 133/25           | .355"     |
| 2   | 2525/2          | 655/30           | .425"     |

P-U: 100', 1000'

## TEFLON\* WIRE TYPE E — 600 VOLTS PER MIL-W-16878 • UL 1213

### SPEC. MIL-W-16878E/4 High Temperature Rating -90°C to +200°C VW-1

Single conductor, stranded silver plated copper, .010" TFE Teflon\* insulation.

Acid, alkalis, oil, flame, moisture, fungus, solvent resistant. Order nickel plated for 250°C.

| DABURN Extruded Cat. No. | DABURN Wrapped Cat. No. | Size MIL Type Designation | Max Dia. Over Insul. | Strand | DABURN Extruded Cat. No. | DABURN Wrapped Cat. No. | Size MIL Type Designation | Max Dia. Over Insul. | Strand | DABURN Extruded Cat. No. | DABURN Wrapped Cat. No. | Size MIL Type Designation | Max Dia. Over Insul. | Strand |
|--------------------------|-------------------------|---------------------------|----------------------|--------|--------------------------|-------------------------|---------------------------|----------------------|--------|--------------------------|-------------------------|---------------------------|----------------------|--------|
| 2401                     | —                       | E-32                      | 7/40                 | .033"  | 2405S                    | —                       | E-24(1)                   | 1                    | .045"  | 2408                     | 2415/18                 | E-18                      | 19/30                | .074"  |
| 2402                     | —                       | E-30                      | 7/38                 | .036"  | 2406                     | 2415/22                 | E-22                      | 19/34                | .054"  | 2409                     | 2415/16                 | E-16                      | 19/29                | .079"  |
| 2403                     | 2415/28                 | E-28                      | 7/36                 | .039"  | 2406-7                   | —                       | E-22                      | 7/30                 | .054"  | 2409/14                  | —                       | E-14                      | 19/27                | .097"  |
| 2404                     | 2415/26                 | E-26                      | 7/34                 | .043"  | 2406S                    | —                       | E-22(1)                   | 1                    | .048"  | 2409/12                  | —                       | E-12                      | 19/25                | .120"  |
| 2404S                    | —                       | E-26(1)                   | 1                    | .040"  | 2407                     | 2415/20                 | E-20                      | 19/32                | .062"  | 2409/10                  | —                       | E-10                      | 37/26                | .139"  |
| 2405                     | 2415/24                 | E-24                      | 19/36                | .048"  | 2407-7                   | —                       | E-20                      | 7/28                 | .062"  |                          |                         |                           |                      |        |
| 2405-7                   | —                       | E-24                      | 7/32                 | .048"  | 2407S                    | —                       | E-20(1)                   | 1                    | .056"  |                          |                         |                           |                      |        |

## TEFLON\* TYPE EE MIL-W-16878

### Extruded (1000 Volts) MIL-W-16878D MIL-W-16878E/5

DESCRIPTION: Single conductor silver plated copper wire concentrically insulated and insulated with .016 TFE extruded TEFLON\* insulation.

TEMPERATURE RATING: -90°C to +200°C, 1000 volts. Order nickel plated strand for 250°C.

| DABURN Cat. No.  | MIL Type Designation | Size AWG | Strand | Nom. O.D. |
|------------------|----------------------|----------|--------|-----------|
| 2428/24          | EE-24                | 24       | 19/36  | .055"     |
| 2428/22          | EE-22                | 22       | 19/34  | .062"     |
| 2428/20          | EE-20                | 20       | 19/32  | .070"     |
| 2428/18          | EE-18                | 18       | 19/30  | .080"     |
| 2428/16          | EE-16                | 16       | 19/29  | .089"     |
| 2428/14          | EE-14                | 14       | 19/27  | .106"     |
| 2428/12          | EE-12                | 12       | 19/25  | .124"     |
| 2428/10          | EE-10                | 10       | 37/26  | .145"     |
| 2428/8 (wrapped) | EE-8                 | 8        | 133/29 | .210"     |

## TEFLON\* TYPE ET MIL-W-16878 250 VOLTS, 200°C

MIL-W-16878E/6

Provides lighter weight, greater flexibility and hi temperature resistance. Size Nos. 32 thru 20 conform to MIL-W-16878D Type ET 250 volts, 200°C. Silver plated copper conductor.

| DABURN Cat. No. | MIL Type | AWG Size | Min. Strand | Nom. O.D. |
|-----------------|----------|----------|-------------|-----------|
| 2427/36         | —        | 36       | 7/44        | .018"     |
| 2427/34         | —        | 34       | 7/42        | .020"     |
| 2427/32         | ET-32    | 32       | 7/40        | .021"     |
| 2427/30         | ET-30    | 30       | 7/38        | .024"     |
| 2427/28         | ET-28    | 28       | 7/36        | .027"     |
| 2427/26         | ET-26    | 26       | 7/34        | .031"     |
| 2427/24         | ET-24    | 24       | 7/32        | .036"     |
| 2427/22         | ET-22    | 22       | 7/30        | .042"     |
| 2427/20         | ET-20    | 20       | 7/28        | .049"     |

Stocked in ten colors and a variety of tracers. Teflon hook-up also stocked in UL styles 1164, 1180, and 1213 shielded and multiconductor TFE and FEP cable in stock. \*DUPONT

## TUBULAR BRAID PER MIL SPEC QQ-B-575

Tinned copper shielded braid m'd completely round per Mil Spec QQ-B-575-R. Maintains its round configuration. Shielding coverage is 95% or more. Used in military applications where maximum shielding is required against electrostatic interference. Useful against mechanical abrasion and stresses for cables — as grounding cable.

| DABURN No. | Nom. Inside Diam. When Rounded | Construction Total No. of Wires | Carriers | AWG of Indiv. Wires | Approx. AWG Equiv. | Nom. Circular Mils | Current Carrying Cap. | DABURN No.   | Nom. Inside Diam. When Rounded | Construction Total No. of Wires | Carriers | AWG of Indiv. Wires | Approx. AWG Equiv. | Nom. Circular Mils | Current Carrying Cap. |
|------------|--------------------------------|---------------------------------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|--------------------------------|---------------------------------|----------|---------------------|--------------------|--------------------|-----------------------|
| 2350-1/32  | 1/32"                          | 24                              | 24       | #36                 | #22                | 640                | 7.0 amps              | 2350-1/2     | 1/2"                           | 528                             | 48       | #36                 | # 9                | 13,200             | 70.0 amps             |
| 2350-1/16  | 1/16"                          | 48                              | 24       | #36                 | #19                | 1290               | 11.0 amps             | 2350-9/16†   | 9/16"                          | 528                             | 48       | #36                 | # 9                | 13,200             | 70.0 amps             |
| 2350-5/64  | 5/64"                          | 72                              | 24       | #36                 | #17                | 1900               | 18.0 amps             | 2351-9/16    | 9/16"                          | 480                             | 48       | #30                 | # 3                | 48,240             | 145.0 amps            |
| 2350-7/64  | 7/64"                          | 96                              | 24       | #36                 | #16                | 2500               | 22.0 amps             | 2350-21/32   | 21/32"                         | 768                             | 48       | #30                 | # 1                | 77,180             | 190.0 amps            |
| 2350-1/8   | 1/8"                           | 120                             | 24       | #36                 | #15                | 3260               | 28.0 amps             | 2350-11/16†  | 11/16"                         | 720                             | 48       | #36                 | # 7                | 19,000             | 82.0 amps             |
| 2350-5/32  | 5/32"                          | 240                             | 24       | #36                 | #12                | 6200               | 39.0 amps             | 2350-25/32   | 25/32"                         | 864                             | 48       | #36                 | # 7                | 21,750             | 85.0 amps             |
| 2350-11/64 | 11/64"                         | 168                             | 24       | #36                 | #14                | 4500               | 32.0 amps             | 2350-13/16   | 13/16"                         | 864                             | 48       | #36                 | # 7                | 21,750             | 85.0 amps             |
| 2350-3/16  | 3/16"                          | 192                             | 24       | #36                 | #13                | 5100               | 35.0 amps             | 2350-7/8     | 7/8"                           | 336                             | 48       | #30                 | # 5                | 33,700             | 100.0 amps            |
| 2350-13/64 | 13/64"                         | 312                             | 24       | #36                 | #11                | 8200               | 46.0 amps             | 2350-1"      | 1"                             | 384                             | 48       | #30                 | # 4                | 38,600             | 120.0 amps            |
| 2350-1/4   | 1/4"                           | 384                             | 24       | #36                 | #10                | 10,400             | 53.0 amps             | 2350-1 1/4"  | 1 1/4"                         | 432                             | 48       | #30                 | # 4                | 43,330             | 130.0 amps            |
| 2350-9/32  | 9/32"                          | 120                             | 24       | #30                 | # 9                | 12,060             | 60.0 amps             | 2350-1 1/2"† | 1 1/2"                         | 480                             | 48       | #30                 | # 3                | 48,150             | 145.0 amps            |
| 2350-3/8   | 3/8"                           | 384                             | 48       | #36                 | #10                | 10,400             | 53.0 amps             | 2350-1 3/4"  | 1 3/4"                         | 528                             | 48       | #30                 | # 3                | 53,000             | 150.0 amps            |
| 2350-7/16  | 7/16"                          | 240                             | 24       | #30                 | # 6                | 24,120             | 90.0 amps             | 2350-1 1/2"  | 1 1/2"                         | 576                             | 48       | #30                 | # 2                | 57,775             | 165.0 amps            |

Flat braid (2355 series) and stainless steel braid (2354 series) in stock. Standard put-ups: 50', 100', 250'. Larger spools available. †Manufactured to QQB575 but not listed under spec. Send for our complete catalog. Items on this page may be ordered cut to length, cut & stripped, & printed. Values based on copper in free air at 65°F and intended as a guide only. Silver plated copper and nickel plated copper braid to order.

DABURN ELECTRONICS & CABLE CORP. • 225 PEGASUS AVE. • NORTHVALE, N.J., 07647 • 201-768-5400 • FAX 201-768-9642



**DABURN**

# HI-VOLTAGE CABLE



Voltage Rating at Sea Level - Voltage Rating at 80,000 feet, approximately 1/3 lower - Minimum life expectancy: 10,000 hours



## HI-VOLT CORONA RESISTANT TEFLON\* CABLE®

**SMALL SIZE:** You do not need bulky, thick, insulation jacketing as used with silicone rubber and polyethylene insulations to get your hi-voltage requirements. Wire used is MIL-SPEC QQ-W-343 and MIL-W-16878. Insulation used conforms to and surpasses MIL-SPEC-W-16878.

**AVOID CORONA PROBLEMS:** Corona Resistant Teflon construction is specifically designed to retard and prevent corona penetration.

Temperature variations from -60°C to +250°C have no life effect on the corona resistant Teflon. In addition, there is no stress or crack failure under severe, adverse conditions including mechanical strain, moisture, corona or chemical conditions.

**DESCRIPTION:** Single Conductor, Stranded Silver Plated Copper, Corona Resistant Teflon\* Insulation.

**TEMPERATURE RATING:** -90°C to +250°C.

**VOLTAGE RATING:** Based on insulation thickness.

**AVAILABLE COLORS:** White, Black, Red, Green, Yellow, Lt. Blue, Brown, Orange, Gray, Violet. (Also available in tracer colors)

**PUT-UP:** 250', 500', 1000'.

## ADDITIONAL SIZES AND VOLTAGES AVAILABLE

## WRITE FOR COMPLETE CATALOG

| DABURN No. | AWG Size | Strand | Voltage Rating |        | Nom. O.D. |
|------------|----------|--------|----------------|--------|-----------|
|            |          |        | AC             | DC     |           |
| CRT10-2    | 10       | 37/26  | 2500           | 10,000 | .158"     |
| CRT10-2.5  | 10       | 37/26  | 3750           | 12,500 | .168"     |
| CRT12-2    | 12       | 19/25  | 2500           | 10,000 | .142"     |
| CRT12-2.5  | 12       | 19/25  | 3750           | 12,500 | .152"     |
| CRT12-3    | 12       | 19/25  | 4500           | 15,000 | .162"     |
| CRT12-3.5  | 12       | 19/25  | 5300           | 17,500 | .172"     |
| CRT12-4    | 12       | 19/25  | 6000           | 20,000 | .182"     |
| CRT12-5    | 12       | 19/25  | 7500           | 25,000 | .202"     |
| CRT12-6.5  | 12       | 19/25  | 10,000         | 32,500 | .232"     |
| CRT12-8    | 12       | 19/25  | 12,000         | 40,000 | .262"     |
| CRT12-10   | 12       | 19/25  | 15,000         | 50,000 | .302"     |
| CRT14-2    | 14       | 19/27  | 2500           | 10,000 | .124"     |
| CRT14-2.5  | 14       | 19/27  | 3750           | 12,500 | .134"     |
| CRT14-3    | 14       | 19/27  | 4500           | 15,000 | .144"     |
| CRT14-3.5  | 14       | 19/27  | 5300           | 17,500 | .154"     |
| CRT14-4    | 14       | 19/27  | 6000           | 20,000 | .164"     |
| CRT14-5    | 14       | 19/27  | 7500           | 25,000 | .184"     |
| CRT14-6.5  | 14       | 19/27  | 10,000         | 32,500 | .214"     |
| CRT14-8    | 14       | 19/27  | 12,000         | 40,000 | .244"     |
| CRT14-10   | 14       | 19/27  | 15,000         | 50,000 | .284"     |
| CRT16-2    | 16       | 19/29  | 2500           | 10,000 | .111"     |
| CRT16-2.5  | 16       | 19/29  | 3750           | 12,500 | .119"     |
| CRT16-3    | 16       | 19/29  | 4500           | 15,000 | .129"     |
| CRT16-3.5  | 16       | 19/29  | 5300           | 17,500 | .141"     |
| CRT16-4    | 16       | 19/29  | 6000           | 20,000 | .151"     |
| CRT16-5    | 16       | 19/29  | 7500           | 25,000 | .172"     |
| CRT16-6.5  | 16       | 19/29  | 10,000         | 32,500 | .201"     |
| CRT16-8    | 16       | 19/29  | 12,000         | 40,000 | .231"     |
| CRT16-10   | 16       | 19/29  | 15,000         | 50,000 | .271"     |
| CRT18-2    | 18       | 19/30  | 2500           | 10,000 | .105"     |
| CRT18-2.5  | 18       | 19/30  | 3750           | 12,500 | .114"     |
| CRT18-3    | 18       | 19/30  | 4500           | 15,000 | .124"     |
| CRT18-3.5  | 18       | 19/30  | 5300           | 17,500 | .135"     |
| CRT18-4    | 18       | 19/30  | 6000           | 20,000 | .145"     |
| CRT18-5    | 18       | 19/30  | 7500           | 25,000 | .166"     |
| CRT18-6.5  | 18       | 19/30  | 10,000         | 32,500 | .194"     |
| CRT18-8    | 18       | 19/30  | 12,000         | 40,000 | .225"     |
| CRT18-10   | 18       | 19/30  | 15,000         | 50,000 | .265"     |

| DABURN No. | AWG Size | Strand | Voltage Rating |        | Nom. O.D. |
|------------|----------|--------|----------------|--------|-----------|
|            |          |        | AC             | DC     |           |
| CRT20-2    | 20       | 19/32  | 2500           | 10,000 | .095"     |
| CRT20-2.5  | 20       | 19/32  | 3750           | 12,500 | .105"     |
| CRT20-3    | 20       | 19/32  | 4500           | 15,000 | .115"     |
| CRT20-3.5  | 20       | 19/32  | 5300           | 17,500 | .126"     |
| CRT20-4    | 20       | 19/32  | 6000           | 20,000 | .135"     |
| CRT20-5    | 20       | 19/32  | 7500           | 25,000 | .156"     |
| CRT20-6.5  | 20       | 19/32  | 10,000         | 32,500 | .185"     |
| CRT20-8    | 20       | 19/32  | 12,000         | 40,000 | .215"     |
| CRT20-10   | 20       | 19/32  | 15,000         | 50,000 | .255"     |
| CRT22-2    | 22       | 19/34  | 2500           | 10,000 | .087"     |
| CRT22-2.5  | 22       | 19/34  | 3750           | 12,500 | .097"     |
| CRT22-3    | 22       | 19/34  | 4500           | 15,000 | .107"     |
| CRT22-3.5  | 22       | 19/34  | 5300           | 17,500 | .118"     |
| CRT22-4    | 22       | 19/34  | 6000           | 20,000 | .127"     |
| CRT22-5    | 22       | 19/34  | 7500           | 25,000 | .148"     |
| CRT22-6.5  | 22       | 19/34  | 10,000         | 32,500 | .177"     |
| CRT22-8    | 22       | 19/34  | 12,000         | 40,000 | .207"     |
| CRT22-10   | 22       | 19/34  | 15,000         | 50,000 | .247"     |
| CRT24-2    | 24       | 19/36  | 2500           | 10,000 | .081"     |
| CRT24-2.5  | 24       | 19/36  | 3750           | 12,500 | .091"     |
| CRT24-3    | 24       | 19/36  | 4500           | 15,000 | .101"     |
| CRT24-3.5  | 24       | 19/36  | 5300           | 17,500 | .112"     |
| CRT24-4    | 24       | 19/36  | 6000           | 20,000 | .121"     |
| CRT24-5    | 24       | 19/36  | 7500           | 25,000 | .142"     |
| CRT24-6.5  | 24       | 19/36  | 10,000         | 32,500 | .171"     |
| CRT24-8    | 24       | 19/36  | 12,000         | 40,000 | .201"     |
| CRT24-10   | 24       | 19/36  | 15,000         | 50,000 | .241"     |
| CRT26-2    | 26       | 7/34   | 2500           | 10,000 | .071"     |
| CRT26-2.5  | 26       | 7/34   | 3750           | 12,500 | .081"     |
| CRT26-3    | 26       | 7/34   | 4500           | 15,000 | .091"     |
| CRT26-3.5  | 26       | 7/34   | 5300           | 17,500 | .101"     |
| CRT26-4    | 26       | 7/34   | 6000           | 20,000 | .111"     |
| CRT26-5    | 26       | 7/34   | 7500           | 25,000 | .131"     |
| CRT26-6.5  | 26       | 7/34   | 10,000         | 32,500 | .161"     |
| CRT26-8    | 26       | 7/34   | 12,000         | 40,000 | .191"     |
| CRT26-10   | 26       | 7/34   | 15,000         | 50,000 | .231"     |

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## HI-VOLTAGE SILICONE RUBBER LEAD WIRE 200°C VW-1

One conductor stranded tinned copper, extruded flexible silicone rubber insulation overall. Constructions to UL-3239 (150°C) and nickel plated conductor available. **STANDARD COLOR:** White (Natural). Additional colors to order.

| DABURN Cat. No. | Size AWG | Strand | Nom. Ins. Wall | D.C. Volt Rating | Nom. O.D. | DABURN Cat. No. | Size AWG | Strand | Nom. Ins. Wall | D.C. Volt Rating | Nom. O.D. |
|-----------------|----------|--------|----------------|------------------|-----------|-----------------|----------|--------|----------------|------------------|-----------|
|                 |          |        |                |                  |           |                 |          |        |                |                  |           |
| 2636/22A        | 22       | 7/30   | .045"          | 20KV             | 120"      | 2636/16D        | 16       | 26/30  | .097"          | 40KV             | .258"     |
| 2636/22B        | 22       | 7/30   | .062"          | 25KV             | 155"      | 2636/14A        | 14       | 41/30  | .045"          | 20KV             | .187"     |
| 2636/22C        | 22       | 7/30   | .075"          | 30KV             | 180"      | 2636/14B        | 14       | 41/30  | .062"          | 25KV             | .200"     |
| 2636/22D        | 22       | 7/30   | .097"          | 40KV             | 225"      | 2636/14C        | 14       | 41/30  | .075"          | 30KV             | .227"     |
| 2636/20A        | 20       | 10/30  | .045"          | 20KV             | 125"      | 2636/14D        | 14       | 41/30  | .087"          | 40KV             | .276"     |
| 2636/20B        | 20       | 10/30  | .062"          | 25KV             | 160"      | 2636/12A        | 12       | 65/30  | .045"          | 20KV             | .181"     |
| 2636/20C        | 20       | 10/30  | .075"          | 30KV             | 186"      | 2636/12B        | 12       | 65/30  | .062"          | 25KV             | .215"     |
| 2636/20D        | 20       | 10/30  | .097"          | 40KV             | 232"      | 2636/12C        | 12       | 65/30  | .075"          | 30KV             | .241"     |
| 2636/18A        | 18       | 16/30  | .045"          | 20KV             | 135"      | 2636/12D        | 12       | 65/30  | .087"          | 40KV             | .290"     |
| 2636/18B        | 18       | 16/30  | .062"          | 25KV             | 170"      | 2636/10A        | 10       | 105/30 | .045"          | 20KV             | .220"     |
| 2636/18C        | 18       | 16/30  | .075"          | 30KV             | 196"      | 2636/10B        | 10       | 105/30 | .062"          | 25KV             | .255"     |
| 2636/18D        | 18       | 16/30  | .097"          | 40KV             | 245"      | 2636/10C        | 10       | 105/30 | .075"          | 30KV             | .280"     |
| 2636/16A        | 16       | 26/30  | .045"          | 20KV             | 150"      | 2636/10D        | 10       | 105/30 | .087"          | 40KV             | .325"     |
| 2636/16B        | 16       | 26/30  | .062"          | 25KV             | 185"      |                 |          |        |                |                  |           |
| 2636/16C        | 16       | 26/30  | .075"          | 30KV             | 210"      |                 |          |        |                |                  |           |

STANDARD PUT-UP: 100 Ft., 1000 Ft.

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# CABLE: TEFLON® • COMPUTER

**DABURN**

These products represent a small segment of the Daburn multiconductor cable line. In addition to hundreds of configurations on our shelves for immediate delivery, a near infinite variety of designs may be fabricated to order. The broad spectrum of Daburn multiconductor is described at the bottom of this page. Ask for our latest

**DESCRIPTION:** One or more conductors, each conductor silver plated concentrically stranded copper wire. Type E, MIL-W-16878E/4 extruded TFE .010" insulation. When shielded, braided silver plated copper shield over conductor(s), 90% shield coverage. When covered, either a TEFLON® impregnated fiberglass braid or a .010" TEFLON® fused, dou-

master catalog containing complete specs for all Daburn products.

Two other configurations of the family shown below are the 2464 series with teflon impregnated jacket overall and no shield, and the 2430 series of shielded teflon cable, without jacket.

ble tape jacket overall. Fungus, solvent, moisture, flame, acid, alkali and oil resistant. Multi-conductors are twisted.

**VOLTAGE RATING:** 600V, VW-1.

**TEMPERATURE RATING:** -65°C to +200°C. For 250°C USE N.P. CONDUCTOR.

## TEFLON® IMPREGNATED BRAID OVER SHIELD



| DABURN No. | Conds. | AWG Size | Strand | Nom. O.D. |
|------------|--------|----------|--------|-----------|
| 2444       | 1      | 26       | 7/34   | .075"     |
| 2444/2     | 2      | 26       | 7/34   | .119"     |
| 2445       | 1      | 24       | 19/36  | .081"     |
| 2445/2     | 2      | 24       | 19/36  | .126"     |
| 2445/3     | 3      | 24       | 19/36  | .133"     |
| 2445/4     | 4      | 24       | 19/36  | .144"     |
| 2445/5     | 5      | 24       | 19/36  | .156"     |
| 2446       | 1      | 22       | 19/34  | .088"     |
| 2446/2     | 2      | 22       | 19/34  | .137"     |
| 2446/3     | 3      | 22       | 19/34  | .144"     |
| 2446/4     | 4      | 22       | 19/34  | .158"     |
| 2446/5     | 5      | 22       | 19/34  | .172"     |

| DABURN No. | Conds. | AWG Size | Strand | Nom. O.D. |
|------------|--------|----------|--------|-----------|
| 2447       | 1      | 20       | 19/32  | .093"     |
| 2447/2     | 2      | 20       | 19/32  | .154"     |
| 2447/3     | 3      | 20       | 19/32  | .163"     |
| 2447/4     | 4      | 20       | 19/32  | .180"     |
| 2447/5     | 5      | 20       | 19/32  | .195"     |
| 2448       | 1      | 18       | 19/30  | .097"     |
| 2448/2     | 2      | 18       | 19/30  | .162"     |
| 2448/3     | 3      | 18       | 19/30  | .172"     |
| 2448/4     | 4      | 18       | 19/30  | .192"     |
| 2448/5     | 5      | 18       | 19/30  | .207"     |
| 2449       | 1      | 16       | 19/29  | .117"     |
| 2449/2     | 2      | 16       | 19/29  | .196"     |

## TEFLON® TAPE WRAP JACKET OVER SHIELD



| DABURN No. | Conds. | AWG Size | Strand | Nom. O.D. |
|------------|--------|----------|--------|-----------|
| 2454       | 1      | 26       | 7/34   | .078"     |
| 2454/2     | 2      | 26       | 7/34   | .125"     |
| 2455       | 1      | 24       | 19/36  | .084"     |
| 2455/2     | 2      | 24       | 19/36  | .128"     |
| 2455/3     | 3      | 24       | 19/36  | .135"     |
| 2455/4     | 4      | 24       | 19/36  | .148"     |
| 2455/5     | 5      | 24       | 19/36  | .162"     |
| 2456       | 1      | 22       | 19/34  | .090"     |
| 2456/2     | 2      | 22       | 19/34  | .140"     |
| 2456/3     | 3      | 22       | 19/34  | .148"     |
| 2456/4     | 4      | 22       | 19/34  | .162"     |
| 2456/5     | 5      | 22       | 19/34  | .183"     |

| DABURN No. | Conds. | AWG Size | Strand | Nom. O.D. |
|------------|--------|----------|--------|-----------|
| 2457       | 1      | 20       | 19/32  | .099"     |
| 2457/2     | 2      | 20       | 19/32  | .158"     |
| 2457/3     | 3      | 20       | 19/32  | .167"     |
| 2457/4     | 4      | 20       | 19/32  | .184"     |
| 2457/5     | 5      | 20       | 19/32  | .204"     |
| 2458       | 1      | 18       | 19/30  | .109"     |
| 2458/2     | 2      | 18       | 19/30  | .178"     |
| 2458/3     | 3      | 18       | 19/30  | .189"     |
| 2458/4     | 4      | 18       | 19/30  | .208"     |
| 2458/5     | 5      | 18       | 19/30  | .230"     |
| 2459       | 1      | 16       | 19/29  | .130"     |
| 2459/2     | 2      | 16       | 19/29  | .230"     |

**STANDARD SPOOL PUT-UPS:** 250 Ft., 500 Ft., 1000 Ft. **CONDUCTOR COLOR CODE:** 1—White, 2—Black, 3—Red, 4—Green, 5—Yellow.

**WE ALSO STOCK**—Shield braid over conductors; Teflon® impregnated braid over conductors—no shield. Additional constructions to order.

## FEP TEFLON® CABLE

FEP EXTRUDED JACKET OVER SHIELD TYPE E CONDUCTORS



**DESCRIPTION:** Each conductor silver plated stranded copper wire, Type E extruded TFE .010" insulation. Color coded, cabled, braided silver plated copper shield—90% coverage, FEP white teflon jacket overall.

**TEMPERATURE RATING:** -65°C to +200°C.

**VOLTAGE RATING:** 600V, VW-1.

**CONDUCTOR COLOR CODE:**

1—White, 2—Black, 3—Red, 4—Green.

**STANDARD PUT-UP:** 500 Ft., 1000 Ft.

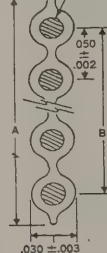
Additional FEP constructions available to order.

\*DUPONT

| DABURN No. | Conds. | AWG Size | Strand | Nom. O.D. |
|------------|--------|----------|--------|-----------|
| 2480       | 1      | 24       | 19/36  | .085"     |
| 2480/2     | 2      | 24       | 19/36  | .130"     |
| 2480/3     | 3      | 24       | 19/36  | .135"     |
| 2480/4     | 4      | 24       | 19/36  | .148"     |
| 2481       | 1      | 22       | 19/34  | .091"     |
| 2481/2     | 2      | 22       | 19/34  | .150"     |
| 2481/3     | 3      | 22       | 19/34  | .158"     |
| 2481/4     | 4      | 22       | 19/34  | .172"     |
| 2482       | 1      | 20       | 19/32  | .100"     |
| 2482/2     | 2      | 20       | 19/32  | .168"     |
| 2482/3     | 3      | 20       | 19/32  | .178"     |
| 2482/4     | 4      | 20       | 19/32  | .193"     |
| 2483       | 1      | 18       | 19/30  | .110"     |
| 2483/2     | 2      | 18       | 19/30  | .188"     |
| 2483/3     | 3      | 18       | 19/30  | .207"     |
| 2483/4     | 4      | 18       | 19/30  | .222"     |
| 2484       | 1      | 16       | 19/29  | .123"     |
| 2484/2     | 2      | 16       | 19/29  | .220"     |

## TEFLON HIGH TEMPERATURE FLAT RIBBON CABLE

UL STYLE 20424 • 200°C • 300 VOLTS • VW-1



**NOM. WALL:** .008"

**THICKNESS:** .030 ± .003"

**TEMPERATURE RATING:**

-65°C to +200°C

**DIELECTRIC CONSTANT:** 1.54

**CONDUCTOR RESISTANCE:**

63 Ohms/M

**CAPACITANCE NOM.:**

10.9 PF/FT (G.S.G.)

**IMPEDANCE:** 120 Ohms nom. (G.S.G.)

Each conductor is 28 AWG, 7 strand of 36 AWG silver plated copper with flexible FEP insulation overall. Conductors are spaced on .050" ± .002" centers, allowing for mass termination with conventional insulation displacement connectors.

| DABURN Cat. No. | No. Cond. | (.050 Pitch) |              |
|-----------------|-----------|--------------|--------------|
|                 |           | Nom. Span B  | Nom. Width A |
| 2488/9          | 9         | .400 ± .008  | .450 ± .010  |
| 2488/10         | 10        | .450 ± .008  | .500 ± .010  |
| 2488/14         | 14        | .650 ± .008  | .700 ± .010  |
| 2488/16         | 16        | .750 ± .010  | .800 ± .015  |
| 2488/25         | 25        | 1.200 ± .010 | 1.250 ± .015 |

**STANDARD PUT-UP:** 100' (30.48M); larger packages available to order.

**STANDARD COLOR:** Natural

**ADDITIONAL CONSTRUCTIONS AVAILABLE:** Shielded, shielded and jacketed; PFA (for higher temperature), Tefzel; .100" center spacing; 19 strand (for high flexing—above 50,000,000 flexures).

**ADDITIONAL STANDARD CONSTRUCTION THRU 64 COND.**

The two multiconductor computer cables shown below are among many Daburn designs featuring reliable, interference-free operation. Other stock configurations include multi- and twisted-pair styles, single and double shield construction. #24AWG UL Style 2484 & CL2.

## MINIATURE COMPUTER CABLE—SHIELD-PLUS™ CL2 MULTICONDUCTOR TO UL STYLE 2464

**DESCRIPTION:** Each conductor is #28 AWG 7/36 tinned copper, color coded, .009" wall of semi-rigid PVC (UL Style 1061, CSA Type S-R PVC). Conductors are twisted. Overall aluminum/polyester foil shield and 7 strand tinned copper drain wire, plus an overall braided shield of tinned copper (SHIELD-PLUS®). Gray PVC jacket overall. To UL Style 2464, FCC Docket 20780, MIL-STD 461-462B.

Construction is flexible and suitable for computer, communication and control applications.

Cable resists acids, alkalis, oil, solvents, moisture and fungus.

**TEMPERATURE RANGE:** -20°C to +80°C.

**VOLTAGE RATING:** 300V.

**FLAMMABILITY:** Passes UL VW-1.



| DABURN Cat. No. | No. of Cond. | Nom. Jacket Wall |     | Nominal O.D. |       |
|-----------------|--------------|------------------|-----|--------------|-------|
|                 |              | Inches           | mm  | Inches       | mm    |
| 2928            | 2            | .032             | .81 | .170         | 4.30  |
| 2928/3          | 3            | .032             | .81 | .175         | 4.40  |
| 2928/4          | 4            | .032             | .81 | .185         | 4.70  |
| 2928/6          | 6            | .032             | .81 | .205         | 5.20  |
| 2928/8          | 8            | .032             | .81 | .215         | 5.40  |
| 2928/10         | 10           | .032             | .81 | .240         | 6.10  |
| 2928/15         | 15           | .032             | .81 | .265         | 6.70  |
| 2928/20         | 20           | .032             | .81 | .285         | 7.20  |
| 2928/25         | 25           | .032             | .81 | .310         | 7.80  |
| 2928/50         | 50           | .032             | .81 | .395         | 10.10 |

**STANDARD PUT-UP:** 500 Ft., 1000 Ft.

**COLOR CODED**

constructions available.

CL-3, CM, send for catalog.

We stock a full line of MULTICONDUCTOR—VW-1, CL-2, CL-3, CM, riser, plenum. Stock designs include control and instrument; flat bonded ribbon; shielded plenum; control and portable; audio, microphone, intercom, and speaker; modular and station telephone cable. Also AC cords and cord assemblies, zip, lamp and heater cord. Send for catalog

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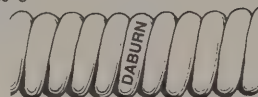


**DABURN****RETRACTILE CORDS • POWER • COMMUNICATION****CSA POWER CORDS**

Retracted Lengths: 1, 2, 3 &amp; 4 Ft. Extended Lengths: 5, 10, 15 &amp; 20 Ft.

UL Listed — Neoprene Jacketed Cord • OPERATING TEMPERATURE: -20°C to +60°C

| DABURN No. & Retracted Lengths |          |          |          | No. Cond. | Size | Strand | UL & CSA Type | Amps | Volt Rating | Coil Nom. O.D. |    | Cord Nom. |    |
|--------------------------------|----------|----------|----------|-----------|------|--------|---------------|------|-------------|----------------|----|-----------|----|
| 4 Ft.*                         | 3 Ft.    | 2 Ft.    | 1 Ft.    |           |      |        |               |      |             | in.            | mm | in.       | mm |
| 986-4                          | 986-3    | 986-2    | 986-1    | 2         | 18   | 41/34  | SV0           | 7    | 300         | 7/8            | 22 | 280       | 7  |
| 986/3-4                        | 986/3-3  | 986/3-2  | 986/3-1  | 3         | 18   | 41/34  | SV0           | 7    | 300         | 1              | 25 | 275       | 7  |
| 989-4                          | 989-3    | 989-2    | 989-1    | 2         | 18   | 41/34  | SJO           | 7    | 300         | 1 1/8          | 30 | 320       | 8  |
| 989/3-4                        | 989/3-3  | 989/3-2  | 989/3-1  | 3         | 18   | 41/34  | SJO           | 7    | 300         | 1 1/8          | 35 | 330       | 9  |
| 989/4-4                        | 989/4-3  | 989/4-2  | 989/4-1  | 4         | 18   | 41/34  | SJO           | 5.6  | 300         | 1 1/8          | 37 | 360       | 10 |
| 989/5-4                        | 989/5-3  | 989/5-2  | 989/5-1  | 5         | 18   | 41/34  | SJO           | 5.6  | 300         | 1 1/8          | 41 | 440       | 11 |
| 989/7-4                        | 989/7-3  | 989/7-2  | 989/7-1  | 7         | 18   | 41/34  | SJO           | 4.9  | 300         | 1 1/8          | 48 | 522       | 13 |
| 989/15-4                       | 989/15-3 | 989/15-2 | 989/15-1 | 15        | 18   | 41/34  | SV0           | 7    | 300         | 2 1/4          | 54 | 575       | 15 |
| 990/3-4                        | 990/3-3  | 990/3-2  | 990/3-1  | 3         | 18   | 41/34  | SO            | 7    | 600         | 1 1/8          | 40 | 405       | 10 |
| 990/4-4                        | 990/4-3  | 990/4-2  | 990/4-1  | 4         | 18   | 41/34  | SO            | 5.6  | 600         | 1 1/8          | 41 | 435       | 11 |
| 991-4                          | 991-3    | 991-2    | 991-1    | 2         | 16   | 65/34  | SJO           | 10   | 300         | 1 1/8          | 35 | 330       | 9  |
| 991/3-4                        | 991/3-3  | 991/3-2  | 991/3-1  | 3         | 16   | 65/34  | SJO           | 10   | 300         | 1 1/8          | 37 | 365       | 10 |
| 991/4-4                        | 991/4-3  | 991/4-2  | 991/4-1  | 4         | 16   | 65/34  | SJO           | 8    | 300         | 1 1/8          | 38 | 395       | 11 |
| 991/5-4                        | 991/5-3  | 991/5-2  | 991/5-1  | 5         | 16   | 65/34  | SO            | 5.6  | 600         | 2              | 54 | 540       | 14 |
| 991/6-4                        | 991/6-3  | 991/6-2  | 991/6-1  | 6         | 16   | 65/34  | SO            | 8    | 600         | 2 1/8          | 51 | 550       | 14 |
| 991/7-4                        | 991/7-3  | 991/7-2  | 991/7-1  | 7         | 16   | 65/34  | SO            | 10   | 600         | 2 1/8          | 57 | 600       | 15 |
| 992/3-4                        | 992/3-3  | 992/3-2  | 992/3-1  | 3         | 16   | 65/34  | SO            | 10   | 600         | 1 1/8          | 46 | 470       | 12 |
| 992/4-4                        | 992/4-3  | 992/4-2  | 992/4-1  | 4         | 16   | 65/34  | SO            | 8    | 600         | 1 1/8          | 48 | 500       | 13 |
| 993-4                          | 993-3    | 993-2    | 993-1    | 2         | 14   | 41/30  | SO            | 15   | 600         | 2              | 54 | 535       | 14 |
| 993/3-4                        | 993/3-3  | 993/3-2  | 993/3-1  | 3         | 14   | 41/30  | SO            | 15   | 600         | 2 1/8          | 54 | 560       | 14 |
| 993/4-4                        | 993/4-3  | 993/4-2  | 993/4-1  | 4         | 14   | 41/30  | SO            | 12   | 600         | 2 1/8          | 57 | 605       | 15 |
| 994/3-4                        | 994/3-3  | 994/3-2  | 994/3-1  | 3         | 12   | 65/30  | SO            | 20   | 600         | 2 1/8          | 60 | 635       | 16 |
| 994/4-4                        | 994/4-3  | 994/4-2  | 994/4-1  | 4         | 12   | 65/30  | SO            | 16   | 600         | 2 1/2          | 60 | 665       | 17 |
| 994/6-4                        | 994/6-3  | 994/6-2  | 994/6-1  | 6         | 12   | 65/30  | SO            | 16   | 600         | 2 1/8          | 57 | 605       | 15 |
| 994/7-4                        | 994/7-3  | 994/7-2  | 994/7-1  | 7         | 12   | 65/30  | SO            | 16   | 600         | 2 1/8          | 67 | 775       | 20 |
| 996/4-4                        | 996/4-3  | 996/4-2  | 996/4-1  | 4         | 10   | 104/30 | SO            | 20   | 600         | 2 1/8          | 70 | 745       | 19 |



Long Lasting Service — useful wherever cords must change length or position. Extend to approximately five times its retracted length. Returns to its original shape or length when released. Eliminates tangling, twisting or knots. Cords are UL and CSA approved.

Wherever UL Type is shown, approved by CSA testing laboratories.

\*Preferred Put-up. 6" tangents on all but 1 Ft. cords — 12" tangents.

Also available: 18/2, 18/3 SVT; 18/2, 18/3, 18/4 SUT; 18/2, 18/3 ST; 16/2, 16/3, 16/4 SUT; 16/2, 16/3, 16/4 SUT in 4 Ft., 3 Ft. and 1 Ft. Retracted, UL Listed.

**CONDUCTOR COLOR CODE:**

1—Black, 2—White, 3—Green, 4—Red  
5—Orange, 6—Blue, 7—Yellow.

†† 989/15-5 Extended to 25 Ft. Non UL or CSA.

† UL ONLY

†† NON UL OR CSA

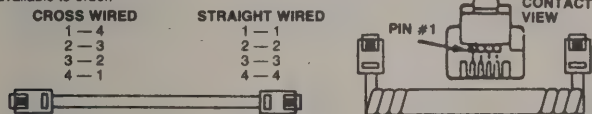
**WRITE FOR COMPLETE CATALOG****MODULAR PLUG CABLES STRAIGHT AND RETRACTABLE CABLES**

Each Daburn modular cord is 28 AWG 7/36 soft tinned copper, color coded with an overall PVC jacket and modular plugs at each end. Shielded constructions use an overall aluminum/polyester shield and drain wire.

Daburn modular cords are suitable for data equipment, interface, keyboards, audio, telephone handsets, security and alarm applications.

They resist oils, grease, acids, fumes and are abrasion resistant. They will not mar surfaces with which they come in contact.

Note: "Half-Modular" cords — lugs on one end, keyed plugs and UL approved styles are available to order.

**MODULAR PLUG CORDS**

| STRAIGHT CORDS  |              |           |                       | RETRACTILE CORDS |              |           |                       |
|-----------------|--------------|-----------|-----------------------|------------------|--------------|-----------|-----------------------|
| Daburn Cat. No. | No. of Cond. | Lgth. Ft. | Con. of In. struction | Daburn Cat. No.  | No. of Cond. | Lgth. Ft. | Con. of Ex. struction |
| 28-04-7         | 28-04-7X     | 4         | 7 F                   | 28-14-1          | 28-14-1X     | 4         | 5 Ft. F               |
| 28-04-14        | 28-04-14X    | 4         | 14 F                  | 28-14-2          | 28-14-2X     | 4         | 10 Ft. F              |
| 28-04-25        | 28-04-25X    | 4         | 25 F                  | 28-14-5          | 28-14-5X     | 4         | 20 Ft. F              |
| 28-06-7         | 28-06-7X     | 6         | 7 F                   | 28-16-1          | 28-16-1X     | 6         | 5 Ft. F               |
| 28-06-14        | 28-06-14X    | 6         | 14 F                  | 28-16-2          | 28-16-2X     | 6         | 10 Ft. F              |
| 28-06-25        | 28-06-25X    | 6         | 25 F                  | 28-16-5          | 28-16-5X     | 6         | 20 Ft. F              |
| 28-08-7         | 28-08-7X     | 8         | 7 F                   | 28-18-1          | 28-18-1X     | 8         | 3 Ft. F               |
| 28-08-14        | 28-08-14X    | 8         | 14 F                  | 28-18-2          | 28-18-2X     | 8         | 6 Ft. F               |
| 28-08-25        | 28-08-25X    | 8         | 25 F                  | 28-18-5          | 28-18-5X     | 8         | 12 Ft. F              |

| SHIELDED        |              |           |                       | SHIELDED        |              |           |                       |
|-----------------|--------------|-----------|-----------------------|-----------------|--------------|-----------|-----------------------|
| Daburn Cat. No. | No. of Cond. | Lgth. Ft. | Con. of In. struction | Daburn Cat. No. | No. of Cond. | Lgth. Ft. | Con. of Ex. struction |
| 28-08-7S        | 28-08-7SX    | 8**       | 7 R                   | 28-18-1S        | 28-18-1SX    | 8**       | 5 Ft. R               |
| 28-08-14S       | 28-08-14SX   | 8**       | 14 R                  | 28-18-2S        | 28-18-2SX    | 8**       | 10 Ft. R              |
| 28-08-25S       | 28-08-25SX   | 8**       | 25 R                  | 28-18-5S        | 28-18-5SX    | 8**       | 20 Ft. R              |

STOCK JACKET COLORS: Silver Satin, Black. If not specified Silver Satin will be supplied.

STANDARD PACKAGE: 25 pcs.

Additional lengths to order. R = Round construction.

\*\*7 conductors + 1 conductor ground. Above also available in #28 AWG, i.e., 26-04-7.

Modular plugs, with and without tabs; modular crimping tool for the above cable available.

**DABURN MINI — RETRACTILE COMMUNICATION CORDS - SHIELDED - UNSHIELDED 300V .5 AMP****1, 2 Foot Retracted — 5, 10 Foot Extended**

Miniature. Suitable for compact equipment. Cords are #28 AWG 19/40 soft tinned copper, color coded, where shielded, aluminum polyester foil shield and drain, overall black plastic jacket. 1 Ft. retracted — 12" tangents; 2 Ft. retracted — 6" tangents.

OPERATING TEMPERATURE: -20°C to +60°C.

COLOR CODE: 1—Black, 2—White, 3—Red, 4—Green,

5—Orange, 6—Blue, 7—Yellow, 8—Brown.

STANDARD PACKAGE: 10.



The above cords are also available in 3 Ft. and 4 Ft. retracted, which extend to 15 and 20 feet respectively.

| UNSHIELDED      |        |       |               | SHIELDED*       |         |       |               |
|-----------------|--------|-------|---------------|-----------------|---------|-------|---------------|
| Daburn Cat. No. | Coll   | Cord  |               | Daburn Cat. No. | Coll    | Cord  |               |
| 1 Ft.           | 2 Ft.  | Cond. | in. mm        | 1 Ft.           | 2 Ft.   | Cond. | in. mm        |
| 975/28A         | 975/28 | 2     | .5 13 .14 .34 | 975/28SA        | 975/28S | 2     | .5 13 .16 .40 |
| 976/28A         | 976/28 | 3     | .5 13 .14 .35 | 976/28SA        | 976/28S | 3     | .5 13 .17 .43 |
| 977/28A         | 977/28 | 4     | .5 13 .15 .38 | 977/28SA        | 977/28S | 4     | .6 15 .18 .46 |
| 978/28A         | 978/28 | 5     | .6 14 .18 .40 | 978/28SA        | 978/28S | 5     | .6 15 .19 .48 |
| 979/28A         | 979/28 | 6     | .6 14 .19 .43 | 979/28SA        | 979/28S | 6     | .6 16 .20 .50 |
| 980/28A         | 980/28 | 7     | .6 16 .20 .45 | 980/28SA        | 980/28S | 7     | .6 16 .21 .52 |
| 981/28A         | 981/28 | 8     | .9 22 .24 .48 | 981/28SA        | 981/28S | 8     | .9 22 .25 .63 |

Additional cords available in tough TPE (Thermo Plastic Elastomer) with many of the properties of rubber and superior retractability.

NOTE: Retracted lengths are approximate, extended lengths are guaranteed.

\*Not UL construction.

DABURN ELECTRONICS & CABLE CORP. • 225 PEGASUS AVE. • NORTHVALE, N.J., 07647 • 201-768-5400 • FAX 201-768-9642

LACING CORD & TAPE • CERAMIC INSULATORS

STIK KLIPS™ • SPIRAL WRAP

DABURN

LACING CORD-TAPE TO MEET MIL-T-713D TYPE P\* AND MIL-T-43435 COMP. P-TYPE S NYLON FLAT BRAIDED LACING TYPE

TYPE I FIN. B



Nylon fiber flat braided impregnated with MW microcrystalline fungicidal wax. Stays flat. Designed to create a wider contact to distribute the stress. Flexible. Won't slip when knotted. Resistant to fungus, flame, abrasion, acids, MIL-T-43435 (new) supersedes MIL-T-713 (old). 40% maximum elongation.

Addtl. finishes to order.

| DABURN No. | Color         | (New) Size | (Old) Class | Nom. Width | Nom. Thickness | Tensile Strength | Standard Put-Up Tubes |
|------------|---------------|------------|-------------|------------|----------------|------------------|-----------------------|
| 2035       | Natural White | 1          | —           | .200"      | .014"          | 150 lbs.         | 250 yd.               |
| 2035B      | Black         | 1          | —           | .200"      | .014"          | 150 lbs.         | 250 yd.               |
| 2036       | Natural White | 2          | 1           | .120"      | .014"          | 80 lbs.          | 250 yd.               |
| 2036B      | Black         | 2          | 1           | .120"      | .014"          | 80 lbs.          | 250 yd.               |
| 2037       | Natural White | 3          | 2*          | .090"      | .014"          | 50 lbs.          | 500 yd.               |
| 2037B      | Black         | 3          | 2*          | .090"      | .014"          | 50 lbs.          | 500 yd.               |
| 2038       | Natural White | 4          | 3           | .065"      | .010"          | 30 lbs.          | 500 yd.               |
| 2038B      | Black         | 4          | 3           | .065"      | .010"          | 30 lbs.          | 500 yd.               |
| 2039       | Natural White | 5          | 4           | .046"      | .010"          | 15 lbs.          | 500 yd.               |
| 2039B      | Black         | 5          | 4           | .046"      | .010"          | 15 lbs.          | 500 yd.               |

DACRON FLAT BRAIDED LACING TAPE

TYPE II FIN. B



Dacron fiber, flat braided, impregnated with non-slip fungicidal finish. Will not cut or damage insulation. Stays flat. Has all characteristics of nylon with less elongation, better resistance to acids.

Addtl. finishes to order.

| DABURN No. | Color         | Nom. Width | Nom. Thickness | Tensile Strength | Standard Put-Up Tubes |
|------------|---------------|------------|----------------|------------------|-----------------------|
| 2041       | Natural White | .120"      | .014"          | 80               | 250 yd.               |
| 2041B      | Black         | .120"      | .014"          | 80               | 250 yd.               |
| 2042       | Natural White | .090"      | .014"          | 48               | 500 yd.               |
| 2042B      | Black         | .090"      | .014"          | 48               | 500 yd.               |
| 2043       | Natural White | .060"      | .010"          | 35               | 500 yd.               |
| 2043B      | Black         | .060"      | .010"          | 35               | 500 yd.               |
| 2044       | Natural White | .046"      | .010"          | 25               | 500 yd.               |
| 2044B      | Black         | .046"      | .010"          | 25               | 500 yd.               |

Also available from stock: Teflon\*-coated fiberglass, Type IV, Teflon\* Type III

ROUND TWISTED NYLON LACING CORD



Manufactured to meet MIL-T-713D Type P specification, Composition P, Classes 3, 2, 1. Wax finish — compounded with fungicide to resist mildew. Easy to tie. 20% maximum elongation.

PUT-UP ON 1 LB. TUBES

| DABURN No. | Color   | Class | Tensile Strength | Nom. Diam. | Yds. Per Tube |
|------------|---------|-------|------------------|------------|---------------|
| 2070       | Natural | 1     | 70 lbs.          | .039"      | 600           |
| 2070B      | Black   | 1     | 70 lbs.          | .039"      | 600           |
| 2071       | Natural | 2     | 48 lbs.          | .029"      | 800           |
| 2071B      | Black   | 2     | 48 lbs.          | .029"      | 800           |
| 2072       | Natural | 3     | 32 lbs.          | .025"      | 1140          |
| 2072B      | Black   | 3     | 32 lbs.          | .025"      | 1140          |
| 2072/1     | Natural | 4     | 20 lbs.          | .020"      | 2400          |
| 2072/1B    | Black   | 4     | 20 lbs.          | .020"      | 2400          |

TEFLON\* FIBERGLASS FLAT BRAIDED LACING TAPE TYPE IV FIN. D



Teflon coated fiberglass flat braided lacing tape bonded for high temp. operations (550°). Stays flat — for strength, stability. Teflon finish increases strength and abrasion resistant surface. Will not cut or damage insulation. Additional finishes to order.

| DABURN No. | Color | Nom. Width | Nom. Thickness | Test lbs. | Standard Put-Up Tubes |
|------------|-------|------------|----------------|-----------|-----------------------|
| 2045       | White | .170"      | .025"          | 150       | 250 yd.               |
| 2046       | White | .120"      | .020"          | 90        | 250 yd.               |
| 2047       | White | .080"      | .020"          | 70        | 500 yd.               |

TEFLON\* FLAT BRAIDED LACING TYPE

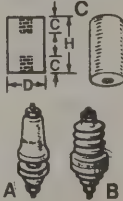
For high temperature operations (550°F) TYPE III FIN. A

| DABURN No. | Color | Nom. Width | Nom. Thickness | Test lbs. | Standard Put-Up Tubes |
|------------|-------|------------|----------------|-----------|-----------------------|
| 2048       | Brown | .100"      | .016"          | 35        | 250 yd.               |
| 2049       | Brown | .075"      | .010"          | 15        | 500 yd.               |

Additional finishes to order.

CORRUGATED & NON-CORRUGATED FEED-THROUGH • STEATITE STANDOFF INSULATORS

| DABURN No. | Ill. | Hgt. H | B      | H <sub>1</sub> | Mounting Hole | H'dwe  | Std. Pkg. |
|------------|------|--------|--------|----------------|---------------|--------|-----------|
| 10-58      | A    | 3/8"   | 1/4"   | 1/4"           | 3/8"          | 6-32   | 50        |
| 10-78      | A    | 1"     | 3/4"   | 3/4"           | 3/4"          | 10-32  | 25        |
| 10-125     | A    | 1 1/4" | 3/4"   | 3/4"           | 3/4"          | 10-32  | 25        |
| 10-234     | A    | 2 3/4" | 2"     | 1"             | 1 1/4"        | 1/4-20 | 10        |
| 10-79      | B    | 1 3/8" | 1 1/4" | 1 1/4"         | 3/4"          | 10-32  | 25        |
| 10-76      | B    | 2 3/4" | 1 3/4" | 1"             | 3/4"          | 1/4-20 | 10        |
| 10-52      | B    | 4 1/2" | 2 1/4" | 1 1/2"         | 1"            | 1/4-20 | 5         |



Feed-thru insulators are made from quality porcelain, smoothly glazed. Nickel plated brass hardware and cushion washers are supplied. The corrugated style (Ill B) has twice the leakage path due to increased surface area. Daburn ceramic products include steatite cones, standoffs, and fish spine beads; porcelain feed-thrus, lead-in, airplane and antenna insulators. Send for our full catalog.

| DABURN No. | JAN I Type   | Ht.    | Diam. | Thr'd Lgth | Thr'd |
|------------|--------------|--------|-------|------------|-------|
| 10-47      |              | 2 1/2" | 1/2"  | 3/4"       | 6-32  |
| 10-40      | NL523W02-005 | 3/4"   | 3/4"  | 3/4"       | 8-32  |
| 10-40A     | NL523W02-006 | 3/4"   | 1/2"  | 1/4"       | 8-32  |
| 10-40B     | NL523W02-008 | 1"     | 1/2"  | 3/8"       | 8-32  |
| 10-40C     | NL523W02-010 | 1 1/4" | 1/2"  | 3/8"       | 8-32  |
| 10-40D     | NL523W02-012 | 1 1/2" | 1/2"  | 3/8"       | 8-32  |
| 10-40E     | NL523W02-016 | 2"     | 1/2"  | 3/8"       | 8-32  |
| 10-40F     | NL523W02-020 | 2 1/4" | 1/2"  | 3/8"       | 8-32  |
| 10-40G     | NL523W02-024 | 3"     | 1/2"  | 3/8"       | 8-32  |
| 10-44C     |              | 3/4"   | 3/4"  | 1/4"       | 10-32 |

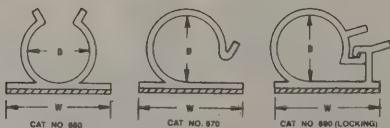
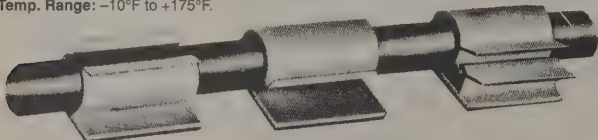
Additional steatite standoff constructions to 4" in 6-32, 10-32 and 1/4-20 thread sizes from height 1/4" to 4" height are stocked. **Standard Package:** 100. Standoffs are made from grade L-5 glazed steatite. Threaded holes on each end for one hole mounting.

Other Daburn electronic hardware items—Stik-Klips™ in additional configurations than below; cable clamps in nylon, propionate, and aluminum; wire and cable ties; solid and serrated grommets, banana and phone tip plugs and jacks; binding posts; solderless terminals; PC supports; captive hardware; nuts, washers, spacers; and additional specialty items.

(SEND FOR YOUR COPY OF OUR COMPLETE CATALOG)

DABURN STIK KLIPS™ — SELF ADHESIVE

MATERIAL: PVC COLOR: Gray. #680 - 1/4 also available in Black. Temp. Range: -10°F to +175°F.



For fast secure mounting on smooth surfaces. No need to screw, nail or staple in place. Fastens in a flash — just peel off the protective backing and press in place on a clean, dry, smooth surface. For best results allow a few seconds for adhesive to set before applying load.

These plastic clips are insulating, strong and elastic. They have many uses, such as keeping telephone wires off the floor, holding wire, cable, tubing rods, etc. in position.

| DABURN No. | D    | W    | Std. Pkg. |
|------------|------|------|-----------|
| 660-1/8    | 1/8" | 3/4" | 100, 1000 |
| 660-1/4    | 1/4" | 3/4" | 100, 1000 |
| 660-3/8    | 3/8" | 3/4" | 100, 1000 |
| 660-1/2    | 1/2" | 1"   | 100, 1000 |
| 660-3/4    | 3/4" | 1"   | 100, 1000 |
| 670-1/8    | 1/8" | 3/4" | 100, 1000 |
| 670-1/4    | 1/4" | 3/4" | 100, 1000 |
| 670-3/8    | 3/8" | 3/4" | 100, 1000 |
| 670-1/2    | 1/2" | 1"   | 100, 1000 |
| 670-3/4    | 3/4" | 1"   | 100, 1000 |
| 680-1/4*   | 1/4" | 3/4" | 100, 1000 |
| 680-1/2    | 1/2" | 1"   | 100, 1000 |
| 680-3/4    | 3/4" | 1"   | 100, 1000 |



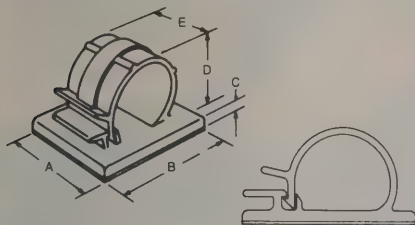
# DEK®

## WIRE CLIPS

For over 27 years, innovation has been the hallmark of every Dek, Inc. product. Whether it is for state-of-the-art electronic or communication systems...DEK's wire and cable holding devices are recognized as the leaders in cable holding technology.

Dek's complete product line features the patented quick-lock-release clip, cable clamps, flat wire clips, and wire ties. Adhesive backed, pushmount or mechanical fastening styles available.

### DEKLIP Series 021



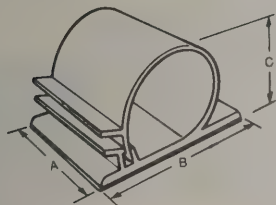
- Exclusive Quick Lock/Release Feature
- Advanced Adhesive Mounting System
- Exceptionally High Performance
- Rugged Injection Molded Flame Resistant Nylon
- Wide Selection of Sizes
- Color: Gray
- UL Listed 94V-2 Material

### DEK Inc. ... A New Beginning

| Part Number | Dimensions (in.) |       |       |       |       | Max. Wire Bundle Dia. (in.) | Rated Static Load (lb.) |
|-------------|------------------|-------|-------|-------|-------|-----------------------------|-------------------------|
|             | A                | B     | C     | D     | E     |                             |                         |
| 021-0188    | 0.740            | 0.620 | 0.080 | 0.335 | 0.390 | 3/16                        | 1/2                     |
| 021-0250    | 1.000            | 0.870 | 0.100 | 0.420 | 0.630 | 1/4                         | 3/4                     |
| 021-0375    | 1.000            | 1.000 | 0.090 | 0.500 | 0.630 | 3/8                         | 1                       |
| 021-0500    | 1.000            | 1.210 | 0.110 | 0.680 | 0.640 | 1/2                         | 1 1/4                   |
| 021-0750    | 1.150            | 1.450 | 0.125 | 0.990 | 0.640 | 3/4                         | 1 3/4                   |
| 021-1000    | 1.980            | 2.240 | 0.140 | 1.370 | 1.260 | 1                           | 4                       |
| 021-1500    | 2.420            | 2.950 | 0.150 | 1.770 | 1.310 | 1 1/2                       | 6                       |

All dimensions listed have a tolerance of  $\pm .030$  inches.

### DEKLIP Series 022 and 023

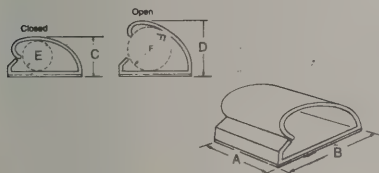


- Economy with Excellent Performance
- Exclusive Quick Lock/Release Feature
- Advanced Adhesive Mounting System
- Extruded, Flame Resistant PVC Copolymer
- Wide Selection of Sizes
- Color: Black
- UL Listed 94V-0 Material

| Part Number | Dimensions (in.) |       |       | Max. Wire Bundle Dia. (in.) | Rated Static Load (lb.) |
|-------------|------------------|-------|-------|-----------------------------|-------------------------|
|             | A                | B     | C     |                             |                         |
| 022-0188    | 1.000            | 0.750 | 0.306 | 3/16                        | 1/4                     |
| 022-0250    | 1.000            | 1.020 | 0.410 | 1/4                         | 3/8                     |
| 022-0375    | 1.000            | 1.000 | 0.520 | 3/8                         | 1/2                     |
| 022-0500    | 1.000            | 1.250 | 0.670 | 1/2                         | 5/8                     |
| 022-0625    | 1.250            | 1.250 | 0.770 | 5/8                         | 3/4                     |
| 022-0750    | 1.500            | 1.500 | 0.935 | 3/4                         | 1                       |
| 023-0188    | 0.500            | 0.750 | 0.306 | 3/16                        | 1/8                     |
| 023-0250    | 0.500            | 1.020 | 0.410 | 1/4                         | 3/16                    |
| 023-0375    | 0.500            | 1.000 | 0.520 | 3/8                         | 1/4                     |
| 023-0500    | 0.500            | 1.250 | 0.670 | 1/2                         | 5/16                    |
| 023-0625    | 0.625            | 1.250 | 0.770 | 5/8                         | 3/8                     |
| 023-0750    | 0.750            | 1.500 | 0.935 | 3/4                         | 1/2                     |

All dimensions listed have a tolerance of  $\pm .030$  inches.

### DEKLIP Series 025

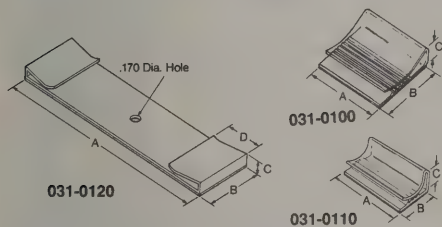


- Fast Installation: Push Mount or Adhesive Base
- With or Without Built-In Strain Relief
- Quick Access to Wire
- Remarkable Holding Power
- Color: Gray
- UL Listed 94V-0 Material

| Part Number | Dimensions (in.) |       |       |       |         | Max. Wire Bundle Dia. (in.) | Rated Static Load (lb.) |
|-------------|------------------|-------|-------|-------|---------|-----------------------------|-------------------------|
|             | A                | B     | C     | D     | E to F  |                             |                         |
| 025-0250    | 0.510            | 0.500 | 0.280 | 0.340 | 1/8 1/4 | 1/8                         | 1/8                     |
| 025-0500    | 0.760            | 0.760 | 0.400 | 0.660 | 1/4 1/2 | 1/4                         | 1/4                     |
| 025-0750    | 1.000            | 1.140 | 0.560 | 0.870 | 1/2 3/4 | 1/2                         | 1/2                     |
| 025-1000    | 1.250            | 1.500 | 0.740 | 1.200 | 3/4 1   | 3/4                         | 7/8                     |

All dimensions listed have a tolerance of  $\pm .030$  inches.

### DEKLIP Extruded Flat Wire Cable Series 031

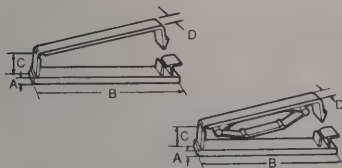


- Effective Retention of Ribbon and Flat Wire
- Advanced Adhesive Mounting System
- Fast Installation
- Low Profile Construction
- Color: 0100 & 0110 Clear  
0120 Gray
- UL Listed 94V-0 Material

| Part Number | Dimensions (in.) |       |      |      | Suggested Use             |
|-------------|------------------|-------|------|------|---------------------------|
|             | A                | B     | C    | D    |                           |
| 031-0100    | 1.000            | 1.000 | .360 | —    | For 20 or more conductors |
| 031-0110    | 1.000            | 0.570 | .360 | —    | For 1 to 20 conductors    |
| 031-0120    | 3.340            | 1.000 | .225 | .760 | For 60 conductors         |

All dimensions listed have a tolerance of  $\pm .030$  inches.

### DEKLIP Flat Wire Clips Series 033 through S38



- Fast Installation: Push Mount or Adhesive Base
- With or Without Built-In Strain Relief
- Quick Access to Wire
- Remarkable Holding Power
- Color: Gray
- UL Listed 94V-2 Material

| Part Number | Dimensions (in.) |      |      |      | Max. Width of Flat Wire (in.) | Max. Hgt. of Flat Wire (in.) |
|-------------|------------------|------|------|------|-------------------------------|------------------------------|
|             | A                | B    | C    | D    |                               |                              |
| 037-0250    | .75              | 1.77 | .435 | .620 | 1 1/4                         | 1/4                          |
| 037-0250S   | .75              | 1.77 | .585 | .620 | 1 1/4                         | 1/4                          |
| 038-0250    | .75              | 3.00 | .435 | .620 | 2 1/2                         | 1/4                          |
| 038-0250S   | .75              | 3.00 | .585 | .620 | 2 1/2                         | 1/4                          |

All dimensions listed have a tolerance of  $\pm .030$  inches.

Call today for a free catalog.

DEK®, Inc., 3480 Swenson Drive, St. Charles, IL 60174  
In Illinois: 1-708-377-2575; Outside Illinois: 1-800-323-1419; FAX: 708-377-8387

# CORDSETS CORDS AND CABLE



ALL COUNTRIES • ALL TYPES • ALL CONFIGURATIONS

## MOLDED-ON STRAIN RELIEFS

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*FREE TOOLING*



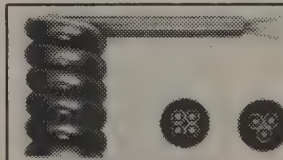
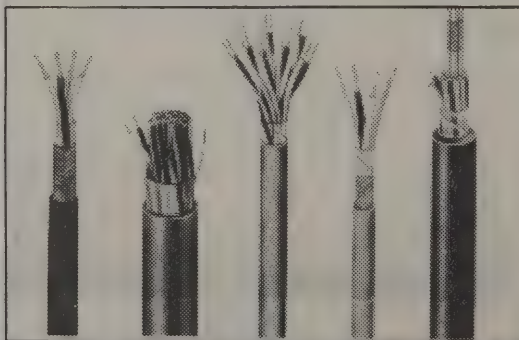
- MULTIPLE SAFETY APPROVALS: UL, CSA, VDE, (HAR), BSI, SEV, etc.
- MOLDED CABLE ASSEMBLIES WITH TERMINATIONS, LENGTH, HANKING, etc. PER CUSTOMER'S SPECIFICATIONS. ★ JUST IN TIME DELIVERY ★
- MANY STANDARD MODELS AVAILABLE FROM STOCK FOR IMMEDIATE DELIVERY
- EXTREMELY COMPETITIVE PRICES
- SAME DAY RESPONSE WITH PRICE & SAMPLE
- HIGH QUALITY



GlobTek's new 208-pg. Component and Engineering Services Catalog contains technical information on North American and international cable and cord sets, AC and DC plugs and connectors, appliance couplers, power entry modules, line filters, circuit breakers, switches and voltage selectors, fuse holders, surge protection, fans, capacitors, relays, external power supplies and transformers, DC/DC converters, OEM subcontract assemblies.

## RFI/EMI Shielded & Filtered Cordsets & Cable

- POWER CABLES & CORDS: PVC, RUBBER, NEOPRENE,
- HOOK UP WIRE: UL, MIL, CSA, PVC, XLP, PE, SILICONE
- FLEXIBLE CORD
- EUROPEAN, JAPAN, AUSTRALIAN STANDARDS & TYPES
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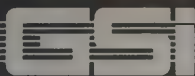


# GlobTek, Inc.

186 Veterans Drive, Northvale, NJ 07647 • USA • Telephone: (201) 784-1000 • Fax: (201) 784-0111 • Telex: 755579

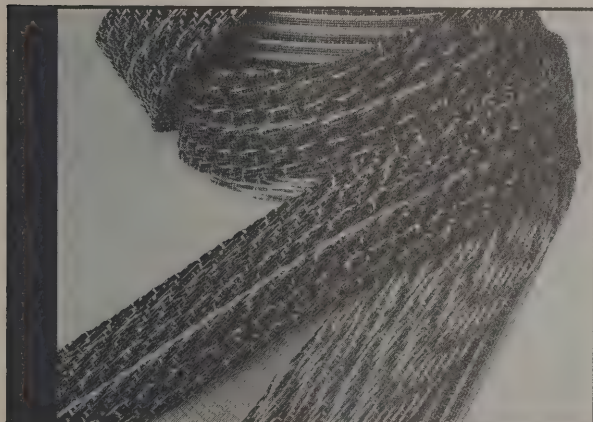






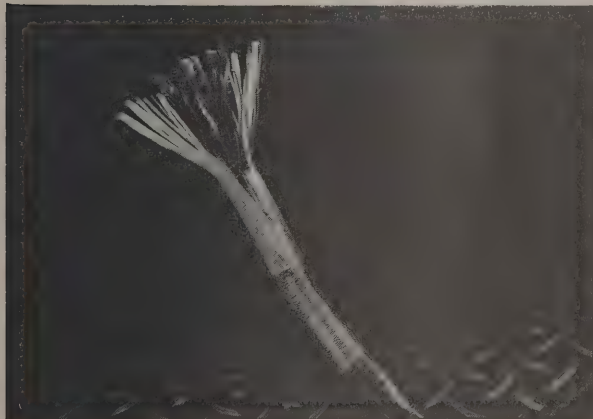
# ELECTRONIC CABLE

GSI produces special cable for applications where standard off-the-shelf products don't measure up. All GSI products are built to exceed drawing requirements and to benefit from more than thirty years of cumulative experience in design, materials, system requirements and manufacturing methods.



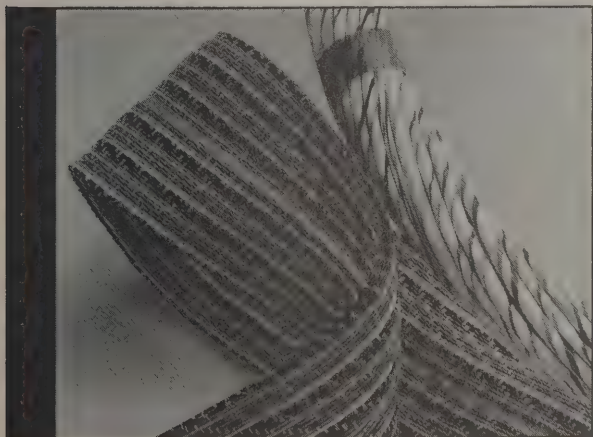
**Flat Ribbon Cable.** □ Flat woven cable can be designed for specific end-use applications and is often the best means of satisfying difficult electronic, mechanical and environmental requirements.

- Precise center-to-center spacing
- Continuous or programmed lengths
- Any conductor size or combination
- Compact and flexible; less weight
- Controlled impedance, low crosstalk



**Flexible Round Cable** □ Round cross section cable can have a concentrically smooth surface, and be flexible in any direction. GSI produces cables with these features by winding layers of flexible conductors in opposite directions around a central core.

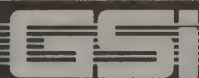
- Contrahelically wound for flexibility
- Single or multiple shields
- Engineered conductor placement
- Braided, wrapped or extruded jackets
- Compact and durable
- Economical in short lengths



**Special Cable Options** □ Whether flat, round, or a combination of the two, every GSI cable is designed and manufactured to meet specific requirements.

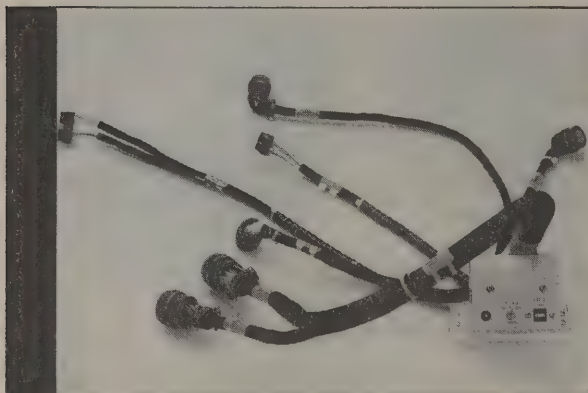
- Tracers or coding to identify conductors
- Flat cables with multiple layers
- Flexibility by design and construction
- Braided or woven shields, composites
- Certification to CSA, UL, MIL specs
- Electronic, mechanical and environmental testing

**GSI Corporation** 1917 Greenspring Drive Timonium, MD 21093-4178 Tel 410-252-1768 FAX 410-561-1768



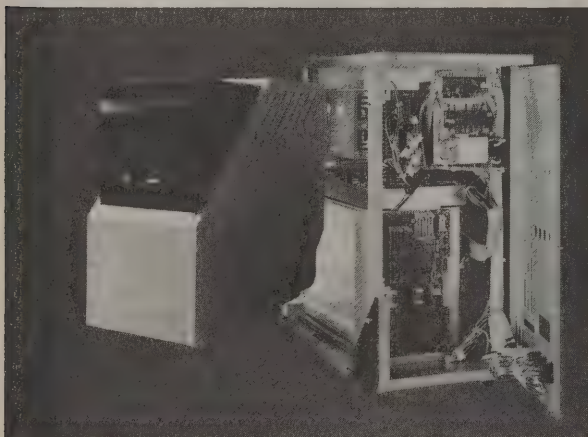
# ELECTRO-MECHANICAL ASSEMBLIES

From one-of-a-kind prototype harnesses to installed interconnection systems, GSI puts it all together. Demanding assembly projects are delivered on time, complete and guaranteed free of faults when GSI takes on the job.



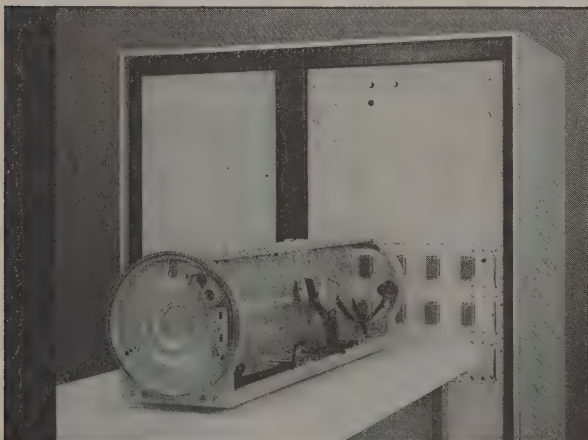
**Branched Harnesses** □ Whether a modular ROI design for Navy aircraft or a conventional format for industrial machinery, GSI harnesses incorporate superior materials, engineering and workmanship.

- Flat cable with programmed breakouts
- Contrahelically wound round sections
- Hand-laid and tied branches
- Shielding and jacketing
- Crimped, soldered or IDC terminations



**Complex Assemblies** □ GSI's contract manufacturing capabilities make available a one-stop source for the integration of military and commercial mechanical and electronic systems.

- Complete chassis fabrication, assembly
- Interconnecting cabling systems
- Design support and documentation
- Just-in-time delivery schedules
- Certified processes
- MIL-STD-2000 soldering

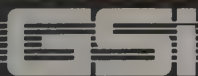


**Comprehensive Testing** □ Structured process controls and inspection procedures ensure that assemblies consistently meet or exceed drawing requirements.

- Programmed hi-pot testing
- Continuity and spark testing
- Pull, bend, abrasion, hardness testing
- Ionic cleanliness for finished products
- Tip-to-ground resistance for equipment
- SPC tracking and documentation

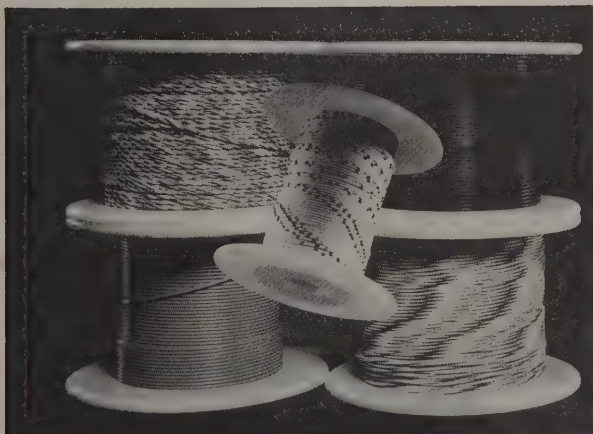
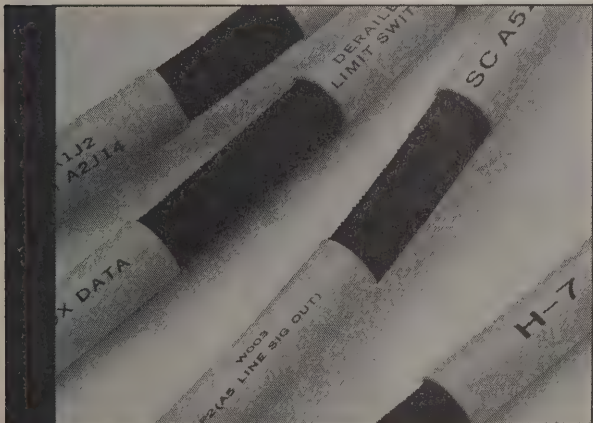
**GSI Corporation** 1917 Greenspring Drive Timonium, MD 21093-4178 Tel 410-252-1768 FAX 410-561-1768





# WIRE AND CABLE MARKERS HEAT SHRINKABLES

A supplier of wire markers, wire marking services and wire marking systems for over thirty years, GSI also offers a comprehensive line of state-of-the-art heat shrinkable products.



**Heat Shrinkable Products** □ A great variety of superior heat-shrink products, from bulk tubing on spools to termination sleeves is available.

- Halogen free polyolefins
- PVCs and elastomerics
- Flexible and semi-rigid Kynars
- QPL-approved termination sleeves
- Shrinkable or non-shrinkable tubing

**Wire and Cable Markers** □ GSI has been producing wire and cable markers since 1962 and is an acknowledged leader in quality and cost effectiveness. Methods feature traditional hot stamping and leading edge thermal transfer technology.

- Up to four lines per marker
- Colors and materials for any application
- Cable ties and identification plates
- A variety of character sizes and styles
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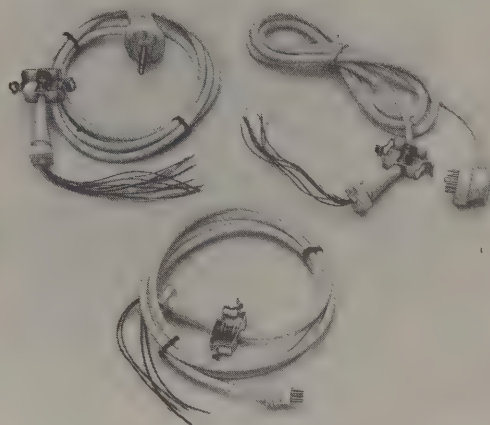
Conductor Type  
Solid, Stranded,  
& Gauge  
Number of  
Conductors  
Paired or Unpaired

Dielectric Type  
Types of Shields  
Braided Copper  
Foil/Drain Wire  
Foil/Braid  
100% Shield

Insulation of  
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Other

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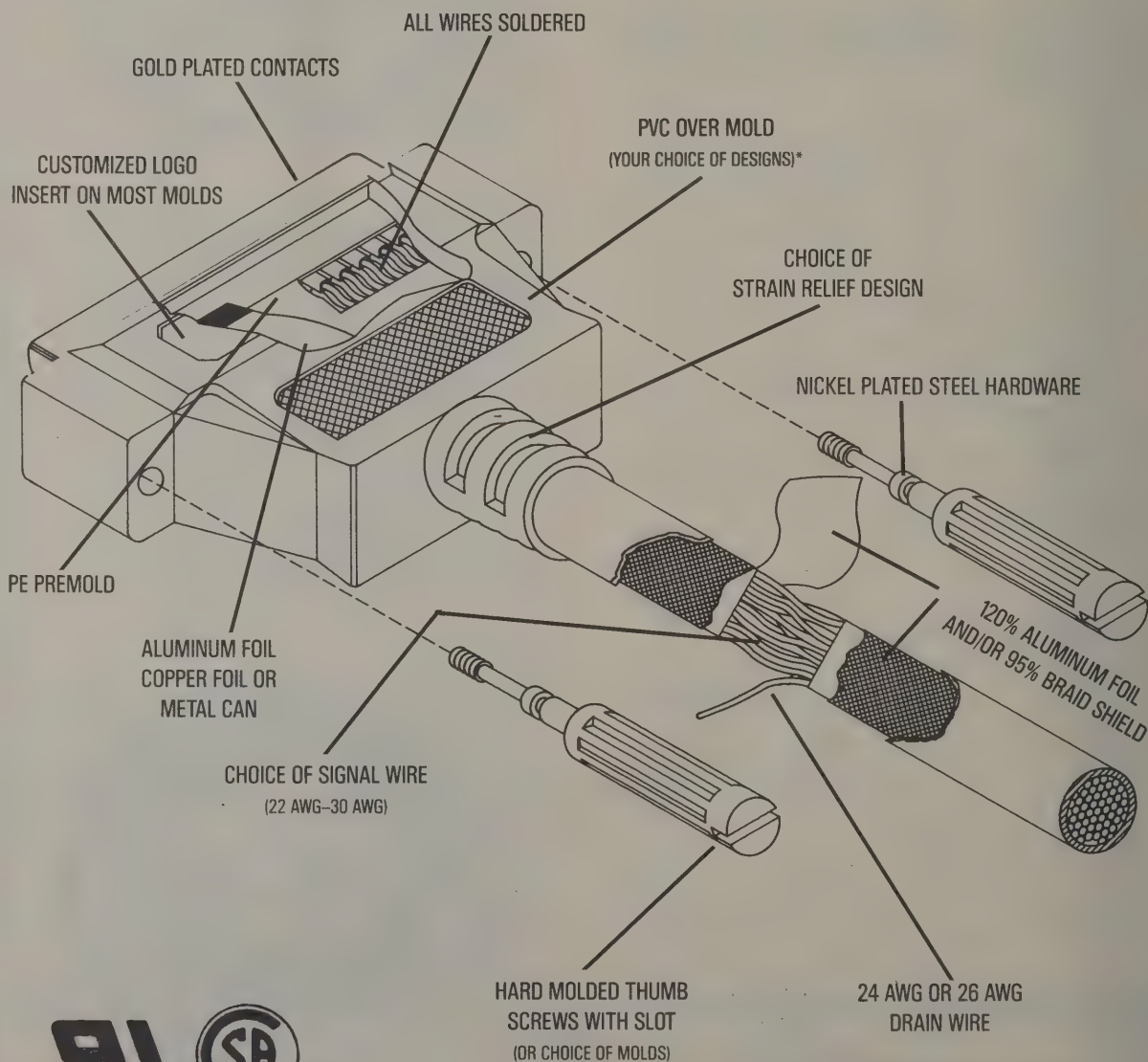
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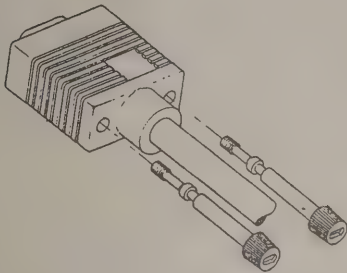
RU E110892  
C LR 83825

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Telephone (310) 328-0051 FAX (310) 328-0057

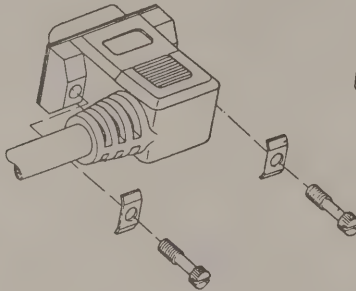


**C**hoose from our wide variety of standard molds and give your cable a custom look. (Shown below are only some of the various mold types available.)

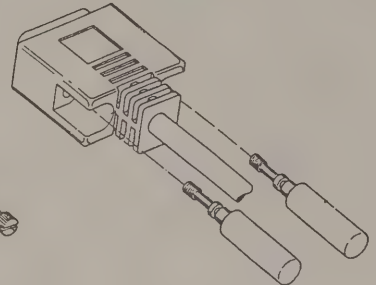
C09-008E



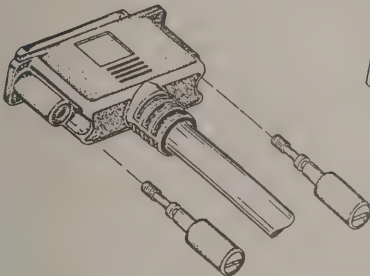
C09-003B



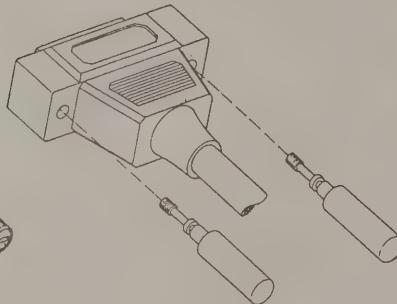
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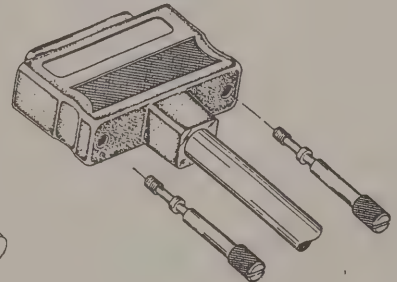
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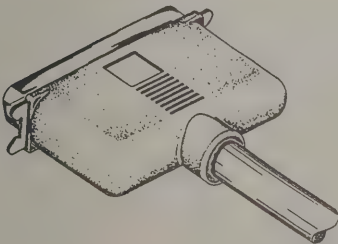
C25-001T



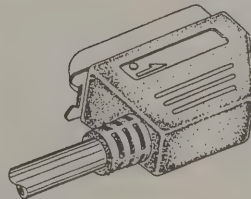
C25-015E



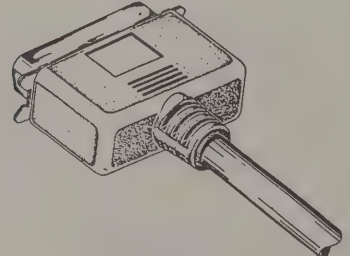
C50-002E



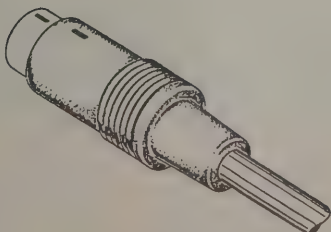
C36-001D



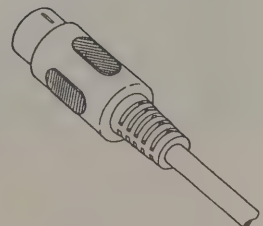
C36-013E



DN-02



DN-01



Contact the factory for information on other mold types, logo inserts and strain relief availability for the mold design and cable you select.


**JUDD WIRE INC.**
**TURNERS FALLS, MA**

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## Pioneer in Irradiated Wire

Judd Wire is a high technology wire company, specializing in the use of electron beam cross-linked thermosets for wire insulation. By applying irradiation cross-linking technology to insulating materials, Judd Wire meets the needs of the wire and cable industry for economical, high-performance products.

Judd Wire manufactures electronic wire and cable in over

100 styles recognized by Underwriters Laboratory, Canadian Standards and/or Military Specifications.

These pages contain comprehensive listings of Judd Wire standard products, many of which are stocked in a variety of colors. For the stocking status of a specific product, please call Judd Wire.

### PCA (80°C & 105°C XLPVC)

PCA is a diverse line of tri-rated electronic wire. Its polychloroalkene insulation is an exclusive irradiation cross-linked PVC with a unique combination of high-performance properties.

- **High heat and burn through resistance.** PCA insulation will not melt or flow at soldering iron temperatures up to 660°F. It eliminates the problem of rework due to soldering iron damage.
- **Wide operating temperature range.** PCA insulated wires are rated for continuous operation from -55°C to 105°C regardless of the temperature range established by UL, CSA and MIL Spec ratings.
- **Improved chemical resistance.** PCA insulation has chemical and solvent resistance that is superior to the best grade PVC insulations.
- **Superior processability.** End costs are reduced with PCA insulated wires, which conform easily to desired shapes for

chassis wiring and harness construction. PCA insulation can be cut and stripped cleanly by automatic processing equipment. The characteristic PVC creep due to insulation stretch is eliminated.

- **VW-1.** PCA insulated wire provides the same excellent flame-resistant properties as the best PVC insulations. It does not melt or shrink back at termination.
- **Ready availability.** PCA insulated wire is available in nine UL styles and over 100 types and configurations. They are UL and CSA rated, and MIL specified at your option.
- **Reduced material costs.** PCA tinned copper conductors do not require expensive silverplating as do many fluorocarbon constructions. PCA with tinned copper is comparable to fluorocarbon insulations with silver plating in every respect but one - price. There, PCA offers the significant advantage of lower cost with equivalent quality.

### FLEXRAD HV™ (105°C XLPE)

FLEXRAD HV is specially designed as a high voltage lead wire for consumer electronics, appliances, test equipment and instrumentation. It has Judd Wire's superior cross-linked polyethylene insulation and is temperature rated for 105° continuous, with excellent overload capacity for short duration.

- **Application-matching variety.** FLEXRAD HV is available in seven voltage ratings. 5kV to 40kV, so it is easily matched to your applications without expensive "overkill." There is no need, for example, to substitute a 15kV wire in a 5kV application. Savings up to 20% in cost, space requirement and wire weight are possible by specifying the right FLEXRAD HV for each job.

- **Superior production properties.** The excellent flexibility of FLEXRAD HV makes it easy to use in tight places. Its tough irradiated polyethylene insulation resists shrink-back and melting, even when in direct contact with a soldering iron.

- **Excellent performance characteristics.** FLEXRAD HV has high resistance to abrasion, deformation, cut-through and chemical attack.

- **Flame retardant rating VW-1.**
- **Three conductor styles.** Solid tinned copper, stranded bare copper with tinned overcoat (TOP), or stranded tinned copper with tinned overcoat (TOC).

### FLEXRAD 125™ (125°C XLPE)

FLEXRAD 125 is an irradiation cross-linked polyethylene insulated wire, tri-rated by UL, CSA and Military Specifications for a wide variety of uses. It is offered in three styles, each of which has these desirable characteristics:

- **High heat and abrasion resistance.** FLEXRAD 125 has excellent abrasion resistance (no cut-through) and exhibits no shrink-back even when in direct contact with a soldering iron.
- **Excellent chemical resistance.** FLEXRAD 125 insulation has unusually high resistance to chemicals and solvents, especially potting systems, which makes it ideal for transformer applications.
- **Wide operating temperature range.** FLEXRAD 125 insulated wires are rated for continuous operation from -55°C to 125°C,

as recognized by UL, CSA and Military Specifications.

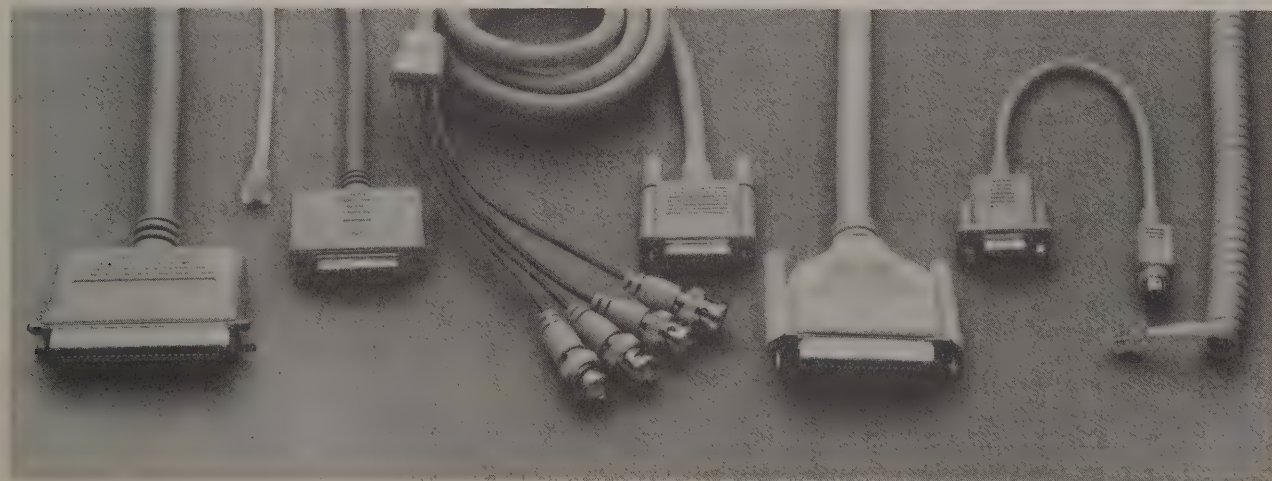
- **Flame retardant rating VW-1.**
- **Superior processability and performance.** Highly flexible FLEXRAD 125 wires conform readily to desired shapes for lead wire and interconnection applications. They avoid the limitations of conventional 105° C PVC: limited temperature range, solder iron shrink-back, creeping insulation during automated cut and strip processing, and poor abrasion resistance. Similarly, FLEXRAD 125 avoids the production problems of fluorocarbons: cold flow, low adhesion, poor cut-through resistance, short lengths, limited flexibility and poor potting ability.
- **Reduced material costs.** Instead of the silver-plated conductors often required with fluorocarbon constructions, FLEXRAD 125 can use tinned copper at substantial savings

| UL        |                 |                |           |                     | CSA                                                        |                |                |           |                     | Judd Wire Product Line                                                                         |
|-----------|-----------------|----------------|-----------|---------------------|------------------------------------------------------------|----------------|----------------|-----------|---------------------|------------------------------------------------------------------------------------------------|
| Style No. | Temp. Rating °C | Voltage Rating | AWG Sizes | Average Wall Thick. | Class                                                      | Temp Rating °C | Voltage Rating | AWG Sizes | Average Wall Thick. |                                                                                                |
| 1472      | 80              | 125V           | 32-20     | .007"               | AWM                                                        | 80             | 150V           | 32-12     | .011"               | PCA<br>PCA                                                                                     |
| 1429      | 80              | 150V           | 32-20     | .0105"              |                                                            |                |                |           |                     |                                                                                                |
| 1534      | 80              | NVS*           | 18-16     | .011"               |                                                            |                |                |           |                     |                                                                                                |
| 1536      | 80              | NVS*           | 32-16     | .011"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 14        | .012"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 32-16     | .011"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 14        | .012"               |                                                            |                |                |           |                     |                                                                                                |
| 1787      | 80              | 300V           | 12-10     | .013"               | REW                                                        | 105            | 300V           | 26-10     | .016"               | PCA<br>PCA                                                                                     |
|           |                 |                | 36-20     | .0105"              |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 18-16     | .011"               |                                                            |                |                |           |                     |                                                                                                |
| 1430      | 105             | 300V           | 30-16     | .016"               | REW                                                        | 105            | 300V           | 26-10     | .016"               | PCA                                                                                            |
| 1557      | 105             | NVS*           | 16        | .016"               |                                                            |                |                |           |                     |                                                                                                |
| 3317      | 105             | 300V           | 14-10     | .016"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 14-10     | .016"               | REW                                                        | 105            | 600V           | 24-10     | .030"               | PCA                                                                                            |
|           |                 |                | 30-10     | .030"               |                                                            |                |                |           |                     |                                                                                                |
| 1431      | 105             | 600V           | 8         | .050"               |                                                            |                |                |           |                     |                                                                                                |
| 3265      | 125             | 150V           | 6-2       | .060"               | AWM<br>AWM or<br>CL 1252<br>CL 1251                        | 125            | 150V           | 30-16     | .011"               | FLEXRAD 125<br>FLEXRAD 125                                                                     |
|           |                 |                | 30-16     | .011"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 26-10     | .016"               |                                                            |                |                |           |                     |                                                                                                |
| 3271      | 125             | 600V           | 26-10     | .030"               | TV-6<br>TV-10<br>TV-15<br>TV-20<br>TV-20<br>TV-30<br>TV-40 | 125            | 600V           | 26-10     | .030"               | FLEXRAD 125                                                                                    |
| 3239      | 105             | 5kV            | 8         | .045"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 6-1/0     | .060"               |                                                            |                |                |           |                     |                                                                                                |
|           |                 |                | 24-12     | .020"               |                                                            |                |                |           |                     |                                                                                                |
| 3239      | 105             | 10kV           | 24-12     | .030"               | TV-6<br>TV-10<br>TV-15<br>TV-20<br>TV-20<br>TV-30<br>TV-40 | 105            | 6kV            | 22-10     | .020"               | FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV |
| 3239      | 105             | 15kV           | 24-12     | .035"               |                                                            |                |                |           |                     |                                                                                                |
| 3239      | 105             | 20kV           | 24-12     | .050"               |                                                            |                |                |           |                     |                                                                                                |
| 3239      | 105             | 25kV           | 24-12     | .055"               | TV-6<br>TV-10<br>TV-15<br>TV-20<br>TV-20<br>TV-30<br>TV-40 | 105            | 20kV           | 22-10     | .055"               | FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV<br>FLEXRAD HV |
| 3239      | 105             | 30kV           | 24-12     | .060"               |                                                            |                |                |           |                     |                                                                                                |
| 3239      | 105             | 40kV           | 24-12     | .070"               |                                                            |                |                |           |                     |                                                                                                |

\* No voltage specified.



## CUSTOM MOLDED CABLES



# AC POWER CORDS

## NORTH AMERICA, JAPAN

STANDARD LENGTH: 6 FT

| Approval | Model No. | Rating | Size of Conductor |             | Cord | Nominal O.D. (mm) | Temperature Rating |
|----------|-----------|--------|-------------------|-------------|------|-------------------|--------------------|
|          |           |        | AWG               | Composition |      |                   |                    |



Hospital Grade Cord

|      |      |          |    |       |     |     |                     |
|------|------|----------|----|-------|-----|-----|---------------------|
| <br> | ZHG1 | 125V 10A | 18 | 43/34 | SVT | 6.3 | 60°C, 75°C or 105°C |
|      | ZHG2 | 125V 10A | 18 | 43/34 | SJT | 7.8 |                     |
|      | ZHG3 | 125V 13A | 16 | 68/34 | SJT | 8.5 |                     |
|      | ZHG4 | 125V 15A | 14 | 41/30 | SJT | 9.3 |                     |



|      |      |          |    |         |     |     |                     |
|------|------|----------|----|---------|-----|-----|---------------------|
| <br> | ZV03 | 125V 10A | 18 | 41/0.16 | SVT | 6.4 | 60°C, 75°C or 105°C |
|      | ZJ03 | 125V 10A | 18 | 41/0.16 | SJT | 8.3 | 60°C, 75°C or 105°C |



|      |      |          |    |         |     |     |                     |
|------|------|----------|----|---------|-----|-----|---------------------|
| <br> | ZV05 | 125V 10A | 18 | 41/0.16 | SVT | 6.4 | 60°C, 75°C or 105°C |
|      | ZJ05 | 125V 10A | 18 | 41/0.16 | SJT | 8.3 | 60°C, 75°C or 105°C |



|          |      |          |                     |         |      |     |                     |
|----------|------|----------|---------------------|---------|------|-----|---------------------|
| <br><br> | ZV01 | 125V 10A | 18                  | 41/0.16 | SVT  | 6.4 | 60°C, 75°C or 105°C |
|          | ZJ01 | 125V 10A | 18                  | 41/0.16 | SJT  | 8.3 | 60°C, 75°C or 105°C |
|          | ZP01 | 125V 10A | 1.25mm <sup>2</sup> | 50/0.18 | VCTE | 8.7 | 60°C, 75°C          |



|      |      |          |    |         |     |     |                     |
|------|------|----------|----|---------|-----|-----|---------------------|
| <br> | ZV02 | 125V 10A | 18 | 41/0.16 | SVT | 6.4 | 60°C, 75°C or 105°C |
|      | ZJ02 | 125V 10A | 18 | 41/0.16 | SJT | 8.3 | 60°C, 75°C or 105°C |



|      |      |          |    |         |     |     |                     |
|------|------|----------|----|---------|-----|-----|---------------------|
| <br> | ZV07 | 125V 10A | 18 | 41/0.16 | SVT | 6.4 | 60°C, 75°C or 105°C |
|      | ZJ07 | 125V 10A | 18 | 41/0.16 | SJT | 8.3 | 60°C, 75°C or 105°C |



For Polarized plug add -P after model no.

|          |     |          |                     |         |              |         |                   |
|----------|-----|----------|---------------------|---------|--------------|---------|-------------------|
| <br><br> | Z1  | 125V 10A | 18                  | 41/0.16 | SPT-2, (HPN) | 3.5x6.9 | SPT-2-60°C, 105°C |
|          | Z2  | 125V 13A | 16                  | 66/0.16 | SPT-2, (HPN) | 3.7x7.4 | (HPN-90°C, 105°C) |
|          | ZP1 | 125V 12A | 1.25mm <sup>2</sup> | 50/0.18 | HVFF         | 3.1x6.2 | HVFF 75°C         |

## Notes:

- The mark S next to the cord assembly denotes that shielded cord is available when requested.
- Shielded power supply cords are 100% aluminum-mylar tape shielded.
- All cords except Z1, Z2, ZP1 are available in 14 or 16 AWG wire for higher power ratings.

SPECIAL LENGTHS, CUSTOM MADE CORDS, STRAIN RELIEF, ETC. ARE AVAILABLE PER CUSTOMER SPECIFICATIONS.

## INTERNATIONAL



STANDARD LENGTH: 2 METERS (6.7 FT)

| Approval | Model No. | Rating | Size of Conductor |             | Cord | Nominal O.D. (mm) | Temperature Rating |
|----------|-----------|--------|-------------------|-------------|------|-------------------|--------------------|
|          |           |        | AWG               | Composition |      |                   |                    |



Continental Europe Cord Set



|  |      |          |                       |        |         |        |            |
|--|------|----------|-----------------------|--------|---------|--------|------------|
|  | Z510 | 250V 10A | (1.0mm <sup>2</sup> ) | 32/0.2 | H05VV-F | 7.5 mm | 60°C, 75°C |
|--|------|----------|-----------------------|--------|---------|--------|------------|



United Kingdom Cord Set, With 13A Fuse



|  |      |          |                       |        |         |        |            |
|--|------|----------|-----------------------|--------|---------|--------|------------|
|  | Z610 | 250V 10A | (1.0mm <sup>2</sup> ) | 32/0.2 | H05VV-F | 7.5 mm | 60°C, 75°C |
|--|------|----------|-----------------------|--------|---------|--------|------------|



Australia Plug, Optional 2 Prong



|  |      |          |                       |        |        |        |      |
|--|------|----------|-----------------------|--------|--------|--------|------|
|  | Z410 | 250V 10A | (1.0mm <sup>2</sup> ) | 32/0.2 | GFC-3R | 7.5 mm | 75°C |
|--|------|----------|-----------------------|--------|--------|--------|------|



|  |      |          |                        |         |         |        |      |
|--|------|----------|------------------------|---------|---------|--------|------|
|  | Z505 | 250V 6A  | (0.75mm <sup>2</sup> ) | 42/0.15 | H05VV-F | 7.5 mm | 60°C |
|  | Z506 | 250V 10A | (1.0mm <sup>2</sup> )  | 32/0.2  | H05VV-F | 7.5 mm | 60°C |



Continental Europe

|  |      |          |                        |         |         |        |      |
|--|------|----------|------------------------|---------|---------|--------|------|
|  | Z508 | 250V 6A  | (0.75mm <sup>2</sup> ) | 42/0.15 | H05VV-F | 7.5 mm | 60°C |
|  | Z509 | 250V 10A | (1.0mm <sup>2</sup> )  | 32/0.2  | H05VV-F | 7.5 mm | 60°C |



|  |      |          |                        |         |         |        |      |
|--|------|----------|------------------------|---------|---------|--------|------|
|  | Z502 | 250V 6A  | (0.75mm <sup>2</sup> ) | 42/0.15 | H05VV-F | 7.5 mm | 60°C |
|  | Z503 | 250V 10A | (1.0mm <sup>2</sup> )  | 32/0.2  | H05VV-F | 7.5 mm | 60°C |



|  |    |           |                        |         |                        |         |      |
|--|----|-----------|------------------------|---------|------------------------|---------|------|
|  | Z3 | 250V 2.5A | (0.75mm <sup>2</sup> ) | 42/0.15 | H03VVH2-F<br>H05VVH2-F | 3.7x5.8 | 60°C |
|--|----|-----------|------------------------|---------|------------------------|---------|------|

# LZRelectronics, inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

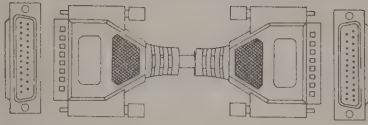
# LZR



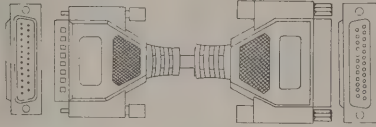
# COMPUTER INTERFACE CABLES

## STANDARD & CUSTOM MOLDED CABLE ASSEMBLIES

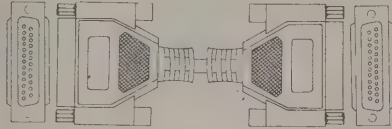
**DB25MM6**  
DB25 male to male fully loaded, 6 ft length, molded or assembly type



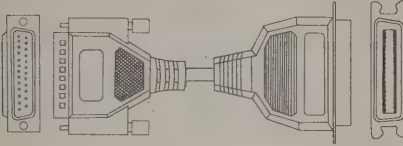
**DB25MF6**  
DB25 male to female fully loaded, 6 ft length, molded or assembly type



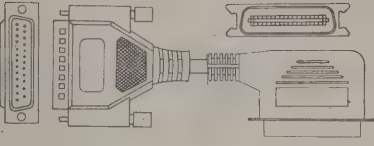
**DB25FF6**  
DB25 female to female fully loaded, 6 ft length, molded or assembly type



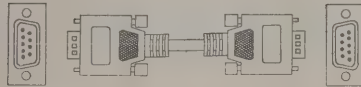
**DB25M36M**  
Printer cable DB25M to 36 pin male, 6 ft long



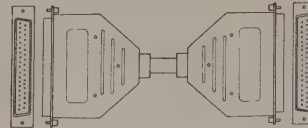
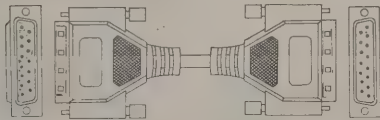
**25M36MRA**  
Printer cable 6 ft with right 90° plug  
**25M36MLA**  
Printer cable, 6 ft with left 90° plug



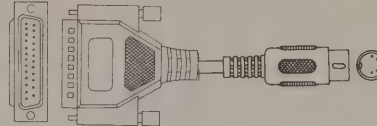
**DB9MM6**  
DB9 male to male fully loaded, 6 ft  
**DB9MF6**  
DB9 male to female, 6 ft  
**DB9FF6**  
DB9 Female to Female 6 ft



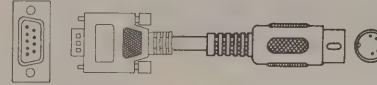
**DB15MM6**  
DB15 male to male, 6 ft fully loaded  
**DB15FF6**  
DB15 female to female, 6 ft  
**DB15MF6**  
DB15 male to female, 6 ft



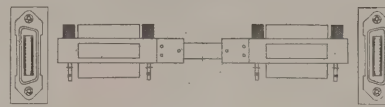
**DB37MM6**  
DB37 male to male, 6 ft, molded or assembly type  
**DB37MF6**  
DB37 male to female 6 ft  
**DB37FF6**  
DB37 female to female 6 ft



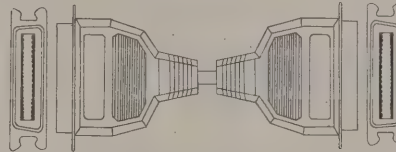
**DB25M5PD6**  
DB25 male to 5 pin DIN plug 6 ft long molded or assembly type



**DB9M5PD6**  
DB9 male to 5 pin DIN plug, 6 ft long, assembly or molded type



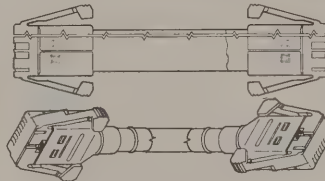
**MCA8522**  
IEEE-488 CABLE 6 ft



**5736MM6**  
36 pin male to male fully loaded, 6 ft  
**5736MF6**  
Male to female, 6 ft  
**5736FF6**  
female to female, 6 ft

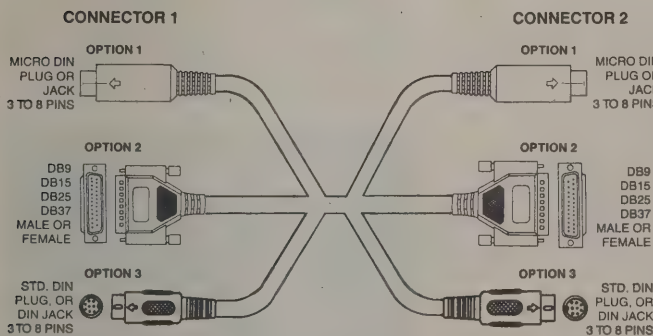


Molded molex connector  
**Mol-3**  
3 position, 6 ft  
**Mol-4**  
4 position, 6 ft



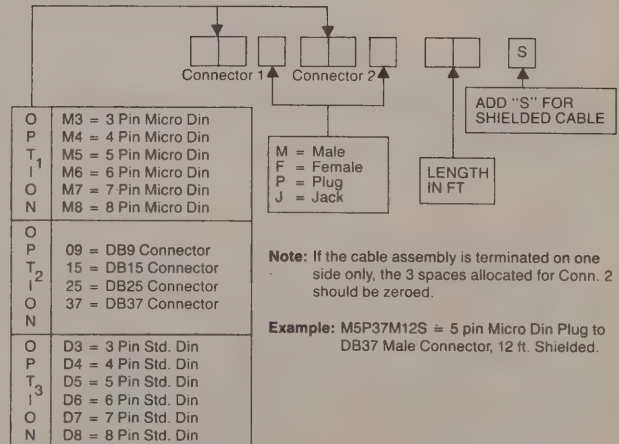
**SDL TYPE**  
4, 6, 8, 16 position  
Custom Length  
Round or Flat

## CUSTOM MADE MOLDED CABLE ASSEMBLIES



OTHER COMBINATIONS ARE AVAILABLE UPON REQUEST

## ORDERING SYSTEM



**LZR electronics, inc.**

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

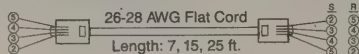
**LZR**

# MODULAR TELEPHONE CORDS

## T4-4 CONDUCTOR SERIES: PLUG TO PLUG

6P4C  
PLUG

(RJ-11)



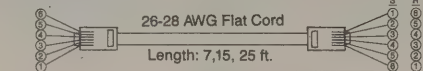
|          |                          |
|----------|--------------------------|
| T407S/R* | 4 Cond. 7 ft. Ext. Cord  |
| T415S/R* | 4 Cond. 15 ft. Ext. Cord |
| T425S/R* | 4 Cond. 25 ft. Ext. Cord |

\* S = Straight Through Wiring  
\* R = Reversed Sequence Wiring

## T6-6 CONDUCTOR SERIES:

6P6C  
PLUG

(RJ-11)

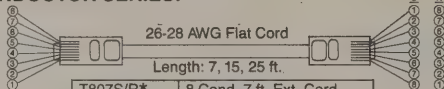


|          |                          |
|----------|--------------------------|
| T607S/R* | 6 Cond. 7 ft. Ext. Cord  |
| T615S/R* | 6 Cond. 15 ft. Ext. Cord |
| T625S/R* | 6 Cond. 25 ft. Ext. Cord |

## T8-8 CONDUCTOR SERIES:

8P8C  
PLUG

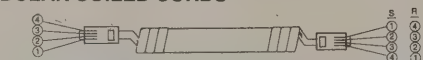
(RJ-45)



|          |                          |
|----------|--------------------------|
| T807S/R* | 8 Cond. 7 ft. Ext. Cord  |
| T815S/R* | 8 Cond. 15 ft. Ext. Cord |
| T825S/R* | 8 Cond. 25 ft. Ext. Cord |

## C4—MODULAR COILED CORDS

4P4C  
PLUG

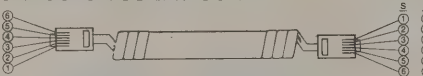


|          |                               |
|----------|-------------------------------|
| C407S/R* | Telephone Headset Cord 7 ft.  |
| C415S/R* | Telephone Headset Cord 15 ft. |
| C425S/R* | Telephone Headset Cord 25 ft. |

## C6—6 CONDUCTOR COILED CORD

6P6C  
PLUG

(RJ-11)

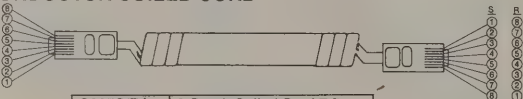


|          |                            |
|----------|----------------------------|
| C607S/R* | 6 Cond. Coiled Cord 7 ft.  |
| C615S/R* | 6 Cond. Coiled Cord 15 ft. |

## C8—8 CONDUCTOR COILED CORD

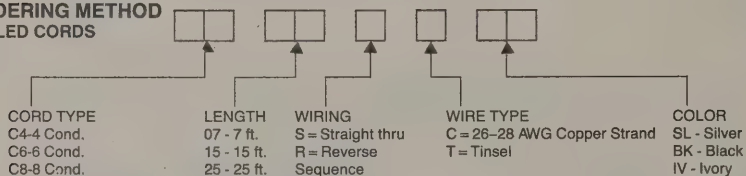
8P8C  
PLUG

(RJ-45)



|          |                            |
|----------|----------------------------|
| C807S/R* | 8 Cond. Coiled Cord 7 ft.  |
| C815S/R* | 8 Cond. Coiled Cord 15 ft. |

## ORDERING METHOD COILED CORDS



## CUSTOM MADE MODULAR CORD ASSEMBLIES

### ORDERING SYSTEM

NO. OF CONDUCTORS  
2 = 2 Cond.  
4 = 4 Cond.  
6 = 6 Cond.  
8 = 8 Cond.

LENGTH, FT.

TERMINATION

CORD TYPE  
A = Flat Cord, Copper Strand  
B = Flat Cord, Tinsel Wire  
C = Round Cord, 26-28 AWG Copper  
D = Round Shielded Cord  
E = Flat Shielded Cord  
F = Coiled Cord Tinsel Wire  
G = Coiled Cord, 26-28 AWG

COLOR  
SL = Silver  
BK = Black  
WT = White  
IV = Ivory  
BG = Beige  
BR = Brown  
CM = Custom Color

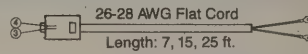
LEFT SIDE  
RIGHT SIDE  
0 = Untermated  
1 = 4P4C Plug  
2 = 6P4C Plug  
3 = 6P6C Plug  
4 = 8P8C Plug  
5 = Spade Lugs

WIRING DIAGRAM  
S = Straight Thru (Pin 1 to 1...)  
R = Reverse Sequence  
C = Custom Wiring  
Advise Pinouts

## S2-2 CONDUCTOR SERIES: PLUG TO SPADE

6P2C  
PLUG

(RJ-11)

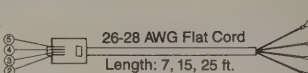


|      |                              |
|------|------------------------------|
| S207 | 2 Cond. 7 ft. Plug to Spade  |
| S215 | 2 Cond. 15 ft. Plug to Spade |
| S225 | 2 Cond. 25 ft. Plug to Spade |

## S4-4 CONDUCTOR SERIES

6P4C  
PLUG

(RJ-11)

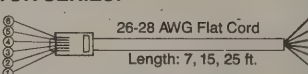


|      |                              |
|------|------------------------------|
| S407 | 4 Cond. 7 ft. Plug to Spade  |
| S415 | 4 Cond. 15 ft. Plug to Spade |
| S425 | 4 Cond. 25 ft. Plug to Spade |

## S6-6 CONDUCTOR SERIES:

6P6C  
PLUG

(RJ-11)

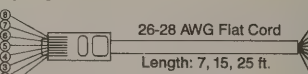


|      |                              |
|------|------------------------------|
| S607 | 6 Cond. 7 ft. Plug to Spade  |
| S615 | 6 Cond. 15 ft. Plug to Spade |
| S625 | 6 Cond. 25 ft. Plug to Spade |

## S8-8 CONDUCTOR SERIES

8P8C  
PLUG

(RJ-45)



|      |                              |
|------|------------------------------|
| S807 | 8 Cond. 7 ft. Plug to Spade  |
| S815 | 8 Cond. 15 ft. Plug to Spade |
| S825 | 8 Cond. 25 ft. Plug to Spade |

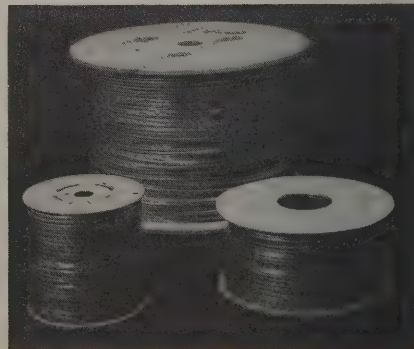
**Note:** Straight through wiring means PIN 1 to 1, PIN 2 to 2, PIN 3 to 3, etc. Reverse sequence wiring means for example: PIN 1 to 6, PIN 2 to 5, PIN 3 to PIN 4...etc. (For a six cond. cable assembly)

## BULK TELEPHONE CABLE

| MODEL    | DESCRIPTION                   |
|----------|-------------------------------|
| TC1K4C   | 1000 Ft. Reel, Flat Cord, 4C  |
| TC3.5K4C | 3,500 Ft. Reel, Flat Cord, 4C |
| TC5006C  | 500 Ft. Reel, Flat Cord, 6C   |
| TC1K6C   | 1000 Ft. Reel, Flat Cord, 6C  |
| TC2.5K6C | 2500 Ft. Reel, Flat Cord, 6C  |
| TC5008C  | 500 Ft. Reel, Flat Cord, 8C   |
| TC1K8C   | 1000 Ft. Reel, Flat Cord, 8C  |
| TC2K8C   | 2000 Ft. Reel, Flat Cord, 8C  |

## SHIELDED OVERALL FOIL SHIELD

| MODEL  | DESCRIPTION                              |
|--------|------------------------------------------|
| TS1K31 | 1000 Ft. Reel, Flat, 3 Cond & Drain Wire |
| TS1K51 | 1000 Ft. Reel, Flat, 5 Cond & Drain Wire |
| TS1K71 | 1000 Ft. Reel, Flat, 7 Cond & Drain Wire |



**LZRelectronics, inc.**

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436



# CUSTOM CABLE ASSEMBLIES

ASSEMBLY OR MOLDED TYPE  
AUDIO, VIDEO, RCA, DIN, 3.5mm, 6.4mm

|                                                                              |                                                                                                  |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| <b>AC 094</b><br>RCA plug double end, 6 ft. Mono                             | <b>AC 095</b><br>RCA plug to RCA jack, 6 ft. Mono                                                |
| <b>AC 096</b><br>2 RCA jacks and 2 RCA plugs, 6 ft. Stereo                   | <b>AC 097</b><br>2 RCA plugs each end, 6 ft. Stereo                                              |
| <b>AC 099</b><br>RCA plug to 2 RCA plugs, 1 ft. Mono                         | <b>AC 100</b><br>RCA plug to 2 RCA jacks 1 ft. Mono                                              |
| <b>AC 015</b><br>5 pin DIN plug to 2 RCA plugs, 6 ft. Stereo                 | <b>AC 022</b><br>1/4" phone plug stereo (6.4mm) to 2 RCA plugs, 1 ft. Stereo                     |
| <b>AC 049</b><br>3.5mm plug to plug, 6 ft. Mono                              | <b>AC 047</b><br>6.4mm (1/4") plug on each end, 6 ft. Mono                                       |
| <b>AC049S</b> 3.5mm plug to plug, Stereo, 6 ft.                              | <b>AC047S</b> 6.4mm plug to plug, Stereo, 6 ft.                                                  |
| <b>AC 108</b><br>3.5mm plug to two jacks, 1 ft. Mono                         | <b>AC 108S</b><br>3.5mm plug to two jacks, stereo, 1 ft. Stereo                                  |
| <b>AC 6435</b><br>6.4mm (1/4") phone plug to 3.5mm plug, 6 ft. Mono          | <b>AC 6464</b><br>6.4mm (1/4") phone plug to jack, 6 ft. Stereo                                  |
| <b>CVC 506</b><br>BNC Male to Male, molded, 6 ft. RG59U                      | <b>AC 64RAC</b><br>Right angle 6.4mm (1/4") plug to plug coiled cord, 6 ft. extended length Mono |
| <b>CVC 510RA</b><br>F plug to plug, right angle, 6 ft. molded, RG59U Push on | <b>CVC 509</b><br>BNC Male to RCA plug, molded, 6 ft., RG 59U                                    |

Notes: A. Some custom molded assemblies require 500 pcs. min. order and 8-10 weeks lead time.

B. Your own specifications are welcome for our quote.

**LZR**electronics,inc.

8051 Cessna Ave., Gaithersburg, MD 20879  
Telephone (301) 921-4600 Fax (301) 670-0436

**LZR**

# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

## WHERE TO FIND THEM IN THE 93/94 EDITION OF EEM

|                                                                                 |        |                                                                                |        |
|---------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------|
| AC Power Supplies, Product Selection Guide                                      | D•2221 | Keyboards & Keypads, Product Selection Guide                                   | B•1818 |
| Batteries, Product Selection Guide                                              | D•1419 | Lamps, Lights, & Indicators, Product Selection Guide                           | B•1131 |
| Cabinets, Enclosures, Racks & Chassis, Product Selection Guide                  | C•1003 | Microwave Components, Product Selection Guide                                  | A•1719 |
| Capacitors, Product Selection Guide                                             | A•1003 | Military Qualified Products List                                               | B•1002 |
| Coils, Chokes, Inductors, Product Selection Guide                               | A•1179 | Motors, Drives, & Rotating Components, Product Selection Guide                 | B•1231 |
| Connectors, Terminals & Sockets, Product Selection Guide                        | C•1139 | Oscilloscopes, Product Selection Guide                                         | D•1402 |
| Cores, Magnets & Ferrites                                                       | A•1317 | Panel Hardware, Product Selection Guide                                        | C•1522 |
| Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide | A•1326 | Panel Meters, Analog & Digital, Product Selection Guide                        | D•1336 |
| DC-DC Converters                                                                | D•2049 | Potentiometers, Trimmers, Controls, & Rheostats, Product Selection Guide       | A•2053 |
| DC Power Supplies, Product Selection Guide                                      | D•1488 | Power Supplies, AC, Product Selection Guide                                    | D•2221 |
| Delay Lines, Product Selection Guide                                            | A•1513 | Power Supplies, DC, Product Selection Guide                                    | D•1488 |
| Discrete Semiconductors, Product Selection Guide                                | A•2130 | Protective Components (Fuses, Circuit Breakers, etc.), Product Selection Guide | B•1341 |
| Displays, Readouts, & CRTs, Product Selection Guide                             | B•1017 | Relays, Product Selection Guide                                                | B•1401 |
| Fans, Blowers, Cooling Equipment, & Heat Exchangers, Product Selection Guide    | C•1557 | Resistors, Product Selection Guide                                             | A•1859 |
| Fiber Optics, Product Selection Guide                                           | B•1200 | Solenoids, Product Selection Guide                                             | B•1626 |
| Filters, Power, Product Selection Guide                                         | A•1584 | Switches, Product Selection Guide                                              | B•1658 |
| Filters, Signal, Product Selection Guide                                        | A•1617 | Thermal Components, Product Selection Guide                                    | B•1857 |
| Instruments, Test & Measuring, Product Selection Guide                          | D•1215 | Transducers & Encoders, Product Selection Guide                                | B•1911 |
| Interconnection Systems, Product Selection Guide                                | C•1670 | Transformers, Product Selection Guide                                          | A•2229 |
|                                                                                 |        | Wire & Cable, Product Selection Guide                                          | C•1701 |





# Manhattan<sup>®</sup>

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Connectors

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High Temperature Wire  
Hook-Up and Lead Wire  
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Thermocouple Cable  
Plenum Cable  
Power/Building Wire  
Power/Extension Cords  
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## LITZ WIRE

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## MOLYBDENUM

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All sizes to 56 AWG Round per - NEMA MW 1000 JW 1177B, MIL W583C High Temperatures, Colors, Half Sizes, Bondable Wires, Copper, Aluminum and Special Conductors

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## PLATED WIRE AND

## RIBBON

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## TANTALUM

## TITANIUM

## TUNGSTEN

## TWISTITE™

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16 AWG and Finer

Up to 33 TPI  $\pm 1\%$

Up to 10 colors in some sizes

# FACILITIES/SERVICES

## CUSTOM ENAMELING

In our custom enameling facilities we enamel most metals from .072" to .0004" round or square and rectangular sizes smaller than 14 AWG or 3500 sq. mil. cross-sectional area. Insulations are available in special colors, builds and bondable overcoats. All insulations meet NEMA MW 1000, 105-220°C, single thru quadruple film builds. Up to 10 insulation colors are available to aid in conductor identification.

## WIRE SHAPING

MWS produces a complete line of miniature square and rectangular wires in a variety of metals. Sizes smaller than 14 AWG sq. and rectangular shapes smaller than 3500 sq. mils. are produced bare as well as film insulated.

## RIBBON ROLLING

MWS operates facilities for production of flat ribbon wire in a wide variety of metals. Thicknesses range from .0005" with widths up to .125". Ribbon wires are available bare, film insulated and plated.

Multifilar® is a registered trademark of MWS Wire Industries. Monel® & Inconel® are trademarks of the Inco family of companies.

## DRAWING AND ANNEALING

Our drawing and annealing capabilities round out our custom manufacturing facilities. These capabilities allow us to fabricate most metals from .064" through .0004" diameter in the temper and quantity you require.

## TESTING LABORATORY

Expanded test facility provides complete chemical, physical and electrical test data for applicable military, federal, commercial and customer standards. Metallurgical and I/R spectro analysis are also available. We can provide you with fast and accurate answers to your technical questions.

## CUSTOM PACKAGING

MWS provides recycled paper shipping containers. These containers eliminate damage in shipping, and later prevent breakage in storage and production line handling.

## WIRE TWISTING

MWS operates facilities for twisting 2 or more conductors 18 AWG and finer. Twisting tightness up to 33 twists per inch and to tolerances of  $\pm 1\%$ . Conductor materials include copper, silver, plated conductors and specialty alloys, in bare and insulated constructions.

## WIRE SPOOLING

Spooling facilities handle every size wire from heavy square and rectangular to ultra-fine. This enables you to buy the quantity of wire you need on the spool size you want.



**Wire Industries**

31200 Cedar Valley Drive, Westlake Village, CA 91362

CALL TOLL FREE 800 423-5097

(818) 991-8553 FAX: (818) 706-0911



# MULTIFILAR<sup>®</sup>

## Magnet Wire



Whenever two or more magnet wires travel together, MULTIFILAR magnet wire is worth a closer look. This parallel-bonded, color-coded magnet wire offers many benefits for both small and large users.

Engineers should specify it when they're concerned with space, weight and reliability. Where consistent capacitance and impedance characteristics are needed, MULTIFILAR magnet wire outperforms windings where two separate magnet wires are used.

Production users benefit from increased layer winding speeds, reduced labor and handling. Color-coding assists in conductor identification and reduces termination errors.

MULTIFILAR magnet wires are custom produced by MWS. We guarantee flat, parallel construction in an array of sizes 16 AWG and finer, with up to 20 conductors in some sizes.

Both round and flat constructions are available. Color-coded conductors are available in most insulations with up to 10 different colors in some sizes. Conductor separation is also guaranteed with certain bonding mediums.

For an even closer look, send for a free sample, specifications and ordering information. Production minimums are as low as 500 feet.

### GENERAL PRODUCT INFORMATION

| Code No. | INSULATIONS           | Thermal Rating | NEMA MW1000 | JW 1177B Class/Type                       | Code No. | Bonding Films (operating temp.) | Solvents for Conductor Separation       | BOND THICKNESS STANDARDS |           |                  |
|----------|-----------------------|----------------|-------------|-------------------------------------------|----------|---------------------------------|-----------------------------------------|--------------------------|-----------|------------------|
| 1        | Polyurethane*         | 130°C          | MW 75-C     | JW 1177/37B<br>CL-130<br>SP thru SP-4     | 1        | Polyvinyl Butyral<br>(105°C)    | Alcohol<br>Isopropyl<br>or<br>Denatured | AWG Size                 | Thickness | Tolerances       |
| 2        | Poly-Nylon*           | 130°C          | MW 28-C     | JW 1177/9B<br>CL-130<br>SUN thru SUN-4    |          |                                 |                                         | 16-20                    | .0007"    | ±.0002"          |
| 4        | Modified Polyester    | 180°C          | MW 30-C     | JW 1177/12B<br>CL-180<br>H thru H-4       | 2        | Polyamide<br>(Nylon)<br>(105°C) | None                                    | 21-28                    | .0005"    | ±.0002"          |
| 5        | Armored Polyester     | 200°C          | MW 35-C     | JW 1177/14B<br>CL-200<br>K thru K-4       |          |                                 |                                         | 29-32                    | .0004"    | ±.0001"          |
| 6        | Solderable Polyester* | 180°C          | MW 77-C     | JW 1177/39B<br>CL-180<br>SPEI thru SPEI-4 | 3        | Epoxy<br>(130°C)                | Acetone                                 | 33-36                    | .0003"    | ±.0001"          |
| 7        | Formvar               | 105°C          | MW 15-C     | JW 1177/4B<br>CL-105<br>T thru T4         |          |                                 |                                         | 37-41                    | .0002"    | ±.0001"          |
| 8        | Pyre M.L.†            | 220°C          | MW 10-C     | JW 1177/15B<br>CL-220<br>M thru M-4       |          |                                 |                                         | 42-finer                 | .0001"    | + .0001"<br>- .0 |

\* Solderable Insulations † Trademark of DuPont

NOTE: The above referenced insulations, bonding films, and bond thickness are standard. Other insulations, films and thicknesses are available upon request. CONDUCTOR SEPARATION: Bonding films can be softened and removed by immersion in appropriate solvents. Some mechanical action (i.e. wiping wires following immersion in solvent) may be required to affect conductor separation.

### PART NUMBER ORDERING SYSTEM

Make your own 8 digit part number by following the guidelines outlined below.

EXAMPLE

**B - 2 3 8 1 1 1 1 (155)**

Product letter for all multifilar magnet wire

Number of conductors. Use ( ) for more than 9 conductors

AWG gauge sizes

Insulation thickness  
1= single  
2=heavy  
3=triple  
4=quadruple

Insulation type  
"See above chart for correct code number"

Color coded conductors  
0=none required  
1=red/green  
2=green/clear  
3=red/green/clear  
9=special - call for color code

Bonding film  
"See above chart for correct code number"

EXAMPLE = 2 Conductors—38AWG Single Polyurethane 155°C—Red/Green—Butyral Bond  
When requiring polyurethane or poly nylon 155°C note (155) at the end of the part number.

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31200 Cedar Valley Drive, Westlake Village, California 91362

**MWS**  
Wire Industries

# MICROSQUARE™

## Magnet Wire

Copper

| SIZE<br>(AWG) | BARE DIMENSION<br>(INCHES) | CROSS SECTIONAL<br>AREA (SQ. MILS.) | RESISTANCE*<br>(OHMS PER 1000 FT. AT 20°C) |         | SINGLE<br>BUILD | HEAVY<br>BUILD | SIZE<br>(AWG) |
|---------------|----------------------------|-------------------------------------|--------------------------------------------|---------|-----------------|----------------|---------------|
|               | NOMINAL                    | NOMINAL                             | NOMINAL                                    | NOMINAL | NOMINAL         | NOMINAL        |               |
| 15            | .0571                      | 3041                                | 2.77                                       |         | .0584           | .0596          | 15            |
| 16            | .0508                      | 2361                                | 3.57                                       |         | .0521           | .0533          | 16            |
| 17            | .0453                      | 1832                                | 4.60                                       |         | .0466           | .0477          | 17            |
| 18            | .0403                      | 1500                                | 5.62                                       |         | .0415           | .0425          | 18            |
| 19            | .0359                      | 1185                                | 7.23                                       |         | .0370           | .0381          | 19            |
| 20            | .0320                      | 954                                 | 8.83                                       |         | .0331           | .0341          | 20            |
| 21            | .0285                      | 742                                 | 11.35                                      |         | .0296           | .0304          | 21            |
| 22            | .0253                      | 610                                 | 13.81                                      |         | .0263           | .0271          | 22            |
| 23            | .0226                      | 480                                 | 17.55                                      |         | .0236           | .0244          | 23            |
| 24            | .0201                      | 374                                 | 22.52                                      |         | .0211           | .0219          | 24            |
| 25            | .0179                      | 316                                 | 26.68                                      |         | .0189           | .0196          | 25            |
| 26            | .0159                      | 232                                 | 36.25                                      |         | .0168           | .0175          | 26            |
| 27            | .0142                      | 197                                 | 42.85                                      |         | .0153           | .0161          | 27            |
| 28            | .0126                      | 158                                 | 53.96                                      |         | .0137           | .0144          | 28            |
| 29            | .0113                      | 122                                 | 69.0                                       |         | .0123           | .0130          | 29            |
| 30            | .0100                      | 91                                  | 93.0                                       |         | .0109           | .0116          | 30            |

\*Based on 99.66% conductivity IACS

Aluminum

| SIZE<br>(AWG) | BARE DIMENSION<br>(INCHES) | CROSS SECTIONAL<br>AREA (SQ. MILS.) | RESISTANCE*<br>(OHMS PER 1000 FT. AT 20°) |         | SINGLE<br>BUILD | HEAVY<br>BUILD | SIZE<br>(AWG) |
|---------------|----------------------------|-------------------------------------|-------------------------------------------|---------|-----------------|----------------|---------------|
|               | NOMINAL                    | NOMINAL                             | NOMINAL                                   | NOMINAL | NOMINAL         | NOMINAL        |               |
| 15            | .0571                      | 3041                                | 4.39                                      |         | .0584           | .0596          | 15            |
| 16            | .0508                      | 2361                                | 5.66                                      |         | .0521           | .0533          | 16            |
| 17            | .0453                      | 1832                                | 7.29                                      |         | .0466           | .0477          | 17            |
| 18            | .0403                      | 1500                                | 8.91                                      |         | .0415           | .0425          | 18            |
| 19            | .0359                      | 1185                                | 11.46                                     |         | .0370           | .0381          | 19            |
| 20            | .0320                      | 954                                 | 13.99                                     |         | .0331           | .0341          | 20            |
| 21            | .0285                      | 742                                 | 17.99                                     |         | .0295           | .0304          | 21            |
| 22            | .0253                      | 610                                 | 21.88                                     |         | .0263           | .0271          | 22            |
| 23            | .0226                      | 480                                 | 27.81                                     |         | .0236           | .0244          | 23            |
| 24            | .0201                      | 374                                 | 35.69                                     |         | .0211           | .0219          | 24            |
| 25            | .0179                      | 316                                 | 42.26                                     |         | .0189           | .0196          | 25            |
| 26            | .0159                      | 232                                 | 57.56                                     |         | .0168           | .0175          | 26            |
| 27            | .0142                      | 197                                 | 67.79                                     |         | .0153           | .0161          | 27            |
| 28            | .0126                      | 158                                 | 85.60                                     |         | .0137           | .0144          | 28            |
| 29            | .0113                      | 122                                 | 109.46                                    |         | .0123           | .0130          | 29            |
| 30            | .0100                      | 91                                  | 146.75                                    |         | .0109           | .0116          | 30            |

\*Based on 61% conductivity IACS



Cross Section at 100X  
#28 Square Copper  
Insulated with polyester  
base coat and epoxy  
bondable topcoat.



### Miniature square and rectangular magnet wire for specialty coil and motor windings.

When product miniaturization calls for tighter dimensional specifications, MWS Microsquare film-coated magnet wire allows design engineers to create compact coils and small motors that deliver more power in less space.

Microsquare means miniature square and rectangular, copper and aluminum magnet wire. Custom-produced by MWS in sizes smaller than 14 AWG or 3500 sq.mil. cross-sectional area, Microsquare is available in a wide range of solderable and high-temperature insulations and a variety of colors, with or without bondable overcoats. See pages 2 and 3 for information on film insulations and page 10 for information on bondable overcoats.

Microsquare magnet wire was developed to provide improved winding uniformity and maximum use of space.

### Part Number Ordering System. Make your own 7-digit part number by following the guidelines outlined below.

**M - 2 2 1 1 2 1 (155)**

Product letter for all Microsquare magnet wire.

Square AWG Size From chart. Use 88 for special square size. Use 99 for rectangular sizes. (Show size after basic number.)

Conductor Material  
1 = copper  
2 = aluminum  
9 = special

Insulation Build  
1 = single  
2 = heavy  
3 = triple  
4 = quad  
9 = special

Insulation Type  
\* 1 = polyurethane  
\* 2 = poly nylon  
3 = polyester—180  
4 = polyester—200  
5 = polyurethane bondable  
6 = solderable polyester  
7 = formvar  
8 = ML  
9 = special

Color Code  
1 = natural  
2 = green  
3 = red  
4 = blue  
9 = special

EXAMPLE = 22 AWG-Sq. Copper-Single Poly nylon 155°C-Natural Color

NOTE: For part numbers starting with 88 or 99, please show wire dimensions after basic part number.

\*When requiring polyurethane or poly nylon 155°C note (155) at the end of the part number.

CALL TOLL FREE **1 800 423-5097**  
(818) 991-8553 FAX: (818) 706-0911  
31200 Cedar Valley Drive, Westlake Village, California 91362





# TWISTITE™

## Magnet Wire



| NUMBER OF STRANDS | SIZE (AWG) | CIRCULAR MILS | NEAREST AWG EQUIV. (CIR. MILS) | RESISTANCE (OHMS PER 1000 FT. AT 20°C) | SINGLE BUILD       |                |                     | HEAVY BUILD        |                |                     |
|-------------------|------------|---------------|--------------------------------|----------------------------------------|--------------------|----------------|---------------------|--------------------|----------------|---------------------|
|                   |            |               |                                |                                        | MEAN O.D. (INCHES) | FEET PER POUND | POUNDS PER 1000 FT. | MEAN O.D. (INCHES) | FEET PER POUND | POUNDS PER 1000 FT. |
|                   |            |               |                                |                                        |                    |                |                     |                    |                |                     |
| 2                 | 24         | 808.00        | 21                             | 12.83                                  | .043               | 402            | 2.49                | .045               | 395            | 2.53                |
| 3                 | 24         | 1212.00       | 19½                            | 8.56                                   | .043               | 268            | 3.73                | .045               | 263            | 3.79                |
| 6                 | 24         | 2424.00       | 16½                            | 4.28                                   | .060               | 134            | 7.46                | .063               | 132            | 7.59                |
| 2                 | 25         | 641.00        | 22                             | 16.18                                  | .038               | 505            | 1.90                | .040               | 496            | 2.02                |
| 3                 | 25         | 961.00        | 20½                            | 10.79                                  | .038               | 337            | 2.97                | .040               | 331            | 3.03                |
| 6                 | 25         | 1922.00       | 17½                            | 5.39                                   | .054               | 168            | 5.94                | .057               | 165            | 6.06                |
| 2                 | 26         | 506.00        | 23                             | 20.51                                  | .034               | 639            | 1.56                | .036               | 627            | 1.60                |
| 3                 | 26         | 750.00        | 21½                            | 13.67                                  | .034               | 426            | 2.35                | .036               | 418            | 2.39                |
| 6                 | 26         | 1517.00       | 18½                            | 6.64                                   | .048               | 213            | 4.68                | .051               | 209            | 4.79                |
| 2                 | 27         | 403.00        | 24                             | 25.71                                  | .031               | 800            | 1.25                | .032               | 785            | 1.27                |
| 3                 | 27         | 605.00        | 22½                            | 17.14                                  | .031               | 533            | 1.87                | .032               | 524            | 1.91                |
| 6                 | 27         | 1210.00       | 19½                            | 8.57                                   | .043               | 267            | 3.75                | .046               | 261            | 3.82                |
| 2                 | 28         | 318.00        | 25                             | 32.66                                  | .027               | 1014           | .966                | .029               | 993            | 1.01                |
| 3                 | 28         | 476.00        | 23½                            | 21.78                                  | .027               | 678            | 1.48                | .029               | 662            | 1.51                |
| 6                 | 28         | 953.00        | 20½                            | 10.99                                  | .039               | 338            | 2.96                | .041               | 331            | 3.02                |
| 2                 | 29         | 255.00        | 26                             | 40.61                                  | .025               | 1256           | .787                | .026               | 1231           | .812                |
| 3                 | 29         | 383.00        | 24½                            | 27.07                                  | .025               | 838            | 1.19                | .026               | 821            | 1.22                |
| 6                 | 29         | 766.00        | 21½                            | 13.54                                  | .035               | 419            | 2.39                | .037               | 410            | 2.44                |
| 2                 | 30         | 200.00        | 27                             | 51.85                                  | .022               | 1604           | .623                | .023               | 1568           | .639                |
| 3                 | 30         | 300.00        | 25½                            | 34.57                                  | .022               | 1068           | .935                | .023               | 1048           | .954                |
| 6                 | 30         | 600.00        | 22½                            | 17.22                                  | .031               | 534            | 1.87                | .033               | 524            | 1.91                |
| 2                 | 32         | 128.00        | 29                             | 81.05                                  | .0176              | 2488           | .400                | .019               | 2436           | .410                |
| 3                 | 32         | 192.00        | 27                             | 54.00                                  | .018               | 1695           | .590                | .019               | 1651           | .606                |
| 6                 | 32         | 384.00        | 24                             | 27.00                                  | .025               | 848            | 1.18                | .027               | 828            | 1.21                |
| 2                 | 34         | 78.00         | 31                             | 130.65                                 | .014               | 4027           | .246                | .015               | 3918           | .255                |
| 3                 | 34         | 119.00        | 29½                            | 87.10                                  | .014               | 2680           | .373                | .015               | 2627           | .381                |
| 6                 | 34         | 238.00        | 26½                            | 43.55                                  | .020               | 1340           | .748                | .021               | 1313           | .762                |
| 2                 | 36         | 50.00         | 33                             | 207.40                                 | .0112              | 6400           | .156                | .012               | 6190           | .162                |
| 3                 | 36         | 75.00         | 31                             | 138.27                                 | .011               | 4230           | .236                | .012               | 4151           | .241                |
| 6                 | 36         | 150.00        | 28½                            | 89.13                                  | .016               | 2115           | .473                | .017               | 2076           | .482                |
| 2                 | 38         | 32.00         | 35                             | 324.10                                 | .009               | 10010          | .100                | .0098              | 9680           | .103                |
| 3                 | 38         | 48.00         | 33                             | 218.07                                 | .009               | 6748           | .148                | .010               | 6549           | .135                |
| 6                 | 38         | 96.00         | 30                             | 108.03                                 | .013               | 3374           | .296                | .014               | 3274           | .305                |
| 2                 | 40         | 19.22         | 37                             | 539.50                                 | .007               | 16665          | .060                | .0076              | 15970          | .063                |
| 3                 | 40         | 28.83         | 35½                            | 359.73                                 | .007               | 10650          | .0939               | .008               | 10449          | .0957               |
| 6                 | 40         | 57.66         | 32½                            | 179.87                                 | .010               | 5325           | .186                | .011               | 5225           | .191                |
| 2                 | 41         | 15.88         | 38                             | 661.50                                 | .0062              | 20400          | .049                | .0068              | 19670          | .051                |
| 3                 | 41         | 23.82         | 36½                            | 441.00                                 | .006               | 13495          | .0741               | .007               | 13228          | .0756               |
| 6                 | 41         | 47.04         | 33½                            | 220.50                                 | .009               | 6748           | .148                | .010               | 6614           | .151                |
| 2                 | 42         | 12.50         | 39                             | 829.50                                 | .0056              | 25470          | .039                | .006               | 24800          | .040                |
| 3                 | 42         | 18.75         | 37½                            | 553.00                                 | .006               | 17129          | .0584               | .006               | 16750          | .0597               |
| 6                 | 42         | 37.50         | 34½                            | 276.50                                 | .008               | 8564           | .117                | .009               | 8375           | .119                |
| 2                 | 43         | 9.68          | 40                             | 1071.00                                | .005               | 33070          | .030                | .0054              | 31585          | .032                |
| 3                 | 43         | 14.52         | 38½                            | 714.33                                 | .005               | 21533          | .0484               | .006               | 20984          | .0477               |
| 6                 | 43         | 29.04         | 35½                            | 357.17                                 | .007               | 10767          | .0929               | .008               | 10482          | .0954               |
| 2                 | 44         | 6.00          | 41                             | 1296.00                                | .0044              | 40030          | .025                | .005               | 39080          | .026                |
| 3                 | 44         | 12.00         | 39                             | 864.33                                 | .004               | 27034          | .0370               | .006               | 26247          | .0381               |
| 6                 | 44         | 24.00         | 36                             | 432.17                                 | .005               | 13517          | .0740               | .007               | 13123          | .0762               |
| 2                 | 45         | 6.20          | 42                             | 1674.00                                | .0039              | 51750          | .019                | .0043              | 49555          | .020                |
| 3                 | 45         | 9.30          | 40½                            | 1116.00                                | .0040              | 34500          | .0290               | .0045              | 33033          | .0303               |
| 6                 | 45         | 18.60         | 37½                            | 558.00                                 | .0055              | 17250          | .0580               | .0060              | 16517          | .0605               |
| 2                 | 46         | 4.94          | 43                             | 2103.00                                | .0035              | 65000          | .015                | .0039              | 61900          | .016                |
| 3                 | 46         | 7.41          | 41                             | 1402.33                                | .0035              | 43367          | .0231               | .0040              | 41267          | .0242               |
| 6                 | 46         | 14.82         | 38½                            | 701.16                                 | .0050              | 21683          | .0461               | .0055              | 20633          | .0485               |
| 2                 | 47         | 3.92          | 44                             | 2645.00                                | .0032              | 81700          | .012                | .0036              | 77800          | .013                |
| 3                 | 47         | 5.88          | 42½                            | 1763.67                                | .0030              | 54100          | .0185               | .0035              | 51533          | .0194               |
| 6                 | 47         | 11.76         | 39                             | 861.63                                 | .0045              | 27050          | .0370               | .0050              | 25767          | .0388               |
| 2                 | 48         | 3.08          | 45                             | 3372.00                                | .0028              | 102450         | .0098               | .0031              | 98450          | .0101               |
| 3                 | 48         | 4.62          | 43                             | 2248.33                                | .0030              | 68333          | .0146               | .0030              | 65567          | .0153               |
| 6                 | 48         | 9.24          | 40                             | 1124.16                                | .0040              | 34167          | .0293               | .0045              | 32783          | .0305               |

**For superior performance and tighter control over twisted wire construction.**

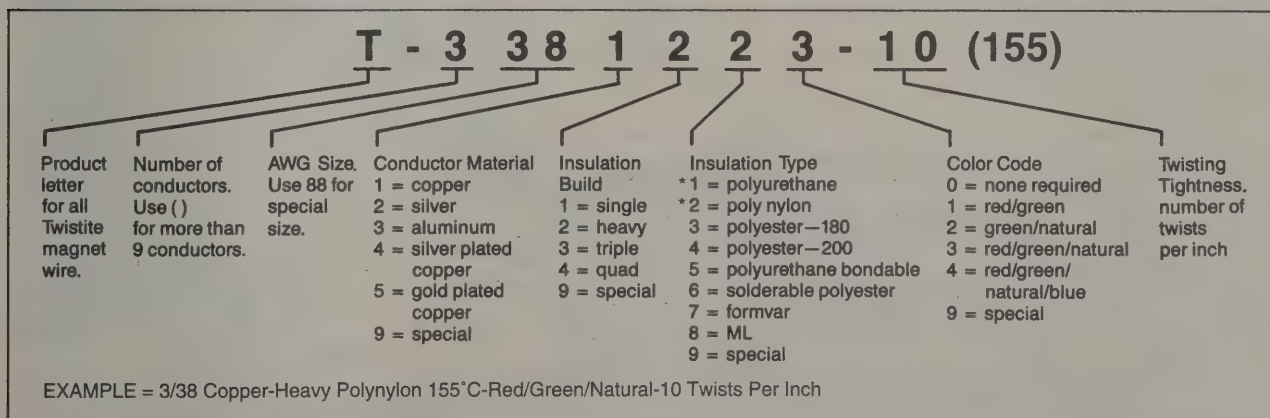
For those who use twisted magnet wire in the production of custom toroid, ferrite and recording head coils, specialty audio and R.F. transformers, Twistite magnet wire offers several advantages over other twisted magnet wire constructions.

Because Twistite is custom produced by MWS, a wider range of twisting constructions is possible. Manufacturing capabilities include:

- up to 33 twists per inch on fine wire
- twisting tolerance as tight as  $\pm 1\%$
- tightly controlled capacitance, inductance and impedance characteristics
- up to 10 colors in some sizes for conductor identification
- huge selection of insulations including NEMA MW 1000, JW 1177, 105-220°C (single through quadruple film builds)
- wide range of sizes: 16 through 52 AWG
- wide variety of conductor materials: copper; silver; plated conductors; and specialty alloys.

### Part Number Ordering System.

Make your own 10-digit part number by following the guidelines outlined below.



\*When requiring polyurethane or polynylon 155°C note (155) at the end of the part number.

**CALL TOLL FREE 1 800 423-5097**

(818) 991-8553 FAX: (818) 706-0911

31200 Cedar Valley Drive, Westlake Village, California 91362

# MANUFACTURERS OF ELECTRONIC WIRES & CABLES

As a manufacturer of wire and cable products National Wire & Cable is ready to fill your immediate needs. Choose from our standard lines of wire or cable . . . OR let us design and custom manufacture exactly what you require for your application.

Our wire inventory is now over 160 million feet, and our 1500 different standard multiconductor cables total in excess of 1.5 million feet!

When you call National Wire, you'll find we are especially well equipped to handle your large as well as minimal requirements. If our "standard" items won't meet your application, we have the wire inventory, the machinery, the expertise to produce exactly what you need. 105,000 square feet of manufacturing area and our expert engineering staff are at your disposal!!!! All cable components are produced within our own facility in order to assure complete quality control.

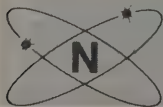
Review the following catalog pages. If you need some assistance with your specific requirement, call our factory direct, or call our representative nearest you.

## CORPORATE OFFICE

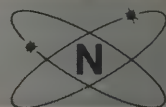
### Factory and Warehouse Facilities

136 San Fernando Road, P.O. Box 31307, Los Angeles, Calif. 90031

Telephone: (213) 225-5611 • FAX: (213) 225-4630



**NATIONAL WIRE & CABLE CORPORATION**  
136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307  
PHONE: (213) 225-5611 • FAX: (213) 225-4630  
CAGE CODE 04569





**U/L RECOGNIZED WIRE****CSA CERTIFIED WIRE****U/L STYLE 1061**

Appliance wiring material available as FR-1 rated 80-degree C Service. .009" semi-rigid vinyl insulation U/L rated: 300-volt service. Meets Mil-W-16878D Type B, and CSA S-R PVC. Also available with solid conductors.

**U/L STYLE 1007**

Appliance wiring available as FR-1 rated 80-degree C Service. 1/64" vinyl insulation U/L rated: 300 volt appliance, use 600 volt electronic use. Meets Mil-W-16878D Type C. Also approved by CSA as Type TR-64 radio wiring for 90-degree C Service. Colors: 10 standard colors plus tracers on solid colors. Also available with solid conductors.

**U/L STYLE 1015**

Appliance wiring material available as FR-1 rated 105-degree C Service 1/32" vinyl insulation U/L rated: 2500 volts electronic use, 600 volt appliance use. Meets Mil-W-16878D Type D. Colors: 10 standard colors plus tracers on solid colors.

**CSA/TYPE TR-32 RADIO WIRE**

Rated: 90-degree C 600 volt, 1/32" vinyl insulation. Also listed as CSA Appliance Wiring Material 90-degree 600 V. Meets U/L Style 1015 & Mil-W-16878D Type D.

**CSA CERTIFIED TYPE TR-64 RADIO WIRE**

Rated: 90-degree C 300 volt, 1/64" vinyl insulation. Meets U/L Style 1007 & Mil-W-16878D Type C.

• Wires recognized by the Underwriter's Laboratories, Inc. for operation in an air or an oil environment. U.L. file #E35793.

• Wires certified by the Canadian Standards Association for radio or electronic uses. CSA File #LR-20482 & LR-32511.

**U/L STYLE 1061**

\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 28          | N304-736U               | 7              | 36                   | .015                                      | .034                          | 69.0                                       | 1.0                          |
| 26          | N304-1938U              | 19*            | 38                   | .019                                      | .038                          | 42.9                                       | 1.5                          |
| 24          | N304-1936U              | 19*            | 36                   | .024                                      | .043                          | 26.8                                       | 2.0                          |
| 22          | N304-1934U              | 19*            | 34                   | .030                                      | .050                          | 16.7                                       | 3.0                          |
| 20          | N304-1932U              | 19*            | 32                   | .038                                      | .057                          | 10.5                                       | 4.75                         |
| 18          | N304-1930U              | 19             | 30                   | .048                                      | .068                          | 6.57                                       | 6.5                          |
| 16          | N304-1929U              | 19             | 29                   | .057                                      | .077                          | 4.85                                       | 9.0                          |

**U/L STYLE 1007**

\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 24          | N303-732U               | 7              | 32                   | .024                                      | .058                          | 26.8                                       | 2.75                         |
| 22          | N303-1934U              | 19*            | 34                   | .030                                      | .063                          | 16.7                                       | 3.75                         |
| 20          | N303-1932U              | 19*            | 32                   | .038                                      | .072                          | 10.5                                       | 5.50                         |
| 18          | N303-1930U              | 19             | 30                   | .048                                      | .082                          | 6.57                                       | 8.0                          |
| 16          | N303-1929U              | 19             | 29                   | .057                                      | .090                          | 4.85                                       | 10.0                         |

**U/L STYLE 1015**

\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 24          | N600-732U               | 7              | 32                   | .024                                      | .082                          | 26.8                                       | 4.0                          |
| 22          | N600-730U               | 7              | 30                   | .030                                      | .090                          | 16.7                                       | 5.2                          |
| 20          | N600-728U               | 7              | 28                   | .038                                      | .098                          | 10.5                                       | 7.3                          |
| 18          | N600-1930U              | 19             | 30                   | .048                                      | .108                          | 6.57                                       | 10.0                         |
| 16          | N600-1929U              | 19             | 29                   | .057                                      | .117                          | 4.85                                       | 12.0                         |
| 14          | N600-1927U              | 19             | 27                   | .071                                      | .130                          | 3.05                                       | 17.1                         |
| 12          | N600-1925U              | 19             | 25                   | .090                                      | .162                          | 1.92                                       | 27.4                         |
| 10          | N600-4927U              | 49             | 27                   | .111                                      | .181                          | 1.24                                       | 38.6                         |

**CSA/Type TR-32 Radio Wire**

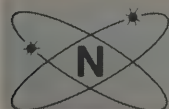
\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 24          | N307-732U               | 7              | 32                   | .024                                      | .082                          | 26.8                                       | 4.0                          |
| 22          | N307-730U               | 7              | 30                   | .030                                      | .090                          | 16.7                                       | 5.2                          |
| 20          | N307-728U               | 7              | 28                   | .038                                      | .098                          | 10.5                                       | 7.3                          |
| 18          | N307-1930U              | 19             | 30                   | .048                                      | .108                          | 6.57                                       | 10.0                         |
| 16          | N307-1929U              | 19             | 29                   | .057                                      | .117                          | 4.85                                       | 12.0                         |
| 14          | N307-1927U              | 19             | 27                   | .071                                      | .130                          | 3.05                                       | 17.1                         |
| 12          | N307-1925U              | 19             | 25                   | .090                                      | .162                          | 1.92                                       | 27.4                         |
| 10          | N307-4927U              | 49             | 27                   | .111                                      | .181                          | 1.24                                       | 38.6                         |

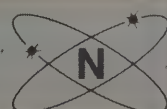
**CSA/Type TR-64**

\*Also available with Nylon Jacket

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 24          | N308-732U               | 7              | 32                   | .024                                      | .058                          | 28.4                                       | 2.75                         |
| 22          | N308-1934U              | 19*            | 34                   | .030                                      | .063                          | 19.0                                       | 3.50                         |
| 20          | N308-1932U              | 19*            | 32                   | .038                                      | .072                          | 13.12                                      | 5.25                         |
| 18          | N308-1930U              | 19             | 30                   | .048                                      | .082                          | 7.89                                       | 6.75                         |
| 16          | N308-1929U              | 19             | 29                   | .057                                      | .090                          | 4.97                                       | 10.0                         |



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 CAGE CODE 04569



# MILITARY ELECTRONIC HOOKUP WIRE

## MIL-W-16878/1 Type BU

For internal wiring of electronic equipment.  
.010" wall vinyl primary insulation. No  
outer covering.

-54-degree C to +105-degree C, 600 V,  
R.M.S. (working).  
Also available as NABOND.  
Meets U/L Style 1061, and CSA S-R PVC.

## MIL-W-16878/1 TYPE BU

\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 32          | NB740U                  | 7              | 40                   | .009                                      | .028                          | 179.0                                      | 0.70                         |
| 30          | NB738U                  | 7              | 38                   | .012                                      | .031                          | 111.0                                      | 0.75                         |
| 28          | NB736U                  | 7              | 36                   | .015                                      | .034                          | 69.0                                       | 1.0                          |
| 26          | NB1938U                 | 19*            | 38                   | .019                                      | .038                          | 42.9                                       | 1.5                          |
| 24          | NB1936U                 | 19*            | 36                   | .024                                      | .043                          | 26.8                                       | 2.0                          |
| 22          | NB1934U                 | 19*            | 34                   | .030                                      | .050                          | 16.7                                       | 3.0                          |
| 20          | NB1932U                 | 19*            | 32                   | .038                                      | .057                          | 10.5                                       | 4.5                          |
| 18          | NB1930U                 | 19             | 30                   | .048                                      | .063                          | 6.57                                       | 6.5                          |
| 16          | NB1929U                 | 19             | 29                   | .057                                      | .077                          | 4.85                                       | 9.0                          |
| 14          | NB1927U                 | 19             | 27                   | .071                                      | .091                          | 3.05                                       | 14.0                         |

## MIL-W-16878/17 Type BN

For internal wiring of electronic equip-  
ment.  
Vinyl primary insulation with Nylon jacket  
overall.

-54-degree C to +105-degree C, 600 V,  
R.M.S. (working).  
Meets U/L Style 1006.

## MIL-W-16878/17 TYPE BN

\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 32          | NB740N                  | 7              | 40                   | .009                                      | .032                          | 179.0                                      | 0.75                         |
| 30          | NB738N                  | 7              | 38                   | .012                                      | .036                          | 111.0                                      | 1.0                          |
| 28          | NB736N                  | 19             | 40                   | .015                                      | .039                          | 69.0                                       | 1.25                         |
| 26          | NB1938N                 | 19*            | 38                   | .019                                      | .044                          | 42.9                                       | 1.75                         |
| 24          | NB1936N                 | 19*            | 36                   | .024                                      | .049                          | 26.8                                       | 2.25                         |
| 22          | NB1934N                 | 19*            | 34                   | .030                                      | .056                          | 16.7                                       | 3.25                         |
| 20          | NB1932N                 | 19*            | 32                   | .038                                      | .063                          | 10.5                                       | 4.75                         |
| 18          | NB1930N                 | 19             | 30                   | .048                                      | .074                          | 6.57                                       | 7.0                          |
| 16          | NB1929N                 | 19             | 29                   | .057                                      | .083                          | 4.85                                       | 9.0                          |
| 14          | NB1927N                 | 19             | 27                   | .071                                      | .098                          | 3.05                                       | 14.7                         |

## MIL-W-16878/2 Type CU

For internal wiring of meters, panels &  
electronic equipment,  
.015" Wall Vinyl primary insulation (no  
outer covering).

-54° C to +105° C, 1000 Volts, R.M.S.  
(working).  
Also available as NABOND.

Meets U/L Style 1007, and CSA TR-64.

## MIL-W-16878/2 TYPE CU

\*Also available in 7 strands

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 26          | NC734U                  | 7              | 34                   | .024                                      | .053                          | 42.9                                       | 2.1                          |
| 24          | NC732U                  | 7              | 32                   | .024                                      | .058                          | 26.8                                       | 2.75                         |
| 22          | NC1934U                 | 19*            | 34                   | .030                                      | .063                          | 16.7                                       | 3.75                         |
| 20          | NC1932U                 | 19*            | 32                   | .038                                      | .072                          | 10.5                                       | 5.50                         |
| 18          | NC1930U                 | 19             | 30                   | .048                                      | .082                          | 6.57                                       | 8.0                          |
| 16          | NC1929U                 | 19             | 29                   | .057                                      | .090                          | 4.85                                       | 10.0                         |
| 14          | NC1927U                 | 19             | 27                   | .071                                      | .104                          | 3.05                                       | 15.0                         |
| 12          | NC1925U                 | 19             | 25                   | .090                                      | .124                          | 1.92                                       | 24.0                         |

## MIL-W-16878/3 Type DU

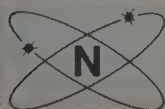
Resists the effect of salt water, aviation  
fuel, motor oil, ethylene glycol and alco-  
hols (methyl or ethyl).

.031" wall primary insulation. No  
outer covering.  
-54-degree C to +105-degree C, 3000 V,  
R.M.S. (working).  
Meets U/L Style 1015 and CSA TR-32.

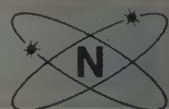
## MIL-W-16878/3 TYPE DU

| Gauge (AWG) | National Catalog Number | No. of Strands | Ga. of Strands (AWG) | Nom. Diam. of Stranded Conductor (Inches) | Nom. Fin. Wire Diam. (Inches) | Max. Resistance (dc) at 25°C Ohms/1000 ft. | Nom. Wt. per 1000 ft. (lbs.) |
|-------------|-------------------------|----------------|----------------------|-------------------------------------------|-------------------------------|--------------------------------------------|------------------------------|
| 24          | ND732U                  | 7              | 32                   | .024                                      | .082                          | 26.8                                       | 4.0                          |
| 22          | ND730U                  | 7              | 30                   | .030                                      | .090                          | 16.7                                       | 5.2                          |
| 20          | ND728U                  | 7              | 28                   | .038                                      | .098                          | 10.5                                       | 7.3                          |
| 18          | ND1930U                 | 19             | 30                   | .048                                      | .108                          | 6.57                                       | 10.0                         |
| 16          | ND1929U                 | 19             | 29                   | .057                                      | .117                          | 4.85                                       | 12.0                         |
| 14          | ND1927U                 | 19             | 27                   | .071                                      | .130                          | 3.05                                       | 17.1                         |
| 12          | ND1925U                 | 19             | 25                   | .090                                      | .162                          | 1.92                                       | 27.4                         |
| 10          | ND4927U                 | 49             | 27                   | .111                                      | .181                          | 1.24                                       | 38.6                         |
| 8           | ND13329U                | 133            | 29                   | .167                                      | .246                          | 0.726                                      | 70.5                         |
| 6           | ND13327U                | 133            | 27                   | .210                                      | .290                          | 0.444                                      | 104.0                        |

NOTE: The above wires come in 10 standard colors plus tracers on solid colors.



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CAGE CODE 04569







(NX-1922 SJ shown)



## MINIATURE SIGNAL & CONTROL CABLES

National Wire & Cable Corp. manufactures a complete line of MINIATURE low voltage signal and control cable. Available as cable pairs or cabled singles, with optional overall shield. Conductors are stranded tinned copper with .010" wall of vinyl primary insulation for use up to 105°C. per MIL-W-16878/1.

Insulated for 600 volts working voltage. (Also meets U.L. AWM Type 1061; 300 volt, 80°C.) All are coded using 10 standard colors plus stripes on white per MIL-STD-681. (See table Page 12, Section 8.)

All conductors are planetary cabled and contra-helically laid for optimum flexibility, with a Mylar tape barrier undershields. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078; and braid angles below 40° for easy pushback.

The outer jacket is black abrasion-resistant 105°C. vinyl meeting MIL-I-631 Type F. All materials are self-extinguishing and fungus resistant. All items are U.L. STYLE 2343 COMPUTER CABLE; rated 80°C. (Higher temp. ratings apply for any non-U.L. service.) Meets E.I.A. Standard RS-232 for 18-24 gauges.

**U.L. and/or CSA certification furnished only when requested.**

Standard Putups: 500 and 1000 ft. No-deposit reels.

**IN STOCK**

## COMPUTER GRADE SINGLE CONDUCTORS (NX SERIES)

**MIL SPEC. & U.L. RECOGNIZED  
STYLE 2343 & CSA CERTIFIED**

### TECHNICAL DATA (all cables)

**Insulation break-down voltage:** Greater than 5000 volts AC RMS, 60cps.

**Capacitance:** Nominal capacitance from a wire to all else in a cable ranges from 45 to 70 pF/ft at 1 kc, depending on gauge and position.

**Insulation Leakage:** 200 megohms/1000 feet minimum @ 500 VDC from any conductor to all else in cable.

**Sheath Leakage:** 10 megohms/1000 feet minimum @ 500 VDC from shield or conductor group through sheath to ground.

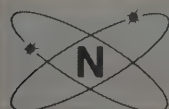
**Temperature Range:** Suitable for continuous use from -40°C. to +105°C. (U.L. Service limited to +80°C.)

**Bending Characteristics:** All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to -20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at -40°C. For continuous flexing applications consult the factory.

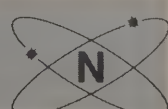
## MULTICONDUCTOR STOCK CABLED SINGLES

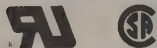
Conductor sizes 24, 22 are 7 strand; 20 AWG is 19 strand

| UNSHIELDED              |           |           |                |     |             |     |                  |      |                   |       | OVERALL SHIELDED        |           |           |                |     |             |     |                  |      |                   |       |
|-------------------------|-----------|-----------|----------------|-----|-------------|-----|------------------|------|-------------------|-------|-------------------------|-----------|-----------|----------------|-----|-------------|-----|------------------|------|-------------------|-------|
| National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |     | Nominal Diameter |      | Weight            |       | National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |     | Nominal Diameter |      | Weight            |       |
|                         |           |           | Inches         | MM  | Inches      | MM  | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |                         |           |           | Inches         | MM  | Inches      | MM  | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NX-524J                 | 5         | 24        | .044           | 1.1 | .062        | 1.6 | .247             | 6.3  | 31                | 47    | NX-524SJ                | 5         | 24        | .044           | 1.1 | .062        | 1.6 | .267             | 6.8  | 42                | 63    |
| NX-724J                 | 7         | 24        | .044           | 1.1 | .062        | 1.6 | .260             | 6.6  | 37                | 55    | NX-724SJ                | 7         | 24        | .044           | 1.1 | .062        | 1.6 | .280             | 7.1  | 49                | 72    |
| NX-1224J                | 12        | 24        | .044           | 1.1 | .062        | 1.6 | .311             | 7.9  | 53                | 79    | NX-1224SJ               | 12        | 24        | .044           | 1.1 | .062        | 1.6 | .331             | 8.4  | 63                | 101   |
| NX-1524J                | 15        | 24        | .044           | 1.1 | .062        | 1.6 | .335             | 8.5  | 62                | 92    | NX-1524SJ               | 15        | 24        | .044           | 1.1 | .062        | 1.6 | .355             | 9.0  | 79                | 117   |
| NX-1924J                | 19        | 24        | .044           | 1.1 | .062        | 1.6 | .348             | 8.8  | 72                | 106   | NX-1924SJ               | 19        | 24        | .044           | 1.1 | .062        | 1.6 | .368             | 9.3  | 89                | 133   |
| NX-2724J                | 27        | 24        | .044           | 1.1 | .062        | 1.6 | .399             | 10.1 | 94                | 139   | NX-2724SJ               | 27        | 24        | .044           | 1.1 | .062        | 1.6 | .419             | 10.6 | 115               | 171   |
| NX-3724J                | 37        | 24        | .044           | 1.1 | .062        | 1.6 | .436             | 11.1 | 118               | 176   | NX-3724SJ               | 37        | 24        | .044           | 1.1 | .062        | 1.6 | .461             | 11.7 | 151               | 224   |
| NX-4824J                | 48        | 24        | .044           | 1.1 | .062        | 1.6 | .484             | 12.3 | 146               | 217   | NX-4824SJ               | 48        | 24        | .044           | 1.1 | .062        | 1.6 | .510             | 12.9 | 183               | 273   |
| NX-6024J                | 60        | 24        | .044           | 1.1 | .062        | 1.6 | .524             | 13.3 | 175               | 261   | NX-6024SJ               | 60        | 24        | .044           | 1.1 | .062        | 1.6 | .549             | 13.9 | 216               | 321   |
| NX-522J                 | 5         | 22        | .050           | 1.3 | .062        | 1.6 | .263             | 6.7  | 38                | 56    | NX-522SJ                | 5         | 22        | .050           | 1.3 | .062        | 1.6 | .283             | 7.2  | 50                | 74    |
| NX-722J                 | 7         | 22        | .050           | 1.3 | .062        | 1.6 | .278             | 7.1  | 45                | 67    | NX-722SJ                | 7         | 22        | .050           | 1.3 | .062        | 1.6 | .298             | 7.6  | 58                | 87    |
| NX-1222J                | 12        | 22        | .050           | 1.3 | .062        | 1.6 | .336             | 8.5  | 67                | 99    | NX-1222SJ               | 12        | 22        | .050           | 1.3 | .062        | 1.6 | .356             | 9.0  | 83                | 124   |
| NX-1522J                | 15        | 22        | .050           | 1.3 | .062        | 1.6 | .363             | 9.2  | 79                | 117   | NX-1522SJ               | 15        | 22        | .050           | 1.3 | .062        | 1.6 | .383             | 9.7  | 97                | 145   |
| NX-1922J                | 19        | 22        | .050           | 1.3 | .062        | 1.6 | .378             | 9.6  | 92                | 137   | NX-1922SJ               | 19        | 22        | .050           | 1.3 | .062        | 1.6 | .398             | 10.1 | 112               | 166   |
| NX-2722J                | 27        | 22        | .050           | 1.3 | .062        | 1.6 | .436             | 11.1 | 122               | 182   | NX-2722SJ               | 27        | 22        | .050           | 1.3 | .062        | 1.6 | .461             | 11.7 | 155               | 230   |
| NX-3722J                | 37        | 22        | .050           | 1.3 | .062        | 1.6 | .478             | 12.1 | 156               | 233   | NX-3722SJ               | 37        | 22        | .050           | 1.3 | .062        | 1.6 | .503             | 12.8 | 193               | 287   |
| NX-4822J                | 48        | 22        | .050           | 1.3 | .062        | 1.6 | .533             | 13.5 | 195               | 290   | NX-4822SJ               | 48        | 22        | .050           | 1.3 | .062        | 1.6 | .558             | 14.2 | 237               | 352   |
| NX-6022J                | 60        | 22        | .050           | 1.3 | .062        | 1.6 | .578             | 14.7 | 235               | 350   | NX-6022SJ               | 60        | 22        | .050           | 1.3 | .062        | 1.6 | .603             | 15.3 | 281               | 419   |
| NX-520J                 | 5         | 20        | .058           | 1.5 | .062        | 1.6 | .285             | 7.2  | 49                | 73    | NX-520SJ                | 5         | 20        | .058           | 1.5 | .062        | 1.6 | .305             | 7.7  | 62                | 93    |
| NX-720J                 | 7         | 20        | .058           | 1.5 | .062        | 1.6 | .302             | 7.7  | 61                | 90    | NX-720SJ                | 7         | 20        | .058           | 1.5 | .062        | 1.6 | .322             | 8.2  | 75                | 112   |
| NX-1220J                | 12        | 20        | .058           | 1.5 | .062        | 1.6 | .369             | 9.4  | 92                | 137   | NX-1220SJ               | 12        | 20        | .058           | 1.5 | .062        | 1.6 | .389             | 9.9  | 111               | 165   |
| NX-1520J                | 15        | 20        | .058           | 1.5 | .062        | 1.6 | .401             | 10.2 | 110               | 163   | NX-1520SJ               | 15        | 20        | .058           | 1.5 | .062        | 1.6 | .421             | 10.7 | 131               | 195   |
| NX-1920J                | 19        | 20        | .058           | 1.5 | .062        | 1.6 | .418             | 10.6 | 131               | 194   | NX-1920SJ               | 19        | 20        | .058           | 1.5 | .062        | 1.6 | .438             | 11.1 | 153               | 228   |
| NX-2720J                | 27        | 20        | .058           | 1.5 | .062        | 1.6 | .485             | 12.3 | 176               | 262   | NX-2720SJ               | 27        | 20        | .058           | 1.5 | .062        | 1.6 | .510             | 13.0 | 213               | 317   |
| NX-3720J                | 37        | 20        | .058           | 1.5 | .062        | 1.6 | .534             | 13.6 | 229               | 341   | NX-3720SJ               | 37        | 20        | .058           | 1.5 | .062        | 1.6 | .559             | 14.2 | 271               | 403   |
| NX-4820J                | 48        | 20        | .058           | 1.5 | .062        | 1.6 | .598             | 15.2 | 288               | 429   | NX-4820SJ               | 48        | 20        | .058           | 1.5 | .062        | 1.6 | .623             | 15.8 | 336               | 500   |
| NX-6020J                | 60        | 20        | .058           | 1.5 | .062        | 1.6 | .650             | 16.5 | 351               | 522   | NX-6020SJ               | 60        | 20        | .058           | 1.5 | .062        | 1.6 | .675             | 17.2 | 404               | 601   |



**NATIONAL WIRE & CABLE CORPORATION**  
136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307  
PHONE: (213) 225-5611 • FAX: (213) 225-4630  
CAGE CODE 04569





(NXP-1924J shown)

IN STOCK

COMPUTER GRADE

TWISTED PAIRS  
(NXP SERIES)

## MINIATURE SIGNAL &amp; CONTROL CABLES

National Wire & Cable Corp. manufactures a complete line of MINIATURE low voltage signal and control cable. Available as cabled pairs or cabled singles, with optional overall shield. Conductors are stranded tinned copper with .010" wall of vinyl primary insulation for use up to 105°C. per MIL-W-16878/1.

Insulated for 600 volts working voltage. (Also meets U.L. AWM Type 1061; 300 volt, 80°C.) All are coded using 10 standard colors plus stripes on white per table below.

All conductors are planetary cabled and contra-helically laid for optimum flexibility, with a Mylar tape barrier undershields. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078; and braid angles below 40° for easy pushback.

The outer jacket is black abrasion-resistant 105°C. vinyl meeting MIL-I-631 Type F. All materials are self-extinguishing and fungus resistant. All items are U.L. STYLE 2343 or 2344 COMPUTER CABLE; rated 80°C. (Higher temp. ratings apply for any non-U.L. service.) Meets RS-423 for 20-24 gauge.

U.L. and/or CSA certification furnished only when requested.

Standard Putups: 500 and 1000 ft. No-deposit reels.

MIL SPEC. & U.L. RECOGNIZED  
STYLE 2343 & 2344 & CSA CERTIFIED

## TECHNICAL DATA (all cables)

|                                       |                                                                                                                                                                                                                                                        |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Insulation break-down voltage:</b> | Greater than 5000 volts AC RMS, 60cps.                                                                                                                                                                                                                 |
| <b>Capacitance:</b>                   | Nominal capacitance from a wire to all else in a cable ranges from 45 to 70 pF/ft at 1 kc, depending on gauge and position.                                                                                                                            |
| <b>Insulation Leakage:</b>            | 200 megohms/1000 feet minimum @ 500 VDC from conductor to all else in cable.                                                                                                                                                                           |
| <b>Sheath Leakage:</b>                | 10 megohms/1000 feet minimum @ 500 VDC from shield or conductor group through sheath to ground.                                                                                                                                                        |
| <b>Temperature Range:</b>             | Suitable for continuous use from -40°C. to +105°C. (U.L. Service limited to +80°C.)                                                                                                                                                                    |
| <b>Bending Characteristics:</b>       | All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to -20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at -40°C. For continuous flexing applications consult the factory. |
| <b>Impedance:</b>                     | Balanced: 87 ohms ±5%<br>Unbalanced: 52 ohms ±5%                                                                                                                                                                                                       |

## MULTI-CONDUCTOR STOCK CABLED PAIRS

Conductor sizes: 24, 22 are 7 strand; 20 AWG is 19 strand

## UNSHIELDED

## OVERALL SHIELDED

| National Catalog Number | No. Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall |     | Nominal Diameter |      | Weight            |       | National Catalog Number | No. Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall |     | Nominal Diameter |      | Weight            |       |
|-------------------------|-----------|-----------|----------------|-----|-------------|-----|------------------|------|-------------------|-------|-------------------------|-----------|-----------|----------------|-----|-------------|-----|------------------|------|-------------------|-------|
|                         |           |           | Inches         | MM  | Inches      | MM  | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |                         |           |           | Inches         | MM  | Inches      | MM  | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NXP-524J                | 5         | 24        | .044           | 1.1 | .062        | 1.6 | .339             | 8.6  | 55                | 82    | NXP-524SJ               | 5         | 24        | .044           | 1.1 | .062        | 1.6 | .359             | 9.1  | 74                | 110   |
| NXP-724J                | 7         | 24        | .044           | 1.1 | .062        | 1.6 | .352             | 9.0  | 66                | 99    | NXP-724SJ               | 7         | 24        | .044           | 1.1 | .062        | 1.6 | .372             | 9.5  | 87                | 129   |
| NXP-1224J               | 12        | 24        | .044           | 1.1 | .062        | 1.6 | .439             | 11.2 | 98                | 146   | NXP-1224SJ              | 12        | 24        | .044           | 1.1 | .062        | 1.6 | .464             | 11.8 | 137               | 203   |
| NXP-1524J               | 15        | 24        | .044           | 1.1 | .062        | 1.6 | .489             | 12.4 | 116               | 173   | NXP-1524SJ              | 15        | 24        | .044           | 1.1 | .062        | 1.6 | .514             | 13.1 | 159               | 236   |
| NXP-1924J               | 19        | 24        | .044           | 1.1 | .062        | 1.6 | .502             | 12.8 | 135               | 201   | NXP-1924SJ              | 19        | 24        | .044           | 1.1 | .062        | 1.6 | .527             | 13.4 | 181               | 269   |
| NXP-2724J               | 27        | 24        | .044           | 1.1 | .062        | 1.6 | .589             | 15.0 | 180               | 267   | NXP-2724SJ              | 27        | 24        | .044           | 1.1 | .062        | 1.6 | .614             | 15.6 | 234               | 349   |
| NXP-3724J               | 37        | 24        | .044           | 1.1 | .062        | 1.6 | .652             | 16.6 | 229               | 340   | NXP-3724SJ              | 37        | 24        | .044           | 1.1 | .062        | 1.6 | .677             | 17.2 | 291               | 432   |
| NXP-4824J               | 48        | 24        | .044           | 1.1 | .062        | 1.6 | .734             | 18.6 | 285               | 424   | NXP-4824SJ              | 48        | 24        | .044           | 1.1 | .062        | 1.6 | .759             | 19.3 | 356               | 529   |
| NXP-6024J               | 60        | 24        | .044           | 1.1 | .062        | 1.6 | .801             | 20.4 | 343               | 510   | NXP-6024SJ*             | 60        | 24        | .044           | 1.1 | .062        | 1.6 | .862             | 21.9 | 453               | 674   |
| NXP-522J                | 5         | 22        | .050           | 1.3 | .062        | 1.6 | .368             | 9.3  | 68                | 101   | NXP-522SJ               | 5         | 22        | .050           | 1.3 | .062        | 1.6 | .388             | 9.9  | 89                | 132   |
| NXP-722J                | 7         | 22        | .050           | 1.3 | .062        | 1.6 | .383             | 9.7  | 83                | 124   | NXP-722SJ               | 7         | 22        | .050           | 1.3 | .062        | 1.6 | .403             | 10.2 | 106               | 158   |
| NXP-1222J               | 12        | 22        | .050           | 1.3 | .062        | 1.6 | .482             | 12.2 | 126               | 187   | NXP-1222SJ              | 12        | 22        | .050           | 1.3 | .062        | 1.6 | .507             | 12.9 | 169               | 251   |
| NXP-1522J               | 15        | 22        | .050           | 1.3 | .062        | 1.6 | .538             | 13.7 | 150               | 223   | NXP-1522SJ              | 15        | 22        | .050           | 1.3 | .062        | 1.6 | .563             | 14.3 | 198               | 294   |
| NXP-1922J               | 19        | 22        | .050           | 1.3 | .062        | 1.6 | .553             | 14.0 | 177               | 263   | NXP-1922SJ              | 19        | 22        | .050           | 1.3 | .062        | 1.6 | .578             | 14.7 | 227               | 338   |
| NXP-2722J               | 27        | 22        | .050           | 1.3 | .062        | 1.6 | .652             | 16.6 | 237               | 352   | NXP-2722SJ              | 27        | 22        | .050           | 1.3 | .062        | 1.6 | .677             | 17.2 | 299               | 444   |
| NXP-3722J               | 37        | 22        | .050           | 1.3 | .062        | 1.6 | .723             | 18.4 | 305               | 454   | NXP-3722SJ              | 37        | 22        | .050           | 1.3 | .062        | 1.6 | .748             | 19.0 | 375               | 558   |
| NXP-4822J*              | 48        | 22        | .050           | 1.3 | .062        | 1.6 | .817             | 20.7 | 382               | 569   | NXP-4822SJ*             | 48        | 22        | .050           | 1.3 | .080        | 2.0 | .878             | 22.3 | 495               | 737   |
| NXP-6022J*              | 60        | 22        | .050           | 1.3 | .080        | 2.0 | .929             | 23.6 | 498               | 741   | NXP-6022SJ              | 60        | 22        | .050           | 1.3 | .080        | 2.0 | .954             | 24.2 | 588               | 874   |
| NXP-520J                | 5         | 20        | .058           | 1.5 | .062        | 1.6 | .406             | 10.3 | 91                | 135   | NXP-520SJ               | 5         | 20        | .058           | 1.5 | .062        | 1.6 | .426             | 10.8 | 115               | 171   |
| NXP-720J                | 7         | 20        | .058           | 1.5 | .062        | 1.6 | .424             | 10.8 | 114               | 169   | NXP-720SJ               | 7         | 20        | .058           | 1.5 | .062        | 1.6 | .444             | 11.3 | 140               | 208   |
| NXP-1220J               | 12        | 20        | .058           | 1.5 | .062        | 1.6 | .538             | 13.7 | 176               | 262   | NXP-1220SJ              | 12        | 20        | .058           | 1.5 | .062        | 1.6 | .563             | 14.3 | 226               | 336   |
| NXP-1520J               | 15        | 20        | .058           | 1.5 | .062        | 1.6 | .604             | 15.3 | 212               | 315   | NXP-1520SJ              | 15        | 20        | .058           | 1.5 | .062        | 1.6 | .629             | 16.0 | 267               | 397   |
| NXP-1920J               | 19        | 20        | .058           | 1.5 | .062        | 1.6 | .621             | 15.8 | 254               | 378   | NXP-1920SJ              | 19        | 20        | .058           | 1.5 | .062        | 1.6 | .646             | 16.4 | 312               | 464   |
| NXP-2720J               | 27        | 20        | .058           | 1.5 | .062        | 1.6 | .735             | 18.7 | 345               | 513   | NXP-2720SJ              | 27        | 20        | .058           | 1.5 | .062        | 1.6 | .761             | 19.3 | 416               | 619   |
| NXP-3720J               | 37        | 20        | .058           | 1.5 | .062        | 1.6 | .818             | 20.8 | 451               | 670   | NXP-3720SJ*             | 37        | 20        | .058           | 1.5 | .080        | 2.0 | .879             | 22.3 | 564               | 839   |
| NXP-4820J*              | 48        | 20        | .058           | 1.5 | .062        | 2.0 | .963             | 24.5 | 605               | 901   | NXP-4820SJ*             | 48        | 20        | .058           | 1.5 | .080        | 2.0 | .988             | 25.1 | 699               | 1039  |
| NXP-6020J*              | 60        | 20        | .058           | 1.5 | .062        | 2.0 | 1.051            | 26.7 | 734               | 1092  | NXP-6020SJ*             | 60        | 20        | .058           | 1.5 | .080        | 2.0 | 1.077            | 27.3 | 838               | 1246  |

\*Denotes U.L. Style 2344.

## COLOR CODING USED IN TWISTED PAIRS

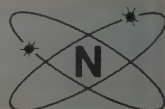
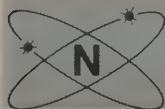
| PR # | PAIR COLORS       | PR # | PAIR COLORS       | PR # | PAIR COLORS       | PR # | PAIR COLORS        | PR # | PAIR COLORS       | PR # | PAIR COLORS       |
|------|-------------------|------|-------------------|------|-------------------|------|--------------------|------|-------------------|------|-------------------|
| 1    | White with Black  | 11   | Black with Red    | 21   | Brown with Green  | 31   | Orange with Yellow | 41   | Green with Violet | 51   | Wh/Bk with Green  |
| 2    | White with Brown  | 12   | Black with Orange | 22   | Brown with Blue   | 32   | Orange with Green  | 42   | Green with Gray   | 52   | Wh/Bk with Blue   |
| 3    | White with Red    | 13   | Black with Yellow | 23   | Brown with Violet | 33   | Orange with Blue   | 43   | Blue with Violet  | 53   | Wh/Bk with Violet |
| 4    | White with Orange | 14   | Black with Green  | 24   | Brown with Gray   | 34   | Orange with Violet | 44   | Blue with Gray    | 54   | Wh/Bk with Gray   |
| 5    | White with Yellow | 15   | Black with Blue   | 25   | Red with Orange   | 35   | Orange with Gray   | 45   | Violet with Gray  | 55   | Wh/Bk with Black  |
| 6    | White with Green  | 16   | Black with Violet | 26   | Red with Yellow   | 36   | Yellow with Green  | 46   | Wh/Bk with Black  | 56   | Wh/Bk with Brown  |
| 7    | White with Blue   | 17   | Black with Gray   | 27   | Red with Green    | 37   | Yellow with Blue   | 47   | Wh/Bk with Brown  | 57   | Wh/Bk with Red    |
| 8    | White with Violet | 18   | Brown with Red    | 28   | Red with Blue     | 38   | Yellow with Violet | 48   | Wh/Bk with Red    | 58   | Wh/Bk with Orange |
| 9    | White with Gray   | 19   | Brown with Orange | 29   | Red with Violet   | 39   | Yellow with Gray   | 49   | Wh/Bk with Orange | 59   | Wh/Bk with Yellow |
| 10   | Black with Brown  | 20   | Brown with Yellow | 30   | Red with Gray     | 40   | Green with Blue    | 50   | Wh/Bk with Yellow | 60   | Wh/Bk with Green  |

## NATIONAL WIRE &amp; CABLE CORPORATION

136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307

PHONE: (213) 225-5611 • FAX: (213) 225-4630

GAGE CODE 04569







(NW-1918SJ shown)

## MULTIPLE CONDUCTOR CONTROL CABLES

National Wire & Cable Corp. manufactures a complete line of multiple conductor control cable. All conductors are stranded tinned copper with 1/64" wall of vinyl primary insulation for use up to 105°C per MIL-W-16878/2.\* Insulated for 1000 volts working voltage. Color coded using 10 standard colors plus stripes on white per MIL-STD- 681 (see Page 12, Section 8).

All conductors are planetary cabled and contra-helically laid for optimum flexibility, with a Mylar tape serve over cable bundle. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078, and braid angles below 40° for easy pushback.

The outer jacket is black abrasion-resistant 105°C vinyl meeting MIL-I-631 Type F. All materials are self-extinguishing and fungus resistant. May be Neoprene to MIL-R-6855 Class 2 Grade 60 specification. (Neoprene at added cost and only available for non-U.L. applications.) Cables are U.L. STYLE 2343 or 2344, rated 80°C, and CSA CERTIFIED for 105°C as described below. U.L. and/or CSA certification furnished only when requested.

\*Insulated wires also meet U.L. style 1007 or 1569 as appropriate for gauge.

\*\* Not recognized under UL styles 2343 or 2344 or CSA in these gauges. — See NWH Series.

### IN STOCK

### HEAVY DUTY

## SINGLE CONDUCTORS (NW SERIES)

MIL SPEC. & U.L. RECOGNIZED  
STYLE 2343 OR 2344 & CSA CERTIFIED

### TECHNICAL DATA (all cables)

#### Insulation Break-down Voltage:

Greater than 8000 volts AC RMS, 60 cps.

#### U.L. Voltage Rating:

300 volts RMS AC (appliance use).  
600 volts RMS AC (electronic use).

#### CSA Voltage Rating:

300 volts RMS AC (appliance use).

#### Military Voltage Rating:

1000 volts RMS.

#### Capacitance:

Nominal capacitance from a wire to all else in the cable ranges from 40 to 65 pf per ft., @ 1000 cps, dependent on gauge and position.

#### Insulation Leakage Res.:

200 megohms/1000 ft. min. at 500 VDC from any conductor to all else in cable.

#### Sheath Leakage Res.:

10 megohms/1000 ft. min. at 500 VDC from overall shield through sheath to outside world.

#### Usable Temp. Range:

Suitable for continuous use from +105°C to -55°C.

#### Bending Characteristics:

All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to -20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at -40°C. For continuous flexing applications consult the factory.

### MULTI-CONDUCTOR STOCK CABLES

Conductor sizes: 22, 20, 18, 16, 14 & 12 gauge. 22 AWG is 7 strand. All others 19 strand.

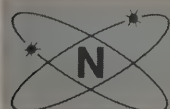
#### UNSHIELDED

| National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |     | Nominal Diameter |      | Weight            |       |
|-------------------------|-----------|-----------|----------------|-----|-------------|-----|------------------|------|-------------------|-------|
|                         |           |           | Inches         | MM  | Inches      | MM  | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NW-722J                 | 7         | 22        | .064           | 1.6 | .062        | 1.6 | .320             | 8.1  | 55                | 82    |
| NW-1222J                | 12        | 22        | .064           | 1.6 | .062        | 1.6 | .394             | 10.1 | 82                | 123   |
| NW-1922J                | 19        | 22        | .064           | 1.6 | .062        | 1.6 | .448             | 11.4 | 114               | 170   |
| NW-2722J                | 27        | 22        | .064           | 1.6 | .062        | 1.6 | .522             | 13.3 | 152               | 227   |
| NW-3722J                | 37        | 22        | .064           | 1.6 | .062        | 1.6 | .576             | 14.6 | 195               | 291   |
| NW-4822J                | 48        | 22        | .064           | 1.6 | .062        | 1.6 | .646             | 16.4 | 244               | 363   |
| NW-6022J                | 60        | 22        | .064           | 1.6 | .062        | 1.6 | .704             | 17.9 | 295               | 438   |
| NW-7222J                | 72        | 22        | .064           | 1.6 | .062        | 1.6 | .768             | 19.5 | 346               | 515   |
| NW-8822J                | 88        | 22        | .064           | 1.6 | .080        | 2.0 | .868             | 22.0 | 441               | 656   |
| NW-10222J               | 102       | 22        | .064           | 1.6 | .080        | 2.0 | .932             | 23.7 | 502               | 747   |
| NW-720J                 | 7         | 20        | .072           | 1.8 | .062        | 1.6 | .344             | 8.7  | 71                | 106   |
| NW-1220J                | 12        | 20        | .072           | 1.8 | .062        | 1.6 | .428             | 10.9 | 109               | 162   |
| NW-1920J                | 19        | 20        | .072           | 1.8 | .062        | 1.6 | .488             | 12.4 | 155               | 230   |
| NW-2720J                | 27        | 20        | .072           | 1.8 | .062        | 1.6 | .572             | 14.5 | 209               | 311   |
| NW-3720J                | 37        | 20        | .072           | 1.8 | .062        | 1.6 | .632             | 16.1 | 272               | 405   |
| NW-4820J                | 48        | 20        | .072           | 1.8 | .062        | 1.6 | .711             | 18.1 | 342               | 509   |
| NW-6020J                | 60        | 20        | .072           | 1.8 | .062        | 1.6 | .776             | 19.7 | 417               | 620   |
| NW-7220J                | 72        | 20        | .072           | 1.8 | .080        | 2.0 | .884             | 22.5 | 521               | 775   |
| NW-8820J                | 88        | 20        | .072           | 1.8 | .080        | 2.0 | .956             | 24.3 | 621               | 924   |
| NW-10220J               | 102       | 20        | .072           | 1.8 | .080        | 2.0 | 1.028            | 26.1 | 710               | 1056  |
| NW-718J                 | 7         | 18        | .082           | 2.1 | .062        | 1.6 | .374             | 9.5  | 91                | 136   |
| NW-1218J                | 12        | 18        | .082           | 2.1 | .062        | 1.6 | .469             | 11.9 | 142               | 211   |
| NW-1918J                | 19        | 18        | .082           | 2.1 | .062        | 1.6 | .538             | 13.7 | 206               | 306   |
| NW-2718J                | 27        | 18        | .082           | 2.1 | .062        | 1.6 | .633             | 16.1 | 280               | 417   |
| NW-3718J                | 37        | 18        | .082           | 2.1 | .062        | 1.6 | .702             | 17.8 | 368               | 547   |
| NW-4818J                | 48        | 18        | .082           | 2.1 | .062        | 1.6 | .792             | 20.1 | 465               | 692   |
| NW-6018J                | 60        | 18        | .082           | 2.1 | .080        | 2.0 | .902             | 22.9 | 599               | 891   |
| NW-7218J                | 72        | 18        | .082           | 2.1 | .080        | 2.0 | .984             | 25.0 | 706               | 1051  |
| NW-716J                 | 7         | 16        | .091           | 2.3 | .062        | 1.6 | .401             | 10.2 | 108               | 161   |
| NW-1216J                | 12        | 16        | .091           | 2.3 | .062        | 1.6 | .507             | 12.9 | 170               | 253   |
| NW-1916J                | 19        | 16        | .091           | 2.3 | .062        | 1.6 | .583             | 14.8 | 248               | 369   |
| NW-2716J                | 27        | 16        | .091           | 2.3 | .062        | 1.6 | .689             | 17.5 | 339               | 504   |
| NW-3716J                | 37        | 16        | .091           | 2.3 | .062        | 1.6 | .765             | 19.4 | 446               | 664   |
| NW-4816J                | 48        | 16        | .091           | 2.3 | .080        | 2.0 | .901             | 22.9 | 576               | 857   |
| NW-6016J                | 60        | 16        | .091           | 2.3 | .080        | 2.0 | .983             | 25.0 | 720               | 1071  |
| NW-714J **              | 7         | 14        | .105           | 2.7 | .062        | 1.6 | .443             | 11.2 | 146               | 217   |
| NW-1214J **             | 12        | 14        | .105           | 2.7 | .062        | 1.6 | .565             | 14.3 | 233               | 347   |
| NW-1914J **             | 19        | 14        | .105           | 2.7 | .062        | 1.6 | .653             | 16.6 | 345               | 513   |
| NW-2714J **             | 27        | 14        | .105           | 2.7 | .062        | 1.6 | .775             | 19.7 | 476               | 708   |
| NW-512J **              | 5         | 12        | .124           | 3.1 | .062        | 1.6 | .463             | 11.7 | 157               | 234   |
| NW-712J **              | 7         | 12        | .124           | 3.1 | .062        | 1.6 | .500             | 12.7 | 205               | 305   |
| NW-1212J **             | 12        | 12        | .124           | 3.1 | .062        | 1.6 | .644             | 16.4 | 332               | 494   |
| NW-1912J **             | 19        | 12        | .124           | 3.1 | .062        | 1.6 | .748             | 19.0 | 499               | 743   |

\*\* Not listed under UL styles 2343 or 2344 in these gauges. — See NWH Series.

#### OVERALL SHIELDED

| National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |     | Nominal Diameter |      | Weight            |       |
|-------------------------|-----------|-----------|----------------|-----|-------------|-----|------------------|------|-------------------|-------|
|                         |           |           | Inches         | MM  | Inches      | MM  | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NW-722SJ                | 7         | 22        | .064           | 1.6 | .062        | 1.6 | .340             | 8.6  | 71                | 106   |
| NW-1222SJ               | 12        | 22        | .064           | 1.6 | .062        | 1.6 | .414             | 10.5 | 103               | 153   |
| NW-1922SJ               | 19        | 22        | .064           | 1.6 | .062        | 1.6 | .473             | 12.0 | 148               | 220   |
| NW-2722SJ               | 27        | 22        | .064           | 1.6 | .062        | 1.6 | .547             | 13.9 | 193               | 287   |
| NW-3722SJ               | 37        | 22        | .064           | 1.6 | .062        | 1.6 | .601             | 15.3 | 241               | 359   |
| NW-4822SJ               | 48        | 22        | .064           | 1.6 | .062        | 1.6 | .672             | 17.1 | 296               | 441   |
| NW-6022SJ               | 60        | 22        | .064           | 1.6 | .062        | 1.6 | .729             | 18.5 | 353               | 525   |
| NW-7222SJ               | 72        | 22        | .064           | 1.6 | .062        | 1.6 | .793             | 20.1 | 410               | 610   |
| NW-8822SJ               | 88        | 22        | .064           | 1.6 | .080        | 2.0 | .893             | 22.7 | 512               | 761   |
| NW-10222SJ              | 102       | 22        | .064           | 1.6 | .080        | 2.0 | .957             | 24.3 | 579               | 861   |
| NW-720SJ                | 7         | 20        | .072           | 1.8 | .062        | 1.6 | .364             | 9.2  | 89                | 132   |
| NW-1220SJ               | 12        | 20        | .072           | 1.8 | .062        | 1.6 | .448             | 11.4 | 132               | 196   |
| NW-1920SJ               | 19        | 20        | .072           | 1.8 | .062        | 1.6 | .513             | 13.0 | 192               | 286   |
| NW-2720SJ               | 27        | 20        | .072           | 1.8 | .062        | 1.6 | .597             | 15.2 | 255               | 379   |
| NW-3720SJ               | 37        | 20        | .072           | 1.8 | .062        | 1.6 | .657             | 16.7 | 323               | 481   |
| NW-4820SJ               | 48        | 20        | .072           | 1.8 | .062        | 1.6 | .736             | 18.7 | 401               | 597   |
| NW-6020SJ               | 60        | 20        | .072           | 1.8 | .062        | 1.6 | .801             | 20.4 | 482               | 716   |
| NW-7220SJ               | 72        | 20        | .072           | 1.8 | .080        | 2.0 | .909             | 23.1 | 593               | 883   |
| NW-8820SJ               | 88        | 20        | .072           | 1.8 | .080        | 2.0 | .981             | 24.9 | 700               | 1042  |
| NW-10220SJ              | 102       | 20        | .072           | 1.8 | .080        | 2.0 | 1.053            | 26.8 | 796               | 1184  |
| NW-718SJ                | 7         | 18        | .082           | 2.1 | .062        | 1.6 | .394             | 10.0 | 111               | 165   |
| NW-1218SJ               | 12        | 18        | .082           | 2.1 | .062        | 1.6 | .494             | 12.6 | 178               | 265   |
| NW-1918SJ               | 19        | 18        | .082           | 2.1 | .062        | 1.6 | .563             | 14.3 | 248               | 369   |
| NW-2718SJ               | 27        | 18        | .082           | 2.1 | .062        | 1.6 | .658             | 16.7 | 332               | 493   |
| NW-3718SJ               | 37        | 18        | .082           | 2.1 | .062        | 1.6 | .727             | 18.5 | 425               | 633   |
| NW-4818SJ               | 48        | 18        | .082           | 2.1 | .062        | 1.6 | .817             | 20.8 | 532               | 791   |
| NW-6018SJ               | 60        | 18        | .082           | 2.1 | .080        | 2.0 | .927             | 23.6 | 673               | 1001  |
| NW-7218SJ               | 72        | 18        | .082           | 2.1 | .080        | 2.0 | 1.009            | 25.6 | 788               | 1173  |
| NW-716SJ                | 7         | 16        | .091           | 2.3 | .062        | 1.6 | .421             | 10.7 | 129               | 192   |
| NW-1216SJ               | 12        | 16        | .091           | 2.3 | .062        | 1.6 | .532             | 13.5 | 209               | 311   |
| NW-1916SJ               | 19        | 16        | .091           | 2.3 | .062        | 1.6 | .608             | 15.4 | 294               | 437   |
| NW-2716SJ               | 27        | 16        | .091           | 2.3 | .062        | 1.6 | .714             | 18.1 | 395               | 588   |
| NW-3716SJ               | 37        | 16        | .091           | 2.3 | .062        | 1.6 | .790             | 20.0 | 510               | 759   |
| NW-4816SJ               | 48        | 16        | .091           | 2.3 | .080        | 2.0 | .926             | 23.5 | 670               | 997   |
| NW-6016SJ               | 60        | 16        | .091           | 2.3 | .080        | 2.0 | 1.008            | 25.6 | 808               | 1202  |
| NW-714SJ **             | 7         | 14        | .105           | 2.7 | .062        | 1.6 | .468             | 11.9 | 175               | 260   |
| NW-1214SJ **            | 12        | 14        | .105           | 2.7 | .062        | 1.6 | .590             | 15.0 | 270               | 402   |
| NW-1914SJ **            | 19        | 14        | .105           | 2.7 | .062        | 1.6 | .678             | 17.2 | 399               | 594   |
| NW-2714SJ **            | 27        | 14        | .105           | 2.7 | .062        | 1.6 | .805             | 20.4 | 530               | 789   |
| NW-512SJ **             | 5         | 12        | .124           | 3.1 | .062        | 1.6 | .488             | 12.4 | 192               | 286   |
| NW-712SJ **             | 7         | 12        | .124           | 3.1 | .062        | 1.6 | .525             | 13.3 | 244               | 363   |
| NW-1212SJ **            | 12        | 12        | .124           | 3.1 | .062        | 1.6 | .669             | 17.0 | 385               | 573   |
| NW-1912SJ **            | 19        | 12        | .124           | 3.1 | .062        | 1.6 | .773             | 19.6 | 562               | 836   |

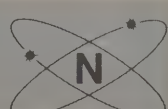


### NATIONAL WIRE & CABLE CORPORATION

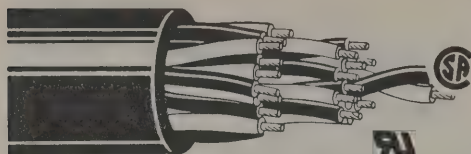
136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307

PHONE: (213) 225-5611 • FAX: (213) 225-4630

CAGE CODE 04569







(NWP1918J shown)

## MULTIPLE CONDUCTOR CONTROL CABLES

Identical to National's NW-Series Cables except offered as twisted pairs.

National Wire & Cable Corporation manufactures a complete line of multiple pair control cables. Conductors are of tinned copper strand with 1/64" vinyl primary insulation for use up to 105°C per MIL-W-16878/2.\* Insulated for 1000 volts working voltage. Conductors are color coded using 10 standard basic colors, plus spiral tracers on white per table below.

All pairs are planetary cabled and contra-helically laid with a Mylar tape serve over the cable bundle. Shielded cables have a tinned copper braid overall, of 85-90% coverage per MIL-C-7078, and braid angles below 40° for easy pushback.

The outer jacket is black, abrasion-resistant 105°C vinyl meeting MIL-I-631 Type F. This material is self-extinguishing and fungus resistant. Neoprene to MIL-R-6855 Class 2 Grade 60 specification is also available on special request for non-U.L. applications.

Cables are U.L. STYLE 2343 or 2344, rated 80°C, and CSA CERTIFIED for 105°C as described below. U.L. and/or CSA certification furnished only when requested.

\*Insulated wires also meet U.L. Style 1007 or 1569 as appropriate for gauge.

**IN STOCK**
**HEAVY DUTY**
**TWISTED PAIR  
(NWP SERIES)**
**MIL SPEC. & U.L. RECOGNIZED  
STYLE 2343 OR 2344 & CSA CERTIFIED**

### TECHNICAL DATA (all cables)

**Insulation Break-down Voltage:**

Greater than 8000 volts AC RMS, 60 cps.

**U.L. Voltage Rating:**

300 volts RMS AC (appliance use).

**CSA Voltage Rating:**

600 volts RMS AC (electronic use).

**Military Voltage Rating:**

300 volts RMS AC (appliance use).

**Capacitance:**

1000 volts RMS.

**Insulation Leakage Res.:**

Nominal capacitance wire to wire for a pair ranges from 27 to 40 pF/ft. Capacitance from both wires tied together measured to all else in common ranges from 35 to 60 mmf/ft. dependent on gauge and position. Overall shield has negligible effect on W-W capacitance.

**Sheath Leakage Res.:**

200 megohms/1000 ft. min. at 500 VDC from any conductor to all else in cable.

**Usable Temp. Range:**

10 megohms/1000 ft. min. at 500 VDC from overall shield through sheath to outside world.

**Cold Bending Capability:**

Suitable for continuous use from +105°C to -55°C.

All cables are suitable for flexing to a circle diameter of approximately 6 cable diameters from +105°C to -20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at -40°C. For continuous flexing applications consult the factory.

### MULTI-CONDUCTOR STOCK CABLED PAIRS

Conductor sizes: 22 AWG is 7 strand. All others 19 strand.

#### UNSHIELDED

| National Catalog Number | No. Pairs | Cond. AWG | Cond. Diameter<br>Inches MM | Jacket Wall<br>Inches MM | Nominal Diameter<br>Inches MM | Weight<br>Lbs. per 1000 ft. KG/KM |
|-------------------------|-----------|-----------|-----------------------------|--------------------------|-------------------------------|-----------------------------------|
| NWP-722J                | 7         | 22        | .064                        | 1.6                      | .454                          | 11.5                              |
| NWP-1222J               | 12        | 22        | .064                        | 1.6                      | .581                          | 14.7                              |
| NWP-1922J               | 19        | 22        | .064                        | 1.6                      | .672                          | 17.1                              |
| NWP-2722J               | 27        | 22        | .064                        | 1.6                      | .798                          | 20.3                              |
| NWP-3722J               | 37        | 22        | .064                        | 1.6                      | .926                          | 23.5                              |
| NWP-4822J               | 48        | 22        | .064                        | 1.6                      | 1.045                         | 26.6                              |
| NWP-6022J               | 60        | 22        | .064                        | 1.6                      | 1.143                         | 29.0                              |
| NWP-720J                | 7         | 20        | .072                        | 1.8                      | .495                          | 12.6                              |
| NWP-1220J               | 12        | 20        | .072                        | 1.8                      | .637                          | 16.2                              |
| NWP-1920J               | 19        | 20        | .072                        | 1.8                      | .740                          | 18.8                              |
| NWP-2720J               | 27        | 20        | .072                        | 1.8                      | .918                          | 23.3                              |
| NWP-3720J               | 37        | 20        | .072                        | 1.8                      | 1.021                         | 25.9                              |
| NWP-4820J               | 48        | 20        | .072                        | 1.8                      | 1.155                         | 29.3                              |
| NWP-6020J               | 60        | 20        | .072                        | 1.8                      | 1.266                         | 32.1                              |
| NWP-718J                | 7         | 18        | .082                        | 2.1                      | .546                          | 13.9                              |
| NWP-1218J               | 12        | 18        | .082                        | 2.1                      | .708                          | 18.0                              |
| NWP-1918J               | 19        | 18        | .082                        | 2.1                      | .861                          | 21.9                              |
| NWP-2718J               | 27        | 18        | .082                        | 2.1                      | 1.023                         | 26.0                              |
| NWP-3718J               | 37        | 18        | .082                        | 2.1                      | 1.140                         | 29.8                              |
| NWP-4818J               | 48        | 18        | .082                        | 2.1                      | 1.293                         | 32.8                              |
| NWP-716J*               | 7         | 16        | .091                        | 2.3                      | .592                          | 15.0                              |
| NWP-1216J*              | 12        | 16        | .091                        | 2.3                      | .772                          | 19.6                              |
| NWP-1916J*              | 19        | 16        | .091                        | 2.3                      | .938                          | 23.8                              |
| NWP-2716J*              | 27        | 16        | .091                        | 2.3                      | 1.117                         | 28.4                              |
| NWP-3716J*              | 37        | 16        | .091                        | 2.3                      | 1.247                         | 31.7                              |

#### OVERALL SHIELDED

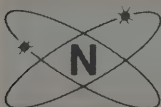
| National Catalog Number | No. Pairs | Cond. AWG | Cond. Diameter<br>Inches MM | Jacket Wall<br>Inches MM | Nominal Diameter<br>Inches MM | Weight<br>Lbs. per 1000 ft. KG/KM |
|-------------------------|-----------|-----------|-----------------------------|--------------------------|-------------------------------|-----------------------------------|
| NWP-722SJ               | 7         | 22        | .064                        | 1.6                      | .480                          | 12.2                              |
| NWP-1222SJ              | 12        | 22        | .064                        | 1.6                      | .606                          | 15.4                              |
| NWP-1922SJ              | 19        | 22        | .064                        | 1.6                      | .697                          | 17.7                              |
| NWP-2722SJ              | 27        | 22        | .064                        | 1.6                      | .823                          | 20.9                              |
| NWP-3722SJ              | 37        | 22        | .064                        | 1.6                      | .951                          | 24.2                              |
| NWP-4822SJ              | 48        | 22        | .064                        | 1.6                      | 1.070                         | 27.2                              |
| NWP-6022SJ              | 60        | 22        | .064                        | 1.6                      | 1.168                         | 29.7                              |
| NWP-720SJ               | 7         | 20        | .072                        | 1.8                      | .520                          | 13.2                              |
| NWP-1220SJ              | 12        | 20        | .072                        | 1.8                      | .662                          | 16.8                              |
| NWP-1920SJ              | 19        | 20        | .072                        | 1.8                      | .765                          | 19.4                              |
| NWP-2720SJ              | 27        | 20        | .072                        | 1.8                      | .943                          | 24.0                              |
| NWP-3720SJ              | 37        | 20        | .072                        | 1.8                      | 1.046                         | 26.6                              |
| NWP-4820SJ              | 48        | 20        | .072                        | 1.8                      | 1.181                         | 30.0                              |
| NWP-6020SJ              | 60        | 20        | .072                        | 1.8                      | 1.291                         | 32.8                              |
| NWP-718SJ               | 7         | 18        | .082                        | 2.1                      | .571                          | 14.5                              |
| NWP-1218SJ              | 12        | 18        | .082                        | 2.1                      | .733                          | 18.6                              |
| NWP-1918SJ              | 19        | 18        | .082                        | 2.1                      | .886                          | 22.5                              |
| NWP-2718SJ              | 27        | 18        | .082                        | 2.1                      | 1.048                         | 26.6                              |
| NWP-3718SJ              | 37        | 18        | .082                        | 2.1                      | 1.165                         | 29.6                              |
| NWP-4818SJ              | 48        | 18        | .082                        | 2.1                      | 1.318                         | 33.5                              |
| NWP-716SJ               | 7         | 16        | .091                        | 2.3                      | .617                          | 15.7                              |
| NWP-1216SJ              | 12        | 16        | .091                        | 2.3                      | .797                          | 20.2                              |
| NWP-1916SJ              | 19        | 16        | .091                        | 2.3                      | .963                          | 24.5                              |
| NWP-2716SJ              | 27        | 16        | .091                        | 2.3                      | 1.142                         | 29.0                              |
| NWP-3716SJ              | 37        | 16        | .091                        | 2.3                      | 1.272                         | 32.3                              |

NWP Cables in 16 Gauge are not U.L. or CSA recognized

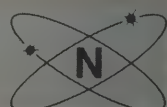
### COLOR CODING USED ON TWISTED PAIRS

| PR # | PAIR COLORS       | PR # | PAIR COLORS       | PR # | PAIR COLORS       | PR # | PAIR COLORS        | PR # | PAIR COLORS         | PR # | PAIR COLORS         |
|------|-------------------|------|-------------------|------|-------------------|------|--------------------|------|---------------------|------|---------------------|
| 1    | White with Black  | 11   | Black with Red    | 21   | Brown with Green  | 31   | Orange with Yellow | 41   | Green with Violet   | 51   | Wht/Blk with Green  |
| 2    | White with Brown  | 12   | Black with Orange | 22   | Brown with Blue   | 32   | Orange with Green  | 42   | Green with Gray     | 52   | Wht/Blk with Blue   |
| 3    | White with Red    | 13   | Black with Yellow | 23   | Brown with Violet | 33   | Orange with Blue   | 43   | Blue with Violet    | 53   | Wht/Blk with Violet |
| 4    | White with Orange | 14   | Black with Green  | 24   | Brown with Gray   | 34   | Orange with Violet | 44   | Blue with Gray      | 54   | Wht/Blk with Gray   |
| 5    | White with Yellow | 15   | Black with Blue   | 25   | Red with Orange   | 35   | Orange with Green  | 45   | Violet with Gray    | 55   | Wht/Brn with Black  |
| 6    | White with Green  | 16   | Black with Violet | 26   | Red with Yellow   | 36   | Yellow with Green  | 46   | Wht/Blk with Black  | 56   | Wht/Brn with Brown  |
| 7    | White with Blue   | 17   | Black with Gray   | 27   | Red with Green    | 37   | Yellow with Blue   | 47   | Wht/Blk with Brown  | 57   | Wht/Brn with Red    |
| 8    | White with Violet | 18   | Brown with Red    | 28   | Red with Blue     | 38   | Yellow with Violet | 48   | Wht/Blk with Red    | 58   | Wht/Brn with Orange |
| 9    | White with Gray   | 19   | Brown with Orange | 29   | Red with Violet   | 39   | Yellow with Gray   | 49   | Wht/Blk with Orange | 59   | Wht/Brn with Yellow |
| 10   | Black with Brown  | 20   | Brown with Yellow | 30   | Red with Gray     | 40   | Green with Blue    | 50   | Wht/Blk with Yellow | 60   | Wht/Brn with Green  |

continued on following page



**NATIONAL WIRE & CABLE CORPORATION**  
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CAGE CODE 04569







(NQ1928J shown)

## MINIATURE SIGNAL & CONTROL CABLES

### GRAY PVC JACKET

National Wire & Cable Corporation manufactures a complete line of highly flexible micro-miniature low-voltage instrument control cable. These are available as cabled pairs or singles, with optional overall shield of either foil with drain or a braided shield.

Conductors are stranded tinned copper with .010" wall of tough extruded polyvinyl chloride primary insulation, rated for 300 volt use at +80°C under U.L. style 1061.\* All are color coded using ten standard colors plus white with stripes per MIL-STD-681. (See Table Page 12, Section 8.)

Conductors are planetary cabled and helically laid for optimum flexibility, with a barrier under braids. Shielded cables have a tinned copper braid of 90% coverage per MIL-C-7078, with braid angles below 40° for easy pushback; or have a 100% coverage foil shield in intimate contact with a drain wire for easy termination. See Section 4 of our catalog for relative shield effectiveness.

Outer jacket is highly flexible abrasion-resistant gray polyvinyl chloride thermoplastic, meeting the requirements of U.L. style 2464.\*\* U.L. & CSA certification furnished.

**Military certification furnished only when requested.**

All materials are flame retardant and fungus resistant.

Standard Putups: 500 and 1000 ft. No-deposit reels. For short-er quantities or specific lengths, consult factory.

\*Wire also meets MIL-W-16878/1, rated 600 volts, +105°C.

\*\*Jacket material is military rated for +105°C; meets MIL-I-631, Type F. Meets E.I.A. Standards RS-232 for 18-24 gauges.

## IN STOCK

### EXTRA FLEXIBLE GRAY PVC JACKETS

## SINGLE CONDUCTORS (NQ SERIES)

MIL SPEC. & U.L. RECOGNIZED  
STYLE 2464 & CSA CERTIFIED

### TECHNICAL DATA (all cables)

**Insulation break-down voltage:** Greater than 3000 volts AC RMS, 60cps.

**Capacitance:** Nominal capacitance from a wire to all else in a cable ranges from 25 to 45 pf/ft at 1kc, depending on gauge and position.

**Insulation Leakage:** 200 megohms/1000 feet minimum @ 500VDC from conductor to all else in cable.

**Sheath Leakage:** 10 megohms/1000 feet minimum @ 500VDC from shield or conductor group through sheath to ground.

**Temperature Range:** U.L. rating: +80°C per U.L. style 2464. Military: Continuous use from -40°C to +105°C.

**Bending Characteristics:** All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to -20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at -40°C. For continuous flexing applications consult the factory.

**Foil Shielded Cables:** The nominal over-all diameter of foil shielded cables will be .006" greater than the non-shielded cables of the same conductor count and wire size.

**Characteristic Impedance (NQP Paired Cables)** Ranges from 150 ohms to 45 ohms, dependent on wire size (AWG), geometry and drive method. Consult our technical staff for data on specific cable types.

## MULTI-CONDUCTOR STOCK CABLED SINGLES

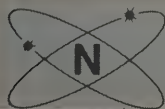
Conductor sizes 28, 26, 24, 22 are 7 strand. All others 19 strand.

### UNSHIELDED

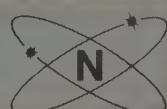
### OVERALL BRAIDED SHIELD

| National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |     | Weight            |       | National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight            |       |
|-------------------------|-----------|-----------|----------------|-----|-------------|----|------------------|-----|-------------------|-------|-------------------------|-----------|-----------|----------------|-----|-------------|----|------------------|------|-------------------|-------|
|                         |           |           | Inches         | MM  | Inches      | MM | Inches           | MM  | Lbs. per 1000 ft. | KG/KM |                         |           |           | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NQ-228J                 | 2         | 28        | .035           | .9  | .032        | .8 | .138             | 3.5 | 8                 | 12    | NQ-228SJ                | 2         | 28        | .035           | .9  | .032        | .8 | .158             | 4.0  | 15                | 22    |
| NQ-328J                 | 3         | 28        | .035           | .9  | .032        | .8 | .144             | 3.6 | 10                | 14    | NQ-328SJ                | 3         | 28        | .035           | .9  | .032        | .8 | .164             | 4.2  | 16                | 24    |
| NQ-428J                 | 4         | 28        | .035           | .9  | .032        | .8 | .152             | 3.9 | 11                | 17    | NQ-428SJ                | 4         | 28        | .035           | .9  | .032        | .8 | .172             | 4.4  | 18                | 27    |
| NQ-528J                 | 5         | 28        | .035           | .9  | .032        | .8 | .163             | 4.1 | 13                | 19    | NQ-528SJ                | 5         | 28        | .035           | .9  | .032        | .8 | .183             | 4.6  | 21                | 31    |
| NQ-628J                 | 6         | 28        | .035           | .9  | .032        | .8 | .173             | 4.4 | 14                | 21    | NQ-628SJ                | 6         | 28        | .035           | .9  | .032        | .8 | .193             | 4.9  | 23                | 34    |
| NQ-728J                 | 7         | 28        | .035           | .9  | .032        | .8 | .173             | 4.4 | 15                | 23    | NQ-728SJ                | 7         | 28        | .035           | .9  | .032        | .8 | .193             | 4.9  | 24                | 36    |
| NQ-828J                 | 8         | 28        | .035           | .9  | .032        | .8 | .178             | 5.0 | 18                | 27    | NQ-828SJ                | 8         | 28        | .035           | .9  | .032        | .8 | .218             | 5.5  | 28                | 42    |
| NQ-928J                 | 9         | 28        | .035           | .9  | .032        | .8 | .208             | 5.3 | 20                | 29    | NQ-928SJ                | 9         | 28        | .035           | .9  | .032        | .8 | .228             | 5.8  | 31                | 45    |
| NQ-1028J                | 10        | 28        | .035           | .9  | .032        | .8 | .208             | 5.3 | 21                | 31    | NQ-1028SJ               | 10        | 28        | .035           | .9  | .032        | .8 | .228             | 5.8  | 32                | 47    |
| NQ-1228J                | 12        | 28        | .035           | .9  | .032        | .8 | .214             | 5.4 | 23                | 34    | NQ-1228SJ               | 12        | 28        | .035           | .9  | .032        | .8 | .234             | 5.9  | 34                | 51    |
| NQ-1528J                | 15        | 28        | .035           | .9  | .032        | .8 | .233             | 5.9 | 27                | 40    | NQ-1528SJ               | 15        | 28        | .035           | .9  | .032        | .8 | .253             | 6.4  | 40                | 59    |
| NQ-1928J                | 19        | 28        | .035           | .9  | .032        | .8 | .243             | 6.2 | 32                | 47    | NQ-1928SJ               | 19        | 28        | .035           | .9  | .032        | .8 | .263             | 6.7  | 45                | 67    |
| NQ-2728J                | 27        | 28        | .035           | .9  | .032        | .8 | .284             | 7.2 | 42                | 63    | NQ-2728SJ               | 27        | 28        | .035           | .9  | .032        | .8 | .304             | 7.7  | 50                | 87    |
| NQ-3728J                | 37        | 28        | .035           | .9  | .032        | .8 | .313             | 8.0 | 54                | 81    | NQ-3728SJ               | 37        | 28        | .035           | .9  | .032        | .8 | .333             | 8.5  | 72                | 108   |
| NQ-226J                 | 2         | 26        | .039           | 1.0 | .032        | .8 | .146             | 3.7 | 10                | 14    | NQ-226SJ                | 2         | 26        | .039           | 1.0 | .032        | .8 | .166             | 4.2  | 16                | 24    |
| NQ-326J                 | 3         | 26        | .039           | 1.0 | .032        | .8 | .152             | 3.9 | 11                | 17    | NQ-326SJ                | 3         | 26        | .039           | 1.0 | .032        | .8 | .172             | 4.4  | 19                | 28    |
| NQ-426J                 | 4         | 26        | .039           | 1.0 | .032        | .8 | .162             | 4.1 | 13                | 20    | NQ-426SJ                | 4         | 26        | .039           | 1.0 | .032        | .8 | .182             | 4.6  | 21                | 32    |
| NQ-526J                 | 5         | 26        | .039           | 1.0 | .032        | .8 | .173             | 4.4 | 15                | 23    | NQ-526SJ                | 5         | 26        | .039           | 1.0 | .032        | .8 | .193             | 4.9  | 24                | 36    |
| NQ-626J                 | 6         | 26        | .039           | 1.0 | .032        | .8 | .185             | 4.7 | 18                | 26    | NQ-626SJ                | 6         | 26        | .039           | 1.0 | .032        | .8 | .205             | 5.2  | 27                | 40    |
| NQ-726J                 | 7         | 26        | .039           | 1.0 | .032        | .8 | .185             | 4.7 | 19                | 28    | NQ-726SJ                | 7         | 26        | .039           | 1.0 | .032        | .8 | .205             | 5.2  | 28                | 42    |
| NQ-826J                 | 8         | 26        | .039           | 1.0 | .032        | .8 | .212             | 5.4 | 22                | 33    | NQ-826SJ                | 8         | 26        | .039           | 1.0 | .032        | .8 | .232             | 5.9  | 33                | 50    |
| NQ-926J                 | 9         | 26        | .039           | 1.0 | .032        | .8 | .224             | 5.7 | 24                | 36    | NQ-926SJ                | 9         | 26        | .039           | 1.0 | .032        | .8 | .244             | 6.2  | 36                | 54    |
| NQ-1026J                | 10        | 26        | .039           | 1.0 | .032        | .8 | .224             | 5.7 | 25                | 38    | NQ-1026SJ               | 10        | 26        | .039           | 1.0 | .032        | .8 | .244             | 6.2  | 38                | 56    |
| NQ-1226J                | 12        | 26        | .039           | 1.0 | .032        | .8 | .230             | 5.8 | 29                | 43    | NQ-1226SJ               | 12        | 26        | .039           | 1.0 | .032        | .8 | .250             | 6.4  | 41                | 61    |
| NQ-1526J                | 15        | 26        | .039           | 1.0 | .032        | .8 | .251             | 6.4 | 34                | 51    | NQ-1526SJ               | 15        | 26        | .039           | 1.0 | .032        | .8 | .271             | 6.9  | 48                | 72    |
| NQ-1926J                | 19        | 26        | .039           | 1.0 | .032        | .8 | .263             | 6.7 | 40                | 60    | NQ-1926SJ               | 19        | 26        | .039           | 1.0 | .032        | .8 | .283             | 7.2  | 55                | 82    |
| NQ-2726J                | 27        | 26        | .039           | 1.0 | .032        | .8 | .308             | 7.8 | 54                | 81    | NQ-2726SJ               | 27        | 26        | .039           | 1.0 | .032        | .8 | .320             | 8.3  | 72                | 108   |
| NQ-3726J                | 37        | 26        | .039           | 1.0 | .032        | .8 | .341             | 8.7 | 71                | 105   | NQ-3726SJ               | 37        | 26        | .039           | 1.0 | .032        | .8 | .361             | 9.2  | 91                | 135   |
| NQ-4826J                | 48        | 26        | .039           | 1.0 | .032        | .8 | .384             | 9.8 | 89                | 132   | NQ-4826SJ               | 48        | 26        | .039           | 1.0 | .032        | .8 | .409             | 10.4 | 120               | 179   |

(CONTINUED ON THE FOLLOWING PAGE)



**NATIONAL WIRE & CABLE CORPORATION**  
136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307  
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CAGE CODE 04569







(NQ-1928J shown)

IN STOCK

EXTRA FLEXIBLE  
GRAY PVC JACKETSSINGLE CONDUCTORS  
(NQ SERIES)

U.L. and CSA certification furnished.

## MINIATURE SIGNAL &amp; CONTROL CABLES

MULTI-CONDUCTOR STOCK CABLED SINGLES continued from previous page.

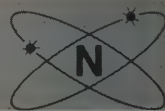
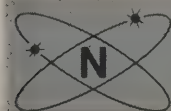
| UNSHIELDED                    |              |              |                |     |             |    |                  |      |                            | OVERALL BRAIDED SHIELD        |              |              |                |     |             |    |                  |      |                            |
|-------------------------------|--------------|--------------|----------------|-----|-------------|----|------------------|------|----------------------------|-------------------------------|--------------|--------------|----------------|-----|-------------|----|------------------|------|----------------------------|
| National<br>Catalog<br>Number | No.<br>Cond. | Cond.<br>AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight                     | National<br>Catalog<br>Number | No.<br>Cond. | Cond.<br>AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight                     |
|                               |              |              | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per<br>1000 ft. KG/KM |                               |              |              | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per<br>1000 ft. KG/KM |
| NQ-224J                       | 2            | 24           | .044           | 1.1 | .032        | .8 | .156             | 4.0  | 11 17                      | NQ-224SJ                      | 2            | 24           | .044           | 1.1 | .032        | .8 | .176             | 4.5  | 19 28                      |
| NQ-324J                       | 3            | 24           | .044           | 1.1 | .032        | .8 | .163             | 4.1  | 14 21                      | NQ-324SJ                      | 3            | 24           | .044           | 1.1 | .032        | .8 | .183             | 4.6  | 22 32                      |
| NQ-424J                       | 4            | 24           | .044           | 1.1 | .032        | .8 | .174             | 4.4  | 17 25                      | NQ-424SJ                      | 4            | 24           | .044           | 1.1 | .032        | .8 | .194             | 4.9  | 25 37                      |
| NQ-524J                       | 5            | 24           | .044           | 1.1 | .032        | .8 | .187             | 4.7  | 19 29                      | NQ-524SJ                      | 5            | 24           | .044           | 1.1 | .032        | .8 | .207             | 5.3  | 29 43                      |
| NQ-624J                       | 6            | 24           | .044           | 1.1 | .032        | .8 | .200             | 5.1  | 22 33                      | NQ-624SJ                      | 6            | 24           | .044           | 1.1 | .032        | .8 | .220             | 5.6  | 33 49                      |
| NQ-724J                       | 7            | 24           | .044           | 1.1 | .032        | .8 | .200             | 5.1  | 24 36                      | NQ-724SJ                      | 7            | 24           | .044           | 1.1 | .032        | .8 | .220             | 5.6  | 35 52                      |
| NQ-824J                       | 8            | 24           | .044           | 1.1 | .032        | .8 | .231             | 5.9  | 28 42                      | NQ-824SJ                      | 8            | 24           | .044           | 1.1 | .032        | .8 | .251             | 6.4  | 41 60                      |
| NQ-924J                       | 9            | 24           | .044           | 1.1 | .032        | .8 | .244             | 6.2  | 31 46                      | NQ-924SJ                      | 9            | 24           | .044           | 1.1 | .032        | .8 | .264             | 6.7  | 44 66                      |
| NQ-1024J                      | 10           | 24           | .044           | 1.1 | .032        | .8 | .244             | 6.2  | 33 49                      | NQ-1024SJ                     | 10           | 24           | .044           | 1.1 | .032        | .8 | .264             | 6.7  | 46 69                      |
| NQ-1224J                      | 12           | 24           | .044           | 1.1 | .032        | .8 | .251             | 6.4  | 37 56                      | NQ-1224SJ                     | 12           | 24           | .044           | 1.1 | .032        | .8 | .271             | 6.9  | 51 76                      |
| NQ-1524J                      | 15           | 24           | .044           | 1.1 | .032        | .8 | .275             | 7.0  | 45 67                      | NQ-1524SJ                     | 15           | 24           | .044           | 1.1 | .032        | .8 | .295             | 7.5  | 61 90                      |
| NQ-1924J                      | 19           | 24           | .044           | 1.1 | .032        | .8 | .288             | 7.3  | 54 80                      | NQ-1924SJ                     | 19           | 24           | .044           | 1.1 | .032        | .8 | .308             | 7.8  | 70 105                     |
| NQ-2724J                      | 27           | 24           | .044           | 1.1 | .032        | .8 | .339             | 8.6  | 73 109                     | NQ-2724SJ                     | 27           | 24           | .044           | 1.1 | .032        | .8 | .359             | 9.1  | 93 139                     |
| NQ-3724J                      | 37           | 24           | .044           | 1.1 | .032        | .8 | .376             | 9.6  | 96 142                     | NQ-3724SJ                     | 37           | 24           | .044           | 1.1 | .032        | .8 | .401             | 10.2 | 127 189                    |
| NQ-4824J                      | 48           | 24           | .044           | 1.1 | .032        | .8 | .424             | 10.8 | 121 180                    | NQ-4824SJ                     | 48           | 24           | .044           | 1.1 | .032        | .8 | .450             | 11.4 | 157 233                    |
| NQ-6024J                      | 60           | 24           | .044           | 1.1 | .032        | .8 | .464             | 11.8 | 148 220                    | NQ-6024SJ                     | 60           | 24           | .044           | 1.1 | .032        | .8 | .489             | 12.4 | 187 278                    |
| NQ-222J                       | 2            | 22           | .050           | 1.3 | .032        | .8 | .168             | 4.3  | 14 21                      | NQ-222SJ                      | 2            | 22           | .050           | 1.3 | .032        | .8 | .188             | 4.8  | 22 33                      |
| NQ-322J                       | 3            | 22           | .050           | 1.3 | .032        | .8 | .176             | 4.5  | 17 26                      | NQ-322SJ                      | 3            | 22           | .050           | 1.3 | .032        | .8 | .196             | 5.0  | 26 39                      |
| NQ-422J                       | 4            | 22           | .050           | 1.3 | .032        | .8 | .188             | 4.8  | 21 31                      | NQ-422SJ                      | 4            | 22           | .050           | 1.3 | .032        | .8 | .208             | 5.3  | 31 46                      |
| NQ-522J                       | 5            | 22           | .050           | 1.3 | .032        | .8 | .203             | 5.2  | 25 37                      | NQ-522SJ                      | 5            | 22           | .050           | 1.3 | .032        | .8 | .223             | 5.7  | 35 53                      |
| NQ-622J                       | 6            | 22           | .050           | 1.3 | .032        | .8 | .218             | 5.5  | 29 43                      | NQ-622SJ                      | 6            | 22           | .050           | 1.3 | .032        | .8 | .238             | 6.0  | 40 60                      |
| NQ-722J                       | 7            | 22           | .050           | 1.3 | .032        | .8 | .218             | 5.5  | 32 47                      | NQ-722SJ                      | 7            | 22           | .050           | 1.3 | .032        | .8 | .238             | 6.0  | 43 64                      |
| NQ-822J                       | 8            | 22           | .050           | 1.3 | .032        | .8 | .253             | 6.4  | 37 54                      | NQ-822SJ                      | 8            | 22           | .050           | 1.3 | .032        | .8 | .273             | 6.9  | 51 75                      |
| NQ-922J                       | 9            | 22           | .050           | 1.3 | .032        | .8 | .268             | 6.8  | 40 60                      | NQ-922SJ                      | 9            | 22           | .050           | 1.3 | .032        | .8 | .288             | 7.3  | 56 83                      |
| NQ-1022J                      | 10           | 22           | .050           | 1.3 | .032        | .8 | .268             | 6.8  | 43 64                      | NQ-1022SJ                     | 10           | 22           | .050           | 1.3 | .032        | .8 | .288             | 7.3  | 58 87                      |
| NQ-1222J                      | 12           | 22           | .050           | 1.3 | .032        | .8 | .276             | 7.0  | 50 74                      | NQ-1222SJ                     | 12           | 22           | .050           | 1.3 | .032        | .8 | .296             | 7.5  | 65 97                      |
| NQ-1522J                      | 15           | 22           | .050           | 1.3 | .032        | .8 | .303             | 7.7  | 60 89                      | NQ-1522SJ                     | 15           | 22           | .050           | 1.3 | .032        | .8 | .323             | 8.2  | 78 115                     |
| NQ-1922J                      | 19           | 22           | .050           | 1.3 | .032        | .8 | .318             | 8.1  | 73 108                     | NQ-1922SJ                     | 19           | 22           | .050           | 1.3 | .032        | .8 | .338             | 8.6  | 91 136                     |
| NQ-2722J                      | 27           | 22           | .050           | 1.3 | .032        | .8 | .376             | 9.6  | 100 148                    | NQ-2722SJ                     | 27           | 22           | .050           | 1.3 | .032        | .8 | .401             | 10.2 | 131 194                    |
| NQ-3722J                      | 37           | 22           | .050           | 1.3 | .032        | .8 | .418             | 10.6 | 131 196                    | NQ-3722SJ                     | 37           | 22           | .050           | 1.3 | .032        | .8 | .443             | 11.3 | 167 248                    |
| NQ-4822J                      | 48           | 22           | .050           | 1.3 | .032        | .8 | .473             | 12.0 | 167 248                    | NQ-4822SJ                     | 48           | 22           | .050           | 1.3 | .032        | .8 | .498             | 12.7 | 207 308                    |
| NQ-6022J                      | 60           | 22           | .050           | 1.3 | .032        | .8 | .518             | 13.2 | 205 305                    | NQ-6022SJ                     | 60           | 22           | .050           | 1.3 | .032        | .8 | .543             | 13.8 | 249 371                    |
| NQ-220J                       | 2            | 20           | .058           | 1.5 | .032        | .8 | .184             | 4.7  | 18 27                      | NQ-220SJ                      | 2            | 20           | .058           | 1.5 | .032        | .8 | .204             | 5.2  | 28 41                      |
| NQ-320J                       | 3            | 20           | .058           | 1.5 | .032        | .8 | .193             | 4.9  | 24 35                      | NQ-320SJ                      | 3            | 20           | .058           | 1.5 | .032        | .8 | .213             | 5.4  | 34 50                      |
| NQ-420J                       | 4            | 20           | .058           | 1.5 | .032        | .8 | .207             | 5.3  | 29 44                      | NQ-420SJ                      | 4            | 20           | .058           | 1.5 | .032        | .8 | .227             | 5.8  | 40 60                      |
| NQ-520J                       | 5            | 20           | .058           | 1.5 | .032        | .8 | .225             | 5.7  | 35 52                      | NQ-520SJ                      | 5            | 20           | .058           | 1.5 | .032        | .8 | .245             | 6.2  | 47 70                      |
| NQ-620J                       | 6            | 20           | .058           | 1.5 | .032        | .8 | .242             | 6.1  | 41 61                      | NQ-620SJ                      | 6            | 20           | .058           | 1.5 | .032        | .8 | .262             | 6.7  | 54 81                      |
| NQ-720J                       | 7            | 20           | .058           | 1.5 | .032        | .8 | .242             | 6.1  | 46 68                      | NQ-720SJ                      | 7            | 20           | .058           | 1.5 | .032        | .8 | .262             | 6.7  | 59 88                      |
| NQ-820J                       | 8            | 20           | .058           | 1.5 | .032        | .8 | .283             | 7.2  | 53 78                      | NQ-820SJ                      | 8            | 20           | .058           | 1.5 | .032        | .8 | .303             | 7.7  | 69 102                     |
| NQ-920J                       | 9            | 20           | .058           | 1.5 | .032        | .8 | .300             | 7.6  | 58 87                      | NQ-920SJ                      | 9            | 20           | .058           | 1.5 | .032        | .8 | .320             | 8.1  | 76 113                     |
| NQ-1020J                      | 10           | 20           | .058           | 1.5 | .032        | .8 | .300             | 7.6  | 63 94                      | NQ-1020SJ                     | 10           | 20           | .058           | 1.5 | .032        | .8 | .320             | 8.1  | 80 120                     |
| NQ-1220J                      | 12           | 20           | .058           | 1.5 | .032        | .8 | .309             | 7.9  | 73 109                     | NQ-1220SJ                     | 12           | 20           | .058           | 1.5 | .032        | .8 | .329             | 8.4  | 91 136                     |
| NQ-1520J                      | 15           | 20           | .058           | 1.5 | .032        | .8 | .341             | 8.7  | 89 133                     | NQ-1520SJ                     | 15           | 20           | .058           | 1.5 | .032        | .8 | .361             | 9.2  | 109 163                    |
| NQ-1920J                      | 19           | 20           | .058           | 1.5 | .032        | .8 | .358             | 9.1  | 109 162                    | NQ-1920SJ                     | 19           | 20           | .058           | 1.5 | .032        | .8 | .378             | 9.6  | 130 194                    |
| NQ-2720J                      | 27           | 20           | .058           | 1.5 | .032        | .8 | .425             | 10.8 | 151 225                    | NQ-2720SJ                     | 27           | 20           | .058           | 1.5 | .032        | .8 | .450             | 11.4 | 187 278                    |
| NQ-3720J                      | 37           | 20           | .058           | 1.5 | .032        | .8 | .474             | 12.0 | 201 299                    | NQ-3720SJ                     | 37           | 20           | .058           | 1.5 | .032        | .8 | .499             | 12.7 | 242 359                    |
| NQ-218J                       | 2            | 18           | .068           | 1.7 | .032        | .8 | .204             | 5.2  | 24 36                      | NQ-218SJ                      | 2            | 18           | .068           | 1.7 | .032        | .8 | .224             | 5.7  | 35 52                      |
| NQ-318J                       | 3            | 18           | .068           | 1.7 | .032        | .8 | .215             | 5.5  | 32 47                      | NQ-318SJ                      | 3            | 18           | .068           | 1.7 | .032        | .8 | .235             | 6.0  | 43 64                      |
| NQ-418J                       | 4            | 18           | .068           | 1.7 | .032        | .8 | .231             | 5.9  | 40 59                      | NQ-418SJ                      | 4            | 18           | .068           | 1.7 | .032        | .8 | .251             | 6.4  | 52 78                      |
| NQ-518J                       | 5            | 18           | .068           | 1.7 | .032        | .8 | .252             | 6.4  | 48 71                      | NQ-518SJ                      | 5            | 18           | .068           | 1.7 | .032        | .8 | .272             | 6.9  | 62 92                      |
| NQ-618J                       | 6            | 18           | .068           | 1.7 | .032        | .8 | .272             | 6.9  | 56 83                      | NQ-618SJ                      | 6            | 18           | .068           | 1.7 | .032        | .8 | .292             | 7.4  | 71 106                     |
| NQ-718J                       | 7            | 18           | .068           | 1.7 | .032        | .8 | .272             | 6.9  | 63 94                      | NQ-718SJ                      | 7            | 18           | .068           | 1.7 | .032        | .8 | .292             | 7.4  | 78 117                     |
| NQ-818J                       | 8            | 18           | .068           | 1.7 | .032        | .8 | .320             | 8.1  | 73 108                     | NQ-818SJ                      | 8            | 18           | .068           | 1.7 | .032        | .8 | .340             | 8.6  | 91 136                     |
| NQ-918J                       | 9            | 18           | .068           | 1.7 | .032        | .8 | .340             | 8.6  | 81 120                     | NQ-918SJ                      | 9            | 18           | .068           | 1.7 | .032        | .8 | .360             | 9.1  | 101 150                    |
| NQ-1018J                      | 10           | 18           | .068           | 1.7 | .032        | .8 | .340             | 8.6  | 88 131                     | NQ-1018SJ                     | 10           | 18           | .068           | 1.7 | .032        | .8 | .360             | 9.1  | 100 161                    |
| NQ-1218J                      | 12           | 18           | .068           | 1.7 | .032        | .8 | .351             | 8.9  | 102 152                    | NQ-1218SJ                     | 12           | 18           | .068           | 1.7 | .032        | .8 | .371             | 9.4  | 123 183                    |
| NQ-1518J                      | 15           | 18           | .068           | 1.7 | .032        | .8 | .388             | 9.8  | 126 187                    | NQ-1518SJ                     | 15           | 18           | .068           | 1.7 | .032        | .8 | .413             | 10.5 | 158 235                    |
| NQ-1918J                      | 19           | 18           | .068           | 1.7 | .032        | .8 | .408             | 10.4 | 155 230                    | NQ-1918SJ                     | 19           | 18           | .068           | 1.7 | .032        | .8 | .433             | 11.0 | 189 281                    |
| NQ-2718J                      | 27           | 18           | .068           | 1.7 | .032        | .8 | .487             | 12.4 | 215 320                    | NQ-2718SJ                     | 27           | 18           | .068           | 1.7 | .032        | .8 | .512             | 13.0 | 257 382                    |

## NATIONAL WIRE &amp; CABLE CORPORATION

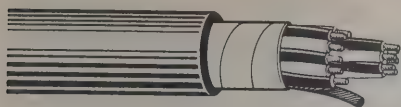
136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307

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CAGE CODE 04569







(NQ-1926FSJ shown)



# MINIATURE SIGNAL & CONTROL CABLES

**IN STOCK**  
**EXTRA FLEXIBLE**  
**GRAY PVC JACKETS**  
**SINGLE CONDUCTORS**  
**(NQ SERIES)**  
 U.L. and CSA certification furnished.

**MULTI-CONDUCTOR STOCK CABLED SINGLES** Same as previous pages except Foil Shield with Drain Wire.

## OVERALL FOIL SHIELD WITH DRAIN

| National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight            |       | National Catalog Number | No. Cond. | Cond. AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight            |       |
|-------------------------|-----------|-----------|----------------|-----|-------------|----|------------------|------|-------------------|-------|-------------------------|-----------|-----------|----------------|-----|-------------|----|------------------|------|-------------------|-------|
|                         |           |           | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |                         |           |           | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NQ-228FSJ               | 2         | 28        | .035           | .9  | .032        | .8 | .140             | 3.6  | 9                 | 13    | NQ-222FSJ               | 2         | 22        | .050           | 1.3 | .032        | .8 | .170             | 4.3  | 16                | 24    |
| NQ-328FSJ               | 3         | 28        | .035           | .9  | .032        | .8 | .146             | 3.7  | 10                | 15    | NQ-322FSJ               | 3         | 22        | .050           | 1.3 | .032        | .8 | .178             | 4.5  | 20                | 29    |
| NQ-428FSJ               | 4         | 28        | .035           | .9  | .032        | .8 | .154             | 3.9  | 12                | 18    | NQ-422FSJ               | 4         | 22        | .050           | 1.3 | .032        | .8 | .190             | 4.8  | 23                | 35    |
| NQ-528FSJ               | 5         | 28        | .035           | .9  | .032        | .8 | .165             | 4.2  | 13                | 20    | NQ-522FSJ               | 5         | 22        | .050           | 1.3 | .032        | .8 | .205             | 5.2  | 27                | 40    |
| NQ-628FSJ               | 6         | 28        | .035           | .9  | .032        | .8 | .175             | 4.4  | 15                | 22    | NQ-622FSJ               | 6         | 22        | .050           | 1.3 | .032        | .8 | .220             | 5.6  | 31                | 46    |
| NQ-728FSJ               | 7         | 28        | .035           | .9  | .032        | .8 | .175             | 4.4  | 16                | 24    | NQ-722FSJ               | 7         | 22        | .050           | 1.3 | .032        | .8 | .220             | 5.6  | 34                | 50    |
| NQ-828FSJ               | 8         | 28        | .035           | .9  | .032        | .8 | .200             | 5.1  | 19                | 28    | NQ-822FSJ               | 8         | 22        | .050           | 1.3 | .032        | .8 | .255             | 6.5  | 39                | 58    |
| NQ-928FSJ               | 9         | 28        | .035           | .9  | .032        | .8 | .210             | 5.3  | 20                | 30    | NQ-922FSJ               | 9         | 22        | .050           | 1.3 | .032        | .8 | .270             | 6.9  | 43                | 63    |
| NQ-1028FSJ              | 10        | 28        | .035           | .9  | .032        | .8 | .210             | 5.3  | 21                | 32    | NQ-1022FSJ              | 10        | 22        | .050           | 1.3 | .032        | .8 | .270             | 6.9  | 46                | 68    |
| NQ-1228FSJ              | 12        | 28        | .035           | .9  | .032        | .8 | .216             | 5.5  | 24                | 35    | NQ-1222FSJ              | 12        | 22        | .050           | 1.3 | .032        | .8 | .278             | 7.1  | 52                | 77    |
| NQ-1528FSJ              | 15        | 28        | .035           | .9  | .032        | .8 | .235             | 6.0  | 28                | 41    | NQ-1522FSJ              | 15        | 22        | .050           | 1.3 | .032        | .8 | .305             | 7.7  | 62                | 93    |
| NQ-1928FSJ              | 19        | 28        | .035           | .9  | .032        | .8 | .245             | 6.2  | 32                | 48    | NQ-1922FSJ              | 19        | 22        | .050           | 1.3 | .032        | .8 | .320             | 8.1  | 75                | 111   |
| NQ-2728FSJ              | 27        | 28        | .035           | .9  | .032        | .8 | .286             | 7.3  | 43                | 64    | NQ-2722FSJ              | 27        | 22        | .050           | 1.3 | .032        | .8 | .378             | 9.6  | 102               | 152   |
| NQ-3728FSJ              | 37        | 28        | .035           | .9  | .032        | .8 | .315             | 8.0  | 55                | 82    | NQ-3722FSJ              | 37        | 22        | .050           | 1.3 | .032        | .8 | .420             | 10.7 | 134               | 199   |
| NQ-226FSJ               | 2         | 26        | .039           | 1.0 | .032        | .8 | .148             | 3.8  | 11                | 16    | NQ-4822FSJ              | 48        | 22        | .050           | 1.3 | .032        | .8 | .475             | 12.1 | 169               | 252   |
| NQ-326FSJ               | 3         | 26        | .039           | 1.0 | .032        | .8 | .154             | 3.9  | 12                | 18    | NQ-6022FSJ              | 60        | 22        | .050           | 1.3 | .032        | .8 | .520             | 13.2 | 207               | 308   |
| NQ-426FSJ               | 4         | 26        | .039           | 1.0 | .032        | .8 | .164             | 4.2  | 14                | 21    | NQ-220FSJ               | 2         | 20        | .058           | 1.5 | .032        | .8 | .186             | 4.7  | 22                | 33    |
| NQ-526FSJ               | 5         | 26        | .039           | 1.0 | .032        | .8 | .175             | 4.5  | 16                | 24    | NQ-320FSJ               | 3         | 20        | .058           | 1.5 | .032        | .8 | .195             | 5.0  | 28                | 41    |
| NQ-626FSJ               | 6         | 26        | .039           | 1.0 | .032        | .8 | .187             | 4.7  | 18                | 28    | NQ-420FSJ               | 4         | 20        | .058           | 1.5 | .032        | .8 | .209             | 5.3  | 33                | 49    |
| NQ-726FSJ               | 7         | 26        | .039           | 1.0 | .032        | .8 | .187             | 4.7  | 20                | 30    | NQ-520FSJ               | 5         | 20        | .058           | 1.5 | .032        | .8 | .227             | 5.8  | 39                | 58    |
| NQ-826FSJ               | 8         | 26        | .039           | 1.0 | .032        | .8 | .214             | 5.4  | 23                | 34    | NQ-620FSJ               | 6         | 20        | .058           | 1.5 | .032        | .8 | .244             | 6.2  | 45                | 66    |
| NQ-926FSJ               | 9         | 26        | .039           | 1.0 | .032        | .8 | .226             | 5.7  | 25                | 37    | NQ-720FSJ               | 7         | 20        | .058           | 1.5 | .032        | .8 | .244             | 6.2  | 49                | 73    |
| NQ-1026FSJ              | 10        | 26        | .039           | 1.0 | .032        | .8 | .226             | 5.7  | 26                | 39    | NQ-820FSJ               | 8         | 20        | .058           | 1.5 | .032        | .8 | .285             | 7.2  | 56                | 84    |
| NQ-1226FSJ              | 12        | 26        | .039           | 1.0 | .032        | .8 | .232             | 5.9  | 30                | 44    | NQ-920FSJ               | 9         | 20        | .058           | 1.5 | .032        | .8 | .302             | 7.7  | 62                | 93    |
| NQ-1526FSJ              | 15        | 26        | .039           | 1.0 | .032        | .8 | .253             | 6.4  | 35                | 52    | NQ-1020FSJ              | 10        | 20        | .058           | 1.5 | .032        | .8 | .302             | 7.7  | 67                | 100   |
| NQ-1926FSJ              | 19        | 26        | .039           | 1.0 | .032        | .8 | .265             | 6.7  | 41                | 62    | NQ-1220FSJ              | 12        | 20        | .058           | 1.5 | .032        | .8 | .311             | 7.9  | 77                | 114   |
| NQ-2726FSJ              | 27        | 26        | .039           | 1.0 | .032        | .8 | .310             | 7.9  | 55                | 82    | NQ-1520FSJ              | 15        | 20        | .058           | 1.5 | .032        | .8 | .343             | 8.7  | 93                | 138   |
| NQ-3726FSJ              | 37        | 26        | .039           | 1.0 | .032        | .8 | .343             | 8.7  | 71                | 106   | NQ-1920FSJ              | 19        | 20        | .058           | 1.5 | .032        | .8 | .360             | 9.1  | 113               | 168   |
| NQ-4826FSJ              | 48        | 26        | .039           | 1.0 | .032        | .8 | .386             | 9.8  | 90                | 133   | NQ-2720FSJ              | 27        | 20        | .058           | 1.5 | .032        | .8 | .427             | 10.9 | 155               | 230   |
| NQ-224FSJ               | 2         | 24        | .044           | 1.1 | .032        | .8 | .158             | 4.0  | 13                | 19    | NQ-3720FSJ              | 37        | 20        | .058           | 1.5 | .032        | .8 | .476             | 12.0 | 205               | 305   |
| NQ-324FSJ               | 3         | 24        | .044           | 1.1 | .032        | .8 | .165             | 4.2  | 15                | 23    | NQ-218FSJ               | 2         | 18        | .068           | 1.7 | .032        | .8 | .206             | 5.2  | 30                | 45    |
| NQ-424FSJ               | 4         | 24        | .044           | 1.1 | .032        | .8 | .176             | 4.5  | 18                | 27    | NQ-318FSJ               | 3         | 18        | .068           | 1.7 | .032        | .8 | .217             | 5.5  | 38                | 56    |
| NQ-524FSJ               | 5         | 24        | .044           | 1.1 | .032        | .8 | .189             | 4.8  | 21                | 31    | NQ-418FSJ               | 4         | 18        | .068           | 1.7 | .032        | .8 | .233             | 5.9  | 46                | 68    |
| NQ-624FSJ               | 6         | 24        | .044           | 1.1 | .032        | .8 | .202             | 5.1  | 24                | 35    | NQ-518FSJ               | 5         | 18        | .068           | 1.7 | .032        | .8 | .254             | 6.4  | 54                | 80    |
| NQ-724FSJ               | 7         | 24        | .044           | 1.1 | .032        | .8 | .202             | 5.1  | 26                | 38    | NQ-618FSJ               | 6         | 18        | .068           | 1.7 | .032        | .8 | .274             | 7.0  | 62                | 92    |
| NQ-824FSJ               | 8         | 24        | .044           | 1.1 | .032        | .8 | .233             | 5.9  | 30                | 44    | NQ-718FSJ               | 7         | 18        | .068           | 1.7 | .032        | .8 | .274             | 7.0  | 69                | 102   |
| NQ-924FSJ               | 9         | 24        | .044           | 1.1 | .032        | .8 | .246             | 6.2  | 32                | 48    | NQ-818FSJ               | 8         | 18        | .068           | 1.7 | .032        | .8 | .322             | 8.2  | 79                | 117   |
| NQ-1024FSJ              | 10        | 24        | .044           | 1.1 | .032        | .8 | .246             | 6.2  | 34                | 51    | NQ-918FSJ               | 9         | 18        | .068           | 1.7 | .032        | .8 | .342             | 8.7  | 87                | 129   |
| NQ-1224FSJ              | 12        | 24        | .044           | 1.1 | .032        | .8 | .253             | 6.4  | 39                | 58    | NQ-1018FSJ              | 10        | 18        | .068           | 1.7 | .032        | .8 | .342             | 8.7  | 94                | 139   |
| NQ-1524FSJ              | 15        | 24        | .044           | 1.1 | .032        | .8 | .277             | 7.0  | 46                | 69    | NQ-1218FSJ              | 12        | 18        | .068           | 1.7 | .032        | .8 | .353             | 9.0  | 100               | 161   |
| NQ-1924FSJ              | 19        | 24        | .044           | 1.1 | .032        | .8 | .290             | 7.4  | 55                | 82    | NQ-1518FSJ              | 15        | 18        | .068           | 1.7 | .032        | .8 | .390             | 9.9  | 131               | 196   |
| NQ-2724FSJ              | 27        | 24        | .044           | 1.1 | .032        | .8 | .341             | 8.7  | 75                | 111   | NQ-1918FSJ              | 19        | 18        | .068           | 1.7 | .032        | .8 | .410             | 10.4 | 150               | 239   |
| NQ-3724FSJ              | 37        | 24        | .044           | 1.1 | .032        | .8 | .378             | 9.6  | 97                | 145   | NQ-2718FSJ              | 27        | 18        | .068           | 1.7 | .032        | .8 | .489             | 12.4 | 221               | 329   |
| NQ-4824FSJ              | 48        | 24        | .044           | 1.1 | .032        | .8 | .426             | 10.8 | 122               | 182   |                         |           |           |                |     |             |    |                  |      |                   |       |
| NQ-6024FSJ              | 60        | 24        | .044           | 1.1 | .032        | .8 | .466             | 11.8 | 149               | 222   |                         |           |           |                |     |             |    |                  |      |                   |       |

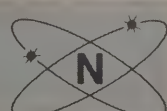
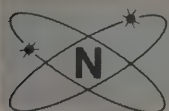
NOTE: Drain wires are the same gage as individual conductors in any one group.

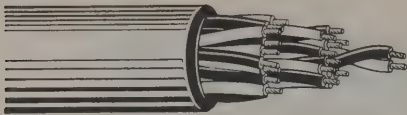
## NATIONAL WIRE & CABLE CORPORATION

136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307

PHONE: (213) 225-5611 • FAX: (213) 225-4630

CAGE CODE 04569





(NQP-1928J shown)



## MINIATURE SIGNAL & CONTROL CABLES

### GRAY PVC JACKET

National Wire & Cable Corporation manufactures a complete line of highly flexible micro-miniature low-voltage instrument control cable. These are available as cabled pairs or singles, with optional overall shield of either foil with drain or a braided shield.

Conductors are stranded tinned copper with .010" wall of tough extruded polyvinyl chloride primary insulation, rated for 300 volt use at +80°C under U.L. style 1061.\* All are color coded using ten standard colors plus white with stripes per MIL-STD-681. (See table following page.)

Conductors are planetary cabled and helically laid for optimum flexibility, with a barrier under braids. Shielded cables have a tinned copper braid of 90% coverage per MIL-C-7078, with braid angles below 40° for easy pushback; or have a 100% coverage foil shield in intimate contact with a drain wire for easy termination. See Section 3 of our mater catalog for relative shield effectiveness.

Outer jacket is highly flexible abrasion-resistant gray polyvinyl chloride thermoplastic, meeting the requirements of U.L. style 2464.\*\*

**Military certification furnished only when requested.**

All materials are flame retardant and fungus resistant.

Standard Putups: 500 and 1000 ft. No-deposit reels. For shorter quantities or specific lengths, consult factory.

\*Wire also meets MIL-W-16878/1, rated 600 volts, +105°C.

\*\*Jacket material is military rated for +105°C; meets MIL-I-631, Type F.

Meets E.I.A. Standards RS-232 for 18-24 gauges.

## IN STOCK

### EXTRA FLEXIBLE GRAY PVC JACKETS

### TWISTED PAIRS (NQP SERIES)

MIL SPEC., U.L. RECOGNIZED  
STYLE 2464 & CSA CERTIFIED

### TECHNICAL DATA (all cables)

|                                                     |                                                                                                                                                                                                                                                        |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Insulation break-down voltage:</b>               | Greater than 3000 volts AC RMS, 60cps.                                                                                                                                                                                                                 |
| <b>Capacitance:</b>                                 | Nominal capacitance from a wire to all else in a cable ranges from 25 to 45 pf/ft at 1kc, depending on gauge and position.                                                                                                                             |
| <b>Insulation Leakage:</b>                          | 200 megohms/1000 feet minimum @ 500VDC from conductor to all else in cable.                                                                                                                                                                            |
| <b>Sheath Leakage:</b>                              | 10 megohms/1000 feet minimum @ 500VDC from shield or conductor group through sheath to ground.                                                                                                                                                         |
| <b>Temperature Range:</b>                           | U.L. rating: +80°C per U.L. style 2464.<br>Military: Continuous use from -40°C to +105°C.                                                                                                                                                              |
| <b>Bending Characteristics:</b>                     | All cables are suitable for flexing to a circle diameter of 6 cable diameters from +105°C to -20°C. Recommended flex diameter should be greater than 20 cable diameters for flexing at -40°C. For continuous flexing applications consult the factory. |
| <b>Foil Shielded Cables:</b>                        | The nominal overall diameter of foil shielded cables will be .006" greater than the non-shielded cables of the same conductor count and wire size.                                                                                                     |
| <b>Characteristic Impedance (NQP Paired Cables)</b> | Ranges from 150 ohms to 45 ohms, dependent on wire size (AWG), geometry and drive method. Consult our technical staff for data on specific cable types.                                                                                                |

## MULTI-CONDUCTOR STOCK CABLED PAIRS

Conductor sizes 28, 26, 24, 22 are 7 strand. All others 19 strand.

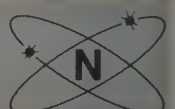
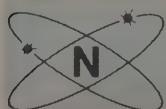
### UNSHIELDED

### OVERALL BRAIDED SHIELD

| National Catalog Number | No. of Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight            |       | National Catalog Number | No. of Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall |    | Nominal Diameter |      | Weight            |       |
|-------------------------|--------------|-----------|----------------|-----|-------------|----|------------------|------|-------------------|-------|-------------------------|--------------|-----------|----------------|-----|-------------|----|------------------|------|-------------------|-------|
|                         |              |           | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |                         |              |           | Inches         | MM  | Inches      | MM | Inches           | MM   | Lbs. per 1000 ft. | KG/KM |
| NQP-228J                | 2            | 28        | .035           | .9  | .032        | .8 | .187             | 4.7  | 14                | 22    | NQP-228SJ               | 2            | 28        | .035           | .9  | .032        | .8 | .207             | 5.3  | 26                | 38    |
| NQP-328J                | 3            | 28        | .035           | .9  | .032        | .8 | .197             | 5.0  | 17                | 26    | NQP-328SJ               | 3            | 28        | .035           | .9  | .032        | .8 | .217             | 5.5  | 29                | 43    |
| NQP-428J                | 4            | 28        | .035           | .9  | .032        | .8 | .215             | 5.5  | 20                | 30    | NQP-428SJ               | 4            | 28        | .035           | .9  | .032        | .8 | .235             | 6.0  | 33                | 49    |
| NQP-528J                | 5            | 28        | .035           | .9  | .032        | .8 | .236             | 6.0  | 23                | 35    | NQP-528SJ               | 5            | 28        | .035           | .9  | .032        | .8 | .256             | 6.5  | 38                | 56    |
| NQP-628J                | 6            | 28        | .035           | .9  | .032        | .8 | .257             | 6.5  | 27                | 40    | NQP-628SJ               | 6            | 28        | .035           | .9  | .032        | .8 | .277             | 7.0  | 43                | 63    |
| NQP-728J                | 7            | 28        | .035           | .9  | .032        | .8 | .247             | 6.3  | 29                | 43    | NQP-728SJ               | 7            | 28        | .035           | .9  | .032        | .8 | .267             | 6.8  | 45                | 66    |
| NQP-828J                | 8            | 28        | .035           | .9  | .032        | .8 | .306             | 7.8  | 34                | 50    | NQP-828SJ               | 8            | 28        | .035           | .9  | .032        | .8 | .326             | 8.3  | 53                | 79    |
| NQP-928J                | 9            | 28        | .035           | .9  | .032        | .8 | .292             | 7.4  | 37                | 55    | NQP-928SJ               | 9            | 28        | .035           | .9  | .032        | .8 | .312             | 7.9  | 58                | 86    |
| NQP-1028J               | 10           | 28        | .035           | .9  | .032        | .8 | .306             | 7.8  | 39                | 58    | NQP-1028SJ              | 10           | 28        | .035           | .9  | .032        | .8 | .326             | 8.3  | 60                | 89    |
| NQP-1228J               | 12           | 28        | .035           | .9  | .032        | .8 | .316             | 8.0  | 44                | 65    | NQP-1228SJ              | 12           | 28        | .035           | .9  | .032        | .8 | .336             | 8.5  | 65                | 97    |
| NQP-1528J               | 15           | 28        | .035           | .9  | .032        | .8 | .355             | 9.0  | 52                | 77    | NQP-1528SJ              | 15           | 28        | .035           | .9  | .032        | .8 | .375             | 9.5  | 76                | 113   |
| NQP-1928J               | 19           | 28        | .035           | .9  | .032        | .8 | .366             | 9.3  | 61                | 91    | NQP-1928SJ              | 19           | 28        | .035           | .9  | .032        | .8 | .386             | 9.8  | 87                | 129   |
| NQP-2728J               | 27           | 28        | .035           | .9  | .032        | .8 | .435             | 11.1 | 82                | 122   | NQP-2728SJ              | 27           | 28        | .035           | .9  | .032        | .8 | .460             | 11.7 | 125               | 189   |
| NQP-3728J               | 37           | 28        | .035           | .9  | .032        | .8 | .485             | 12.2 | 106               | 158   | NQP-3728SJ              | 37           | 28        | .035           | .9  | .032        | .8 | .510             | 12.9 | 155               | 231   |
| NQP-226J                | 2            | 26        | .039           | 1.0 | .032        | .8 | .201             | 5.1  | 17                | 25    | NQP-226SJ               | 2            | 26        | .039           | 1.0 | .032        | .8 | .221             | 5.6  | 29                | 43    |
| NQP-326J                | 3            | 26        | .039           | 1.0 | .032        | .8 | .211             | 5.4  | 21                | 31    | NQP-326SJ               | 3            | 26        | .039           | 1.0 | .032        | .8 | .231             | 5.9  | 34                | 50    |
| NQP-426J                | 4            | 26        | .039           | 1.0 | .032        | .8 | .232             | 5.9  | 25                | 36    | NQP-426SJ               | 4            | 26        | .039           | 1.0 | .032        | .8 | .252             | 6.4  | 39                | 58    |
| NQP-526J                | 5            | 26        | .039           | 1.0 | .032        | .8 | .255             | 6.5  | 29                | 43    | NQP-526SJ               | 5            | 26        | .039           | 1.0 | .032        | .8 | .275             | 7.0  | 45                | 66    |
| NQP-626J                | 6            | 26        | .039           | 1.0 | .032        | .8 | .279             | 7.1  | 33                | 49    | NQP-626SJ               | 6            | 26        | .039           | 1.0 | .032        | .8 | .299             | 7.6  | 50                | 75    |
| NQP-726J                | 7            | 26        | .039           | 1.0 | .032        | .8 | .267             | 6.8  | 36                | 53    | NQP-726SJ               | 7            | 26        | .039           | 1.0 | .032        | .8 | .287             | 7.3  | 53                | 79    |
| NQP-826J                | 8            | 26        | .039           | 1.0 | .032        | .8 | .333             | 8.5  | 42                | 62    | NQP-826SJ               | 8            | 26        | .039           | 1.0 | .032        | .8 | .353             | 9.0  | 63                | 94    |
| NQP-926J                | 9            | 26        | .039           | 1.0 | .032        | .8 | .318             | 8.1  | 46                | 68    | NQP-926SJ               | 9            | 26        | .039           | 1.0 | .032        | .8 | .338             | 8.6  | 69                | 102   |
| NQP-1026J               | 10           | 26        | .039           | 1.0 | .032        | .8 | .333             | 8.5  | 49                | 73    | NQP-1026SJ              | 10           | 26        | .039           | 1.0 | .032        | .8 | .353             | 9.0  | 72                | 107   |
| NQP-1226J               | 12           | 26        | .039           | 1.0 | .032        | .8 | .344             | 8.7  | 55                | 82    | NQP-1226SJ              | 12           | 26        | .039           | 1.0 | .032        | .8 | .364             | 9.2  | 79                | 117   |
| NQP-1526J               | 15           | 26        | .039           | 1.0 | .032        | .8 | .388             | 9.9  | 66                | 98    | NQP-1526SJ              | 15           | 26        | .039           | 1.0 | .032        | .8 | .413             | 10.5 | 103               | 153   |
| NQP-1926J               | 19           | 26        | .039           | 1.0 | .032        | .8 | .400             | 10.1 | 79                | 117   | NQP-1926SJ              | 19           | 26        | .039           | 1.0 | .032        | .8 | .425             | 10.8 | 118               | 175   |
| NQP-2726J               | 27           | 26        | .039           | 1.0 | .032        | .8 | .476             | 12.1 | 107               | 159   | NQP-2726SJ              | 27           | 26        | .039           | 1.0 | .032        | .8 | .502             | 12.7 | 154               | 230   |
| NQP-3726J               | 37           | 26        | .039           | 1.0 | .032        | .8 | .532             | 13.5 | 139               | 207   | NQP-3726SJ              | 37           | 26        | .039           | 1.0 | .032        | .8 | .557             | 14.2 | 193               | 288   |

(CONTINUED ON THE FOLLOWING PAGE)

**NATIONAL WIRE & CABLE CORPORATION**  
136 SAN FERNANDO ROAD, LOS ANGELES, CALIFORNIA 90031-0307  
PHONE: (213) 225-5611 • FAX: (213) 225-4630  
CAGE CODE 04569







(NQP-1928J shown)



IN STOCK

EXTRA FLEXIBLE  
GRAY PVC JACKETSTWISTED PAIRS  
(NQP SERIES)

U.L. and CSA certification furnished.

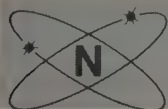
## MINIATURE SIGNAL &amp; CONTROL CABLES

MULTI CONDUCTOR STOCK CABLED PAIRS continued from previous page.

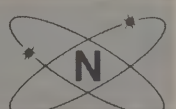
| UNSHIELDED              |              |           |                |     |             |                  |        |        |                         | OVERALL BRAIDED SHIELD  |              |           |                |      |             |                  |        |        |                         |     |     |
|-------------------------|--------------|-----------|----------------|-----|-------------|------------------|--------|--------|-------------------------|-------------------------|--------------|-----------|----------------|------|-------------|------------------|--------|--------|-------------------------|-----|-----|
| National Catalog Number | No. of Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall | Nominal Diameter |        | Weight |                         | National Catalog Number | No. of Pairs | Cond. AWG | Cond. Diameter |      | Jacket Wall | Nominal Diameter |        | Weight |                         |     |     |
|                         |              |           | Inches         | MM  | Inches      | MM               | Inches | MM     | Lbs. per 1000 ft. KG/KM |                         |              |           | Inches         | MM   | Inches      | MM               | Inches | MM     | Lbs. per 1000 ft. KG/KM |     |     |
| NQP-224J                | 2            | 24        | .044           | 1.1 | .032        | .8               | .218   | 5.5    | 21                      | 31                      | NQP-224SJ    | 2         | 24             | .044 | 1.1         | .032             | .8     | .238   | 6.0                     | 34  | 51  |
| NQP-324J                | 3            | 24        | .044           | 1.1 | .032        | .8               | .230   | 5.8    | 26                      | 38                      | NQP-324SJ    | 3         | 24             | .044 | 1.1         | .032             | .8     | .250   | 6.3                     | 40  | 60  |
| NQP-424J                | 4            | 24        | .044           | 1.1 | .032        | .8               | .253   | 6.4    | 31                      | 46                      | NQP-424SJ    | 4         | 24             | .044 | 1.1         | .032             | .8     | .273   | 6.9                     | 47  | 70  |
| NQP-524J                | 5            | 24        | .044           | 1.1 | .032        | .8               | .279   | 7.1    | 37                      | 54                      | NQP-524SJ    | 5         | 24             | .044 | 1.1         | .032             | .8     | .299   | 7.6                     | 54  | 81  |
| NQP-624J                | 6            | 24        | .044           | 1.1 | .032        | .8               | .306   | 7.8    | 42                      | 63                      | NQP-624SJ    | 6         | 24             | .044 | 1.1         | .032             | .8     | .326   | 8.3                     | 62  | 92  |
| NQP-724J                | 7            | 24        | .044           | 1.1 | .032        | .8               | .292   | 7.4    | 46                      | 69                      | NQP-724SJ    | 7         | 24             | .044 | 1.1         | .032             | .8     | .312   | 7.9                     | 66  | 98  |
| NQP-824J                | 8            | 24        | .044           | 1.1 | .032        | .8               | .367   | 9.3    | 54                      | 80                      | NQP-824SJ    | 8         | 24             | .044 | 1.1         | .032             | .8     | .387   | 9.8                     | 78  | 116 |
| NQP-924J                | 9            | 24        | .044           | 1.1 | .032        | .8               | .350   | 8.9    | 60                      | 89                      | NQP-924SJ    | 9         | 24             | .044 | 1.1         | .032             | .8     | .370   | 9.4                     | 85  | 127 |
| NQP-1024J               | 10           | 24        | .044           | 1.1 | .032        | .8               | .367   | 9.3    | 64                      | 95                      | NQP-1024SJ   | 10        | 24             | .044 | 1.1         | .032             | .8     | .387   | 9.8                     | 89  | 133 |
| NQP-1224J               | 12           | 24        | .044           | 1.1 | .032        | .8               | .379   | 9.6    | 73                      | 108                     | NQP-1224SJ   | 12        | 24             | .044 | 1.1         | .032             | .8     | .404   | 10.3                    | 109 | 163 |
| NQP-1524J               | 15           | 24        | .044           | 1.1 | .032        | .8               | .429   | 10.9   | 88                      | 130                     | NQP-1524SJ   | 15        | 24             | .044 | 1.1         | .032             | .8     | .454   | 11.5                    | 129 | 192 |
| NQP-1924J               | 19           | 24        | .044           | 1.1 | .032        | .8               | .442   | 11.2   | 106                     | 157                     | NQP-1924SJ   | 19        | 24             | .044 | 1.1         | .032             | .8     | .467   | 11.9                    | 149 | 222 |
| NQP-2724J               | 27           | 24        | .044           | 1.1 | .032        | .8               | .529   | 13.4   | 144                     | 214                     | NQP-2724SJ   | 27        | 24             | .044 | 1.1         | .032             | .8     | .554   | 14.1                    | 198 | 294 |
| NQP-222J                | 2            | 22        | .050           | 1.3 | .032        | .8               | .238   | 6.0    | 26                      | 38                      | NQP-222SJ    | 2         | 22             | .050 | 1.3         | .032             | .8     | .258   | 6.6                     | 41  | 61  |
| NQP-322J                | 3            | 22        | .050           | 1.3 | .032        | .8               | .252   | 6.4    | 33                      | 48                      | NQP-322SJ    | 3         | 22             | .050 | 1.3         | .032             | .8     | .272   | 6.9                     | 49  | 73  |
| NQP-422J                | 4            | 22        | .050           | 1.3 | .032        | .8               | .278   | 7.1    | 40                      | 59                      | NQP-422SJ    | 4         | 22             | .050 | 1.3         | .032             | .8     | .298   | 7.6                     | 58  | 86  |
| NQP-522J                | 5            | 22        | .050           | 1.3 | .032        | .8               | .308   | 7.8    | 47                      | 71                      | NQP-522SJ    | 5         | 22             | .050 | 1.3         | .032             | .8     | .328   | 8.3                     | 67  | 100 |
| NQP-622J                | 6            | 22        | .050           | 1.3 | .032        | .8               | .338   | 8.6    | 55                      | 82                      | NQP-622SJ    | 6         | 22             | .050 | 1.3         | .032             | .8     | .350   | 9.1                     | 77  | 115 |
| NQP-722J                | 7            | 22        | .050           | 1.3 | .032        | .8               | .323   | 8.2    | 61                      | 91                      | NQP-722SJ    | 7         | 22             | .050 | 1.3         | .032             | .8     | .343   | 8.7                     | 83  | 123 |
| NQP-822J                | 8            | 22        | .050           | 1.3 | .032        | .8               | .408   | 10.4   | 71                      | 106                     | NQP-822SJ    | 8         | 22             | .050 | 1.3         | .032             | .8     | .433   | 11.0                    | 108 | 161 |
| NQP-922J                | 9            | 22        | .050           | 1.3 | .032        | .8               | .388   | 9.9    | 79                      | 117                     | NQP-922SJ    | 9         | 22             | .050 | 1.3         | .032             | .8     | .413   | 10.5                    | 119 | 176 |
| NQP-1022J               | 10           | 22        | .050           | 1.3 | .032        | .8               | .408   | 10.4   | 85                      | 126                     | NQP-1022SJ   | 10        | 22             | .050 | 1.3         | .032             | .8     | .433   | 11.0                    | 124 | 185 |
| NQP-1222J               | 12           | 22        | .050           | 1.3 | .032        | .8               | .422   | 10.7   | 97                      | 145                     | NQP-1222SJ   | 12        | 22             | .050 | 1.3         | .032             | .8     | .447   | 11.3                    | 139 | 206 |
| NQP-1522J               | 15           | 22        | .050           | 1.3 | .032        | .8               | .478   | 12.1   | 118                     | 176                     | NQP-1522SJ   | 15        | 22             | .050 | 1.3         | .032             | .8     | .503   | 12.8                    | 165 | 245 |
| NQP-1922J               | 19           | 22        | .050           | 1.3 | .032        | .8               | .493   | 12.5   | 143                     | 213                     | NQP-1922SJ   | 19        | 22             | .050 | 1.3         | .032             | .8     | .518   | 13.2                    | 193 | 287 |
| NQP-2722J               | 27           | 22        | .050           | 1.3 | .050        | 1.3              | .628   | 15.9   | 221                     | 328                     | NQP-2722SJ   | 27        | 22             | .050 | 1.3         | .050             | 1.3    | .653   | 16.6                    | 282 | 419 |
| NQP-220J                | 2            | 20        | .058           | 1.5 | .032        | .8               | .265   | 6.7    | 35                      | 52                      | NQP-220SJ    | 2         | 20             | .058 | 1.5         | .032             | .8     | .285   | 7.2                     | 52  | 78  |
| NQP-320J                | 3            | 20        | .058           | 1.5 | .032        | .8               | .281   | 7.1    | 45                      | 67                      | NQP-320SJ    | 3         | 20             | .058 | 1.5         | .032             | .8     | .301   | 7.6                     | 64  | 95  |
| NQP-420J                | 4            | 20        | .058           | 1.5 | .032        | .8               | .312   | 7.9    | 56                      | 84                      | NQP-420SJ    | 4         | 20             | .058 | 1.5         | .032             | .8     | .332   | 8.4                     | 77  | 114 |
| NQP-520J                | 5            | 20        | .058           | 1.5 | .032        | .8               | .346   | 8.8    | 68                      | 101                     | NQP-520SJ    | 5         | 20             | .058 | 1.5         | .032             | .8     | .366   | 9.3                     | 91  | 135 |
| NQP-620J                | 6            | 20        | .058           | 1.5 | .032        | .8               | .381   | 9.7    | 79                      | 118                     | NQP-620SJ    | 6         | 20             | .058 | 1.5         | .032             | .8     | .401   | 10.2                    | 105 | 156 |
| NQP-720J                | 7            | 20        | .058           | 1.5 | .032        | .8               | .364   | 9.2    | 89                      | 132                     | NQP-720SJ    | 7         | 20             | .058 | 1.5         | .032             | .8     | .384   | 9.7                     | 114 | 170 |
| NQP-820J                | 8            | 20        | .058           | 1.5 | .032        | .8               | .462   | 11.7   | 103                     | 154                     | NQP-820SJ    | 8         | 20             | .058 | 1.5         | .032             | .8     | .488   | 12.4                    | 146 | 217 |
| NQP-920J                | 9            | 20        | .058           | 1.5 | .032        | .8               | .439   | 11.2   | 115                     | 171                     | NQP-920SJ    | 9         | 20             | .058 | 1.5         | .032             | .8     | .464   | 11.8                    | 161 | 239 |
| NQP-1020J               | 10           | 20        | .058           | 1.5 | .032        | .8               | .462   | 11.7   | 124                     | 185                     | NQP-1020SJ   | 10        | 20             | .058 | 1.5         | .032             | .8     | .488   | 12.4                    | 170 | 253 |
| NQP-1220J               | 12           | 20        | .058           | 1.5 | .032        | .8               | .478   | 12.1   | 144                     | 214                     | NQP-1220SJ   | 12        | 20             | .058 | 1.5         | .032             | .8     | .503   | 12.8                    | 192 | 285 |
| NQP-1520J               | 15           | 20        | .058           | 1.5 | .032        | .8               | .544   | 13.8   | 176                     | 262                     | NQP-1520SJ   | 15        | 20             | .058 | 1.5         | .050             | 1.3    | .605   | 15.4                    | 252 | 375 |
| NQP-1920J               | 19           | 20        | .058           | 1.5 | .032        | .8               | .561   | 14.2   | 216                     | 321                     | NQP-1920SJ   | 19        | 20             | .058 | 1.5         | .050             | 1.3    | .622   | 15.8                    | 296 | 441 |
| NQP-2720J               | 27           | 20        | .058           | 1.5 | .050        | .8               | .711   | 18.1   | 326                     | 486                     | NQP-2720SJ   | 27        | 20             | .058 | 1.5         | .050             | 1.3    | .737   | 18.7                    | 397 | 591 |
| NQP-218J                | 2            | 18        | .068           | 1.7 | .032        | .8               | .299   | 7.6    | 46                      | 69                      | NQP-218SJ    | 2         | 18             | .068 | 1.7         | .032             | .8     | .319   | 8.1                     | 66  | 98  |
| NQP-318J                | 3            | 18        | .068           | 1.7 | .032        | .8               | .318   | 8.1    | 61                      | 91                      | NQP-318SJ    | 3         | 18             | .068 | 1.7         | .032             | .8     | .338   | 8.6                     | 83  | 123 |
| NQP-418J                | 4            | 18        | .068           | 1.7 | .032        | .8               | .354   | 9.0    | 77                      | 115                     | NQP-418SJ    | 4         | 18             | .068 | 1.7         | .032             | .8     | .374   | 9.5                     | 101 | 150 |
| NQP-518J                | 5            | 18        | .068           | 1.7 | .032        | .8               | .394   | 10.0   | 94                      | 139                     | NQP-518SJ    | 5         | 18             | .068 | 1.7         | .032             | .8     | .420   | 10.7                    | 130 | 194 |
| NQP-618J                | 6            | 18        | .068           | 1.7 | .032        | .8               | .435   | 11.1   | 110                     | 163                     | NQP-618SJ    | 6         | 18             | .068 | 1.7         | .032             | .8     | .460   | 11.7                    | 151 | 224 |
| NQP-718J                | 7            | 18        | .068           | 1.7 | .032        | .8               | .415   | 10.5   | 124                     | 184                     | NQP-718SJ    | 7         | 18             | .068 | 1.7         | .032             | .8     | .440   | 11.2                    | 164 | 245 |
| NQP-1218J               | 12           | 18        | .068           | 1.7 | .032        | .8               | .549   | 13.9   | 203                     | 302                     | NQP-1218SJ   | 12        | 18             | .068 | 1.7         | .050             | .8     | .610   | 15.5                    | 281 | 418 |

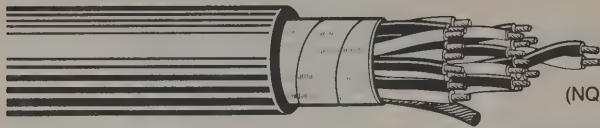
continued on following page

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 CAGE CODE 04569





(NQP-1924FSJ shown)

IN STOCK

EXTRA FLEXIBLE  
GRAY PVC JACKETS

TWISTED PAIRS  
(NQP SERIES)

U.L. and CSA certification furnished.



MINIATURE SIGNAL & CONTROL CABLES

MULTI CONDUCTOR STOCK CABLED PAIRS Same as previous pages except Foil Shield with Drain Wire.

OVERALL FOIL SHIELD WITH DRAIN

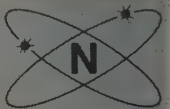
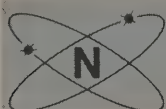
| National Catalog Number | No. of Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall Inches MM | Nominal Diameter |      | Weight Lbs. per 1000 ft. KG/KM | National Catalog Number | No. of Pairs | Cond. AWG | Cond. Diameter |     | Jacket Wall Inches MM | Nominal Diameter |      | Weight Lbs. per 1000 ft. KG/KM |
|-------------------------|--------------|-----------|----------------|-----|-----------------------|------------------|------|--------------------------------|-------------------------|--------------|-----------|----------------|-----|-----------------------|------------------|------|--------------------------------|
|                         |              |           | Inches         | MM  |                       | Inches           | MM   |                                |                         |              |           | Inches         | MM  |                       | Inches           | MM   |                                |
| NQP-228FSJ              | 2            | 28        | .035           | .9  | .032 .8               | .189             | 4.8  | 15 23                          | NQP-222FSJ              | 2            | 22        | .050           | 1.3 | .032 .8               | .240             | 6.1  | 28 42                          |
| NQP-328FSJ              | 3            | 28        | .035           | .9  | .032 .8               | .199             | 5.0  | 18 27                          | NQP-322FSJ              | 3            | 22        | .050           | 1.3 | .032 .8               | .254             | 6.4  | 35 52                          |
| NQP-428FSJ              | 4            | 28        | .035           | .9  | .032 .8               | .217             | 5.5  | 21 31                          | NQP-422FSJ              | 4            | 22        | .050           | 1.3 | .032 .8               | .280             | 7.1  | 42 63                          |
| NQP-528FSJ              | 5            | 28        | .035           | .9  | .032 .8               | .238             | 6.0  | 24 36                          | NQP-522FSJ              | 5            | 22        | .050           | 1.3 | .032 .8               | .310             | 7.9  | 50 74                          |
| NQP-628FSJ              | 6            | 28        | .035           | .9  | .032 .8               | .259             | 6.6  | 27 41                          | NQP-622FSJ              | 6            | 22        | .050           | 1.3 | .032 .8               | .340             | 8.6  | 57 85                          |
| NQP-728FSJ              | 7            | 28        | .035           | .9  | .032 .8               | .249             | 6.3  | 29 44                          | NQP-722FSJ              | 7            | 22        | .050           | 1.3 | .032 .8               | .325             | 8.3  | 63 94                          |
| NQP-828FSJ              | 8            | 28        | .035           | .9  | .032 .8               | .308             | 7.8  | 34 51                          | NQP-822FSJ              | 8            | 22        | .050           | 1.3 | .032 .8               | .410             | 10.4 | 73 109                         |
| NQP-928FSJ              | 9            | 28        | .035           | .9  | .032 .8               | .294             | 7.5  | 38 56                          | NQP-922FSJ              | 9            | 22        | .050           | 1.3 | .032 .8               | .390             | 9.9  | 81 120                         |
| NQP-1028FSJ             | 10           | 28        | .035           | .9  | .032 .8               | .308             | 7.8  | 40 59                          | NQP-1022FSJ             | 10           | 22        | .050           | 1.3 | .032 .8               | .410             | 10.4 | 87 129                         |
| NQP-1228FSJ             | 12           | 28        | .035           | .9  | .032 .8               | .318             | 8.1  | 44 66                          | NQP-1222FSJ             | 12           | 22        | .050           | 1.3 | .032 .8               | .424             | 10.8 | 99 148                         |
| NQP-1528FSJ             | 15           | 28        | .035           | .9  | .032 .8               | .357             | 9.1  | 53 78                          | NQP-1522FSJ             | 15           | 22        | .050           | 1.3 | .032 .8               | .480             | 12.2 | 120 179                        |
| NQP-1928FSJ             | 19           | 28        | .035           | .9  | .032 .8               | .368             | 9.3  | 62 92                          | NQP-1922FSJ             | 19           | 22        | .050           | 1.3 | .032 .8               | .495             | 12.6 | 146 216                        |
| NQP-2728FSJ             | 27           | 28        | .035           | .9  | .032 .8               | .437             | 11.1 | 83 124                         | NQP-2722FSJ             | 27           | 22        | .050           | 1.3 | .050 1.3              | .630             | 16.0 | 223 331                        |
| NQP-3728FSJ             | 37           | 28        | .035           | .9  | .032 .8               | .487             | 12.3 | 107 159                        | NQP-220FSJ              | 2            | 20        | .058           | 1.5 | .032 .8               | .267             | 6.8  | 39 57                          |
| NQP-226FSJ              | 2            | 26        | .039           | 1.0 | .032 .8               | .203             | 5.1  | 18 27                          | NQP-320FSJ              | 3            | 20        | .058           | 1.5 | .032 .8               | .283             | 7.2  | 49 73                          |
| NQP-326FSJ              | 3            | 26        | .039           | 1.0 | .032 .8               | .213             | 5.4  | 22 32                          | NQP-420FSJ              | 4            | 20        | .058           | 1.5 | .032 .8               | .314             | 8.0  | 60 90                          |
| NQP-426FSJ              | 4            | 26        | .039           | 1.0 | .032 .8               | .234             | 5.9  | 25 38                          | NQP-520FSJ              | 5            | 20        | .058           | 1.5 | .032 .8               | .348             | 8.8  | 72 107                         |
| NQP-526FSJ              | 5            | 26        | .039           | 1.0 | .032 .8               | .257             | 6.5  | 30 44                          | NQP-620FSJ              | 6            | 20        | .058           | 1.5 | .032 .8               | .383             | 9.7  | 83 124                         |
| NQP-626FSJ              | 6            | 26        | .039           | 1.0 | .032 .8               | .281             | 7.1  | 34 50                          | NQP-720FSJ              | 7            | 20        | .058           | 1.5 | .032 .8               | .366             | 9.3  | 93 138                         |
| NQP-726FSJ              | 7            | 26        | .039           | 1.0 | .032 .8               | .269             | 6.8  | 37 55                          | NQP-820FSJ              | 8            | 20        | .058           | 1.5 | .032 .8               | .464             | 11.8 | 107 159                        |
| NQP-826FSJ              | 8            | 26        | .039           | 1.0 | .032 .8               | .335             | 8.5  | 43 64                          | NQP-920FSJ              | 9            | 20        | .058           | 1.5 | .032 .8               | .441             | 11.2 | 119 176                        |
| NQP-926FSJ              | 9            | 26        | .039           | 1.0 | .032 .8               | .320             | 8.1  | 47 70                          | NQP-1020FSJ             | 10           | 20        | .058           | 1.5 | .032 .8               | .464             | 11.8 | 128 190                        |
| NQP-1026FSJ             | 10           | 26        | .039           | 1.0 | .032 .8               | .335             | 8.5  | 50 74                          | NQP-1220FSJ             | 12           | 20        | .058           | 1.5 | .032 .8               | .480             | 12.2 | 148 220                        |
| NQP-1226FSJ             | 12           | 26        | .039           | 1.0 | .032 .8               | .346             | 8.8  | 56 84                          | NQP-1520FSJ             | 15           | 20        | .058           | 1.5 | .032 .8               | .546             | 13.9 | 180 268                        |
| NQP-1526FSJ             | 15           | 26        | .039           | 1.0 | .032 .8               | .390             | 9.9  | 67 100                         | NQP-1920FSJ             | 19           | 20        | .058           | 1.5 | .032 .8               | .563             | 14.3 | 220 327                        |
| NQP-1926FSJ             | 19           | 26        | .039           | 1.0 | .032 .8               | .402             | 10.2 | 80 119                         | NQP-2720FSJ             | 27           | 20        | .058           | 1.5 | .032 .8               | .713             | 18.1 | 330 492                        |
| NQP-2726FSJ             | 27           | 26        | .039           | 1.0 | .032 .8               | .478             | 12.2 | 108 160                        | NQP-218FSJ              | 2            | 18        | .068           | 1.7 | .032 .8               | .301             | 7.7  | 52 77                          |
| NQP-3726FSJ             | 37           | 26        | .039           | 1.0 | .032 .8               | .534             | 13.5 | 140 209                        | NQP-318FSJ              | 3            | 18        | .068           | 1.7 | .032 .8               | .320             | 8.1  | 67 100                         |
| NQP-224FSJ              | 2            | 24        | .044           | 1.1 | .032 .8               | .220             | 5.6  | 22 33                          | NQP-418FSJ              | 4            | 18        | .068           | 1.7 | .032 .8               | .356             | 9.0  | 83 124                         |
| NQP-324FSJ              | 3            | 24        | .044           | 1.1 | .032 .8               | .232             | 5.9  | 27 40                          | NQP-518FSJ              | 5            | 18        | .068           | 1.7 | .032 .8               | .396             | 10.1 | 99 148                         |
| NQP-424FSJ              | 4            | 24        | .044           | 1.1 | .032 .8               | .255             | 6.5  | 32 48                          | NQP-618FSJ              | 6            | 18        | .068           | 1.7 | .032 .8               | .437             | 11.1 | 116 172                        |
| NQP-524FSJ              | 5            | 24        | .044           | 1.1 | .032 .8               | .281             | 7.1  | 38 57                          | NQP-718FSJ              | 7            | 18        | .068           | 1.7 | .032 .8               | .417             | 10.6 | 130 193                        |
| NQP-624FSJ              | 6            | 24        | .044           | 1.1 | .032 .8               | .308             | 7.8  | 44 65                          | NQP-1218FSJ             | 12           | 18        | .068           | 1.7 | .032 .8               | .551             | 14.0 | 209 310                        |
| NQP-724FSJ              | 7            | 24        | .044           | 1.1 | .032 .8               | .294             | 7.5  | 48 71                          |                         |              |           |                |     |                       |                  |      |                                |
| NQP-824FSJ              | 8            | 24        | .044           | 1.1 | .032 .8               | .369             | 9.4  | 55 83                          |                         |              |           |                |     |                       |                  |      |                                |
| NQP-924FSJ              | 9            | 24        | .044           | 1.1 | .032 .8               | .352             | 8.9  | 61 91                          |                         |              |           |                |     |                       |                  |      |                                |
| NQP-1024FSJ             | 10           | 24        | .044           | 1.1 | .032 .8               | .369             | 9.4  | 65 97                          |                         |              |           |                |     |                       |                  |      |                                |
| NQP-1224FSJ             | 12           | 24        | .044           | 1.1 | .032 .8               | .381             | 9.7  | 74 110                         |                         |              |           |                |     |                       |                  |      |                                |
| NQP-1524FSJ             | 15           | 24        | .044           | 1.1 | .032 .8               | .431             | 10.9 | 89 133                         |                         |              |           |                |     |                       |                  |      |                                |
| NQP-1924FSJ             | 19           | 24        | .044           | 1.1 | .032 .8               | .444             | 11.3 | 107 159                        |                         |              |           |                |     |                       |                  |      |                                |
| NQP-2724FSJ             | 27           | 24        | .044           | 1.1 | .032 .8               | .531             | 13.5 | 146 217                        |                         |              |           |                |     |                       |                  |      |                                |

NOTE : Drain wires are same gage as individual conductors in any one group.

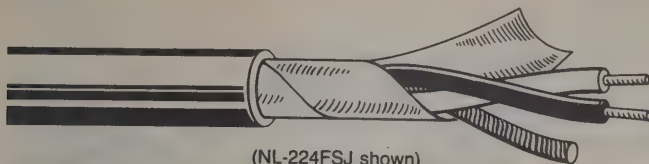
COLOR CODING USED IN TWISTED PAIRS

| PR # | PAIR COLORS       | PR # | PAIR COLORS       | PR # | PAIR COLORS       | PR # | PAIR COLORS        | PR # | PAIR COLORS         | PR # | PAIR COLORS         |
|------|-------------------|------|-------------------|------|-------------------|------|--------------------|------|---------------------|------|---------------------|
| 1    | White with Black  | 11   | Black with Red    | 21   | Brown with Green  | 31   | Orange with Yellow | 41   | Green with Violet   | 51   | Wht/Blk with Green  |
| 2    | White with Brown  | 12   | Black with Orange | 22   | Brown with Blue   | 32   | Orange with Green  | 42   | Green with Gray     | 52   | Wht/Blk with Blue   |
| 3    | White with Red    | 13   | Black with Yellow | 23   | Brown with Violet | 33   | Orange with Blue   | 43   | Blue with Violet    | 53   | Wht/Blk with Violet |
| 4    | White with Orange | 14   | Black with Green  | 24   | Brown with Gray   | 34   | Orange with Violet | 44   | Blue with Gray      | 54   | Wht/Blk with Gray   |
| 5    | White with Yellow | 15   | Black with Blue   | 25   | Red with Orange   | 35   | Orange with Gray   | 45   | Violet with Gray    | 55   | Wht/Brn with Black  |
| 6    | White with Green  | 16   | Black with Violet | 26   | Red with Yellow   | 36   | Yellow with Green  | 46   | Wht/Blk with Black  | 56   | Wht/Brn with Brown  |
| 7    | White with Blue   | 17   | Black with Gray   | 27   | Red with Green    | 37   | Yellow with Blue   | 47   | Wht/Blk with Brown  | 57   | Wht/Brn with Red    |
| 8    | White with Violet | 18   | Brown with Red    | 28   | Red with Blue     | 38   | Yellow with Violet | 48   | Wht/Blk with Red    | 58   | Wht/Brn with Orange |
| 9    | White with Gray   | 19   | Brown with Orange | 29   | Red with Violet   | 39   | Yellow with Grey   | 49   | Wht/Blk with Orange | 59   | Wht/Brn with Yellow |
| 10   | Black with Brown  | 20   | Brown with Yellow | 30   | Red with Gray     | 40   | Green with Blue    | 50   | Wht/Blk with Yellow | 60   | Wht/Brn with Green  |

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CAGE CODE 04569







(NL-224FSJ shown)

## SIGNAL & CONTROL TRAY CABLES

National Wire & Cable Corporation manufactures a complete line of DUAL-RATED multiconductor NEC TRAY CABLE Type CL2, for signal, instrumentation and control uses. Also UL rated for use as 300 Volt Appliance Wiring Material (AWM). These are available as cabled singles or pairs, with optional overall shield of aluminum-Mylar foil with drain wire.

Cabled conductors use stranded tinned copper wire with 0.010" wall of tough extruded poly-vinyl-chloride (PVC) insulation, rated for 300. Volt use under U.L. Style 2464.

All wires are color coded using 10 standard solid colors plus white with stripes. Cabled singles are color coded the same as our NQ and NX cable families per MIL-STD-681. (See table in Tech section.) Cabled pairs are color coded the same as our NQP and NXP cable families.

Conductors are helically cabled and laid for optimum flexibility, with a Mylar tape barrier wrap (or Mylar+ Foil) applied between cabled wire bundle and outer jacket.

Shielded cables have an overall Aluminum-Mylar foil shielding tape helically wrapped over cable and a tinned uninsulated drain wire for shield connection. (Use FSJ part number suffix.) For optional composite tinned copper RFI braid(s) + foil shielding, consult factory.

Outer jacket is a special highly flexible abrasion-resistant gray poly-vinyl-chloride (PVC) thermoplastic. DUAL-RATED jacket compound meets the requirements of both U.L. Style 2464 AWM and U.L. 13 Type CL2 TRAY CABLE. Jacket is surface printed with both UL 2464 AWM and U.L. 13 Type CL2 TRAY CABLE identifiers. Jacket wall thickness is .032" nom.

Finished cables comply with applicable U.L. tests for N.E.C. Type CL2 TRAY CABLE Vertical Tray Flame Spread. All materials are flame-spread retardant and fungus resistant. The products are DUAL-RATED for AWM use as U.L. Style 2464 300 Volt, 80°C, OR for U.L. 13 Type CL2 TRAY CABLE 105°C use.

Standard putups: 500 ft. and 1000 ft. No-deposit reels. For shorter quantities or specific lengths consult factory.

## TRAY CABLES NEC 725

## CABLED SINGLES (NL SERIES)



### TECHNICAL DATA (all cables)

#### Rated Working Voltage:

300 VOLTS for AWM uses.

#### Rated Temperature:

DUAL-RATED: + 105°C or + 80°C dependent on AGENCY intended use. See below.

#### Insulation Breakdown Voltage:

Greater than 1000 Volts AC RMS at 60 Hz.

#### Capacitance:

Nominal capacitance from a wire to all else in a cable ranges from 25 to 45 PF/FT at 1 Khz, depending on AWG and position.

#### Insulation Leakage:

100 Megohms/1000 feet minimum @ 500 VDC; from a conductor to all else in a cable, at 25°C.

#### U.L. Agency Voltage & Temperature Ratings:

UL rated: + 80°C AWM, 300 VOLT per UL Style 2464. UL rated + 105°C CL2 TRAY CABLE per UL 13, NEC Type CL2.

#### Bending Characteristics:

All cables are suitable for flexing to a circle diameter of 8 cable diameters from + 105°C to - 10°C. The flex diameter should be greater than 20 cable diameters for flexing at - 20°C.

#### Characteristic Impedance:

RF Impedance of twisted pairs or adjacent singles is: 87 ohms in AWG 24; 80 ohms in AWG 22. Suitable for digital signals.

## MULTI-CONDUCTOR STOCK CABLED SINGLES

Conductor sizes 24, 22 are 7 strand. All others 19 strand.

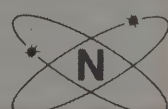
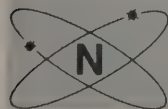
| UNSHIELDED |              |           |           |                 | OVERALL FOIL SHIELDED ( w/drain) |              |           |           |                 | OVERALL BRAIDED SHIELD |              |           |           |                 |
|------------|--------------|-----------|-----------|-----------------|----------------------------------|--------------|-----------|-----------|-----------------|------------------------|--------------|-----------|-----------|-----------------|
| Part No.   | No. of Cond. | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.                         | No. of Cond. | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.               | No. of Cond. | Cond. AWG | Nom. O.D. | Weight LB/K ft. |
| NL-224J    | 2            | 24        | .156      | 11              | NL-224FSJ                        | 2            | 24        | .158      | 13              | NL-224SJ               | 2            | 24        | .176      | 19              |
| NL-324J    | 3            | 24        | .163      | 14              | NL-324FSJ                        | 3            | 24        | .165      | 15              | NL-324SJ               | 3            | 24        | .183      | 22              |
| NL-424J    | 4            | 24        | .174      | 17              | NL-424FSJ                        | 4            | 24        | .176      | 18              | NL-424SJ               | 4            | 24        | .194      | 25              |
| NL-524J    | 5            | 24        | .187      | 19              | NL-524FSJ                        | 5            | 24        | .189      | 21              | NL-524SJ               | 5            | 24        | .207      | 29              |
| NL-624J    | 6            | 24        | .200      | 22              | NL-624FSJ                        | 6            | 24        | .202      | 24              | NL-624SJ               | 6            | 24        | .220      | 33              |
| NL-724J    | 7            | 24        | .200      | 24              | NL-724FSJ                        | 7            | 24        | .202      | 25              | NL-724SJ               | 7            | 24        | .220      | 35              |
| NL-824J    | 8            | 24        | .231      | 28              | NL-824FSJ                        | 8            | 24        | .233      | 30              | NL-824SJ               | 8            | 24        | .251      | 41              |
| NL-924J    | 9            | 24        | .244      | 31              | NL-924FSJ                        | 9            | 24        | .246      | 32              | NL-924SJ               | 9            | 24        | .264      | 44              |
| NL-1024J   | 10           | 24        | .244      | 33              | NL-1024FSJ                       | 10           | 24        | .246      | 34              | NL-1024SJ              | 10           | 24        | .264      | 46              |
| NL-1224J   | 12           | 24        | .251      | 37              | NL-1224FSJ                       | 12           | 24        | .253      | 39              | NL-1224SJ              | 12           | 24        | .271      | 51              |
| NL-1524J   | 15           | 24        | .275      | 45              | NL-1524FSJ                       | 15           | 24        | .277      | 46              | NL-1524SJ              | 15           | 24        | .295      | 61              |
| NL-1924J   | 19           | 24        | .288      | 54              | NL-1924FSJ                       | 19           | 24        | .290      | 55              | NL-1924SJ              | 19           | 24        | .308      | 70              |
| NL-2724J   | 27           | 24        | .339      | 73              | NL-2724FSJ                       | 27           | 24        | .341      | 75              | NL-2724SJ              | 27           | 24        | .359      | 93              |
| NL-3724J   | 37           | 24        | .376      | 96              | NL-3724FSJ                       | 37           | 24        | .378      | 97              | NL-3724SJ              | 37           | 24        | .401      | 127             |
| NL-4824J   | 48           | 24        | .424      | 121             | NL-4824FSJ                       | 48           | 24        | .427      | 122             | NL-4824SJ              | 48           | 24        | .450      | 157             |
| NL-6024J   | 60           | 24        | .464      | 148             | NL-6024FSJ                       | 60           | 24        | .466      | 149             | NL-6024SJ              | 60           | 24        | .489      | 187             |
| NL-222J    | 2            | 22        | .168      | 14              | NL-222FSJ                        | 2            | 22        | .170      | 16              | NL-222SJ               | 2            | 22        | .188      | 22              |
| NL-322J    | 3            | 22        | .176      | 17              | NL-322FSJ                        | 3            | 22        | .178      | 20              | NL-322SJ               | 3            | 22        | .196      | 26              |
| NL-422J    | 4            | 22        | .188      | 21              | NL-422FSJ                        | 4            | 22        | .190      | 23              | NL-422SJ               | 4            | 22        | .208      | 31              |
| NL-522J    | 5            | 22        | .203      | 25              | NL-522FSJ                        | 5            | 22        | .205      | 27              | NL-522SJ               | 5            | 22        | .223      | 35              |
| NL-622J    | 6            | 22        | .218      | 29              | NL-622FSJ                        | 6            | 22        | .220      | 31              | NL-622SJ               | 6            | 22        | .238      | 40              |
| NL-722J    | 7            | 22        | .218      | 32              | NL-722FSJ                        | 7            | 22        | .220      | 34              | NL-722SJ               | 7            | 22        | .238      | 43              |
| NL-822J    | 8            | 22        | .253      | 37              | NL-822FSJ                        | 8            | 22        | .255      | 39              | NL-822SJ               | 8            | 22        | .273      | 51              |
| NL-922J    | 9            | 22        | .268      | 40              | NL-922FSJ                        | 9            | 22        | .270      | 43              | NL-922SJ               | 9            | 22        | .288      | 56              |
| NL-1022J   | 10           | 22        | .268      | 43              | NL-1022FSJ                       | 10           | 22        | .270      | 46              | NL-1022SJ              | 10           | 22        | .288      | 58              |
| NL-1222J   | 12           | 22        | .276      | 50              | NL-1222FSJ                       | 12           | 22        | .278      | 52              | NL-1222SJ              | 12           | 22        | .296      | 65              |
| NL-1522J   | 15           | 22        | .303      | 60              | NL-1522FSJ                       | 15           | 22        | .305      | 62              | NL-1522SJ              | 15           | 22        | .323      | 78              |
| NL-1922J   | 19           | 22        | .318      | 73              | NL-1922FSJ                       | 19           | 22        | .320      | 75              | NL-1922SJ              | 19           | 22        | .338      | 91              |
| NL-2722J   | 27           | 22        | .376      | 100             | NL-2722FSJ                       | 27           | 22        | .378      | 102             | NL-2722SJ              | 27           | 22        | .401      | 131             |
| NL-3722J   | 37           | 22        | .418      | 131             | NL-3722FSJ                       | 37           | 22        | .420      | 134             | NL-3722SJ              | 37           | 22        | .443      | 167             |
| NL-4822J   | 48           | 22        | .473      | 167             | NL-4822FSJ                       | 48           | 22        | .475      | 169             | NL-4822SJ              | 48           | 22        | .498      | 207             |
| NL-6022J   | 60           | 22        | .518      | 205             | NL-6022FSJ                       | 60           | 22        | .520      | 207             | NL-6022SJ              | 60           | 22        | .543      | 249             |

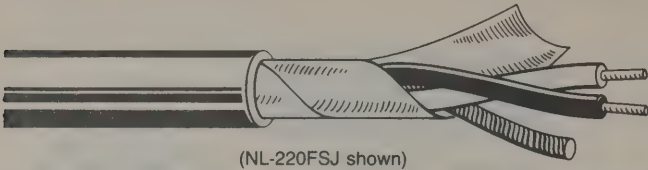
## NATIONAL WIRE & CABLE CORPORATION

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CAGE CODE 04569





(NL-220FSJ shown)

SIGNAL & CONTROL TRAY CABLES

TRAY CABLES  
NEC 725

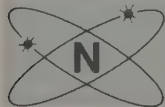
CABLED SINGLES  
(NL SERIES)



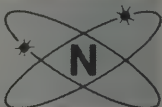
MULTI-CONDUCTOR STOCK CABLED SINGLES continued from previous page.

| UNSHIELDED |              |           |           |                 | OVERALL FOIL SHIELDED ( w/drain) |              |           |           |                 | OVERALL BRAIDED SHIELD |              |           |           |                 |
|------------|--------------|-----------|-----------|-----------------|----------------------------------|--------------|-----------|-----------|-----------------|------------------------|--------------|-----------|-----------|-----------------|
| Part No.   | No. of Cond. | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.                         | No. of Cond. | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.               | No. of Cond. | Cond. AWG | Nom. O.D. | Weight LB/K ft. |
| NL-220J    | 2            | 20        | .184      | 18              | NL-220FSJ                        | 2            | 20        | .186      | 22              | NL-220SJ               | 2            | 20        | .204      | 28              |
| NL-320J    | 3            | 20        | .193      | 24              | NL-320FSJ                        | 3            | 20        | .195      | 28              | NL-320SJ               | 3            | 20        | .213      | 34              |
| NL-420J    | 4            | 20        | .207      | 29              | NL-420FSJ                        | 4            | 20        | .209      | 33              | NL-420SJ               | 4            | 20        | .227      | 40              |
| NL-520J    | 5            | 20        | .225      | 35              | NL-520FSJ                        | 5            | 20        | .227      | 39              | NL-520SJ               | 5            | 20        | .245      | 47              |
| NL-620J    | 6            | 20        | .242      | 41              | NL-620FSJ                        | 6            | 20        | .244      | 45              | NL-620SJ               | 6            | 20        | .262      | 54              |
| NL-720J    | 7            | 20        | .242      | 46              | NL-720FSJ                        | 7            | 20        | .244      | 49              | NL-720SJ               | 7            | 20        | .262      | 59              |
| NL-820J    | 8            | 20        | .283      | 53              | NL-820FSJ                        | 8            | 20        | .285      | 56              | NL-820SJ               | 8            | 20        | .303      | 69              |
| NL-920J    | 9            | 20        | .300      | 58              | NL-920FSJ                        | 9            | 20        | .302      | 62              | NL-920SJ               | 9            | 20        | .320      | 76              |
| NL-1020J   | 10           | 20        | .300      | 63              | NL-1020FSJ                       | 10           | 20        | .302      | 67              | NL-1020SJ              | 10           | 20        | .320      | 80              |
| NL-1220J   | 12           | 20        | .309      | 73              | NL-1220FSJ                       | 12           | 20        | .311      | 77              | NL-1220SJ              | 12           | 20        | .329      | 91              |
| NL-1520J   | 15           | 20        | .341      | 89              | NL-1520FSJ                       | 15           | 20        | .343      | 90              | NL-1520SJ              | 15           | 20        | .361      | 109             |
| NL-1920J   | 19           | 20        | .358      | 109             | NL-1920FSJ                       | 19           | 20        | .360      | 113             | NL-1920SJ              | 19           | 20        | .378      | 130             |
| NL-2720J   | 27           | 20        | .425      | 151             | NL-2720FSJ                       | 27           | 20        | .427      | 155             | NL-2720SJ              | 27           | 20        | .450      | 187             |
| NL-3720J   | 37           | 20        | .474      | 201             | NL-3720FSJ                       | 37           | 20        | .476      | 205             | NL-3720SJ              | 37           | 20        | .499      | 242             |
| NL-218J    | 2            | 18        | .204      | 24              | NL-218FSJ                        | 2            | 18        | .206      | 20              | NL-218SJ               | 2            | 18        | .224      | 35              |
| NL-318J    | 3            | 18        | .215      | 32              | NL-318FSJ                        | 3            | 18        | .217      | 38              | NL-318SJ               | 3            | 18        | .235      | 43              |
| NL-418J    | 4            | 18        | .231      | 40              | NL-418FSJ                        | 4            | 18        | .233      | 46              | NL-418SJ               | 4            | 18        | .251      | 52              |
| NL-518J    | 5            | 18        | .252      | 48              | NL-518FSJ                        | 5            | 18        | .254      | 54              | NL-518SJ               | 5            | 18        | .272      | 62              |
| NL-618J    | 6            | 18        | .272      | 56              | NL-618FSJ                        | 6            | 18        | .274      | 62              | NL-618SJ               | 6            | 18        | .292      | 71              |
| NL-718J    | 7            | 18        | .272      | 63              | NL-718FSJ                        | 7            | 18        | .274      | 69              | NL-718SJ               | 7            | 18        | .293      | 78              |
| NL-818J    | 8            | 18        | .320      | 73              | NL-818FSJ                        | 8            | 18        | .322      | 79              | NL-818SJ               | 8            | 18        | .340      | 91              |
| NL-918J    | 9            | 18        | .340      | 81              | NL-918FSJ                        | 9            | 18        | .342      | 87              | NL-918SJ               | 9            | 18        | .360      | 101             |
| NL-1018J   | 10           | 18        | .340      | 88              | NL-1018FSJ                       | 10           | 18        | .342      | 94              | NL-1018SJ              | 10           | 18        | .360      | 108             |
| NL-1218J   | 12           | 18        | .351      | 102             | NL-1218FSJ                       | 12           | 18        | .353      | 108             | NL-1218SJ              | 12           | 18        | .371      | 123             |
| NL-1518J   | 15           | 18        | .388      | 126             | NL-1518FSJ                       | 15           | 18        | .390      | 131             | NL-1518SJ              | 15           | 18        | .413      | 158             |
| NL-1918J   | 19           | 18        | .408      | 155             | NL-1918FSJ                       | 19           | 18        | .410      | 180             | NL-1918SJ              | 19           | 18        | .433      | 189             |
| NL-2718J   | 27           | 18        | .487      | 215             | NL-2718FSJ                       | 27           | 18        | .489      | 221             | NL-2718SJ              | 27           | 18        | .512      | 257             |

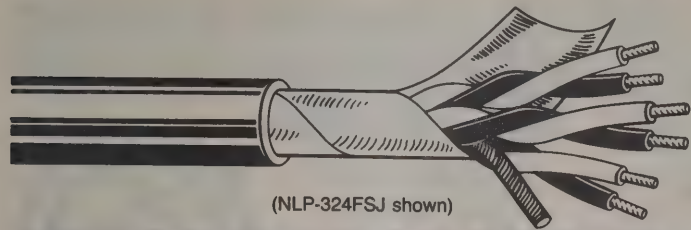
- NOTES: 1. Available in other conductor sizes.  
2. Available in other jacket colors.



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CAGE CODE 04569







TRAY CABLES  
NEC 725

TWISTED PAIRS  
(NLP SERIES)



SIGNAL & CONTROL TRAY CABLES

National Wire & Cable Corporation manufactures a complete line of DUAL-RATED multiconductor NEC TRAY CABLE Type CL2, for signal, instrumentation and control uses. Also UL rated for use as 300 Volt Appliance Wiring Material (AWM). These are available as cabled singles or pairs, with optional overall shield of aluminum-Mylar foil with drain wire.

Cabled conductors use stranded tinned copper wire with 0.010" wall of tough extruded poly-vinyl-chloride (PVC) insulation, rated for 300. Volt use under U.L. Style 2464.

All wires are color coded using 10 standard solid colors plus white with stripes. Cabled singles are color coded the same as our NQ and NX cable families per MIL-STD-681. (See table in Tech section.) Cabled pairs are color coded the same as our NQP and NXP cable families.

Conductors are helically cabled and laid for optimum flexibility, with a Mylar tape barrier wrap (or Mylar + Foil) applied between cabled wire bundle and outer jacket.

Shielded cables have an overall Aluminum-Mylar foil shielding tape helically wrapped over cable and a tinned uninsulated drain wire for shield connection. (Use FSJ part number suffix.) For optional composite tinned copper RFI braid(s) + foil shielding, consult factory.

Outer jacket is a special highly flexible, abrasion-resistant gray poly-vinyl-chloride (PVC) thermoplastic. DUAL-RATED jacket compound meets the requirements of both U.L. Style 2464 AWM and U.L. Type CL2 TRAY CABLE. Jacket is surface printed with both U.L. 2464 AWM and U.L. 13 Type CL2 TRAY CABLE identifiers. Jacket wall thickness is .032" nom.

Finished cables comply with applicable U.L. tests for N.E.C. Type CL2 TRAY CABLE Vertical Tray Flame Spread. All materials are flame-spread retardant and fungus resistant. The products are DUAL-RATED for AWM use as U.L. Style 2464 300 Volt, 80°C, OR for U.L. 13 Type CL2 TRAY CABLE 105°C use.

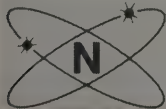
Standard putups: 500 ft. and 1000 ft. No-deposit reels. For shorter quantities or specific lengths consult factory.

TECHNICAL DATA (all cables)

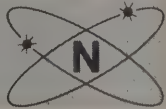
- Rated Working Voltage:** 300 VOLTS for AWM uses.
- Rated Temperature:** DUAL-RATED: + 105°C or + 80°C dependent on AGENCY intended use. See below.
- Insulation Breakdown Voltage:** Greater than 1000 Volts AC RMS at 60 Hz.
- Capacitance:** Nominal capacitance from a wire to all else in a cable ranges from 25 to 45 PF/FT at 1 Khz, depending on AWG and position.
- Insulation Leakage:** 100 Megohms/1000 feet minimum @ 500 VDC; from a conductor to all else in a cable, at 25°C.
- U.L. Agency Voltage & Temperature Ratings:** UL rated: + 80°C AWM, 300 VOLT per UL Style 2464. UL rated + 105°C CL2 TRAY CABLE per UL 13, NEC Type CL2.
- Bending Characteristics:** All cables are suitable for flexing to a circle diameter of 8 cable diameters from + 105°C to - 10°C. The flex diameter should be greater than 20 cable diameters for flexing at - 20°C.
- Characteristic Impedance:** RF Impedance of twisted pairs or adjacent singles is: 87 ohms in AWG 24; 80 ohms in AWG 22. Suitable for digital signals.

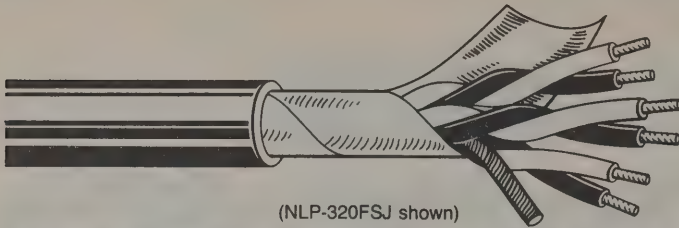
MULTI-CONDUCTOR STOCK CABLED SINGLES Conductor sizes 24, 22 are 7 strand. All others 19 strand.

| UNSHIELDED |              |           |           |                 | OVERALL FOIL SHIELDED ( w/drain) |              |           |           |                 | OVERALL BRAIDED SHIELD |              |           |           |                 |
|------------|--------------|-----------|-----------|-----------------|----------------------------------|--------------|-----------|-----------|-----------------|------------------------|--------------|-----------|-----------|-----------------|
| Part No.   | No. of Pairs | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.                         | No. of Pairs | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.               | No. of Pairs | Cond. AWG | Nom. O.D. | Weight LB/K ft. |
| NLP-224J   | 2            | 24        | .218      | 21              | NLP-224FSJ                       | 2            | 24        | .220      | 22              | NLP-224SJ              | 2            | 24        | .238      | 34              |
| NLP-324J   | 3            | 24        | .230      | 26              | NLP-324FSJ                       | 3            | 24        | .232      | 27              | NLP-324SJ              | 3            | 24        | .250      | 40              |
| NLP-424J   | 4            | 24        | .253      | 31              | NLP-424FSJ                       | 4            | 24        | .255      | 32              | NLP-424SJ              | 4            | 24        | .273      | 47              |
| NLP-524J   | 5            | 24        | .279      | 37              | NLP-524FSJ                       | 5            | 24        | .281      | 38              | NLP-524SJ              | 5            | 24        | .299      | 54              |
| NLP-624J   | 6            | 24        | .306      | 42              | NLP-624FSJ                       | 6            | 24        | .308      | 44              | NLP-624SJ              | 6            | 24        | .326      | 62              |
| NLP-724J   | 7            | 24        | .292      | 46              | NLP-724FSJ                       | 7            | 24        | .294      | 48              | NLP-724SJ              | 7            | 24        | .312      | 66              |
| NLP-824J   | 8            | 24        | .367      | 54              | NLP-824FSJ                       | 8            | 24        | .369      | 55              | NLP-824SJ              | 8            | 24        | .387      | 78              |
| NLP-924J   | 9            | 24        | .350      | 60              | NLP-924FSJ                       | 9            | 24        | .352      | 61              | NLP-924SJ              | 9            | 24        | .370      | 85              |
| NLP-1024J  | 10           | 24        | .367      | 64              | NLP-1024FSJ                      | 10           | 24        | .369      | 65              | NLP-1024SJ             | 10           | 24        | .387      | 89              |
| NLP-1224J  | 12           | 24        | .379      | 73              | NLP-1224FSJ                      | 12           | 24        | .381      | 74              | NLP-1224SJ             | 12           | 24        | .404      | 109             |
| NLP-1524J  | 15           | 24        | .429      | 88              | NLP-1524FSJ                      | 15           | 24        | .431      | 89              | NLP-1524SJ             | 15           | 24        | .454      | 129             |
| NLP-1924J  | 19           | 24        | .442      | 106             | NLP-1924FSJ                      | 19           | 24        | .444      | 107             | NLP-1924SJ             | 19           | 24        | .467      | 149             |
| NLP-2724J  | 27           | 24        | .529      | 144             | NLP-2724FSJ                      | 27           | 24        | .531      | 146             | NLP-2724SJ             | 27           | 24        | .554      | 198             |
| NLP-222J   | 2            | 22        | .238      | 26              | NLP-222FSJ                       | 2            | 22        | .240      | 28              | NLP-222SJ              | 2            | 22        | .258      | 41              |
| NLP-322J   | 3            | 22        | .252      | 33              | NLP-322FSJ                       | 3            | 22        | .254      | 35              | NLP-322SJ              | 3            | 22        | .272      | 49              |
| NLP-422J   | 4            | 22        | .278      | 40              | NLP-422FSJ                       | 4            | 22        | .280      | 42              | NLP-422SJ              | 4            | 22        | .298      | 58              |
| NLP-522J   | 5            | 22        | .308      | 47              | NLP-522FSJ                       | 5            | 22        | .310      | 50              | NLP-522SJ              | 5            | 22        | .328      | 67              |
| NLP-622J   | 6            | 22        | .338      | 55              | NLP-622FSJ                       | 6            | 22        | .340      | 57              | NLP-622SJ              | 6            | 22        | .358      | 77              |
| NLP-722J   | 7            | 22        | .323      | 61              | NLP-722FSJ                       | 7            | 22        | .325      | 63              | NLP-722SJ              | 7            | 22        | .343      | 83              |
| NLP-822J   | 8            | 22        | .408      | 71              | NLP-822FSJ                       | 8            | 22        | .410      | 73              | NLP-822SJ              | 8            | 22        | .433      | 108             |
| NLP-922J   | 9            | 22        | .388      | 79              | NLP-922FSJ                       | 9            | 22        | .390      | 81              | NLP-922SJ              | 9            | 22        | .413      | 119             |
| NLP-1022J  | 10           | 22        | .408      | 85              | NLP-1022FSJ                      | 10           | 22        | .410      | 87              | NLP-1022SJ             | 10           | 22        | .433      | 124             |
| NLP-1222J  | 12           | 22        | .422      | 97              | NLP-1222FSJ                      | 12           | 22        | .424      | 99              | NLP-1222SJ             | 12           | 22        | .447      | 139             |
| NLP-1522J  | 15           | 22        | .478      | 118             | NLP-1522FSJ                      | 15           | 22        | .480      | 120             | NLP-1522SJ             | 15           | 22        | .503      | 165             |
| NLP-1922J  | 19           | 22        | .493      | 143             | NLP-1922FSJ                      | 19           | 22        | .495      | 146             | NLP-1922SJ             | 19           | 22        | .518      | 193             |
| NLP-2722J  | 27           | 22        | .592      | 197             | NLP-2722FSJ                      | 27           | 22        | .594      | 199             | NLP-2722SJ             | 27           | 22        | .617      | 257             |



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CAGE CODE 04569





TRAY CABLES  
NEC 725

TWISTED PAIRS  
(NLP SERIES)

SIGNAL & CONTROL TRAY CABLES



MULTI-CONDUCTOR STOCK CABLED SINGLES continued from previous page.

| UNSHIELDED |              |           |           |                 | OVERALL FOIL SHIELDED ( w/drain) |              |           |           |                 | OVERALL BRAIDED SHIELD |              |           |           |                 |
|------------|--------------|-----------|-----------|-----------------|----------------------------------|--------------|-----------|-----------|-----------------|------------------------|--------------|-----------|-----------|-----------------|
| Part No.   | No. of Pairs | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.                         | No. of Pairs | Cond. AWG | Nom. O.D. | Weight LB/K ft. | Part No.               | No. of Pairs | Cond. AWG | Nom. O.D. | Weight LB/K ft. |
| NLP-220J   | 2            | 20        | .265      | 35              | NLP-220FSJ                       | 2            | 20        | .267      | 39              | NLP-220SJ              | 2            | 20        | .285      | 52              |
| NLP-320J   | 3            | 20        | .281      | 45              | NLP-320FSJ                       | 3            | 20        | .283      | 49              | NLP-320SJ              | 3            | 20        | .301      | 64              |
| NLP-420J   | 4            | 20        | .312      | 56              | NLP-420FSJ                       | 4            | 20        | .314      | 60              | NLP-420SJ              | 4            | 20        | .332      | 77              |
| NLP-520J   | 5            | 20        | .346      | 68              | NLP-520FSJ                       | 5            | 20        | .348      | 72              | NLP-520SJ              | 5            | 20        | .366      | 91              |
| NLP-620J   | 6            | 20        | .381      | 79              | NLP-620FSJ                       | 6            | 20        | .383      | 83              | NLP-620SJ              | 6            | 20        | .401      | 105             |
| NLP-720J   | 7            | 20        | .364      | 89              | NLP-720FSJ                       | 7            | 20        | .366      | 93              | NLP-720SJ              | 7            | 20        | .384      | 114             |
| NLP-820J   | 8            | 20        | .462      | 103             | NLP-820FSJ                       | 8            | 20        | .464      | 107             | NLP-820SJ              | 8            | 20        | .488      | 146             |
| NLP-920J   | 9            | 20        | .439      | 115             | NLP-920FSJ                       | 9            | 20        | .441      | 119             | NLP-920SJ              | 9            | 20        | .464      | 161             |
| NLP-1020J  | 10           | 20        | .462      | 124             | NLP-1020FSJ                      | 10           | 20        | .464      | 128             | NLP-1020SJ             | 10           | 20        | .488      | 170             |
| NLP-1220J  | 12           | 20        | .478      | 144             | NLP-1220FSJ                      | 12           | 20        | .480      | 148             | NLP-1220SJ             | 12           | 20        | .503      | 192             |
| NLP-1520J  | 15           | 20        | .544      | 176             | NLP-1520FSJ                      | 15           | 20        | .546      | 180             | NLP-1520SJ             | 15           | 20        | .569      | 230             |
| NLP-1920J  | 19           | 20        | .561      | 216             | NLP-1920FSJ                      | 19           | 20        | .563      | 220             | NLP-1920SJ             | 19           | 20        | .586      | 273             |
| NLP-2720J  | 27           | 20        | .675      | 300             | NLP-2720FSJ                      | 27           | 20        | .677      | 304             | NLP-2720SJ             | 27           | 20        | .701      | 369             |
| NLP-218J   | 2            | 18        | .299      | 46              | NLP-218FSJ                       | 2            | 18        | .301      | 52              | NLP-218SJ              | 2            | 18        | .319      | 66              |
| NLP-318J   | 3            | 18        | .318      | 61              | NLP-318FSJ                       | 3            | 18        | .320      | 67              | NLP-318SJ              | 3            | 18        | .338      | 83              |
| NLP-418J   | 4            | 18        | .354      | 77              | NLP-418FSJ                       | 4            | 18        | .356      | 83              | NLP-418SJ              | 4            | 18        | .374      | 101             |
| NLP-518J   | 5            | 18        | .394      | 94              | NLP-518FSJ                       | 5            | 18        | .396      | 99              | NLP-518SJ              | 5            | 18        | .420      | 130             |
| NLP-618J   | 6            | 18        | .435      | 110             | NLP-618FSJ                       | 6            | 18        | .437      | 116             | NLP-618SJ              | 6            | 18        | .460      | 151             |
| NLP-718J   | 7            | 18        | .415      | 124             | NLP-718FSJ                       | 7            | 18        | .417      | 130             | NLP-718SJ              | 7            | 18        | .440      | 164             |
| NLP-1218J  | 12           | 18        | .549      | 203             | NLP-1218FSJ                      | 12           | 18        | .551      | 209             | NLP-1218SJ             | 12           | 18        | .574      | 258             |

- NOTES: 1. Available in other conductor sizes.  
2. Available in other jacket colors.

OTHER SPECIAL PURPOSE CABLES

ANTENNA ROTOR CABLE

| Part No. | No. Cond. | AWG/Str. | Ins. OD  | Jkt Wall | Nom. OD | Weight Lb/M' |
|----------|-----------|----------|----------|----------|---------|--------------|
| NQ 818J  | 8         | 18/19    | .068 pvc | .032     | .320    | 73           |

\*See Page 2, Section 5 for specifications

LOW CAPACITANCE MICROPHONE CABLE (ULTRA-LIMP, ULTRA-QUIET)

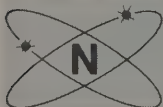
| Part No. | No. Cond. | AWG/Str.  | Ins. OD   | Jkt Wall | Nom. OD | Weight Lb/M' |
|----------|-----------|-----------|-----------|----------|---------|--------------|
| S10-8819 | 2         | 24/105 BC | 0.060" pe | .040"    | .220"   | 24.          |
| S10-9109 | 4         | 24/41 BC  | 0.054" pe | .045"    | .245"   | 29.          |

TRANSDUCER CABLE, SHIELDED (For Low Level Uses)

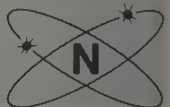
| Part No. | No. Cond. | AWG/Str. | Ins. OD   | Jkt Wall | Nom. OD | Weight Lb/M' |
|----------|-----------|----------|-----------|----------|---------|--------------|
| S10-6023 | 4         | 22/19    | 0.054 pvc | .030"    | .210"   | 31.          |

SEISMIC GEOPHONE CABLE (Digital Signals)

| Part No. | No. Cond. | AWG/Str. | Ins. OD | Jkt Wall | Nom. OD | Weight Lb/M' |
|----------|-----------|----------|---------|----------|---------|--------------|
| D-2362   | 2         | 20/19    | 130 Ohm | .045     | .370    | 54.          |



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CAGE CODE 04569





**SIGNAL & CONTROL TRAY CABLES****NEC 725 TRAY CABLES "PLTC"****STANDARD PLTC CABLES**

UL RATED: 300 VOLTS, 105°C.

**PAIRS:**

| PLTC UNSHIELDED PAIR CABLE |       |     |              | PLTC FOIL-SHIELDED PAIR CABLE |       |     |              |
|----------------------------|-------|-----|--------------|-------------------------------|-------|-----|--------------|
| PART NO.                   | COND. | AWG | DIAM. INCHES | PART NO.                      | COND. | AWG | DIAM. INCHES |
| NG222J                     | 2     | 22  | .170         | NG222FSJ                      | 2     | 22  | .176         |
| NG220J                     | 2     | 20  | .190         | NG220FSJ                      | 2     | 20  | .196         |
| NG218J                     | 2     | 18  | .206         | NG218FSJ                      | 2     | 18  | .212         |
| NG216J                     | 2     | 16  | .220         | NG216FSJ                      | 2     | 16  | .226         |

**TRIOS:**

| PLTC UNSHIELDED TRIO CABLE |       |     |              | PLTC FOIL-SHIELDED TRIO CABLE |       |     |              |
|----------------------------|-------|-----|--------------|-------------------------------|-------|-----|--------------|
| PART NO.                   | COND. | AWG | DIAM. INCHES | PART NO.                      | COND. | AWG | DIAM. INCHES |
| NG322J                     | 3     | 22  | .179         | NG322FSJ                      | 3     | 22  | .185         |
| NG320J                     | 3     | 20  | .200         | NG320FSJ                      | 3     | 20  | .206         |
| NG318J                     | 3     | 18  | .218         | NG318FSJ                      | 3     | 18  | .224         |
| NG316J                     | 3     | 16  | .233         | NG316FSJ                      | 3     | 16  | .239         |

**PLTC CABLE CONSTRUCTION:**

ALL PLTC CABLES USE 0.012" (min.) WALL OF 105°C PVC WIRE INSULATION, PLUS AN OVERALL 0.032" WALL OF SPECIAL FLAME-SPREAD-RESISTANT BLACK PVC JACKET.

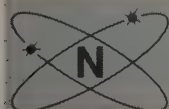
U.L. LISTED AS SUNLIGHT-RESISTANT "PLTC" TRAY CABLE.  
 (PLTC is abbreviation of NEC "POWER-LIMITED TRAY CABLE")  
 ALSO AVAILABLE AS CL3 (NOT SUNLIGHT RESISTANT)

**RELATIVE PERFORMANCE:**

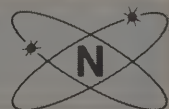
THE NATIONAL PLTC CABLES ARE **VERY** SIMILAR IN PERFORMANCE TO THE NATIONAL "NQ" FAMILY OF FLEXIBLE CABLES.

**STANDARD PUTUP:** 500 FT. REELS (NON RETURNABLE REELS)

STANDARD COLORS: PAIRS; BLACK & RED. TRIOS; BLACK, RED, WHITE. MANY OTHER PLTC CONSTRUCTIONS CAN BE MADE TO ORDER. CONSULT FACTORY FOR OTHER LARGER "PLTC" CABLES.



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 CAGE CODE 04569



## DIGITAL DATA TRANSMISSION CABLES



U.S. Pat. No. 3489844



### (D-200 SERIES)

#### UL AWM STYLE 2835

Meets E.I.A. Standards RS-422,  
RS-423, RS-485

## LOW VOLTAGE COMPUTER CABLE

THE D-200 SERIES CABLES ARE MULTIPLE-PAIR FLEXIBLE CABLES DESIGNED FOR TRANSMISSION OF DIGITAL PULSE SIGNALS BETWEEN A COMPUTER AND ITS PERIPHERAL EQUIPMENT.

### DESIGN FEATURES OF THE D-200 SERIES DIGITAL DATA CABLE

Unlike conventional flexible cable construction the primary features offered by the D-200 series data cable are the high and accurately controlled characteristic impedance of every pair, regardless of its position in the cable and special geometry chosen to reduce crosstalk.

#### ADVANTAGES

1. Less crosstalk and noise from mismatched loads, due to proper matching.
2. Uniform light loading on drivers allows direct I.C. drive, accurate prediction of current demands from power supply, and driver power dissipation.
3. Proper load match reduces re-flection and inversion noise where driver end is not matched to line. (Typical of TTL.)
4. Special geometry and pair construction provides exceptionally close capacitance balance between pair wires, reducing differential crosstalk.

#### USAGE

We recommend use of balanced drive and differential-input line receivers for lowest crosstalk and best pulse reproduction, utilizing the 110 ohm balanced impedance of the pairs. With such a system, TTL speeds have been used in D-200 cable at 1 mc data rates over 1000 ft.

Where the system is single-ended drive and receive, all pairs exhibit the 78 ohm impedance. Since these line receivers cannot discriminate between noise and the desired signal, crosstalk limits the cable distance over which transmission is reliable. Typical runs for DTL having 50 ns risetimes are 200 ft. Where risetimes can be slowed to longer than 100 ns, run lengths are practical to 500 ft. Without differential line reception, runs over 500 ft. are not recommended for D-200 cable due to external noise aspects.

The D-210 series cables are recommended for high noise or long-run application. (Utilizing individual shields.)

Although use of balanced drive and differential line reception will avoid most noise problems, there are some installations where the expected external noise is unknown but assumed to be very great. Here, the use of data cables having individually-shielded pairs may be considered as conservative engineering practice. The assurance of a lower received noise may justify the increased size cost and risetime.

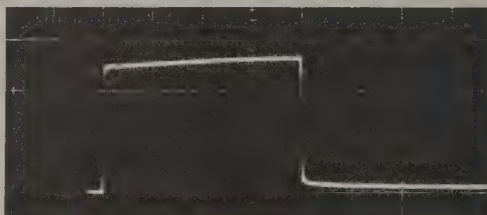
For these high noise-long run applications, Dynatronic Cable Engineering Corp. has developed the D-210 series data cables. Electrical performance is essentially the same as the D-200 series cables, which use only an overall shield. <sup>Δ</sup>An overall tinned-copper shield braid may be specified on either series by the suffix -RF on the part number. Standard D-200 shield is aluminum-mylar foil. THE D220 AND D222 SERIES CABLES ARE RECOMMENDED FOR LONG RUNS WHERE EXTRA-FAST OUTPUT PULSE TIMES ARE REQUIRED.

For runs of 1000-5000 ft. or where extra-fast output pulse risetimes are required, we offer the D220 and D222 series cables: larger versions of the D200 series having improved transmission properties with sufficient mechanical strength for long pulls in conduit.

PULSE TRANSMISSION LOSS in D-series data cables causes a moderate amplitude loss, with definite rounding of the leading and trailing edges from 50% to 90% amplitude. The photos below (for a 1.25 megabit clock rate) show typical waveforms. The D-220 and D-222 series cables offer even lower losses than the D-200 or D-210 cables for long-run or fast-clocked applications.

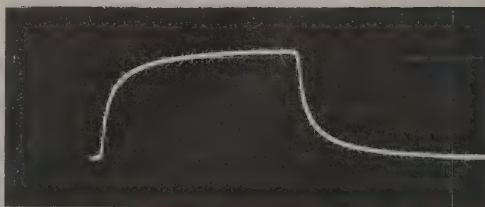
Contact our factory engineering staff for detailed pulse-shape versus distance information, or for special applications.

#### INPUT PULSE



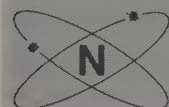
Horizontal: 200. ns/cm  
Vertical : 2. volts/cm

#### OUTPUT PULSE at 500 FT.

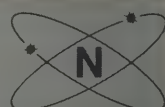


Horizontal: 200. ns/cm  
Vertical : 2. volts/cm

We invite your telephone inquiries for technical information on data cables.  
Contact our Engineering Dept.



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CAGE CODE 04569





# DIGITAL DATA TRANSMISSION CABLES IN STOCK



U.S. Pat. No. 3489844



Black Vinyl Jackets.

D-200 XX (XX designates number of pairs)

D-200 XXRF (RF designates braided shield over aluminum mylar foil shield) <sup>Δ</sup>**(D-200 SERIES)****UL AWM STYLE 2835**

## LOW VOLTAGE COMPUTER CABLE

MEETS E.I.A. STANDARDS

RS-422, RS-423, RS-485

### STANDARD DATA CABLE CONSTRUCTIONS – D-200 SERIES

| Nat'l Catalog No. |             | No. of Pairs | Cond. AWG. | Delay NS/FT | Cable Diam. |       | Weight            |       |
|-------------------|-------------|--------------|------------|-------------|-------------|-------|-------------------|-------|
| Black Jacket      | Grey Jacket |              |            |             | (Inches)    | (MM)  | Lbs. per 1000 Ft. | Kg/Km |
| D-200-4           | D-200-4G    | 4            | 24         | 1.61*       | .315"       | 8.00  | 41.               | 61.0  |
| D-200-7           | D-200-7G    | 7            | 24         | 1.61*       | .410"       | 10.41 | 73.               | 109.0 |
| D-200-12          | D-200-12G   | 12           | 24         | 1.61*       | .455"       | 11.56 | 96.               | 143.0 |
| D-200-15          | D-200-15G   | 15           | 24         | 1.61*       | .510"       | 12.95 | 120.              | 179.0 |
| D-200-20          | D-200-20G   | 20           | 24         | 1.61*       | .635"       | 16.13 | 160.              | 238.0 |
| D-200-24          | D-200-24G   | 24           | 24         | 1.61*       | .660"       | 16.76 | 180.              | 268.0 |
| D-200-27          | D-200-27G   | 27           | 24         | 1.61*       | .690"       | 17.53 | 210.              | 312.0 |
| D-200-30          | D-200-30G   | 30           | 24         | 1.61*       | .710"       | 18.03 | 230.              | 342.0 |
| D-200-33          | D-200-33G   | 33           | 24         | 1.61*       | .750"       | 19.05 | 250.              | 372.0 |
| D-200-42          | D-200-42G   | 42           | 24         | 1.61*       | .840"       | 21.34 | 280.              | 417.0 |
| D-200-50          | D-200-50G   | 50           | 24         | 1.61*       | .910"       | 23.1  | 320.              | 476.0 |

(\*5.28 NS/MTR)

### TECHNICAL DATA

| Characteristic           | Balanced**                           | Single-ended <sup>Δ</sup> |
|--------------------------|--------------------------------------|---------------------------|
| Characteristic Impedance | 110. ohms $\pm$ 5%                   | 78. ohms $\pm$ 4%         |
| Capacitance              | 14. pf/ft (46. PF/MTR)               | 21. pf/ft (68.9 PF/MTR)   |
| Signal Delay             | 1.61 ns/ft (5.28 NS/MTR)             | 1.61 ns/ft (5.28 NS/MTR)  |
| DC Resistance/100 ft.    | 5.6 ohms loop                        | 2.8 ohms                  |
| Insulation Breakdown     | 6. KV min. DC                        | 6. KV min. DC             |
| Insulation Resistance    | > 1000. megohms/M'                   | > 1000. megohms/M'        |
| Temperature Range        | -20. C up to +80. C (60. C for U.L.) |                           |
| Min. Bend Radius         | 6 x cable diameter                   |                           |

### STANDARD DATA CABLE CONSTRUCTIONS – D-210 SERIES INDIVIDUALLY SHIELDED DATA PAIRS

| Nat'l Catalog No. | No. of Pairs | Z <sub>0</sub> | Delay NS/FT | Cond. AWG | (In.) Cable Diam. | (MM) | Sheath |
|-------------------|--------------|----------------|-------------|-----------|-------------------|------|--------|
| D-210-1           | 1            | 110.           | 1.61*       | 24        | .220              | 5.59 | PVC    |
| D-210-12          | 12           | 110.           | 1.61*       | 24        | .980              | 24.9 | PVC    |
| D-210-15          | 15           | 110.           | 1.61*       | 24        | 1.06              | 26.9 | PVC    |
| D-210-20          | 20           | 110.           | 1.61*       | 24        | 1.20              | 30.5 | PVC    |
| D-210-30          | 30           | 110.           | 1.61*       | 24        | 1.42              | 36.1 | PVC    |
| D-210-40          | 40           | 110.           | 1.61*       | 24        | 1.69              | 42.9 | PVC    |
| D-210-48          | 48           | 110.           | 1.61*       | 24        | 1.76              | 44.7 | PVC    |

(\*5.289 NS/MTR)

All items available in 50 ft. multiples.

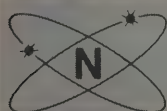
### TECHNICAL DATA

| Characteristic           | Balanced**                           | Single-ended <sup>Δ</sup> |
|--------------------------|--------------------------------------|---------------------------|
| Characteristic Impedance | 110. ohms $\pm$ 5%                   | 63. ohms $\pm$ 4%         |
| Capacitance              | 14. pf/ft (46. PF/MTR)               | 23. pf/ft (77.0 PF/MTR)   |
| Signal Delay             | 1.61 ns/ft (5.28 NS/MTR)             | 1.61 ns/ft.               |
| DC Resistance/100 ft.    | 5.6 ohms loop                        | 2.8 ohms                  |
| Insulation Breakdown     | 6. KV min. DC                        | 6. KV min. DC             |
| Insulation Resistance    | > 1000. megohms/M'                   | > 1000. megohms/M'        |
| Temperature Range        | -20. C up to +80. C (60. C for U.L.) |                           |
| Min. Bend Radius         | 9 x cable diameter                   |                           |

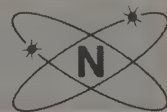
\*\*Both driven, one inverted.

<sup>Δ</sup>One conductor of each pair tied to common.

We invite your telephone inquiries for technical information on data cables. Contact our Engineering Dept.

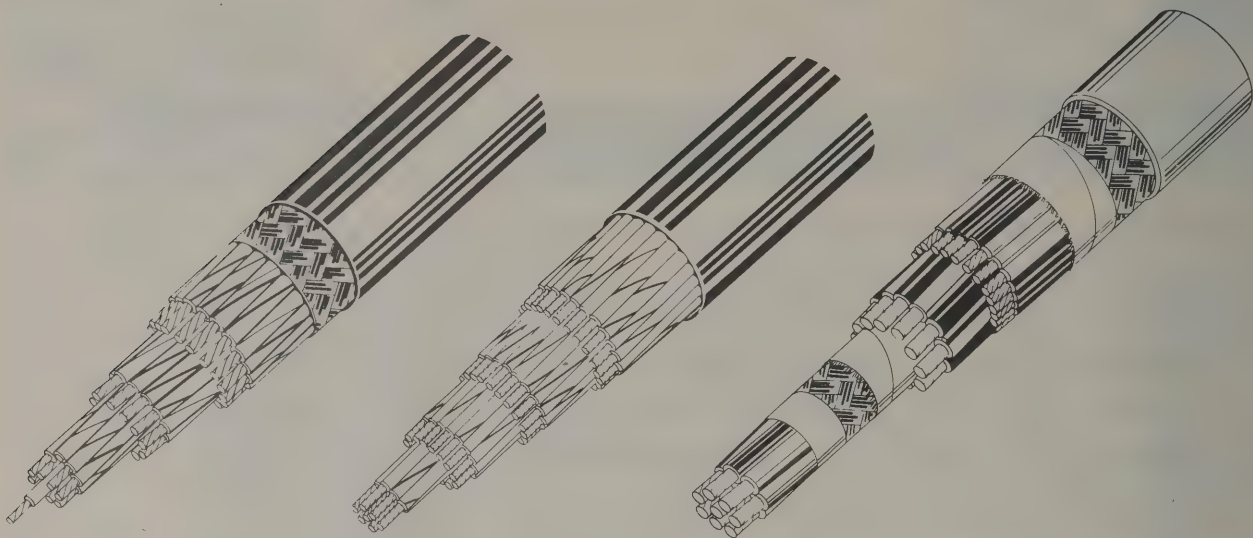


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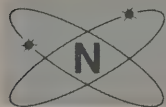
We invite your inquiries on fiber optic cables. National Wire & Cable can manufacture multi-conductor fiber optic cables as well as hybrid cables consisting of fiber and copper conductors.

**BECAUSE NATIONAL HAS:**

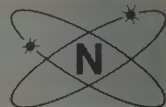
1. The organization & experience to handle short-runs or rush schedules with consistent quality.
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3. An enormous wire inventory to draw from for material for your cable. Over 160 million feet in stock.
4. Technical consultants to aid you in properly specifying your cable needs.

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- B. Call our engineering department (213-225-5611) and discuss your needs with our technical consultants. They speak your language and may have just the answers you need.
- C. Our consultants will assist you in design, obtain cost and delivery information, provide formal quotations and drawings, and assist with sales & procurement liaison.
- D. On most custom cables, we can print your company name and part number at regular intervals on the outside jacket at no extra cost. This will make your packaging truly "Custom".



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# NATIONAL WIRE AND CABLE CORPORATION

## CUSTOM COILED CABLE INQUIRY SHEET

CUSTOMER \_\_\_\_\_ DATE \_\_\_\_\_

CONTACT \_\_\_\_\_ PHONE NO. \_\_\_\_\_

POSITION \_\_\_\_\_ DRAWING \_\_\_\_\_

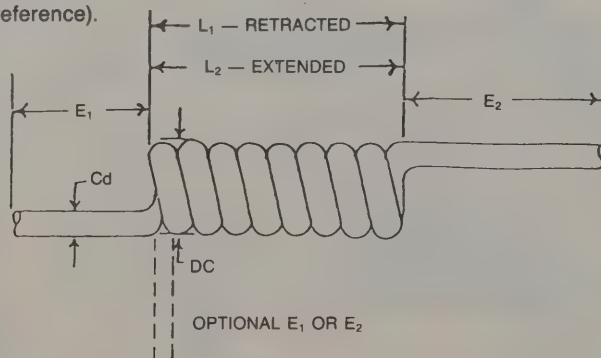
Let us review your requirements by mailing or faxing us this completed inquiry sheet.

### CABLE DESCRIPTION

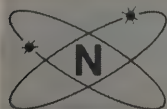
1. Number of Conductors (2 thru 60). \_\_\_\_\_
2. Gauge Size and Stranding of Conductors (30 thru 18). \_\_\_\_\_
3. Conductor Insulation Type (if preference). \_\_\_\_\_
4. Shielding, normally Nafoil or Spiral Tinned Copper (if required). \_\_\_\_\_
5. Jacketing Compound Polyurethane or Hytrel by Dupont. Compound PU, color black. Color matching is available. \_\_\_\_\_
6. Finished cable diameter requirements (if preference). . cd = \_\_\_\_\_
7. Voltage range and temperature range of application. \_\_\_\_\_ v. \_\_\_\_\_ °c \_\_\_\_\_
8. Any special requirements, \_\_\_\_\_  
UL 20197 is available for computer use on request.

### COILED CABLE DESCRIPTION

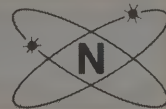
1. Retracted Length L1 = \_\_\_\_\_
2. Extended length (normally 4-5 times recovered length). L2 = \_\_\_\_\_
3. Length of ends to be straight or right angle.  $E1 = \frac{\text{Length} - \text{Angle} -}{\text{Angle} -}$   
 $E2 = \frac{\text{Length} - \text{Angle} -}{\text{Angle} -}$
4. Outside diameter of coil (if preference).

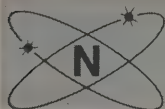
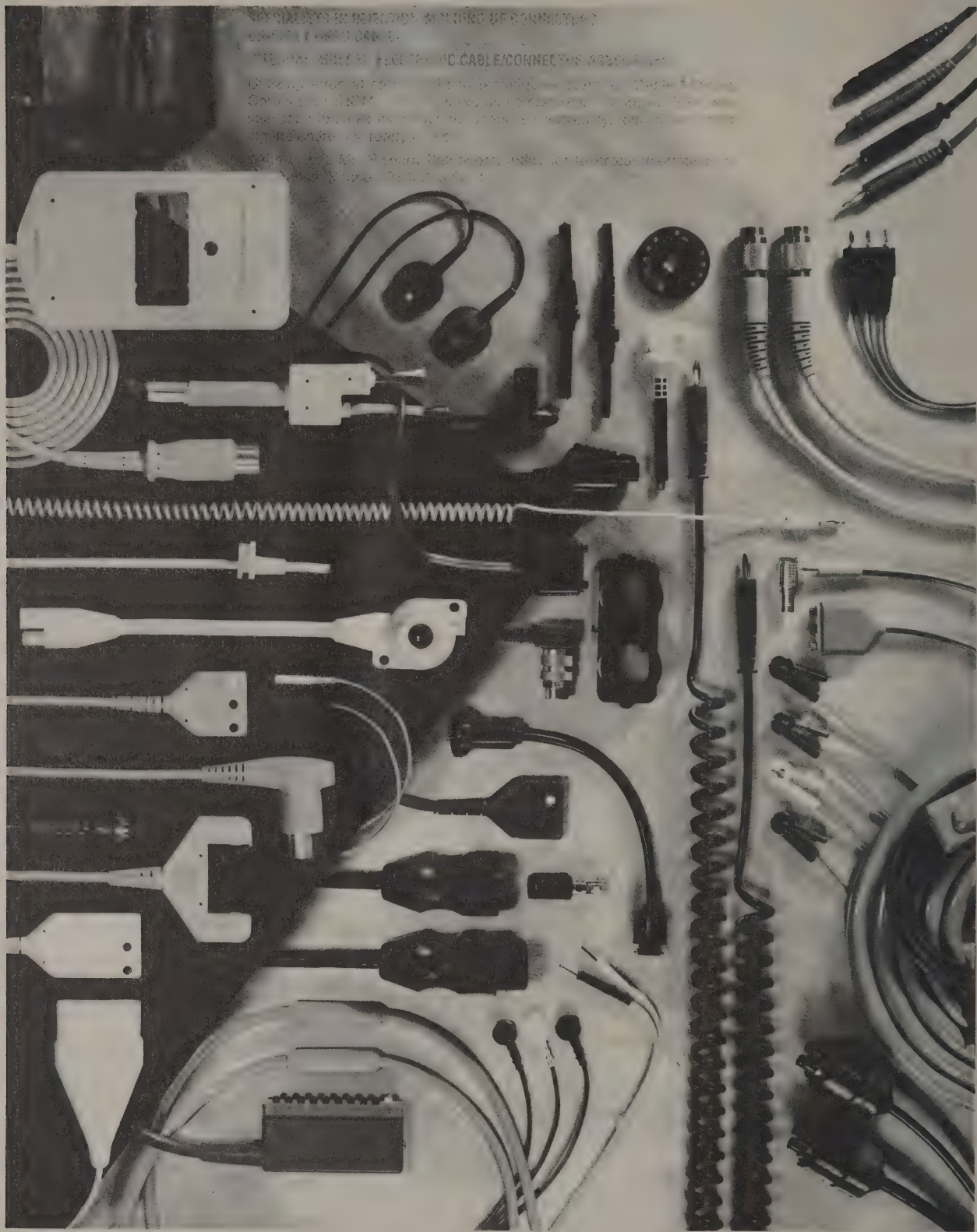


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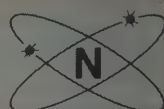


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# Heli-Tube®

## Cable Harness Abrasion Protector

| Standard Materials                                                                                                                                                                                                                                                                                                                                                               | Max.<br>Oper.<br>Temp. | Min.<br>Oper.<br>Temp. | MIL<br>Spec.<br>& Approvals                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Clear Polyethylene</b><br>Ideal for general applications, this low-cost material is highly abrasion resistant and is not affected by most solvents.                                                                                                                                                                                                                           | 215°F<br>101°C         | -105°F<br>-76°C        | Fed. Spec.<br>LP390<br>MIL-I-631D<br>MIL-P-21922A                                                                  |
| <b>Ultraviolet-Resistant Black Polyethylene</b><br>Has the same properties as clear polyethylene but features an ultraviolet absorber which allows it to be used outdoors in direct sunlight for long periods of time.                                                                                                                                                           | 215°F<br>101°C         | -105°F<br>-76°C        | Fed. Spec.<br>LP390<br>MIL-I-631D<br>MIL-P-21922A                                                                  |
| <b>Fire-Resistant Polyethylene</b><br>This material is self-extinguishing and costs less than Nylon or Teflon; available in White or Black.                                                                                                                                                                                                                                      | 200°F<br>93°C          | -1°F<br>-19°C          |                                                                                                                    |
| <b>Nylon</b><br>Natural Nylon is self-extinguishing and does not produce any toxic or irritating byproducts, even when exposed to an open flame or temperatures beyond its operating range. Recommended for use in enclosed environments where the possibility of fire exists, Nylon is also lightweight, highly abrasion resistant, and operates over a wide temperature range. | 200°F<br>93°C          | -121°F<br>-85°C        | MIL-M-20693B<br>Type I<br>MIL-M-22096A<br>LP 410A<br>MIL-M-19098                                                   |
| <b>Black Nylon</b><br>Features the same properties as Natural Nylon with the added benefit of an ultraviolet absorber so that it can be used in direct sunlight for long periods of time.                                                                                                                                                                                        | 200°F<br>93°C          | -121°F<br>-85°C        | MIL-M-20693A<br>Type II<br>MIL-M-22096<br>LP 410A<br>MIL-I-47287A<br>Type II                                       |
| <b>Teflon (TFE)</b><br>Natural (TFE) features the widest operating temperature range of any material and can be used from -450° to +500°F. It is chemically inert, non-flammable, and can be supplied in a variety of colors.                                                                                                                                                    | 500°F<br>260°C         | -450°F<br>-85°C        | AMS 3651C<br>AMS 3653C<br>AMS 3654<br>AMS 3655<br>ASTM D3295<br>MIL I-22129C<br>P-22296B<br>MIL-T-47287A<br>Type I |

### Spirally Cut Plastic Expandable Cable Wrap Available in Six Sizes



Organizes and bundles wires



Protects hoses from abrasion

- Bundles wires, cables, hoses, and tubing firmly, but allows flexibility
- Wraps on like tape, but can be reused quickly and simply
- Permits wire and hose breakouts in any orientation
- Easy to route or reroute new or replacement wires
- Resists abrasion, dampens vibration, and insulates
- Clamps bundles to standoffs and robotic components
- Available in colors for special identification requirements
- Can be supplied forward or reverse cut for user convenience
- UL recognized component listed under category ZTFR2, Component Wire Positioning Devices. Our file Card Number is E83405 (M).



Sizes from 1/16" thru 1"  
for bundles up to 7" dia.



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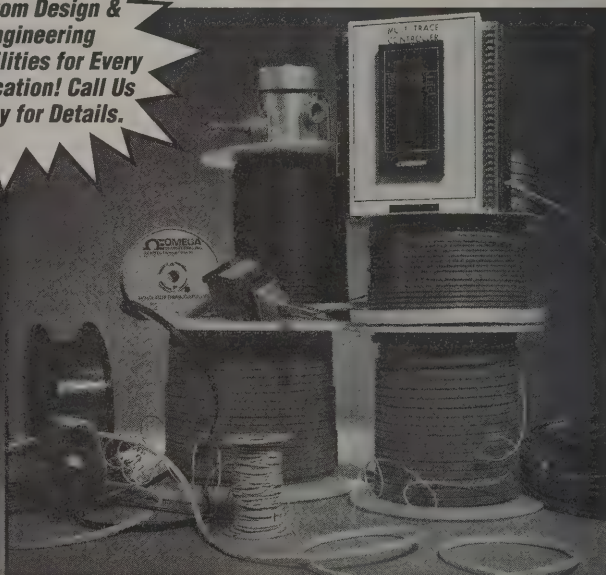
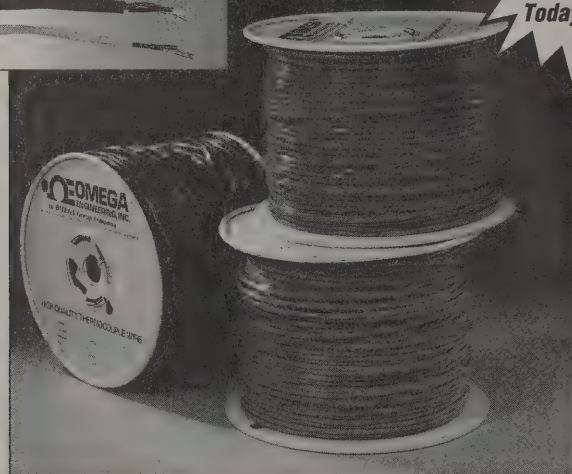
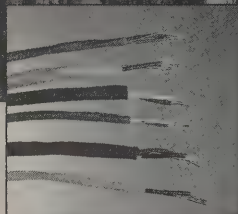
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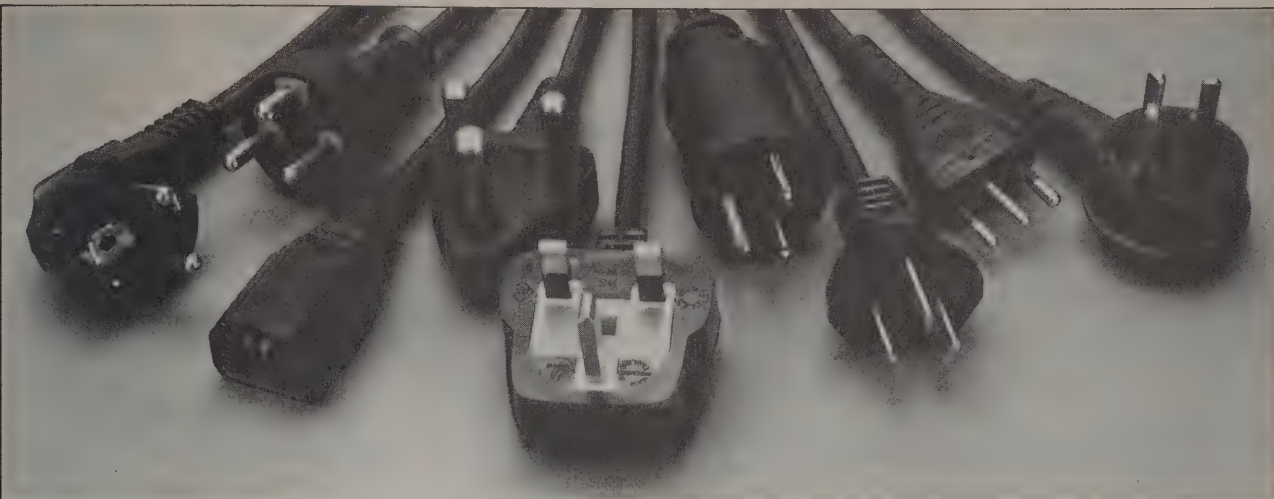
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## International Cords, Cordsets, and Cordage

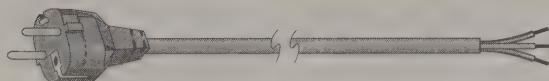
### Specifying International Power Connections

There are several important technical hurdles facing the designer of equipment that will be exported, some of which are:

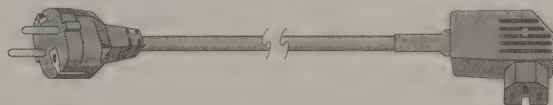
- The product must be easily connected to foreign mains power outlets or wall sockets which vary from country to country;
- The product must work at foreign mains voltages and frequencies which range from 100-250VAC at 50 or 60Hz. European voltages are typically 220-240 at 50 Hz. (See our power inlet modules with integral voltage selectors in Section 2100.)
- The product must conform to foreign product safety standards as enforced by appropriate national standards and test agencies.

1. **Detachable connections** based on IEC 320. Benefit: Flexibility. The IEC 320 power inlet (installed on product) and outlet (on cordset) allows the manufacturer to attach a cordset with the correct international or North American wall plug just before shipment. The IEC 320 standard covers several connector outlines, the most important of which are shown below:

2. **Power Supply Cords:** Usually specified when equipment requires more than 10A. For applications rated at 10-16 amps, 1.5mm<sup>2</sup> (cp. 14AWG) conductors are specified. For ratings above 16A, specify IEC 309 connectors and assemblies.



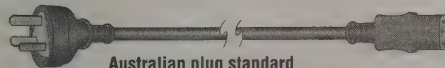
3. **Made-to-Order Cord & Cordset Assemblies:** We offer in-house made-to-order assembly services when a standard model is not available or when special end preparations are required.



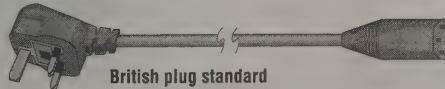
4. **Cordage:** When neither a molded power supply cord or cordset is suitable, international or North American cordage with appropriately sized conductors may be the best alternative.



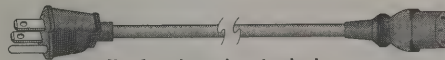
Continental European (German)



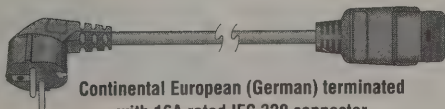
Australian plug standard



British plug standard



No. American plug standard



Continental European (German) terminated with 16A rated IEC 320 connector



10A rated  
IEC 320 inlet  
(15A N.Am.)



16A rated  
IEC 320 inlet  
(20A N.Am.)

## Designing for Export? We make it easy!



**Export Designer's Reference/Catalog** gives detailed information about world electrical requirements and safety agencies; each product section begins with a review of international regulations. Call or FAX toll free for a free copy.

Components carry approvals by UL, CSA, VDE, SEMKO, SEV and other safety agencies. Most items are available for fast shipment from our large inventory. We have no minimum order and can ship prototype orders quickly.

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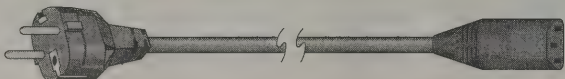
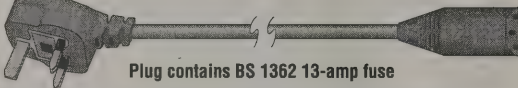
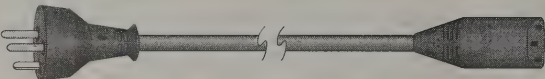
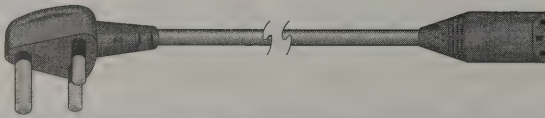
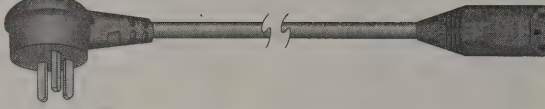
# Low Power Cordsets

## 15A/120VAC North American 10A/220-240VAC International



Cordsets below are terminated with detachable IEC 320 connector; connector locks—which secure cordset to IEC 320 inlet—are available for most models. See section 2100 for international sockets and rewirable plugs. In-house made-to-order assembly services available.



| CORDSETS                                                                                                                                                               |                       |             |        |                |         |           |  | Approvals                                                                           | Current Rating | Voltage Rating | Max. Temp. | Color | Length<br>±0.1m<br>(3.9') | Recommended connector lock | IEC 320 inlet<br>(10A Int'l./15A N. Am.)                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|--------|----------------|---------|-----------|--|-------------------------------------------------------------------------------------|----------------|----------------|------------|-------|---------------------------|----------------------------|-----------------------------------------------------------------------------|
| <b>#86511052: CONTINENTAL EUROPE (German "Schuko")</b><br>                             |                       |             |        |                |         |           |  |    | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010                  | #8301211: solder tabs<br>8301212: 4.8mm sold./QD<br>8301213: 6.3mm sold./QD |
| CORDAGE SPECIFICATIONS*                                                                                                                                                | Conductor Size        | Description | Wiring | Typ. Stranding | Marking | Nom. O.D. |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
|                                                                                                                                                                        | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
| <b>#86516050: AUSTRALIA/NEW ZEALAND</b><br>                                            |                       |             |        |                |         |           |  | SECV<br>Australian Telecom                                                          | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | —                          | #8301211: solder tabs<br>8301212: 4.8mm sold./QD<br>8301213: 6.3mm sold./QD |
| CORDAGE SPECIFICATIONS*                                                                                                                                                | Conductor Size        | Description | Wiring | Typ. Stranding | Marking | Nom. O.D. |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
|                                                                                                                                                                        | 3x1.00mm <sup>2</sup> | —           | INT'L* | —              | —       | 7.0mm     |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
| <b>#86552007: UNITED KINGDOM/IRELAND</b><br> <p>Plug contains BS 1362 13-amp fuse</p> |                       |             |        |                |         |           |  |    | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010                  | #8301211: solder tabs<br>8301212: 4.8mm sold./QD<br>8301213: 6.3mm sold./QD |
| CORDAGE SPECIFICATIONS*                                                                                                                                                | Conductor Size        | Description | Wiring | Typ. Stranding | Marking | Nom. O.D. |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
|                                                                                                                                                                        | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
| <b>#86536041: DENMARK</b><br>                                                        |                       |             |        |                |         |           |  |  | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010                  | #8301211: solder tabs<br>8301212: 4.8mm sold./QD<br>8301213: 6.3mm sold./QD |
| CORDAGE SPECIFICATIONS*                                                                                                                                                | Conductor Size        | Description | Wiring | Typ. Stranding | Marking | Nom. O.D. |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
|                                                                                                                                                                        | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
| <b>#86559011: INDIA</b><br>                                                          |                       |             |        |                |         |           |  |                                                                                     | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010                  | #8301211: solder tabs<br>8301212: 4.8mm sold./QD<br>8301213: 6.3mm sold./QD |
| CORDAGE SPECIFICATIONS*                                                                                                                                                | Conductor Size        | Description | Wiring | Typ. Stranding | Marking | Nom. O.D. |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
|                                                                                                                                                                        | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
| <b>#86558011: ISRAEL</b><br>                                                         |                       |             |        |                |         |           |  |  | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010                  | #8301211: solder tabs<br>8301212: 4.8mm sold./QD<br>8301213: 6.3mm sold./QD |
| CORDAGE SPECIFICATIONS*                                                                                                                                                | Conductor Size        | Description | Wiring | Typ. Stranding | Marking | Nom. O.D. |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |
|                                                                                                                                                                        | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |  |                                                                                     |                |                |            |       |                           |                            |                                                                             |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground); N.A.M.—black (line), white (neutral), green (ground)

Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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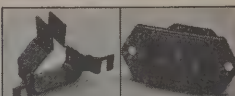
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# Low Power Cordsets, continued

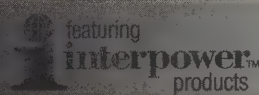
All items normally available from stock. No minimum order requirements.



| CORDSETS                                                                                                                        |                       |             |         |                |                     |              | Approvals | Current Rating | Voltage Rating | Max. Temp. | Color | Length<br>±0.1m<br>(3.9') | Connector lock | IEC 320 Inlet<br>(10-15A.)                                                           |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|---------|----------------|---------------------|--------------|-----------|----------------|----------------|------------|-------|---------------------------|----------------|--------------------------------------------------------------------------------------|
| <b>#86531031: ITALY</b><br>                                                                                                     |                       |             |         |                |                     |              |           | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010      | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Description | Wiring  | Typ. Stranding | Marking             | Nom. O.D.    |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L*  | 32/0.2mm       | <HAR>               | 7.0mm        |           |                |                |            |       |                           |                |                                                                                      |
| <b>#86589010: JAPAN</b><br>                                                                                                     |                       |             |         |                |                     |              |           | 15A            | 125 VAC        | 60°C       | BLK   | 2.4m (8')                 | —              | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Desc.       | Wiring  | Typ. Stranding | Marking             | Nom. O.D.    |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x2.00mm <sup>2</sup> | JIS         | INT'L*  | 30/0.18mm      | 12-1367 Yukita 300V | 8.5mm        |           |                |                |            |       |                           |                |                                                                                      |
| <b>#86537030: NORTH AMERICA</b><br><br>Utilizes SJT cordage                                                                     |                       |             |         |                |                     |              |           | 10A            | 125 VAC        | 60°C       | BLK   | 8'                        | 85910020       | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Description | Wiring  | Typ. Stranding | Marking             | O.D.         |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x18AWG               | SJT         | INT'L*  | 41/34AWG       | —                   | 0.300-0.355" |           |                |                |            |       |                           |                |                                                                                      |
| <b>#86610300: NORTH AMERICA HOSPITAL GRADE</b><br><br>Note: Plug is clear                                                       |                       |             |         |                |                     |              |           | 10A            | 125 VAC        | 65°C       | Gray  | 10'                       | —              | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Description | Wiring  | Typ. Stranding | Marking             | Nom. O.D.    |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x18AWG               | SJT         | N.A.M.* | 16/30AWG       | —                   | 0.330"       |           |                |                |            |       |                           |                |                                                                                      |
| <b>#86515050: SWITZERLAND</b><br>                                                                                               |                       |             |         |                |                     |              |           | 10A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2')               | #85910010      | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Description | Wiring  | Typ. Stranding | Marking             | Nom. O.D.    |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L*  | 32/0.2mm       | <HAR>               | 7.0mm        |           |                |                |            |       |                           |                |                                                                                      |
| <b>#86525051: IEC 320 CORD—INT'L CORDAGE</b><br><br>Ready for installation of international plug—see Section 2100 for plugs     |                       |             |         |                |                     |              |           | 10A            | 250 VAC        | 65°C       | BLK   | 3.0m (9.8')               | #85910010      | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Description | Wiring  | Typ. Stranding | Marking             | Nom. O.D.    |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x1.00mm <sup>2</sup> | H05VVF3G1.0 | INT'L*  | 32/0.2mm       | <HAR>               | 7.0mm        |           |                |                |            |       |                           |                |                                                                                      |
| <b>#86525032: IEC 320 CORD—NO. AMER. CORDAGE</b><br><br>Ready for installation of North American plug—see Section 2100 for plug |                       |             |         |                |                     |              |           | 10A            | 250 VAC        | 60°C       | BLK   | 10'                       | #85910020      | #8301211:<br>solder tabs<br>8301212:<br>4.8mm sold./QD<br>8301213:<br>6.3mm sold./QD |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                  | Conductor Size        | Description | Wiring  | Typ. Stranding | Marking             | O.D.         |           |                |                |            |       |                           |                |                                                                                      |
|                                                                                                                                 | 3x18AWG               | SJT         | INT'L*  | 41/34AWG       | —                   | 0.300-0.335" |           |                |                |            |       |                           |                |                                                                                      |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground); N.A.M.—black (line), white (neutral), green (ground)  
 Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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# Low Power Cords

## 15A/120VAC North American 10A/220-240VAC International



Standard international power cords. Cable strain reliefs and terminal blocks are available. See section 2100 for international sockets and rewirable plugs. In-house made-to-order assembly services available.

| CORDS                                           |                |              |        |                |         |           | Approvals                | Current Rating | Voltage Rating | Max. Temp. | Color | Length ±0.1m (3.9') | Recommended strain relief | Recommended terminal block |
|-------------------------------------------------|----------------|--------------|--------|----------------|---------|-----------|--------------------------|----------------|----------------|------------|-------|---------------------|---------------------------|----------------------------|
| #86517030: CONTINENTAL EUROPE (GERMAN "SCHUKO") |                |              |        |                |         |           |                          | 10A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')         | #85810012 w/o bend rel.   | #82010010                  |
|                                                 |                |              |        |                |         |           |                          |                |                |            |       |                     | #85810042 w/ bend rel.    |                            |
| CORDAGE SPECIFICATIONS*                         | Conductor Size | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |       |                     |                           |                            |
|                                                 | 3x1.00mm²      | H05VVF3G1.0  | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |                          |                |                |            |       |                     |                           |                            |
| #86519030: CONTINENTAL EUROPE—ANGLED            |                |              |        |                |         |           |                          | 10A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')         | #85810012 w/o bend rel.   | #82010010                  |
|                                                 |                |              |        |                |         |           |                          |                |                |            |       |                     | #85810042 w/ bend rel.    |                            |
| CORDAGE SPECIFICATIONS*                         | Conductor Size | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |       |                     |                           |                            |
|                                                 | 3x1.00mm²      | H05VVF3G1.0  | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |                          |                |                |            |       |                     |                           |                            |
| #86522050: AUSTRALIA/NEW ZEALAND                |                |              |        |                |         |           | SECV, Australian Telecom | 10A            | 250 VAC        | 75°C       | BLK   | 2.5m (8.2')         | #85810012 w/o bend rel.   | #82010010                  |
|                                                 |                |              |        |                |         |           |                          |                |                |            |       |                     | #85810042 w/ bend rel.    |                            |
| CORDAGE SPECIFICATIONS*                         | Conductor Size | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |       |                     |                           |                            |
|                                                 | 3x1.00mm²      | —            | INT'L* | —              | —       | 7.0mm     |                          |                |                |            |       |                     |                           |                            |
| #86590012: UNITED KINGDOM/IRELAND (5A)          |                |              |        |                |         |           |                          | 5A             | 250 VAC        | 70°C       | BLK   | 3.0m (9.8')         | #85810012 w/o bend rel.   | #82010010                  |
| <br>Plug contains BS 1362 5-amp fuse            |                |              |        |                |         |           |                          |                |                |            |       |                     | #85810042 w/ bend rel.    |                            |
| CORDAGE SPECIFICATIONS*                         | Conductor Size | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |       |                     |                           |                            |
|                                                 | 3x0.75mm²      | H05VVF3G0.75 | INT'L* | 24/0.2mm       | <HAR>   | 6.8mm     |                          |                |                |            |       |                     |                           |                            |
| #86554004: UNITED KINGDOM/IRELAND (10A)         |                |              |        |                |         |           |                          | 10A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')         | #85810012 w/o bend rel.   | #82010010                  |
| <br>Plug contains BS 1362 13-amp fuse           |                |              |        |                |         |           |                          |                |                |            |       |                     | #85810042 w/ bend rel.    |                            |
| CORDAGE SPECIFICATIONS*                         | Conductor Size | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |       |                     |                           |                            |
|                                                 | 3x1.00mm²      | H05VVF3G1.0  | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |                          |                |                |            |       |                     |                           |                            |
| #86539030: DENMARK                              |                |              |        |                |         |           |                          | 10A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')         | #85810012 w/o bend rel.   | #82010010                  |
|                                                 |                |              |        |                |         |           |                          |                |                |            |       |                     | #85810042 w/ bend rel.    |                            |
| CORDAGE SPECIFICATIONS*                         | Conductor Size | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |       |                     |                           |                            |
|                                                 | 3x1.00mm²      | H05VVF3G1.0  | INT'L* | 32/0.2mm       | <HAR>   | 7.0mm     |                          |                |                |            |       |                     |                           |                            |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground); NAM—black (line), white (neutral), green (ground)  
Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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## Low Power Cords, continued

All items normally available from stock. No minimum order requirements.



| CORDS                                                                                                                                                              |  |  |  |  |  |  |  | Approvals                      | Current Rating | Voltage Rating | Max. Temp. | Color | Length (ft.) | Strain relief                                     | Terminal block |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--------------------------------|----------------|----------------|------------|-------|--------------|---------------------------------------------------|----------------|
| <b>#98010763.1004.1: INDIA (made-to-order assembly)</b><br>                                                                                                        |  |  |  |  |  |  |  | (None required)                | 16A            | 250 VAC        | 70°C       | BLK   | Call         | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x1.00mm <sup>2</sup> Description H05VVf3G1.0 Wiring INT'L* Typ. Stranding — Marking <HAR> Nom. O.D. —            |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |
| <b>#98010771.1004.1: ITALY (made-to-order assembly)</b><br>                                                                                                        |  |  |  |  |  |  |  | Plug, IMQ (Harmonized cordage) | 10A            | 250 VAC        | 70°C       | BLK   | Call         | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x1.00mm <sup>2</sup> Description H05VVf3G1.0 Wiring INT'L* Typ. Stranding — Marking <HAR> Nom. O.D. —            |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |
| <b>#86590041: NORTH AMERICA (10A)</b><br><br>Utilizes SJT cordage                                                                                                  |  |  |  |  |  |  |  | UL<br>SP                       | 10A            | 125 VAC        | 75°C       | BLK   | 10'          | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x18AWG Description SJT Wiring INT'L* Typ. Stranding 41/34AWG Marking — O.D. 0.300-0.355"                         |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |
| <b>#86610400: NORTH AMERICA—HOSPITAL GRADE</b><br><br>Note: Plug is clear                                                                                          |  |  |  |  |  |  |  | UL<br>SP                       | 10A            | 125 VAC        | 60°C       | Gray  | 10'          | Call for gray                                     | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x18AWG Description SJT Wiring N.A.M.* Typ. Stranding 16/30AWG Marking — O.D. 0.330"                              |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |
| <b>#86590051: NORTH AMERICA (13A)</b><br>                                                                                                                          |  |  |  |  |  |  |  | UL<br>SP                       | 13A            | 125 VAC        | 75°C       | BLK   | 10'          | #85810022 w/o bend rel.<br>#85810052 w/ bend rel. | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x16AWG Description SJT Wiring N.A.M.* Typ. Stranding — Marking — Nom. O.D. —                                     |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |
| <b>#86610200: NORTH AMERICA, for use in 230V circuits</b><br>                                                                                                      |  |  |  |  |  |  |  | UL<br>SP                       | 10A            | 230 VAC        | 60°C       | BLK   | 10'          | #85810022 w/o bend rel.<br>#85810052 w/ bend rel. | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x18AWG Description SJT Wiring N.A.M.* Typ. Stranding 41/0.16" Marking — O.D. 0.335"                              |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |
| <b>#86521040: SWITZERLAND</b><br>                                                                                                                                  |  |  |  |  |  |  |  | S                              | 10A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')  | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010      |
| <b>CORDAGE SPECIFICATIONS*</b><br>Conductor Size 3x1.00mm <sup>2</sup> Description H05VVf3G1.0 Wiring INT'L* Typ. Stranding 32/0.2mm Marking <HAR> Nom. O.D. 7.0mm |  |  |  |  |  |  |  |                                |                |                |            |       |              |                                                   |                |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground); N.A.M.—black (line), white (neutral), green (ground).  
 Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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Medium Power International Cordsets

15-20A/120-230VAC No. America  
10-16A/220-240VAC International



The cords below feature a molded-on IEC 320 connector rated at 16A for international models (20A North America.) The plug on cordset model #86595000 is molded on, but plugs on the other cordsets are assembled on to IEC 320 cords #86591000 or #86591010.



| CORDSETS                                             |                                                                                                                                                 | Approvals                         | Current Rating | Voltage Rating | Max. Temp. | Color | Length ±0.1m (3.9") | Recommended connector lock | IEC 320 Inlet (16A Int'l./ 20A N. Am.) |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------|----------------|------------|-------|---------------------|----------------------------|----------------------------------------|
| #86595000: CONTINENTAL EUROPE                        |                                                                                                                                                 |                                   | 16A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2")         | #85910051                  | #83011340                              |
| CORDAGE SPECIFICATIONS*                              | Conductor Size 3x1.50mm <sup>2</sup><br>Description H05VVFG1.5<br>Wiring INT'L*<br>Typ. Stranding 48/0.35mm<br>Marking <HAR><br>Nom. O.D. 8.5mm |                                   |                |                |            |       |                     |                            |                                        |
| #96591000.2: AUSTRALIA/N.Z. (made-to-order assembly) |                                                                                                                                                 | EANSW                             | 15A            | 250 VAC        | 65°C       | BLK   | 8' Max.             | #85910051                  | #83011340                              |
| CORDAGE SPECIFICATIONS*                              | Conductor Size 3x1.50mm <sup>2</sup><br>Description —<br>Wiring INT'L*<br>Typ. Stranding 48/0.35mm<br>Marking —<br>Nom. O.D. 8.5mm              |                                   |                |                |            |       |                     |                            |                                        |
| #96591000.2: U.K./IRELAND (made-to-order assembly)   |                                                                                                                                                 | Plug, BSI<br>(Harmonized cordage) | 13A            | 250 VAC        | 65°C       | BLK   | 8' Max.             | #85910051                  | #83011340                              |
| CORDAGE SPECIFICATIONS*                              | Conductor Size 3x1.50mm <sup>2</sup><br>Description H05VVFG1.0<br>Wiring INT'L*<br>Typ. Stranding 48/0.35mm<br>Marking <HAR><br>Nom. O.D. 8.5mm |                                   |                |                |            |       |                     |                            |                                        |
| #96591010.2: NORTH AMERICA (made-to-order assembly)  |                                                                                                                                                 |                                   | 20A            | 125 VAC        | 65°C       | BLK   | 8' Max.             | #85910051                  | #83011340                              |
| CORDAGE SPECIFICATIONS*                              | Conductor Size 3x12AWG<br>Description SJT<br>Wiring N.A.M.*<br>Typ. Stranding —<br>Marking —<br>Nom. O.D. —                                     |                                   |                |                |            |       |                     |                            |                                        |
| #86591000: IEC 320 CORD—INT'L CORDAGE                |                                                                                                                                                 | <br>EANSW                         | 16A            | 250 VAC        | 65°C       | BLK   | 2.5m (8.2")         | #85910051                  | #83011340                              |
| CORDAGE SPECIFICATIONS*                              | Conductor Size 3x1.50mm <sup>2</sup><br>Description H05VVFG1.5<br>Wiring INT'L*<br>Typ. Stranding 48/0.35mm<br>Marking <HAR><br>Nom. O.D. 8.5mm |                                   |                |                |            |       |                     |                            |                                        |
| #86591010: IEC 320 CORD—NO. AMER. CORDAGE            |                                                                                                                                                 |                                   | 20A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2")         | #85910051                  | #83011340                              |
| CORDAGE SPECIFICATIONS*                              | Conductor Size 3x12AWG<br>Description SJT<br>Wiring N.A.M.*<br>Typ. Stranding —<br>Marking —<br>Nom. O.D. —                                     |                                   |                |                |            |       |                     |                            |                                        |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground); N.A.M.—black (line), white (neutral), green (ground)  
Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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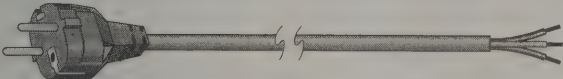
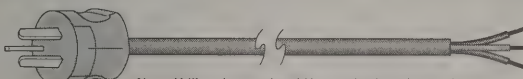
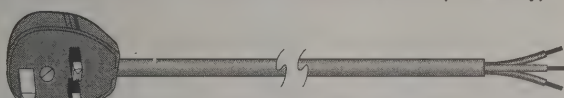
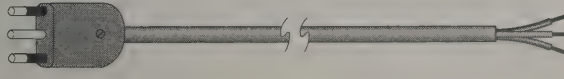
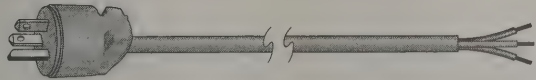
# Medium Power International Cords

**15-20A/120-230VAC No. Amer.**  
**10-16A/220-240VAC International**



Standard international power cords and made-to-order assemblies. Cable strain reliefs and terminal blocks are available. See section 2100 for international sockets. In-house made-to-order assembly services available for most international or North American plug configurations.



| CORDS                                                                                                                                                                                                                                                |                       |             |        |      |           |         |           | Approvals                                                                           | Current Rating | Voltage Rating | Max. Temp. | Color | Length ±0.1m (3.9') | Recommended strain relief                         | Recommended terminal block |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|--------|------|-----------|---------|-----------|-------------------------------------------------------------------------------------|----------------|----------------|------------|-------|---------------------|---------------------------------------------------|----------------------------|
| <b>#86518030: CONTINENTAL EUROPE (GERMAN "SCHUKO")</b><br>                                                                                                           |                       |             |        |      |           |         |           |    | 16A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')         | #85810022 w/o bend rel.<br>#85810052 w/ bend rel. | #82010010                  |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                                                                                                                                       | Conductor Size        | Description | Wiring | Typ. | Stranding | Marking | Nom. O.D. |                                                                                     |                |                |            |       |                     |                                                   |                            |
|                                                                                                                                                                                                                                                      | 3x1.50mm <sup>2</sup> | H05VVF3G1.5 | INT'L  |      | 29/0.25mm | <HAR>   | 8.5mm     |                                                                                     |                |                |            |       |                     |                                                   |                            |
| <b>#98010713.10074.1: AUSTRALIA/NEW ZEALAND (assembly)</b><br><br><i>Note: Utilizes International Harmonized cordage, which does not carry Australian approvals</i> |                       |             |        |      |           |         |           | Plug, EANSW<br>(Harmonized cordage)                                                 | 15A            | 250 VAC        | 70°C       | BLK   | Call                | #85810022 w/o bend rel.<br>#85810052 w/ bend rel. | #82010010                  |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                                                                                                                                       | Conductor Size        | Description | Wiring | Typ. | Stranding | Marking | Nom. O.D. |                                                                                     |                |                |            |       |                     |                                                   |                            |
|                                                                                                                                                                                                                                                      | 3x1.50mm <sup>2</sup> |             | INT'L  |      |           |         |           |                                                                                     |                |                |            |       |                     |                                                   |                            |
| <b>#98010721.10074.1: UNITED KINGDOM/IRE. (assembly)</b><br><br>Plug contains BS 1362 13-amp fuse                                                                   |                       |             |        |      |           |         |           | Plug, BSI<br>(Harmonized cordage)                                                   | 13A            | 250 VAC        | 70°C       | BLK   | Call                | #85810022 w/o bend rel.<br>#85810052 w/ bend rel. | #82010010                  |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                                                                                                                                       | Conductor Size        | Description | Wiring | Typ. | Stranding | Marking | Nom. O.D. |                                                                                     |                |                |            |       |                     |                                                   |                            |
|                                                                                                                                                                                                                                                      | 3x1.50mm <sup>2</sup> | H05VVF3G1.5 | INT'L  |      |           | <HAR>   |           |                                                                                     |                |                |            |       |                     |                                                   |                            |
| <b>#98010771.10074.1: ITALY (assembly)</b><br>                                                                                                                    |                       |             |        |      |           |         |           | Plug, IMQ<br>(Harmonized cordage)                                                   | 16A            | 250 VAC        | 70°C       | BLK   | Call                | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010                  |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                                                                                                                                       | Conductor Size        | Description | Wiring | Typ. | Stranding | Marking | Nom. O.D. |                                                                                     |                |                |            |       |                     |                                                   |                            |
|                                                                                                                                                                                                                                                      | 3x1.50mm <sup>2</sup> | H05VVF3G1.5 | INT'L  |      |           | <HAR>*  |           |                                                                                     |                |                |            |       |                     |                                                   |                            |
| <b>#98020120.10610.1: NORTH AMERICA (20A/125V)</b><br>                                                                                                            |                       |             |        |      |           |         |           |  | 20A            | 125 VAC        | 70°C       | BLK   | Call                | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010                  |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                                                                                                                                       | Conductor Size        | Description | Wiring | Typ. | Stranding | Marking | Nom. O.D. |                                                                                     |                |                |            |       |                     |                                                   |                            |
|                                                                                                                                                                                                                                                      | 3x12AWG               | SO          | N.Am.* |      |           |         |           |                                                                                     |                |                |            |       |                     |                                                   |                            |
| <b>#87510021: IEC 309 CORD WITH INT'L CORDAGE</b><br><br><b>UL &amp; CSA assemblies are also available!</b>                                                       |                       |             |        |      |           |         |           | Plug, VDE<br>(Harmonized cordage)                                                   | 16A            | 250 VAC        | 70°C       | BLK   | 2.5m (8.2')         | #85810012 w/o bend rel.<br>#85810042 w/ bend rel. | #82010010                  |
| <b>CORDAGE SPECIFICATIONS*</b>                                                                                                                                                                                                                       | Conductor Size        | Description | Wiring | Typ. | Stranding | Marking | Nom. O.D. |                                                                                     |                |                |            |       |                     |                                                   |                            |
|                                                                                                                                                                                                                                                      | 3x1.50mm <sup>2</sup> | H05VVF3G1.5 | INT'L  |      |           | <HAR>   |           |                                                                                     |                |                |            |       |                     |                                                   |                            |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground); N.Am.—black (line), white (neutral), green (ground)  
 Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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# High Power Cords

## 16-32A/220-240VAC/Single Phase

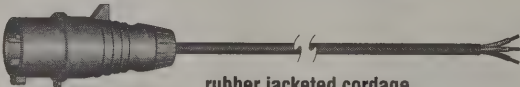
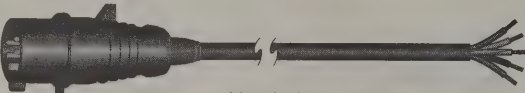
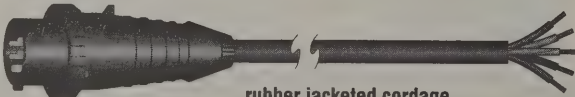
## 32A-125A/380-415VAC/Three Phase



IEC 309 connection system is recommended for North American and international high power connections above 16A. The connectors below carry UL, CSA, and VDE approvals, but differing North American and International cordage standards require AWG cordage for assemblies used in North America and Harmonized cordage for assemblies being shipped overseas (see first page of this section for more information on differences in the cordage types).

The cordsets below are configured with Harmonized cordage; we also offer assemblies with AWG cordage.



| CORDS                                                                                                         |                        |              |        |                |         |           | Approvals                | Current Rating | Voltage Rating | Max. Temp. | Color                            | Length<br>±0.1m<br>(3.9') | Recommended strain relief                                                  | Recommended terminal block |
|---------------------------------------------------------------------------------------------------------------|------------------------|--------------|--------|----------------|---------|-----------|--------------------------|----------------|----------------|------------|----------------------------------|---------------------------|----------------------------------------------------------------------------|----------------------------|
| #87510021: IEC 309 cord—16A, single phase                                                                     |                        |              |        |                |         |           | <br>(Harmonized cordage) | 16A<br>1φ      | 250<br>VAC     | 70°C       | Blue, Black<br>(8.2')<br>cordage | 2.5m<br>(8.2')            | #85810022<br>w/o bend rel.<br><br>#85810052<br>w/ bend rel.                | #82010010                  |
| <br>PVC jacketed cordage      |                        |              |        |                |         |           |                          |                |                |            |                                  |                           |                                                                            |                            |
| CORDAGE SPECIFICATIONS*                                                                                       | Conductor Size         | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |                                  |                           |                                                                            |                            |
|                                                                                                               | 3x1.50mm <sup>2</sup>  | H05VVF3G1.5  | INT'L* | —              | <HAR>   | 8.5mm     |                          |                |                |            |                                  |                           |                                                                            |                            |
| #87520021: IEC 309 cord—32A, single phase                                                                     |                        |              |        |                |         |           | <br>(Harmonized cordage) | 32A<br>1φ      | 250<br>VAC     | 70°C       | Blue, Black<br>(8.2')<br>cordage | 2.5m<br>(8.2')            | #85810092<br>w/o bend rel.<br><br>—                                        | —                          |
| <br>rubber jacketed cordage   |                        |              |        |                |         |           |                          |                |                |            |                                  |                           |                                                                            |                            |
| CORDAGE SPECIFICATIONS*                                                                                       | Conductor Size         | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |                                  |                           |                                                                            |                            |
|                                                                                                               | 3x4.00mm <sup>2</sup>  | H07RNF3G4.00 | INT'L* | —              | <HAR>   | 14.0mm    |                          |                |                |            |                                  |                           |                                                                            |                            |
| #87530021: IEC 309 cord—32A, 3-phase                                                                          |                        |              |        |                |         |           | <br>(Harmonized cordage) | 32A<br>3φ      | 380-<br>415    | 70°C       | Red, Black<br>(8.2')<br>cordage  | 2.5m<br>(8.2')            | #85810102,<br>SHC-1041<br>w/o bend rel.<br><br>#074-01-021<br>w/ bend rel. | #82010071                  |
| <br>rubber jacketed cordage |                        |              |        |                |         |           |                          |                |                |            |                                  |                           |                                                                            |                            |
| CORDAGE SPECIFICATIONS*                                                                                       | Conductor Size         | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |                                  |                           |                                                                            |                            |
|                                                                                                               | 5x6.00mm <sup>2</sup>  | H07RNF5G6.00 | INT'L  | —              | <HAR>   | 22.0mm    |                          |                |                |            |                                  |                           |                                                                            |                            |
| #87540021: IEC 309 cord—63A, 3-phase                                                                          |                        |              |        |                |         |           | <br>(Harmonized cordage) | 63A<br>3φ      | 380-<br>415    | 70°C       | Red, Black<br>(8.2')<br>cordage  | 2.5m<br>(8.2')            | #SHC-1052<br>w/o bend rel.<br><br>#074-01-027<br>w/ bend rel.              | #82010100                  |
| <br>rubber jacketed cordage |                        |              |        |                |         |           |                          |                |                |            |                                  |                           |                                                                            |                            |
| CORDAGE SPECIFICATIONS*                                                                                       | Conductor Size         | Description  | Wiring | Typ. Stranding | Marking | Nom. O.D. |                          |                |                |            |                                  |                           |                                                                            |                            |
|                                                                                                               | 5x10.00mm <sup>2</sup> | H07RNF5G10.0 | INT'L  | —              | <HAR>   | 26.0mm    |                          |                |                |            |                                  |                           |                                                                            |                            |

\* Conductor Wiring Code: INT'L—International: brown (line), blue (neutral), green/yellow (ground)  
Marking: International Harmonized cordage may be marked on outer or inner conductor, or an identifying tracer thread can be incorporated with conductors.

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# International & North American Cordage

Products being shipped to Europe—and almost everywhere outside of North America—must utilize Harmonized cordage manufactured to CENELEC standard HD-21 (for PVC jacketed cordage) or HD-22 (rubber jacketed). Harmonized cordage differs from North American AWG cordage in several ways, the most important of which are:

## Conductor color coding:

| Conductor | Harmonized   | North Amer. AWG |
|-----------|--------------|-----------------|
| Line      | Brown        | Black           |
| Neutral   | Blue         | White           |
| Ground    | Green-Yellow | Green           |

**Metric and AWG:** Harmonized wire sizes are expressed in metric units; North American wire sizes are expressed in AWG). Here is how they compare:

| AWG    | Closest Metric Equiv. | Max. Current |
|--------|-----------------------|--------------|
| 18 AWG | 0.75mm <sup>2</sup>   | 6A           |
| 16 AWG | 1.00mm <sup>2</sup>   | 10A          |
| 14 AWG | 1.50mm <sup>2</sup>   | 16A          |

**Constructional differences:** Tensile strength of UL 62 cordage is typically greater than similar sizes of Harmonized cordage. Harmonized cordage may have textile threads in the construction which are used to indicate the manufacturer of the cordage.

## International Harmonized Cordage



All items normally available from stock.  
No minimum order requirements.

Approved by VDE to HD-21 (PVC jacketed cordage) or HD-22 (rubber jacketed cordage). Most cordage is also sold by the reel; contact us for more information.

### 3 Conductors



International color coding: Brown (line), Blue (neutral), Green/Yellow (Ground)

| Part No. | Conductor Size        | Jacket Material | Cur. Rat. | Volt. Rating | Temperature Rating | O.D. (mm) | Color | HD-21 or HD-22 Code |
|----------|-----------------------|-----------------|-----------|--------------|--------------------|-----------|-------|---------------------|
| 86010014 | 3x0.75mm <sup>2</sup> | PVC             | 6A        | 300/500V     | -15°C to +70°C     | 6.4-8.0   | Black | H05VVF3G0.75        |
| 86010044 | 3x1.00mm <sup>2</sup> | PVC             | 10A       | 300/500V     | -15°C to +70°C     | 6.8-8.4   | Black | H05VVF3G1.00        |
| 86010074 | 3x1.50mm <sup>2</sup> | PVC             | 16A       | 300/500V     | -15°C to +70°C     | 8.0-9.8   | Black | H05VVF3G1.50        |
| 86010124 | 3x2.50mm <sup>2</sup> | PVC             | 25A       | 300/500V     | -15°C to +70°C     | 9.6-12.0  | Black | H05VVF3G2.50        |
| 86010380 | 3x1.50mm <sup>2</sup> | Rubber          | 16A       | 450V         | 60°C               | 9.6-12.5  | Black | H07RNF3G1.50        |
| 86010390 | 3x2.50mm <sup>2</sup> | Rubber          | 25A       | 450V         | 60°C               | 11.5-14.5 | Black | H07RNF3G2.50        |
| 86010400 | 3x4.00mm <sup>2</sup> | Rubber          | 32A       | 450V         | 60°C               | 13.0-16.0 | Black | H07RNF3G4.00        |

### 5 Conductors (3 phase applications)



International color coding: Brown (line), Blue (neutral), Green/Yellow (Ground), plus two black conductors

|          |                       |        |     |          |                |           |       |              |
|----------|-----------------------|--------|-----|----------|----------------|-----------|-------|--------------|
| 86010354 | 5x1.50mm <sup>2</sup> | PVC    | 16A | 300/500V | -15°C to +70°C | 10.4 (±2) | Black | H05VVF5G1.5  |
| 86010374 | 5x2.50mm <sup>2</sup> | PVC    | 25A | 300/500V | -15°C to +70°C | 12.4 (±3) | Black | H05VVF5G2.5  |
| 86010410 | 5x2.50mm <sup>2</sup> | Rubber | 20A | 450V     | 60°C           | 13.5-17.0 | Black | H07RNF5G2.5  |
| 86010420 | 5x4.00mm <sup>2</sup> | Rubber | 25A | 450V     | 60°C           | 16.0-19.5 | Black | H07RNF5G4.0  |
| 86010430 | 5x6.00mm <sup>2</sup> | Rubber | 32A | 450V     | 60°C           | 18.0-24.5 | Black | H07RNF5G6.0  |
| 86010440 | 5x10.0mm <sup>2</sup> | Rubber | 63A | 450V     | 60°C           | 24.0-30.5 | Black | H07RNF5G10.0 |
| 86010490 | 5x16.0mm <sup>2</sup> | Rubber | 82A | 450V     | 60°C           | 27.0-35.5 | Black | H07RNF5G16.0 |

## North American AWG Cordage

All items normally available from stock.  
No minimum order requirements.

Note: This cordage is UL listed. It carries CSA certification only if it is ordered by the reel; contact us for reel part numbers.

### 3 Conductors



Color coding: Black (line), White (neutral), Green (Ground)

| Part No. | Conductor Size | Jacket Material | Cur. Rat. | Volt. Rating | Temperature Rating | O.D. (inches) | Color | Cordage Type |
|----------|----------------|-----------------|-----------|--------------|--------------------|---------------|-------|--------------|
| 86010450 | 3x18AWG        | PVC             | 10A       | 300V         | 60°C               | .325" nom.    | Black | SJT          |
| 86010460 | 3x16AWG        | PVC             | 13A       | 300V         | 60°C               | .345" nom.    | Black | SJT          |
| 86010470 | 3x14AWG        | PVC             | 18A       | 300V         | 60°C               | .378" nom.    | Black | SJT          |
| 86010480 | 3x12AWG        | PVC             | 25A       | 300V         | 60°C               | .445" nom.    | Black | SJT          |
| 86010600 | 3x14AWG        | Rubber          | 18A       | 600V         | 90°C               | .560" nom.    | Black | SO           |
| 86010610 | 3x12AWG        | Rubber          | 25A       | 600V         | 90°C               | .560" nom.    | Black | SO           |
| 86010620 | 3x10AWG        | Rubber          | 30A       | 600V         | 90°C               | .560" nom.    | Black | SO           |

### 5 Conductors (3 phase applications)



Color coding: Brown (line), Blue (neutral), Green/Yellow (Ground), 4th conductor = red, 5th conductor = orange

|          |         |        |     |      |                 |            |       |          |
|----------|---------|--------|-----|------|-----------------|------------|-------|----------|
| 86010660 | 5x10AWG | Rubber | 25A | 600V | -50°C to +105°C | .830" nom. | Black | SO & SOW |
| 86010610 | 5x8AWG  | Rubber | 35A | 600V | -50°C to +105°C | .875" nom. | Black | SO       |
| 86010620 | 5x4AWG  | Rubber | 60A | 600V | -50°C to +105°C | 1.42" nom. | Black | SEO      |

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• 300 Volt Service • Operating temperature – 90° to + 260°C • Silver Plated Conductor • Multi-layer TFE-Teflon® insulation insures uniformity, quality, and concentricity • Extreme Flexibility; long lengths • No danger from Soldering Irons • Chemically Inert — Weather resistant, non-flammable; zero moisture absorption; natural lubricity • Available in 10 Bright colors • Space & Weight savings invaluable in miniaturization programs • Parallel flat, triangular, and twisted multi-conductor cables available.

| Catalog Number | AWG Size | Bare Conductor Diameter | Stranding | Insulation Wall Thickness |         | Insulated Wire Diameter |         |         |
|----------------|----------|-------------------------|-----------|---------------------------|---------|-------------------------|---------|---------|
|                |          |                         |           | Minimum                   | Maximum | Minimum                 | Nominal | Maximum |
| 30738MHW       | 30       | .0120                   | 7/38      | .0029                     | .0039   | .0178                   | .0188   | .0198   |
| 301040MHW      | 30       | .0114                   | 10/40     | .0029                     | .0039   | .0172                   | .0182   | .0192   |
| 301942MHW      | 30       | .0125                   | 19/42     | .0029                     | .0039   | .0183                   | .0193   | .0203   |
| 302544MHW      | 30       | .0115                   | 25/44     | .0029                     | .0039   | .0173                   | .0183   | .0193   |
| 304046MHW      | 30       | .0117                   | 40/46     | .0029                     | .0039   | .0175                   | .0185   | .0195   |
| 32740MHW       | 32       | .0093                   | 7/40      | .0025                     | .0035   | .0143                   | .0153   | .0163   |
| 321944MHW      | 32       | .0100                   | 19/44     | .0022                     | .0036   | .0154                   | .0163   | .0172   |
| 322546MHW      | 32       | .0093                   | 25/46     | .0025                     | .0035   | .0143                   | .0153   | .0163   |
| 326450MHW      | 32       | .0093                   | 64/50*    | .0025                     | .0035   | .0143                   | .0153   | .0163   |
| 34540MHW       | 34       | .0078                   | 5/40      | .0025                     | .0032   | .0128                   | .0135   | .0142   |
| 34742MHW       | 34       | .0075                   | 7/42      | .0024                     | .0030   | .0123                   | .0129   | .0135   |
| 341044MHW      | 34       | .0073                   | 10/44     | .0022                     | .0028   | .0121                   | .0127   | .0133   |
| 341646MHW      | 34       | .0074                   | 16/46     | .0023                     | .0029   | .0122                   | .0128   | .0134   |
| 341946MHW      | 34       | .0080                   | 19/46     | .0024                     | .0032   | .0129                   | .0137   | .0145   |
| 344050MHW      | 34       | .0073                   | 40/50*    | .0022                     | .0028   | .0121                   | .0127   | .0133   |
| 36340MHW       | 36       | .0061                   | 3/40      | .0015                     | .0025   | .0093                   | .0102   | .0111   |
| 36744MHW       | 36       | .0060                   | 7/44      | .0015                     | .0025   | .0092                   | .0101   | .0110   |
| 361046MHW      | 36       | .0059                   | 10/46     | .0015                     | .0025   | .0091                   | .0100   | .0109   |
| 362550MHW      | 36       | .0058                   | 25/50*    | .0015                     | .0025   | .0090                   | .0099   | .0109   |
| 38444MHW       | 38       | .0046                   | 4/44      | .0017                     | .0021   | .0080                   | .0084   | .0088   |
| 38746MHW       | 38       | .0048                   | 7/46      | .0017                     | .0021   | .0082                   | .0086   | .0090   |
| 381650MHW      | 38       | .0046                   | 16/50*    | .0017                     | .0021   | .0080                   | .0084   | .0088   |
| 401050MHW      | 40       | .0037                   | 10/50*    | .0015                     | .0017   | .0067                   | .0069   | .0071   |
| 42650MHW       | 42       | .0031                   | 6/50*     | .0013                     | .0015   | .0057                   | .0059   | .0061   |

\*Bare Copper Conductor

## TDQ SUBMINIATURE LEAD WIRE

For greater economy, but still retaining all the features of our MHW (with the exception of less flexibility) try our TDQ Wire. Bare Copper or Silver Plated Copper Conductor standard. Conductor of your choice may also be used.

| Catalog Number | AWG Size | Bare Conductor Diameter | Insulation Wall Thickness |         | Insulated Wire Diameter |         |         |
|----------------|----------|-------------------------|---------------------------|---------|-------------------------|---------|---------|
|                |          |                         | Minimum                   | Maximum | Minimum                 | Nominal | Maximum |
| 24TDQ          | 24       | .0201                   | .0035                     | .0049   | .0269                   | .0285   | .0301   |
| 26TDQ          | 26       | .0159                   | .0032                     | .0045   | .0222                   | .0236   | .0251   |
| 28TDQ          | 28       | .0126                   | .0029                     | .0039   | .0183                   | .0194   | .0206   |
| 30TDQ          | 30       | .0100                   | .0027                     | .0036   | .0153                   | .0163   | .0173   |
| 32TDQ          | 32       | .0080                   | .0025                     | .0032   | .0129                   | .0137   | .0145   |
| 34TDQ          | 34       | .0063                   | .0021                     | .0027   | .0104                   | .0111   | .0118   |
| 36TDQ          | 36       | .0050                   | .0019                     | .0023   | .0087                   | .0092   | .0097   |
| 38TDQ          | 38       | .0040                   | .0016                     | .0019   | .0071                   | .0075   | .0079   |
| 40TDQ          | 40       | .0031                   | .0013                     | .0015   | .0056                   | .0059   | .0062   |
| 42TDQ          | 42       | .0025                   | .0010                     | .0012   | .0044                   | .0047   | .0050   |
| 44TDQ          | 44       | .0020                   | .0009                     | .0011   | .0037                   | .0040   | .0043   |

## MFC MULTICONDUCTOR MICROMINIATURE AND SUBMINIATURE FLAT CABLES GAUGES: 24—44

### Servicing... ELECTRONICS MEDICAL PACKAGING

Specializing in the application of less than .00025" to over .006" of Teflon® (TFE and FEP) to wires of any composition in AWG. Gauges: 14 to 60.

- Teflon® Insulated Magnet Wire. Gauges: 14 to 60
- Teflon® Tubing & Lead Wire
- Wire Harness & Electronic Assembly Capability
- Microminiature and Subminiature Flat Cables. Gauges: 24 to 44

**No Order Too Large or Too Small!**

\*Registered Trademark of the duPont Co.



## PHOENIX WIRE, INC.

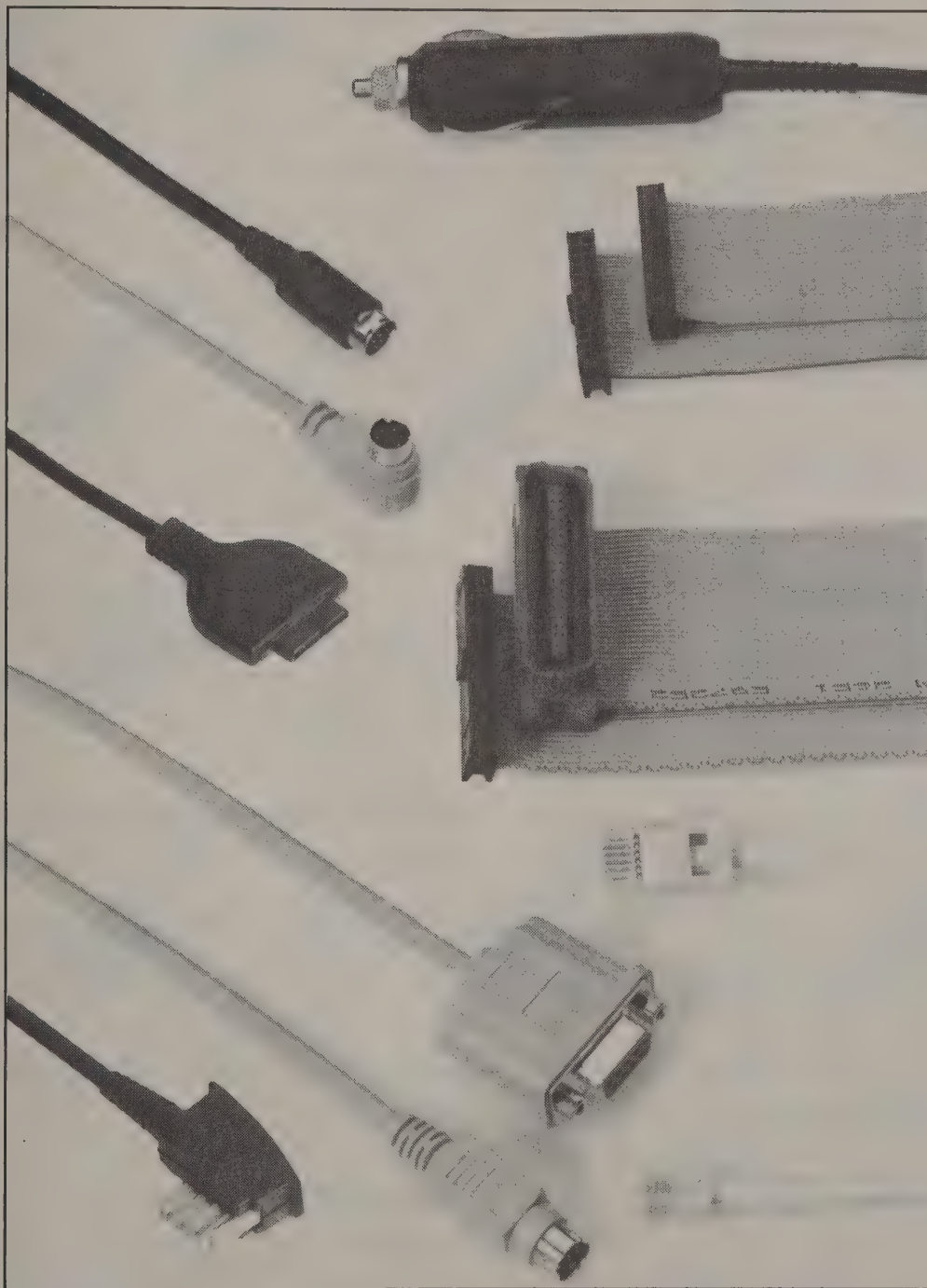
100 TEFLON AVENUE, SOUTH HERO, VERMONT 05486  
Telephone 802-372-4561





The following information is excerpted from our catalog. Please contact us for your complete guide to the components available from RDI Electronics.

## CABLES



*FROM PROTOTYPE TO PRODUCTION, SPECIFY RDI ELECTRONICS FOR QUALITY, SERVICE AND COMPETITIVE PRICING.*

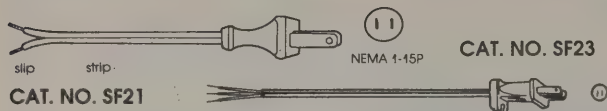
**RDI Electronics, Inc.,/ Dept. E, 147 Palmer Ave., Mamaroneck, NY 10543 Tel: 914-777-7000/ Fax: 914-777-7070**

**RODALE**  
Technical Sales Inc.

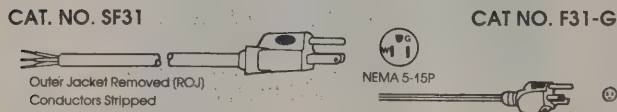
577 Main Street, Islip, New York 11751  
516-277-5454 Telex: 5106007812 FAX: 516-277-8375  
West Coast Sales Office: 714-283-3140

# power supply cords

## Power Supply Cords



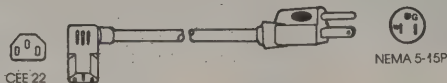
| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SPT-2                | 16AWG/2C 13A, 125V |
| SPT-1, SPT-2, HPN    | 18AWG/2C 10A, 125V |
| XT                   | 20AWG/2C 5A, 125V  |
| HPN                  | 16AWG/2C 15A, 125V |
| SJT (O)              | 16AWG/2C 13A, 125V |
| SVT, SJT (O)         | 18AWG/2C 10A, 125V |
| SJT (O)              | 14AWG/2C 15A, 125V |



| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SPT-1 (W-A)          | 18AWG/3C 10A, 125V |
| SPT-2 (W-A)          | 18AWG/3C 10A, 125V |
| SVT (O), SJT (O)     | 18AWG/3C 10A, 125V |
| SJT (O), SPT-2       | 16AWG/3C 13A, 125V |
| SJT (O)              | 14AWG/3C 15A, 125V |

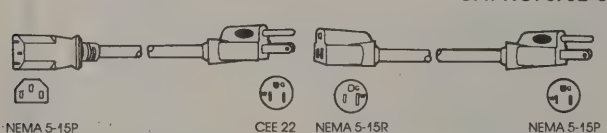
## Detachable Power Supply Cords

CAT. NO. SF83-3120



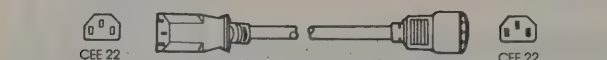
| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SJT, SVT             | 18AWG/3C 10A, 125V |

CAT. NO. SF82-3120



| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SJT, SVT             | 18AWG/3C 10A, 125V |
| SJT                  | 16AWG/3C 13A, 125V |

CAT. NO. SF82-81

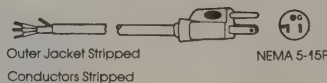


| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SJT, SVT             | 18AWG/3C 10A, 125V |
| SJT                  | 16AWG/3C 13A, 125V |

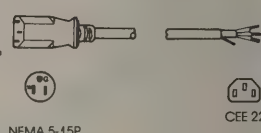


## Shielded Power Supply Cords

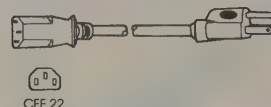
CAT. NO. SF31-SH



CAT. NO. SF82-SH

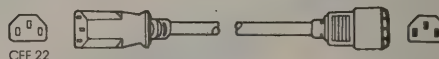


CAT. NO. SF82-3120SH



| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SVT, SJT             | 18AWG/3C 10A, 125V |
| SJT                  | 16AWG/3C 13A, 125V |
| SJT                  | 14AWG/3C 15A, 125V |

CAT. NO. SF81-82SH



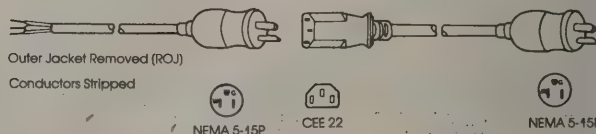
3 Conductor Hooded Male Shielded Included)  
3 Conductor Wiring Harness

| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SVT, SJT             | 18AWG/3C 10A, 125V |
| SJT                  | 16AWG/3C 13A, 125V |
| SJT                  | 14AWG/3C 15A, 125V |

## Hospital Grade Power Supply Cords

CAT. NO. SF33H6

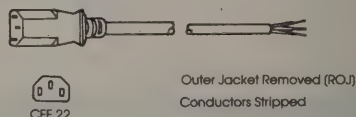
CAT. NO. SF33-82-H6



| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SJT                  | 18AWG/3C 10A, 125V |
| SJT                  | 16AWG/3C 13A, 125V |

## Wiring Harnesses

CAT. NO. SF82

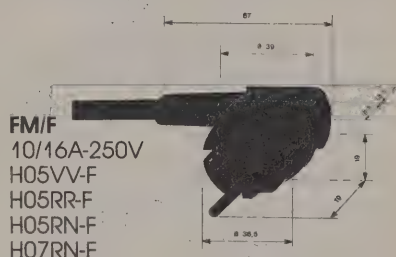


| Applicable Wire Type | Rating             |
|----------------------|--------------------|
| SVT, SJT             | 18AWG/3C 10A, 125V |
| SJT                  | 16AWG/3C 13A, 125V |



277-8375

## Most International Approvals Available



- COAXIAL CABLE
- COMPUTER CABLES
- MONITOR EXTENSION CABLES
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- CEE FLEXIBLE CORD
- EXTENSION CORDS
- CORD GRIP PLUGS

# PRODUCT SELECTION GUIDES

# TECHNICAL INFORMATION

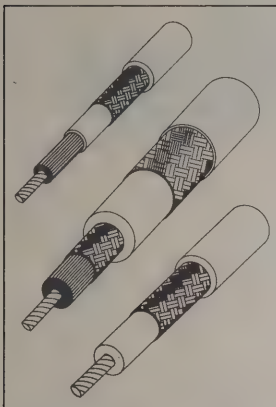
## WHERE TO FIND THEM IN THE 93/94 EDITION OF EEM

|                                                                                 |        |                                                                                |        |
|---------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------|--------|
| AC Power Supplies, Product Selection Guide                                      | D•2221 | Keyboards & Keypads, Product Selection Guide                                   | B•1818 |
| Batteries, Product Selection Guide                                              | D•1419 | Lamps, Lights, & Indicators, Product Selection Guide                           | B•1131 |
| Cabinets, Enclosures, Racks & Chassis, Product Selection Guide                  | C•1003 | Microwave Components, Product Selection Guide                                  | A•1719 |
| Capacitors, Product Selection Guide                                             | A•1003 | Military Qualified Products List                                               | B•1002 |
| Coils, Chokes, Inductors, Product Selection Guide                               | A•1179 | Motors, Drives, & Rotating Components, Product Selection Guide                 | B•1231 |
| Connectors, Terminals & Sockets, Product Selection Guide                        | C•1139 | Oscilloscopes, Product Selection Guide                                         | D•1402 |
| Cores, Magnets & Ferrites                                                       | A•1317 | Panel Hardware, Product Selection Guide                                        | C•1522 |
| Crystals, Oscillators, Crystal & Piezoelectric Filters, Product Selection Guide | A•1326 | Panel Meters, Analog & Digital, Product Selection Guide                        | D•1336 |
| DC-DC Converters                                                                | D•2049 | Potentiometers, Trimmers, Controls, & Rheostats, Product Selection Guide       | A•2053 |
| DC Power Supplies, Product Selection Guide                                      | D•1488 | Power Supplies, AC, Product Selection Guide                                    | D•2221 |
| Delay Lines, Product Selection Guide                                            | A•1513 | Power Supplies, DC, Product Selection Guide                                    | D•1488 |
| Discrete Semiconductors, Product Selection Guide                                | A•2130 | Protective Components (Fuses, Circuit Breakers, etc.), Product Selection Guide | B•1341 |
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| Fans, Blowers, Cooling Equipment, & Heat Exchangers, Product Selection Guide    | C•1557 | Resistors, Product Selection Guide                                             | A•1859 |
| Fiber Optics, Product Selection Guide                                           | B•1200 | Solenoids, Product Selection Guide                                             | B•1626 |
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| Filters, Signal, Product Selection Guide                                        | A•1617 | Thermal Components, Product Selection Guide                                    | B•1857 |
| Instruments, Test & Measuring, Product Selection Guide                          | D•1215 | Transducers & Encoders, Product Selection Guide                                | B•1911 |
| Interconnection Systems, Product Selection Guide                                | C•1670 | Transformers, Product Selection Guide                                          | A•2229 |
|                                                                                 |        | Wire & Cable, Product Selection Guide                                          | C•1701 |



# Rowe High Temperature, High Voltage, Cable and Wire

## High Voltage Cable



Rowe Industries has provided industry and the military with high reliability, corona-free, high voltage cable designed for use in varied and exacting applications such as accelerators, radar, X-ray, and ECM equipment.

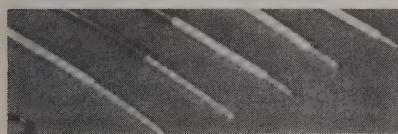
The semi-conducting corona-suppressing layers with thermosetting materials provide noise free, corona-free cable and wire. Various high pulse coax and triax types are listed in the chart.

Primary insulation is extruded silicone and outer jacket is silicone, neoprene or PVC. Consult factory for exact cable construction.

Cable jacket color is black. Additional colors are available for some cables. Consult factory.

| Rowe Cable No. | Center Conductor AWG Size & Plating | Final O.D. (Inches) | Capitance Rating PF/FT | Voltage Rating KVDC |
|----------------|-------------------------------------|---------------------|------------------------|---------------------|
| <b>Coax</b>    |                                     |                     |                        |                     |
| R5234-1        | #20 (14/32) TPC                     | .215                | 43                     | 30                  |
| R5743-1        | #20 (19/32) SPC                     | .260                | 30                     | 15                  |
| R1020-2        | #20 (19/32) TPC                     | .280                | 36                     | 15                  |
| 2R1032-4       | #16 (19/29) SPC                     | .340                | 48                     | 30                  |
| R3146-2        | #22 (19/34) SPC                     | .285                | 50                     | 25                  |
| 2R1020-3       | #20 (7/26) SPC                      | .375                | 46                     | 30                  |
| R1037-1        | #16 (19/29) TPC                     | .495                | 50MMF/FT               | 25                  |
| R1035-1        | #16 (19/29) TPC                     | .565                | 50                     | 25                  |
| R7000-1        | #16 (19/29) TPC                     | .615                | 56                     | 40                  |
| R1006-1        | #12 (19/25) TPC                     | .625                | 50                     | 50                  |
| R1081-2        | #12 (19/25) SPC                     | .670                | 55                     | 56                  |
| 2R1080-1       | #10 (37/26) TPC or SPC              | 1.100               | 55                     | 90                  |
| R1046-1        | #10 (19/23) TPC                     | .830                | 49                     | 75                  |
| <b>Triax</b>   |                                     |                     |                        |                     |
| R1296-1        | #12 (19/25) TPC                     | .540                | 66                     | 30                  |
| R7010-1        | #6 (13/27) TPC                      | .825                | 100                    | 40                  |
| R7020-1        | #12 (19/25) TPC                     | .880                | 56                     | 55                  |
| 2R1068-1       | #8 (13/29) SPC                      | 1.200               | 51                     | 80                  |
| R1068-1        | #10 (19/23) TPC or SPC              | 1.000               | 40                     | 100                 |

## High Voltage Silicone Coated Teflon Insulated Wire



Rowe's high voltage silicone coated teflon wire is designed for use in radar systems, ECM's, CRT displays, laser systems, and airborne system applications where maximum operating capability with minimal size is a must.

Silicone coated teflon wire offers excellent dielectric strength while maintaining the small diameter so often required in a systems' package design. The wire can be easily bonded to with most silicone based RTV's, eliminating the need for chemical etching of teflon wires.

All operating voltages listed are continuous DC ratings from +55°C to +150°C, and sea level to 70,000 ft.

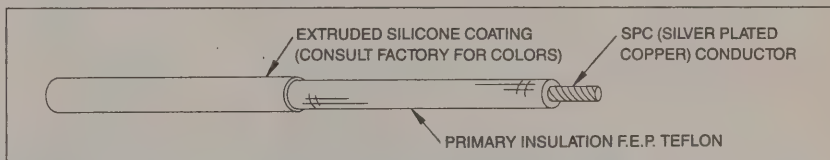
\* Nomex is a trademark for DuPont Aramid (Polyimide) Fibers "Teflon" is a trademark of DuPont

### Features:

- Voltage ratings thru 60 kvdc • 26 AWG thru 20 AWG conductor • -55°C to +150°C operating temperature range • High flexible • Easy bonding to extruded silicone outer jacket • Small diameter
- Available with or without silicone outer jacket
- Available with or without Nomex\* braid

**Ordering Information:** When ordering wire specify part number followed by applicable dash number for color.

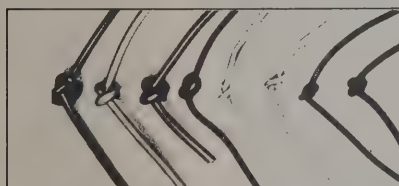
EXAMPLE: **RCB10081-24-6**  
BASE PART NO. \_\_\_\_\_ COLOR \_\_\_\_\_



| Base Part No. | Conductor      | Physical Characteristics |            | Electrical Characteristics |              |
|---------------|----------------|--------------------------|------------|----------------------------|--------------|
|               |                | Primary O.D.             | Final O.D. | Operating Voltage          | Test Voltage |
| RCB10081-24   | 24 (19/36) AWG | .050 NOM.                | .070 NOM.  | 18 KVDC                    | 36 KVDC      |
| RCB10081-22   | 22 (19/34) AWG | .060 NOM.                | .080 NOM.  | 20 KVDC                    | 40 KVDC      |
| RCB10081-20   | 20 (19/32) AWG | .080 NOM.                | .100 NOM.  | 22 KVDC                    | 45 KVDC      |
| RCB10081-19   | 20 (19/32) AWG | .100 NOM.                | .120 NOM.  | 25 KVDC                    | 50 KVDC      |

Follows standard IEEE color code.

## "Super Tough" and "UL 3239" High Voltage Silicone Lead Wire



"Super Tough" High Voltage Silicone Lead Wire was developed for high abrasion resistance requirements and exhibits excellent dielectric capability in extreme environments. "UL 3239" High Voltage Silicone Lead Wire exhibits excellent dielectric capability in extreme environment areas where high abrasion resistance, high voltage, flame resistance, and flexibility are major requirements.

### Specifications\*

Conductor — Silver or tin plated copper stranding\*\* (SPC indicates silver plating)

Temperature Rating:

"Super Tough" —

SPC -65° to +200°C (250°C Intermittent)

TPC -40°C to +150°C

"UL 3239" — 150°C (250°C Intermittent)

Voltage Ratings — Maximum DC voltage rating in air

Wire Marking — Per UL 3239 requirements

### "Super Tough" High Voltage Silicone Lead Wire

| Rowe Catalog No. | AWG Size | Strand | O.D. Nom. | Maximum Operating Voltage Rating DC |
|------------------|----------|--------|-----------|-------------------------------------|
| R790-0222        | 22       | 19/34  | .054      | 2KV                                 |
| R790-0522        | 22       | 7/30   | .070      | 5KV                                 |
| R790-1022        | 22       | 19/34  | .090      | 10KV                                |
| R790-1522        | 22       | 19/34  | .110      | 15KV                                |
| R790-2022        | 22       | 7/30   | .130      | 20KV                                |
| R790-2522        | 22       | 19/34  | .160      | 25KV                                |
| R790-6022        | 22       | 19/34  | .380      | 60KV                                |
| R790-1520        | 20       | 19/32  | .120      | 15KV                                |
| R790-2020        | 20       | 19/32  | .150      | 20KV                                |
| R790-2520        | 20       | 19/32  | .166      | 25KV                                |
| R790-3020        | 20       | 19/32  | .190      | 30KV                                |
| R790-2518        | 18       | 19/30  | .160      | 25KV                                |
| R790-4518        | 18       | 19/30  | .295      | 45KV                                |
| R790-2016        | 16       | 41/32  | .161      | 20KV                                |
| R790-3516        | 16       | 41/32  | .265      | 35KV                                |
| R790-4516        | 16       | 19/29  | .300      | 45KV                                |
| R790-6016        | 16       | 26/30  | .380      | 60KV                                |
| R790-3014        | 14       | 19/27  | .256      | 30KV                                |
| R790-6014        | 14       | 19/27  | .385      | 60KV                                |
| R790-2012        | 12       | 19/25  | .205      | 20KV                                |
| R790-3012        | 12       | 19/25  | .275      | 30KV                                |
| R790-4012        | 12       | 19/25  | .335      | 40KV                                |
| R790-5012        | 12       | 19/25  | .414      | 50KV                                |
| R790-6012        | 12       | 19/25  | .445      | 60KV                                |

### "UL 3239" High Voltage Silicone Lead Wire

| Rowe Catalog No. | AWG Size | Strand | Nom. Wall Thickness (Inches) | Nom. O.D. | Voltage Rating |
|------------------|----------|--------|------------------------------|-----------|----------------|
| *R800-2022       | 22       | 7/30   | .050                         | .130      | 20KV           |
| R800-2522        | 22       | 7/30   | .065                         | .160      | 25KV           |
| R800-3022        | 22       | 7/30   | .090                         | .210      | 30KV           |
| R800-2020        | 20       | 10/30  | .050                         | .135      | 20KV           |
| R800-2520        | 20       | 10/30  | .065                         | .165      | 25KV           |
| R800-3020        | 20       | 10/30  | .090                         | .215      | 30KV           |
| R800-2018        | 18       | 16/30  | .050                         | .150      | 20KV           |
| R800-2518        | 18       | 16/30  | .065                         | .180      | 25KV           |
| R800-3018        | 18       | 16/30  | .090                         | .230      | 30KV           |
| R800-2016        | 16       | 26/30  | .050                         | .160      | 20KV           |
| R800-3016        | 16       | 26/30  | .090                         | .240      | 30KV           |
| R800-4016        | 16       | 26/30  | .120                         | .300      | 40KV           |
| R800-3014        | 14       | 41/30  | .090                         | .255      | 30KV           |
| R800-4014        | 14       | 41/30  | .120                         | .315      | 40KV           |
| R800-4012        | 12       | 65/30  | .120                         | .335      | 40KV           |
| R800-5012        | 12       | 65/30  | .160                         | .415      | 50KV           |
| R800-4010        | 10       | 105/30 | .120                         | .360      | 40KV           |
| *R800-5010       | 10       | 105/30 | .160                         | .440      | 50KV           |

\*Per UL3239 requirements.

\*Consult factory for variation available for conductor stranding, plating, AWG, size and voltage rating. Standard insulation is white. Other colors and special configurations available.

\*\*When ordering tin plated stranding, add "TPC" to P/N (i.e. R790-2022/TPC)

## Connectors • Cable Assemblies • Electronic Products • Specialists in Corona-Free High Voltage Interconnections

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**Talley**  
Industries

For information on Rowe connections and cable assemblies see the Connectors, Terminals & Sockets Section.

# SHOGYO CONNECTORS, JACKS & PLUGS

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• Jacks:

RCA phono and chassis mount, communications, phone, multi-conductor, closed and open circuit, stereo, in-line, barrel, sub miniature enclosed phone, PC mount, panel mount, DC, open frame, DC power, earphone, DIN, headphone, combination, auto an-

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• Plugs:

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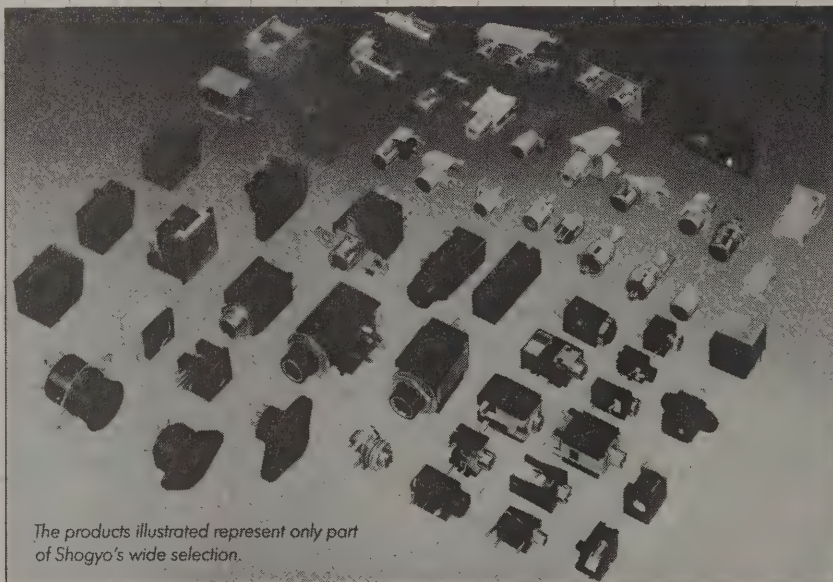
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• Shielding

• A wide variety of angles, mountings, sizes and shapes

• Mating components for virtually all items

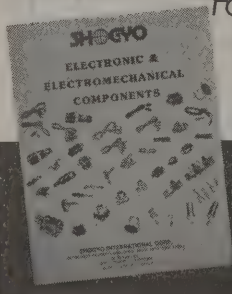


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# SHOGYO CORD SETS AND CABLE ASSEMBLIES

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- Audio:

shielded, unshielded, single or multi-conductor, with molded plugs and in-line jacks

- Zip:

standard or custom lengths, gauges, insulation thicknesses and jacket colors, with DC or phone plugs in a variety of sizes

- Computer/Video:

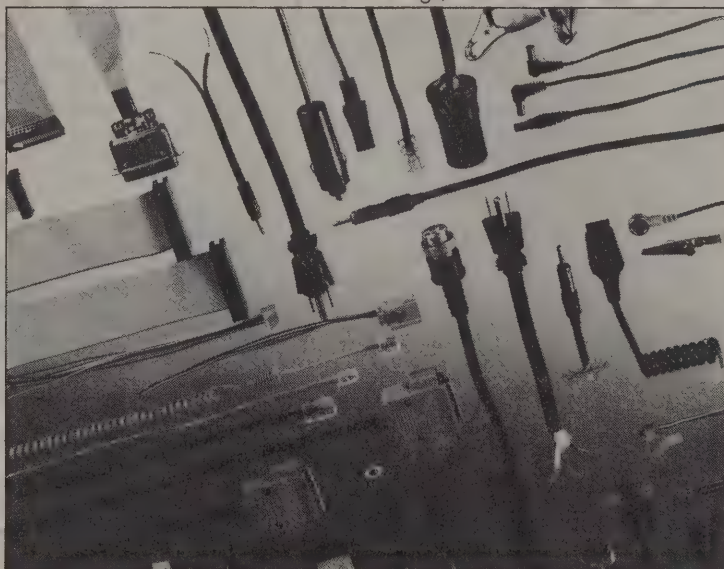
(from 9-50 pins, male or female, plastic or metal, low-profile, edgewise or multi-polar), DIN cables produced to spec (available with shielding), and RCA phono

- Power:

European or American, single or multi-conductor, custom made to specified current and temperature ratings, standard SPT-1 & 2, ST, SVT, SJT, XT or PXT, UL/CSA approved

- And featuring:

- A comprehensive selection of lengths, thicknesses, coilings, and end terminations



The products illustrated represent only part of Shogyo's wide selection.

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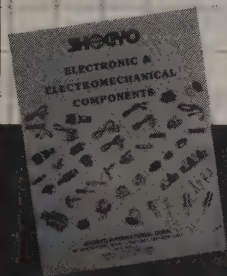
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**SHOGYO**



# Switchcraft

A Raytheon Company

## M O L D E D C A B L E A S S E M B L I E S

Switchcraft quality-molded cable assemblies offer built-in cable clamps to eliminate strain. Cables are available in black or chrome gray with matching plastic handles which have been functionally designed for a positive grip. Other features which ensure exceptional life and performance are:

- Soldered and/or crimped connections for positive electrical continuity.
- Molded assemblies protect against moisture, noise and shorts.
- Shielding and impedance matched to eliminate RF noise and guard against loss of frequency response.

### DIN PLUGS

Switchcraft's versatile system of molded cable assemblies and mating receptacles meets the increased demand for modern, miniature connectors for a wide range of electrical/electronic applications. Connectors are DIN circular type and are fully field-proven in electronic applications. Strict requirements of FCC 20780 docket are fully addressed in offering fully shielded links.

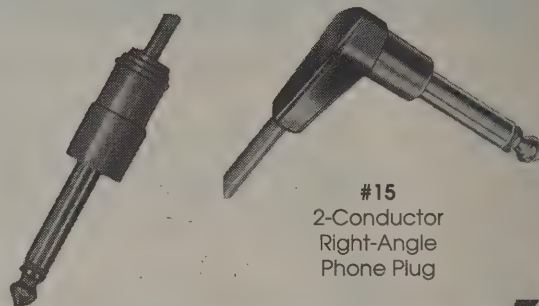
The system comprises male and female plugs, locking and non-locking, with 3 to 8 pins/contacts. Units are fully-molded and protected with a rugged handle and advanced design cable relief. A complete range of mating receptacles is also available.

### CABLE TYPES

| DESIGNATION | DESCRIPTION                                      | SIZE (AWG) |
|-------------|--------------------------------------------------|------------|
| A           | 1-conductor coaxial with spiral shield           | 22         |
| B           | 2-conductor with single spiral shield and jacket | 22         |
| D           | 1-conductor coaxial with spiral shield           | 25         |
| F           | 2-conductor parallel coaxial                     | 25         |

NOTE: F is a twin cable which can be attached on each end to either a pair of mono connectors or a single stereo connector.

See following page for part numbering system



#05  
2-Conductor  
Phone Plug

#15  
2-Conductor  
Right-Angle  
Phone Plug



#25  
2-Conductor  
Phono Plug



#40  
2-Conductor  
Phone  
Tini-Plug



#80  
2-Conductor  
#81  
3-Conductor  
Phone  
Extension  
Jax



#82  
2-Conductor  
Phono  
Extension  
Jax



#83  
Tini  
Extension  
Jax



#84  
Stripped & Tinned Ends

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### MOLDED CABLES PART NUMBERING SYSTEM

#### TO CREATE A PART NUMBER

- 1 Identify Terminations (both ends)
- 2 Locate Color and Type of Cable
- 3 Select the Length of Assembly

#### MONO MOLDED CABLE ASSEMBLIES

| TERMINATION                       | COLOR                  | CABLE*                 | LENGTH (feet)                                | TERMINATION                       |
|-----------------------------------|------------------------|------------------------|----------------------------------------------|-----------------------------------|
| <div><div></div><div></div></div> | <div><div></div></div> | <div><div></div></div> | <div><div></div><div></div><div></div></div> | <div><div></div><div></div></div> |
| 0 5                               | G - Gray               | A                      | 0 1 8 (1.5)                                  | 0 5                               |
| 1 5                               | H - Black              | D                      | 0 2 4 (2)                                    | 1 5                               |
| 2 5                               |                        | F                      | 0 3 6 (3)                                    | 2 5                               |
| 4 0                               |                        |                        | 0 4 8 (4)                                    | 4 0                               |
| 8 0                               |                        |                        | 0 7 2 (6)                                    | 8 0                               |
| 8 2                               |                        |                        | 1 2 0 (10)                                   | 8 2                               |
| 8 3                               |                        |                        |                                              | 8 3                               |
|                                   |                        |                        |                                              | 8 4                               |

#### STEREO MOLDED CABLE ASSEMBLIES

|     |           |   |                 |     |
|-----|-----------|---|-----------------|-----|
| 1 0 | G - Gray  | B | (same as above) | 1 0 |
| 8 1 | H - Black | F |                 | 8 4 |

\* See "Cable Types" chart on previous page.

#### NOTES:

- Some configurations will be special orders.
- Only cable "A" may be used with #80 termination.
- Larger plug (#45) will be supplied in place of #40 plug when used with cable "A".
- Mono plugs attached to twin cable "F" will have one plug colored red for right channel.
- Contact Switchcraft for all special orders.

#### TYPICAL STANDARD PART NUMBERS

| Straight 2-conductor Phone Plug (#05) to: |       |        |                          |
|-------------------------------------------|-------|--------|--------------------------|
| Termination (other end)                   | Cable | Length | Part Number <sup>1</sup> |
| (phone plug) #05                          | A     | 6'     | 05HA07205                |
| (stripped wires) #84                      | A     | 3'     | 05HA03684                |

| Phono Plugs (#25) to: |   |    |           |
|-----------------------|---|----|-----------|
| (phono jack) #82      | A | 6' | 25HA07282 |

| Dual Phono Plugs (#25) to: |   |     |           |
|----------------------------|---|-----|-----------|
| (dual phono jacks) #82     | F | 10' | 25HF12082 |

| 3.5mm Miniature Plug (#40) to: |   |    |           |
|--------------------------------|---|----|-----------|
| (3.5 mm plug) #40              | D | 6' | 40HD07240 |

<sup>1</sup> All cables listed here are black

See previous page for product photographs

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# COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

## A

**A/D** acrylonitrile butadiene-styrene  
**A/D** analog to digital  
**ADC** analog to digital converter  
**ADP** automatic data processing  
**AFC** audio frequency control  
**AFT** automatic filter test  
**ALGOL** algorithmic language  
**AM** a logical operator  
**AQL** acceptable quality level  
**ASCII** American national standard code for information interchange  
**ASIC** application specific IC  
**ATE** automatic test equipment  
**ATG** automatic test generation  
**AWG** American wire gauge

## B

**BALUN** balanced to unbalanced  
**BASIC** beginners' all-purpose symbolic instruction  
**BCD** binary-coded decimal  
**BNC** baby "N" connector  
**BUS** basic utility syste

## C

**CAD** computer-aided design  
**CAE** computer-aided engineering  
**CAM** computer-aided manufacture  
**CAMAC** computer-automated measurement and control  
**CAPP** computer-aided process planning  
**CAT** computer-aided test  
**CATV** cable television or community antenna television  
**CCC** (leaded) ceramic chip carriers  
**CCD** computer-controlled display  
**CERMET** ceramic metal element  
**CIE** computer-integrated engineering  
**CIM** computer-integrated manufacturing  
**CLCC** ceramic leadless chip carriers  
**CMOS** complementary metal-oxide semiconductor  
**Comm.** communications  
**CPS** characters per second  
**CPU** central processing unit

## D

**D/A** digital to analog  
**DAC** digital to analog converter  
**DBMS** data base management system  
**DC** direct current  
**DFT** design for testability  
**DIAC** bidirectional trigger diode  
**DIL** dual in-line  
**DIN** Deutsche Industrie Normenausschuss  
**DIP** dual in-line package  
**DPM** digital panel meter  
**DRAM** dynamic RAM  
**DTL** diode transistor logic

## E

**EDA** electronic design automation  
**EDP** electronic data processing  
**EBCDIC** extended binary coded decimal interchange code  
**EEPROM** electrically erasable PROM

**EIA** Electronic Industries Association

**EMC** electromagnetic compatibility  
**EMI** electromagnetic interference  
**EMP** electromagnetic pulse  
**EPROM** erasable programmable ROM  
**ESR** equivalent series resistance

## F

**FEP** fluorinated ethylene propylene Copolymer, 200° Teflon  
**FET** field-effect transistor  
**FM** frequency modulation  
**FORTAN** formula translator

## G

**GaAsFET** gallium arsenide FET  
**CMIP** commn management information protocol  
**GPIB** general purpose interface bus  
**GPS** global positioning system

## H

**HF** high frequency (3 to 30 MHz)  
**HIPOT** test, measurement, and diagnostic equipment  
**HLL** high level language  
**HV** high voltage  
**Hz** Hertz

## I

**IAB** Internet Activities Board  
**IC** integrated circuit  
**IDC** insulation displacement contact  
**IF** intermediate frequency  
**IO** input/output (devices)  
**IR** insulation resistance (or) infrared  
**ISDN** integrated services digital network  
**ISO** International Standards Organization

## J

**JEDEC** Joint Electronic Device Engineering Council  
**JFET** junction FET  
**JMOS** junction MOS

## K

**kHz** kilohertz ( $10^3$  hertz)  
**KSR** keyboard send/receive

## L

**LAN** local area network  
**LC (filters)** inductance/capacitance  
**LCC** leaded chip carrier  
**LCD** liquid crystal display  
**LED** light-emitting diode  
**LF** low frequency (30 to 300 kHz)  
**LIF** low insertion force  
**LNA** low noise amplifier  
**LNB** low noise band  
**LSI** large scale integration  
**LVDT** linear velocity displacement transformer

## M

**MASER** microwave amplification by stimulated emission of radiation  
**MATV** master antenna television

**μF** microfarad  
**MHz** megahertz  
**MIC** microwave IC  
**MIPS** million instructions per second  
**MIB** microcomputer interface board  
**MOS** metal oxide semiconductor  
**MOSFET** metal oxide semiconductor FET  
**MOSIGT** metal oxide semiconductor insulated-gate transistor  
**MOV** metal oxide varistor  
**MPU** microprocessor unit  
**MSI** medium scale integration

## N

**NBS** National Bureau of Standards  
**NEMP** nuclear electromagnetic pulse  
**NIM** national instrumentation module  
**NOR** not OR  
**NTC** negative temperature coefficient

## O

**OCR** optical character reader  
**OEM** original equipment manufacturer  
**OR** a logical operator  
**OSI** open systems interconnection

## P

**PAL** programmable array logic  
**PC** printed circuit  
**PCB** printed circuit board  
**PCM** pulse code modulation  
**PCS** plastic clad silica  
**pF** picofarad  
**PGA** pin grid array  
**PIN** positive-intrinsic-negative (transistor)  
**PLA** programmable logic array  
**PLCC** plastic leaded chip carrier  
**PLL** phased lock loop  
**PPI** plan position indicator  
**PROM** programmable ROM  
**PTC** positive temperature coefficient  
**PUT** programmable unijunction transistor

## Q

**QAM** quadrature amplitude modulation  
**Q (meter)** quality-factor meter

## R

**RAM** random access memory  
**RC** resistance-capacitance  
**RFI** radio frequency interference  
**RMS** root mean square  
**ROM** read only memory  
**RF** radio frequency  
**RFC** radio-frequency choke  
**RFI** radio-frequency interference  
**RTD** resistance-temperature detector  
**RTL** resistor transistor logic  
**RTV** room temperature vulcanizing  
**RW** read/write

## S

**SAS** silicon asymmetrical switch  
**SBC** single board (micro) computer

**SBS** silicon bilateral switch  
**SCR** silicon-controlled rectifier  
**SCS** silicon-controlled switch  
**SDA** source & detector assemblies  
**SGMP** simple gateway monitoring protocol  
**SIDAC** bidirectional voltage-triggered switch  
**SIMM** single in-line memory module  
**SIP** single in-line package  
**SMD** surface mount device  
**SMT** surface mount technology  
**SNMP** simple network management protocol  
**SO** small outline  
**SOIC** small outline IC  
**SOT** small outline transistor  
**SSI** small scale integration  
**SSR** solid-state relay  
**STL** Schottky transistor logic  
**SUS** silicon unilateral switch

## T

**TC** temperature coefficient  
**TCE** thermal coefficient of expansion  
**TXCO** temperature compensated crystal oscillator  
**TFE** tetrafluoride ethylene propylene Copolymer, 250° Teflon  
**TRIAC** bidirectional AC switch  
**TTL** transistor-transistor logic  
**TTY** teletypewriter

## U

**UHF** ultra high frequency (300 MHz to 3 GHz)  
**UJT** silicon unijunction transistor  
**UL** Underwriters Laboratory  
**UPS** uninterruptible power supply

## V

**VAC** volts (of) alternating current  
**VAN** value-added network  
**VAR** volt-ampere reactive  
**VCR** video cassette recorder  
**VDC** volts (of) direct current  
**VHF** very high frequency (30 kHz to 300 MHz)  
**VHSIC** very high speed integrated circuit  
**VLF** very low frequency (3 to 30 kHz)  
**VLSI** very large scale integration  
**VME** virtual machine environment  
**VRM** voice recognition module  
**VTVM** vacuum tube volt meter  
**VU** volume unit  
**VSWR** voltage standing wave ratio

## W

**WPS** word processing software

## Y

**YIG** yttrium iron garnet

## Z

**ZIF** zero insertion force



# Technical Devices

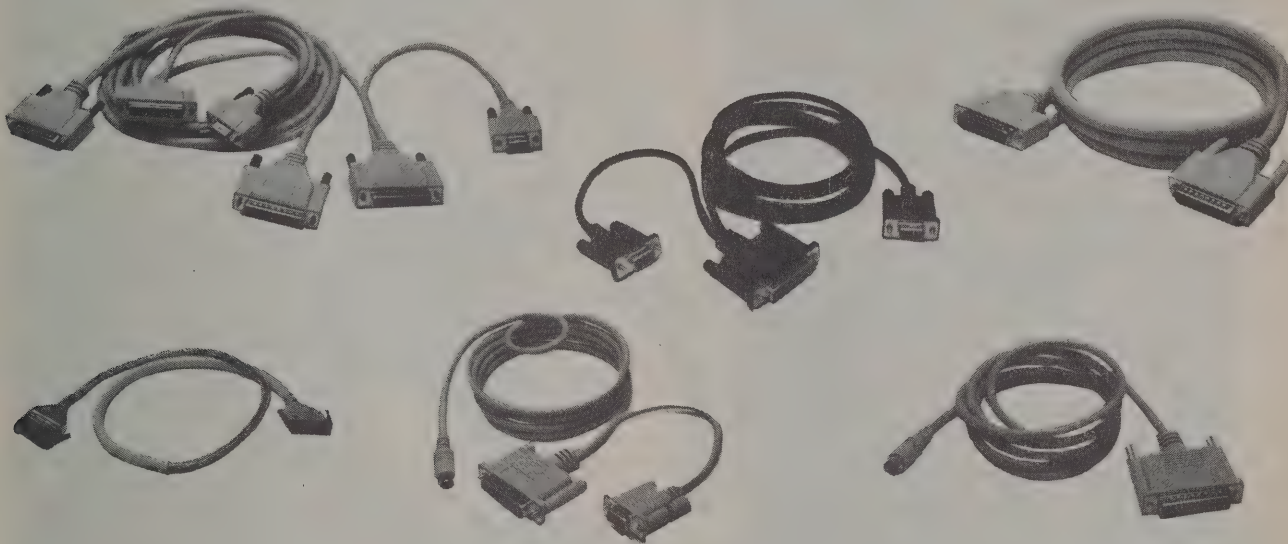
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**YOUR SATISFACTION IS OUR REPUTATION**

## Custom Molded / Shielded Cables

At Technical Devices, we specialize in custom cable applications built to your specification; or our technical support team is ready at a moments notice to help you develop the exact cable assembly you need. All of our cables are expertly constructed to offer exceptional quality and customer satisfaction.

Uses for our molded cable assemblies include commercial, computer, industrial and medical applications. Whatever your need, it is a challenge we will meet. Whether you are a manufacturer, V.A.R., or distributor, you will be pleased by our attention to detail and appreciate our on time delivery service.



### OPTIONS

- Multi Conductor/Twisted Pair
- Shielded/Molded Cables
- Aluminum Mylar Foil/Braided Shield
- RS232C Applications
- Low Capacitance Cables
- Meets FCC EMI/RFI Emissions Regulations
- Custom Designs Such As Termination, Colors, Logo And Marking Are Available

### TYPES OF CABLE TERMINATION

- D-Subminiature
- Ribbon (Centronics Type)
- DIN
- Coaxial
- SCSI 2
- "Box" Contacts
- Terminals
- Edge Card Connectors

### APPLICATIONS

- RS232C Communication Cables
- Computer Peripheral Equipment Such As Printers And Modems
- Keyboard Cables
- Data Transmission Cables
- Satellite Communication Cables
- Telecommunications
- Optic Readers
- Extension Cables
- Medical

### STANDARD CABLES

- Printer
- Modem
- Keyboard
- SCSI

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**Virginia Plastics Company**

# Assemble a World Class Combination

With Virginia Plastics Company Products

Virginia Plastics Company manufactures coiled cord assemblies with a vinyl rubber blend jacket which offers excellent memory characteristics, high reliability and excellent coil flex life.

Assemblies are used for bar code readers, mobile communications, medical equipment and computer keyboards.

Custom cable and made-to-order cable assemblies are also available.

## FEATURES

- ◆ High reliability cable
- ◆ Outer jackets offer a wide range of continuous operating temperatures:
  - PVC - Outer jacket:
    - 25° to 90°C
  - C75 - Outer jacket:
    - 30° to 90°C

## OTHER APPLICATIONS

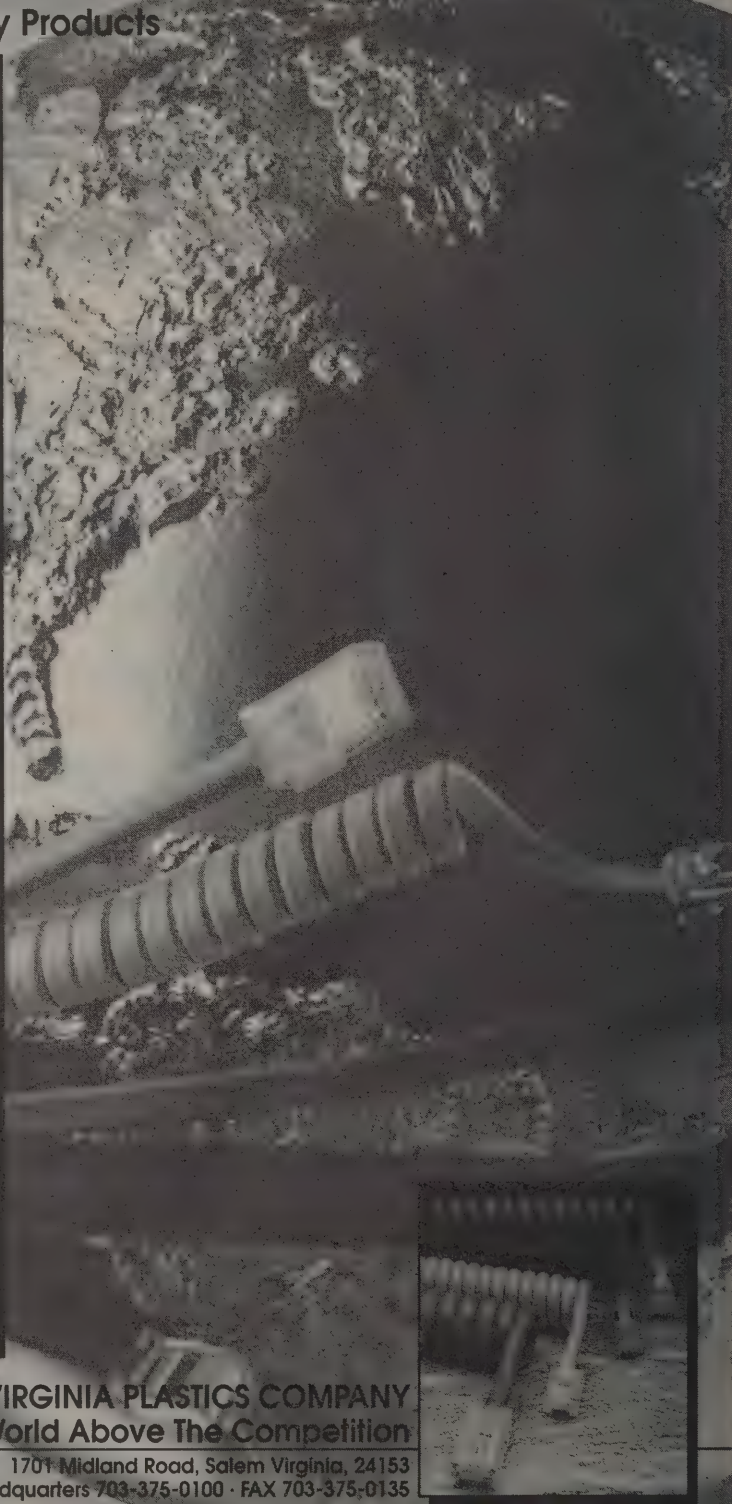
- ◆ Data transmission equipment
- ◆ Computer peripheral interconnections
- ◆ Data collection systems
- ◆ Optical scanning equipment
- ◆ Business information systems

## OTHER PRODUCTS

- ◆ High reliability modular connectors
- ◆ Field installable modular plugs
- ◆ Field termination tools
- ◆ Data communication and transmission line cable

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Company Headquarters 703-375-0100 • FAX 703-375-0135







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## FLAT/OVAL MULTI-CONDUCTOR/UNSHIELDED

- ☐ UNIFORM CAPACITANCE THROUGHOUT THE CABLE OR ANY CABLE SECTION
- ☐ provides consistent electrical transmission properties between multiple lots of cable
- ☐ DESIGNED FOR CONNECTORIZING WITH DATA MODULAR MALE PLUGS
- ☐ GOOD FIELD RELIABILITY
- ☐ IMPROVED FLEXIBILITY FOR EASIER INSTALLATION AND ENHANCED APPEARANCE
- ☐ LOW HEIGHT OF CABLE COMPARED TO STANDARD I/O CABLES
- ☐ reduces bulkiness of an installation
- ☐ allows higher density of multiple cables
- ☐ FLAT/OVAL CABLE CONSTRUCTIONS ARE CONFIGURABLE IN ONE OF TWO WAYS FOR CONNECTING THE CABLE:
  - ☐ simulated pairs—balanced line configuration
  - ☐ parallel—non-balanced or single line configuration

### 2 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination | Parallel Termination |
|----------------------------|----------------------|
| Pair<br>#1 Red/Green       | #1 Red<br>#2 Green   |

(this cable is identical for either configuration)

### 4 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination              | Parallel Termination                        |
|-----------------------------------------|---------------------------------------------|
| Pair<br>#1 Black/Red<br>#2 Green/Yellow | #1 Black<br>#2 Red<br>#3 Green<br>#4 Yellow |

### 6 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination                               | Parallel Termination                                               |
|----------------------------------------------------------|--------------------------------------------------------------------|
| Pair<br>#1 White/Black<br>#2 Red/Green<br>#3 Yellow/Blue | #1 White<br>#2 Black<br>#3 Red<br>#4 Green<br>#5 Yellow<br>#6 Blue |

### 8 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination                                                 | Parallel Termination                                                                       |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Pair<br>#1 Blue/Orange<br>#2 Black/Red<br>#3 Green/Yellow<br>#4 Brown/Grey | #1 Blue<br>#2 Orange<br>#3 Black<br>#4 Red<br>#5 Green<br>#6 Yellow<br>#7 Brown<br>#8 Grey |

## SUPPLY FLAT/OVAL MULTI-CONDUCTOR PHYSICAL ENGINEERING DATA

| Property                   | Cable Part Number                          |                                   |                                   |                                   |
|----------------------------|--------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                            | 010.000.869                                | 010.000.708                       | 010.000.840                       | 010.000.831                       |
| Conductor Type             | Tin-Plated Copper                          | Tin-Plated Copper                 | Tin-Plated Copper                 | Tin-Plated Copper                 |
| Conductor Stranding (AWG)  | 7 x 34 (26)                                | 7 x 34 (26)                       | 7 x 34 (26)                       | 7 x 34 (26)                       |
| Number of conductors       | 2                                          | 4                                 | 6                                 | 8                                 |
| Insulation Material        | C41 Polyolefin                             | C41 Polyolefin                    | C41 Polyolefin                    | C41 Polyolefin                    |
| Jacket Material            | Flexible PVC                               | Flexible PVC                      | Flexible PVC                      | Flexible PVC                      |
| Jacket Flammability Rating | UL 94VO @ .025" (.64mm) Thickness          | UL 94VO @ .025" (.64mm) Thickness | UL 94VO @ .025" (.64mm) Thickness | UL 94VO @ .025" (.64mm) Thickness |
| Jacket Color               | Pearl Gray                                 | Pearl Gray                        | Pearl Gray                        | Pearl Gray                        |
| Jacket Finish              | Matte                                      | Matte                             | Matte                             | Matte                             |
| Nominal Cable O.D.         | .099" x .190" (2.51 x 4.83)                | .090" x .190" (2.29 x 4.83)       | .090" x .270" (2.29 x 6.86)       | .090" x .360" (2.29 x 9.14)       |
| Cable Configuration        | Configurable as Simulated Pair or Parallel |                                   |                                   |                                   |
| Can be coiled: Y/N         | Y                                          | Y                                 | Y                                 | Y                                 |
| Cable durability category  | Very Good                                  | Very Good                         | Very Good                         | Very Good                         |
| Flex life                  | Good                                       | Good                              | Good                              | Good                              |
| UL Temperature Rating      | 60°C – 80°C                                | 60°C – 80°C                       | 60°C – 80°C                       | 60°C – 80°C                       |

Other conductor sizes and cable constructions are available upon request. Color-matched outer jackets to customer specifications are available. UL styles are available.

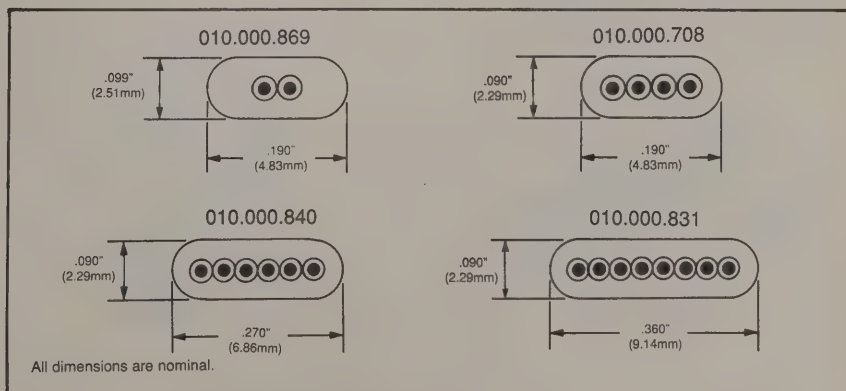
### MATERIALS FEATURES:

#### C41: Polyolefin

- Excellent data transmission characteristics
- Outstanding electrical properties
- Moderate cut-through resistance
- Very good stress crack resistance
- Excellent for low temperature usage
- Exceptional chemical resistance

#### Flexible PVC

- Outstanding flame retardancy (UL94V-0)
- Provides highly flexible cables
- Moderate abrasion resistance
- Improved cut-through resistance for flexible PVC
- Good operating temperature range
- Good chemical resistance





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P.O. BOX 4577/ROANOKE, VA 24015-0577  
703-375-0100  
FAX 703-375-0135

## MULTI-PURPOSE DATA CABLES/UNSHIELDED\*\*

- ☐ UNIFORM CAPACITANCE THROUGHOUT THE CABLE OR ANY CABLE SECTION
- ☐ reduces capacitance imbalances between sections taken from a single length of cable
- ☐ eliminate impedance mismatches that are typically found throughout a single length of cable
- ☐ provides consistent electrical transmission properties between multiple lots of cable
- ☐ DESIGNED FOR CONNECTORIZING WITH DATA MODULAR MALE PLUGS
- ☐ HIGHER FIELD RELIABILITY THAN STANDARD I/O CABLES
- ☐ IMPROVED FLEXIBILITY FOR EASIER INSTALLATION AND ENHANCED APPEARANCE
- ☐ ALL MULTI-PURPOSE DATA CABLE CONSTRUCTIONS ARE CONFIGURABLE IN ONE OF TWO WAYS FOR CONNECTING THE CABLE:
  - ☐ simulated pairs—balanced line configuration
  - ☐ lower capacitance isolated conductors\*—non-balanced or single line configuration

### 4 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination | Lower Capacitance Termination |
|----------------------------|-------------------------------|
| Pair                       | Isolated                      |
| #1 Black/Red               | #1 Black/Yellow               |
| #2 Yellow/Green            | #2 Red/Green                  |

### 6 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination | Lower Capacitance Termination |
|----------------------------|-------------------------------|
| Pair                       | Isolated                      |
| #1 White/Red               | #1 White/Black                |
| #2 Black/Green             | #2 Red/Green                  |
| #3 Yellow/Blue             | #3 Yellow/Blue                |

### 8 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination | Lower Capacitance Termination |
|----------------------------|-------------------------------|
| Pair                       | Isolated                      |
| #1 Black/Blue              | #1 Black/Green                |
| #2 Green/Brown             | #2 Blue/Brown                 |
| #3 Orange/Red              | #3 Orange/Grey                |
| #4 Grey/Yellow             | #4 Red/Yellow                 |

### 10 CONDUCTOR CONFIGURED TO BE A

| Simulated Pair Termination | Lower Capacitance Termination |
|----------------------------|-------------------------------|
| Pair                       | Isolated                      |
| #1 Black/Brown             | #1 Black/White                |
| #2 White/Blue              | #2 Brown/Blue                 |
| #3 Yellow/Red              | #3 Yellow/Green               |
| #4 Green/Grey              | #4 Red/Grey                   |
| #5 Orange/Violet           | #5 Orange/Violet              |

\*measured between two single conductors

\*\*SHIELDED VERSIONS  
ALSO AVAILABLE

## SEVERE DUTY/EXTENDED LIFE UNSHIELDED MULTI-PURPOSE DATA CABLE PHYSICAL ENGINEERING DATA

| Property                                                   | Cable Part Number                                 |                                   |                                   |                                   |
|------------------------------------------------------------|---------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                                                            | 010.000.728                                       | 010.000.307                       | 010.000.311                       | 010.000.195                       |
| Conductor Type                                             | Tin-Plated Copper                                 | Tin-Plated Copper                 | Tin-Plated Copper                 | Tin-Plated Copper                 |
| Conductor Stranding (AWG)                                  | 7 x 34 (26)                                       | 7 x 34 (26)                       | 7 x 34 (26)                       | 7 x 34 (26)                       |
| Number of Conductors                                       | 4                                                 | 6                                 | 8                                 | 10                                |
| Insulation Material                                        | MYLAR® or C21                                     | MYLAR® or C21                     | MYLAR® or C21                     | MYLAR® or C21                     |
| Jacket Material                                            | C75                                               | C75                               | C75                               | C75                               |
| Jacket Flammability Rating                                 | UL 94VO @ .025" (.64mm) Thickness                 | UL 94VO @ .025" (.64mm) Thickness | UL 94VO @ .025" (.64mm) Thickness | UL 94VO @ .025" (.64mm) Thickness |
| Jacket Color                                               | Black                                             | Black                             | Black                             | Black                             |
| Jacket Finish                                              | Matte                                             | Matte                             | Matte                             | Matte                             |
| Nominal Cable O.D. inches (mm)                             | .160 (4.06)                                       | .168 (4.27)                       | .191 (4.85)                       | .214 (5.44)                       |
| Cable Configuration                                        | Configurable as Simulated Pair or Low Capacitance |                                   |                                   |                                   |
| Can Be Coiled: Y/N                                         | Y                                                 | Y                                 | Y                                 | Y                                 |
| Cable Durability Category                                  | Excellent                                         | Excellent                         | Excellent                         | Excellent                         |
| Flex Life                                                  | Excellent                                         | Excellent                         | Excellent                         | Excellent                         |
| UL Temperature Rating                                      | 80°C                                              | 80°C                              | 80°C                              | 80°C                              |
| UL Style                                                   | 20187                                             | 20187                             | 20187                             | 20187                             |
| <sup>1</sup> Nominal Impedance @ 4 MHz (as simulated pair) | 90Ω                                               | 90Ω                               | 90Ω                               | 90Ω                               |

Other conductor sizes and cable constructions are available upon request. Color matched outer jackets to customer specifications are available. MYLAR® is a registered trademark of E.I. Du Pont de Nemours & Co., Inc. <sup>1</sup>Test results were obtained per Virginia Plastics impedance testing procedures.

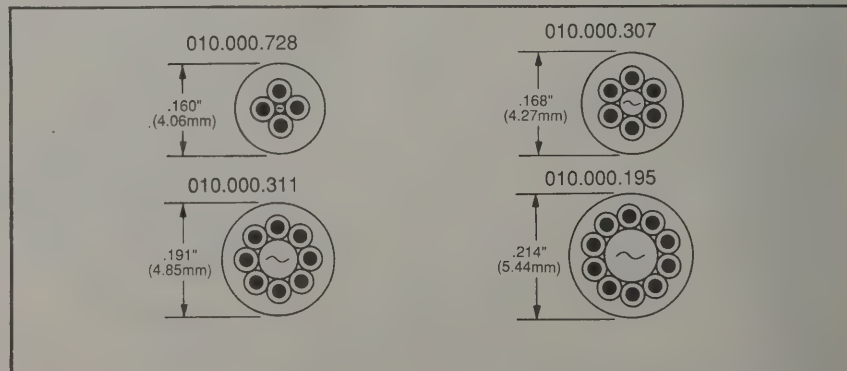
### MATERIALS FEATURES:

#### C21 (CPRE 21): Oriented Polyester

- Comparable to oriented polyesters like Mylar®
- Toughness suited for thin wall construction
- Outstanding cut-through resistance
- Excellent flex and stress crack resistance
- Wide operating temperature range
- Flame retardant
- Good chemical resistance

#### C75 (CPRE75): Vinyl-Rubber blend

- Outstanding flame retardancy (UL94V-O)
- UL evaluated/classified as a unique material
- Superior cut-through/abrasion resistance
- Undamaged by tough, abusive environments
- Excellent resistance to ultraviolet light
- Excellent strength characteristics
- Wide operating temperature range







# VIRGINIA PLASTICS

1701 MIDLAND ROAD, SALEM, VA 24153  
P.O. BOX 4577/ROANOKE, VA 24015-0577  
703-375-0100  
FAX 703-375-0135

## TWISTED PAIR DATA CABLE/UNSHIELDED\*

- ☐ UNIFORM CAPACITANCE THROUGHOUT THE CABLE OR ANY CABLE SECTION
- ☐ minimizes capacitance imbalances between sections of cable typically found in datacommunications cable
- ☐ provides matched impedance throughout the cable
- ☐ provides consistent electrical cable properties between multiple lots of cable
- ☐ SPECIAL CABLING PROCESS PRODUCES A UNIFORM TWIST OF THE PAIRED CONDUCTORS
- ☐ DESIGNED FOR CONNECTORIZING WITH DATA MODULAR MALE PLUGS
- ☐ GOOD FIELD RELIABILITY AND EXTENDED LIFE
- ☐ PAIRED CONDUCTORS MAINTAIN THEIR TWIST ARRANGEMENT REGARDLESS OF CABLE ROUTINGS USED FOR INSTALLING OFFICE LAYOUTS OR LAYOUT CHANGES
- ☐ IMPROVED FLEXIBILITY FOR EASIER INSTALLATION AND ENHANCED APPEARANCE

### IMPEDANCE CONTROLLED UNSHIELDED TWISTED PAIR DATA CABLE PHYSICAL ENGINEERING DATA

| Property                                     | Cable Part Number                 |                                   |                                   |
|----------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                                              | 010.000.808                       | 010.000.474                       | 010.000.478                       |
| Conductor Type                               | Tin-Plated Copper                 | Tin-Plated Copper                 | Tin-Plated Copper                 |
| Conductor Stranding (AWG)                    | 7 x 34 (26)                       | 7 x 34 (26)                       | 7 x 34 (26)                       |
| Number of Conductors                         | 4                                 | 6                                 | 8                                 |
| Insulation Material                          | MYLAR® or C21                     | MYLAR® or C21                     | MYLAR® or C21                     |
| Jacket Material                              | Flexible PVC                      | Flexible PVC                      | Flexible PVC                      |
| Jacket Flammability Rating                   | UL 94VO @ .030" (.76mm) Thickness | UL 94VO @ .030" (.76mm) Thickness | UL 94VO @ .030" (.76mm) Thickness |
| Jacket Color                                 | Black                             | Black                             | Black                             |
| Jacket Finish                                | Semi-Gloss                        | Semi-Gloss                        | Semi-Gloss                        |
| Nominal Cable O.D. inches (mm)               | .142 x .214 (3.61 x 5.44)         | .210 x .214 (5.33 x 5.44)         | .210 x .250 (5.33 x 6.35)         |
| Cable Configuration                          | Two Unshielded Twisted Pair       | Three Unshielded Twisted Pair     | Four Unshielded Twisted Pair      |
| Cable Durability Category                    | Very Good                         | Very Good                         | Very Good                         |
| Flex Life                                    | Very Good                         | Very Good                         | Very Good                         |
| UL Temperature Rating                        | 60°C – 80°C                       | 60°C – 80°C                       | 60°C – 80°C                       |
| UL Style                                     | 2626                              | 2626                              | 2626                              |
| *Nominal Impedance @ 4 MHz (as twisted pair) | 100Ω                              | 100Ω                              | 100Ω                              |

Other conductor sizes and cable constructions are available upon request. Color matched outer jackets to customer specifications are available. MYLAR® is a registered trademark of E.I. Du Pont de Nemours & Co., Inc. \*Test results were obtained per Virginia Plastics impedance testing procedures.

### UNSHIELDED

#### Two unshielded twisted pair Standard Conductor Colors

Black/Yellow  
Red/Green

#### Three unshielded twisted pair Standard Conductor Colors

Red/Green  
Black/Blue  
Grey/Yellow

#### Four unshielded twisted pair Standard Conductor Colors

Grey/Yellow  
Red/Green  
Blue/Black  
Orange/Brown

Contact Virginia Plastics for special color code requirements

\*SHIELDED VERSIONS  
ALSO AVAILABLE

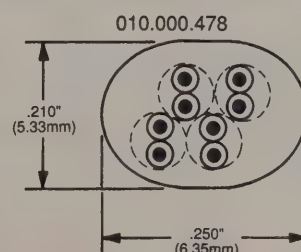
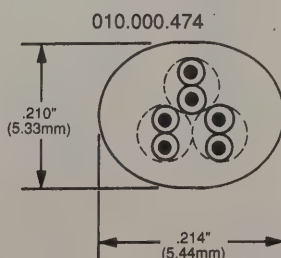
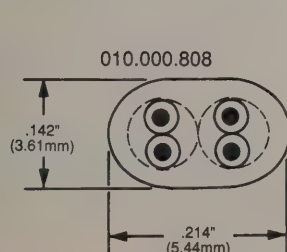
### MATERIALS FEATURES:

#### C21 (CPRE 21): Oriented Polyester

- Comparable to oriented polyesters like Mylar®
- Toughness suited for thin wall construction
- Outstanding cut-through resistance
- Excellent flex and stress crack resistance
- Wide operating temperature range
- Flame retardant
- Good chemical resistance

#### Flexible PVC

- Outstanding flame retardancy (UL94V-O)
- Provides highly flexible cables
- Moderate abrasion resistance
- Improved cut-through resistance for flexible PVC
- Good operating temperature range
- Good chemical resistance



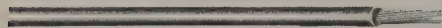


# HOOK-UP WIRE PVC INSULATED

## MIL-W-16878/1

### TYPE B - 600V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded Tinned Copper, Color Coded  
Polyvinylchloride Insulation

#### CHARACTERISTICS:

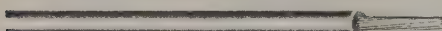
- Temperature Rating: -55°C to +105°C
- Voltage Rating: 600 Volts

| WEICO NO. | MILITARY NO.  | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|---------------|----------------|--------|---------------------|--------------------|
| 1130      | M16878/1BBB-X | 30             | 7/38   | .010                | .032               |
| 1128      | M16878/1BCB-X | 28             | 7/36   | .010                | .034               |
| 1126      | M16878/1BDB-X | 26             | 7/34   | .010                | .038               |
| 1126/19   | M16878/1BDE-X | 26             | 19/38  | .010                | .038               |
| 1124      | M16878/1BEB-X | 24             | 7/32   | .010                | .043               |
| 1124/19   | M16878/1BEE-X | 24             | 19/36  | .010                | .043               |
| 1122      | M16878/1BFB-X | 22             | 7/30   | .010                | .050               |
| 1122/19   | M16878/1BFE-X | 22             | 19/34  | .010                | .050               |
| 1120      | M16878/1BGB-X | 20             | 7/28   | .010                | .058               |
| 1120/19   | M16878/1BGE-X | 20             | 19/32  | .010                | .058               |
| 1118      | M16878/1BHB-X | 18             | 7/26   | .010                | .068               |
| 1118/19   | M16878/1BHE-X | 18             | 19/30  | .010                | .068               |
| 1116/19   | M16878/1BJE-X | 16             | 19/29  | .010                | .077               |
| 1114/19   | M16878/1BKE-X | 14             | 19/27  | .010                | .091               |

## MIL-W-16878/2

### TYPE C - 1000V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded Tinned Copper, Color Coded  
Polyvinylchloride Insulation.

#### CHARACTERISTICS:

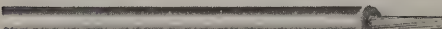
- Temperature Rating: -55°C to +105°C
- Voltage Rating: 1000 Volts

| WEICO NO. | MILITARY NO.  | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|---------------|----------------|--------|---------------------|--------------------|
| 1224      | M16878/2BEB-X | 24             | 7/32   | .016                | .058               |
| 1222      | M16878/2BFB-X | 22             | 7/30   | .016                | .064               |
| 1220      | M16878/2BGB-X | 20             | 7/28   | .016                | .072               |
| 1218      | M16878/2BHB-X | 18             | 7/26   | .016                | .082               |
| 1216/19   | M16878/2BJE-X | 16             | 19/29  | .016                | .091               |
| 1214/19   | M16878/2BKE-X | 14             | 19/27  | .016                | .105               |
| 1212/19   | M16878/2BLE-X | 12             | 19/25  | .016                | .124               |

## MIL-W-16878/3

### TYPE D - 3000V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded, Tinned Copper, Color Coded  
Polyvinylchloride Insulation

#### CHARACTERISTICS:

- Temperature Rating: -55°C to +105°C
- Voltage Rating: 3000 Volts

| WEICO NO. | MILITARY NO.  | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|---------------|----------------|--------|---------------------|--------------------|
| 1324      | M16878/3BEB-X | 24             | 7/32   | .029                | .082               |
| 1322      | M16878/3BFB-X | 22             | 7/30   | .029                | .088               |
| 1320      | M16878/3BGB-X | 20             | 7/28   | .029                | .096               |
| 1318      | M16878/3BHB-X | 18             | 7/26   | .029                | .106               |
| 1316/19   | M16878/3BJE-X | 16             | 19/29  | .029                | .115               |
| 1314/19   | M16878/3BKE-X | 14             | 19/27  | .029                | .129               |
| 1312/19   | M16878/3BLE-X | 12             | 19/25  | .034                | .158               |
| 1310      | M16878/3BMG-X | 10             | 37/26  | .037                | .185               |
| 1308      | M16878/3BNL-X | 8              | 133/29 | .040                | .247               |
| 1306      | M16878/3BPL-X | 6              | 133/27 | .040                | .290               |
| 1304      | M16878/3BRL-X | 4              | 133/25 | .046                | .358               |
| 1302      | M16878/3BSP-X | 2              | 665/30 | .046                | .432               |

**COLORS:** 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

**X Denotes 0-9 color coding Standard Put-Ups: 100 ft., 1000 ft.**

\*\*STRIPES: Any of the above colors are available in any combination of stripes up to a maximum of three stripes.

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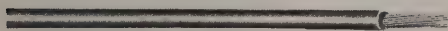




## HOOK-UP WIRE PVC INSULATED

### MIL-W-16878/1 PREBONDED TYPE B - 600V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded Double Tinned, Pre-Bonded  
Copper Conductor, Color Coded PVC  
Insulated

#### CHARACTERISTICS:

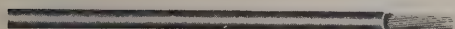
- Temperature Rating: -55°C to +105°C
- Voltage Rating: 600 Volts

#### APPLICATION:

The pre-bond conductor maintains much of the flexibility of an ordinary stranded wire but reduces processing and handling costs on soldering, retwisting of strands after stripping, and hand tinning operations.

| WEICO NO. | SIZE | CONDUCTOR STRAND | NOM. O.D. (INCHES) |
|-----------|------|------------------|--------------------|
| 1526      | 26   | 7/34             | .039               |
| 1524      | 24   | 7/32             | .044               |
| 1522      | 22   | 7/30             | .051               |
| 1520      | 20   | 7/28             | .059               |
| 1518      | 18   | 7/26             | .070               |

### MIL-W-16878/17 NYLON JACKET TYPE BN - 600V



#### DESCRIPTION:

Conductor, Stranded Tinned Copper.  
Insulation, Color Coded PVC. Jacket,  
Clear Nylon.

#### CHARACTERISTICS:

- Temperature Rating: -55°C +115°C
- Voltage Rating: 600 Volts

| WEICO NO. | MILITARY NO.   | CONDUCTOR SIZE | CONDUCTOR STRAND | INSULATION THICKNESS | NYLON JACKET THICKNESS | NOM. O.D. (INCHES) |
|-----------|----------------|----------------|------------------|----------------------|------------------------|--------------------|
| 1926/19   | M16878/17BDE-X | 26             | 19/38            | .010                 | .003                   | .044               |
| 1926      | M16878/17BDB-X | 26             | 7/34             | .010                 | .003                   | .044               |
| 1924/19   | M16878/17BEE-X | 24             | 19/36            | .010                 | .003                   | .049               |
| 1924      | M16878/17BEB-X | 24             | 7/32             | .010                 | .003                   | .049               |
| 1922/19   | M16878/17BFE-X | 22             | 19/34            | .010                 | .003                   | .056               |
| 1922      | M16878/17BFB-X | 22             | 7/30             | .010                 | .003                   | .056               |
| 1920/19   | M16878/17BGE-X | 20             | 19/32            | .010                 | .003                   | .064               |
| 1918/19   | M16878/17BHE-X | 18             | 19/30            | .010                 | .003                   | .074               |
| 1916/19   | M16878/17BJE-X | 16             | 19/29            | .010                 | .003                   | .083               |
| 1914/19   | M16878/17BKE-X | 14             | 19/27            | .010                 | .004                   | .099               |

### MIL-W-76B TYPE MW - 1000V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Conductor, Stranded Tinned Copper.  
Insulation, Color Coded PVC.

#### CHARACTERISTICS:

- Temperature Rating: -40°C to +80°C
- Voltage Rating: 1000 Volts

| WEICO NO. | TYPE DESIGNATION | CONDUCTOR SIZE | CONDUCTOR STRAND | INSULATION THICKNESS | NOM. O.D. (INCHES) |
|-----------|------------------|----------------|------------------|----------------------|--------------------|
| 1624      | MW-C24(7)U       | 24             | 7/32             | 0.016                | 0.059              |
| 1622      | MW-C22(7)U       | 22             | 7/30             | 0.016                | 0.064              |
| 1620      | MW-C20(10)U      | 20             | 10/30            | 0.016                | 0.073              |
| 1618      | MW-C18(16)U      | 18             | 16/30            | 0.016                | 0.084              |
| 1616      | MW-C16(26)U      | 16             | 26/30            | 0.016                | 0.095              |
| 1614      | MW-C14(41)U      | 14             | 41/30            | 0.016                | 0.110              |
| 1612      | MW-C12(65)U      | 12             | 65/30            | 0.016                | 0.125              |

COLORS: 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

X Denotes 0-9 color coding Standard Put-Ups: 100 ft., 1000 ft.

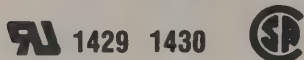
\*\*STRIPES: Any of the above colors are available in any combination of stripes up to a maximum of three stripes.

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# HOOK-UP WIRE

## IRRADIATED PVC INSULATED THHN UNIVERSAL CIRCUIT WIRE

**MIL-W-16878/1**
**MIL-W-16878/2**
**TYPES B AND C IRRADIATED**

**DESCRIPTION:**

Stranded Tinned Plated  
Copper, Irradiated PVC Insulated

**CHARACTERISTICS:**

- Temperature Rating:  
MIL-W-16878: -55° to +105°C  
UL 1429: +80°C  
UL 1430: +105°C
- Voltage Rating:  
MIL-W-16878  
Type B: 600 Volts  
Type C: 1000 Volts  
UL Style 1429: 150 Volts  
UL Style 1430: 300 Volts

**COLORS:**

0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

**STRIPES:** Any of the above colors are available in any combination  
of stripes up to a maximum of three stripes.

**TYPE B—UL STYLE 1429**

| WEICO NO. | SIZE | CONDUCTOR STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|------|------------------|---------------------|--------------------|
| 1428      | 28   | 7/36             | .010                | .035               |
| 1426      | 26   | 7/34             | .010                | .038               |
| 1424      | 24   | 7/32             | .010                | .043               |
| 1424/19   | 24   | 19/36            | .010                | .043               |
| 1422      | 22   | 7/30             | .010                | .050               |
| 1422/19   | 22   | 19/34            | .010                | .050               |
| 1420      | 20   | 7/28             | .010                | .058               |
| 1420/19   | 20   | 19/32            | .010                | .058               |
| 1418      | 18   | 7/26             | .010                | .068               |
| 1418/19   | 18   | 19/30            | .010                | .068               |
| 1416/19   | 16   | 19/.0117         | .010                | .077               |
| 1414/19   | 14   | 19/27            | .012                | .095               |

**TYPE C—UL STYLE 1430**

| WEICO NO. | SIZE | CONDUCTOR STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|------|------------------|---------------------|--------------------|
| 1446      | 24   | 7/32             | .016                | .058               |
| 1446/19   | 24   | 19/36            | .016                | .058               |
| 1447      | 22   | 7/30             | .016                | .064               |
| 1447/19   | 22   | 19/34            | .016                | .064               |
| 1448      | 20   | 7/28             | .016                | .072               |
| 1448/19   | 20   | 19/32            | .016                | .072               |
| 1449      | 18   | 7/26             | .016                | .082               |
| 1449/19   | 18   | 19/30            | .016                | .082               |
| 1450      | 16   | 19/29            | .016                | .091               |
| * 1451    | 14   | 19/27            | .016                | .105               |
| * 1452    | 12   | 19/25            | .016                | .124               |

**STANDARD PUT-UP: 100 ft., 1000 ft.**
**\*UL 3317**

# THHN UNIVERSAL CIRCUIT WIRE 600V


**DESCRIPTION:**

Stranded or Solid Bare Copper, PVC  
Insulation and Clear Nylon Jacket  
Overall. Used for Building Wire Machine  
Tool Wire, Appliances, Lighting Ballasts  
and General Hook-up Wire.

**CHARACTERISTICS:**

- Temperature Rating: +105°C
- Voltage Rating: 600 Volts

**COLORS:**

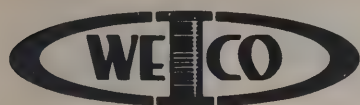
0 = Black 2 = Red 4 = Yellow 6 = Blue  
1 = Brown 3 = Orange 5 = Green 9 = White

| WEICO NO. | COND. SIZE (AWG) & STRANDING | INSULATION THICKNESS | NOMINAL JACKET THICKNESS | NOM. O.D. (INCHES) |
|-----------|------------------------------|----------------------|--------------------------|--------------------|
| 1431      | #14 Solid                    | .015                 | .004                     | .110               |
| 1432      | #12 Solid                    | .015                 | .004                     | .125               |
| 1433      | #10 Solid                    | .020                 | .004                     | .155               |
| † 1429    | #18 (19)                     | .015                 | .004                     | .090               |
| † 1434    | #16 (19)                     | .015                 | .004                     | .100               |
| 1435      | #14 (19)                     | .015                 | .004                     | .116               |
| 1436      | #12 (19)                     | .015                 | .004                     | .135               |
| 1437      | #10 (19)                     | .020                 | .004                     | .170               |
| 1438      | #8 (19)                      | .030                 | .005                     | .225               |
| 1439      | #6 (19)                      | .030                 | .005                     | .260               |
| 1440      | #4 (19)                      | .040                 | .006                     | .335               |
| 1441      | #2 (19)                      | .040                 | .006                     | .400               |
| 1442      | #1 (37)                      | .050                 | .007                     | .450               |
| 1443      | #1/0 (37)                    | .050                 | .007                     | .500               |
| 1444      | #2/0 (37)                    | .050                 | .007                     | .540               |

† TFFN

**STANDARD PUT-UP: #18 Thru #6—500 ft. #4 & LARGER—100 ft.**



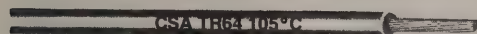


# HOOK-UP WIRE PVC INSULATED

**1007 1569**

**CSA TR-64**

(PASSES UL VW-1 FLAME TEST)



## DESCRIPTION:

Stranded Tinned Copper, Color Coded  
Polyvinylchloride Insulation, .016" nominal  
Insulation Thickness

## CHARACTERISTICS:

- Temperature Range: —10°C to +105°C
- Voltage Rating: 300 Volts

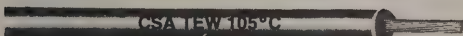
| WEICO NO. | SIZE | CONDUCTOR STRAND | NOM. O.D. (INCHES) |
|-----------|------|------------------|--------------------|
| 3026      | 26   | 7/34             | .051               |
| 3024      | 24   | 7/32             | .057               |
| 3022      | 22   | 7/30             | .064               |
| 3020      | 20   | 10/30            | .072               |
| 3018      | 18   | 16/30            | .082               |
| 3016      | 16   | 26/30            | .095               |
| 3014      | 14   | 41/30            | .110               |

**STANDARD PUT-UPS: 100 ft., 1000 ft.**

**1015-MTW**

**CSA TEW**

(PASSES UL VW-1 FLAME TEST)



## DESCRIPTION:

Stranded Tinned Copper, Color Coded  
Polyvinylchloride Insulation, .032" nominal  
Insulation Thickness

## CHARACTERISTICS:

- Temperature Range: —20°C to +105°C
- Voltage Rating: 600 Volts

| WEICO NO. | SIZE | CONDUCTOR STRAND | NOM. O.D. (INCHES) |
|-----------|------|------------------|--------------------|
| 3224      | 24   | 7/32             | .088               |
| 3222      | 22   | 7/30             | .095               |
| 3220      | 20   | 10/30            | .102               |
| 3218      | 18   | 16/30            | .112               |
| 3216      | 16   | 26/30            | .125               |
| 3214      | 14   | 41/30            | .142               |
| 3212      | 12   | 65/30            | .156               |
| 3210      | 10   | 105/30           | .184               |
| *3208     | 8    | 133/29           | .265               |
| **3206    | 6    | 133/27           | .341               |

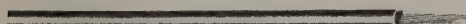
**STANDARD PUT-UPS: 100 ft., 1000 ft.**

\*UL1028 \*\*UL1283

**1061 SEMI-RIGID**

**CSA SR-PVC**

(PASSES UL VW-FLAME TEST)



## DESCRIPTION:

Stranded Tinned Copper, Color Coded  
Semi-Rigid Polyvinylchloride Insulation

## CHARACTERISTICS:

- Temperature Range: —10°C to +80°C
- Voltage Rating: 300 Volts

## APPLICATIONS:

Internal Wiring of Computers, Electric  
bookkeeping, Accounting machines, and  
other office and Control Equipment.

## COLORS:

0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

| WEICO NO. | SIZE | CONDUCTOR STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|------|------------------|---------------------|--------------------|
| 3326      | 26   | 7/34             | .010                | .038               |
| 3324      | 24   | 7/32             | .010                | .042               |
| 3322      | 22   | 7/30             | .010                | .048               |
| 3320      | 20   | 7/28             | .010                | .056               |
| 3318      | 18   | 7/26             | .010                | .068               |

**STANDARD PUT-UPS: 100 ft., 1000 ft.**

\*\*STRIPES: Any of the above colors are available in any combination of stripes up to a maximum of three stripes.

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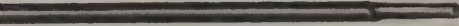


# HOOK-UP WIRE POLYOLEFIN - \*KYNAR INSULATED

## \*KYNAR INSULATED

### 1423 SOLID CONDUCTOR

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Solid, Silver-Plated, Oxygen-Free, High Conductivity (OFHC) Copper Conductor, Kynar Insulated

#### CHARACTERISTICS:

- Temperature Rating: +125°C (UL Rated at 105°C)
- High Cut-Thru and Abrasion Resistance

| WEICO NO. | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|----------------|--------|---------------------|--------------------|
| 2030      | 30             | Solid  | .005                | .019               |
| 2028      | 28             | Solid  | .005                | .023               |
| 2026      | 26             | Solid  | .005                | .026               |
| 2024      | 24             | Solid  | .005                | .030               |

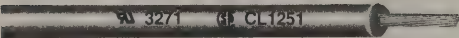
STANDARD PUT-UPS: 1000 ft. \*Registered Trademark of Pennwalt

COLORS: 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

## 3271

### CSA CL 1251

(PASSES UL VW-FLAME TEST)



#### DESCRIPTION:

Stranded Tinned Copper, Color Coded Irradiated Cross Linked Polyolefin (XLPE), .032" Nominal Insulation Thickness

#### CHARACTERISTICS:

- Temperature Range: -55°C to +125°C
- Voltage Rating: 600 Volts

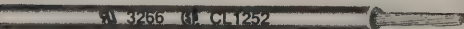
| WEICO NO. | CONDUCTOR SIZE | STRAND | NOM. OD. (INCHES) |
|-----------|----------------|--------|-------------------|
| 3620      | 20             | 7/28   | .101              |
| 3618      | 18             | 16/30  | .109              |
| 3616/19   | 16             | 19/29  | .122              |
| 3614/41   | 14             | 41/30  | .137              |
| 3612/65   | 12             | 65/30  | .156              |
| 3610/105  | 10             | 105/30 | .182              |

COLORS: 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

## 3266

### CSA CL 1252

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded Tinned Copper, Color Coded Irradiated Cross Linked Polyolefin (XLPE), .016" Nominal Insulation Thickness

#### CHARACTERISTICS:

- Temperature Range: -55°C to +125°C
- Voltage Rating: 300 Volts

| WEICO NO. | CONDUCTOR SIZE | STRAND | NOM. OD. (INCHES) |
|-----------|----------------|--------|-------------------|
| 3524/19   | 24             | 19/36  | .057              |
| 3522      | 22             | 7/30   | .062              |
| 3522/19   | 22             | 19/34  | .064              |
| 3520/19   | 20             | 19/32  | .072              |
| 3518/19   | 18             | 19/30  | .082              |
| 3516/19   | 16             | 19/29  | .089              |
| 3514/19   | 14             | 19/27  | .106              |

COLORS: 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

\*\*STRIPES: Any of the above colors are available in any combination of stripes up to a maximum of three stripes.

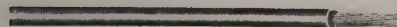
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# HOOK-UP WIRE \* "TEFLON" INSULATED

## MIL-W-22759/11 600V



### DESCRIPTION:

Stranded Silver Plated Copper,  
Extruded TFE Teflon\* Insulation

### CHARACTERISTICS:

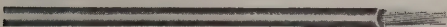
- Temperature Rating: +200°C.
- Voltage Rating: 600 Volts.
- Printed with Military Part Number,  
& Manufacturer's Code Identification

| WEICO NO. | MILITARY NO.   | CONDUCTOR SIZE | CONDUCTOR STRANDING | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|----------------|----------------|---------------------|---------------------|--------------------|
| 2428      | M22759/11-28-X | 28             | 7/36                | .009                | .033               |
| 2426/19   | M22759/11-26-X | 26             | 19/38               | .010                | .038               |
| 2424/19   | M22759/11-24-X | 24             | 19/36               | .010                | .043               |
| 2422/19   | M22759/11-22-X | 22             | 19/34               | .010                | .049               |
| 2420/19   | M22759/11-20-X | 20             | 19/32               | .010                | .058               |
| 2418/19   | M22759/11-18-X | 18             | 19/30               | .010                | .068               |
| 2416/19   | M22759/11-16-X | 16             | 19/29               | .011                | .075               |
| 2414/19   | M22759/11-14-X | 14             | 19/27               | .012                | .090               |
| 2412/19   | M22759/11-12-X | 12             | 19/25               | .014                | .111               |
| 2410/19   | M22759/11-10-X | 10             | 37/26               | .016                | .139               |

## MIL-W-16878/4 TYPE E- 600V

(PASSES UL VW-FLAME TEST)

**1213**



### DESCRIPTION:

Stranded Silver Plated Copper,  
Extruded TFE Teflon Insulation

### CHARACTERISTICS:

- Temperature Rating:  
MIL-W-16878: -60°C to +200°C  
UL 1213: +105°C
- Voltage Rating:  
MIL-W-16878: 600 Volts  
UL 1213: Not Rated

| WEICO NO. | MILITARY NO.  | CONDUCTOR SIZE | CONDUCTOR STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|---------------|----------------|------------------|---------------------|--------------------|
| 2132      | M16878/4BAB-X | 32             | 7/40             | .010                | .030               |
| 2130      | M16878/4BBB-X | 30             | 7/38             | .010                | .032               |
| 2128      | M16878/4BCB-X | 28             | 7/36             | .010                | .036               |
| 2128/19   | M16878/4BCE-X | 28             | 19/40            | .010                | .036               |
| 2126      | M16878/4BDB-X | 26             | 7/34             | .010                | .040               |
| 2126/19   | M16878/4BDE-X | 26             | 19/38            | .010                | .041               |
| 2124      | M16878/4BEB-X | 24             | 7/32             | .010                | .044               |
| 2124/19   | M16878/4BEE-X | 24             | 19/36            | .010                | .045               |
| 2122      | M16878/4BFB-X | 22             | 7/30             | .010                | .050               |
| 2122/19   | M16878/4BFE-X | 22             | 19/34            | .010                | .051               |
| 2120      | M16878/4BGB-X | 20             | 7/28             | .010                | .058               |
| 2120/19   | M16878/4BGE-X | 20             | 19/32            | .010                | .059               |
| 2118†     | M16878/4BHB-X | 18             | 7/26             | .010                | .068               |
| 2118/19†  | M16878/4BHE-X | 18             | 19/30            | .010                | .070               |
| 2116/19†  | M16878/4BJE-X | 16             | 19/29            | .010                | .077               |
| 2114/19†  | M16878/4BKE-X | 14             | 19/27            | .012                | .094               |
| 2112/19†  | M16878/4BLE-X | 12             | 19/25            | .012                | .113               |
| 2110/19†  | M16878/4BMG-X | 10             | 37/26            | .012                | .134               |

NOTE: AWG 18-10 must be surface marked to comply with UL, please specify when ordering.

† Not UL listed

## MIL-W-16878/4 SOLID CONDUCTOR TYPE E- 600V

(PASSES UL VW-1 FLAME TEST)

### DESCRIPTION:

Solid, Silver Plated Copper,  
Extruded TFE Teflon Insulation

| WEICO NO. | MILITARY NO.  | CONDUCTOR SIZE | CONDUCTOR STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|---------------|----------------|------------------|---------------------|--------------------|
| 2830      | M16878/4BBA-X | 30             | Solid            | .010                | .030               |
| 2828      | M16878/4BCA-X | 28             | Solid            | .010                | .033               |
| 2826      | M16878/4BDA-X | 26             | Solid            | .010                | .036               |
| 2824      | M16878/4BEA-X | 24             | Solid            | .010                | .040               |
| 2822      | M16878/4BFA-X | 22             | Solid            | .010                | .045               |
| 2820      | M16878/4BGA-X | 20             | Solid            | .010                | .052               |
| 2818      | M16878/4BHA-X | 18             | Solid            | .010                | .060               |

COLORS: 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

X Denotes 0-9 color coding Standard Put-Ups: 100 ft., 1000 ft.

\*DuPont's Registered Trademark. \*\*STRIPES: Any of the above colors are available in any combination of stripes up to a maximum of three stripes.

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# HOOK-UP WIRE \*"TEFLON" INSULATED

## MIL-W-16878/6

### TYPE ET - 250V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded Silver Plated Copper,  
Extruded TFE Teflon Insulation

#### CHARACTERISTICS:

- Temperature Rating:  $-60^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$
- Voltage Rating: 250 Volts

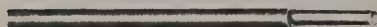
| WEICO NO. | MILITARY NO.  | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|---------------|----------------|--------|---------------------|--------------------|
| 2332      | M16878/6BAB-X | 32             | 7/40   | .006                | .021               |
| 2330      | M16878/6BBB-X | 30             | 7/38   | .006                | .024               |
| 2328      | M16878/6BCB-X | 28             | 7/36   | .006                | .027               |
| 2328/19   | M16878/6BCE-X | 28             | 19/40  | .006                | .027               |
| 2326      | M16878/6BDB-X | 26             | 7/34   | .006                | .031               |
| 2326/19   | M16878/6BDE-X | 26             | 19/38  | .006                | .032               |
| 2324      | M16878/6BEB-X | 24             | 7/32   | .006                | .036               |
| 2324/19   | M16878/6BEE-X | 24             | 19/36  | .006                | .037               |
| 2322      | M16878/6BFB-X | 22             | 7/30   | .006                | .042               |
| 2322/19   | M16878/6BFE-X | 22             | 19/34  | .006                | .044               |

## MIL-W-16878/6

### SOLID CONDUCTOR

### TYPE ET - 250V

(PASSES UL WV-1 FLAME TEST)



#### DESCRIPTION:

Solid Silver Plated Copper,  
Extruded TFE Teflon Insulation

#### CHARACTERISTICS:

- Temperature Range:  $-60^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$
- Voltage Rating: 250 Volts

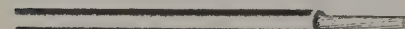
| WEICO NO. | MILITARY NO.     | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|------------------|----------------|--------|---------------------|--------------------|
| 2932      | MILW16878/6BAA-X | 32             | Solid  | .006                | .019               |
| 2930      | MILW16878/6BBA-X | 30             | Solid  | .006                | .022               |
| 2928      | MILW16878/6BCA-X | 28             | Solid  | .006                | .025               |
| 2926      | MILW16878/6BDA-X | 26             | Solid  | .006                | .028               |
| 2924      | MILW16878/6BEA-X | 24             | Solid  | .006                | .032               |

## MIL-W-16878/5

### MIL-W-16878/22

### TYPE EE-1000V

(PASSES UL VW-1 FLAME TEST)



#### DESCRIPTION:

Stranded Silver Plated Copper,  
Extruded TFE Teflon Insulation

#### CHARACTERISTICS:

- Temperature Rating  
MIL-W-16878:  $-60^{\circ}$  to  $+200^{\circ}\text{C}$   
UL 1180:  $+200^{\circ}\text{C}$
- Voltage Rating  
MIL-W-16878: 1000 Volts  
UL 1180: 300 Volts

| WEICO NO. | MILITARY NO.   | CONDUCTOR SIZE | STRAND | NOM. WALL THICKNESS | NOM. O.D. (INCHES) |
|-----------|----------------|----------------|--------|---------------------|--------------------|
| 2224      | M16878/5BEB-X  | 24             | 7/32   | .015                | .054               |
| 2224/19   | M16878/5BEE-X  | 24             | 19/36  | .015                | .055               |
| 2222      | M16878/5BFB-X  | 22             | 7/30   | .015                | .060               |
| 2222/19   | M16878/5BFE-X  | 22             | 19/34  | .015                | .062               |
| 2220      | M18678/5BGB-X  | 20             | 7/28   | .015                | .068               |
| 2220/19   | M16878/5BGE-X  | 20             | 19/32  | .015                | .070               |
| 2218/19†  | M16878/5BHE-X  | 18             | 19/30  | .015                | .080               |
| 2216/19†  | M16878/5BJE-X  | 16             | 19/29  | .015                | .089               |
| 2214/19†  | M16878/5BKE-X  | 14             | 19/27  | .017                | .106               |
| 2212/19†  | M16878/5BLE-X  | 12             | 19/25  | .017                | .124               |
| 2210†     | M16878/5BMG-X  | 10             | 37/26  | .017                | .145               |
| 2208†     | M16878/22BNL-X | 8              | 133/29 | .020                | .210               |
| 2206†     | M16878/22BPL-X | 6              | 133/27 | .020                | .252               |
| 2204†     | M16878/22BRL-X | 4              | 133/25 | .020                | .315               |

NOTE: AWG 18-10 must be surface marked to comply with UL, please specify when ordering.

† Not UL listed

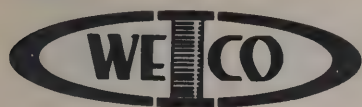
COLORS: 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

X Denotes 0-9 color coding Standard Put-Ups: 100 ft., 1000 ft.

\*DuPont's Registered Trademark \*\*STRIPES: Any of the above colors are available in any combination of stripes up to a maximum of three stripes.

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# HOOK-UP WIRE, CROSS LINKED

## MIL-W-22759/32 CROSS-LINKED ETFE

| WEICO NO. | MILITARY NO.   | CONDUCTOR SIZE | STRAND | NOM. O.D. (INCHES) |
|-----------|----------------|----------------|--------|--------------------|
| 2530      | M22759/32-30-X | 30             | 7/38   | .024               |
| 2528      | M22759/32-28-X | 28             | 7/36   | .027               |
| 2526/19   | M22759/32-26-X | 26             | 19/38  | .032               |
| 2524/19   | M22759/32-24-X | 24             | 19/36  | .037               |
| 2522/19   | M22759/32-22-X | 22             | 19/34  | .043               |
| 2520/19   | M22759/32-20-X | 20             | 19/32  | .050               |
| 2518/19   | M22759/32-18-X | 18             | 19/30  | .060               |
| 2516/19   | M22759/32-16-X | 16             | 19/29  | .068               |
| 2514/19   | M22759/32-14-X | 14             | 19/27  | .085               |
| 2512/37   | M22759/32-12-X | 12             | 37/28  | .103               |

### DESCRIPTION:

Stranded, Tinned Copper, Color Coded  
Irradiation Cross-Linked Extruded  
Modified Ethylene Tetrafluoroethylene  
Copolymer (ETFE)

### CHARACTERISTICS:

- Temperature Rating: 150°C
- Voltage Rating: 600 Volts

## MIL-W-81044/12 CROSS-LINKED POLYALKENE PVF

| WEICO NO. | MILITARY NO.   | CONDUCTOR SIZE | STRAND | NOM. O.D. (INCHES) |
|-----------|----------------|----------------|--------|--------------------|
| 9898      | M81044/12-28-X | 28             | 7/36   | .032               |
| 9897      | M81044/12-26-X | 26             | 19/38  | .036               |
| 9896      | M81044/12-24-X | 24             | 19/36  | .042               |
| 9895      | M81044/12-22-X | 22             | 19/34  | .049               |
| 9894      | M81044/12-20-X | 20             | 19/32  | .057               |
| 9893      | M81044/12-18-X | 18             | 19/30  | .067               |
| 9892      | M81044/12-16-X | 16             | 19/29  | .075               |
| 9891      | M81044/12-14-X | 14             | 19/27  | .093               |
| 9890      | M81044/12-12-X | 12             | 37/28  | .112               |

### DESCRIPTION:

Stranded, Tinned Copper, Color Coded  
Irradiation Cross-Linked Extruded  
Polyalkene with Clear Irradiation  
Cross-Linked Extruded Polyvinylidene  
Fluoride (PVF) Jacket.

### CHARACTERISTICS:

- Temperature Rating: 150°C
- Voltage Rating: 600 Volts

**COLORS:** 0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray Stripes\*\*  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

**X Denotes 0-9 color coding Standard Put-Ups: 100 ft., 1000 ft.**

**\*\*STRIPES:** Any of the above colors are available in any combination of stripes up to a maximum of three stripes.



# COMMUNICATION AND CONTROL CABLE

## MULTIPAIR UNSHIELDED

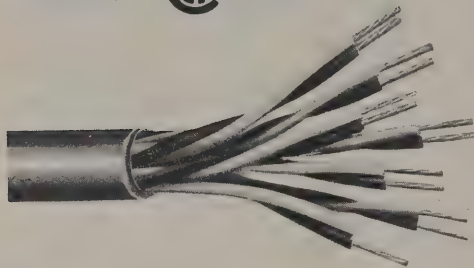
### 80°-300V-PVC

### 22 AND 18 GAUGE

(PASSES UL VW-1 FLAME TEST)

**CL2  
RATED**

**UL 2464** **SP** S-R PVC



#### DESCRIPTION:

Each Conductor Solid or Stranded Tinned Copper, Color Coded Polyvinylchloride Insulation. Conductors Twisted into Pairs, Gray Polyvinylchloride Jacket Overall.

#### CHARACTERISTICS:

- Temperature Rating: -20°C to +80°C
- Voltage Rating: 300 Volts

#### 22 AWG-SOLID CONDUCTORS

| WEICO NO. | NO. OF PAIRS | NO. OF COND. | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|--------------|--------------------------------|--------------------|
| 7102      | 1            | 2            | .032                           | .150               |
| 7104      | 2            | 4            | .032                           | .209               |
| 7106      | 3            | 6            | .032                           | .244               |
| 7108      | 4            | 8            | .032                           | .259               |
| 7110      | 5            | 10           | .040                           | .307               |
| 7112      | 6            | 12           | .035                           | .305               |
| 7118      | 9            | 18           | .037                           | .354               |
| 7122      | 11           | 22           | .037                           | .369               |
| 7126      | 13           | 26           | .037                           | .394               |
| 7130      | 15           | 30           | .040                           | .405               |
| 7132      | 16           | 32           | .040                           | .425               |
| 7138      | 19           | 38           | .040                           | .430               |
| 7146      | 23           | 46           | .040                           | .495               |
| 7154      | 27           | 54           | .045                           | .535               |

#### 22 AWG (7/30)-STRANDED CONDUCTORS

|         |    |     |      |      |
|---------|----|-----|------|------|
| 7002    | 1  | 2   | .032 | .165 |
| 7004    | 2  | 4   | .032 | .238 |
| 7006    | 3  | 6   | .032 | .284 |
| 7008    | 4  | 8   | .032 | .299 |
| 7010    | 5  | 10  | .032 | .304 |
| 7012    | 6  | 12  | .035 | .320 |
| 7018    | 9  | 18  | .037 | .389 |
| 7022    | 11 | 22  | .035 | .400 |
| 7024    | 12 | 24  | .040 | .425 |
| 7030    | 15 | 30  | .040 | .440 |
| 7038    | 19 | 38  | .040 | .505 |
| 7046    | 23 | 46  | .045 | .555 |
| 7054    | 27 | 54  | .045 | .580 |
| 7054/51 | 51 | 102 | .045 | .800 |

#### 18 AWG (16/30)-STRANDED CONDUCTORS

|      |    |    |      |      |
|------|----|----|------|------|
| 7202 | 1  | 2  | .032 | .222 |
| 7204 | 2  | 4  | .035 | .287 |
| 7206 | 3  | 6  | .037 | .362 |
| 7208 | 4  | 8  | .040 | .358 |
| 7210 | 5  | 10 | .050 | .416 |
| 7212 | 6  | 12 | .050 | .475 |
| 7216 | 8  | 16 | .050 | .478 |
| 7218 | 9  | 18 | .055 | .575 |
| 7224 | 12 | 24 | .055 | .675 |
| 7230 | 15 | 30 | .060 | .785 |
| 7238 | 19 | 38 | .070 | .865 |
| 7254 | 27 | 54 | .070 | .965 |

COLOR CODE: CONSULT OUR FACTORY

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

## MULTICONDUCTOR—

### UNSHIELDED

**80°C-300V-PVC**

(PASSES UL VW-1 FLAME TEST)

**UL 2464**

**CL2  
RATED**



#### DESCRIPTION:

Each Conductor Stranded Tinned Copper,  
Color Coded Polyvinylchloride Insulation,  
Gray Polyvinylchloride Jacket Overall.

#### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C
- Voltage Rating: 300 Volts (UL)

COLOR CODE: CONSULT OUR FACTORY

#### MULTI-CONDUCTOR 22-AWG (7/30) NOM. INS. THICKNESS .010

| WEICO NO. | NO. OF COND. | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|--------------------------------|--------------------|
| 4002      | 2            | .032                           | .164               |
| 4003      | 3            | .032                           | .169               |
| 4004      | 4            | .032                           | .194               |
| 4005      | 5            | .032                           | .199               |
| 4006      | 6            | .032                           | .209               |
| 4007      | 7            | .032                           | .214               |
| 4008      | 8            | .032                           | .224               |
| 4009      | 9            | .032                           | .249               |
| 4010      | 10           | .032                           | .259               |
| 4012      | 12           | .032                           | .279               |
| 4015      | 15           | .032                           | .304               |
| 4020      | 20           | .032                           | .324               |
| 4025      | 25           | .032                           | .364               |
| 4030      | 30           | .032                           | .379               |
| 4040      | 40           | .032                           | .439               |
| 4050      | 50           | .035                           | .500               |
| 4060      | 60           | .035                           | .530               |

## MULTICONDUCTOR—

### UNSHIELDED

**80°C-300V-PVC**

(PASSES UL VW-1 FLAME TEST)

**UL 2095**

**CL2  
RATED**



#### DESCRIPTION:

Each Conductor Stranded Tinned Copper,  
Color Coded Polyvinylchloride  
Insulation, Gray Polyvinylchloride Jacket  
Overall.

#### CHARACTERISTICS:

- Temperature Rating: -20°C to +80°C
- Voltage Rating: 300 Volts

#### MULTI-CONDUCTOR: NOM. INSULATION THICKNESS .016

| WEICO NO. | NO. OF COND. | CONDUCTOR AWG | STRAND | NOM. JKT. THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|---------------|--------|------------------------------|--------------------|
| 4002/20   | 2            | 20            | 10/30  | .020                         | .180               |
| 4003/20   | 3            | 20            | 10/30  | .020                         | .190               |
| 4004/20   | 4            | 20            | 10/30  | .020                         | .215               |
| 4005/20   | 5            | 20            | 10/30  | .020                         | .233               |
| 4006/20   | 6            | 20            | 10/30  | .020                         | .255               |
| 4007/20   | 7            | 20            | 10/30  | .020                         | .255               |
| 4008/20   | 8            | 20            | 10/30  | .020                         | .270               |
| 4009/20   | 9            | 20            | 10/30  | .020                         | .300               |
| 4010/20   | 10           | 20            | 10/30  | .020                         | .335               |
| 4012/20   | 12           | 20            | 10/30  | .020                         | .350               |
| 4015/20   | 15           | 20            | 10/30  | .030                         | .395               |
| 4002/18   | 2            | 18            | 16/30  | .020                         | .200               |
| 4003/18   | 3            | 18            | 16/30  | .020                         | .210               |
| 4004/18   | 4            | 18            | 16/30  | .020                         | .240               |
| 4005/18   | 5            | 18            | 16/30  | .020                         | .262               |
| 4006/18   | 6            | 18            | 16/30  | .020                         | .290               |
| 4007/18   | 7            | 18            | 16/30  | .020                         | .286               |
| 4008/18   | 8            | 18            | 16/30  | .025                         | .315               |
| 4009/18   | 9            | 18            | 16/30  | .025                         | .346               |
| 4010/18   | 10           | 18            | 16/30  | .025                         | .370               |
| 4012/18   | 12           | 18            | 16/30  | .025                         | .385               |
| 4015/18   | 15           | 18            | 16/30  | .030                         | .445               |
| 4019/18   | 19           | 18            | 16/30  | .030                         | .470               |
| 4025/18   | 25           | 18            | 16/30  | .035                         | .558               |
| 4002/16   | 2            | 16            | 26/30  | .020                         | .225               |
| 4003/16   | 3            | 16            | 26/30  | .020                         | .245               |
| 4004/16   | 4            | 16            | 26/30  | .020                         | .270               |

COLOR CODE: CONSULT OUR FACTORY

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

## MULTICONDUCTOR 80°C-300V-PVC

(PASSES UL VW-1 FLAME TEST)

### DESCRIPTION:

Each Conductor Stranded Tinned Copper,  
Color Coded Polyvinylchloride Insulation,  
Gray Polyvinylchloride Jacket Overall.

- PVC Insulation UL 1061, CSA SR-PVC
- Clear Mylar Tape Wrap .001"
- Jacket Print: CSA AWM SR-PVC 80°C 300 Volts

### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C
- Voltage Rating: 300 Volts (UL)

## MULTICONDUCTOR FOIL SHIELD 60°C-PE/PVC-300V

\*2092 2093 2094



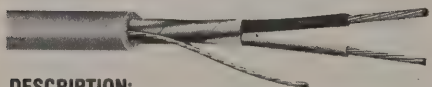
### DESCRIPTION:

Each Conductor Stranded Tinned Copper,  
Color Coded Polyethylene Insulation,  
Conductors Twisted, Wrapped Mylar  
Supported Aluminum Foil Shield, Drain  
Wire, Gray Polyvinylchloride Jacket  
Overall.

### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C (UL 60°C)
- Voltage Rating: 300 Volts
- Small Cable Diameter
- 100% Shield Coverage

## MULTICONDUCTOR - FOIL SHIELD 105°C-PP/PVC-200V



### DESCRIPTION:

Conductor, Stranded or Solid Tinned  
Copper. Insulation, Color Coded  
Polypropylene (PP). Shield, Aluminum/  
Polyester Tape, Foil Facing Inward (100%  
Coverage). Drain Wire, 22 AWG Tinned  
Copper. Jacket, Gray PVC

### CHARACTERISTICS:

- Temperature Range: -20°C to +105°C
- Voltage Rating: 200 Volts

### 22-AWG (7/30)

| WEICO NO. | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|--------------------------------|--------------------|
| 4102      | 2                 | .032                           | .170               |
| 4103      | 3                 | .032                           | .180               |
| 4104      | 4                 | .032                           | .195               |
| 4106      | 6                 | .032                           | .225               |
| 4108      | 8                 | .032                           | .240               |
| 4110      | 10                | .032                           | .270               |
| 4115      | 15                | .032                           | .300               |
| 4120      | 20                | .032                           | .340               |
| 4125      | 25                | .032                           | .375               |
| 4130      | 30                | .032                           | .400               |
| 4140      | 40                | .032                           | .445               |
| 4150      | 50                | .032                           | .485               |
| 4160      | 60                | .032                           | .525               |

COLOR CODE: CONSULT OUR FACTORY

| WEICO NO. | NO. OF COND. | CONDUCTOR AWG. | CONDUCTOR STRAND | NOM. INS. THICKNESS (INCHES) | NOM. WALL THICKNESS (INCHES) | NOM. O.D. (INCHES) | COND. COLOR CODE |
|-----------|--------------|----------------|------------------|------------------------------|------------------------------|--------------------|------------------|
| 9201      | 2            | 24             | 7/32             | .016                         | .020                         | .160               | 1,3              |
| 9202      | 2            | 22             | 7/30             | .016                         | .020                         | .170               | 1,3              |
| 9203      | 2            | 22             | 7/30             | .016                         | .020                         | .170               | 1,2              |
| 9204      | 3            | 22             | 7/30             | .016                         | .020                         | .185               | 1,2,3            |
| 9205      | 4            | 22             | 7/30             | .016                         | .020                         | .210               | 1,2,3,4          |
| 9206      | 2            | 20             | 10/30            | .016                         | .020                         | .186               | 1,3              |
| 9207      | 2            | 20             | 10/30            | .016                         | .020                         | .186               | 1,2              |
| 9208      | 3            | 20             | 10/30            | .016                         | .020                         | .205               | 1,2,3            |
| 9209      | 4            | 20             | 10/30            | .016                         | .020                         | .225               | 1,2,3,4          |
| 9210      | 2            | 18             | 16/30            | .016                         | .020                         | .210               | 1,3              |
| 9211      | 2            | 18             | 16/30            | .016                         | .020                         | .210               | 1,2              |
| 9212      | 3            | 18             | 16/30            | .016                         | .020                         | .230               | 1,2,3            |
| 9214      | 4            | 18             | 16/30            | .016                         | .020                         | .255               | 1,2,3,4          |
| 9215      | 2            | 16             | 26/30            | .016                         | .020                         | .245               | 1,2              |
| 9216      | 3            | 16             | 26/30            | .016                         | .020                         | .270               | 1,2,3            |

\*2 Cond.—UL 2092, 3 Cond.—UL 2093, 4 Cond.—UL 2094

COLORS: 1 = Black 2 = Red 3 = Clear 4 = Green

### Insulation Thickness 0.008"

| WEICO NO. | NO. OF COND. | CONDUCTOR AWG. | CONDUCTOR STRAND | JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|----------------|------------------|---------------------------|--------------------|
| 9217      | 2            | 22             | Solid            | .018                      | 0.120              |
| 9218      | 2            | 22             | 7/30             | .020                      | 0.130              |

COLOR CODE: Black, Red

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

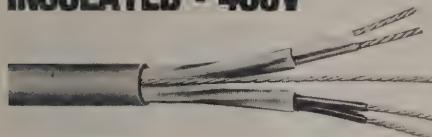
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# COMMUNICATION AND CONTROL CABLE

## MULTIPAIR 80°C - POLYPROPYLENE INSULATED - 400V



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, Polypropylene insulated, twisted into pairs (Black with Red and Green with White). Each Pair Aluminum Polyester Shielded with Stranded Tinned Copper Common Drain Wire, Overall Gray PVC Jacket.

### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C
- Suggested Voltage Rating: 400 Volts

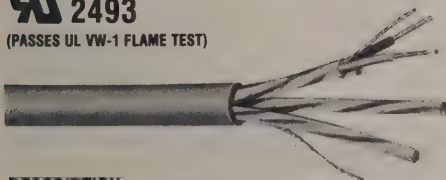
### 22—STRANDED (7/30)

| WEICO NO. | NO. OF PAIRS | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|-------------------|--------------------------------|--------------------|
| 8004      | 2            | 4                 | .020                           | .165               |

## INDIVIDUALLY FOIL SHIELDED 80°C - PP/PVC 300, 400V

**2493**

(PASSES UL VW-1 FLAME TEST)



### DESCRIPTION:

Each Conductor Tinned Copper, Color Coded Polypropylene Conductors Twisted into Pairs, Mylar-Supported Aluminum Foil Shield, Aluminum Facing Inward, Stranded Tinned Copper Drain Wire, Gray Polyvinylchloride Jacket.

### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C
- Suggested Working Voltage:
  - 22 AWG—300V
  - 18 AWG—400V
- UL Does Not Specify Voltage

### #22—SOLID NOM. INS. THICKNESS .013"

| WEICO NO. | NO. OF PAIRS | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|-------------------|--------------------------------|--------------------|
| 8106      | 3            | 6                 | .037                           | .279               |
| 8112      | 6            | 12                | .037                           | .379               |
| 8118      | 9            | 18                | .040                           | .425               |
| 8122      | 11           | 22                | .040                           | .470               |
| 8130      | 15           | 30                | .045                           | .525               |

### #22—STRANDED (7/30) NOM. INS. THICKNESS .010"

| WEICO NO. | NO. OF PAIRS | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|-------------------|--------------------------------|--------------------|
| 8006      | 3            | 6                 | .048                           | .301               |
| 8012      | 6            | 12                | .048                           | .401               |
| 8018      | 9            | 18                | .048                           | .443               |
| 8022      | 11           | 22                | .048                           | .486               |
| 8024      | 12           | 24                | .048                           | .486               |
| 8030      | 15           | 30                | .065                           | .580               |
| 8034      | 17           | 34                | .065                           | .615               |
| 8038      | 19           | 38                | .065                           | .625               |
| 8054      | 27           | 54                | .070                           | .745               |

### #18—STRANDED (16/30) NOM. INS. THICKNESS .016"

| WEICO NO. | NO. OF PAIRS | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|-------------------|--------------------------------|--------------------|
| 8006/18   | 3            | 6                 | .048                           | .398               |
| 8012/18   | 6            | 12                | .065                           | .570               |
| 8018/18   | 9            | 18                | .065                           | .655               |
| 8024/18   | 12           | 24                | .070                           | .750               |
| 8030/18   | 15           | 30                | .070                           | .820               |

COLOR CODE: CONSULT OUR FACTORY

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

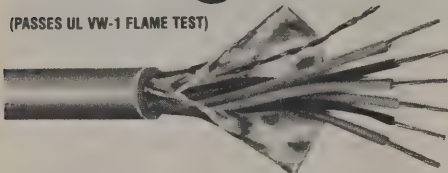
## MULTICONDUCTOR OVERALL FOIL SHIELD 300V-24 GAUGE

**UL 2464**

**SP S-R PVC**

**CL2  
RATED**

(PASSES UL VW-1 FLAME TEST)



### DESCRIPTION:

Each Conductor Tinned Copper, Color Coded Polyvinylchloride Insulation, Conductors Cabled. Overall Mylar Supported Aluminum Foil Shield, Stranded 24 Gauge Tinned Copper Drain Wire, Gray Polyvinylchloride Jacket Overall.

### CHARACTERISTICS:

- Temperature Rating: -40°C to +80°C
- Suggested Working Voltage: 300 Volts
- 100% Shield Coverage

### #24—STRANDED (7/32) NOM. INS. THICKNESS .010"

| WEICO NO. | NO. OF CONDUCTORS | COLOR CODE | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|------------|--------------------------------|--------------------|
| 7503      | 3                 | D          | .035                           | .168               |
| 7504      | 4                 | D          | .035                           | .190               |
| 7505      | 5                 | D          | .035                           | .195               |
| 7506      | 6                 | D          | .035                           | .215               |
| 7507      | 7                 | D          | .035                           | .215               |
| 7508      | 8                 | D          | .035                           | .220               |
| 7509      | 9                 | D          | .035                           | .250               |
| 7510      | 10                | D          | .035                           | .250               |
| 7515      | 15                | E          | .035                           | .280               |
| 7520      | 20                | E          | .035                           | .320               |
| 7525      | 25                | E          | .040                           | .360               |
| 7530      | 30                | E          | .040                           | .380               |
| 7540      | 40                | E          | .040                           | .430               |
| 7550      | 50                | E          | .045                           | .490               |

COLOR CODE: CONSULT OUR FACTORY

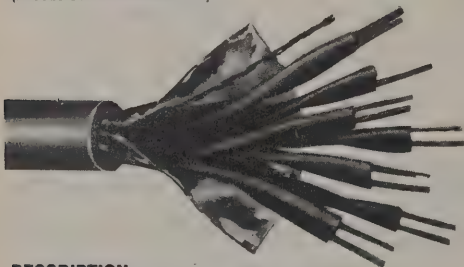
## MULTIPAIR OVERALL FOIL SHIELD 300V-24 GAUGE

**UL 2464**

**SP S-R PVC**

**CL2  
RATED**

(PASSES UL VW-1 FLAME TEST)



### DESCRIPTION:

Each Conductor Tinned Copper, Color Coded Polyvinylchloride Insulation, Conductors Twisted into Pairs. Overall Mylar Supported Aluminum Foil Shield, Stranded Tinned Copper Drain Wire, Gray Polyvinylchloride Jacket Overall.

### CHARACTERISTICS:

- Temperature Rating: -40°C to +80°C
- Suggested Working Voltage: 300 Volts
- 100% Shield Coverage

### #24—STRANDED (7/32) NOM. INS. THICKNESS .010"

| WEICO NO. | NO. OF PAIRS | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|-------------------|--------------------------------|--------------------|
| 7302      | 1            | 2                 | .032                           | .156               |
| 7304      | 2            | 4                 | .032                           | .222               |
| 7306      | 3            | 6                 | .032                           | .232               |
| 7308      | 4            | 8                 | .032                           | .265               |
| 7310      | 5            | 10                | .035                           | .295               |
| 7312      | 6            | 12                | .035                           | .295               |
| 7314      | 7            | 14                | .035                           | .300               |
| 7316      | 8            | 16                | .035                           | .330               |
| 7318      | 9            | 18                | .035                           | .340               |
| 7320      | 10           | 20                | .040                           | .380               |
| 7330      | 15           | 30                | .040                           | .425               |
| 7338      | 19           | 38                | .040                           | .460               |
| 7350      | 25           | 50                | .045                           | .515               |
| 7300*     | 50           | 100               | .050                           | .700               |

COLOR CODE: CONSULT OUR FACTORY

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

## MULTICONDUCTOR FOIL SHIELD 300V - 22 GAUGE

(PASSES UL VW-1 FLAME TEST)

CL2  
RATED

2464 SR PVC

OSHA ACCEPTABLE



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, Color Coded Polyvinylchloride (UL Style 1061) Insulated. Overall Aluminum/Polyester Shield with Stranded Tinned Copper Drain Wire, Nylon Rip Cord for Ease of Jacket Stripping, Gray PVC Jacket Overall.

### CHARACTERISTICS:

- Temperature Range:  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$
- Suggested Working Voltage: 300 Volts
- 100% Shield Coverage

22 AWG 7/30 Insulation Thickness .010"

| WEICO NO. | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|--------------------------------|--------------------|
| 7602      | 2                 | .032                           | .180               |
| 7603      | 3                 | .032                           | .190               |
| 7604      | 4                 | .032                           | .210               |
| 7606      | 6                 | .032                           | .230               |
| 7608      | 8                 | .032                           | .260               |
| 7610      | 10                | .032                           | .280               |
| 7615      | 15                | .032                           | .320               |
| 7620      | 20                | .032                           | .350               |
| 7625      | 25                | .032                           | .380               |
| 7630      | 30                | .032                           | .410               |
| 7640      | 40                | .032                           | .460               |
| 7650      | 50                | .032                           | .500               |
| 7660      | 60                | .032                           | .540               |
| 7670      | 70                | .053                           | .620               |
| 7680      | 80                | .053                           | .650               |
| 7690      | 90                | .053                           | .690               |
| 7600      | 100               | .053                           | .720               |

COLOR CODE: CONSULT OUR FACTORY

## MULTIPAIR, FOIL SHIELD 300V - 22 GAUGE

(PASSES UL VW-1 FLAME TEST)

CL2  
RATED

2464 SR PVC

OSHA ACCEPTABLE



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, Color Coded Polyvinylchloride (UL Style 1061) Insulated, Twisted into Pairs, Overall Aluminum/Polyester Shield with Stranded Tinned Copper Drain Wire, Nylon Rip Cord for Ease of Jacket Stripping, Gray PVC Jacket Overall.

### CHARACTERISTICS:

- Temperature Range:  $-40^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$
- Suggested Working Voltage: 300 Volts
- 100% Shield Coverage

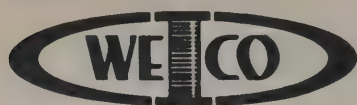
22 AWG 7/30 INSULATION THICKNESS .010"

| WEICO NO. | NO. OF PAIRS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|--------------------------------|--------------------|
| 7702      | 1            | .032                           | .180               |
| 7704      | 2            | .032                           | .230               |
| 7706      | 3            | .032                           | .260               |
| 7708      | 4            | .032                           | .280               |
| 7710      | 5            | .032                           | .310               |
| 7712      | 6            | .032                           | .330               |
| 7718      | 9            | .032                           | .380               |
| 7722      | 11           | .032                           | .410               |
| 7730      | 15           | .032                           | .460               |
| 7738      | 19           | .032                           | .500               |
| 7754      | 27           | .053                           | .610               |
| 7701      | 51           | .083                           | .860               |

COLOR CODE: CONSULT OUR FACTORY

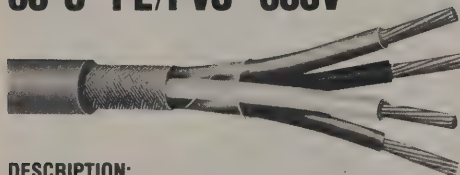
Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

## MULTICONDUCTOR BRAIDED SHIELD 80°C - PE/PVC - 600V



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, Color Coded Polyethylene Insulation, Cabled with Fillers Where Necessary, Mylar Wrap, Braided Tinned Copper Shield, Gray Polyvinylchloride Jacket Overall.

### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C
- Suggested Working Voltage: 600 Volts

### 20 AWG-26/34 STRANDED CONDUCTOR—NOMINAL INS. THICKNESS .015"

| WEICO NO. | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|--------------------------------|--------------------|
| 9401      | 2                 | .030                           | .245               |
| 9402      | 3                 | .035                           | .250               |
| 9403      | 4                 | .035                           | .260               |
| 9404      | 5                 | .035                           | .275               |
| 9405      | 6                 | .035                           | .300               |
| 9406      | 8                 | .035                           | .330               |
| 9407      | 10                | .035                           | .375               |
| 9408      | 12                | .035                           | .380               |
| 9409      | 15                | .035                           | .410               |
| 9410      | 20                | .035                           | .455               |

COLOR CODE: CONSULT OUR FACTORY

## MULTICONDUCTOR BRAIDED SHIELDED 105°C - PVC/NYLON - 600V MIL-W-16878 TYPE BN



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, .010" Polyvinylchloride Insulation, Color Coded, Clear Nylon (Polyamide) Jacket, Conductors Cabled, Braided Tinned Copper Shield 90% Coverage, Gray Polyvinylchloride Jacket Overall.

### CHARACTERISTICS:

- Temperature Rating: -55°C to +105°C
- Voltage Rating: 600 Volts

### MIL-W-16878 TYPE B CONDUCTORS NOMINAL INS. THICKNESS—.010"—NOMINAL NYLON THICKNESS .003"

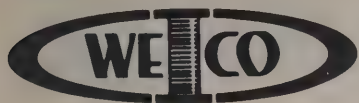
| WEICO NO. | NO. OF COND. | CONDUCTOR SIZE | STRAND | NOM. JKT. THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|--------------|----------------|--------|------------------------------|--------------------|
| 6126      | 1            | 26             | 7/34   | .010                         | .087               |
| 6226      | 2            | 26             | 7/34   | .014                         | .138               |
| 6326      | 3            | 26             | 7/34   | .014                         | .142               |
| 6426      | 4            | 26             | 7/34   | .016                         | .162               |
| 6124      | 1            | 24             | 19/36  | .010                         | .092               |
| 6224      | 2            | 24             | 19/36  | .016                         | .152               |
| 6324      | 3            | 24             | 19/36  | .016                         | .161               |
| 6424      | 4            | 24             | 19/36  | .017                         | .172               |
| 6122      | 1            | 22             | 19/34  | .010                         | .100               |
| 6222      | 2            | 22             | 19/34  | .016                         | .168               |
| 6322      | 3            | 22             | 19/34  | .017                         | .178               |
| 6422      | 4            | 22             | 19/34  | .019                         | .194               |
| 6120      | 1            | 20             | 19/32  | .010                         | .106               |
| 6220      | 2            | 20             | 19/32  | .019                         | .186               |
| 6320      | 3            | 20             | 19/32  | .019                         | .196               |
| 6420      | 4            | 20             | 19/32  | .021                         | .218               |
| 6118      | 1            | 18             | 19/30  | .012                         | .120               |
| 6218      | 2            | 18             | 19/30  | .021                         | .210               |
| 6318      | 3            | 18             | 19/30  | .022                         | .227               |
| 6418      | 4            | 18             | 19/30  | .023                         | .250               |
| 6116      | 1            | 16             | 19/29  | .016                         | .137               |
| 6216      | 2            | 16             | 19/29  | .023                         | .236               |
| 6316      | 3            | 16             | 19/29  | .023                         | .240               |
| 6416      | 4            | 16             | 19/29  | .025                         | .274               |

COLORS: 1 = White 2 = Black 3 = Red 4 = Green

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

## MULTICONDUCTOR DUAL SHIELDED

80°C - 300V

(PASSES UL VW-1 FLAME TEST)

**UL** 2464 **SP** SR PVC

OSHA ACCEPTABLE

CL2  
RATED



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, Color Coded Polyvinylchloride Insulation, Aluminum Foil/Polyester/Aluminum Foil with Drain Wire, Overall Braided Tinned Copper Shield, Nylon Rip Cord, for Ease of Jacket Stripping, Gray PVC Jacket overall:

- Meets FCC Docket 20780
- MIL-STD 461 and MIL STD 462B

### #22 STRANDED (7/30) NOM. INS. THICKNESS .009"

| WEICO NO. | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|--------------------------------|--------------------|
| 9102      | 2                 | .032                           | .190               |
| 9103      | 3                 | .032                           | .200               |
| 9104      | 4                 | .032                           | .215               |
| 9106      | 6                 | .032                           | .245               |
| 9108      | 8                 | .032                           | .255               |
| 9110      | 10                | .032                           | .290               |
| 9115      | 15                | .032                           | .330               |
| 9120      | 20                | .032                           | .360               |
| 9125      | 25                | .032                           | .400               |
| 9130      | 30                | .032                           | .420               |
| 9140      | 40                | .032                           | .465               |
| 9150      | 50                | .032                           | .510               |
| 9160      | 60                | .032                           | .560               |
| 9170      | 70                | .050                           | .635               |
| 9180      | 80                | .050                           | .660               |
| 9190      | 90                | .050                           | .690               |
| 9100      | 100               | .050                           | .745               |

COLOR CODE: CONSULT OUR FACTORY

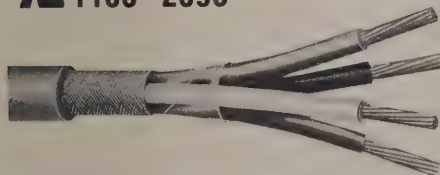
## MULTICONDUCTOR, BRAID SHIELD

80°C - 300V

(PASSES UL VW-1 FLAME TEST)

**UL** 1108 2095

CL2  
RATED



### DESCRIPTION:

Each Conductor Stranded Tinned Copper, Color Coded Polyvinylchloride Insulated, Tinned Copper Braided Shield, Gray PVC Jacket Overall.

### CHARACTERISTICS:

- Temperature Rating: -20°C to +80°C
- Voltage Rating: 300 Volts

### INSULATION THICKNESS .016"

| WEICO NO. | NO. OF CONDUCTORS | CONDUCTOR AWG | STRAND | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|---------------|--------|--------------------------------|--------------------|
| 9450      | 1                 | 22            | 7/30   | .020                           | .120               |
| 9451      | 2                 | 22            | 7/30   | .020                           | .180               |
| 9452      | 3                 | 22            | 7/30   | .020                           | .200               |
| 9453      | 4                 | 22            | 7/30   | .020                           | .210               |
| 9454      | 1                 | 20            | 10/30  | .020                           | .130               |
| 9455      | 2                 | 20            | 10/30  | .020                           | .200               |
| 9456      | 3                 | 20            | 10/30  | .020                           | .220               |
| 9457      | 4                 | 20            | 10/30  | .020                           | .230               |
| 9458      | 1                 | 18            | 16/30  | .020                           | .140               |
| 9459      | 2                 | 18            | 16/30  | .020                           | .230               |
| 9460      | 3                 | 18            | 16/30  | .020                           | .240               |
| 9461      | 4                 | 18            | 16/30  | .020                           | .250               |
| 9462      | 2                 | 16            | 26/30  | .020                           | .250               |
| 9463      | 3                 | 16            | 26/30  | .020                           | .250               |

COLOR CODE: CONSULT OUR FACTORY

Single Conductor UL 1108, Multi Conductor UL 2095

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

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# COMMUNICATION AND CONTROL CABLE

## MULTICONDUCTOR SPIRAL SHIELD 80°C-300V-PVC

CL2  
RATED

**UL 1108 2095**

(PASSES UL VW-1 FLAME TEST)



### DESCRIPTION:

Each Conductor Stranded or Solid Tinned Copper, Color Coded Polyvinylchloride Insulation, Spiral Wrapped Bare Copper Shield. Nom. .020" Gray Polyvinylchloride Jacket Overall.

### CHARACTERISTICS:

- Temperature Range: -20°C to +80°C
- 95% Shield Coverage
- Suggested Working Voltage: 300 Volts
- Excellent for Production Line Work, Use of Spiral Shield Makes Shield Termination Extremely Simple and Fast

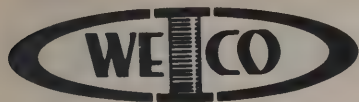
**COLORS:** 1 = Black 3 = White 5 = Yellow  
2 = Red 4 = Green 6 = Blue

| WEICO NO. | NO. OF CONDUCTORS | CONDUCTOR AWG | STRAND | NOM. INS. THICKNESS (INCHES) | NOM.O.D. (INCHES) |
|-----------|-------------------|---------------|--------|------------------------------|-------------------|
| 9301      | 2                 | 22            | Solid  | .016                         | .170              |
| 9302      | 1                 | 22            | 7/30   | .016                         | .115              |
| 9303      | 2                 | 22            | 7/30   | .016                         | .175              |
| 9304      | 3                 | 22            | 7/30   | .016                         | .190              |
| 9305      | 4                 | 22            | 7/30   | .016                         | .200              |
| 9306      | 6                 | 22            | 7/30   | .016                         | .235              |
| 9307      | 1                 | 20            | 10/30  | .016                         | .130              |
| 9308      | 2                 | 20            | 10/30  | .016                         | .195              |
| 9309      | 3                 | 20            | 10/30  | .016                         | .210              |
| 9310      | 4                 | 20            | 10/30  | .016                         | .225              |
| 9311      | 6                 | 20            | 10/30  | .016                         | .265              |
| 9312      | 1                 | 18            | 16/30  | .016                         | .135              |
| 9314      | 2                 | 18            | 16/30  | .016                         | .230              |
| 9315      | 3                 | 18            | 16/30  | .016                         | .235              |
| 9316      | 4                 | 18            | 16/30  | .016                         | .245              |
| 9317      | 2                 | 16            | 26/30  | .016                         | .240              |
| 9318      | 3                 | 16            | 26/30  | .016                         | .245              |
| 9319*     | 2                 | 14            | 41/30  | .020                         | .285              |
| 9320*     | 3                 | 14            | 41/30  | .020                         | .290              |

Single Conductor UL 1108, Multi Conductor UL 2095

\* Not UL Recognized  
Not CL2





# COMMUNICATION AND CONTROL CABLE

## BRAIDED SHIELD

\* \*\*"TEFLON" (TFE)

## TAPE WRAPPED JACKET

200°C - 600V

MIL-W-16878/4

TYPE E



### DESCRIPTION:

Each Conductor Stranded Silver Plated Copper, Type E Extruded .010" TFE Teflon Insulation, Color Coded, Cabled, Braided Silver Plated Copper Shield 90% Coverage, Sintered Wrapped White Teflon Tape.

### CHARACTERISTICS:

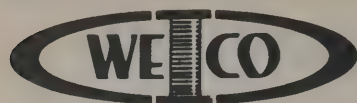
- Temperature Range: -65°C to +200°C
- Voltage Rating: 600 Volts

**COLORS:** 1 = White 2 = Black 3 = Red 4 = Green

\*\* DuPont's Registered Trademark

| WEICO NO. | NO. OF COND. | COND. SIZE | COND. STRAND | NOM. JKT. (INCHES) | NOM. O.D. AT HIGH POINT (INCHES) | NOM. SHIELD TO COND. | NOM. CAP IN MMF TO COND. |
|-----------|--------------|------------|--------------|--------------------|----------------------------------|----------------------|--------------------------|
| 5128/7    | 1            | 28         | 7/36         | .010               | .079                             | 35                   | —                        |
| 5228/7    | 2            | 28         | 7/36         | .010               | .121                             | 32                   | 18                       |
| 5126/7    | 1            | 26         | 7/34         | .010               | .083                             | 40                   | —                        |
| 5226/7    | 2            | 26         | 7/34         | .010               | .129                             | 36                   | 20                       |
| 5326/7    | 3            | 26         | 7/34         | .010               | .129                             | 33                   | 19                       |
| 5126      | 1            | 26         | 19/38        | .010               | .083                             | 40                   | —                        |
| 5226      | 2            | 26         | 19/38        | .010               | .129                             | 36                   | 20                       |
| 5326      | 3            | 26         | 19/38        | .010               | .129                             | 33                   | 19                       |
| 5426      | 4            | 26         | 19/38        | .010               | .146                             | 32                   | 18                       |
| 5124      | 1            | 24         | 19/36        | .012               | .095                             | 45                   | —                        |
| 5224      | 2            | 24         | 19/36        | .012               | .140                             | 35                   | 25                       |
| 5324      | 3            | 24         | 19/36        | .012               | .147                             | 35                   | 20                       |
| 5424      | 4            | 24         | 19/36        | .012               | .159                             | 35                   | 20                       |
| 5122      | 1            | 22         | 19/34        | .012               | .102                             | 55                   | —                        |
| 5222      | 2            | 22         | 19/34        | .012               | .154                             | 45                   | 25                       |
| 5322      | 3            | 22         | 19/34        | .012               | .162                             | 35                   | 25                       |
| 5422      | 4            | 22         | 19/34        | .012               | .176                             | 35                   | 25                       |
| 5120      | 1            | 20         | 19/32        | .012               | .110                             | 55                   | —                        |
| 5220      | 2            | 20         | 19/32        | .012               | .170                             | 95                   | 25                       |
| 5320      | 3            | 20         | 19/32        | .012               | .180                             | 85                   | 25                       |
| 5420      | 4            | 20         | 19/32        | .012               | .195                             | 140                  | 30                       |
| 5118      | 1            | 18         | 19/30        | .012               | .120                             | 70                   | —                        |
| 5218      | 2            | 18         | 19/30        | .012               | .190                             | 60                   | 35                       |
| 5318      | 3            | 18         | 19/30        | .012               | .203                             | 60                   | 35                       |
| 5418      | 4            | 18         | 19/30        | .012               | .220                             | 55                   | 35                       |
| 5116      | 1            | 16         | 19/29        | .012               | .130                             | 107                  | —                        |
| 5216      | 2            | 16         | 19/29        | .012               | .210                             | 67                   | 25                       |
| 5316      | 3            | 16         | 19/29        | .012               | .211                             | 56                   | 30                       |
| 5416      | 4            | 16         | 19/29        | .012               | .243                             | 54                   | 29                       |
| 5114      | 1            | 14         | 19/27        | .012               | .144                             | 84                   | —                        |
| 5214      | 2            | 14         | 19/27        | .012               | .239                             | 61                   | 34                       |
| 5314      | 3            | 14         | 19/27        | .012               | .227                             | 56                   | 31                       |
| 5112      | 1            | 12         | 19/25        | .012               | .164                             | 96                   | —                        |
| 5212      | 2            | 12         | 19/25        | .012               | .279                             | 72                   | 40                       |
| 5312      | 3            | 12         | 19/25        | .012               | .265                             | 61                   | 34                       |

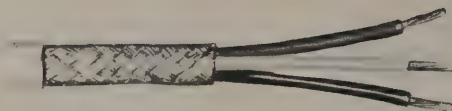
Standard Put-Ups: 100 ft., 500 ft., 1000 ft.



# COMMUNICATION AND CONTROL CABLE

## MIL-C-27500 AEROSPACE ELECTRONIC CABLE

TYPE RC (MIL-W-22759/11) 06



### APPLICATIONS:

For general aerospace flight vehicle applications. These cables use M22759/11 insulated conductors in their construction. QPL to Mil-W-22759/11 is required on the insulated conductors in these cables.

### SPECIFICATIONS:

**Conductor:** Stranded silver plated copper wire.

**Insulation:** Extruded polytetrafluoroethylene (\*Teflon PTFE) in accordance with Mil-W-22759/11.

**Cable:** Up to seven conductors available in cable configuration.

**Shield:** Silver plated copper wire braid, 85% minimum coverage, #38 AWG on core diameters less than 0.060", #36 AWG on 0.060" and larger.

**Jacket:** Taped and fused white polytetrafluoroethylene (PTFE).

**Voltage Rating:** 600V RMS

**Temperature Rating:** -55°C to +200°C

**Identification:** Marker tape under the shield with cable code and manufacturer's I.D. except single conductor where identification is printed on the conductor insulation.

| WEICO NO. | MILITARY NO.    | NO. OF COND. | AWG SIZE | STRANDS | INSUL O.D. | APPROX. CABLE O.D. | APPROX. WGT. LBS/1000' |
|-----------|-----------------|--------------|----------|---------|------------|--------------------|------------------------|
| 55126     | M27500-26RC1S06 | 1            | 26       | 19/38   | .038       | .081               | 7.0                    |
| 55226     | M27500-26RC2S06 | 2            | 26       | 19/38   | .038       | .118               | 13.5                   |
| 55326     | M27500-26RC3S06 | 3            | 26       | 19/38   | .038       | .125               | 16.8                   |
| 55426     | M27500-26RC4S06 | 4            | 26       | 19/38   | .038       | .135               | 19.9                   |
| 55124     | M27500-24RC1S06 | 1            | 24       | 19/36   | .043       | .083               | 8.2                    |
| 55224     | M27500-24RC2S06 | 2            | 24       | 19/36   | .043       | .135               | 15.9                   |
| 55324     | M27500-24RC3S06 | 3            | 24       | 19/36   | .043       | .140               | 20.2                   |
| 55424     | M27500-24RC4S06 | 4            | 24       | 19/36   | .043       | .150               | 23.8                   |
| 55122     | M27500-22RC1S06 | 1            | 22       | 19/34   | .049       | .090               | 9.6                    |
| 55222     | M27500-22RC2S06 | 2            | 22       | 19/34   | .049       | .145               | 19.3                   |
| 55322     | M27500-22RC3S06 | 3            | 22       | 19/34   | .049       | .150               | 24.9                   |
| 55422     | M27500-22RC4S06 | 4            | 22       | 19/34   | .049       | .162               | 29.8                   |
| 55120     | M27500-20RC1S06 | 1            | 20       | 19/32   | .058       | .098               | 12.3                   |
| 55220     | M27500-20RC2S06 | 2            | 20       | 19/32   | .058       | .165               | 24.5                   |
| 55320     | M27500-20RC3S06 | 3            | 20       | 19/32   | .058       | .170               | 32.5                   |
| 55420     | M27500-20RC4S06 | 4            | 20       | 19/32   | .058       | .190               | 52.5                   |
| 55118     | M27500-18RC1S06 | 1            | 18       | 19/30   | .068       | .115               | 17.5                   |
| 55218     | M27500-18RC2S06 | 2            | 18       | 19/30   | .068       | .185               | 31.7                   |
| 55318     | M27500-18RC3S06 | 3            | 18       | 19/30   | .068       | .195               | 42.5                   |
| 55418     | M27500-18RC4S06 | 4            | 18       | 19/30   | .068       | .215               | 62.8                   |
| 55116     | M27500-16RC1S06 | 1            | 16       | 19/29   | .075       | .125               | 20.5                   |
| 55216     | M27500-16RC2S06 | 2            | 16       | 19/29   | .075       | .200               | 37.5                   |
| 55316     | M27500-16RC3S06 | 3            | 16       | 19/29   | .075       | .205               | 50.5                   |
| 55416     | M27500-16RC4S06 | 4            | 16       | 19/29   | .075       | .230               | 66.0                   |
| 55114     | M27500-14RC1S06 | 1            | 14       | 19/27   | .090       | .140               | 27.5                   |
| 55214     | M27500-14RC2S06 | 2            | 14       | 19/27   | .090       | .230               | 51.2                   |
| 55314     | M27500-14RC3S06 | 3            | 14       | 19/27   | .090       | .240               | 70.3                   |
| 55414     | M27500-14RC4S06 | 4            | 14       | 19/27   | .090       | .265               | 88.5                   |
| 55112     | M27500-12RC1S06 | 1            | 12       | 19/25   | .111       | .160               | 39.0                   |
| 55212     | M27500-12RC2S06 | 2            | 12       | 19/25   | .111       | .270               | 74.0                   |
| 55312     | M27500-12RC3S06 | 3            | 12       | 19/25   | .111       | .285               | 105.0                  |
| 55412     | M27500-12RC4S06 | 4            | 12       | 19/25   | .111       | .315               | 131.0                  |

\*DuPont's Registered Trademark





# COAXIAL CABLE

## MIL-C-17 COAXIAL CABLE (POLY- ETHYLENE DIELECTRIC)



### MECHANICAL SPECIFICATIONS

### ELECTRICAL SPECIFICATIONS

| WEICO NO.    | RG CABLE TYPE | JKT. O.D.   | JKT. MAT | OUTER SHIELD       | INNER SHIELD       | DIELEC-TRIC O.D. | DIELEC-TRIC MAT. | CENTER COND.                          | NOM IMPED. (OHMS) | NOM CAP. MMFD/FT. | MAX OPERAT-ING VOLT (RMS) | V.P. 0/0 |
|--------------|---------------|-------------|----------|--------------------|--------------------|------------------|------------------|---------------------------------------|-------------------|-------------------|---------------------------|----------|
| W006A        | 6A/U          | .336        | NCV      | C                  | SC                 | .189             | PE               | 21 CW SOLID                           | 75                | 20.0              | 2700                      | 65.9     |
| W008         | 8/U           | .415        | V        | —                  | C                  | .289             | PE               | 13 C 7/21                             | 52                | 29.5              | 5000                      | 65.9     |
| W008A        | 8A/U          | .415        | NCV      | —                  | C                  | .295             | PE               | 13 C 7/21                             | 52                | 29.5              | 5000                      | 65.9     |
| W011         | 11/U          | .415        | V        | —                  | C                  | .295             | PE               | 18 TC 7/26                            | 75                | 20.5              | 5000                      | 65.9     |
| W011A        | 11A/U         | .412        | NCV      | —                  | C                  | .292             | PE               | 18 TC 7/26                            | 75                | 20.5              | 5000                      | 65.9     |
| W055B        | 55B/U         | .206        | PE       | TC                 | TC                 | .116             | NP               | 20 SC SOLID                           | 53.5              | 28.8              | 1900                      | 66.0     |
| W058         | 58/U          | .200        | V        | —                  | TC                 | .121             | PE               | 20 C SOLID                            | 53.5              | 28.5              | 1900                      | 65.9     |
| 8918         | 58/U TYPE     | .195        | V        | —                  | TC                 | .116             | FPE              | 20 C SOLID                            | 50                | 26.0              | LOW VOLTAGE APPLICATION   | 78.0     |
| W058A        | 58A/U         | .199        | V        | —                  | TC                 | .120             | PE               | 20 C 19/33                            | 50                | 29.5              | 1900                      | 65.9     |
| W058C        | 58C/U         | .199        | NCV      | —                  | TC                 | .120             | PE               | 20 TC 19/33                           | 50                | 29.5              | 1900                      | 65.9     |
| W058Q        | 58C/U         | .195        | NCV      | —                  | TC                 | .116             | PE               | 20 TC 19/33                           | 50                | 30.8              | 1900                      | 66.0     |
| M17/28-RG058 |               |             |          |                    |                    |                  |                  |                                       |                   |                   |                           |          |
| W059         | 59/U          | .250        | V        | —                  | C                  | .150             | PE               | 22 CW SOLID                           | 73                | 21.0              | 2300                      | 65.9     |
| W059B        | 59B/U         | .246        | NCV      | —                  | C                  | .150             | PE               | 23 CW SOLID                           | 75                | 20.5              | 2300                      | 65.9     |
| W059BD DUAL  | 59B/U         | .242 X .504 | NCV      | —                  | C                  | .146             | PE               | 23 CW SOLID                           | 75                | 20.1              | 2300                      | 66.0     |
| W059F        | 59/U TYPE     | .242        | V        | —                  | C                  | .146             | FPE              | 22 C 7/30                             | 75                | 17.3              | 1500                      | 78.0     |
| W062         | 62/U          | .250        | V        | —                  | C                  | .151             | SSP              | 22 CW SOLID                           | 93                | 13.5              | 750                       | 84.0     |
| W062A        | 62A/U         | .249        | NCV      | —                  | C                  | .151             | SSP              | 22 CW SOLID                           | 93                | 13.5              | 750                       | 84.0     |
| W062B        | 62B/U         | .242        | NCV      | —                  | C                  | .146             | SSP              | 24 CW 7/32                            | 93                | 13.5              | 750                       | 84.0     |
| W063B        | 63B/U         | .415        | NCV      | —                  | C                  | .295             | SSP              | 22 CW SOLID                           | 125               | 10.0              | 1000                      | 84.0     |
| W108A        | 108A/U        | .235        | NCV      | —                  | TC                 | .158             | PE               | 20 1 COND TC 7/28<br>20 1 COND C 7/28 | 78                | 19.7              | 1000                      | 66.0     |
| W174         | 174/U         | .105        | NCV      | —                  | TC                 | .060             | PE               | 26 CW 7/34                            | 50                | 30.0              | 1500                      | 65.9     |
| W174A        | 174A/U        | .110        | NCV      | —                  | TC                 | .060             | PE               | 26 CW 7/34                            | 50                | 30.8              | 1500                      | 66.0     |
| W213         | 213/U         | .412        | NCV      | —                  | C                  | .292             | PE               | .0888 C 7/.0296                       | 50                | 30.5              | 5000                      | 65.9     |
| W214         | 214/U         | .432        | NCV      | SC                 | SC                 | .292             | PE               | .0888 SC 7/.0296                      | 50                | 30.5              | 5000                      | 65.9     |
| W217         | 217/U         | .555        | NCV      | C                  | C                  | .380             | PE               | 10 C SOLID                            | 50                | 30.0              | 7000                      | 65.9     |
| W218         | 218/U         | .880        | NCV      | —                  | C                  | .690             | PE               | .195 C SOLID                          | 50                | 30.0              | 11000                     | 65.9     |
| W223         | 223/U         | .216        | NCV      | SC                 | SC                 | .120             | PE               | 19 SC SOLID                           | 50                | 30.0              | 1900                      | 65.9     |
| W701         | TWINAX        | .330        | V        | —                  | TC                 | .228             | PE               | 20 1 COND TC 7/28<br>20 1 COND C 7/28 | 100               | 15.5              | LOW VOLTAGE APPLICATION   | 66.0     |
| W702         | —             | .150        | V        | —                  | TC                 | .100             | PE               | 27 CW 7/35                            | 75                | 20.5              | 2500                      | 66.0     |
| W703         | —             | .305        | PE       | TC                 | TC                 | .198             | PE               | 20 C SOLID                            | 75                | 21.0              | 2700                      | 66.0     |
| 8922         | TWINAX        | .244        | V        | —                  | TC                 | .158             | PE               | 20 1 COND TC 7/28<br>20 1 COND C 7/28 | 78                | 19.7              | LOW VOLTAGE APPLICATION   | 66.0     |
| 8929         | ETHERNET*     | .405        | V        | ALUM FOIL TC BRAID | ALUM FOIL TC BRAID | .247             | FPE              | 12 C SOLID                            | 50                | 26.0              | 3500                      | 78.0     |

\*XEROX TRADEMARK

C—Bare Copper  
TC—Tinned Copper  
SC—Silver Covered Copper  
CW—Copper Covered Steel

FPE—Cellular Polyethylene  
FEP—Fluorinated Ethylene Propylene Type IX  
PTFE—Polytetrafluoroethylene  
FG—Braid V-Fiberglass, Impregnated Type V Per MIL-C-17  
PFA—Perfluoroalkoxy

PE—Solid Polyethylene  
SSP—Semi Solid Polyethylene  
BP—Black Polyethylene—Type IIIA  
NP—Natural Polyethylene—Type III

V—Polyvinylchloride—Type 1  
NCV—Non-Contaminating Polyvinylchloride—Type IIA  
All Dimensions Are Max.  
Except Where Indicated

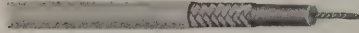
Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

WEICO WIRE & CABLE INC. • 161 Rodeo Drive • Edgewood, N.Y. 11717 • TEL 516-254-2970 • FAX 516-254-2099



# COAXIAL CABLE, PLENUM COAXIAL CABLE

## MIL-C-17 COAXIAL CABLE ("TEFLON"\*\*\* DIELECTRIC)



| WEICO NO. | MILITARY NO.  | RG TYPE | COND.              | NOM. WALL THICK | NOM. JKT. THICK | JACKET TYPE    | MAX. O.D. | NOM. CAP. | IMPED. OHMS. | MAX. OPER. VOLTAGE |
|-----------|---------------|---------|--------------------|-----------------|-----------------|----------------|-----------|-----------|--------------|--------------------|
| W142B     | M17/60RG142   | 142B/U  | 1/.039             | .039            | .012            | Extruded FEP   | .200      | 28.5      | 50 ± 2       | 1900               |
| W178B     | M17/93RG178   | 178B/U  | 7/.004             | .012            | .010            | Extruded FEP   | .075      | 27.9      | 50 ± 2       | 1000               |
| W179B     | M17/94RG179   | 179B/U  | 7/.004             | .021            | .010            | Extruded FEP   | .105      | 20.4      | 75 ± 3       | 1200               |
| W180B     | M17/95RG180   | 180B/U  | 7/.004             | .045            | .010            | Extruded FEP   | .145      | 15.3      | 93 ± 2       | 850                |
| W187A     | PER MIL-C-17D | 187A/U  | 7/.004             | .024            | .012            | Fused TFE Tape | .110      | 19.5      | 75 ± 3       | 1200               |
| W188A     | PER MIL-C-17D | 188A/U  | 7/.0067            | .020            | .012            | Fused TFE Tape | .110      | 27.5      | 50 ± 2       | 1200               |
| W195A     | PER MIL-C-17D | 195A/U  | 7/.004             | .045            | .014            | Fused TFE Tape | .155      | 14.5      | 95 ± 3       | 1500               |
| W196A     | PER MIL-C-17D | 196A/U  | 7/.004             | .011            | .012            | Fused TFE Tape | .080      | 28.5      | 50 ± 2       | 1000               |
| W225      | PER MIL-C-17D | 225/U   | 7/.0312            | .096            | .035            | FG-Braid-V     | .430      | 29.4      | 50 ± 2       | 5000               |
| W302      | M17/110RG302  | 302/U   | 1/.025             | .061            | .013            | Extruded FEP   | .207      | 19.5      | 75 ± 2       | 2300               |
| W316      | M17/113RG316  | 316/U   | 7/.0067            | .020            | .007            | Extruded FEP   | .102      | 29.0      | 50 ± 2       | 1200               |
| W393      | M17/127RG393  | 393/U   | 7/.0312            | .096            | .015            | Extruded FEP   | .390      | 29.4      | 50 ± 2       | 5000               |
| W400      | M17/128RG400  | 400/U   | 19/.008            | .039            | .012            | Extruded FEP   | .195      | 29.3      | 50 ± 2       | 1900               |
| W704      | M17/176-00002 | —       | 2 Cond.<br>19/.005 | .010            | .012            | PFA            | .129      | 24.0      | 77 ± 2       | 750                |

## COAXIAL-CL2P (NEC-725-2b)



### DESCRIPTION:

Fluoropolymer Coaxial Cables are made to the most exacting specifications in the wire and cable industry. WEICO'S designs and standards allow for dramatic improvements in critical data communications electrical characteristics such as: signal speed, attenuation, and capacitance.

### CHARACTERISTICS

- High Transmission Speed
- Allows Longer Cable Lengths In Computer Systems
- Can Be Installed In Air Ducts And Plenums Without Conduit
- UL Listed
- Temp. Range: -90°C to +200°C

| WEICO NO. | RG TYPE    | CENTER COND.           | NOM. O.D. IN.  | WEIGHT LBS/MFT | NOM. IMP. (OHM) | NOM. CAP. (PF/FT) | V.P. % |
|-----------|------------|------------------------|----------------|----------------|-----------------|-------------------|--------|
| WP06      | 6          | 18<br>SOLID BC         | .255           | 55.9           | 75              | 17                | 80     |
| WP11      | 11         | 14<br>SOLID BC         | .350           | 95             | 75              | 17                | 80     |
| WP58      | 58         | 20<br>SOLID BC         | .178           | 38.5           | 50              | 27                | 70     |
| WP59      | 59         | 20<br>SOLID BCW        | .196           | 31.05          | 75              | 17                | 80     |
| WP60      | 59         | 22<br>SOLID BCW        | .189           | 35.6           | 75              | 19                | 80     |
| WP59D     | 59<br>DUAL | 20<br>SOLID BCW        | .206 x<br>.457 | 70.5           | 75              | 17                | 80     |
| WP60D     | 59<br>DUAL | 23<br>SOLID BCW        | .225 x<br>.430 | 86             | 75              | 19                | 70     |
| WP62      | 62         | 22<br>SOLID BCW        | .198           | 29.9           | 93              | 13                | 83     |
| WP01      | TWINAX     | 20-7-B.C.<br>20-7-T.C. | .264           | 55.60          | 100             | 12                | 80     |
| WP02      | ETHERNET*  | SOLID<br>.085 T.C.     | .375           | 128            | 50              | 26                | 80     |

\*XEROX TRADEMARK

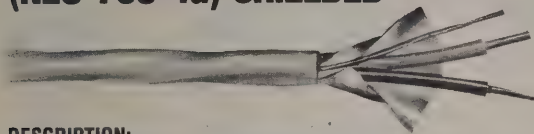
\*\*DuPont's Registered Trademark.





# PLENUM CABLE, WELDING CABLE

## FIRE ALARM-FPLP (NEC-760-4d)-SHIELDED

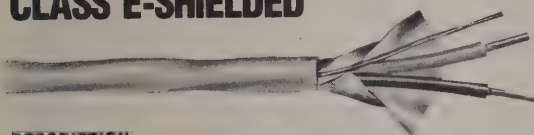


### DESCRIPTION:

Each Conductor Solid Tinned Copper,  
Color Coded Fluoropolymer Resin  
Insulated, Twisted Pair Overall  
Aluminum Foil Shield (100% coverage)  
Drain Wire, Fluoropolymer Jacket  
Overall.

| WEICO NO. | NUMBER OF CONDUCTORS | GAUGE (AWG) | NOM. O.D. (INCHES) | WEIGHT LBS/MFT |
|-----------|----------------------|-------------|--------------------|----------------|
| 9869      | 2                    | 18          | .200               | 34.5           |
| 9870      | 2                    | 16          | .220               | 42             |

## FIRE ALARM-FPLP LOCAL LAW - 5 CLASS E-SHIELDED



### DESCRIPTION:

Each Conductor Solid Tinned Copper,  
Color Coded Fluoropolymer Resin  
Insulated, Twisted Pair, Overall  
Aluminum Foil Shield (100% coverage)  
Drain Wire, Fluoropolymer Jacket  
Overall.

| WEICO NO. | NUMBER OF CONDUCTORS | GAUGE (AWG) | NOM. O.D. (INCHES) | WEIGHT LBS/MFT |
|-----------|----------------------|-------------|--------------------|----------------|
| 9871      | 2                    | 18          | .200               | 31.2           |
| 9872      | 2                    | 16          | .220               | 41.2           |

## WELDING CABLE

### NEOPRENE



### DESCRIPTION:

- Stranded Bare Copper Conductor
- Black Neoprene Jacket
- Temperature Range: -30°C to +90°C

| WEICO NO. | CONDUCTOR AWG. | STRAND  | NOM. OVERALL DIAMETER (INCHES) | CURRENT CARRYING CAPACITY (AMPS) | APPROX. NET. WT. LBS./M.FT. |
|-----------|----------------|---------|--------------------------------|----------------------------------|-----------------------------|
| 1006      | 6              | 266/30  | .39                            | 75                               | 134                         |
| 1004      | 4              | 420/30  | .42                            | 100                              | 187                         |
| 1003      | 3              | 532/30  | .45                            | 150                              | 233                         |
| 1002      | 2              | 665/30  | .55                            | 200                              | 299                         |
| 1001      | 1              | 833/30  | .60                            | 250                              | 365                         |
| 1010      | 1/0            | 1057/30 | .66                            | 300                              | 457                         |
| 1020      | 2/0            | 1317/30 | .73                            | 375                              | 555                         |
| 1030      | 3/0            | 1622/30 | .80                            | 450                              | 698                         |
| 1040      | 4/0            | 2109/30 | .87                            | 550                              | 871                         |



# PLENUM CABLE

## CL2P-(NEC-725-2b) (NON-CONDUIT) SHIELDED PAIRS



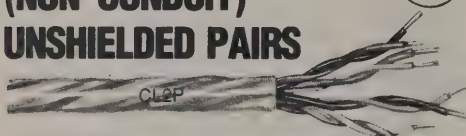
### DESCRIPTION:

Each Conductor Stranded, Tinned Copper, Color Coded Fluoropolymer Resin Insulated, Conductors Twisted into Pairs, Overall Aluminum Foil Shield (100% coverage) Stranded Drain Wire, Fluoropolymer Jacket Overall.

### PAIRED—SHIELDED

| WEICO NO. | NUMBER OF PAIRS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-----------------|-------------|--------------------|-----------------|
| 9830      | 1               | 24          | .120               | 9.80            |
| 9831      | 2               | 24          | .159               | 14.10           |
| 9833      | 3               | 24          | .170               | 21.35           |
| 9834      | 4               | 24          | .184               | 26.75           |
| 9835      | 6               | 24          | .221               | 37.35           |
| 9836      | 12½             | 24          | .294               | 68.09           |
| 9837      | 25              | 24          | .408               | 131.50          |

## CL2P-(NEC-725-2b) (NON-CONDUIT) UNSHIELDED PAIRS



### DESCRIPTION:

Each Conductor Stranded, Tinned Copper, Color Coded Fluoropolymer Resin Insulated, Conductors Twisted into Pairs, Fluoropolymer Jacket Overall.

### PAIRED—UNSHIELDED

| WEICO NO. | NUMBER OF PAIRS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-----------------|-------------|--------------------|-----------------|
| 9838      | 1               | 24          | .110               | 9.30            |
| 9839      | 2               | 24          | .155               | 14.00           |
| 9840      | 3               | 24          | .165               | 18.95           |
| 9841      | 4               | 24          | .179               | 24.10           |
| 9842      | 6               | 24          | .217               | 34.50           |
| 9843      | 12½             | 24          | .290               | 66.30           |
| 9844      | 25              | 24          | .400               | 128.00          |

## CL2P-(NEC-725-2b) (NON-CONDUIT) LOW CAPACITANCE- SHIELDED PAIRS (12.5 PF/FT NOM.)



### DESCRIPTION:

Each Conductor Stranded, Tinned Copper, Color Coded Fluoropolymer Resin Insulated, Conductors Twisted into Pairs,

Overall Aluminum Foil Shield (100% coverage) Stranded Drain Wire, Fluoropolymer Jacket Overall.

### PAIRED—SHIELDED

| WEICO NO. | NUMBER OF PAIRS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-----------------|-------------|--------------------|-----------------|
| 9860      | 1               | 24          | .140               | 11.00           |
| 9861      | 2               | 24          | .178               | 18.60           |
| 9862      | 3               | 24          | .190               | 24.35           |
| 9863      | 4               | 24          | .208               | 30.35           |
| 9864      | 6               | 24          | .250               | 42.65           |
| 9865      | 9               | 24          | .295               | 60.25           |
| 9866      | 12½             | 24          | .335               | 80.15           |

## CL2P-(NEC-725-2b) (NON-CONDUIT) INDIVIDUALLY SHIELDED PAIRS



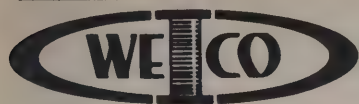
### DESCRIPTION:

Each Conductor Stranded, Tinned Copper, Color Coded Fluoropolymer Resin Insulated, Conductors Twisted into Pairs, Each Pair Individually Aluminum Foil Shielded, Stranded Drain Wire, Fluoropolymer Jacket Overall.

### PAIRED—SHIELDED

| WEICO NO. | NUMBER OF PAIRS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-----------------|-------------|--------------------|-----------------|
| 9867      | 2               | 22          | .167               | 23.45           |
| 9868      | 3               | 22          | .244               | 38.00           |



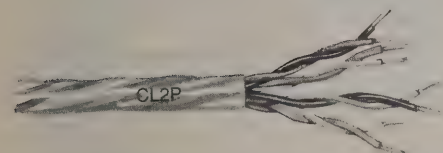
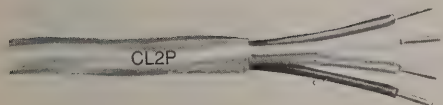


# PLENUM CABLE

**CL2P-(NEC-725-2b)  
(NON-CONDUIT)**



**SHIELDED - UNSHIELDED,  
PAIRED - UNPAIRED**



## DESCRIPTION:

Conductors Tinned or Bare Copper  
Insulated with Fluoropolymer Resin,  
Conductors Paired or Cabled, Unshielded  
or Overall Foil Shield (100% Coverage),  
Drain Wire, Extruded Fluoropolymer  
Transparent Jacket Overall.

## APPLICATION:

Computer Interconnect, Instrumentation  
and Control, Business Machines, and  
Remote Control Signaling.

### UNPAIRED—SHIELDED

| WEICO NO. | NO. OF COND. | COND. AWG (STRANDING) | INSULATION THICKNESS (IN) | JACKET THICKNESS (IN) | NOM. O.D. (IN) | APPROX. WT/MFT (LBS) |
|-----------|--------------|-----------------------|---------------------------|-----------------------|----------------|----------------------|
| 9820      | 2            | 18 (SOLID)            | .010                      | .020                  | .169           | 24                   |
| 9821      | 2            | 16 (SOLID)            | .010                      | .020                  | .189           | 28                   |
| 9822      | 4            | 22 (SOLID)            | .010                      | .020                  | .156           | 22                   |
| 9823      | 4            | 18 (SOLID)            | .010                      | .020                  | .190           | 41                   |

### UNPAIRED—UNSHIELDED

| WEICO NO. | NO. OF COND. | COND. AWG (STRANDING) | INSULATION THICKNESS (IN) | JACKET THICKNESS (IN) | NOM. O.D. (IN) | APPROX. WT/MFT (LBS) |
|-----------|--------------|-----------------------|---------------------------|-----------------------|----------------|----------------------|
| 9824      | 2            | 18 (SOLID)            | .010                      | .020                  | .162           | 23                   |
| 9825      | 2            | 16 (SOLID)            | .010                      | .020                  | .185           | 27                   |
| 9826      | 4            | 18 (SOLID)            | .010                      | .020                  | .186           | 37                   |

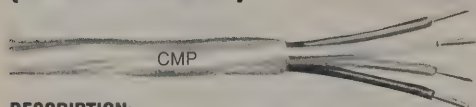
### PAIRED—UNSHIELDED

| WEICO NO. | NO. OF PAIRS | COND. AWG (STRANDING) | INSULATION THICKNESS (IN) | JACKET THICKNESS (IN) | NOM. O.D. (IN) | APPROX. WT/MFT (LBS) |
|-----------|--------------|-----------------------|---------------------------|-----------------------|----------------|----------------------|
| 9828      | 2            | 22 (SOLID)            | .010                      | .020                  | .205           | 22                   |
| 9829      | 3            | 22 (SOLID)            | .010                      | .020                  | .212           | 30                   |



# PLENUM TELEPHONE CABLE

## CMP-(NEC-800-3d) (NON-CONDUIT)



### DESCRIPTION:

Each Conductor Solid Bare Copper,  
Color Coded Fluoropolymer Resin  
Insulated, Conductors Cabled, Extruded  
Fluoropolymer Jacket Overall.

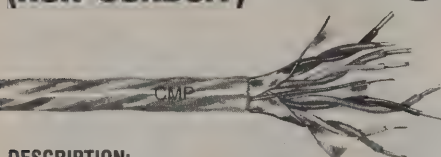
### APPLICATION:

General Intercommunications, Sound  
Systems, Industrial And Residential  
Telephone Service.

### UNPAIRED—UNSHIELDED

| WEICO NO. | NO. OF CONDUCTORS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-------------------|-------------|--------------------|-----------------|
| 9624      | 2                 | 24          | .123               | 11              |
| 9634      | 3                 | 24          | .130               | 14              |
| 9644      | 4                 | 24          | .139               | 16              |
| 9622      | 2                 | 22          | .131               | 12              |
| 9632      | 3                 | 22          | .137               | 15              |
| 9642      | 4                 | 22          | .151               | 18              |

## CMP-(NEC-800-3d) (NON-CONDUIT)



### DESCRIPTION:

Each Conductor Solid Bare Copper, Color  
Coded Fluoropolymer Resin Insulated,  
Conductors Twisted into Pairs, Overall  
Aluminum Foil Shield (100% coverage)  
Stranded Drain Wire, Fluoropolymer  
Jacket Overall.

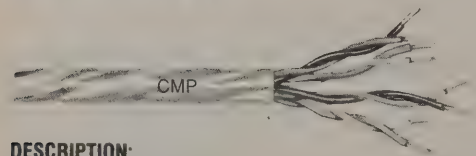
### APPLICATION:

General Intercommunications, Sound  
Systems, Industrial And Residential  
Telephone Service.

### PAIRED—SHIELDED

| WEICO NO. | NUMBER OF PAIRS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-----------------|-------------|--------------------|-----------------|
| 9730      | 3               | 24          | .141               | 15.5            |
| 9731      | 4               | 24          | .150               | 18.65           |
| 9732      | 6               | 24          | .180               | 25.75           |
| 9733      | 10              | 24          | .248               | 51.25           |
| 9734      | 25              | 24          | .317               | 90.15           |
| 9735      | 50              | 24          | .464               | 168.00          |
| 9736      | 100             | 24          | .611               | 323.43          |

## CMP-(NEC-800-3d) (NON-CONDUIT)



### DESCRIPTION:

Each Conductor Solid Bare Copper,  
Color Coded Fluoropolymer Resin  
Insulated, Conductors Twisted into  
Pairs, Fluoropolymer Jacket Overall.

### APPLICATION:

General Intercommunications, Sound  
Systems, Industrial And Residential  
Telephone Service.

### PAIRED—UNSHIELDED

| WEICO P/N | NUMBER OF PAIRS | GAUGE (AWG) | NOM. O.D. (INCHES) | APPROX. LBS/MFT |
|-----------|-----------------|-------------|--------------------|-----------------|
| 9702      | 2               | 24          | .118               | 10.50           |
| 9703      | 3               | 24          | .131               | 12.25           |
| 9704      | 4               | 24          | .142               | 15.65           |
| 9706      | 6               | 24          | .155               | 22.35           |
| 9710      | 10              | 24          | .245               | 50.00           |
| 9712      | 12              | 24          | .253               | 53.00           |
| 9725      | 25              | 24          | .311               | 86.75           |
| 9750      | 50              | 24          | .459               | 166.00          |
| 9700      | 100             | 24          | .605               | 321.43          |

COLOR CODE: CONSULT OUR FACTORY





# BRAID, TINNED COPPER

## FLAT BRAID QQ-B-575 F ASTM-B-33



| WEICO NO. | MILITARY NO.   | NOM. FLAT WIDTH | NOM. THICKNESS | AWG. OF INDIV. ENDS | BRAID CONSTRUCTION CAR-RIERS | TOTAL NO. OF INDIV. ENDS | APPROX. AWG. EQUIV. | NOM. CIRCULAR MILLS | *CURRENT CARRYING CAP. (Amps) |
|-----------|----------------|-----------------|----------------|---------------------|------------------------------|--------------------------|---------------------|---------------------|-------------------------------|
| BF-.025   | —              | .025"           | .015"          | 36                  | 8                            | 8                        | 27                  | 200                 | 4.0                           |
| BF-1/32   | —              | 1/32"           | .020"          | 36                  | 16                           | 16                       | 24                  | 400                 | 6.0                           |
| BF-3/64   | QQB575F36T031  | 3/64"           | .020"          | 36                  | 24                           | 24                       | 22                  | 600                 | 7.0                           |
| BF-3/32   | —              | 3/32"           | .020"          | 36                  | 16                           | 48                       | 19                  | 1200                | 11.0                          |
| BF-1/8    | QQB575F36T078  | 1/8"            | .020"          | 36                  | 24                           | 72                       | 18                  | 1800                | 16.0                          |
| BF-3/16   | QQB575F36T125  | 3/16"           | .020"          | 36                  | 24                           | 120                      | 15                  | 3000                | 25.0                          |
| BF-1/4    | QQB575F36T171  | 1/4"            | .030"          | 36                  | 24                           | 168                      | 14                  | 4200                | 32.0                          |
| BF-3/8    | —              | 3/8"            | .030"          | 36                  | 48                           | 288                      | 12                  | 7200                | 46.0                          |
| BF-1/2    | —              | 1/2"            | .030"          | 36                  | 48                           | 384                      | 10                  | 9600                | 53.0                          |
| BF-5/8    | QQB575F36T375  | 5/8"            | .030"          | 36                  | 48                           | 384                      | 10                  | 9600                | 53.0                          |
| BF-3/4    | QQB575F36T781  | 3/4"            | .040"          | 36                  | 48                           | 864                      | 7                   | 20800               | 88.0                          |
| BF-1      | —              | 1"              | .045"          | 36                  | 48                           | 864                      | 7                   | 20800               | 88.0                          |
| BF-1 3/8  | QQB575F30T875  | 1 3/8"          | .050"          | 30                  | 48                           | 336                      | 5                   | 33700               | 100.0                         |
| BF-1 1/2  | QQB575F30T1375 | 1 1/2"          | .060"          | 30                  | 48                           | 528                      | 3                   | 53064               | 150.0                         |
| BF-1 3/4  | —              | 1 3/4"          | .080"          | 30                  | 48                           | 1248                     | 2/0                 | 125424              | 280.0                         |
| BF-2      | —              | 2"              | .120"          | 30                  | 48                           | 1436                     | 3/0                 | 154368              | 310.0                         |

### DESCRIPTION:

Tinned Copper Strands Woven And Rolled Flat At Time of Manufacture To Specific Width Depending on Construction

### APPLICATION:

Used For Bonding, Straps, Grounding or Connecting Moving Parts. Recommended For High Current.

## TUBULAR BRAID QQ-B-575 R ASTM-B-33



| WEICO NO. | MILITARY NO.   | NOM. I.D. WHEN ROUNDED | AWG. OF INDIV. ENDS | BRAID CONSTRUCTION CAR-RIERS | TOTAL NO. OF INDIV. ENDS | APPROX. AWG. EQUIV. | NOM. CIRCULAR MILLS | *CURRENT CARRYING CAP. (AMPS) |
|-----------|----------------|------------------------|---------------------|------------------------------|--------------------------|---------------------|---------------------|-------------------------------|
| BT-1/32   | QQB575R36T031  | 1/32"                  | 36                  | 24                           | 24                       | 22                  | 600                 | 7.0                           |
| BT-1/16   | QQB575R36T062  | 1/16"                  | 36                  | 24                           | 48                       | 19                  | 1200                | 11.0                          |
| BT-5/64   | QQB575R36T078  | 5/64"                  | 36                  | 24                           | 72                       | 18                  | 1800                | 16.0                          |
| BT-7/64   | QQB575R36T109  | 7/64"                  | 36                  | 24                           | 96                       | 16                  | 2400                | 19.0                          |
| BT-1/8    | QQB575R36T125  | 1/8"                   | 36                  | 24                           | 120                      | 15                  | 3000                | 25.5                          |
| BT-5/32   | QQB575R36T156  | 5/32"                  | 36                  | 24                           | 240                      | 12                  | 6000                | 40.0                          |
| BT-11/64  | QQB575R36T171  | 11/64"                 | 36                  | 24                           | 168                      | 14                  | 4200                | 32.0                          |
| BT-13/64  | QQB575R34T203  | 13/64"                 | 34                  | 24                           | 192                      | 11                  | 7630                | 46.0                          |
| BT-1/4    | QQB575R36T250  | 1/4"                   | 36                  | 24                           | 384                      | 10                  | 9600                | 53.0                          |
| BT-9/32   | QQB575R30T281  | 9/32"                  | 30                  | 24                           | 120                      | 9                   | 12060               | 60.0                          |
| BT-3/8    | QQB575R36T375  | 3/8"                   | 36                  | 48                           | 384                      | 10                  | 9600                | 53.0                          |
| BT-7/16   | QQB575R30T437  | 7/16"                  | 30                  | 24                           | 240                      | 6                   | 24120               | 90.0                          |
| BT-1/2    | QQB575R36T500  | 1/2"                   | 36                  | 48                           | 528                      | 9                   | 13200               | 62.0                          |
| BT-9/16   | QQB575R30T562  | 9/16"                  | 30                  | 48                           | 480                      | 3                   | 48240               | 145.0                         |
| BT-21/32  | QQB575R30T656  | 21/32"                 | 30                  | 48                           | 768                      | 1                   | 77180               | 190.0                         |
| BT-25/32  | QQB575R36T781  | 25/32"                 | 36                  | 48                           | 864                      | 7                   | 21600               | 88.0                          |
| BT-1      | QQB575R30T1000 | 1"                     | 30                  | 48                           | 384                      | 4                   | 38600               | 120.0                         |

### DESCRIPTION:

Tinned Copper Braid Woven in Completely Round Configuration as Outlined in SPEC QQ-BB-575.

### APPLICATION:

Used As Both Shielding and Protective Covering. Shielding is 95% Or More When Placed Over Equivalent Diameter Mandrel To The Inside Diameter of Tubular Braid.

Standard Put-Ups: 100 ft., 500 ft., 1000 ft.

\*Values shown are for bare cable in free air at 30°C (86°F) and intended as a reference guide only. Actual values will depend on permissible temperature rise. Permissible voltage drop and other conditions of service.

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## BUS BAR TINNED COPPER

### SOFT DRAWN BUS MIL-W-3861 TYPE S QQ-W-343 TYPE S ASTM-B-33

**DESCRIPTION:**

Electrolytic, Soft Drawn and Annealed,  
Solid Tin-Plated Copper.

**APPLICATION:**

Point to Point Wiring, Component Leads  
and Ground Wire

Standard Put-Ups: 100 ft., 1000 ft.

| WEICO<br>NO. | CONDUCTOR<br>SIZE (AWG) | NOMINAL CIRCULAR<br>MIL AREA | NOMINAL<br>O.D. (INCHES) |
|--------------|-------------------------|------------------------------|--------------------------|
| 9030         | 30                      | 100.5                        | .010                     |
| 9028         | 28                      | 159.8                        | .013                     |
| 9026         | 26                      | 254.1                        | .016                     |
| 9024         | 24                      | 404.0                        | .020                     |
| 9022         | 22                      | 642.4                        | .025                     |
| 9020         | 20                      | 1022.0                       | .033                     |
| 9018         | 18                      | 1642.0                       | .040                     |
| 9016         | 16                      | 2583.0                       | .051                     |
| 9014         | 14                      | 4107.0                       | .065                     |
| 9012         | 12                      | 6530.0                       | .082                     |
| 9010         | 10                      | 10380.0                      | .103                     |
| 9008         | 8                       | 16510.0                      | .129                     |

### HARD DRAWN BUS MIL-W-3861 TYPE S

**DESCRIPTION:**

Electrolytic, Hard Drawn Copper Electro-  
tinned Plated, Straightened and Cut to 2  
Ft. Lengths.

**APPLICATION:**

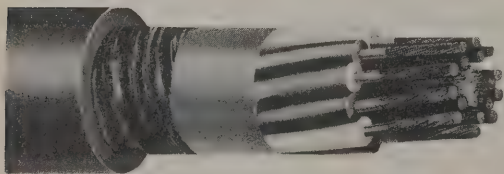
For Hooking Up All Types of Transmitters,  
Especially Ultra Shortwave Equipment  
Connecting Common Connector  
Terminals.

| WEICO<br>NO. | CONDUCTOR<br>SIZE (AWG) | NOMINAL CIRCULAR<br>MIL AREA | NOMINAL<br>O.D. (INCHES) |
|--------------|-------------------------|------------------------------|--------------------------|
| W2424        | 24                      | 404.0                        | .020                     |
| W2222        | 22                      | 642.4                        | .025                     |
| W2020        | 20                      | 1022.0                       | .033                     |
| W1818        | 18                      | 1642.0                       | .040                     |
| W1616        | 16                      | 2583.0                       | .051                     |
| W1414        | 14                      | 4107.0                       | .065                     |
| W1212        | 12                      | 6530.0                       | .082                     |
| W1010        | 10                      | 10380.0                      | .103                     |

Standard Put-Ups: 100 Pcs., 2 Ft. Each, Per Package

## COMMUNICATION AND CONTROL CABLE

### NEOPRENE JACKET (MULTI-SO)



#### 18 16/30—STRANDED BARE COPPER—2/64" INSULATION THICKNESS

| WEICO<br>NO. | NO. OF<br>CONDUCTORS | NOMINAL JKT.<br>THICKNESS<br>(INCHES) | NOMINAL O.D.<br>(INCHES) |
|--------------|----------------------|---------------------------------------|--------------------------|
| NO-518       | 5                    | .078                                  | .485                     |
| NO-618       | 6                    | .078                                  | .510                     |
| NO-818       | 8                    | .078                                  | .560                     |
| NO-918       | 9                    | .078                                  | .595                     |
| NO-1018      | 10                   | .078                                  | .620                     |

#### 16 26/30—STRANDED BARE COPPER—2/64" INSULATION THICKNESS

| WEICO<br>NO. | NO. OF<br>CONDUCTORS | NOMINAL JKT.<br>THICKNESS<br>(INCHES) | NOMINAL O.D.<br>(INCHES) |
|--------------|----------------------|---------------------------------------|--------------------------|
| NO-516       | 5                    | .078                                  | .520                     |
| NO-616       | 6                    | .078                                  | .540                     |
| NO-716       | 7                    | .078                                  | .540                     |
| NO-816       | 8                    | .078                                  | .580                     |
| NO-1016      | 10                   | .094                                  | .720                     |
| NO-1216      | 12                   | .094                                  | .745                     |
| NO-1416      | 14                   | .094                                  | .765                     |
| NO-1616      | 16                   | .094                                  | .810                     |
| NO-2016      | 20                   | .094                                  | .890                     |
| NO-2216      | 22                   | .094                                  | .920                     |
| NO-2416      | 24                   | .109                                  | 1.000                    |
| NO-2616      | 26                   | .109                                  | 1.030                    |
| NO-3016      | 30                   | .109                                  | 1.080                    |

**DESCRIPTION:**

Each Conductor Stranded Bare Copper,  
Color Coded Rubber Insulation, Cabled  
with Fillers where Necessary, Wrap Over  
Conductors, Heavy Black Neoprene  
Jacket Overall.

**CHARACTERISTICS:**

- Temperature Range: -20°C to +60°C
- Voltage Rating: 600 Volts





# COMMUNICATION AND CONTROL CABLE

## CONTROL CABLE, (MULTI-SO)



### 14 41/30—STRANDED BARE COPPER—3/64" INSULATION THICKNESS

| WEICO NO. | NO. OF CONDUCTORS | NOM. JACKET THICKNESS (INCHES) | NOM. O.D. (INCHES) |
|-----------|-------------------|--------------------------------|--------------------|
| NO-514    | 5                 | .095                           | .675               |
| NO-614    | 6                 | .094                           | .705               |
| NO-714    | 7                 | .094                           | .710               |
| NO-814    | 8                 | .094                           | .760               |
| NO-914    | 9                 | .094                           | .810               |
| NO-1014   | 10                | .094                           | .870               |
| NO-1214   | 12                | .094                           | .900               |

### 12 65/30—STRANDED BARE COPPER—3/64" INSULATION THICKNESS

|         |    |      |       |
|---------|----|------|-------|
| NO-512  | 5  | .094 | .740  |
| NO-612  | 6  | .094 | .790  |
| NO-712  | 7  | .094 | .790  |
| NO-812  | 8  | .094 | .820  |
| NO-912  | 9  | .109 | .900  |
| NO-1012 | 10 | .109 | 1.010 |
| NO-1212 | 12 | .109 | 1.040 |
| NO-1612 | 16 | .109 | 1.160 |
| NO-1812 | 18 | .109 | 1.220 |

### 10 104/30—STRANDED BARE COPPER—3/64" INSULATION THICKNESS

|         |    |      |       |
|---------|----|------|-------|
| NO-510  | 5  | .094 | .800  |
| NO-610  | 6  | .094 | .850  |
| NO-810  | 8  | .094 | .910  |
| NO-1010 | 10 | .109 | 1.120 |

COLOR CODE: Per IPCEA

## PORTABLE CORDS

### 300-600V

LISTED SJO, SO



#### DESCRIPTION:

Each Conductor Stranded Bare Copper, Color Coded Rubber Insulation, Cabled with Fillers, Separator, Black Neoprene Jacket Overall.

#### CHARACTERISTICS:

- Temperature Range: -30°C to +90°C
- Voltage Rating:  
SJO: 300 Volts  
SO: 600 Volts

### NEOPRENE PORTABLE CORD 300 VOLT

| WEICO NO. | TYPE | NO. OF COND. | AWG | NOM. INS. THICKNESS (INCHES) | NOM. JKT. THICKNESS (INCHES) | CURRENT CAPACITY IN AMPS | NOM. O.D. (INCHES) |
|-----------|------|--------------|-----|------------------------------|------------------------------|--------------------------|--------------------|
| NJO-218   | SJO  | 2            | 18  | .032                         | .032                         | 7                        | .305               |
| NJO-318   | SJO  | 3            | 18  | .032                         | .032                         | 7                        | .330               |
| NJO-216   | SJO  | 2            | 16  | .032                         | .032                         | 10                       | .330               |
| NJO-316   | SJO  | 3            | 16  | .032                         | .032                         | 10                       | .360               |

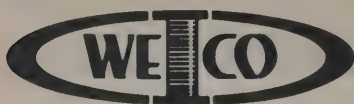
### NEOPRENE PORTABLE CORD 600 VOLT

|        |    |   |    |      |      |    |      |
|--------|----|---|----|------|------|----|------|
| NO-218 | SO | 2 | 18 | .030 | .060 | 7  | .390 |
| NO-318 | SO | 3 | 18 | .030 | .060 | 7  | .405 |
| NO-418 | SO | 4 | 18 | .030 | .060 | 6  | .435 |
| NO-216 | SO | 2 | 16 | .030 | .060 | 10 | .405 |
| NO-316 | SO | 3 | 16 | .030 | .060 | 10 | .430 |
| NO-416 | SO | 4 | 16 | .030 | .060 | 8  | .485 |
| NO-214 | SO | 2 | 14 | .045 | .075 | 15 | .530 |
| NO-314 | SO | 3 | 14 | .045 | .075 | 15 | .560 |
| NO-414 | SO | 4 | 14 | .045 | .075 | 12 | .605 |
| NO-212 | SO | 2 | 12 | .045 | .090 | 20 | .600 |
| NO-312 | SO | 3 | 12 | .045 | .090 | 20 | .635 |
| NO-412 | SO | 4 | 12 | .045 | .090 | 16 | .665 |
| NO-210 | SO | 2 | 10 | .045 | .090 | 25 | .640 |
| NO-310 | SO | 3 | 10 | .045 | .090 | 25 | .690 |
| NO-410 | SO | 4 | 10 | .045 | .090 | 20 | .745 |

Standard Put-Ups: 250 ft.

COLORS: 1 = White 2 = Black 3 = Green 4 = Red

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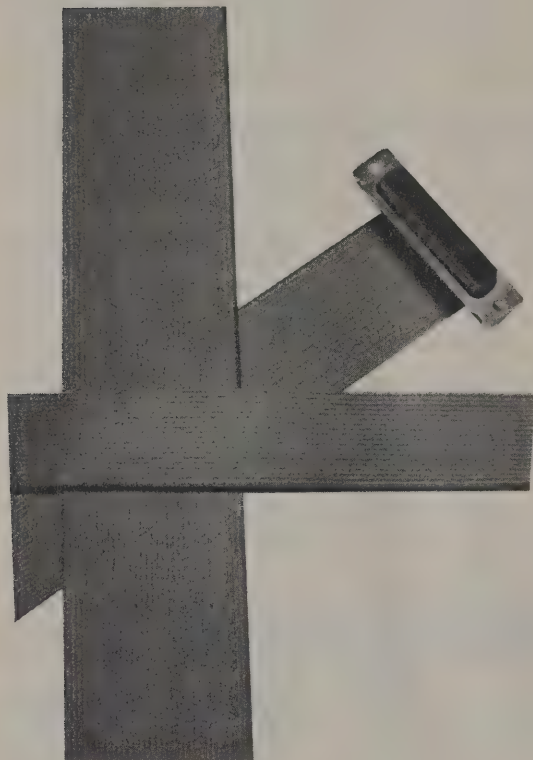


# FLAT CABLE GRAY

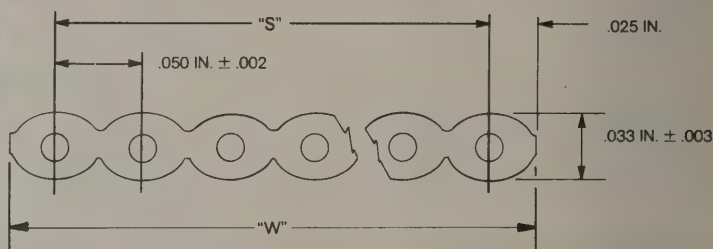
## 105°C PVC

### 2651

(PASSES UL VW-1 FLAME TEST)



| WEICO NO. | NO. OF CONDUCTORS | NOMINAL OVERALL WIDTH (W) (INCHES) | NOMINAL SPAN (S) (INCHES) |
|-----------|-------------------|------------------------------------|---------------------------|
| WR-9      | 9                 | .45                                | .40                       |
| WR-10     | 10                | .50                                | .45                       |
| WR-14     | 14                | .70                                | .65                       |
| WR-15     | 15                | .75                                | .70                       |
| WR-16     | 16                | .80                                | .75                       |
| WR-20     | 20                | 1.00                               | .95                       |
| WR-24     | 24                | 1.20                               | 1.15                      |
| WR-25     | 25                | 1.25                               | 1.20                      |
| WR-26     | 26                | 1.30                               | 1.25                      |
| WR-34     | 34                | 1.70                               | 1.65                      |
| WR-37     | 37                | 1.85                               | 1.80                      |
| WR-40     | 40                | 2.00                               | 1.95                      |
| WR-50     | 50                | 2.50                               | 2.45                      |
| WR-60     | 60                | 3.00                               | 2.95                      |
| WR-64     | 64                | 3.20                               | 3.15                      |



Weico's gray Flat Cable is designed for general purpose applications. Because of its exacting specifications, it provides consistent reliable performance. Being ribbed on both sides permits reverse plane termination ability on the same cable length. Flexibility and excellent teardown characteristics allow intricate circuit routing and uniform breakouts for harness production. Weico's Flat Cable is stocked in bulk (100 Ft./Reel).

#### DESCRIPTION:

- 28 AWG (7/36) stranded tinned copper conductor
- Nominal Insulation Thickness: .010" PVC
- Conductors on .050" centers
- Gray PVC with red stripe on leading edge
- UL listed—Style 2651
- Passes UL VW-1

#### CHARACTERISTICS:

- Temperature Rating: —105°C
- Voltage Rating: 300 Volts
- Capacitance: 14 pF/ft nom.\*
- Propagation Delay: 1.4 ns/ft—.18 ns rise time pulse @ 1 mhz\*
- Impedance: 105 ohms nom.\*
- Crosstalk: nom. between two adjacent signal lines @ 1 ns rise time over 10 ft. length; near end 3.2%—far end 11.5%\*
- Environmental: resists acids, alkalis, oil, moisture, solvents, ozone and fungus

Standard Packaging: 100 foot spool

\*Transmission Characteristics: Ground-Signal-Ground-Signal Etc. With All Grounds Common

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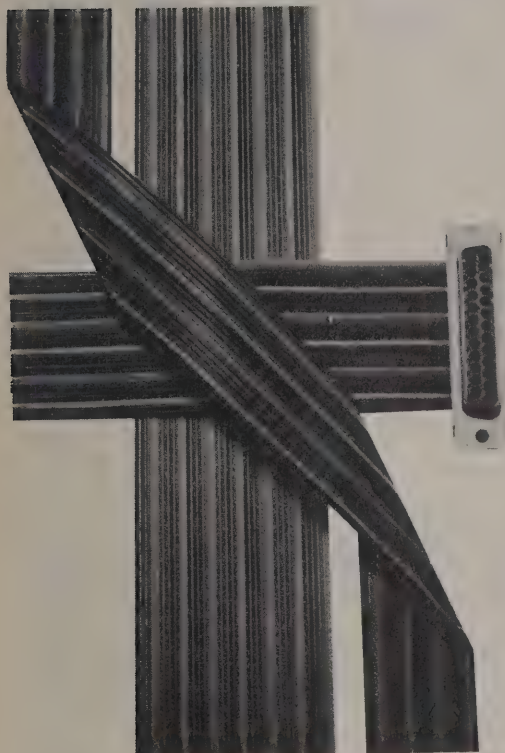


# FLAT CABLE COLOR CODED

## 105°C PVC

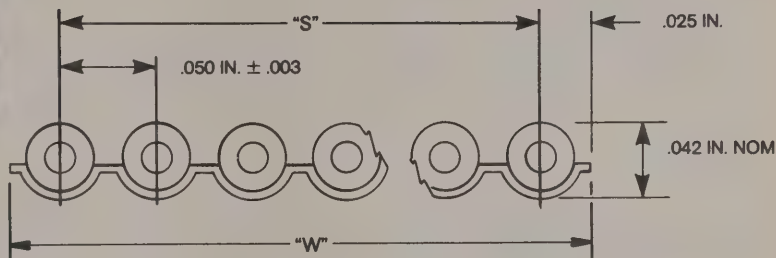
### 2884

(PASSES UL VW-1 FLAME TEST)



Weico's color coded Flat Cable is manufactured from pre-insulated color coded conductors which are then laminated on .050 center to center spacing. This permits conventional termination using insulation displacement connectors. Color coding affords immediate identification of discrete wires for positive termination and traceability. Weico's Flat Cable is stocked in bulk (100 ft/reel).

| WEICO NO. | NO. OF CONDUCTORS | NOMINAL OVERALL WIDTH (W) (INCHES) | NOMINAL SPAN (S) (INCHES) |
|-----------|-------------------|------------------------------------|---------------------------|
| WC-9      | 9                 | .45                                | .40                       |
| WC-10     | 10                | .50                                | .45                       |
| WC-14     | 14                | .70                                | .65                       |
| WC-15     | 15                | .75                                | .70                       |
| WC-16     | 16                | .80                                | .75                       |
| WC-20     | 20                | 1.00                               | .95                       |
| WC-24     | 24                | 1.20                               | 1.15                      |
| WC-25     | 25                | 1.25                               | 1.20                      |
| WC-26     | 26                | 1.30                               | 1.25                      |
| WC-34     | 34                | 1.70                               | 1.65                      |
| WC-37     | 37                | 1.85                               | 1.80                      |
| WC-40     | 40                | 2.00                               | 1.95                      |
| WC-50     | 50                | 2.50                               | 2.45                      |
| WC-60     | 60                | 3.00                               | 2.95                      |
| WC-64     | 64                | 3.20                               | 3.15                      |



#### DESCRIPTION:

- 28 AWG (7/36) stranded tinned copper conductor
- 0.10" nom. wall PVC
- Conductors laminated to a sheet of .009" clear PVC
- Color Code: brown, red, orange, yellow, green, blue, violet, gray, white, black. Color code repeats beyond 10 conductors
- UL listed-Style 2884
- Passes UL VW-1

#### CHARACTERISTICS:

- Temperature Rating: 105°C
- Voltage Rating: 300 Volts
- Capacitance: 14 pF/ft @ 1 mhz\*
- Propagation Delay: 1.4 ns/ft—.18 ns rise time pulse\*
- Impedance: 105 ohms nom.\*
- Crosstalk: nom. between two adjacent signal lines @ 1 ns rise time over 10 ft. length; near end 3.2%—far end 11.5%\*
- Environmental: resists acids, alkalis, oil, moisture, solvents, ozone and fungus

Standard Packaging: 100 foot spool

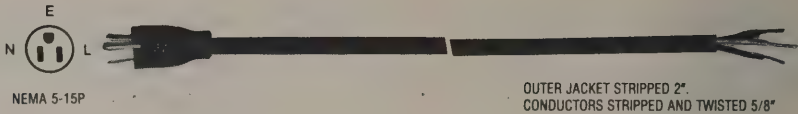
\*Transmission Characteristics: Ground-Signal-Ground-Signal Etc. With All Grounds Common

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POWER SUPPLY CORDS, SHIELDED, UNSHIELDED

3 CONDUCTOR  
N.A. COLOR CODING  
CEE COLOR CODING



| WEICO NO.   | LENGTH (FT.) | COLOR CODING | AWG (STRAND-ING) | NOM. OD. (INCHES) | RATING              | UL TYPE | COLOR |
|-------------|--------------|--------------|------------------|-------------------|---------------------|---------|-------|
| UNSHIELDED  |              |              |                  |                   |                     |         |       |
| 30306       | 6            | NA           | 18(16x30)        | 0.328             | 1250 Watts 10A-125V | SJ      | Black |
| 30406       | 6            | NA           | 18(16x30)        | 0.315             | 1250 Watts 10A-125V | SJT     | Gray  |
| 30407/ECC   | 6'7"         | CEE          | 18(41x34)        | 0.315             | 1250 Watts 10A-125V | SJT     | Black |
| 30308       | 8            | NA           | 18(16x30)        | 0.328             | 1250 Watts 10A-125V | SJ      | Black |
| 30508       | 8            | NA           | 18(16x30)        | 0.328             | 1250 Watts 10A-125V | SJO     | Black |
| 30312       | 12           | NA           | 18(16x30)        | 0.328             | 1250 Watts 10A-125V | SJ      | Black |
| 30309/16    | 9            | NA           | 16(26x30)        | 0.353             | 1625 Watts 13A-125V | SJ      | Black |
| 30410/16ECC | 9'10"        | CEE          | 16(65x34)        | 0.340             | 1625 Watts 13A-125V | SJT     | Black |
| 30312/16    | 12           | NA           | 16(26x30)        | 0.353             | 1625 Watts 13A-125V | SJ      | Black |

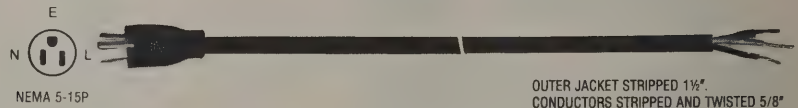
DESCRIPTION:

- Stranded Bare Copper Conductors
- Color Coded PVC or Rubber Insulation
- PVC (SVT-SJT), Rubber (SV-SJ) Or Neoprene (SJO) Jacket
- One End Fitted With Molded Three Prong Male Plug, Other End Has Jacket and Conductors Stripped Back
- Shielded or Unshielded As Indicated In Table

APPLICATIONS:  
Type SV-SVT: Small Tools, Business

Type SJ-SJT-SJO: Heavier Duty Tools, Electric Saws, Small Motors, Grinders, Saws, Sanders

|             |       |     |           |      |                     |              |       |
|-------------|-------|-----|-----------|------|---------------------|--------------|-------|
| SHIELDED    |       |     |           |      |                     |              |       |
| 33207/ECC   | 6'7"  | CEE | 18(41x34) | .270 | 1250 Watts 10A-125V | SVT Shielded | Black |
| 33210/ECC   | 9'10" | CEE | 18(41x34) | .270 | 1250 Watts 10A-125V | SVT Shielded | Black |
| 33410/14ECC | 9'10" | CEE | 14(41x30) | .402 | 1875 Watts 15A-125V | SJT Shielded | Black |

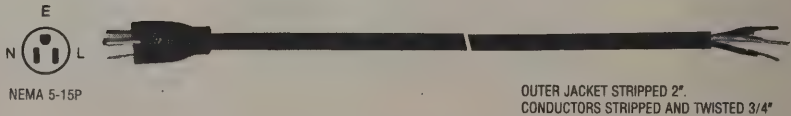


COLOR CODE COMPARISON BY FUNCTION

Function  
N = Neutral  
L = Live  
E = Earth or Ground

North American Color Coding  
White  
Black  
Green or Green/Yellow  
  
CEE  
Light Blue  
Brown  
Green/Yellow

|            |   |    |           |       |                     |     |       |
|------------|---|----|-----------|-------|---------------------|-----|-------|
| UNSHIELDED |   |    |           |       |                     |     |       |
| 30106      | 6 | NA | 18(41x34) | 0.246 | 1250 Watts 10A-125V | SV  | Black |
| 30108      | 8 | NA | 18(41x34) | 0.246 | 1250 Watts 10A-125V | SV  | Black |
| 30206      | 6 | NA | 18(41x34) | 0.253 | 1250 Watts 10A-125V | SVT | Gray  |
| 30208      | 8 | NA | 18(41x34) | 0.253 | 1250 Watts 10A-125V | SVT | Gray  |



|            |    |    |           |       |                     |    |       |
|------------|----|----|-----------|-------|---------------------|----|-------|
| UNSHIELDED |    |    |           |       |                     |    |       |
| 30309/14   | 9  | NA | 14(41x30) | 0.380 | 1875 Watts 15A-125V | SJ | Black |
| 30315/14   | 15 | NA | 14(41x30) | 0.380 | 1875 Watts 15A-125V | SJ | Black |





# POWER SUPPLY CORDS, SHIELDED, UNSHIELDED

**EXTENSION CORDS,  
DETACHABLE  
3 CONDUCTORS  
N.A. COLOR CODING  
CEE COLOR CODING**



NEMA 5-15P



32275/ECC



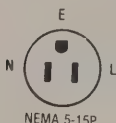
31208



| WEICO NO.         | LENGTH (FT.) | COLOR CODING | AWG (STRAND-ING) | NOM. OD. (INCHES) | RATING               | UL TYPE | COLOR |
|-------------------|--------------|--------------|------------------|-------------------|----------------------|---------|-------|
| <b>UNSHIELDED</b> |              |              |                  |                   |                      |         |       |
| 31208             | 8            | NA           | 18(41x34)        | 0.253             | 875 Watts<br>7A-125V | SVT     | Gray  |
| 32275/ECC         | 7½           | CEE          | 18(41x34)        | 0.246             | 875 Watts<br>7A-125V | SVT     | Gray  |

## DESCRIPTION:

- One End Fitted With Molded Three Prong Male Plug, Other End Fitted With Molded Female Receptacle.
- Shielded or Unshielded As Indicated In Table.



NEMA 5-15P



|                   |       |     |           |       |                        |     |       |
|-------------------|-------|-----|-----------|-------|------------------------|-----|-------|
| <b>UNSHIELDED</b> |       |     |           |       |                        |     |       |
| 31275             | 7½    | NA  | 18(41x34) | 0.246 | 1250 Watts<br>10A-125V | SVT | Black |
| 31275/ECC         | 7½    | CEE | 18(41x34) | 0.246 | 1250 Watts<br>10A-125V | SVT | Black |
| 31407/ECC         | 6'7"  | CEE | 18(41x34) | 0.315 | 1250 Watts<br>10A-125V | SJT | Black |
| 31407/14ECC       | 6'7"  | CEE | 14(41x30) | 0.380 | 1875 Watts<br>15A-125V | SJT | Black |
| 32408/16          | 7'6"  | NA  | 16(65x34) | 0.340 | 1625 Watts<br>13A-125V | SJT | Black |
| 31410             | 9'10" | CEE | 18(41x34) | 0.315 | 1250 Watts<br>10A-125V | SJT | Black |

## COLOR CODE COMPARISON BY FUNCTION

### Function

N = Neutral  
L = Live  
E = Earth or Ground

### North American Color Coding

White  
Black  
Green or Green/Yellow

### CEE

Light Blue  
Brown  
Green/Yellow

## SHIELDED

|              |       |     |           |       |                        |                                       |       |
|--------------|-------|-----|-----------|-------|------------------------|---------------------------------------|-------|
| 33209/ECC    | 6'7"  | CEE | 18(41x34) | 0.270 | 1250 Watts<br>10A-125V | SVT<br>Shielded                       | Black |
| 34407/ECC    | 6'7"  | CEE | 18(41x34) | 0.340 | 1250 Watts<br>10A-125V | SJT<br>Shielded                       | Black |
| 34207/ECC    | 6'7"  | CEE | 18(41x34) | 0.307 | 1250 Watts<br>10A-125V | SVT<br>Foil Shield<br>+85% Braid Shld | Black |
| 34410/16 ECC | 9'10" | CEE | 16(65x34) | 0.365 | 1625 Watts<br>13A-125V | SJT<br>Shielded                       | Black |
| 34407/14 ECC | 6'7"  | CEE | 14(41x30) | 0.402 | 1875 Watts<br>15A-125V | SJT<br>Shielded                       | Black |
| 34410/14ECC  | 9'10" | CEE | 14(41x30) | 0.402 | 1875 Watts<br>15A-125V | SJT<br>Shielded                       | Black |



NEMA 5-15P



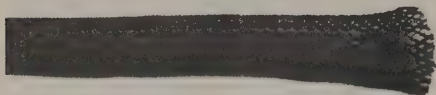
|                   |    |    |           |       |                        |    |       |
|-------------------|----|----|-----------|-------|------------------------|----|-------|
| <b>UNSHIELDED</b> |    |    |           |       |                        |    |       |
| 31310             | 10 | NA | 18(16x30) | 0.328 | 1250 Watts<br>10A-125V | SJ | Black |
| 31310/16          | 10 | NA | 16(26x30) | 0.340 | 1625 Watts<br>13A-125V | SJ | Black |



# TUBING

## EXPANDABLE BRAIDED POLYESTER SLEEVING

(PASSES VW-1 FLAME TEST)



### DESCRIPTION:

WEICO XPT and XFR are lightweight, expandable sleeveings that offer extreme flexibility. The open weave allows for a wide range of sleeving diameters, thus ensuring ease of installation over a wide range of shapes and sizes. This sleeving provides an economical, flexible, protection for bundling wires, harnesses, and cable assemblies on various types of machinery, from industrial robots to CAD/CAM controlled process and machine tool equipment.

| GENERAL PURPOSE WEICO NO. | FLAME RETARDANT WEICO NO. | MINIMUM SUPPLIED I.D. (INCHES) | MAXIMUM EXPANDED I.D. (INCHES) | NOM. WALL THICKNESS (INCHES) |
|---------------------------|---------------------------|--------------------------------|--------------------------------|------------------------------|
| XPT 1/8                   | XFR 1/8                   | 0.093                          | 0.250                          | .025                         |
| XPT 1/4                   | XFR 1/4                   | 0.125                          | 0.437                          | .025                         |
| XPT 1/2                   | XFR 1/2                   | 0.250                          | 0.750                          | .025                         |
| XPT 3/4                   | XFR 3/4                   | 0.500                          | 1.250                          | .025                         |
| XPT 1-1/4                 | XFR 1-1/4                 | 0.750                          | 1.750                          | .025                         |
| XPT 1-3/4                 | XFR 1-3/4                 | 1.250                          | 2.750                          | .025                         |
| XPT 2                     | XFR 2                     | 1.500                          | 3.500                          | .025                         |

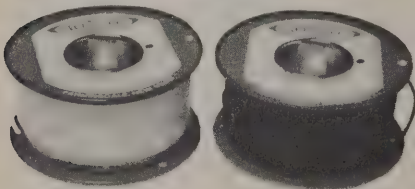
COLOR: Black

### CHARACTERISTICS:

- Operating Temperature: -70°C to +125°C
- Applicable Specifications: MIL STD-810B—Method 508
- Fungus inert
- Resists abrasion and cut through, self-extinguishing when used to encase non-flammable wires or cables.

Standard Put-Ups: Consult Factory

## TUBING \*"TEFLON"



### DESCRIPTION:

WEICO'S Teflon Tubing is Rated For Continuous Operation at 260°C While Retaining Exceptional Toughness and Flexibility. The Dielectric Strength of Teflon at High Frequencies is Many Times That of Other Insulators. The Insulation Resistance Properties are Unaffected by Heat Aging or Temperature Use up to 260°C.

### SPECIFICATIONS:

ETT: AMS 3654, ASTM D 3295 CLASS A  
TT: AMS 3655, ASTM D 3295 CLASS B  
TS: AMS 3653, ASTM D 3295 CLASS C  
MIL-I-22129

### CHARACTERISTICS:

- Operating Temperature: -65°C to +260°C
- Dielectric Strength: 550 Volts/MIL
- Fungus Resistant
- Self-Extinguishing
- Non-Corrosive
- Zero Water Absorption

### COLORS: Natural = C

0 = Black 2 = Red 4 = Yellow 6 = Blue 8 = Gray  
1 = Brown 3 = Orange 5 = Green 7 = Violet 9 = White

Standard Put-Ups: 100 ft., 1000 ft.

\*DuPont's Registered Trademark.

| WEICO NO. AND SIZE |           |               | NOM. INSIDE DIA. (INCHES) | ETT WALL THICKNESS (INCHES) | TT WALL THICKNESS (INCHES) | TS WALL THICKNESS (INCHES) |
|--------------------|-----------|---------------|---------------------------|-----------------------------|----------------------------|----------------------------|
| EXTRA THIN WALL    | THIN WALL | STANDARD WALL |                           |                             |                            |                            |
| ETT-30             | TT-30     | —             | .012                      | .006                        | .009                       | —                          |
| ETT-28             | TT-28     | —             | .015                      | .006                        | .009                       | —                          |
| ETT-26             | TT-26     | —             | .018                      | .006                        | .009                       | —                          |
| ETT-24             | TT-24     | TS-24         | .022                      | .006                        | .010                       | .012                       |
| ETT-22             | TT-22     | TS-22         | .028                      | .006                        | .010                       | .012                       |
| ETT-20             | TT-20     | TS-20         | .034                      | .006                        | .012                       | .016                       |
| ETT-19             | TT-19     | TS-19         | .038                      | .006                        | .012                       | .016                       |
| ETT-18             | TT-18     | TS-18         | .042                      | .006                        | .012                       | .016                       |
| ETT-17             | TT-17     | TS-17         | .047                      | .006                        | .012                       | .016                       |
| ETT-16             | TT-16     | TS-16         | .053                      | .006                        | .012                       | .016                       |
| ETT-15             | TT-15     | TS-15         | .059                      | .006                        | .012                       | .016                       |
| ETT-14             | TT-14     | TS-14         | .066                      | .008                        | .012                       | .016                       |
| ETT-13             | TT-13     | TS-13         | .076                      | .008                        | .012                       | .016                       |
| ETT-12             | TT-12     | TS-12         | .085                      | .008                        | .012                       | .016                       |
| ETT-11             | TT-11     | TS-11         | .095                      | .008                        | .012                       | .016                       |
| ETT-10             | TT-10     | TS-10         | .106                      | .008                        | .012                       | .016                       |
| ETT-9              | TT-9      | TS-9          | .118                      | .008                        | .015                       | .020                       |
| ETT-8              | TT-8      | TS-8          | .133                      | .008                        | .015                       | .020                       |
| ETT-7              | TT-7      | TS-7          | .148                      | .008                        | .015                       | .020                       |
| ETT-6              | TT-6      | TS-6          | .166                      | .010                        | .015                       | .020                       |
| ETT-5              | TT-5      | TS-5          | .186                      | .010                        | .015                       | .020                       |
| ETT-4              | TT-4      | TS-4          | .208                      | .010                        | .015                       | .020                       |
| ETT-3              | TT-3      | TS-3          | .234                      | .010                        | .015                       | .020                       |
| ETT-2              | TT-2      | TS-2          | .263                      | .010                        | .015                       | .020                       |
| ETT-1              | TT-1      | TS-1          | .294                      | .010                        | .015                       | .020                       |
| ETT-0              | TT-0      | TS-0          | .330                      | .012                        | .015                       | .020                       |

WEICO WIRE & CABLE INC. • 161 Rodeo Drive • Edgewood, N.Y. 11717 • TEL 516-254-2970 • FAX 516-254-2099

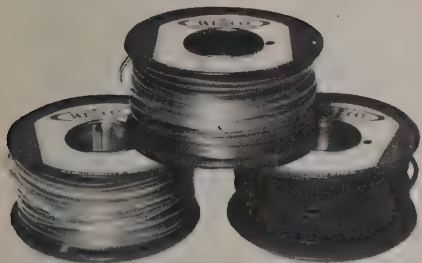




# TUBING

**PVC**  
**105°C**

(PASSES VW-1 FLAME TEST)



## DESCRIPTION:

WEICO'S PVC Tubing is an Economical All-Purpose Insulating Material. It is Flexible, Heat and Oil Resistant and has Superior Thermal, Mechanical and Electrical Properties.

## SPECIFICATIONS:

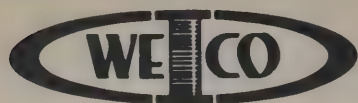
- MIL-I-631-TYPE F,  
FORM U, GRADE C, CLASS 1,  
CATEGORY 1

## CHARACTERISTICS:

- Operating Temperature:  
—20°C to +105°C
- Dielectric Strength:  
800 Volts/MIL
- Non Corrosive
- Self Extinguishing
- Fungus Resistant

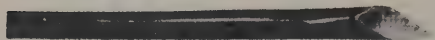
| WEICO NO. | SIZE   | NOM. INSIDE DIA. (INCHES) | NOM. WALL THICKNESS (INCHES) | STANDARD PUT-UPS   |
|-----------|--------|---------------------------|------------------------------|--------------------|
| PV-24     | 24     | .022                      | .013                         | 100',—1000' Spools |
| PV-22     | 22     | .027                      | .012                         | 100',—1000' Spools |
| PV-20     | 20     | .034                      | .016                         | 100',—1000' Spools |
| PV-19     | 19     | .038                      | .016                         | 100',—1000' Spools |
| PV-18     | 18     | .042                      | .016                         | 100',—1000' Spools |
| PV-17     | 17     | .047                      | .016                         | 100',—1000' Spools |
| PV-16     | 16     | .053                      | .016                         | 100',—1000' Spools |
| PV-15     | 15     | .059                      | .016                         | 100',—1000' Spools |
| PV-14     | 14     | .066                      | .016                         | 100',500' Spools   |
| PV-13     | 13     | .076                      | .016                         | 100',500' Spools   |
| PV-12     | 12     | .085                      | .016                         | 100',500' Spools   |
| PV-11     | 11     | .095                      | .016                         | 100',500' Spools   |
| PV-10     | 10     | .106                      | .016                         | 100',500' Spools   |
| PV-9      | 9      | .118                      | .020                         | 100',500' Spools   |
| PV-8      | 8      | .133                      | .020                         | 100',500' Spools   |
| PV-7      | 7      | .148                      | .020                         | 100',500' Spools   |
| PV-6      | 6      | .166                      | .020                         | 100',500' Spools   |
| PV-5      | 5      | .186                      | .020                         | 100',500' Spools   |
| PV-4      | 4      | .208                      | .020                         | 100',250' Spools   |
| PV-3      | 3      | .234                      | .020                         | 100',250' Spools   |
| PV-2      | 2      | .263                      | .020                         | 100',250' Spools   |
| PV-1      | 1      | .294                      | .020                         | 100',250' Spools   |
| PV-0      | 0      | .330                      | .020                         | 100',250' Spools   |
| PV-5/16   | 5/16"  | .312                      | .025                         | 100',250' Coils    |
| PV-3/8    | 3/8"   | .375                      | .025                         | 100',250' Spools   |
| PV-7/16   | 7/16"  | .438                      | .025                         | 100' Coils         |
| PV-1/2    | 1/2"   | .500                      | .025                         | 100' Coils         |
| PV-9/16   | 9/16"  | .562                      | .030                         | 100' Coils         |
| PV-5/8    | 5/8"   | .625                      | .030                         | 100' Coils         |
| PV-3/4    | 3/4"   | .750                      | .035                         | 50' Coils          |
| PV-7/8    | 7/8"   | .875                      | .035                         | 50' Coils          |
| PV-1 IN   | 1"     | 1.000                     | .035                         | 50' Coils          |
| PV-1-1/8  | 1-1/8" | 1.125                     | .035                         | 50' Coils          |
| PV-1-1/4  | 1-1/4" | 1.250                     | .040                         | 50' Coils          |
| PV-1-3/8  | 1-3/8" | 1.375                     | .045                         | 50' Coils          |
| PV-1-1/2  | 1-1/2" | 1.500                     | .045                         | 50' Coils          |
| PV-1-3/4  | 1-3/4" | 1.750                     | .055                         | 50' Coils          |
| PV-2 IN   | 2"     | 2.000                     | .060                         | 50' Coils          |
| PV-2-1/4  | 2-1/4" | 2.250                     | .070                         | 50' Coils          |
| PV-2-1/2  | 2-1/2" | 2.500                     | .070                         | 50' Coils          |

**COLORS:** 0 = Clear 9 = White 2 = Red  
1 = Black 4 = Yellow 5 = Green



## TUBING

### PLASTIC IMPREGNATED FIBERGLASS TUBING


**CONFORMS TO:**

MIL-I-3190—GRADE B AND MIL-I-21557

**THERMAL CLASS B:**

(130°C). NEMA Type 3

**DIELECTRIC: 4000 VDC**
**OPERATING TEMPERATURE:**

—20°C to +130°C

- Non Corrosive
- Self Extinguishing
- Fungus Resistant

**STOCK COLOR:** Black

**Standard Put-Ups:** 100 ft., 1000 ft.

| WEICO NO. | SIZE | NOMINAL I.D. | NOM. WALL THICKNESS (INCHES) |
|-----------|------|--------------|------------------------------|
| FG24      | 24   | .022         | .019                         |
| FG22      | 22   | .027         | .019                         |
| FG20      | 20   | .034         | .019                         |
| FG19      | 19   | .038         | .019                         |
| FG18      | 18   | .042         | .019                         |
| FG17      | 17   | .047         | .019                         |
| FG16      | 16   | .053         | .024                         |
| FG15      | 15   | .059         | .024                         |
| FG14      | 14   | .066         | .024                         |
| FG13      | 13   | .076         | .024                         |
| FG12      | 12   | .085         | .024                         |
| FG11      | 11   | .095         | .024                         |
| FG10      | 10   | .106         | .024                         |
| FG09      | 09   | .118         | .024                         |
| FG08      | 08   | .133         | .024                         |

| WEICO NO.         | SIZE             | NOMINAL I.D. | NOM. WALL THICKNESS (INCHES) |
|-------------------|------------------|--------------|------------------------------|
| FG7               | 7                | .148         | .024                         |
| FG6               | 6                | .166         | .024                         |
| FG5               | 5                | .186         | .031                         |
| FG4               | 4                | .206         | .031                         |
| FG3               | 3                | .234         | .031                         |
| FG2               | 2                | .263         | .031                         |
| FG1               | 1                | .294         | .036                         |
| FG0               | 0                | .330         | .036                         |
| FG $\frac{3}{8}$  | $\frac{3}{8}$ "  | .387         | .036                         |
| FG $\frac{7}{16}$ | $\frac{7}{16}$ " | .450         | .036                         |
| FG $\frac{1}{2}$  | $\frac{1}{2}$ "  | .512         | .036                         |
| FG $\frac{5}{8}$  | $\frac{5}{8}$ "  | .640         | .036                         |
| FG $\frac{3}{4}$  | $\frac{3}{4}$ "  | .768         | .036                         |
| FG $\frac{7}{8}$  | $\frac{7}{8}$ "  | .893         | .036                         |
| FG1"              | 1"               | 1.018        | .036                         |

**DESCRIPTION:**

The Weico FG Tubing is a Woven Fiberglass Braid Impregnated With a Heat Resistant, Extremely Flexible, Tough Plastic Insulation. It is Formulated

to Provide The Optimum in Electrical, Chemical Resistance, Heat Stability, and Abrasion Resistant Properties.

### SILICONE RUBBER COATED FIBERGLASS TUBING


**DESCRIPTION:**

The WEICO RSF Tubing is a Tightly Woven, Fiberglass Braid, Coated With Silicon Rubber. It Offers High Heat and Superior Electrical Characteristics in Any Application Requiring Class H Insulation, and Maintains Exceptional Flexibility Over Its Entire Operating Temperature Range.

**THERMAL CLASS H:** for 200°C operation.

NEMA Type 5.

**GRADE A-1:** 8000V. Dielectric.

**MEETS MILITARY SPECIFICATIONS:**

MIL-I-3190 and MIL-I-18057.

**OPERATING TEMPERATURE RANGE:**

—85°C to +200°C

- Non Corrosive
- Self Extinguishing
- Fungus Resistant

**STOCK COLOR:** Natural

**Standard Put-Ups:** 100 ft., 1000 ft.

| WEICO NO.           | SIZE             | NOM. INSIDE DIAMETER (INCHES) | NOM. WALL THICKNESS (INCHES) |
|---------------------|------------------|-------------------------------|------------------------------|
| RSF-24              | 24               | .024                          | .020                         |
| RSF-22              | 22               | .029                          | .020                         |
| RSF-20              | 20               | .036                          | .020                         |
| RSF-18              | 18               | .045                          | .020                         |
| RSF-17              | 17               | .050                          | .020                         |
| RSF-16              | 16               | .056                          | .024                         |
| RSF-15              | 15               | .062                          | .024                         |
| RSF-14              | 14               | .068                          | .024                         |
| RSF-13              | 13               | .076                          | .024                         |
| RSF-12              | 12               | .085                          | .024                         |
| RSF-11              | 11               | .096                          | .024                         |
| RSF-10              | 10               | .107                          | .024                         |
| RSF-9               | 9                | .119                          | .024                         |
| RSF-8               | 8                | .135                          | .024                         |
| RSF-7               | 7                | .151                          | .024                         |
| RSF-6               | 6                | .170                          | .024                         |
| RSF-5               | 5                | .190                          | .028                         |
| RSF-4               | 4                | .214                          | .028                         |
| RSF-3               | 3                | .239                          | .028                         |
| RSF-2               | 2                | .268                          | .028                         |
| RSF-1               | 1                | .300                          | .028                         |
| RSF-0               | 0                | .336                          | .028                         |
| RSF- $\frac{3}{8}$  | $\frac{3}{8}$ "  | .387                          | .034                         |
| RSF- $\frac{7}{16}$ | $\frac{7}{16}$ " | .450                          | .034                         |
| RSF- $\frac{1}{2}$  | $\frac{1}{2}$ "  | .512                          | .034                         |
| RSF- $\frac{5}{8}$  | $\frac{5}{8}$ "  | .640                          | .034                         |
| RSF- $\frac{3}{4}$  | $\frac{3}{4}$ "  | .768                          | .034                         |
| RSF- $\frac{7}{8}$  | $\frac{7}{8}$ "  | .893                          | .034                         |
| RSF-1"              | 1"               | 1.018                         | .034                         |





# TUBING, SHRINKABLE

## PVC 105°C



### SPECIFICATIONS:

- MIL-I-23053/2
- AMS-3582
- UL RECOGNIZED

### CHARACTERISTICS:

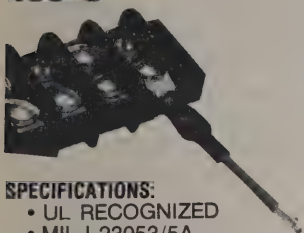
Operating Temperature:  $-35^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$   
 Shrinkage Ratio: to 50% of Supplied Diameter at  $175^{\circ}\text{C}$   
 Longitudinal Shrinkage: 10% Nominal  
 Dielectric Strength: 750 Volts/MIL

| WEICO NO.           | MILITARY NO.   | SIZE (INCHES)  | MIN. I.D. BEFORE SHRINKAGE (INCHES) | RECOVERED I.D. AFTER SHRINKAGE (INCHES) | NOM. WALL THICKNESS (INCHES) | STANDARD PUT-UP (FEET) |
|---------------------|----------------|----------------|-------------------------------------|-----------------------------------------|------------------------------|------------------------|
| SPV- $1/16$         | M23053/2-202-X | $1/16$         | .062                                | .031                                    | .020                         | 100, 500               |
| SPV- $3/32$         | M23053/2-203-X | $3/32$         | .093                                | .046                                    | .020                         | 100, 200               |
| SPV- $1/8$          | M23053/2-204-X | $1/8$          | .125                                | .062                                    | .020                         | 100, 200               |
| SPV- $3/16$         | M23053/2-205-X | $3/16$         | .187                                | .093                                    | .020                         | 100, 200               |
| SPV- $1/4$          | M23053/2-206-X | $1/4$          | .250                                | .125                                    | .025                         | 100, 200               |
| SPV- $3/8$          | M23053/2-207-X | $3/8$          | .375                                | .187                                    | .025                         | 100, 200               |
| SPV- $1/2$          | M23053/2-208-X | $1/2$          | .500                                | .250                                    | .025                         | 100                    |
| SPV- $3/4$          | M23053/2-209-X | $3/4$          | .775                                | .375                                    | .030                         | 100                    |
| SPV-1               | M23053/2-210-X | 1              | 1.000                               | .500                                    | .035                         | 100                    |
| SPV- $1\frac{1}{2}$ | M23053/2-211-X | $1\frac{1}{2}$ | 1.500                               | .750                                    | .045                         | 100                    |
| SPV-2               | M23053/2-212-X | 2              | 2.000                               | 1.000                                   | .050                         | 50                     |

COLORS: 0 = Black C = Clear

X Denotes color coding

## POLYOLEFIN 135°C



### SPECIFICATIONS:

- UL RECOGNIZED
- MIL-I-23053/5A
- AMS-3636B (Colors) Nonflammable
- AMS-3637B (Clear) Flammable

### CHARACTERISTICS:

Operating Temperature:  $-55^{\circ}\text{C}$  to  $+135^{\circ}\text{C}$   
 Shrinkage Ratio: to 50% of Supplied Diameter at  $121^{\circ}\text{C}$   
 Longitudinal Shrinkage: 5% Nominal  
 Dielectric Strength: 1300 Volts/MIL

WEICO'S Polyolefin tubings offer an outstanding balance of properties—electrical, physical and chemical—that make them the most popular choice for a wide variety of industrial and military applications.

Rated for  $135^{\circ}\text{C}$  continuous operation and engineered for superior flame resistance properties, Polyolefin tubings are typically used as a shrink-fit electrical insulation over cable splices and terminations. Polyolefin tubings are also excellent for light-weight wire harness covering, wire marking and bundling, component packaging and fire resistant covering. Polyolefin clear tubings provide excellent visibility for component packaging. All Polyolefin tubings are split-resistant, mechanically tough, easily marked and they resist cold flow.

COLORS: 0 = Black 4 = Yellow 9 = White  
 2 = Red 6 = Blue C = Clear

Also available UL & CSA printed—please specify when ordering.

| WEICO NO.           | MILITARY NO. (CLEAR) | MILITARY NO. (COLORS) | SIZE (INCHES)  | MIN. I.D. BEFORE SHRINKING (INCHES) | RECOVERED I.D. AFTER SHRINKING (INCHES) | RECOVERED NOM. WALL THICKNESS (INCHES) |
|---------------------|----------------------|-----------------------|----------------|-------------------------------------|-----------------------------------------|----------------------------------------|
| SPO- $3/64$         | M23053/5-201-C       | M23053/5-101-X        | $3/64$         | .046                                | .023                                    | .016                                   |
| SPO- $1/16$         | M23053/5-202-C       | M23053/5-102-X        | $1/16$         | .063                                | .031                                    | .017                                   |
| SPO- $3/32$         | M23053/5-203-C       | M23053/5-103-X        | $3/32$         | .093                                | .046                                    | .020                                   |
| SPO- $1/8$          | M23053/5-204-C       | M23053/5-104-X        | $1/8$          | .125                                | .062                                    | .020                                   |
| SPO- $3/16$         | M23053/5-205-C       | M23053/5-105-X        | $3/16$         | .187                                | .093                                    | .020                                   |
| SPO- $1/4$          | M23053/5-206-C       | M23053/5-106-X        | $1/4$          | .250                                | .125                                    | .025                                   |
| SPO- $3/8$          | M23053/5-207-C       | M23053/5-107-X        | $3/8$          | .375                                | .187                                    | .025                                   |
| SPO- $1/2$          | M23053/5-208-C       | M23053/5-108-X        | $1/2$          | .500                                | .250                                    | .025                                   |
| SPO- $3/4$          | M23053/5-209-C       | M23053/5-109-X        | $3/4$          | .750                                | .375                                    | .030                                   |
| SPO-1               | M23053/5-210-C       | M23053/5-110-X        | 1              | 1.000                               | .500                                    | .035                                   |
| SPO- $1\frac{1}{2}$ | M23053/5-211-C       | M23053/5-111-X        | $1\frac{1}{2}$ | 1.500                               | .750                                    | .040                                   |
| SPO-2               | M23053/5-212-C       | M23053/5-112-X        | 2              | 2.000                               | 1.000                                   | .045                                   |
| SPO-3               | M23053/5-213-C       | M23053/5-113-X        | 3              | 3.000                               | 1.500                                   | .050                                   |
| SPO-4               | M23053/5-214-C       | M23053/5-114-X        | 4              | 4.000                               | 2.000                                   | .055                                   |

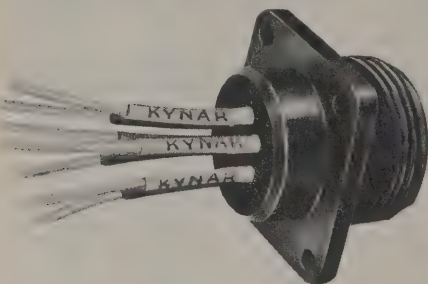
Standard Put-Ups: 4 ft. lengths, 100 ft./pkg. Spools—100 ft and 1000 ft./spool

X Denotes color coding



# TUBING, SHRINKABLE

## KYNAR\* TUBING



WEICO'S Kynar is an irradiated, thin-wall, heat-shrinkable tubing offering a high degree of mechanical strength and high-temperature resistance. Kynar is fabricated from polyvinylidene fluoride, hence, their outstanding abrasion resistance and cut-through properties in combination with high dielectric strength. Kynar is inherently flame-retardant and semi-rigid. It is highly resistant to most industrial fuels, chemicals and solvents.

Kynar tubings are recommended for shrink-fit protection and strain relief of wires, solder joints, terminals and connections. Suggested applications include automotive wiring, jackets, fuse coverings and military wire markers. Because the tubing is transparent, it affords see-thru inspection and identification when used as a jacketing for components such as resistors and capacitors. Kynar tubings are readily marked by hot-stamp and print-wheel equipment.

Kynar tubings are rated for continuous operation from  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ) to  $+175^{\circ}\text{C}$  ( $+347^{\circ}\text{F}$ ). The tubings will withstand higher operating temperatures for short time intervals.

Minimum shrink temperature for Kynar tubings is  $+175^{\circ}\text{C}$  ( $+347^{\circ}\text{F}$ ).

Kynar tubings meet the requirements of MIL-I-23053/8, AMS 3632, and are U.L. recognized for 600 volts @  $150^{\circ}\text{C}$ ; U.L. VW-1 rated.

### CHARACTERISTICS:

- High Mechanical Strength
- High Temperature

COLOR: Clear

| WEICO NO.           | MILITARY NO.   | SIZE (INCHES)  | EXPANDED I.D. MINIMUM (INCHES) | RECOVERED I.D. MAXIMUM (INCHES) | RECOVERED NOM. WALL THICKNESS (INCHES) |
|---------------------|----------------|----------------|--------------------------------|---------------------------------|----------------------------------------|
| SKY- $3/64$         | M23053/8-001-C | $3/64$         | .046                           | .023                            | .010                                   |
| SKY- $1/16$         | M23053/8-002-C | $1/16$         | .063                           | .031                            | .010                                   |
| SKY- $3/32$         | M23053/8-003-C | $3/32$         | .093                           | .046                            | .010                                   |
| SKY- $1/8$          | M23053/8-004-C | $1/8$          | .125                           | .062                            | .010                                   |
| SKY- $3/16$         | M23053/8-005-C | $3/16$         | .187                           | .093                            | .010                                   |
| SKY- $1/4$          | M23053/8-006-C | $1/4$          | .250                           | .125                            | .012                                   |
| SKY- $3/8$          | M23053/8-007-C | $3/8$          | .375                           | .187                            | .012                                   |
| SKY- $1/2$          | M23053/8-008-C | $1/2$          | .500                           | .250                            | .012                                   |
| SKY- $3/4$          | M23053/8-009-C | $3/4$          | .750                           | .375                            | .017                                   |
| SKY-1               | M23053/8-010-C | 1              | 1.000                          | .500                            | .019                                   |
| SKY- $1\frac{1}{2}$ | M23053/8-011-C | $1\frac{1}{2}$ | 1.500                          | .750                            | .020                                   |

Standard Put-Ups: 4 ft. Lengths

\*Pennwalt Chemical Registered Trademark





## TUBING, SHRINKABLE

### NEOPRENE TUBING



NEOPRENE very flexible, self-extinguishing, modified polychloroprene tubings combining a high degree of mechanical toughness and oil-resistance with 121°C continuous operating temperature.

WEICO'S Neoprene heat-shrinkable tubings are recommended for applications requiring a tough, highly flexible covering. Neoprene tubings are thick-walled, and provide superior cut-through and abrasion resistance. The tubings are unaffected by common fluids and solvents. Resistance to oils is excellent.

Neoprene tubings maintain flexibility at low temperatures. The tubings are particularly useful for the fabrication and repair of flexible harnesses and wire bundles and for covering of hydraulic couplings. The superior mechanical properties of Neoprene tubings make them ideal choices for the jacketing of cable harnesses and custom-made cables that must operate in severe environmental conditions.

Neoprene tubings are rated for continuous operation from -70°C (-94°F) to +121°C (+250°F). The tubings will withstand higher operating temperatures for short time intervals.

| WEICO NO. | MILITARY NO.   | SIZE (INCHES) | EXPANDED I.D. MINIMUM (INCHES) | RECOVERED I.D. MAXIMUM (INCHES) | RECOVERED NOM. WALL THICKNESS (INCHES) |
|-----------|----------------|---------------|--------------------------------|---------------------------------|----------------------------------------|
| SNE-1/8   | —              | 1/8           | .125                           | .072                            | .030                                   |
| SNE-3/16  | —              | 3/16          | .187                           | .106                            | .035                                   |
| SNE-1/4   | M23053/1-201-0 | 1/4           | .250                           | .125                            | .035                                   |
| SNE-3/8   | M23053/1-202-0 | 3/8           | .375                           | .187                            | .040                                   |
| SNE-1/2   | M23053/1-203-0 | 1/2           | .500                           | .250                            | .048                                   |
| SNE-5/8   | M23053/1-204-0 | 5/8           | .625                           | .312                            | .052                                   |
| SNE-3/4   | M23053/1-205-0 | 3/4           | .750                           | .375                            | .057                                   |
| SNE-7/8   | M23053/1-206-0 | 7/8           | .875                           | .437                            | .065                                   |
| SNE-1     | M23053/1-207-0 | 1             | 1.000                          | .500                            | .070                                   |
| SNE-1 1/4 | M23053/1-208-0 | 1 1/4         | 1.250                          | .612                            | .087                                   |
| SNE-1 1/2 | M23053/1-209-0 | 1 1/2         | 1.500                          | .750                            | .095                                   |
| SNE-1 3/4 | M23053/1-210-0 | 1 3/4         | 1.750                          | .875                            | .107                                   |
| SNE-2     | M23053/1-211-0 | 2             | 2.000                          | 1.000                           | .110                                   |
| SNE-3     | M23053/1-212-0 | 3             | 3.000                          | 1.500                           | .125                                   |

COLOR: Black

Standard Put-Ups: Spools

Minimum shrinkage temperature for neoprene tubings is +135°C (+275°F)

Neoprene tubings can be readily marked by hot-stamp and print-wheel methods.

Neoprene tubings are self-extinguishing and meet the requirements of MIL-I-23053/1 Class 1 & 2; MIL-R-46846, Type 1, Class 1 and AMS 3623.

### IRRADIATED POLYOLEFIN MULTIPLE WALL, INNER WALL MELTS



WEICO'S SMW Tubings are rated for continuous operation at temperatures from -55° to +110°C and will withstand higher operating temperatures for brief time intervals.

WEICO'S SMW Tubings meet the requirements of AMS 3634 and MIL-I-23053/4, Class 1.

WEICO'S SMW is a semi-rigid, 110°C heat-shrinkable polyolefin tubing that is co-extruded and selectively cross-linked to provide an integral, meltable inner wall.

On the application of heat in excess of 135°C WEICO'S SMW Tubing automatically shrinks

| WEICO NO. | MILITARY NO.   | EXPANDED I.D. MINIMUM (INCHES) | RECOVERED I.D. MAXIMUM (INCHES) | RECOVERED NOM. WALL THICKNESS TOTAL WALL (INCHES) | MELTABLE WALL NOM. (INCHES) |
|-----------|----------------|--------------------------------|---------------------------------|---------------------------------------------------|-----------------------------|
| SMW-1/8   | M23053/4-101-0 | .125                           | .023                            | .038                                              | .020                        |
| SMW-3/16  | M23053/4-102-0 | .187                           | .060                            | .043                                              | .025                        |
| SMW-1/4   | M23053/4-103-0 | .250                           | .080                            | .047                                              | .027                        |
| SMW-300   | —              | .300                           | .050                            | .100                                              | .065                        |
| SMW-3/8   | M23053/4-104-0 | .375                           | .135                            | .050                                              | .030                        |
| SMW-1/2   | M23053/4-105-0 | .500                           | .195                            | .055                                              | .035                        |
| SMW-3/4   | M23053/4-106-0 | .750                           | .313                            | .065                                              | .040                        |
| SMW-1"    | M23053/4-107-0 | 1.00                           | .400                            | .075                                              | .040                        |

COLOR: Black

Standard Put-Ups: 4 ft. Lengths

and closely conforms to the contours of the underlying substrate. The inner meltable wall of the tubing is simultaneously softened and forced by the shrink action into intimate contact with all underlying surfaces, interstices and small voids. Upon cooling, the installed SMW Tubing represents a tough protective and insulating barrier, highly resistant to penetration by moisture and the attack of chemicals and solvents.



# COMMONLY USED ELECTRICAL/ELECTRONIC ABBREVIATIONS AND ACRONYMS

**A**  
A/D acrylonitrile butadiene-styrene  
A/D analog to digital  
ADC analog to digital converter  
ADP automatic data processing  
AFC audio frequency control  
AFT automatic filter test  
ALGOL algorithmic language  
AM a logical operator  
AQL acceptable quality level  
ASCII American national standard  
code for information interchange  
ASIC application specific IC  
ATE automatic test equipment  
ATG automatic test generation  
AWG American wire gauge

**B**  
BALUN balanced to unbalanced  
BASIC beginners' all-purpose  
symbolic instruction  
BCD binary-coded decimal  
BNC baby "N" connector  
BUS basic utility system

**C**  
CAD computer-aided design  
CAE computer-aided engineering  
CAM computer-aided manufacture  
CAMAC computer-automated  
measurement and control  
CAPP computer-aided process  
planning  
CAT computer-aided test  
CATV cable television or  
community antenna television  
CCC (leaded) ceramic chip carriers  
CCD computer-controlled display  
CERMET ceramic metal element  
CIE computer-integrated engineering  
CIM computer-integrated  
manufacturing  
CLCC ceramic leadless chip carriers  
CMOS complementary metal-oxide  
semiconductor  
Comm. communications  
CPS characters per second  
CPU central processing unit

**D**  
D/A digital to analog  
DAC digital to analog converter  
DBMS data base management  
system  
DC direct current  
DFT design for testability  
DIAC bidirectional trigger diode  
DIL dual in-line  
DIN Deutsche Industrie  
Normenausschuss  
DIP dual in-line package  
DPM digital panel meter  
DRAM dynamic RAM  
DTL diode transistor logic

**E**  
EDA electronic design automation  
EDP electronic data processing  
EBCDIC extended binary coded  
decimal interchange code  
EEPROM electrically erasable  
PROM

**EIA** Electronic Industries  
Association  
**EMC** electromagnetic compatibility  
**EMI** electromagnetic interference  
**EMP** electromagnetic pulse  
**EPROM** erasable programmable  
ROM  
**ESR** equivalent series resistance  
**F**  
**FEP** fluorinated ethylene propylene  
Copolymer, 200° Teflon  
**FET** field-effect transistor  
**FM** frequency modulation  
**FORTAN** formula translator

**G**  
**GaAsFET** gallium arsenide FET  
**CMIP** commn management  
information protocol  
**GPIB** general purpose interface bus  
**GPS** global positioning system

**H**  
**HF** high frequency (3 to 30 MHz)  
**HIPOT** test, measurement, and  
diagnostic equipment  
**HLL** high level language  
**HV** high voltage  
**Hz** Hertz

**I**  
**IAB** Internet Activities Board  
**IC** integrated circuit  
**IDC** insulation displacement contact  
**IF** intermediate frequency  
**IO** input/output (devices)  
**IR** insulation resistance (or) infrared  
**ISDN** integrated services digital  
network  
**ISO** International Standards  
Organization

**J**  
**JEDEC** Joint Electronic Device  
Engineering Council  
**JFET** junction FET  
**JMOS** junction MOS

**K**  
**kHz** kilohertz ( $10^3$  hertz)  
**KSR** keyboard send/receive

**L**  
**LAN** local area network  
**LC (filters)** inductance/capacitance  
**LCC** leaded chip carrier  
**LCD** liquid crystal display  
**LED** light-emitting diode  
**LF** low frequency (30 to 300 kHz)  
**LIF** low insertion force  
**LNA** low noise amplifier  
**LNB** low noise band  
**LSI** large scale integration  
**LVDT** linear velocity displacement  
transformer

**M**  
**MASER** microwave amplification  
by stimulated emission of  
radiation  
**MATV** master antenna television

**μF** microfarad  
**MHz** megahertz  
**MIC** microwave IC  
**MIPS** million instructions per  
second  
**MIB** microcomputer interface board  
**MOS** metal oxide semiconductor  
**MOSFET** metal oxide  
semiconductor FET  
**MOSIGT** metal oxide  
semiconductor insulated-gate  
transistor  
**MOV** metal oxide varistor  
**MPU** microprocessor unit  
**MSI** medium scale integration

**N**  
**NBS** National Bureau of Standards  
**NEMP** nuclear electromagnetic pulse  
**NIM** national instrumentation  
module  
**NOR** not OR  
**NTC** negative temperature coefficient

**O**  
**OCR** optical character reader  
**OEM** original equipment  
manufacturer  
**OR** a logical operator  
**OSI** open systems interconnection

**P**  
**PAL** programmable array logic  
**PC** printed circuit  
**PCB** printed circuit board  
**PCM** pulse code modulation  
**PCS** plastic clad silica  
**pF** picofarad  
**PGA** pin grid array  
**PIN** positive-intrinsic-negative  
(transistor)  
**PLA** programmable logic array  
**PLCC** plastic leaded chip carrier  
**PLL** phased lock loop  
**PPI** plan position indicator  
**PROM** programmable ROM  
**PTC** positive temperature coefficient  
**PUT** programmable unijunction  
transistor

**Q**  
**QAM** quadrature amplitude  
modulation  
**Q (meter)** quality-factor meter

**R**  
**RAM** random access memory  
**RC** resistance-capacitance  
**RFI** radio frequency interference  
**RMS** root mean square  
**ROM** read only memory  
**RF** radio frequency  
**RFC** radio-frequency choke  
**RFI** radio-frequency interference  
**RTD** resistance-temperature detector  
**RTL** resistor transistor logic  
**RTV** room temperature vulcanizing  
**RW** read/write

**S**  
**SAS** silicon asymmetrical switch  
**SBC** single board (micro) computer

**SBS** silicon bilateral switch  
**SCR** silicon-controlled rectifier  
**SCS** silicon-controlled switch  
**SDA** source & detector assemblies  
**SGMP** simple gateway monitoring  
protocol  
**SIDAC** bidirectional voltage-  
triggered switch  
**SIMM** single in-line memory  
module  
**SIP** single in-line package  
**SMD** surface mount device  
**SMT** surface mount technology  
**SNMP** simple network  
management protocol  
**SO** small outline  
**SOIC** small outline IC  
**SOT** small outline transistor  
**SSI** small scale integration  
**SSR** solid-state relay  
**STL** Schottky transistor logic  
**SUS** silicon unilateral switch

**T**  
**TC** temperature coefficient  
**TCE** thermal coefficient of  
expansion  
**TXCO** temperature compensated  
crystal oscillator  
**TFE** tetrafluoro ethylene propylene  
Copolymer, 250° Teflon  
**TRIAC** bidirectional AC switch  
**TTL** transistor-transistor logic  
**TTY** teletypewriter

**U**  
**UHF** ultra high frequency (300 MHz  
to 3 GHz)  
**UJT** silicon unijunction transistor  
**UL** Underwriters Laboratory  
**UPS** uninterruptible power supply

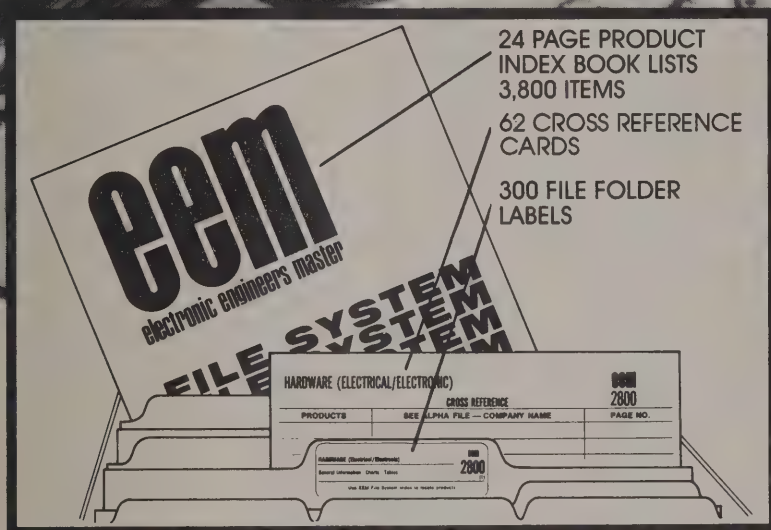
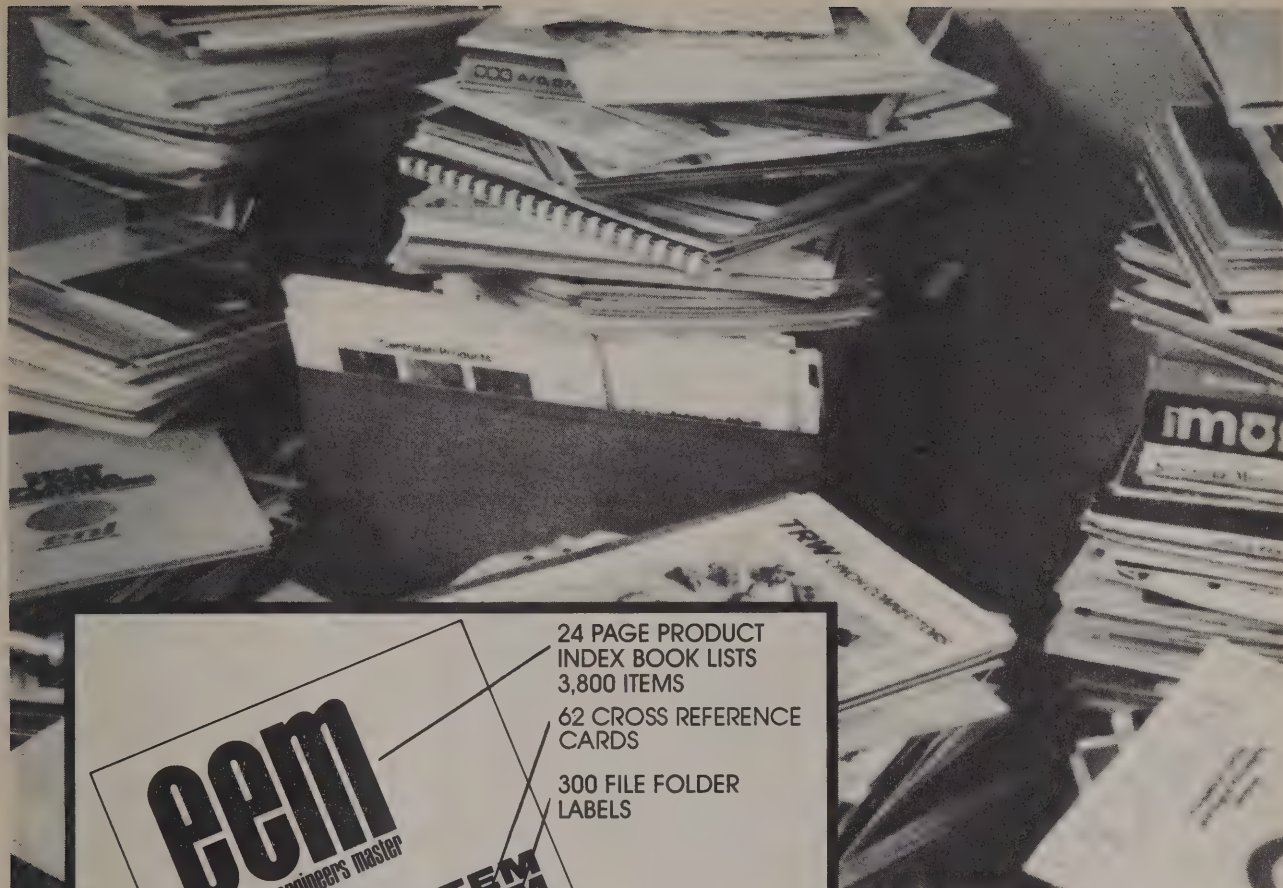
**V**  
**VAC** volts (of) alternating current  
**VAN** value-added network  
**VAR** volt-ampere reactive  
**VCR** video cassette recorder  
**VDC** volts (of) direct current  
**VHF** very high frequency (30 kHz  
to 300 MHz)  
**VHSIC** very high speed integrated  
circuit  
**VLF** very low frequency (3 to 30  
kHz)  
**VLSI** very large scale integration  
**VME** virtual machine environment  
**VRM** voice recognition module  
**VTVM** vacuum tube volt meter  
**VU** volume unit  
**VSWR** voltage standing wave ratio

**W**  
**WPS** word processing software

**Y**  
**YIG** yttrium iron garnet

**Z**  
**ZIF** zero insertion force





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# MINIGLOSSARY

## BASIC

## ASCII CODE

|    |    |    |    |    |     |     |    |   |   |   |   |     |
|----|----|----|----|----|-----|-----|----|---|---|---|---|-----|
| b7 | 0  | 0  | 0  | 0  | 1   | 1   | 1  | 1 |   |   |   |     |
| b6 | 0  | 0  | 1  | 1  | 0   | 0   | 1  | 1 |   |   |   |     |
| b5 | 0  | 1  | 0  | 1  | 0   | 1   | 0  | 1 |   |   |   |     |
| b4 | b3 | b2 | b1 |    | 0   | 1   | 2  | 3 | 4 | 5 | 6 | 7   |
| 0  | 0  | 0  | 0  | 0  | NUL | DLE | SP | 0 | @ | P | ` | p   |
| 0  | 0  | 0  | 1  | 1  | SOH | DC1 | !  | 1 | A | Q | a | q   |
| 0  | 0  | 1  | 0  | 2  | STX | DC2 | "  | 2 | B | R | b | r   |
| 0  | 0  | 1  | 1  | 3  | ETX | DC3 | #  | 3 | C | S | c | s   |
| 0  | 1  | 0  | 0  | 4  | EOT | DC4 | \$ | 4 | D | T | d | t   |
| 0  | 1  | 0  | 1  | 5  | ENQ | NAK | %  | 5 | E | U | e | u   |
| 0  | 1  | 1  | 0  | 6  | ACK | SYN | &  | 6 | F | V | f | v   |
| 0  | 1  | 1  | 1  | 7  | BEL | ETB | '  | 7 | G | W | g | w   |
| 1  | 0  | 0  | 0  | 8  | BS  | CAN | (  | 8 | H | X | h | x   |
| 1  | 0  | 0  | 1  | 9  | HT  | EM  | )  | 9 | I | Y | i | y   |
| 1  | 0  | 1  | 0  | 10 | LF  | SUB | *  | : | J | Z | j | z   |
| 1  | 0  | 1  | 1  | 11 | VT  | ESC | +  | ; | K | [ | k | {   |
| 1  | 1  | 0  | 0  | 12 | FF  | FS  | ,  | < | L | \ | l |     |
| 1  | 1  | 0  | 1  | 13 | CR  | GS  | -  | = | M | ] | m | }   |
| 1  | 1  | 1  | 0  | 14 | SO  | RS  | .  | > | N | ^ | n | ~   |
| 1  | 1  | 1  | 1  | 15 | SI  | US  | /  | ? | O | _ | o | DEL |

### Control Character Representations

|      |                            |     |                                |
|------|----------------------------|-----|--------------------------------|
| NUL  | Null                       | DLE | Data Link Escape (CC)          |
| SOH  | Start of Heading (CC)      | DC1 | Device Control 1               |
| STX  | Start of Text (CC)         | DC2 | Device Control 2               |
| ETX  | End of Text (CC)           | DC3 | Device Control 3               |
| EOT  | End of Transmission (CC)   | DC4 | Device Control 4               |
| ENQ  | Enquiry (CC)               | NAK | Negative Acknowledge (CC)      |
| ACK  | Acknowledge (CC)           | SYN | Synchronous Idle (CC)          |
| BEL  | Bell                       | ETB | End of Transmission Block (CC) |
| BS   | Backspace (FE)             | CAN | Cancel                         |
| HT   | Horizontal Tabulation (FE) | EM  | End of Medium                  |
| LF   | Line Feed (FE)             | SUB | Substitute                     |
| VT   | Vertical Tabulation (FE)   | ESC | Escape                         |
| FF   | Form Feed (FE)             | FS  | File Separator (IS)            |
| CR   | Carriage Return (FE)       | GS  | Group Separator (IS)           |
| SO   | Shift Out                  | RS  | Record Separator (IS)          |
| SI   | Shift In                   | US  | Unit Separator (IS)            |
| (CC) | Communication Control      | DEL | Delete                         |
| (FE) | Format Effector            |     |                                |
| (IS) | Information Separator      |     |                                |

### Special Graphic Characters

|    |                        |   |                                                                            |
|----|------------------------|---|----------------------------------------------------------------------------|
| SP | Space                  | < | Less Than                                                                  |
| !  | Exclamation Point      | = | Equals                                                                     |
|    | Logical OR             | > | Greater Than                                                               |
| "  | Quotation Marks        | ? | Question Mark                                                              |
| #  | Number Sign            | @ | Commercial At                                                              |
| \$ | Dollar Sign            | [ | Opening Bracket                                                            |
| %  | Percent                | \ | Reverse Slant                                                              |
| &  | Ampersand              | ] | Closing Bracket                                                            |
| '  | Apostrophe             | ^ | Circumflex                                                                 |
| (  | Opening Parenthesis    | ~ | Logical NOT                                                                |
| )  | Closing Parenthesis    | _ | Underline                                                                  |
| *  | Asterisk               | ` | Grave Accent                                                               |
| +  | Plus                   | { | Opening Brace                                                              |
| ,  | Comma                  |   | Vertical Line (This graphic is stylized to distinguish it from Logical OR) |
| -  | Hyphen (Minus)         | } | Closing Brace                                                              |
| .  | Period (Decimal Point) | ~ | Tilde                                                                      |
| /  | Slant                  |   |                                                                            |
| :  | Colon                  |   |                                                                            |
| ;  | Semicolon              |   |                                                                            |





# CHARACTERISTICS OF BATTERIES AND FUEL CELLS

| System                         | Anode                         | Cathode               | Theoretical battery |                    | Practical battery        |                       |                    |
|--------------------------------|-------------------------------|-----------------------|---------------------|--------------------|--------------------------|-----------------------|--------------------|
|                                |                               |                       | Voltage,<br>V       | Capacity,<br>Ah/kg | Typical<br>voltage,<br>V | Capacity <sup>a</sup> |                    |
|                                |                               |                       |                     |                    |                          | Wh/kg                 | Wh/dm <sup>3</sup> |
| Primary:                       |                               |                       |                     |                    |                          |                       |                    |
| Leclanche                      | Zn                            | MnO <sub>2</sub>      | 1.6                 | 230                | 1.2                      | 65                    | 175                |
| Magnesium                      | Mg                            | MnO <sub>2</sub>      | 2.0                 | 270                | 1.5                      | 100                   | 195                |
| Organic cathode                | Mg                            | <i>m</i> -DNB         | 1.8                 | 1,400              | 1.15                     | 130                   | 180                |
| Alkaline MnO <sub>2</sub>      | Zn                            | MnO <sub>2</sub>      | 1.5                 | 230                | 1.15                     | 65                    | 200                |
| Mercury                        | Zn                            | HgO                   | 1.34                | 185                | 1.2                      | 80                    | 370                |
| Mercad                         | Cd                            | HgO                   | 0.9                 | 165                | 0.85                     | 45                    | 175                |
| Silver oxide                   | Zn                            | AgO                   | 1.85                | 285                | 1.5                      | 130                   | 310                |
| Zinc-air                       | Zn                            | Air (O <sub>2</sub> ) | 1.6                 | 815                | 1.1                      | 200                   | 190                |
| Li-organic electrolyte         | Li                            | <sup>b</sup>          | 2.1-5.4             | 130-660            | 1.8-3.2                  | 250                   | 400                |
| Secondary:                     |                               |                       |                     |                    |                          |                       |                    |
| Lead-acid                      | Pb                            | PbO <sub>2</sub>      | 2.1                 | 55                 | 2.0                      | 37                    | 70                 |
| Edison                         | Fe                            | Ni oxides             | 1.5                 | 195                | 1.2                      | 29                    | 65                 |
| Nickel-cadmium                 | Cd                            | Ni oxides             | 1.35                | 165                | 1.2                      | 33                    | 60                 |
| Silver-zinc                    | Zn                            | AgO                   | 1.85                | 285                | 1.5                      | 100                   | 170                |
| Silver-cadmium                 | Cd                            | AgO                   | 1.4                 | 230                | 1.05                     | 55                    | 120                |
| Zinc-nickel oxide              | Zn                            | Ni oxides             | 1.75                | 185                | 1.6                      | 55                    | 110                |
| Zinc-air <sup>c</sup>          | Zn                            | Air (O <sub>2</sub> ) | 1.6                 | 815                | 1.1                      | 150                   | 155                |
| Cadmium-air <sup>c</sup>       | Cd                            | Air (O <sub>2</sub> ) | 1.2                 | 475                | 0.8                      | 90                    | 90                 |
| Zinc-O <sub>2</sub>            | Zn                            | O <sub>2</sub>        | 1.6                 | 610                | 1.1                      | 130                   | 120                |
| H <sub>2</sub> -O <sub>2</sub> | H <sub>2</sub>                | O <sub>2</sub>        | 1.23                | 3,000              | 0.8                      | 45                    | 65                 |
| Reserve:                       |                               |                       |                     |                    |                          |                       |                    |
| Cuprous chloride               | Mg                            | CuCl                  | 1.5                 | 240                | 1.4                      | 45                    | 65 <sup>d</sup>    |
| Silver-chloride                | Mg                            | AgCl                  | 1.6                 | 170                | 1.5                      | 60                    | 95 <sup>d</sup>    |
| Zinc-silver oxide              | Zn                            | AgO                   | 1.85                | 285                | 1.5                      | 30                    | 75 <sup>e</sup>    |
| Thermal                        | Ca                            | <sup>b</sup>          | 2.8                 | 240                | 2.6                      | 10                    | 20 <sup>f</sup>    |
| Ammonia-activated              | Mg                            | <i>m</i> -DNB         | 2.2                 | 1,400              | 1.7                      | 22                    | 60 <sup>g</sup>    |
| High-                          | NA                            | S                     | 2.1                 | 685                | 1.8                      | 200                   | <sup>h</sup>       |
| temperature                    | Li                            | S                     | 2.2                 | 1,150              | 1.8                      | 200                   | <sup>i</sup>       |
| Solid electrolyte              | Ag                            | Polyiodide            | 0.66                | ...                | 0.6                      | 180                   | 75 <sup>j</sup>    |
| Fuel cell:                     |                               |                       |                     |                    |                          |                       |                    |
| Hydrogen <sup>c</sup>          | H <sub>2</sub>                | Air                   | 1.23                | 26,000             | 0.7                      |                       | <sup>k</sup>       |
| Hydrazine <sup>c</sup>         | N <sub>2</sub> H <sub>4</sub> | Air                   | 1.5                 | 2,100              | 0.7                      | 800 <sup>b</sup>      | <sup>l</sup>       |
| Methanol <sup>c</sup>          | CH <sub>3</sub> OH            | Air                   | 1.3                 | 1,400              | 0.9                      | 175 <sup>b</sup>      | 185 <sup>m</sup>   |

<sup>a</sup> Delivered capacity when discharged at normal temperatures (20°C) at normal discharge rates.

<sup>b</sup> Based on fuel consumption only.

<sup>c</sup> Weight of air not considered in computation of watt hours.

<sup>d</sup> Water-activated

<sup>e</sup> Automatically activated; high rate discharge; 2- to 10-min rate.

<sup>f</sup> Fused salt; heat-activated; high rate discharge; 2- to 10-min rate.

<sup>g</sup> Four-minute discharge rate.

<sup>h</sup>  $\beta$ -alumina electrolyte, 300°C operation.

<sup>i</sup> Fused salt; 350°C operation.

<sup>j</sup> Solid RbAg<sub>4</sub>I<sub>5</sub> electrolyte.

<sup>k</sup> Several different cathode materials used.

<sup>l</sup> Fuel consumption is based on source of H<sub>2</sub>.

<sup>m</sup> Based on methanol battery-fuel supply in situ.



## MINIGLOSSARY CAPACITORS

**Anode:** One of two plates or conductors. In polarized capacitors, the anode should be connected to the positive conductor in the circuit.

**Capacitive Reactance:** The opposition (in ohms) of capacitance to the flow of alternating current, equal to the reciprocal of the product of the angular frequency ( $2\pi$  times frequency in Hertz) of the current times the capacitance in farads.

**Cathode:** One of two plates or conductors. In electrostatic capacitors the cathode is metallic. In electrolytic capacitors the cathode is a liquid, gel or other conductive material which is in intimate contact with a metallic cathodic connection.

**Dielectric Constant:** The ratio of the capacitance of a capacitor with some material other than air between the capacitor plates to the capacitance of the same capacitor with air between the plates. For example, the dielectric constants of air, Teflon®, polystyrene and ruby mica are 1, 2.1, 2.6 and 5.4, respectively.

**Electrolytic:** A capacitor with one metallic conductor (generally the anode) and with a liquid or semiconductor cathode. Nonpolarized electrolytic capacitors generally have two equal anodes as well as the liquid cathode. These anodes operate alternately as anode and cathodic connection as alternating current is applied.

**Electrostatic:** One of two general classes of capacitors in which two or more discrete metallic conductors are present and separated by an insulating dielectric material. Examples include: mica, ceramic, film, and paper types.

**Farad:** The basic unit of measure in capacitors. A capacitor charged to one volt with a charge of one coulomb (one ampere flowing for one second) has a capacitance of one farad. Capacitors are generally rated at portions of a farad (microfarads or picofarads).

1 farad (F) = 1,000,000 microfarads ( $\mu$ F)  
1 microfarad ( $\mu$ F) = 1,000,000 picofarads (pF)

**Impedance:** All capacitors exhibit impedance. It is a function of capacitor type and internal construction. This can be particularly important in certain applications such as filters for switching power supplies. Capacitors used in these applications often have special multiple tab construction to shorten current paths and to reduce internal resistance.

**Leakage Current:** Expressed as dcl for electrolytic capacitors, a measure of the intrinsic losses in a charged capacitor. Generally speaking, the lower the dcl, the higher quality the capacitor.

**Power Factor:** A measure of the overall efficiency of a capacitor. Power factor ratings take all internal losses into consideration in a complex formula. This parameter of certain capacitors is often very important in AC applications such as motor-start and/or motor-run capacitors

**Rated Voltage:** The rated working voltage of a capacitor. Generally expressed in DC Volts (Vdcw). This is the voltage at which a capacitor may be safely operated at 25°C continuously within its overall parameters.

**Ripple Current:** The total amount of alternating and direct current that may be applied to an

electrolytic capacitor under stated conditions. In general, the higher the ripple current applied, the shorter the operating life of the capacitor will be. Application of significantly higher than rated ripple currents can shorten the capacitor life dramatically and may even cause catastrophic failure (explosion).

**Surge Voltage:** The momentary surge voltage which may be applied for a stated length of time without doing permanent damage to the unit.

**Temperature:** Capacitors are generally rated at 25°C at sea level under specific humidity conditions. Operating temperature ranges are also given, along with derating (reliability) curves for operation at temperatures other than 25°C.

**Temperature Coefficient:** Expressed as TC in ppm (parts per million) or in percent (%) from the norm of 25°C. This is seldom a straight line and may vary widely for certain types. Most capacitors have positive TC in that the capacitance increases as temperature increases. Some types, however, have negative TC in that the capacitance decreases as temperature increases.

**Ceramic Capacitor Codes  
(Capacitance Given In pF)**

| Color  | Digit | Multi-plier | Tolerance    |           |           | Temperature Coefficient ppm°C | Signi-<br>ficant Figure | Multi-plier |
|--------|-------|-------------|--------------|-----------|-----------|-------------------------------|-------------------------|-------------|
|        |       |             | Class 1      |           | Class 2   |                               |                         |             |
|        |       |             | 10pF or less | Over 10pF |           |                               |                         |             |
| Black  | 0     | 1           | ±2.0pF       | ±20%      | ±20%      | 0                             | 0.0                     | −1          |
| Brown  | 1     | 10          | ±0.1pF       | ±1%       |           | −33                           |                         | −10         |
| Red    | 2     | 100         |              | ±2%       |           | −75                           | 1.0                     | −100        |
| Orange | 3     | 1000        |              | ±3%       |           | −150                          | 1.5                     | −1000       |
| Yellow | 4     | 10000       |              |           | +100% −0% | −220                          | 2.0                     | −10000      |
| Green  | 5     |             | ±0.5pF       | ±5%       | ±5%       | −330                          | 3.3                     | +1          |
| Blue   | 6     |             |              |           |           | −470                          | 4.7                     | +10         |
| Violet | 7     |             |              |           |           | −750                          | 7.5                     | +100        |
| Gray   | 8     | 0.01        | ±0.25pF      |           | +80% −20% | +150 to −1500                 |                         | +1000       |
| White  | 9     | 0.1         | ±1.0pF       | ±10%      | ±10%      | +100 to −750                  |                         | +10000      |
| Silver |       |             |              |           |           |                               |                         |             |
| Gold   |       |             |              |           |           |                               |                         |             |





# MINIGLOSSARY

## BASIC

## CAPACITOR FORMULAS

### I. Capacitance (farads)

English:  $C = \frac{.224 \text{ K A}}{t_D}$

Metric:  $C = \frac{.0884 \text{ K A}}{t_D}$

### II. Energy stored in capacitors (Joules, watt-sec)

$$E = \frac{1}{2} CV^2$$

### III. Linear charge of a capacitor (Amperes)

$$I = C \frac{dV}{dt}$$

### IV. Total Impedance of a capacitor (ohms)

$$Z = \sqrt{R_s^2 + (X_c - X_L)^2}$$

Where  $R_s$  = ESR

### V. Capacitive Reactance (ohms)

$$X_c = \frac{1}{2 \pi f C}$$

### VI. Inductive Reactance (ohms)

$$X_L = 2 \pi f L$$

### VII. Phase Angles:

Ideal Capacitors: Current leads voltage  $90^\circ$

Ideal Inductors: Current lags voltage  $90^\circ$

Ideal Resistors: Current in phase with voltage

### VIII. Dissipation Factor

$$DF = \tan \delta \text{ (loss angle)} = \frac{ESR}{X_c} = \frac{1}{2 \pi f C} (ESR)$$

### IX. Power Factor

PF = Sine  $\delta$  (loss angle) = Cos  $\phi$  (phase angle)

PF = DF (when less than 10%)

### X. Quality Factor (dimensionless)

$$Q = \cotan \delta \text{ (loss angle)} = \frac{1}{DF}$$

### XI. Equivalent Series Resistance (ohms)

$$ESR = (DF) (X_c) = (DF) \left( \frac{1}{2 \pi f C} \right)$$

### XII. Power Loss (watts)

$$\text{Power loss} = (2 \pi f CV^2) (DF)$$

### XIII. KVA (Kilowatts)

$$KVA = 2 \pi f CV^2 \times 10^{-3}$$

### XIV. Temperature Characteristic (ppm/ $^\circ$ C)

$$TC = \frac{C_t - C_{25}}{C_{25} (T_t - 25)} \times 10^6$$

### XV. Cap Drift (%)

$$C.D. = \frac{C_1 - C_2}{C_1} \times 100$$

### XVI. Reliability of Ceramic Capacitors

$$\frac{L_o}{L_t} = \left( \frac{V_t}{V_o} \right)^x \left( \frac{T_t}{T_o} \right)^r$$

### XVII. Capacitors in Series (current the same)

$$\text{Any number: } \frac{1}{C_T} = \frac{1}{C_1} + \frac{1}{C_2} + \dots + \frac{1}{C_N}$$

$$\text{Two: } C_T = \frac{C_1 C_2}{C_1 + C_2}$$

### XVIII. Capacitors in Parallel (voltage the same)

$$C_T = C_1 + C_2 + \dots + C_N$$

### XIX. Aging Rate

$$A.R. = \% \Delta C / \text{decade of time}$$

### XX. Decibels

$$db = 20 \log \frac{V_1}{V_2}$$

### Metric prefixes:

|       |              |
|-------|--------------|
| Pico  | X $10^{-12}$ |
| Nano  | X $10^{-9}$  |
| Micro | X $10^{-6}$  |
| Milli | X $10^{-3}$  |
| Deci  | X $10^{-1}$  |
| Deca  | X 10         |
| Kilo  | X $10^3$     |
| Mega  | X $10^6$     |
| Giga  | X $10^9$     |
| Tera  | X $10^{12}$  |

### Symbols:

|          |                             |
|----------|-----------------------------|
| K        | = Dielectric Constant       |
| A        | = Area of electrode overlap |
| $t_D$    | = Dielectric thickness      |
| V        | = Voltage (volts)           |
| t        | = time (hours)              |
| $R_s$    | = Series Resistance (ohms)  |
| f        | = frequency (Hertz)         |
| L        | = Inductance (henries)      |
| $\delta$ | = Loss angle                |

|        |                                              |
|--------|----------------------------------------------|
| $\phi$ | = Phase angle                                |
| x+y    | = Exponent effect of voltage and temperature |
| $L_o$  | = Operating life (hours)                     |
| $L_t$  | = Test life (hours)                          |
| $V_t$  | = Test voltage (volts)                       |
| $V_o$  | = Operating voltage (volts)                  |
| $T_t$  | = Test temperature ( $^\circ$ C)             |
| $T_o$  | = Operating temperature ( $^\circ$ C)        |



## MINIGLOSSARY CONNECTORS

**Connector terminology** is often quite confusing. This confusion starts with the very names of connectors. The name of a connector may derive from its shape, application, type of conductor or even method of termination.

**Shape**—Circular, cylindrical, and rectangular.

**Electrical application**—High voltage, RF, microwave, input/output, etc.

**Mechanical application**—Printed circuit, rack & panel, cable, etc.

**Conductor type**—Coaxial, flat cable, ribbon cable, flex circuit, etc.

**Termination method**—Wirewrap, soldercup, solderless, etc.

Hardware such as clamps, hoods, and adapters are frequently used to convert cable connectors to rack and panel types. This adds to the name confusion. A very common telephone connector, for example (the "C" type) got its name from the model number of the original maker.

**Contact:** The part(s) of the connector that actually provides circuit continuity between its two sections—the parts which are normally mated. The back end of the connector should properly be called the *termination*. This is the point where the wires or PC board is attached to the connector.

**Contact alignments:** Often called *contact float*. Describes the amount of allowable contact movement within the connector body. Permits self-alignment.

**Male vs. female:** In the U.S. this describes the contact construction. In Europe this term is more often used to describe the outer shell mating action which may be the reverse of the contacts.

**Closed entry:** A female contact which prevents entry of a male contact larger than a specific size.

**Open entry:** A female contact designed for a specific size of male contact but which will allow entry of larger male contacts by spring action.

**Hermaphrodite:** Contacts or connector bodies which are the same configuration. Male/female designations do not apply. Bodies usually have some mechanical means for maintaining polarity.

**Hermetic seal:** Glass-to-metal seals at terminations. Often used improperly to describe vacuum-tight seals.

**Waterproof seal:** May or may not be truly *waterproof*. May prevent easy entrance of casual water by means of a rubber or other boot.

**Printed circuit connector:** Connectors which are used in conjunction with printed circuit boards. There are two distinctly different styles.

**Edgeboard.** May be called *edge* or *card*. The printed circuit (PC) board edge enters the connector.

**Two-piece:** One part of the connecting pair is physically attached to the PC board itself. The other part is attached to something else such as a cable or a motherboard.

**Readout:** Describes the arrangement at the terminating edge of a PC board.

May be single or double. A double read-out PC board has termination strips on each side not usually interconnected.

**Ribbon connectors:** A type of connector which allows flat "ribbon" cable to be attached to a round or rectangular connector but also used interchangeably for flat connectors to flat cable.

**Ribbon contact connector:** Describes the contacts in a rectangular connector which have a self-wiping mating action. Not the same as ribbon connector.

**Solderless terminal:** Any style of termination which does not require solder for a permanent connection. See *crimp* and *insulation displacement*.

**Crimp termination:** A stripped wire is inserted into a barrel or trough which is then crimped to the conductor with a suitable tool.

**Insulation displacement:** Unstripped insulated wire is fitted into a channel containing metal teeth which are forced through the insulation to make contact with the conductor.

**Service rating:** The maximum rated voltage and/or current which may be applied continuously. May be called *working voltage*. Can be confused with the term used to describe how many times a connector may be mated and separated.

**Withstanding voltage:** Also called *test voltage*. The voltage a connector must withstand for one minute without breakdown. Applied between connectors and between connectors and shell and any grounding devices of the connector.





# MAXIMUM CURRENT CAPACITY— CONDUCTORS

| Size,<br>AWG | MIL-W-5088      |                  |                 |                  | National<br>Electrical<br>Code | Underwriters<br>Laboratory |      | American<br>Insurance<br>Association | 500<br>c mils/A |
|--------------|-----------------|------------------|-----------------|------------------|--------------------------------|----------------------------|------|--------------------------------------|-----------------|
|              | Copper          |                  | Aluminum        |                  |                                | 60°C                       | 80°C |                                      |                 |
|              | Single-<br>wire | Wire-<br>bundled | Single-<br>wire | Wire-<br>bundled |                                |                            |      |                                      |                 |
| 30           | ...             | ...              | ...             | ...              | ...                            | 0.2                        | 0.4  | ...                                  | 0.20            |
| 28           | ...             | ...              | ...             | ...              | ...                            | 0.4                        | 0.6  | ...                                  | 0.32            |
| 26           | ...             | ...              | ...             | ...              | ...                            | 0.6                        | 1.0  | ...                                  | 0.51            |
| 24           | ...             | ...              | ...             | ...              | ...                            | 1.0                        | 1.6  | ...                                  | 0.81            |
| 22           | 9               | 5                | ...             | ...              | ...                            | 1.6                        | 2.5  | ...                                  | 1.28            |
| 20           | 11              | 7.5              | ...             | ...              | ...                            | 2.5                        | 4.0  | 3                                    | 2.04            |
| 18           | 16              | 10               | ...             | ...              | 6                              | 4.0                        | 6.0  | 5                                    | 3.24            |
| 16           | 22              | 13               | ...             | ...              | 10                             | 6.0                        | 10.0 | 7                                    | 5.16            |
| 14           | 32              | 17               | ...             | ...              | 20                             | 10.0                       | 16.0 | 15                                   | 8.22            |
| 12           | 41              | 23               | ...             | ...              | 30                             | 16.0                       | 26.0 | 20                                   | 13.05           |
| 10           | 55              | 33               | ...             | ...              | 35                             | ...                        | ...  | 25                                   | 20.8            |
| 8            | 73              | 46               | 58              | 36               | 50                             | ...                        | ...  | 35                                   | 33.0            |
| 6            | 101             | 60               | 86              | 51               | 70                             | ...                        | ...  | 50                                   | 52.6            |
| 4            | 135             | 80               | 108             | 64               | 90                             | ...                        | ...  | 70                                   | 83.4            |
| 2            | 181             | 100              | 149             | 82               | 125                            | ...                        | ...  | 90                                   | 132.8           |
| 1            | 211             | 125              | 177             | 105              | 150                            | ...                        | ...  | 100                                  | 167.5           |
| 0            | 245             | 150              | 204             | 125              | 200                            | ...                        | ...  | 125                                  | 212.0           |
| 00           | 283             | 175              | 237             | 146              | 225                            | ...                        | ...  | 150                                  | 266.0           |
| 000          | 328             | 200              | ...             | ...              | 275                            | ...                        | ...  | 175                                  | 336.0           |
| 0000         | 380             | 225              | ...             | ...              | 325                            | ...                        | ...  | 225                                  | 424.0           |



# MINIGLOSSARY

## BASIC

## EBCDIC CODE

| Bit Positions 4, 5, 6, 7<br>Second Hexadecimal Digit<br>Digit Punches |   |     | 00  |     |     |     | 01 |    |    |    | 10 |    |    |    | 11 |    |    |    | Bit Positions 0, 1      |              |
|-----------------------------------------------------------------------|---|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|-------------------------|--------------|
|                                                                       |   |     | 00  | 01  | 10  | 11  | 00 | 01 | 10 | 11 | 00 | 01 | 10 | 11 | 00 | 01 | 10 | 11 | Bit Positions 2, 3      |              |
|                                                                       |   |     | 0   | 1   | 2   | 3   | 4  | 5  | 6  | 7  | 8  | 9  | A  | B  | C  | D  | E  | F  | First Hexadecimal Digit |              |
|                                                                       |   |     | 12  |     |     |     | 12 | 12 |    | 12 | 12 | 12 |    | 12 | 12 |    |    |    |                         |              |
|                                                                       |   |     |     | 11  |     |     |    | 11 | 11 | 11 |    | 11 | 11 | 11 |    | 11 |    |    | Zone Punches            |              |
|                                                                       |   |     |     |     | 0   |     | 0  |    | 0  | 0  | 0  |    | 0  | 0  |    |    | 0  |    | Digit Punches           |              |
|                                                                       |   |     | 9   | 9   | 9   | 9   | 9  | 9  | 9  | 9  |    |    |    |    |    |    |    |    |                         |              |
| 0000                                                                  | 0 | 8-1 | ①   | ②   | ③   | ④   | ⑤  | ⑥  | ⑦  | ⑧  |    |    |    |    | ⑨  | ⑩  | ⑪  | ⑫  | 0                       | 8-1          |
| 0001                                                                  | 1 | 1   | SOH | DC1 | SOS |     |    |    | ⑬  |    | a  | j  |    |    | A  | J  | ⑭  | 1  | 1                       | 1            |
| 0010                                                                  | 2 | 2   | STX | DC2 | FS  | SYN |    |    |    |    | b  | k  | s  |    | B  | K  | S  | 2  | 2                       | 2            |
| 0011                                                                  | 3 | 3   | ETX | TM  |     |     |    |    |    |    | c  | l  | t  |    | C  | L  | T  | 3  | 3                       | 3            |
| 0100                                                                  | 4 | 4   | PF  | RES | BYP | PN  |    |    |    |    | d  | m  | u  |    | D  | M  | U  | 4  | 4                       | 4            |
| 0101                                                                  | 5 | 5   | HT  | NL  | LF  | RS  |    |    |    |    | e  | n  | v  |    | E  | N  | V  | 5  | 5                       | 5            |
| 0110                                                                  | 6 | 6   | LC  | BS  | ETB | UC  |    |    |    |    | f  | o  | w  |    | F  | O  | W  | 6  | 6                       | 6            |
| 0111                                                                  | 7 | 7   | DEL | IL  | ESC | EOT |    |    |    |    | g  | p  | x  |    | G  | P  | X  | 7  | 7                       | 7            |
| 1000                                                                  | 8 | 8   |     | CAN |     |     |    |    |    |    | h  | q  | y  |    | H  | Q  | Y  | 8  | 8                       | 8            |
| 1001                                                                  | 9 | 8-1 |     | EM  |     |     |    |    |    |    | ;  | r  | z  |    | I  | R  | Z  | 9  | 9                       | 9            |
| 1010                                                                  | A | 8-2 | SMM | CC  | SM  |     | ¢  | !  | ⑮  | :  |    |    |    |    |    |    |    |    |                         | 8-2          |
| 1011                                                                  | B | 8-3 | VT  | CU1 | CU2 | CU3 | .  | \$ | ,  | #  |    |    |    |    |    |    |    |    |                         | 8-3          |
| 1100                                                                  | C | 8-4 | FF  | IFS |     | DC4 | <  | *  | %  | @  |    |    |    |    |    |    |    |    |                         | 8-4          |
| 1101                                                                  | D | 8-5 | CR  | IGS | ENQ | NAK | (  | )  | _  | '  |    |    |    |    |    |    |    |    |                         | 8-5          |
| 1110                                                                  | E | 8-6 | SO  | IRS | ACK |     | +  | ;  | >  | =  |    |    |    |    |    |    |    |    |                         | 8-6          |
| 1111                                                                  | F | 8-7 | SI  | IUS | BEL | SUB | I  | ┐  | ?  | ”  |    |    |    |    |    |    |    |    |                         | 8-7          |
|                                                                       |   |     | 12  |     |     |     | 12 |    |    |    | 12 | 12 |    | 12 | 12 | 12 |    | 12 |                         |              |
|                                                                       |   |     |     | 11  |     |     |    | 11 |    |    |    | 11 | 11 | 11 |    | 11 | 11 | 11 |                         | Zone Punches |
|                                                                       |   |     |     |     | 0   |     |    |    | 0  |    | 0  |    | 0  | 0  | 0  |    | 0  | 0  |                         |              |
|                                                                       |   |     | 9   | 9   | 9   | 9   |    |    |    |    |    |    |    |    | 9  | 9  | 9  | 9  |                         |              |

### Card Hole Patterns

|   |               |   |            |   |       |   |          |
|---|---------------|---|------------|---|-------|---|----------|
| ① | 12-0-9-8-1    | ⑤ | No-Punches | ⑨ | 12-0  | ⑬ | 0-1      |
| ② | 12-11-9-8-1   | ⑥ | 12         | ⑩ | 11-0  | ⑭ | 11-0-9-1 |
| ③ | 11-0-9-8-1    | ⑦ | 11         | ⑪ | 0-8-2 | ⑮ | 12-11    |
| ④ | 12-11-0-9-8-1 | ⑧ | 12-11-0    | ⑫ | 0     |   |          |

### Control Character Representations

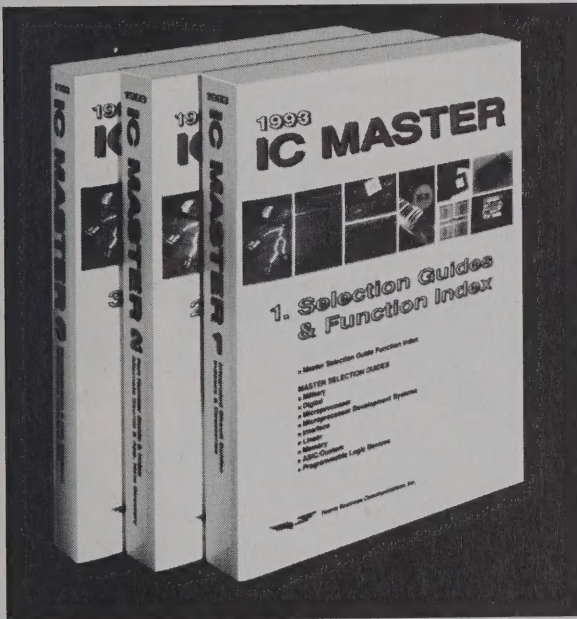
|     |                  |     |                              |     |                         |
|-----|------------------|-----|------------------------------|-----|-------------------------|
| ACK | Acknowledge      | EOT | End of Transmission          | PF  | Punch Off               |
| BEL | Bell             | ESC | Escape                       | PN  | Punch On                |
| BS  | Backspace        | ETB | End of Transmission Block    | RES | Restore                 |
| BYP | Bypass           | ETX | End of Text                  | RS  | Reader Stop             |
| CAN | Cancel           | FF  | Form Feed                    | SI  | Shift In                |
| CC  | Cursar Control   | FS  | Field Separator              | SM  | Set Mode                |
| CR  | Carriage Return  | HT  | Horizontal Tab               | SMM | Start of Manual Message |
| CU1 | Customer Use 1   | IFS | Interchange File Separator   | SO  | Shift Out               |
| CU2 | Customer Use 2   | IGS | Interchange Group Separator  | SOH | Start of Heading        |
| CU3 | Customer Use 3   | IL  | Idle                         | SOS | Start of Significance   |
| DC1 | Device Control 1 | IRS | Interchange Record Separator | SP  | Space                   |
| DC2 | Device Control 2 | IUS | Interchange Unit Separator   | STX | Start of Text           |
| DC4 | Device Control 4 | LC  | Lower Case                   | SUB | Substitute              |
| DEL | Delete           | LF  | Line Feed                    | SYN | Synchronous Idle        |
| DLE | Data Link Escape | NAK | Negative Acknowledge         | TM  | Tape Mark               |
| DS  | Digit Select     | NL  | New Line                     | UC  | Upper Case              |
| EM  | End of Medium    | NUL | Null                         | VT  | Vertical Tab            |
| ENQ | Enquiry          |     |                              |     |                         |

### Special Graphic Characters

|     |                       |
|-----|-----------------------|
| ¢   | Cent Sign             |
| .   | Period, Decimal Point |
| <   | Less-than Sign        |
| (   | Left Parenthesis      |
| +   | Plus Sign             |
| OR  | Logical OR            |
| &   | Ampersand             |
| !   | Exclamation Point     |
| \$  | Dollar Sign           |
| *   | Asterisk              |
| )   | Right Parenthesis     |
| ;   | Semicolon             |
| NOT | Logical NOT           |
| -   | Minus Sign, Hyphen    |
| /   | Slash                 |
| ,   | Comma                 |
| %   | Percent               |
| ~   | Underscore            |
| >   | Greater-than Sign     |
| ?   | Question Mark         |
| :   | Colon                 |
| #   | Number Sign           |
| @   | At Sign               |
| '   | Prime, Apostrophe     |
| =   | Equal Sign            |
| "   | Quotation Mark        |



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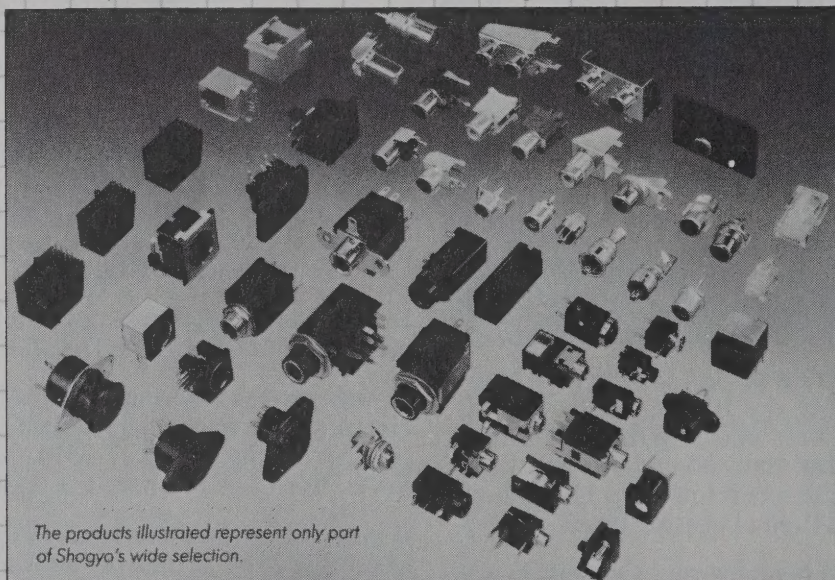
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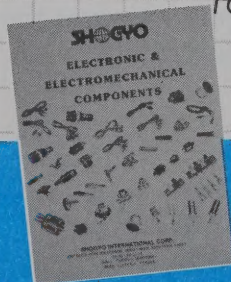


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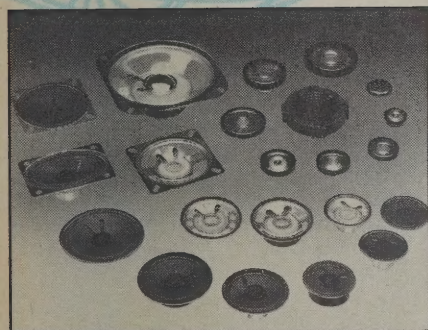
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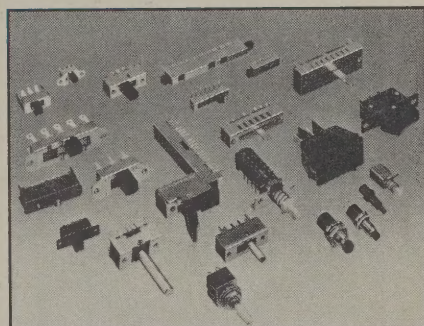
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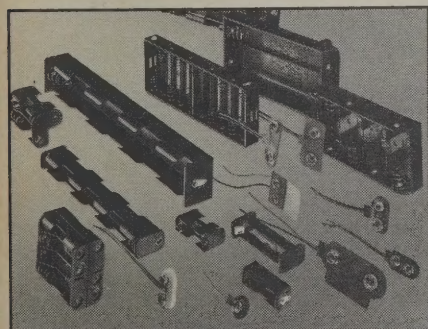
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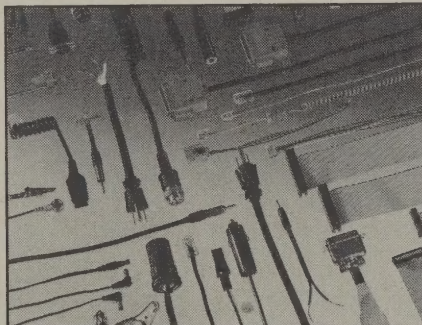
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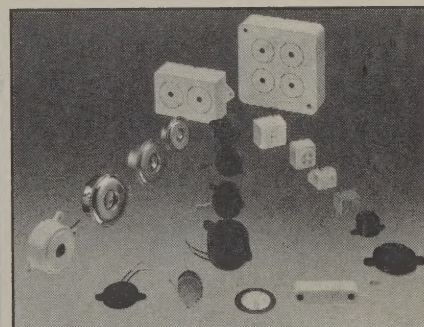
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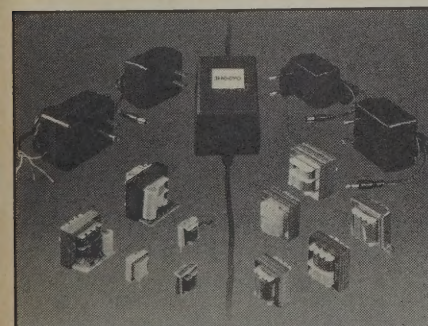
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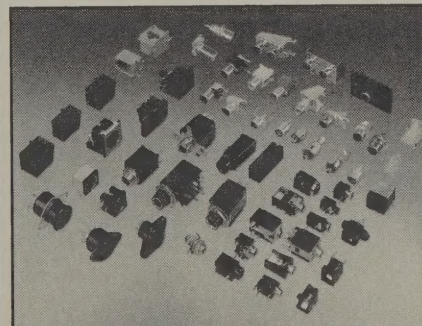
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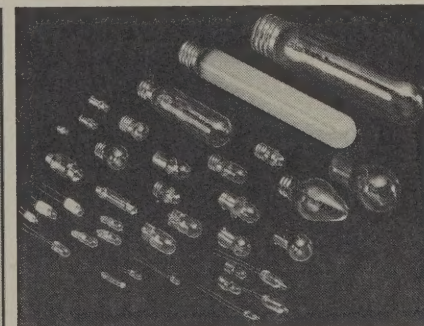
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